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ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

A. E. BRACH

NO. 87 PARK ROW, NEW YORK.

O. D. MUNN.

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### THE INDUSTRIES OF NEW YORK.

That New York is an important manufacturing center, as well as the commercial metropolis of the country, is generally little thought of, yet it is this "productive industry" which has principally caused its astonishing growth in population, and by which the most of those who live here find their support. Its vast commerce requires many workers, and supports a large class who do little or no work, simply living on the interest of former accumulations; but the productive industry here, aside from the mere handling of the products of the industry of others, distributes, through the countless channels which reach the family and the individual, the means of living, which have caused our thoroughfares to be so crowded, and which have necessitated so many miles of street railways, elevated railroads, ferries, and bridges. The total of imports and exports of New York city for the last calendar year was \$896,189,814 the powder, wad, or copper fragments entering the lacerated -a little more than half of that of the whole United States city, whereby the raw or half finished materials were brought | on the Fourth. Fifty cases were brought in for treatment into shape for practical use, amount to more than one-half the value of the exports and imports.

The statistics showing the extent of these manufacturing industries have recently been forwarded to the Census Bureau at Washington, by Charles E. Hill, who has been the chief special agent here supervising their collection. They include the business of the year from June, 1879, to June, 1880, and do not cover a few special lines of industry, which have only been made subjects of investigation by general agents for the whole United States. For 189 different branches of business, as specified, the capital employed was \$157,581,749, in 11,068 establishments, employing 262,459 hands, using 1,812 boilers, and 1,124 engines of 41,951 horse power, and producing goods valued at \$435,422,102. Of these hands 133,998 were males above 16, 63,482 females above 15, and 1,898 children and youth, and this enumeration of help does not include proprietors or firm members, superintendents, bookkeepers, or salesmen-none, in short, connected with the mercantile department, but only those working for wages as producers. It will be at once observed that, adding these exceptions, we would greatly swell the number of those who find employment in the several branches of business, although the latter would made, especially in American papers, with regard to the largely be paid according to the profits of the business. Taking the materials used-\$267,043,236-plus the wages paid, from the value of the products, we have \$78,864,832, for the payment of these others engaged and the interest on capital. The figures given for capital are, probably, more imperfect than those for any other particular, for in many cases they represent an original investment, largely grown in value, and many of the industries have grown up literally almost without capital, except such as furnished by the brain and muscle of their founders.

Among the important items not included in this list is the manufacture of silk goods (which was \$7,842515), gas (\$5,199,979), shipbuilding, and brewing and distilling, with several minor industries, for which the statistics have not yet been completed. The whole, it is estimated, will bring the total very nearly up to \$500,000,000.

The most important industry in the list is the manufacture of men's clothing, a branch of business which has grown wonderfully since the introduction of power for cutting as well as sewing. The production in this line is valued at \$59,798,697, employing 64,056 hands, while women's clothing figures for \$18,599,487, employing 17,267 hands. In boots and shoes, 123 factories make goods to the value packing were valued at \$29,297,527, including 244,275 English lines than on American." beeves, 122,500 calves, and 662,600 sheep. In machinery the product was \$5,077,046; and in engines and boilers, \$3,213,371; car building and repairing, \$547,037; metal goods and metal spinning, \$445,473; steam fitting and steam heating, \$1,289,259; iron casting and finishing, \$5,489,251; tin, copper, and sheet iron ware, \$2,347,182; furniture, \$9,605,779; wood brackets, moulding, turning, etc., \$1,371,083; and drugs and chemicals, \$3,188,178.

But any notice of the business and manufacturing industry of New York city would be incomplete without taking into account the circumstances of its location, whereby a that traveling is exceptionally conducive to morality or else population of some 800,000, just across the East and North that, whether car compartments are large or small, railway Rivers, whose shores are fringed with the factories and travel affords fewer facilities for the commission of serious warehouses of city firms, all contribute to swell the produc- crimes than the ordinary conditions of social life. The tion of this common center. The industries thus carried on murder of people in church during divine service is a more only the establishments within the city lines; when, howpleted that it will be possible to collate the figures touching the productive industry of these intimately related sections, the grand total will show an aggregate of exchangeable commodities which will, in money value, bear no mean proportion to the total exports and imports of the port of reasonable hope of escape, as Lefroy and Muller did in Eng-New York. ----

The toy is a cheap contrivance of cast iron, with a barrel about two inches long. It is a breech loader, intended for blank cartridges, the powder being held in a metallic case either by a paper wad or by folding inward the slashed end of the cartridge case. There is no half-cock; the trigger catch is roughly made, and there is always danger of an accidental discharge when the hinged barrel is being returned to place after the insertion of the cartridge. At such times the barrel is held in the left hand, and the discharge inflicts an ugly wound in the palm. Other wounds are inflicted by the paper wad, or by fragments of the cut end of the copper cartridge-case, which are shot off with considerable force. In other cases buck-shot, gravel, nails, or other missiles, placed in the barrel by heedless or malicious urchins, have caused severe, sometimes fatal, injuries. The more serious wounds, however, are usually caused by accidental discharges, palm, and so injuring the nerves that lockjaw is the result. -but the productions of the workshops and factories of the There were seventeen fatal cases of this sort in Baltimore in three hospitals in this city, with eight or ten deaths; and there is no telling how many cases were under private treatment. Other towns appear to have suffered proportionally except Philadelphia, where, in consequence of fifteen fatalities from toy-pistol wounds last year, the use of the weapon this year was suppressed by the city authorities.

> Other towns will do well to follow the example of Philadelphia. Parents are often ignorant or careless, and a five or ten cent pistol offers irresistible attractions to many boys. In anticipation of next year's celebration some means should be adopted to prevent the manufacture, sale, and use of such murderous playthings. Even the use of the pistol-shaped device for snapping paper caps should be stopped. No harm can result from them directly; but the habit which children acquire of pointing such things at each other in fun, is not conducive to care or caution in handling real pistols.

#### **RELATIVE RISKS OF RAILWAY TRAVEL.**

A few weeks ago, when a traveler was murdered on a railway train near London and thrown out of the car while the train was passing through a tunnel, a great ado was insecurity of travelers in the English cars. The plan of confining two or three or at most half a dozen travelers in a small cab, out of reach and hearing of their fellow travelers on the train, and unprotected by conductors or other trainmen, was unsparingly criticised and ridiculed. For the sake of a degree of (undesirable) privacy any traveler, it was said, was liable to find himself cooped up with a murderer like Muller or Lefroy; or, in case of a lady, with a brute like Valentine Baker. The opportunity thus afforded for robbery, murder, or outrage was declared to be impossible with American cars, and remarks derogatory to the common sense of Englishmen were freely indulged in because they would not give up their system for ours.

The recent robbery of a train of cars on a Missouri road by a bold and well organized gang of desperadoes gives the English press an opportunity to retaliate in kind. A promiuent London paper says:

"The American cars seem specially made to invite this kind of outrage. With the English system such a wholesale raid is impossible. In any case one carriage alone could be robbed here before the passengers and officials could organ. ize resistance. As there is no example of such an event in our railway history, we may assume that the difficulties and of \$4,799.371, and 716 custom shoemaking shops produce dangers are so great as to deter even the most daring crimi-\$2,865,620 worth. The products of slaughtering and meat nals. The actual danger of murder or robbery is far less on

> In this view of the case our English friends are as much at fault as the American critics of the English system were. The conditions under which the two systems are operated make a fair comparison of the relative security to life and property afforded by them quite impossible, while the rarity of violent crimes under both systems shows that the risk to the traveler in either is amazingly small. Indeed, considering the large numbers of persons always in transit by rail, both in this country and England, the rare occurrence of crimes on the road must be accepted as proof either

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#### TOY PISTOLS AND LOCKJAW.

On summing up the casualties of our explosive holiday, the Fourth of July, the numbers of the killed and fate of empires.

o' in our larger towns and cities.

are not at all considered in these statistics, which cover frequent occurrence, if criminal statistics are worth any thing, than like crimes on railway trains; but that affords no ever, the work of the Census Bureau shall be so far com- basis for a comparison of car seats and church pews as aids to crime.

It is pretty certain that under ordinary conditions of travel no ill-disposed person would choose a public car on an American railway for individual murder or robbery with any land. It may be equally true that an organized raid upon a train of cars on an English road would be prevented or made unsuccessful by the plan of the cars and the distribution of the passengers. But such a deterrent effect would be much less certain were the train to be run over a long and sparsely maimed rival those of some battles which have decided the settled route, such as was taken advantage of by the Missouri train robbers. Such crimes are no more attempted in

The majority of the injuries were inflicted by the toy the neighborhood of our larger centers of railway communipistol, using blank cartridges, the introduction of which has cation then they are on roads leading from London or Liverbeen followed by a general epidemic of lockjaw, particularly pool, and it would seem that the surroundings of the roads and the more frequent stations are more influential in pre-

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venting train robberies in the East as in England, than anything in the construction of the cars or the make-up of the train. Given equal time for the work, we are inclined to think that fewer men would be required to capture and go through a train of English cars than one of American cars, while the robbers' chance of meeting serious resistance on the latter would be much the greater. But this question of comparative immunity from attack plays a very insignificant part in determining the choice of large or small compartments, compared with popular customs, popular habits of thought with respect to privacy or promiscuity, the varying hazard of undesirable social contacts while traveling, and all that sort of thing. The English have their prejudices as Americans have theirs, and matters of this sort are more apt to be decided by prejudice than by the calculation of infinitesimal risks to life or property.

#### PATENTS IN TURKEY AND LIBERIA.

General patent laws have been lately passed and promulgated in Turkey and Liberia, in which countries American citizens may now, for the first time, secure their new inventions.

The Turkish patent law is substantially a copy of the French and German systems. Any person may take a patent on deposit of drawings and specifications. Longest term of the patent fifteen years, annual tax \$18. The invention must be worked within two years from the date of the patent. The penalties for infriugement and the proceedings are the same as in European countries.

In Liberia the patentee must be the inventor, or must have lawfully acquired the invention from the inventor. Drawings and specifications must be furnished. The government fee is fifty dollars. The proceedings are much the same as in taking an American patent. The invention must be worked within three years after the grant of the patent. Those desiring to obtain patents in either of the above countries may obtain further information at this office.

# WATERPROOFING.

Without considering the processes by which cloth is waterproofed with such substances as India-rubber, oils, wax, and varnishes, there are several processes in practical use by which cloth is rendered non-absorbent of water—and for all practical purposes waterproof—without materially affecting its color or appearance, greatly increasing its weight, or rendering it entirely airproof. These processes depend mainly upon the reaction between two or more substances, in consequence of which a substance insoluble in water is deposited in the fibers of the cloth.

The following are several of these processes:

#### LOWRY'S PROCESS.

Soap.	 	 	 		<b></b>	2 ounces.
Glue	 	 	 •••••• ••	. <b>.</b>		4 "
Water	 	 	 		• • • • • • • • • •	1 gallon.

Soften the glue in cold water and dissolve it together with the soap in the water by aid of heat and agitation.

The cloth is filled with this solution by boiling it in the liquid for several hours, the time required depending upon the kind of fiber and thickness of the cloth. When properly saturated the excess of liquid is wrung out and the cloth exposed to the air until nearly dry; then digested for from five to twelve hours in the following solution:

•	
Alum	18 ounces.
Salt	15 "
Water	i gallon.
It is finally more out singed in clean motor .	

It is finally wrung out, rinsed in clean water, and dried at a temperature of about 80° Fah. Dent's process requires a small quantity of oil, but in

. Lanca	ргосея	requires	a sma	n quant	ity of	c 011,	out l
other resp	pects res	embles the	e last.	It is give	en as	follov	ws:
Sodium	carbonate	(com'l)				1 100	and.

Caustic lime	
Water	21/2 pints.
Boil together, let it stand to settle, then draw	off the clear

previously melted together. Boil and stir occasionally for half an hour, then introduce-

Gine (previously	softened)	8 ounces,
Linseed oil		8 "

and continue the boiling and stirring for another half hour. In waterproofing one-half ounce of this soap is mixed with a relien of hot mater and in this the mode are sacked for

a gallon of hot water, and in this the goods are soaked for el

y- to the surface, and finally hot pressed and brushed. In this case lead sulphate is deposited in the fibers.

In Townsend's process two solutions are used	as follows:
British gam	90 pounds.
Soap, white	10 "
Water	16 gallons.

The solution is boiled for some minutes, and if color is required one pint of logwood liquor is added. The second

solution consists of a saturated solution of alum in water, or-

Bullard's process is somewhat similar to Riemann's. In this strong aqueous solutions of sulphate of aluminum and lead acctate are used alternately.

Berlin waterproof cloth is said to be prepared by saturating the cloth in a solution of acetate of aluminum and copper, then dipping it successively in water glass and resin soap.

### MOTHER-OF-PEARL AND PEARL INLAYING.

Mother of pearl is chiefly obtained from the pearl oyster (*Meleagrina margaritifera*) which is found in the Gulf of California, at Panama, Cubagua, Ceylon, Madagascar, Swan River, Manila, and the Society Islands. The black-lipped shells from Manila are most highly prized. The Society Islands furnish the silver-lipped sort, and Panama the "bullock" shells.

The genera *Haliotus*, turbo, etc., also furnish some motherof-pearl. Technically the mother-of pearl obtained from the pearl oyster is known as white pearl; that of *Haliotus* or seaear as aurora or ear shell; it is easily distinguished from the former by its prismatic colors and wrinkled appearance.

The peculiar and varied tints exhibited by mother-of-pearl is due to the structure of its surface, which, owing to the great multitude of minute grooves upon it—often many thousands to the inch—decompose the light which falls upon it and reflect different hues.

The pearl shell is lamellar in structure, and admits of being split into laminæ, but this method of dividing it is seldom resorted to owing to the liability of spoiling the shell.

In working up mother-of pearl the saw. file, and grindstone are the principal tools employed. A shell is selected with a coating of the substance of a thickness as nearly as possible to suit the required purpose. Square or angular pieces are cut out with a small circular or buck or fret saw to suit convenience, the piece being held and manipulated with the hand or clamped in a vise. Buttons and such circular pieces are cut with an annular or crown saw fixed upon a mandrel. All such tools used in cutting pearl must be kept well moistened with water to prevent over-heating. The pieces are usually dressed upon a grindstone, the edge and face of which are grooved or ridged to prevent clogging. The stone is kept wet when in use; for this purpose weak soapsuds is better than water alone.

When the pieces have been properly shaped on the stone they are dressed with 'pumice stone and water. In some cases the better plan is to have the piece of pumice stone shaped so as to adapt it to the form required and held in a vise while the work, held in a clamp, is revolved in contact with it on the lathe. After the application of the stone fine powdered pumice stone, free from coarse grit, is applied with a cork or cloth moistened with water. In the final polishing rotten stone is employed. This is moistened with dilute sulphuric acid (1 acid, 15 water) and applied with a cork. The acid is said to develop finely the striated structure of the shell. In some works it is thought necessary to use emery before the rotten-stone and to use a limpid oil in place of the acid.

Knife and razor handles of pearl, after having been roughed out, are drilled where the rivets are to be inserted, lightly riveted together, shaped on the stone, and finished as above described, the last finishing touch often being done by friction of the hand of the workman.

In some shops much of the polishing is done on clothcovered wheels, the moist cloth carrying the polishing materials. Separate wheels are used for the different materials. For some common work powdered chalk or Spanish whiting is used in place of rotten-stone.

Pearl is etched by a process very similar to that used in etching copper. The designs or patterns are drawn upon it with asphaltum varnish, and all parts not intended to be etched having been similarly protected, the piece is submitted to the action of nitric acid. When the parts unprotected have been sufficiently eaten away by the acid the piece is rinsed in cold water and the varnish washed off with a little turpentine or benzine. Thin pieces of mother of pearl of a like pattern are usually gang-cut; that is, the thin plates are glued together, then held in a clamp and cut, drilled, and dressed as one piece, after which they are separated by being thrown into hot water, which separates the glue. In common pearl-inlaid work, films or very thin pieces of mother of-pearl are connected to a background, usually of papier máché or iron, by japan varnish. The plate having been cleaned and dried receives a coat of the varnish, and when this is nearly dry the pieces of pearl, cut out with a scissors by the artist, to represent leaves or designs, are pressed against and adhere to the varnish. The plate is then put in the japanner's oven until the coating becomes hard. A second coating of varnish is then put on-indiscriminately over the pearl and all-and when this has been dried or hardened in the oven the portions adhering to the pearl pieces is removed i

with a knife blade, and the whole surface is rubbed smooth with pumice stone and water. With the aid of a little gold size, gold leaf, and color, and camel's hair brush the artist then develops the design, the beauty of which depends of course upon his skill. Finally the article receives a coat of clear spirit varnish.

Besides the white and aurora shell referred to above, the glistening green snail shell is very frequently used. Its tints are light and dark green, yellow, and pink, blended. The varnished surface is sometimes ornamented with transferred drawings or engravings. When the varnish is nearly dry the engraving is spread out face downward upon it and carefully pressed so as to exclude air bubbles. After the varnish is thoroughly dry the paper is well moistened with warm water by means of a sponge. It may then be rubbed off, the lines of the print remaining adhering to the varnish.

#### THE PARIS ELECTRICAL EXHIBITION.

Among the promised novelties connected with the exhibition will be a boat propelled by electricity. For this purpose there will be a water basin fifty feet in diameter, in which the boat will be kept moving. In the center of the basin, on a pedestal, will be a brilliant electric light. At various points within the palace models of statues will be placed as supports for electric lights. Each exhibitor of lights is also to have a saloon set apart for the special show of his system.

The passenger station of theelectric railway will be within the exhibition building, and the track will run on the ground —not elevated as at first intended.

During the exhibition there will be a congress of electri cians, of which sixty-five French members have been appointed by the President of the Republic. The congress will publish an official report, and only members will be allowed to be present.

## Another Comet Discovered.

Mr. J. M. Schaeberle, of Ann Arbor, Mich., discovered, July 18, a new comet, the third of 1881. In the telescope it showed a bright center and a clear though faint tail. It appeared in the northeast, in the constellation Auriga, not far from the point of appearance of the comet now passing out of sight. The new comet is rapidly increasing in brightness, and will continue to do so until about the 21st of August, when it promises to be quite conspicuous, certainly as a telescopic object. It will be nearest the earth about August 20, a day or two after its perihelion passage, when it will be about 40,000,000 miles away. So far "the orbit presents no special resemblance to that of any known comet," the Harvard astronomers say, though Professor Stone, of Cincinnati, thinks he finds in it a close resemblance to that of the great comet of 1387. It seems to be moving in a northerly direction.

# American Antimony.

A Baltimore dispatch informs us that a carload of antimony, ten tons in all, was on the 14th of July received by C. L. Oudesluys & Co., from the southern part of Utah Territory being the first antimony received in the East from the mines of that section. The antimony was mined about 140 miles from Salt Lake City. The ore is a sulphide, bluish gray in color, and yields from 60 to 65 per cent of antimony. All antimony heretofore came from Great Britain and the island of Borneo, and paid an import duty of 10 per cent ad valorem, and there is also some from Sonora. It is believed that with proper rail facilities to the mines of the West there will be no need of importations.

#### Underground Telegraph Line in New York.

The United States Underground Telegraph Company has laid an experimental series of seventy-two wires, extending from the headquarters of the Fire Department, in Mercer street, to Police Headquarters in Mulberry street. The wires are laid in long wooden boxes covered with a preparation of silica and other substances designed to exclude dampness and secure perfect insulation. It is said that if the present experiment is successful the system will be extended so as to include the police stations, engine-houses, and firealarm boxes.

## Fired by Electricity.

An interesting illustration of the danger attending the manufacture of some kinds of rubber goods was shown in the origin of the recent fire which occurred in the Ætna Rubber Mills, at Jamaica Plains. The cement which fastens the seams of rubber coats is largely made of naphtha. The mere act of lifting a piece of rubber cloth from a pile of half a dozen similar ones, cut for garments, developed so much electricity that a spark was observed to escape. It came in contact with the naphtha cement, or with gases arising from it, and instantly the whole room was in a blaze. Fortunately the fire was extinguished without destroying the mill, the loss being only about a thousand dollars.

about twenty-four hours, according to thickness and character. The pieces are then allowed to drain until partly dried, then soaked for six hours or more in a solution prepared as follows:

Aluminum sulphate.	1	pound.
Lead acetate	7	- 44
Water		

Shake together, allow to settle, and draw off the clear liquid.

Wring out after rinsing, and dry at a temperature of  $80^{\circ}$  Fab.

Bienvaux uses, instead of glue and oil as above, the gelatinous portion of sea-wrack grass with a small quantity of a drying oil and common resin-soda soap.

In Reimann's process the cloth is passed slowly by machinery through a tank divided into three compartments, the first containing a warm solution of alum, the second a warm solution of lead acctate, and the third pure water, which is constantly renewed. The cloth on passing from the latter is brushed and beaten to remove the salt adhering It is not known that anything can be done to prevent the occurrence of another accident of precisely the same kind, whenever all the atmospheric conditions are favorable. One would suppose, however, that a certain degree of dampness would remove all danger from that source.—Commercial Bulletin.

M. BOUCHUT'S experiments with pepsine for destroying worms in the stomach and bowels have been continued with extremely promising results. Even the tape worm succumbs to the digestive action of pepsine in large doees, while the more highly organized tissues of the stomach are unaffected.



# [August 6, 1881.

#### Educated Mechanics.

We have received the twelfth annual and thirteenth statistical report of the Cincinnati Board of Trade and Transportation for 1881, which is a nicely printed pamphlet of two hundred pages.

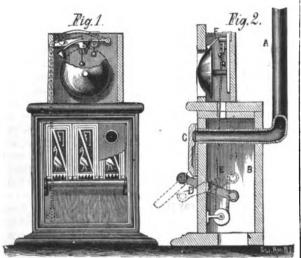
From Article II. of its constitution it appears that the object of this association is to collect and record such local culent roots, and the mole is too often charged with the to the earth and a free passage to the prongs. Then raise and general statistical information relating to manufactures and commerce as may promote the manufacturing, com- due to his burrowings. mercial, and financial welfare of their city, and especially to protect, foster, and develop its manufacturing and other industrial interests.

After commenting on the success, financially and otherwise, of the Eighth Cincinnati Industrial Exposition, the directors, in their report, hint at the establishment of a school of technology, which their position as a manufacturing community makes peculiarly important. They say:

"We need educated mechanics; and no mechanic is a master of his business without the technical training such schools alone can give. The Exposition Buildings furnish ample room and accommodations for such an enterprise, the Mechanics' Institute School is a good nucleus to start on, the Department of Arts and Sciences of the same institution is a step in advance to the end desired, and this year the exposition should be made the means of enlisting a public co-operation which would provide for Cincinnati just such a school as is needed."

## SPEAKING TUBE ANNUNCIATOR.

The engraving shows a novel speaking tube annunciator, in elevation and in section. The tube, A, enters the box,



#### SPEAKING TUBE ANNUNCIATOR.

B, and terminates behind the hinged drop, C. There may be several tubes and as many drops. Below the drop or series of drops there is a rocker, D, whose arms extend into the box, and are connected by a cord, E, with the trigger of the bell at the top of the box.

When a person in a distant portion of a building wishes to communicate with another who is within hearing distance of the bell he blows in the speaking tube, and the air current thus created being directed against the drop, C, at the other end of such tube, causes it to fall upon the outer bar of the rocker, D. The drop being constructed of a thick metal plate, and therefore heavy, tilts the rocker, as shown in dotted lines, so that it pulls on the cord, E, which, in turn, tilts the lever that raises the hammer, which is instantly released and allowed to fall upon the bell, which gives the required notice. The person thus called will, after respond ing to the message, close or replace the weighted drop in its upright position, and thus relieve the rocker, which, being released, returns automatically to its former position, and is ready for the next alarm.

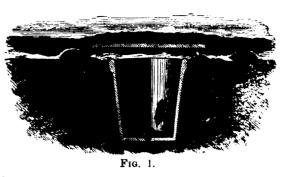
This invention was recently patented by Mr. W. R. Ostrander, of New York city.

#### MOLES-HOW THEY ALD AGRICULTURE-HOW THEY CAN BECOME A NUISANCE-HOW THEY MAY BE DESTROYED.

The common ground mole or "meadow mole," as this

but he does not devour them, and he is often wrongly blamed for injury which has been committed by the insect of the spring, E, will drive the prongs, D, into the ground, depredators he has caught and devoured.

damage thus sustained by farmers, in addition to that really



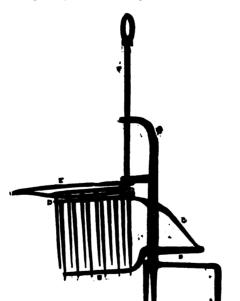
Experiments performed in France to determine the usefulness of moles as insecticides show that the number of grubs, etc., destroyed by them is enormous. A single mole, in one instance, devoured 432 maggots and 250 grubs in four days. Another ate 872 maggots and 540 grubs in twelve days.

Prof. Weber, a distinguished naturalist of Zurich, Switzerland, performed some interesting experiments with moles to prove their carnivorous character and their destructiveness to larvæ. In the stomachs of fifteen moles captured in different localities, not the slightest trace of vegetable matter could be found. He shut up two moles in a box in which fresh grass was growing, and also inclosed in the same box a case of grubs and earthworms. The moles devoured 341 white worms or grubs, 193 earth worms, 25 caterpillars, and a mouse-bones, skin, and all-in nine days. He next gave them raw meat cut in small pieces, and mixed with chopped vegetables. The moles ate the meat but did not touch the vegetables; and when vegetables alone were given them the animals soon died of starvation. It has been computed that a single mole may destroy 20,000 grubs in a single year.

In the face of these experiments it is positively asserted by some that moles will eat wheat grains with avidity, and that poisoned wheat introduced into their burrows through holes punched with a stick is sure death to them. We have tried the latter without impairing the health of the moles, and we have more faith in mole traps, in the use of which we have had considerable experience and with varying results.

We give herewith engravings illustrating two implements of destruction, both quite simple, either of which will be found practically useful.

The simplest form of trap, and one that will prove effectual if skillfully employed, is the jar mole trap shown in Fig. 1. A glass or stoneware jar is sunk into the ground under the runs, as indicated in the engraving. The moles, while running along, fall into the jar, and the vertical slip-



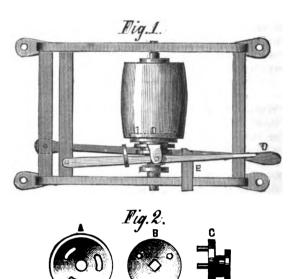
any damage to plant life except in pursuit of his prey. He the mole track, the prong head, D, meantime being held in may break and disturb the tender roots of young plants, its present position by the ring at the top of the upright square bar, F. Now let it slip from the band. The force perhaps half way. Press them entirely down with the foot, The field mouse, on the contrary, does devour tender suc- and raise and lower them several times so as to give firmness up the prong head to its present position, and place the lever, C, in one of the notches of the trigger, B, according as the other end of the latter is more or less depressed. Now the mole cannot again pass through this track without so pressing upon the earth as to move the trigger, at B, which releases the lever, C, and permits the spring. E, to act, sending the prong head into its place with great force, securely pinning (generally killing) the mole.

> There are a number of other traps more or less effective, but the two represented in our illustrations exhibit the two diverse ways for catching moles, other appliances in use being simply modifications of the plans represented.

#### NEW SAFETY PULLEY.

The engraving represents an improved safety pulley applicable to cotton gins and other machinery, when it is desirable to be able to quickly arrest the motion of the machinery in case of accident. The device is very simple and not liable to accidental derangement. Fig. 1 in the engraving is a plan view of the device, and Fig. 2 shows the principal parts.

The pulley is loose on the shaft, and has attached to one end a slotted plate, A, near which the collar, B, is secured on the shaft. A collar, C, carries three pins, which fit corre-



MoCORD'S SAFETY PULLEY.

sponding holes in the collar, B, and engage the slotted collar, A, attached to the end of the pulley. The pins projecting from collar, C, are kept into engagement with the collar, A, by a spiral spring surrounding the shaft and pressing against the collar, C. The latter is provided with a grooved boss, which receives a forked arm attached to the lever, E, and the lever, E, is connected with a foot lever, D, so that when either lever is moved the pulley will be instantly disengaged from all connection with the shaft by the withdrawal of the pins from the slotted plate in the end of the pulley.

This device may be made double so that it may be made to shift from one pulley to another, and so reverse the machinery with which it is connected. It may be applied in this way to hoisting machines

Further information in regard to this invention may be obtained by addressing Messrs. C. C. P. McCord and C. D. Churchell, of Hazel Grove, Independence County, Ark.

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#### A Conductor's Printing Office.

It appears that German railway conductors are made happy by the addition to their equipment of a paper mill and printing office, the invention of a Berlin engineer, to be hung around the neck, which, according to an exchange, is to completely manufacture passenger tickets before the eyes of the wondering public. The apparatus is said to be somewhat complicated in construction, but its manipulation is as simple as its working is correct, for, should the operator not proceed in the way required by the mechanism, it will not print all the figures and words wanted, but the word "Falsch" (wrong) in the place where the fault was committed. At the same time this portable printer checks the number of tickets issued, so that any given moment the money in the hands of the conductor can be compared with the value of the tickets printed and taken.

little animal is often called, is of interest from a zoological point of view, but in this article it is proposed to deal only with the practical side of the subject in its relations to agriculture and horticulture.

The mole is both useful and hurtful. When his services more than counterbalance the injury he commits he should be left unmolested. On the other hand, when he becomes, | pery sides of the jar prevent their getting out again. Field as he often does, an intolerable nuisance, he may be more or less successfully dealt with in the manner we will proceed to describe.

It is very annoying to see a handsome lawn covered with unsightly ridges plowed by the noses and paws of these little depredators; but the knowledge that they are the natural enemies of the numerous worms and grubs that sometimes make fearful war upon the tender roots of growing young crops, renders it often difficult to decide whether the moles are to be welcomed as allies or combated with such means as are available.



F1G. 2

mice are also frequently caught in these traps, which leads to the suspicion that they are the authors of much of the mischief attributed to moles, whose burrows form convenient avenues for the intruders.

Another effective mole trap was described and illustrated in the Rural New Yorker some time ago, and not unlike one illustrated in these columns a few numbers back. It is to be a remedy of great value in the treatment of nervous shown in Fig. 2 and is thus described by our contemporary: The spikes, A, three quarters of an inch wide and tapering |xx| in the beginning of an attack. It usually produces somewhat at the end, are pressed into the ground beside the drowsiness, and after a few hours the patient wakes up mole track as far as possible, so that the trigger, B, which is refreshed and free from pain. It, however, often fails to The mole is a purely carnivorous animal, and never does | not yet attached to the lever, C, rests upon the surface of | produce this effect in cases dependent on anæmia.

#### Nervous Headache.

Dr. Ehlschläger, of Danzig, says, in Allgemeine Medicinische Central Zeitung, that he has found salicylate of sodium headache, especially if given in a dose of one gramme (gr.

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# AUGUST 6, 1881.

#### THE ANTECEDENTS OF THE BELL TELEPHONE. BY GEO M. HOPKING

Boston, in reference to the Bell telephone patent, be sus tained by the higher court, it will prove calamitous not only to inventors who have succeeded Bell in telephonic inventions, but to the public at large, who will be at the mercy of a powerful monopoly, so far as telephonic communication is concerned. Already the workings of this power are beginning to manifest themselves in increased and apparently exorbitant rents, with no corresponding increase in the efficiency of the instrument or in the perfection of the service.

This being the condition of things, it behooves telephone inventors and telephone users to inquire as to the scope of Bell's patent, and to acquire a knowledge of the status of the art of telephony prior to the invention of Bell.

Should it be found that articulate speech had been transmitted from one point to another by means of electricity before Bell thought of the telephone, or should it be proved that instruments as old as the telegraph, without any alterations or additions whatever, could be made to transmit and receive articulate speech through the agency of electricity, then it might be very properly questioned whether the broad claim for the "new art of transmitting speech by electricity" could be sustained, even though Bell's results were secured by improved devices.

In regard to the early transmission of speech, it is certain that Reis, in 1861, transmitted vocal sounds by means of electricity, and it is authoritatively stated that he transmitted words.\* It is certain that Reis's instrument can be used to transmit articulate speech; but now this instrument is claimed to be crude and imperfect. The ordinary Western Union telegraph key and sounder, as elements of a telephonic system, are even more crude and imperfect, and yet with a common telegraph key, used as a transmitter, I have transmitted articulate speech, which has been received by means of a common telegraph sounder, and this without modifying either key or sounder in the least. It is simply a matter of adjustment. Now, could a broad claim for talking to a telegraph key and listening to a telegraph sounder be sustained? Can a broad claim for a "new art of transmitting speech by electricity," by old and well known instrumentalities, be sustained, when the new results are secured by mechanical skill, exercised in adjustment merely?

Clearly, if Reis transmitted vocal sounds, or signals, or words, and if Bell has done the same thing through the agency of the same force, but in a more perfect manner, it should signify nothing, since degrees of perfection are not patentable. As a writer of this journal very aptly said a short time since: "If Reis's instrument was crude and imperfect, the same may be said of Bell's, for when it is constructed and operated according to his patent, and used independently of subsequent inventions, it proves inadequate for commercial purposes under the usual conditions of use." The original principle of the Bell telephone has really been replaced by Reis's invention, as will presently appear. That is, the Bell telephone has reached its present usefulness and popularity through the adoption of the Blake or some other form of transmitter substantially like the original Reis transmitter.

It is claimed by the advocates of the Bell system of telephony that the lack of efficiency in the Reis transmitter was due to the fact that intermittent currents of electricity were employed instead of an "undulatory" current, which Bell holds as essential; but it can be proved that in all contact telephone instruments the current is intermittent, and this is especially noticeable in the class having small contact surfaces like the Blake and Reis instruments.

\* Bottger's Notizblatt, No. 15; Dingler's Polytechnic Journal, vol. 109, p 599, 1863.

If the language of the learned judge who rendered the decision above referred to is applicable to Bell's invention, Should the recent decision of the U. S. Circuit Court, at | it should also apply to that of Morse or Reis. The judge says: "There is some evidence that Bell's experiments with the instrument described in Fig. 7, before he took out his patent, were not entirely successful; but this is non immaterial; for it is proved that the instrument will do the work, whether the inventor knew it or not, and in the mode pointed out by the specification."

> It is equally just to say that the telegraph key and sounder are operative for the transmission of speech, "and that it is immaterial whether Morse and other telegraph inventors knew it or not, "for it is proved that the instrument will do the work," and as the invention of the telegraph now belongs to the public, every function of the telegraph instrument belongs to the public also.

> It is even more just to say the same of Reis's invention. It makes no difference whether Reis knew it or not (but he did know it), the transmission of articulate speech by means of his instrument is an undeniable fact.

> From the foregoing it will be seen that it is at least questionable whether any one is now entitled to a broad claim for transmitting speech by electricity.

> Many of the claims of Bell as to the particular method and means employed by him for the transmission of telegraphic and other signals are manifestly too broad and cover some of the oldest inventions in telegraphy.

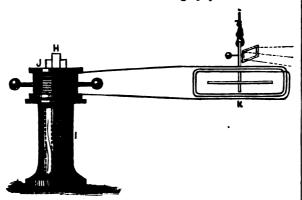


Fig. 2.--Oersted's Induction Apparatus

For example, the first and second claims in his patent of March 7, 1876, read thus:

"1. A system of telegraphy in which the receiver is set in vibration by the employment of undulatory currents of electricity.

"2. The combination of a permanent magnet or other body capable of inductive action with a closed circuit," etc.

These claims are anticipated by the invention of Oersted in 1820 (Fig. 2). His apparatus consisted of a compound bar-magnet, H, mounted in a standard, I, and surrounded near its upper end with a coil, J. This coil was in a closed circuit with a distant coil, K, containing a vibratory mag netic needle. By moving the coil, J, up and down on the magnet, H, "undulatory" currents were produced, which vibrated the needle, giving intelligible telegraphic signals. The more recent magneto-induction key of Siemens and

Halske (Fig. 3) operates in substantially the same way.

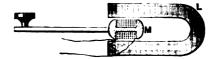
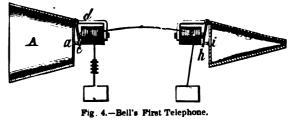


Fig. 8.—Siemens and Haiske's Magneto-Induction Key

Between the poles of the magnet, L, is placed a Siemens armature, M, which, being vibrated by means of the lever, produces "undulatory" currents in the circuit in which it is included. This system antedates Bell's.

The first Bell telephone is shown in Fig. 4. The armature c is fastened loosely by one extremity to the uncovered leg of the electro-magnet b, and its other extremity is attached



to the center of a stretched membrane a. When a sound is uttered in the larger cone A the membrane attached to it is set in vibration, and the armature connected with the membrane is forced to partake of the motion, and thus electrical undulations are created upon the circuit which influences the electro-magnet f at the opposite end of the line, so that the motions of the armature h and membrane : are the same as in the same members of the transmitting instrument.

Fig. 5 represents the later Bell telephone. The form is

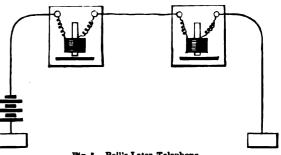


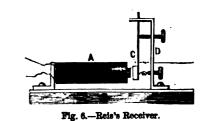
Fig. 5.-Bell's Later Telephone

simplified, but the principle upon which it operates is the same as that of the first instrument.

It will be observed that the transmitter and receiver are alike, that the instruments are upon a continuously closed circuit, and it seems to be questionable whether Bell's invention covers more than this specific arrangement.

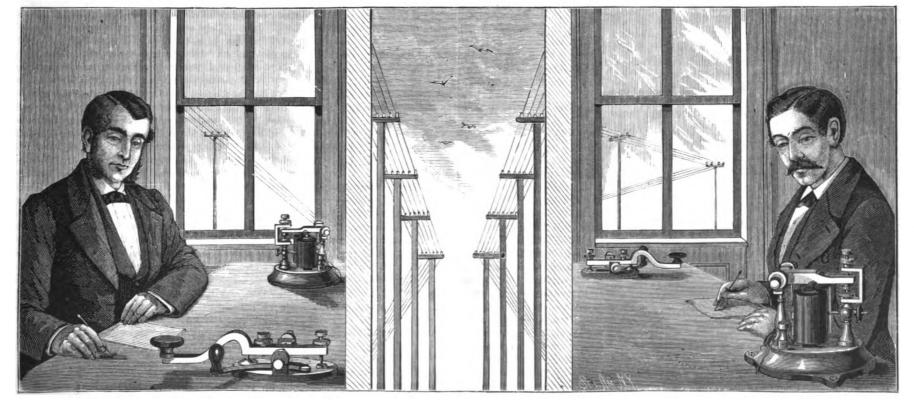
But this arrangement is not the one so largely employed at present by our telephone exchanges. The instruments used at opposite ends of the telephone wires are incapable of being used interchangeably as transmitter and receiver. In the present system of telephony an instrument similar to that shown in Figs. 4 and 5 is used as a receiver, but employed in this way it is difficult to see how it differs materially from Reis's receiver, invented, used, and published twenty years ago.

The Reis receiver, shown in Fig. 6, is familiar to all



students of telephony, but the lack of patentable difference between it and the Bell instrument may not be apparent at first. In this instrument there are all of the essential elements of the Bell telephone-the magnet, the sounding board or diaphragm, and the armature, "capable of inductive action "-and while it can be used in its original form, as shown in Fig. 6, it may be simplified, whereupon the identical character of the instruments of Bell and Reis will at once appear.

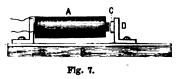
The original Reis instrument 'Fig. 6' consisted of an electro-



# Fig 1.-ORDINARY TELEGRAPH KEY AND SOUNDER EMPLOYED IN THE TRANSMISSION OF ARTICULATE SPEECH.

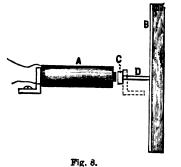


magnet, A, mounted on a sounding board or diaphragm, B, and was provided with an armature. C, sustained by an arm, D, attached to the diaphragm. By dispensing with the adjusting screws and spring support of the armature (cutting them off on the dotted line in Fig. 6), and by attaching the armature directly to the angled arm, D, as in Fig. 7, an ope

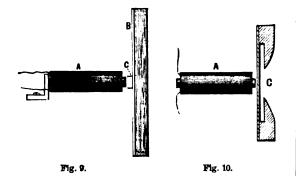


rative instrument is formed, which, although simpler than the original instrument, possesses no patentable features.

By straightening the angled arm, D, so that the diaphragm may be placed directly in front of the poles of the magnet, as in Fig. 8, the form of the instrument is further changed,

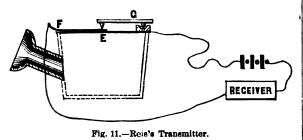


but it is substantially the same as the original. Leaving out the arm, D, and attaching the armature, C, directly to the diaphragm, B, is not an invention, and the instrument is still the Reis receiver.



Suppose the armature, C, to be flattened or rolled out so as to be capable of replacing the diaphragm, B, the instrument would then appear with but two of the original elements (Fig 10). viz.: the magnet, A, and the armature-diaphragm, C: it is still essentially the Reis receiver. Is it supposable that a valid patent can be obtained by omitting a few non-essential elements from the original instrument?

Reis's receiver was used in connection with a transmitter of his own invention, which was totally different from his receiver. The transmitter (Fig. 11) consisted of a box pro-



vided with a mouthpiece, and covered by a membrane, E, carrying a platinum contact surface, F, which is touched lightly by a platinum point carried by the arm. G, one end of the latter resting in the mercury cup to make a perfect yet frictionless electrical connection. The platinum, F. and arm, G, are in the circuit with the battery and receiver, and the interruptions of the current take place between the platinum point on the arm, G, and the platinum, F, carried by the diaphragm.

Fig. 12 shows the essential members of the Blake trans-



#### LIEBIG'S EXTRACT OF MEAT.

Baron von Liebig, Germany's great chemist, ascertained that the soluble constituents of 84 pounds of pure muscle meat (equal to 45 pounds of ordinary meat as it is received from the butcher) may be concentrated by boiling to 1 pound of extract, sufficient for the preparation of 190 parts of bouillon. With his keen perception he foresaw that the manufacture of this extract might become a great industry. He conceived the idea that the transmarine countries rich in cattle might become tributary to the necessities of Europe.

In the year 1850, at the beginning of the manufacture, the Royal Apothecary at Munich consumed scarcely one hundredweight annually, that is, one-tenth part of an ox, and Liebig himself did not imagine that in a score of years the number of cattle falling victims to this industry would number millions. This statement will not appear exaggerated when it is considered that in the summer season there are led daily to the slaughtering bench from one thousand to twelve hundred oxen.

The manufactory of Liebig's Extract of Meat Company lies on the eastern (left) shore of the Uruguay River in that state, and is as important to Fray Bentos as Krupp's great steel manufactory is to Essen.

Proceeding systematically, we should consider first the immense pasturing lands upon which the cattle peacefully graze. These cattle are children of the Pampas, descendants of the European cattle introduced by the Spanish conquerors. The large level pastures were especially suited to them, and here they increased greatly and now rove in innumerable berds.

For the manufacture of the extract the best pieces of meat are selected, for the simple reason that these pieces are the most profitable for the extract. When the animals are driven in from the Pampas to Fray Bentos they are kept for a week upon the pasturing places mentioned, where they are permitted to rest and feed. Then they are driven to the corrals, great inclosures capable of containing five thousand oxen; from here men mounted on horseback, swinging their lassos, drive the cattle by degrees into other smaller corrals, until finally the way is so narrow that the animals can only proceed one behind the other. A man stands at the side upon a staging with a short knife. With unerring certainty he strikes the animal close behind the horns into the spinal marrow. As if struck by lightning the animal falls dead upon a platform which rests upon wheels. The body rolls upon a track to the slaughter house, where with almost incredible celerity it is skinned and cut in pieces by skilled and practiced men. In less than seven minutes a whole ox is cut up. In the slaughtering season over five hundred men are employed, powerful fellows, who are very good hearted and harmless characters in spite of their bloody occupation, and notwithstanding the fact that their nourishment consists almost exclusively of meat. The dexterity with which they handle the knife excites astonishment. The meat is separated from the bones, as if the knife were guided through soft butter. One hundred and fifty to two hundred oxen can be handled in this way per hour.

The greatest cleanliness prevails. A plentiful supply of water is obtained from the river for washing. The slaughter house is roofed with iron and glass, and a railway connects it with the principal buildings of the establishment.

The raw material is conveyed in various ways from the slaughter house. The hides are salted, the horns stored, and the tongues are cooked and preserved in tin cans. The best pieces, as free from fat as possible, are used for the manufacture of the extract, while the inferior pieces are made into tasajo (meat salted and then dried in the air), which is a favorite article of food for the black population of Brazil and the West Indies. The fatty parts furnish material for the large tallow buying houses. The refuse and offal are dried and made into fertilizers.

The meat for the manufacture of the concentrated extract is freed from fat and gelatine, and passes through the following processes:

First it passes through four cutting machines, which discharge it into nine large wrought iron tubs, each one hold ing five thousand kilogrammes. In these the meat with an equal weight of water is heated to boiling. Then the liquid passes through pipes into an apparatus invented by Prof. Max Pettenkofer, where it is clarified and separated from

joiner shops, a foundry, pump works, steam cranes, etc. The company import coal from England at a great cost, from 7,000 to 8,000 tons being consumed yearly.

Four thousand tons of salt are consumed yearly for salting the hides and tasaio.

The cattle slaughtered for the extract are at least four years old, as younger animals will not supply a strong extract.

It is unnecessary to speak of the great value and extensive use of the extract, as it is everywhere acknowledged to be a standard article.

#### ENGINEERING INVENTIONS.

An improved car axle box has been patented by Mr. William H. Taylor, of Richmond, Va. The object of this invention is to prevent journals of car axles from heating, and thus avoid the risk of danger and injury resulting from hot boxes on railroad trains. For this purpose the inventor provides for retaining water in contact with the box on one or more sides to dissipate the heat arising from friction.

An improved elevated railway has been patented by Mr. John G. Curtis, of Ludlow, Pa. The invention is more particularly intended for use inside of a building, to convey goods from one part of the building to another, and it may also be used for conveying goods from one building to another, or from place to place in a tannery or other extensive establishments. It consists in a novel construction, arrangement, and combination of an elevated rail or track. a two-wheeled truck, and a car or platform suspended from the truck.

Messrs. James F. Guild, of Dundee, County of Forfar, Scotland, and Arthur E. Knights, of New York city, have patented an improved steam steering apparatus. The objects of this invention are to move a vessel's rudder easily, quickly, and with perfect regularity, to have it completely under control and almost silent in its action, thus in a great measure overcoming objections to the usual steam steering apparatus. especially on passenger steamers; also to provide for steering vessels either by hand or power; to provide for the relief of the operative mechanism from the injurious effects of shocks by strokes of waves against the rudder, and to reduce the power usually required in apparatus of this character.

Messrs. John H. Reynolds, of Emerson, Iowa, Elisha P. Reynolds, of Rock Island, Ill., and Ben Reynolds, of La Mine, Mo., have patented an improved self-dumping trap which automatically discharges its load of earth or other material into any receptacle below its dumping platforms on the release of griping irons by the operation of a conveniently placed hand lever. The invention consists in supporting one or more pivoted dumping platforms, in an elevated framework, said framework supporting the upper end of "ramps" or inclined approaches thereto, whereon eams drawing loaded vehicles may ascend to the platforms to deposit their load of earth or other material thereon and descend therefrom.

An improved baling press has been patented by John Brown, of Memphis, Tenn. The object of this invention is to improve the construction of the baling presses for which letters patent No. 220,216 were granted to the same inventor October 7, 1879, to adapt them to be operated by steam power, and to make them more convenient in use.

#### The Presidential Cold Air Machine.

The apparatus which proved most satisfactory in cooling the chamber of the wounded President was furnished by a Mr. Jennings, of Baltimore. It was devised for use in a new process of refining lard. According to the inventor's description the apparatus consists of a cast iron chamber, about ten feet long and three wide and three high, filled with vertical iron frames covered with cotton terry or Turkish toweling. These screens are placed half an inch apart, and represent some three thousand feet of cooling surface. Immediately over these vertical screens is placed a coil of inch iron pipe, the lower side of which is filled with fine perforations. Into a galvanized iron tank, holding 100 gallons of water, is put finely granulated or shaved ice (and salt when a low temperature is required). This water is sprayed upon the sheets in the lower tank constantly. In each end of the iron chamber are openings thirteen inches square. To the outer end of this chamber is a pipe connectthe fatty part. Air pumps carry the remaining fluid mass ing with an outdoor air conductor. To the opposite end is

Fig. 12.-Blake Transmitter

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mitter, which is now used almost exclusively. It is hardly necessary to point out the similarity between this instrument and the one just described. The diaphragm, E', platinum contact, F', and spring arm, G', are substantially the same as the elements E, F, and G of the Reis instrument, the only difference being the substitution of a piece of carbon in the end of the arm, G', for the platinum in the end of the arm. G.

From what has been said it will be seen that the system of telephonic communication in use to-day is more Reis's than Bell's.

An Agricultural and Industrial Exhibition is to open on the 14th of September, 1881, at the exhibition grounds, Mile-End, Montreal. The prize list fills a pamphlet of 200 pages. Twenty-five thousand dollars in prizes are to be distributed | food meal. to exhibitors. It closes on the 23d of the same month.

it passes into the evaporating apparatus after it has gone through several straining processes.

The evaporating is effected in five large reservoirs, each having a hundred disks of the same material, which revolve in the liquid; then the extract remains quiet in other reservoirs until the next morning, when it is placed in two cast iron kettles surrounded by hot water jackets, each containing 10,000 liters of the extract, where it is reduced to a uniform mass. Then samples are taken which are subjected to the careful tests of the chemist of the establishment. If these turn out to be perfectly satisfactory as to purity, aroma, and consistency, the extract is packed in tin chests, each containing one hundred pounds, and sent to Europe. Packing the extract in small stone jars for the retail trade is done at the general depot in Antwerp.

The cooked meat remaining in the kettle is dried in the air, and with the addition of a few nutritive salts, and afterward being ground, is manufactured into the so-called meat-

Connected with the establishment are tin, locksmith, and corridors of rooms adjoining the President's,

into two reservoirs placed seven meters higher, from which | connected a similar pipe leading into an ice chamber at its top, and from the bottom of the same a pipe leads to a small exhaust fan, and from the fan the now cold and dry air is forced direct into the President's room through a flue some

twenty feet it length. Air at 99 degrees temperature to day is supplied at the rate of 22,000 cubic feet per hour at the register in the President's room at 54 degrees, and with the windows and doors open the temperature at the President's bed (twenty-five feet away) is maintained steadily at 75 degrees day and night. When the cold air machine was introduced it was intended to keep the windows and doors closed, and under these conditions the machine would create and maintain a temperature of 60 degrees in the hottest weather without using the auxiliary ice-air chamber now used, which was the suggestion of Professor Newcomb and Major Powell, to meet the requirements of cooling the room with the doors

and windows open. The closing of them gave the room an air of gloom. An extra ice chamber fan and engine has been put up in a room opening into the hall near the first apparatus, to be used in case of accident and to cool the

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#### STEAM BOILER NOTES.

The reports of the chief engineers of the English boiler insurance companies of Manchester have been published and contain much useful information for steam users. Mr. McDougall, of the Boiler Insurance and Steam Power Company, claims to have made 13,071 thorough internal examinations and hydraulic tests, and to have had not one explosion and but one serious collapse among the 20,000 boilers in his care. The passage of the Employers' Liability Act, he thinks, will greatly extend the operations of boiler insurance companies, and should tend to effect a great improvement. Mr. Lavington E. Fletcher, chief engineer of the Manchester Steam Users' Association, in his monthly report, states that 971 boilers were examined from May 28 to June 24, of which 467 were thorough annual inspections.

The discussion of the subject of flat cast iron boiler heads is still going on in Philadelphia, and the interest seems to increase. The Iron Age, possibly speaking by authority, repeats the assertion that "the Hartford Company have instructed their agents in Philadelphia not to approve boilers with flat cast iron heads with a greater diameter than 36 inches;" but says, "the company do not wish this action to be construed as indicating a desire not to accommodate manufacturers; but in view of the recent verdict of the coroner's jury, in the case of the explosion at the dye works of Gaffney & Dolan, they do not care to continue writing on this class of boilers."

Since the experimental bursting of a duplicate of the Gaffney boiler head by the makers, Sidebotham & Powell, on the 13th of July, as suggested in our "Notes" of July 2, to the jury, and illustrated in the SCIENTIFIC AMERICAN of July 30, the inspectors of Philadelphia seem to have plucked up courage, especially the city inspector, Mr. Overn, who has been prompted by a lawyer, the city solicitor, to stand on his dignity as a mechanical expert, and he accordingly appears, by the Ledger, to say that he regarded the test as a satisfactory test as to the strength of cast iron in the ends of the boiler." The cast iron held good up to 450 pounds, and under this showing he (Overn) would have no hesitation in giving a boiler, with the same quality of cast iron, a pressure of 80 pounds to the square inch."

It is due to this gentleman to say that this is perfectly in accordance with his faith before the Gaffney explosion, but a misinterpretation of the cause of that accident by some experts shook his faith in his own judgment.

Some instances of apparent hardship to owners of steam boilers since the flat head controvery began are given in the Philadelphia Record of the 16th of July. The lumber mills of Van Horn & Son, at Whitehall, have been closed since the 11th inst., and are likely to remain so, waiting a city inspector's certificate. The machinery of this firm had been running night and day to fill orders, and the loss, besides the cost of new boilers, is represented as being heavy. Cause, 36 inch flat cast iron heads in their 42 foot boilers. Borie & Mackay, Frankford, have received similar treatment from one set of inspectors, while the other passed them so they could continue work, A large number of other boilers have lately been refused certificates, and when this is done by the city inspector they must stop. Messra. Garsed & Co., large manufacturers of cotton yarns, in Frankford, were compelled to throw out four boilers 80 the loss of the former being in a great measure due to the feet long, while 40 feet of the furnace end of them that were removed fourteen years ago are said to be running now under inspection. It may be urged by the inspectors metal, and the loss of the quicksilver being principally due that these 80-foot boilers are dangerously long, but they have an exceptionally good arrangement of supports, which has served for over thirty years to prevent undue strains from sagging. They rest at the ends upon solid supports. Two sets of four volute steel car springs are placed upon heavy arched girders, at S S, that span the boiler settings at such intervals as to make even and elastic supports, thereby preventing undue strains on the lower side of the boiler from slender proportions.

These four boilers were built by Brooks and Stanhope, in 1850, John Powell (now of Sidebotham & Powell) foreman. An improved apparatus for separating sulphurets in ore washing has been patented by Mr. William F. Devan, of and for many years after they were put to work the engineer Gwin Mine, Cal. The object of this invention is to improve used leaden gaskets for the man-hole joints, and he had a ore washers and save the sulphurets by an operation that is habit of adjusting his plate and gasket when closing the boilers and screwing up pretty hard. But if the joint was both continuous and economical. not tight after raising steam, he was accustomed to beat the An improved bird cage has been patented by Mr. John B. Abernathy, of Covington, Ky. The object of this invention head with a heavy sledge near the gasket seat, to settle the been given to no human eye to see by direct vision. uneven plate upon the lead and make it steam-tight. The is to protect the animals confined in cages from suffering by marks of this violence are still plainly seen on the castings, violence and from extern upon by larger and which are about the same thickness and style as the Gaffney mals. An improved adjustable piston, which is so constructed boiler heads. that the packing of the same can be depressed and spread The Ledger also credits Mr. Overn with the remark "that proportionately as it wears off, by adjusting the piston he was inclined to believe, from what he had recently accordingly, so that the packing will always fit closely in observed, that eventually the city would have the entire work of inspection, for he thought the Hartford people the pump-cylinder, has been patented by Mr. James Preston, would drop the inspection department of their business and of New York City. A packing of any desired size is held between the opposite convex or flat conical surfaces of the confine themselves solely to insurance, relying on the city's plates, and in case this packing becomes worn off it can be inspection." It naturally occurs to lookers on who feel an interest in spread by forcing the disks toward each other. the subject to inquire why the verdict of an unfriendly The Byes of Science. jury should make a breach between an insurance company In a communication to the Herald, describing the wonwho have heretofore been not only willing but desirous of ders of the eyes which science has fashioned-telescopic, insuring, and the friendly manufacturers who were willing and desirous of having them insure boilers that have durmicroscopic, spectroscopic, and, most marvelous of all, photographic eyes-Mr. Richard H. Proctor says: ing their experience proved as safe as any of that type. Ordinary human eyesight, even when strengthened and The Philadelphia Record, in commenting on the flat head extended by optical devices, possesses certain imperfections | shading. And these are but illustrative instances, belongmuddle and its effect on the manufacturing interests since the Gaffney explosion, says: "Nearly two thirds of the and is used under certain difficulties. For instance, at ing, too, but to the beginning of the application of photoboilers in use in the suburbs have flat cast iron heads, and least a tenth of a second is required for the eye to take a graphy to science.

the owners are in daily fear that an edict will be promulgated which will put a temporary stop to their operations."

We learn that a boiler explosion took place about the 19th of July, 1881, at Watertown, near Marietta, Ohio. The boiler of a saw mill was blown to atoms. Hiram Brockway and Eugene Barclay were instantly killed. Three others, Isaac Johnson, Robert Alexander, and William . Conner, were fatally injured. Johnson has since died.

The June number of the Hartford Steam Boiler Insurance Company's circular contains the inspector's report for April, 1881, by which it appears that 8,960 boilers were viewed, of which 1,593 were inspected internally and externally, and 528 dangerous defects were found; notable among them were 23 safety valves in dangerous condition, and 74 boilers without steam gauges. 89 boilers were condemned in April. There is also notice of 8 explosions in May, and one illustrated explosion that occurred in 1877, in Brooklyn, N. Y.

#### MISCELLANEOUS INVENTIONS.

Mr. William A. Thompson, of Brooklyn, N. Y., has patented an improved fire escape, which consists of a cradle formed of curved side bars connected by cross bars and provided with supporting bars or legs, the cradle being hinged to a rod attached to the window casing below the sill, and having a ladder attached to its free end and provided with means whereby the fire escape can be extended from the window when required for use, and folded down inside the window when not required for use.

An improved baling press has been patented by Mr. Nel son Arave, of Hooper, Utah Ter. The object of this invention is to press hay and other materials in successive bales by the continuous forward movement of the driving me chanism.

Heretofore alloys, in which lead forms a component part have been used for coating cast and wrought iron to protect the same against oxidation, and zinc and tin alone are in common use for this purpose; but several objections and difficulties attended the use of these materials when applied by the methods now known-as, for instance, when zinc or tin is used and applied directly upon the iron the zinc attacks the iron in such manner as to injure its durability and tenacity, and this is also true of such alloys as antimony, bismuth, and lead, and nickel, tin, zinc, and lead; and, besides, in applying these alloys or the zinc a dross is formed in the molten baths, which is troublesome to remove. and results in a loss of metal, and wrought or cast iron has never been successfully coated with unalloyed lead. Mr. William Frishmuth, of Philadelphia, Pa., has patented a process of thoroughly and effectively coating cast iron or sheets of wrought or cast iron or other metals with pure lead, or with had been so rapidly taken as to show details which no zinc or tin, in such manner that the metal coated will be protected against oxidation and its durability and tenacity preserved, and in such manner that there will be no formation of dross in the molten baths. The invention consists essentially in protecting or preparing the surfaces to be coated by depositing upon them, by electroplating or otherwise, a

thin coating of nickel, or an alloy of nickel and aluminum. It is well known to workers of gold and silver ores that the pan amalgamation process always results in a very considerable loss of the precious metals and of the quicksilver, fact that the particles of metal are coated with some substance that repels the quicksilver or prevents its contact with the to the "flouring" of the latter, because of its trituration in the pans and because of the presence of certain interfering mineral substances that coat the globules of quicksilver and prevent their reunion. Messrs. William H. C. Mathews, Charles W. Ayres, and Madison D. Campbell, of Bodie, Cal., have patented a cheap and effective compound to be used for preventing this loss of both the gold and silver and the quicksilver, by brightening the particles of the precious metals and by preventing the coating of the quicksilver globules.

full look at any object. Even if the eye could see an object in less time the image remains at least this time impressed on the retina. Thus the eye cannot see an object which moves very rapidly, and even when an eye sees an object moving not too rapidly, or moving in a circle so as continually to renew the impression (as where a burning rod is whirled round in a dark room), the object is not seen as it really is, but the successive images, owing to the persistence of luminous impressions, are blurred together into an image utterly unlike the real object. Again, when an object is rapidly changing in shape the eye is often quite unable to see distinctly any one of the shapes which the object assumes. Thus scarcely one of the attitudes of a galloping horse can be seen by the human eye, insomuch that the finest pictures of a charge or a race show not one attitude which a horse really assumes when galloping. Yet again, the eye is often prevented from recognizing the true shape of an object which is itself at rest, by reason of continual fluctuations in the medium through which the object is seen, as for instance when the telescopic image of a sun spot is examined through disturbed air, or when smaller details of the solar surface are examined through the air at its very stillest.

#### OPTICAL DIFFICULTIES.

In all these cases the real trouble is that the eye requires a certain definite though short time in which to take in, as it were, the visual image, and that during this time the object forming the image is changing in form, either actually or apparently. On the other hand, there are cases of an opposite kind, in which the eye fails to recognize objects or their details because of their exceeding faintness, the eye gaining nothing by the length of time during which it is in action. Thus if we look at a point in the heavens at night where there is a telescopic star the eye fails to see that orb if directed toward it during the tenth of a second (the period necessary for distinct vision under ordinary conditions), nor can the eye see the orb better if directed toward it for a second or for a minute or for an hour. Now science posses ses an eye free from these defects, by means of which ordinary vision may be made to see an object as it would be seen if the human eye could take in the image in the thousandth part of a second, or even less time, or, on the other hand, as it might be seen if the human eye could look steadily for an hour or more, gaining distinctness of vision precisely in proportion to the increase of the time during which the eye was used.

#### A LIGHTNING GLANCE.

For instance, in lecturing on the sun I have been able to tell my hearers that a certain photograph of the sun's surface astronomer had ever actually seen or could see, even though he used the most powerful telescope ever made, and gave to the study of the sun with such an instrument every moment of his working life

#### A LONG GAZE.

On the other hand, but a few weeks ago I was looking in Dr. Henry Draper's observatory at a picture of the great nebula in Orion which had been two hours and twenty minutes forming itself on the retina of the photographic eye of science-in other words, the negative had required an exposure of this duration. I say nothing, though I might well say much, on the mechanical skill and ingenuity required to retain the telescopic image so long unchanged in position, though all the time the diurnal motion of the heavens was carrying Orion round the heavens at the rate (in reality a slightly greater rate) at which the sun moves in the skies, nor do I dwell on the optical and physical difficulties involved in the task which Dr. Draper had thus successfully achieved. The point I wish chiefly to dwell upon is this, that where such a photograph is taken science does in reality employ an eye which can give hours to a single look. And let it be noted that we see now but the beginning of the use of the photographic eye, which can see in the fivethousandth part of a second if need be, or if need be can rest its gaze for many hours on the same object, seeing more and more as minute after minute passes on. Yet already the swifter view of the photographic eye has shown details which the unaided human eye, or that eye aided only by the telescope or microscope, could never see, while the steadfast gaze of the photographic eye has revealed what it has

#### SERS AND DELINEATI

Note, further, that the photographic eye in seeing, delineates also, whereas often enough the eve keenest to see is but little skilled to guide the hand to delineate what is seen, and yet oftener the ordinary eye can obtain but so brief a view of an object that there is no time to draw what is seen with out trusting to memory, which in such matters is too often treacherous. The finest picture of the solar rice grains as drawn by any buman artist has much less value than have Janssen's instantaneous photographs of the sun's surface. The best picture of the great Orion nebula-which, despite Mr. Delarue's opinion in favor of the view taken with Lord Rosse's telescope, I consider to be unquestionably Mr. Trouvelot's picture taken with the great Washington telescopeshows no details which are not clearly recognizable in Dr. Draper's beautiful negative, while skillful though Mr. Trouvelot is as an artist, nature has surpassed him in presenting truthfully not only all details but all grades and varieties of



# [AUGUST 6, 1881.

#### IMPROVED CAR STARTER.

No subject is more deserving of the attention of inventors than that of starting our heavily laden street cars after they have come to a full stop, and singularly enough no subject has been more bunglingly treated. The two essential qualities of a car starter are simplicity and durability. Compli cated and expensive mechanism for this purpose is entirely out of the question, as no class of devices are subjected to greater wear or greater inequalities of strain.

The car starter shown in our engraving happily combines all the essential qualities, and has proved itself by actual and continued use to be adequate to all the requirements of a device of this character. The clutch employed is of novel construction, and the leverage is equal to the radius of the wheels.

In the engraving Fig. 1 is an elevation of a portion of a car, showing the clutch of the starter in section. Fig. 2 is an inverted plan view. Fig. 8 is a perspective view of the clutch and clutch lever, and Fig. 4 shows the inner end of the clutch lever.

The axle, A, with which the apparatus is connected, has attached to it a sleeve, B, and a clutch, C, which may be rotated around the enlarged central portion of the sleeve.

In connection with this clutch there is a lever, D, the central pivoted end of which is pivoted in a slot in the clutch, C, in such a way as to have freedom of motion to a certain extent up and down. Upon the outside of this central portion are winged flanges which embrace the sides of the clutch, C. A pivotal pin, passing through these wings as well as the central portion, and clutch, C, give steadiness to the lever, D, and prevent it from lateral movements. At the extreme inner end of the lever, D, there is a recess, of a semi-globular form, elongated in the direction of the length of the lever. A ball, a, having freedom of movement, is placed between this recess and groove, around the central portion of the sleeve, B. This ball, in the movement of the lever at the proper point, is clamped against the groove, and, having freedom of movement in its own recess, presents continually a new wearing surface, and avoids the inconvenience and bad results which would follow if no such ball were employed.

By reason of the longitudinal form of the recess, the ball, in the upward movement of the lever, is brought into engagement in the upper part of its recess with the groove in the sleeve, and therefore the resistance of the ball, being in a slightly angular direction, is increased to such an extent that it never slips.

The outer end of the lever, D, is slotted to receive the link of the chain, E, which is held by a bolt, so that if it is necessary to shorten the chain at any time the bolt may be withdrawn, and then replaced through another link of the same chain. The chain, E, passes over a pulley secured to the bottom of the car, is attached to a rod, F, which, in turn, is attached to the draw bar, G, by a pivotal connection. The inner end of the draw bar connects with one end rated by a pedal, L, through the medium of the angled of the lever, D, pivoted to the bottom of the car. and a levers, K, I, the rod, J, and a short section of chain conspring, with this lever between its pivotal point and its free | necting the double arm of the lever, I, with the yoke, H. end, presses it back, and draws back the draw bar, and holds it in this position when no force is applied to it.

It will be seen that with any forward motion of the draw bar the lever, D, will be raised, and the power for the mo- | ment with the clutch, the catch on the pedal is hooked under ment will be exerted to great advantage, and the car will be a plate in the platform. started easily with-

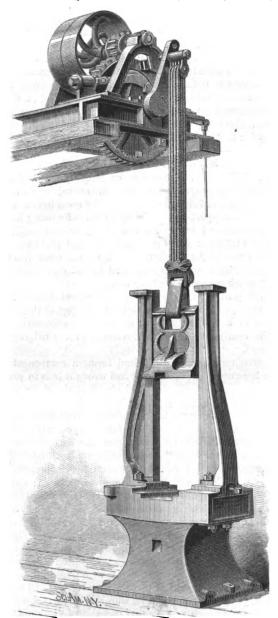
out strains or shocks on the horses, harness, or car.

To check any retrograde movement of the car upon up grades, an auxiliary ball, b, is placed in a cavity in the clutch, C. When the car makes the slightest movement back ward the ball, b, wedges in the cavity and stops the car.

The starter is not intended to supersede the brakes, but to be used as sup-

by any neglect on his part he should fail to put it in gear again, it acts automatically as soon as he attaches the horses to the draught bar.

The ball of the checking device is thrown out of position to engage the clutch by means of a rod attached to the yoke, H, and extending into the ball cavity. This yoke is ope-



#### IMPROVED DROP PRESS.

By means of this mechanism the checking device may at any time be thrown out by the pressure of the foot on the pedal, L, and should it be desirable to keep it out of engage-

One of the great advantages gained is that it removes the concussion from the car, preventing the sudden jerking of passengers inside when the car starts up. So smoothly does it start that even a lady could get on at the time without inconvenience. Another advantage is that passengers standing up are not jostled and thrown around the car, as all the jerking and pitching is done away with. The explanation of the matter is simply that it moves the car to move the load, instead of moving the load to move the car.

This improved car starter is in continuous use on some of our leading horse-car lines in this city, giving great satisfaction. This starter has been applied to some of the car lines in Baltimore with great success, and it should meet the approval of all street railroad companies.

Further information in regard to this useful invention may be obtained by addressing P. B. Shaw, Grand Hotel, 31s street and Broadway, New York city, or the American Car Starter Co., Williamsport, Pa.

# NEW DROP PRESS.

The variety of work that can be welded and forged under a drop press, and the great economy and rapidity with which it can be done, have worked a complete revolution in the production of steel and iron shapes. In no other way can duplicates be made so surely to replace missing or broken parts.

We illustrate a new drop press which is a great improvement over those now in use. The patent connection between the crank pin and hammer is slightly elastic and acts as a cushion.

The right tension can be much easier attained and changes can be more readily made than with the strap in common use. Its first cost is less, and when worn out can be quickly replaced at a small expense. We are informed that quite a demand has arisen for this connection to replace old straps on lifters of drop presses of other manufacturers.

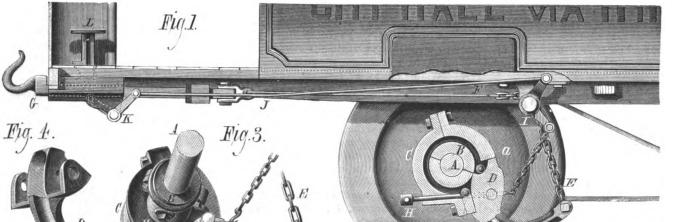
Internal steel ratchets-whose teeth are much stronger than those of external ratchets-are used in constructing this press, and the ratchet being attached to the rim of the main driving gear the transmission of the strain through the arms of the gear wheel is avoided. The greatest strain on crank and ratchet drop presses comes when the dog fails to catch a tooth at its furthest rebound, then it falls back to the next tooth. This ratchet contains forty-five teeth, and hence the falling back in this machine is always through a very small distance. This press is manufactured by Williams, White & Co., Moline, Ill.

# Steam Wagons.

The Colusa Sun says: "After all his experiments, Captain Roberts, of the San Joaquin Company, is still an enthusiast about his steam wagon enterprise. We had a conversation with him some time ago, and he thinks that roads suitable for his wagon can be built very cheaply. While the wagons run and pull very heavy loads on common roads, he thinks of digging two small graded ditches and filling with gravel, which will pack as hard as iron, and give a solid road for each of the broad wheels, and for the wagon wheels that follow with the loads. The Chico Enterprise, of Tuesday, has an item to the effect that this 'steam wagon has been thoroughly overhauled and improved at the Union Iron Works, Sacramento, and on a recent trial worked satis-

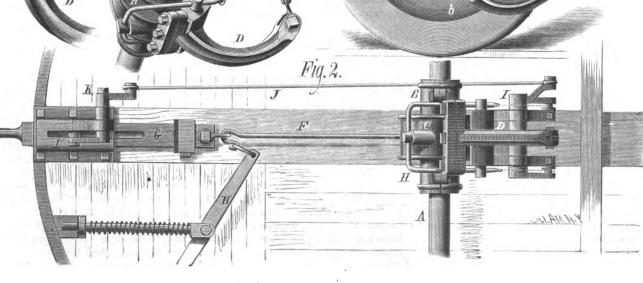
> factorily. Itsweight is 17 or 18 tons, and it is calculated to haul 50 tons of grain at each trip. It will be taken to the Upper Sacramento valley in a day or two, and will engage in grain bauling between Riceville and McIntosh's Landing.'

" Capt. Roberts will, if this one shall prove the success he anticipates, put on wagons to run to all the principal landings on the river, and thus cross-section the entire Sacramento valley. He will have, in effect, a freight railroad across the valley, from foothill to river, every eight or ten miles. We sincerely hope that the wagons may prove successful, as it would be one of the grandest things for the Sacramento valley that could be imagined; that is, always provided we can keep the river navigation from being destroyed."



plementary to them. The main object is to lessen the labor of overcoming the inertia at the initial of the forward movement, and also to equalize the draught after the loaded car has been put in motion.

There is also an attachment by which the driver is enabled to reverse his car by throwing the lever out of gearand preventing the locking of the wheel -simply by a pressure of the foot. If



HILL'S CAR STARTER.

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young are destitute of teeth and have only rudimentary eyes.

often produce ulcerations. The young pass through several lamprey will receive special attention from the French

With the Italians and French the lamprey is considered a prey cel on account of its supposed medicinal qualities,

changes before becoming perfect lampreys. At first the cooks, and is to be served in every known style.

#### SHELTERING HAY RICK

A straw or hay rick that can be used as a shelter for cattle, horses, etc., is shown in the annexed engraving. The frame of the stack consists of two square fences with a passage way between them. The passage is covered by a peak great delicacy, whereas in England only the poorer classes the skins being in great demand as infallible cures for rheuroof framed or tied, the rafters being formed of fence rails or leat it. In this country it is valued only by a few epicures, matism and kindred ailments. The skins are bound about

thick poles, with their lower ends set a small distance in the ground. The hay is placed in the spaces inclosed by the fences and upon the rafters, and the stack is built up to the ordinary height. Very long stacks can be provided with two passage ways if desired. It is considered advisable to construct the frames of these hay stacks as permanent structures.

#### Pharaoh's Serpent and the "Sea Snake."

We have heard a good deal about the amusing chemical toy "Pharaoh's serpent." both harmless and injurious, from its unhealthy vapors given off in the process of burning, but little about another very ingenious and singular chemical phenomenon, discovered and exhibited by the late Prof. Graham, Master of the Mint, which might be termed, in contradistinction to Pharaoh's land serpent, the "sea snake," as it is produced under water. His experiment went to show the prodigious amount to which the metal palladium will absorb hydrogen: an amount exceeding by some hundreds of times its own bulk. Two ribbons of palladium, attached to the two poles of a battery, were seen loose ly coiled in a water bath. The current was turned on; the ribbons took in so much hydrogen that they expanded, uncoiled, and stretched themselves across the bath, as if alive. The current was reversed, the hydrogen was thrown off, and the ribbons resumed

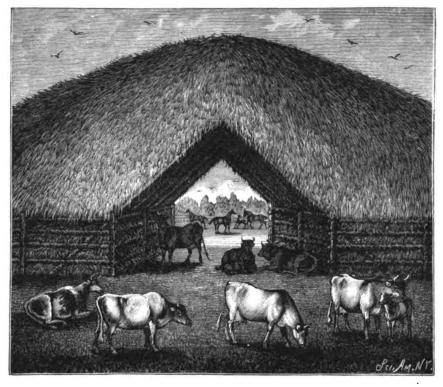
writhing worms. The sight was amusing; but it exempli. sidered it a great luxury, and was known to pay very high fied the researches by which Prof. Graham has thrown light prices to obtain it, being of the opinion that it contained on an important question in cosmical science, and led him to the discovery of the metal to which he has given the name of "hydrogenium." "What do you think," wrote the Professor to Hofmann, "of a metallic hydrogen, a white magnetic metal?" The condensation of hydrogen in palladium, and the discovery of the occlusion of hydrogen in meteoric iron, confirmed the conclusion to which spectrum analysis had previously conducted us, that the meteorites came from an atmosphere of incandescent hydrogen existing under very considerable pressure. Graham's fame as one of England's greatest chemists justly rests upon this important discovery.-Monthly Magazine.

## THE SEA LAMPREY.

The lampreys form a small group of hardly more than a dozen varieties, and are the most imperfectly developed, and occupy the lowest grade of all fishes, with the exception of the Lancelet. Their skeleton consists entirely of cartilaginous material. They are destitute of ribs, shoulder gir dle, real jaws, and scales, and are possessed of only one nostril, and their gills have the form of fixed sacs. In their habit of feeding and attaching themselves to the bodies of other fish, from which they rasp off the flesh and suck the juices, they become very suggestive of the leech.

The body of the sea lamprey is olive-green, mottled with dark brown. Length from two to three feet; numerous rows of mucous ducts on the head and body. The mouth, when not attached to any object, forms a longitudinal fis-

sure; when attached it is circular in form. The teeth are of various kinds, generally disposed in concentric circles. In the throat, and partially closing it, is a group of three large teeth. (See illustration.) Lips fleshy, with a distinct and slightly fimbriated membrane, and beneath a deep triangular fossa, having a fold on each side. Lampreys are fre quently found attached to sturgeon, from which they suck the slime and mucus exuded in abundance through the pores of the sturgeon. All the skate family provide favorite food for the lampreys, in whose bodies they rasp out deep wounds, which



### SHELTERING HAY RICK.

their coil. They might have been compared to a couple of and is rarely seen on the fish stands. Sothern, the actor, con-flowering when quite small, but near water-courses becomes more brain food than any other fish.

It is related of the Roman emperors that, so great was



MOUTH AND TEETH OF SEA LAMPREY.

their valuation of the lamprey, both as a luxury and stimulating food, artificial ponds were constructed in which to fatten the lampreys, the principal food used being well fattened living slayes, on whose bodies the eels would fasten and feed, affording an enjoyable pastime to the noble Roman.

The only place in New York city where the lamprey is served up is at the Grand Union Hotel.

At the next dinner of the Ichthyophagous Club, the sea which gives the best results is desiccation in a vacuum in

the ankles, wrists, and neck of the patient while fresh from the body of the cel, and are worn for long periods of time, in fact often till they drop off.

The negroes of the South have great respect for the lam-

In the months of March and April the lam preys begin ascending our fresh water rivers and streams that empty into salt water. Here they construct what might be called a nest, composed of stones piled up in a heap. These stones are carried from a distance by means of their sucking mouth. In these conical heaps of stones they deposit their spawn.

#### Botanical Sources of Tonga.

Some time ago a native medicine called 'tonga" was introduced into England and the United States from the Fiji Islands, where it hallong been in use as a remedy in neuralgic affections. No clew to the origin of this drug, which belongs to the vegetable kingdom, has hitherto been obtained, as the natives have jealously guarded the secret. According to a recent number of the Garden. ers' Chronicle, however, the botanical source of the medicine has now been found out through specimens sent by Mr R. L. Holmes, and submitted to Baron Von Mueller for identification.

The component parts of tonga consist of two plants only. The first, called by the natives "Aro," is Premna taitensis, and belongs to the order verbenaceæ. Mr. Holmes states that it is, in open dry places, a shrub,

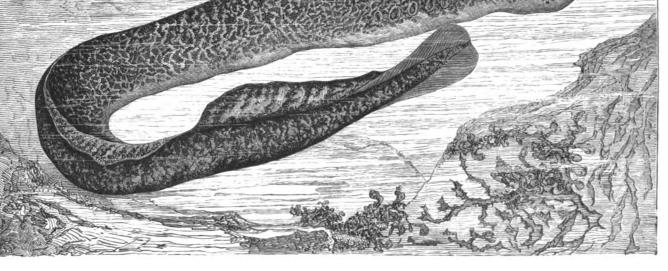
a tall tree, the timber of which is used in building, the inner bark being the part used in medicine. The other plant, known as "Nai Yalu," or "Walu," is an Arad, the Raphiodophora vitiensis of Secmann. It is a creeper, growing freely in sheltered places, climbing over stones and the like till it finds a tree, when it changes its nature. From a small vine, not thicker than a quill at the foot of a tree, it gradually expands, the stem growing to one or two inches in diameter, and the leaves, as many feet long, become pinnatifid, forming a handsome plant. It is the dried scraped stems of this plant that form the second ingredient in tonga.

#### Preservation of Flowers with their Natural Form and Color.

One of the processes consists, says La Belgique Horticole, in inclosing the flower or flowers in a glass jar provided with an air-tight, hollow ground-glass stopper, the cavity of which is filled with quicklime wrapped in leather. The object of the lime is to absorb the small quantity of humidity already existing in the jar or which might enter on a removal of the stopper. The dry air, deprived of its carbonic acid, occupying the jar, seems to brighten the color of the flowers and preserves them in their natural colors

Mr. Cornelis's other method consists in burying the flowers carefully in sand and then drying them. The most convenient receptacle that he finds for this purpose is a piece of paper wrapped in the form of a cone, the point being bent over so as to form a truncated cone. The desiccation may be effected at a temperature of 90° to 100°, but the method

> the presence of com mercial suppuric acid or any other substance which absorbs water with avidity, such, for instance, as chloride of calcium or caustic potash. The flower once dried, which will be in eight or ten days, it nust be removed from the sand with great care, for it is very fragile. The dust remaining on the petals is removed by allowing coarse sand to fall upon them from a small beight. After this species of wash ing the specimen has received all the treatment necessary, and in this state may be preserved indefinitely if it be inclosed in a her inetically scaled jar along with a little quicklime.



THE SEA LAMPREY.

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# [August 6, 1881.

The preservation of color in dried flowers, however, will not in all cases be attended with success, the action of light upon them being very variable. Certain kinds stand the light perfectly-even the direct light of the sun; others are even influenced by a diffused light, and there are some again that are discolored even in partial darkness. Three plants, Abutilon selowi, Fritillaria imperialis, and Vanda suavis, exhibit an unlooked for phenomenon. When dried, these flowers become of a reddish-brown, but when they are exposed to the sun they assume a tint which is quite like their original one, except Fritillaria (the crown-imperial), which becomes violet.

#### MECHANICAL INVENTIONS.

Mr. George W. Greene, corner 41st street and A. V. R. R. Pittsburg, Pa., has patented an improved machine for cutting tapered cork. This ingenious machine cannot be described without engravings.

A means by which the felly of a carriage, wagon, or other similar wheel may be enlarged for the purpose of tightening the tire of the wheel, has been patented by Mr. William Downham, of St. Johns, Mich.

A velocipede designed to be operated by two persons standing and applying their where weight to the treadles, has been patented by Mr. Oliver U. Guinand, of Lawrence burg, Ky. This vehicle is more easy to mount than the velocipedes in common use, and affords conveniences for carrying small parcels and packages.

An improved motive power has been patented by Mr. one remembers to have seen steam escape from the safety leaps, with a spark and snap, to the ground conductor and

Obadiah W. Gibson, of Kellyville, Texas. This invention relates to improvements in motive powers by which the entire power of the horse is thrown on the shaft that operates the gear mechanism, which may be applied to the running of cotton gins, grist and flouring mills, and other purposes. The invention consists of an inclined wheel applied to a center shaft that turns in fixed bottom bearings and adjustable top bearings. and transmits the power by a crown wheel and gear wheels and shafts in one or both directions.

Messrs. Charles C. Henderson and Jacob R. Henderson, of

ing by hand. More particularly the object is to wind the material from the roll upon a suitable drum, measure the pipe. material as it is wound, and provide an indicator of the amount rolled off, so that the desired quantity can be wound and then cut off.

A simple machine for rapidly peeling vegetables or fruits, inch. such as potatoes and apples, has been patented by Mr. Hervey Law, of Chatham, N. J. This machine is especially designed for peeling potatoes, which are usually of very irregular forms and sizes; and the invention consists in means whereby the .utter may be quickly set to a longer or shorter travel to correspond to the length of the potato.

An improved cloth-measuring machine has been patented by Messrs. Charles C. Henderson and Jacob B. Henderson, of Arkadelphia, Ark. This improvement relates to machines for winding off and measuring bagging and heavy bolt goods, and is designed to save the time and labor when the right-hand head blew out as shown, knocking the required in doing such work by hand. It is specially calculated to relieve the counting shaft of weight from the passing web.

An improved device for removing fire damp from mines has been patented by Mr. Francis Wodiczka, of Gratz, Austria. The invention consists in arranging a pipe or channel, displaced the third drying cylinder, B, and landed in the provided with a series of suction funnels, along the ridge of corner, at A', a badly smashed concern, about 40 feet from all the galleries and adits of a mine, which channel 18 con- its starting point. The concussion broke two windows. E nected with a side channel, which, in turn, leads into the and E', one in each room nearly in line, while a piece of the main or receiving channel, which is in communication with the gas flue or chimney.

### Hot Water for the Heart.

#### EXPLOSION OF A STEAM DRYING CYLINDER. BY S. N. HABTWELL.

the Staten Island dye house of Barrett & Nephews, about

one mile south of the steamboat landing at Port Richmond,

S. I., exploded, seriously injuring five persons. The sketch,

Fig. 1, shows the cylinder at A, one of three driven by a

small steam engine and used for drying piece goods. Fig. 2

is an enlarged detail of the head joint. The cylinder was

made of copper, tinned on its exterior surface, 36 inches

diameter by 48 inches long. The copper shell was about

one-tenth of an inch thick, brazed at its longitudinal seam

and fixed upon a cast iron spool by means of wrought iron

hoops shrunk upon the copper over the spoolhead shown in

section, Fig. 2, in which B' is the hoop, C' the cast iron

head, and A'' a section of the copper. The copper was calked at the edge, between the hoop and head, to make it

something less than three-quarters of an inch thick in the

web, thickened at the periphery, as shown in Fig. 2. The bar-

journals. The inlet and outlet pipes for the steam were half

inch, and entered the journals through stuffing boxes. A

On the afternoon of July 10 a steam drying cylinder in

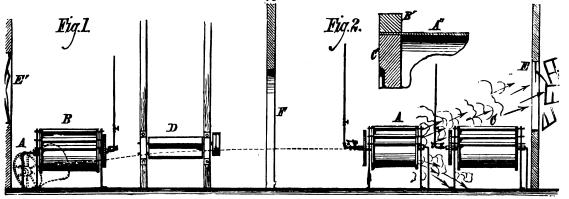
PROTECTION FROM LIGHTNING.

During the present summer thus far no very remarkable damages from lightning in this part of the country have been reported. A few buildings have been struck and a few persons killed; but on the whole the losses of life and property have, we believe, been less than for some years past.

The oil regions of Pennsylvania have been remarkably exempt. Last season, as will be remembered, many oil tanks were struck and their contents burned. But this year, up to the present time, we hear of no oil burning from lightning. We believe that in quite a number of cases the owners of tanks have put up rods and earth connections, with the hope of saving their property. We should be glad if our correspondents in the oil country would send us notes of such improvements and take pains to observe and report the results if thunderstorms take place.

On the 12th of July a heavy thunderstorm passed over steam tight, and to support the head. The heads were flat, the cities of New York and Brooklyn with frequent and powerful discharges of lightning. The thousands of telegraph and telephone wires caused a general diffusion of the electric currents about town. In the SCIENTIFIC AMERICAN rel of the cast iron spool was hollow, having hollow wrought office there was a good deal of electrical snapping on the telephone conductors; while at the general Telephone small safety valve was fixed to the inlet pipe. This cylinder Exchange and also at the Western Union Telegraph office is said to have borne a test pressure of 100 pounds to the there was an extensive display of this sort of fireworks. At square inch, applied by the makers. This, however, may all these offices the wire terminals are located in close proxbe an error. The cylinder was about three years old, but | imity to conductors that are well grounded in the earth, and had lately been to the maker to be retinned, since when no when lightning follows the wires into the buildings it simply

> is dispersed. During the above storm the great seaside resort, near New York, known as the Manhattan Beach Hotel, situated at the edge of the ocean, Coney Island, was struck by lightning; fortunately no serious damage was done. Several thousand persons had sought shelter from the rain within the saloons and under the piazzas of the immense structure. A blinding flash and a deafening roar informed the multitude that the house had been struck. But none were injured. The building is 600 feet long, 100 feet broad, three stories high, and although well provided with almost every other convenience and apparatus for



#### EXPLOSION OF A STEAM DRYING CYLINDER.

Arkadelphia. Ark., have patented a machine adapted for valve, although the weight was set for a light pressure. safety, no precautions in respect to protection from measuring heavy cloths, bagging, and similar materials in The cylinder was located with reference to its fellows at lightning had been adopted. The several spires or steeples lengths, as desired, in place of the usual method of measur- A, and about 150 feet from the steam boiler that supplied it that rise from different parts of the building were surwith steam through a  $1\frac{1}{2}$  inch main and a half inch branch

> The safety valves on the steam boilers, of which there were four horizontal tubulars in this system, were weighted to blow at a limit of 50 pounds per square

> A small drip pipe was tapped into the barrel of the spool of the exploded cylinder at a right angle to its axis; that was for the purpose of carrying off the water of condensation, which was forced out intermittently as the end of the pipe dipped into the water in the bottom of the cylinder at each revolution, steam escaping in the interim. There was a valve opening inward to prevent collapse in case of an accidental vacuum in the cylinder.

> On the day of the accident the cylinder, A, had been a short time in operation after standing for considerable time, cylinder, C, against the wall and breaking the frame. The exploded cylinder flew in a direct line of its axis to the left through an open archway, F, into an adjoining room, knocking down and breaking in pieces the squeezing machine, D, and its supporting posts; thence it struck and broken squeezer, D, was shot endwise through the window, E', into the dye house, breaking a man's arm.

secretary and superintendent of the works, and that of the pipes, gas pipes, or drain pipes; in the absence of these dver. Mr. E. Parker, covering the thirty odd years of the existence of the Barrett dye house, drying cylinders have ing material should be placed, such as a continuous layer, a occasionally given out in a mild way, sometimes even leaving | few inches deep, of iron ore or coal dust-hard coal or chartheir places from the effect of the escaping steam. The absence of water, which no doubt was present in considerable quantity in this case, accounts for the difference.

mounted by ornamental sprays or branches of iron, which would have formed excellent lightning rods had they been connected with the earth. After the storm we made a careful examination of the premises, and found that the lightning had struck the iron ornaments of the central tower, ran down the iron staff thereof on to the wooden timbers within the spire, where the iron terminated; thence the electrical current continued down on the wooden rafters, splintering the same for a distance of about 30 feet to the ceiling of the topmost sleeping room, where it burst through the plastering and took to an adjacent gas pipe, on which the current went to the ground without further damage. It is obvious that all the iron work of the spires and roof trimmings should be connected by rods with the metal pipings in the ground, and doubtless this will now be done. The escape of the tower from fire, with the iron staff terminating in the middle of a mass of dry timbers, is quite fortunate.

We will here repeat the golden rule which must be observed if protection from lightning is expected, namely, the rod must have a large area of conducting material for its underground terminal. Everybody will understand the folly of embedding the extremity of the rod in the woodwork of a steeple, as in the foregoing example. But the majority of rods are not much better arranged, as the common practice is to stick the terminals of the rods two or three feet down into dry earth and call the job complete and safe. But the truth is, it is very unsafe; it is not a sufficient electrical earth connection. The extremity of the rod should be During the experience of Captain C. W. Kennedy, the joined underground by soldered joints to the metallic water metals then long trenches s hould be made, in which conduct

In a letter to the Lancet, Dr. A. Paggi records the following observation: He states that in Paris he saw a case in which, under the inhalation of chloroform, the heart ceased to beat, and artificial respiration for ten minutes failed to restore circulation, when Dr. Labbé dipped a large cloth in boiling water and applied it to the region of the heart, with the result of immediately restoring the action of that organ.

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THE London Iron Trade Exchange, of recent date, publishes a complete list of blast furnaces in and out of blast in the United Kingdom. From the returns it appears that out of the total 943 furnaces built, 563 are in blast and 880 are standing. There are probably 40 furnaces in various districts which are not included in the returns, but none of these have been in blast for many years, and they will never be relighted; others are dismantled, and some have never steam bollers sometimes do at the weakest point. The work been completed. The returns from Derbyshire were imper- of destruction is then accomplished by the explosion-sudden expansion—of the water which is suddenly relieved, the heat fect, and the figures relating to that district may not be quite accurate, but as regards other districts, the figures, says | due to the difference of pressure escaping from every part of the Exchange, may be relied on. its mass with great violence.

#### THE HYPOTHESIS

#### in this case is that the safety valve had been damaged in the resetting or the removal of the cylinder for retinning, and that the outlet pipe for steam and water subsequently became choked with a wad of some kind that found its way into the cylinder while repairs were going on. Water accumulated from condensation of steam, which leaked into the cylinder wuile stopped, and on starting, the pressure in the generator being 40 to 50 pounds per square inch, gradually rose in the cylinder till its strength was exceeded, when it gave way as

coal-and the rod should be extended along the trench, in contact with the coal, which is a good conductor.

#### A Large Monolith.

At a granite quarry in Westerly, Rhode Island, there was recently detached a monolith 150 feet long, 10 feet wide, and 8 feet thick, weighing over 1,000 tons. These dimensions greatly exceed those of the Obelisk of Semiramis, the largest of the Egyptian monoliths. The Westerly stone, a proprietor, Mr. H. Q. French, says, was loosened by one oblong blast-hole in such a simple and perfect manner that the theories and conjectures advanced by many as to the methods of the Egyptians appear absurd. It contains over 12,000 cubic feet of granite, which, cut into smaller blocks, will fetch about \$30,000. Mr. French is quite positive that it could be brought to this city, finished as an obelisk, and erected for about \$150,000.



#### Diatoms,

Henry G. Hanks, State Mineralogist, Cal., writes as follows to the Mining and Scientific Press:

A diatom is generally admitted to be a single celled plant. bearing a singular relation to the animal and even to the mineral kingdom, being considered by some to belong partly to the latter, and regarded as a vegetable crystal, differing only from minerals in having the power of locomotion, and of multiplying by separation. Kutzing says: "In comparing the arguments which indicate the vegetable nature of the diatomacese with those which favor their animal nature, we are, of necessity, led to the latter opinion."

In connection with the idea that the diatoms pertain somewhat to the mineral as well as the animal kingdom, it is a curious fact that silica deposited from fluoride of silicon, if crushed between plates of glass and examined microscopically, with a medium power, markings may be seen on the outer surfaces of the vesicles which resemble those of the diatoms, specially pleurosigma and coscinodiscus. It is also remarkable that Dr. James Blake collected fifty species of living diatoms from a hot spring in Pueblo Valley, Nevada, the temperature of which was 163° Fah. Flint probably originates from diatoms, as does also the silica in certain rocks.

being cut in two. Diatoms resemble the desmids, but differ shower in the year 1846, near Lyons, at 720,000 pounds, one in having an outer skeleton, or frustule, of silica. The frustule of a diatom is a silicious box, always in two parts, one slipping over the other like a pill box or with edges apposed.

The thickness of a single diatom is, roughly, the sixth that of a human hair, and its weight is estimated at the 187-1,000,000th part of a grain. Some varieties attach themselves to other bodies, as the algæ, while others swim in the water free.

interest, is very fascinating. Their extreme and varied beauty is a source of constant pleasure to the microscopist, and the question is often asked, Why is so much beauty veiled from human sight?

#### THE BEAUTY OF THE DIATOMS

consists in their color, their general form, and sculpture, or natural markings, which characterize nearly all of them. These delicate markings are seen under the microscope to be processes, knobe, bosses, concavities, ribs, groovings, and lines, so minute that the highest powers made by the most skillful opticians are required to see them at all; even then they can only be seen when the apparatus is manipulated by the most skillful operators. The lines of certain diatoms have been measured, and are used to test the magnifying and penetrating powers of object glasses. A slide called a test plate has been prepared on which twenty well known species are mounted, commencing with one on which the lines are comparatively coarse, and ending with one-Amphipleura pellucida-which has 130,000 lines to the linear inch. For the convenience of study typical diatoms are mounted on a single glass slide, so arranged that reference can be made to a printed catalogue for the names, while in some cases the names of the species are microphotographed on the slide.

The diatoms are placed on the plate by the aid of an ingenious device called a mechanical finger, by means of which the shells can be picked up singly and given the desired position. Moller's Typenplatte No. 1 has twenty-four lines in each of four groups, comprising about 500 individuais of 395 distinct species and 17 genera. The cost, with printed catalogue, is forty dollars.

Some microscopists are so fond of the study of these minute forms that they scarcely do any other work than to observe, collect, classify, and describe them.

When it is stated that the names of more than 4,000 distinct species of diatoms are given in a catalogue published by Frederic Habirshaw, of New York, each of which has some feature by which it may be distinguished, that this vast kingdom, so to speak, is invisible to the human eye, or nearly so, that when highly magnified many of the species are extremely beautiful, and all of them interesting, it is easy to understand why so much interest is taken in them the wide world over, and why every new discovery is heralded, and calls for samples come from the whole scientific world.

It is an established fact, strange as it may seem, that some of the greatest mountain chains, such as the Andes, and the very soil beneath our feet, are chiefly composed of the

dreds of miles in extent, a bed of tertiary sedimentary formation, 800 feet in thickness, overlaid by a stratum of diatomaceous earth. At Bilin, in Austria, a bed of iufusorial earth, Lapland and Norway, is from beds 80 feet in thickness. It must be remembered that these deposits extend over many thousands of square miles. Notwithstanding the astonishing fact that vast areas of the earth's surface are built of these minute forms, the true nature of these deposits was not known until 1837, when Ehrenberg published his celebrated work on that subject. The same deposition is taking place at the present time. In certain lakes in the United States and elsewhere, deposits several inches in thickness accumulate, composed wholly of the remains of recent diatoms. When thoroughly dried a chalky powder is obtained, which, under the microscope, is easily recognized. Similar deposits have been made known by dredging the bottom of the sea.

According to Professor Joseph Le Conte: In the deeper parts of Lake Tahoe, which sediments do not reach, the ooze is composed wholly of diatoms or infusorial shells.

Dusty showers of a grayish or red color are not unfrequent on the Atlantic and Indian oceans near the coast of Africa. Ehrenberg examined this dust and found it to consist largely The name diatom is derived from a Greek word signifying of diatoms. He estimated the quantity let fall during a dust eighth of which was diatomaceous, or 90,000 pounds, equal to 45 tons. Diatomaceous earth may be distinguished from other formations of a similar appearance by its insolubility in acids, extreme lightness, power of absorbing liquids, and property of polishing metals. It is instantly recognized under the microscope in the hands of one who is familiar with its use. Diatomaceous earth has its uses as well as its scientific interest. It is largely consumed as a polishing powder under the name of tripoli, from the locality which The study of the diatomaccæ, aside from their scientific first gave it to commerce. It is known in California by the absurd name of electro-silicon, and at the East by a variety of trade names. It is a very convenient source of soluble silica, employed in the manufacture of silicate of soda or potash, also known as soluble glass. The manufacture of this compound is simplicity itself. Carbonate of soda or potash, as the case may be, is dissolved in boiling water to saturation, in a canacious iron kettle, and fresh hydrate of lime added until all the carbonic acid is precipitated, and the alkali becomes caustic. Diatomaceous earth in a powdered state is then added as long as silica is dissolved, and the whole covered and allowed to cool. When the insoluble matters have settled the clear liquid is drawn off and evaporated in a clean ressel to the required density.

> Diatomaceous earth is also used in the manufacture of porcelain, and it is a constituent of certain cements and artificial stones. At one time It was claimed to be a fertilizer, but this is thought to be a fallacy, although Ehrenberg states that the fertilizing power of the Nile mud is furnished by fossil infusoria.

Slabs of diatomaceous earth absorb liquids with avidity, and are used in laboratories for drying crystals and filters. This property might be more generally utilized if better known.

A convenient contrivance for lighting fires is a lump of diatomaceous earth with a handle of stout iron wire. It is dipped into a vessel of petroleum, placed in the stove or fireplace, and lighted with a match. It continues to burn safely for some time. It can be used again and again. No person, however, should make use of it who has not the common sense to carefully set away the vessel containing the coal oil before lighting the match.

Bricks that float in water are made of diatomaceous earth mixed with one-twentieth part of clay and well burned. The art of making these floating bricks was well known in the time of Pliny, but was afterward lost. It has recently been discovered. In the Italian department of the Paris Exhibition of 1878, these bricks were exhibited, which attracted considerable attention. Floating bricks, made wholly of California material, may be seen in the State Museum.

Kieselghur, or "fint froth," of the Germans, from a deposit in Hanover, is extensively used in the manufacture of dynamite, giant powder, lithofracteur, and other explosives. Diatomaceous earth absorbs from three to four times its weight of nitro-glycerine, with the advantage over other absorbents of retaining the nitro-glycerine under greater pressure. Dynamite contains 27 per cent and lithofracteur

#### Gelatine Emulsion-Making in Hot Weather

I have thought it might not be amiss to describe the plan I have been following in making emulsion during the last 14 feet thick, occurs. One merchant sells annually many hot weather we had. In my plate making room the temhundred tons of it. The Bergmehl, or mountain meal, of perature was often at 85°; but, nevertheless, several hatches of plates were successfully prepared. The method adopted is very similar to that I described in my little book, "The Practical Working of the Gelatine Process;" but there are one or two alterations in procedure. In the first place I use the formula which was described in last Journal, using potassium bromide instead of ammonium. It is as follows: Potassium bromide, 250 grains; Nelson's No. 1 gelatine, 45 grains; water, 1 ounce; strong hydrochloric acid, 2 drops.

> This is prepared in the usual way, and warmed up to 120° Fah., and the following added in the usual way: Silver nitrate, 800 grains; water, 81/2 ounces.

> Finally, this next solution is added: Potassium indide, 19 grains; water, 1 drachm.

> This I mix in a long hock bottle, shaking between each addition. This is transferred to a glass flask and boiled for half an hour, shaking up the emulsion at intervals. This is allowed to cool in the flask for half an hour, when to it is added, with shaking: Nelson's No. 1 gelatine, 120 grains; Coignet's gelatine (new brand), 120 grains; water, 8 ounces.

> After soaking and very slightly heating to melt it, about three drops of strong ammonia in half a drachm of water is then stirred in, and the emulsion is poured out into a jam pot, which is immediately placed in iced water, a few lumps of ice floating in it. In half an hour the gelatine will be firmly set. The jam pot is then dipped for a few seconds into boiling water, which will loosen the gelatine from its sides, and the lump of emulsion is transferred into moist canvas, and squeezed through into a jar of iced water (the water having been run through filter paper to get rid of all floating matter), in which a few small lumps of washed ice are floating. After ten minutes the water is changed, and after another ten minutes is changed again, when it is again collected in the canvas and squeezed through into water. One more change of water should be sufficient to free it from all except traces of soluble salts. It is then transferred to the canvas and allowed to drain over a jar half an hour to threequarters.

> It is again transferred to the jam pot and melted, and a slight trace of carbolic acid (or other antiseptic) added, and then once more placed in iced water. In half an hour it is set, when it is covered with alcohol and allowed to ripen for a day; and if the jar be placed in water containing a lump of ice, so much the better. When plates have to be coated, the slab on which the plates have to be set is covered with small lumps of ice for half an hour, and if it be thick it is only very gradually cooled; but, on the other hand, it also only very gradually gets warmed again. During this time the emulsion is melted, six drachms of alcohol added, and filtered.

> When the plates are coated (after the slab has been dried from all water) it will be found that the film of emulsion will set in a couple of minutes, and that the slab remains cool enough to enable five or six batches of plates, filling the slab, to be prepared; that is, supposing your slab to hold eight plates, you can coat forty to forty-eight without reconling the slab. I find that the gas of the drying box may be lighted immediately, and the drying of the plates will proceed rapidly and not remelt. If gelatine be once well set it requires a high temperature to remelt it; and the more water is evaporated the higher the temperature required. As the current of warmed air passes over the plates the moisture is rapidly absorbed, and hence the drying can be effected with safety.

> My excuse for writing this must be the fact that I have had many letters asking how I prepare emulsion in this weather, and I trust that this description may be taken as an answer to them. Doubtless there are other modes which will succeed as well; but I think, for an amateur, this plan will be found to be everything that is required. I would just say, that, supposing by any chance the emulsion appears too thin before coating the plates, 40 grains of Coignet's gelatine may be melted in 8 drachms of water and added to the emulsion, with much stirring, immediately before filtering .- W. de W. Abney, F.R.S., in Journal of the Photographic Society.

> > The Chilcat Meteor.

# REMAINS OF ANIMALCULES,

invisible to the eye; that is to say, the matter has been used by animated beings, and returned again to the mineral kingdom, retaining the form which it assumed while a part of their minute bodies. Byron has written with more truth than he probably realized that "The dust we tread upon was once alive," and the remark of Dr. Buckland is often quoted: "The remains of these minute animals have added more to the mass of minerals which compose the exterior crust of the globe than the bones of the elephants, hippopotami, and whales."

In the tertiary age heds of diatomaceous or infusorial earth were deposited, consisting almost wholly of these microscopic organisms. The extent of some of these deposits is almost incredible, and is regarded as an evidence of the great age of the world.

The Bohemian deposit in Europe is 14 feet thick, and, by the estimation of Ehrenberg, contains 40,000,000,000 diatoms to the cubic inch.

Darwin observed in Patagonia, along the coast for hun- zol, 80 to 100 parts.

23 per cent of diatomaceous earth.

Before the kieselghur can be used it is subjected to treatment to remove water, all organic matter, and coarse particles. It is first calcined in a succession of furnaces, crushed between rollers, and sifted.

It is claimed that the diatomaceous earths of California are unfit for this purpose, but it is the opinion of the writer that they have not had a fair trial.

Diatomaceous earth is largely used in the manufacture of soap to mechanically increase its detersive power. The Standard Company receive large quantities of it from the southern counties of the State.

#### Imitation Ground Glass.

A very useful kind of varnish is made known by Léon Vidal, which is excellent for producing imitation of ground glass, and will doubtless be found available for other purposes. The formula is:

Sandarac, 18 parts; mastic, 4 parts; ether, 200 parts; ben-

The State Mining of Bureau California has lately come into possession of the meteorite found among the Alaska Indians by Mr. John Muir. The meteor was seen to fall, it is said, by the father of one of the oldest Indians in Chilcat, over a hundred years ago, and was afterward sought out and carried to his hut in triumph. Through the co-operation of the Northwest Trading Company, the Mining Bureau succeeded in conducting negotiations for its purchase; and for a consideration which seems meager as Esau's mess of pottage in the eyes of scientists, the State of California acquired clear title to the meteor, and it arrived in the city, June 24. This aerolite is exceedingly irregular in shape, and the projecting points are as bright as if they had been burnished. A succession of nut-shaped hollows, which cover almost the entire surface, give it an exceedingly curious aspect, and its fantastic contour looks almost as if it had been moulded by some unknown power into the shape of the head of a strange beast. It weighs a hundred pounds or upward, and has been christened, in honor of the locality from which it was procured, "Chilcat Meteor."



#### A Leech Farm.

Kent Avenue, Williamsburg, L. I. In course of time this dict of "accidental death." small establishment was abandoned, and one of thirteen acres was established near Newtown, L. I., and to him the writer is indebted for the following information and description of the only leech farm in America. The breeding ponds consist of oblong squares of one and a half acres each. The bottoms of these ponds are of clay, the margins of peat. In June the leeches begin forming their cocoons on the peat margins of the pond.

The greatest enemies to the young leeches are musk rats, water rats, and water shrews, who dig the cocoons out of cleaned, and this entails not only a loss of time, but considthe soft peat breeding margins. Next to rats and shrews is enable expense. Much interest is, therefore, taken in a new overheating of the peat or the water of the pond. In fact, ship which was launched from the shipbuilding yard of nothing is so fatal to leeches as a too high temperature. Mr. Messrs. T. B. Seath & Co., Rutherglen. This vessel, which Witte tells the Oil and Drug News he has had leeches frozen is named the Bessie, is built from designs by Mr. G. L. in solid ice, but by slowly dissolving the ice and gradually increasing the temperature of the water the leeches sustained is intended as a tender for the yacht Condor. no injury. The depth of the water in the ponds during the summer is three fect; in winter time the depth of water is hull, to six inches above the water line, with a plate of zinc, increased to avoid freezing.

placed in thin linen bags, which are suspended in the water. during which time the blood remaining undigested in the architect, of the Middle Temple, London. stomach of the leech is in a fluid state, as if just taken in. advantage in small quantities.

to about thirty thousand yearly.

mine, who was the proprietor of a large leech-breeding consequently be watched with great interest.-Marine Engiestablishment at the foot of the Hartz Mountains, when neer. wishing to feed his leeches, was in the habit of hiring poor laborers, at six cents per day, to stand in the water for half an hour nearly up to their thighs, that the leeches might obtain a full gorging of human blood.

In the marshy lands of Roumania the wild leeches are the wild leeches to fasten on to their naked bodies. The leech fishers then strip them off after reaching the shore.

at Newton may not also produce poisonous leeches.]

#### Dangers of Sulphuric Acid.

land, by the upsetting of a wherry or cart loaded with sul- horizontal lines through the nose. The point of bisection phuric acid. A witness testified that the horse was going at between the eyes was that which he was especially careful to a good pace, and the deceased was unable to pull up, and maintain in the same position in each portrait. Mr. Galton's therefore the deceased turned into a lane, but a wheel first method of producing composite portraits was by means coming into contact with a stone the wherry upset, and of a copying camera, paper positives being used. He now, Sellers fell into the road with fifteen carboys of vitriol, however, used transparencies, and he exhibited and demany of them broken, on the top of and around him. When scribed the apparatus which he had adopted for the purthe witness got up he could see nothing of the driver, but, pose. One purpose for which he believed composite porfour broken carboys. He got assistance, and a quantity of physiognomy of disease With this object he had taken the the telephone, caused it to give out the original words. water and milk was thrown over the deceased, whose cloth- portraits of a number of consumptive persons, male and body. Shock to the system caused by the extensive destruc- series was that of the portraits of officers and men of the accident. to ride on his wherry, as the deceased had done, with such a load behind him; but, of course, he would not expect any accident, happening where it did, it was a matter for consideration as to what the consequences would be were such a terrible affair to occur in a crowded thoroughfare, passing through which these wherries of carboys were every day. He had seen the carboys packed in three tiers with only a rope put loosely round them, and should an accident happen the chemical might run down the causeway and produce frightful results to foot passengers. It was a question for aspect, either as a perfect profile or a perfect full face, and offered.-North American Manufacturer, July 14.

the authorities of the town as to whether this mode of con-In 1841 Mr. H. Witte established a small leech farm in veying vitriol was a proper one. The jury returned a ver-

## The Prevention of Fouling in Iron Ships.

The prevention of fouling in the hulls of iron ships is a matter that has long engaged the attention of those interested in the construction and equipment of iron vessels. Many methods have been tried in order to protect vessels against the growth of barnacles in tropical waters, but it can scarcely be said that any of these have proved entirely successful. At present, ships require to be periodically docked and Watson, naval architect, for Mr. John Clarke, Paisley, and

The novelty about the Bessie is that it is covered over the and by means of this it is believed that the vessel will be

The leeches are fed every six months on fresh blood thoroughly proof against fouling. The thickness of zinc employed is not great, and it is fitted so closely as not to The leeches, as soon as they smell the blood, assemble from interfere in the slightest with the delicate outlines of the vesall parts of the pond, and attaching themselves to the out- sel, but its thickness is sufficient to last, it is calculated, for side of the bag, suck the dissolving coagulated blood through fully six years. The patentees of this system are Mr. J. the linen. Digestion proceeds very slowly with the leech, Jepson Atkinson, barrister, and Mr. C. F. Henwood, naval

The well known action of iron on zinc in salt water led to The excremental deposits are of a grass-green color. The the discovery of this invention; but while the use of zinc best substance for packing leeches in is the peat of their was well known, the difficulty of attaching it to the hulls natural ponds made into a stiff mud. Water containing of ships remained. Mr. Atkinson and Mr. Henwood have tannin, tannic acid, lime, salt, or brackish water, must be completely overcome this difficulty, and there can be no guarded against always; iron is not objectionable, but is an doubt that the use of their system will be watched with much interest by the shipping community. The method employed The demand for leeches in the last few years has some- in fixing the zinc is simple and effective. The zinc sheets what fallen off in the Eastern and Southern States. The are attached to the iron plating of the vessel at spots nine to Western States and California are now the heaviest buyers. twelve inches apart, and at these spots a mechanical joint Mr. Witte's sales alone average a thousand a day. The is made by an alloy or solder, the surface of the spots being number of leeches imported into the United States amounts about an inch and a half square. The method of attachment causes the zinc to act like copper on the bottom of a wooden The custom of stripping and salting leeches, to cause ship. Zinc in the ordinary seaway coming in contact with them to disgorge after having been applied, has passed iron oxidizes to the extent of about two to three ounces per away, as many well established cases have occurred of infec- square foot in a year, but by attaching zinc of sufficient tious diseases having been communicated on the application thickness the vessel can be kept at sea for several years withof the same leech to a second party. A very popular error out docking, cleaning, or painting. Scraping will not be exists that a leech when applied takes only the bad blood required, and the speed of the ship will not be diminished (whatever that may be) and rejects the good; this is a mise by the growth of barnacles. Mr. H. N. Moseley, of the take. With a leech blood is blood, be it the cold blood of a University of London, has expressed himself satisfied with tish or the warm blood of a human being, no matter how the chemical action of the new process, and there can be no diseased that human being may be. So long as blood is not doubt that the invention will, if successful, be of immense tainted or putrid the leech will thrive on it. A friend of importance to shipowners. The career of the vessel will

#### Composite Portraits.

At the last meeting of the Photographic Society of Great Britain, Mr. Francis Galton, F.R.S., read a paper on "Composite Portraiture," in which he stated that his attention was captured by means of men entering the water and allowing first directed to the subject some years ago, when he found that by taking two or more portraits of different individuals under exactly the same conditions, and superimposing them, [If it is dangerous to apply the leeches a second time the the features, if not absolutely dissimilar, blended together druggists should beware of the Hartz leeches. And the and formed an idealized portrait which could be well question may be asked whether the blood feeding practiced seen when the image was thrown upon a magic-lantern screen. The register he adopted, so that the features should be identically superimposed, was by drawing a borizontal line through the eyes, another parallel to this through the A driver named Sellers lately lost his life at Leeds, Eng- mouth, and a third perpendicular to and bisecting these

under the same conditions of light and shade. The result of the combination of a number of faces of the same family was often very curious, not the least singular point being the circumstance that there was often a difference of opinion as to whom the idealized portrait was most like. Mr. Warnerke said, that when Mr. Galton first described his method, some years ago, he had tried the production of composite portraits, and found the result exceedingly interesting. Captain Abney expressed surprise at the result of an experiment which Mr. Galton had made to show that repeated exposures on the same plate made no difference in the result. Had not Mr. Galton proved that he was right, he should have expected some difference. After a remark from Col. Wortley, Mr. Galton observed that one curious result he had noticed was in the case of a combination portrait of two criminal boys. This portrait was given to an artist to copy. and, singularly enough, although the artist had never seen either of the boys, the picture he drew was a portrait of one of them rather than a copy of the composite.

#### RECENT INVENTIONS.

A table especially designed for convenience in writing on large heavy books, such as books of record that are used in registers' and other public offices, has been patented by Mr. John A. Harriman, of Bellaire. Mich.

An apparatus for preparing wheat for grinding has been patented by Mr. James Willard Smith, of New York city. The object of this invention is to remove the dust, fuzz, and other impurities from the creases in the kernels of the wheat, and also to prevent the bran from being pulverized and mixed with the flour.

An improved vehicle specially adapted to the use and amusement of children, which shall serve either as a wheeled carriage or as a swing, its construction insuring the comfort and safety of the occupant, has been patented by Mr. Mason Remley, of Hamden Junction, O.

An improved lye-trough for soap-makers, patented by Mr. Daniel F. Trout, of Feesburg, O., consists of a trough or pan made of metal or wood, with a spout at one side or end, which is on a level with the bottom of the trough or pan.

In most of the so-called "magic" pen and pencil cases the pen cannot he pushed out for use unless the pencil is also out; hence, in using the pen the pencil is apt to become inked and its point or lead thereby injured. Mr. Richard M. Collard, of New York city, has patented a pen and pencil case in which this defect is remedied, by so constructing the case that the pencil can be attached to or detached from the "magic movement" at the will of the user, so that the pencil-point will not be out while using the pen, though the case be drawn out to its full length.

An improved ice cream freezer has been patented by Mr. John Marsden, of Chester, Pa. The object of this invention is to furnish ice cream freezers so constructed that they will make smoother cream than the ordinary freezers, and will make a greater quantity of cream from the same quantity of material.

#### A Phosphorus Microphone.

In his photophonic experiments, Professor James Blyth, of Edinburgh, was led to construct a useful form of selenium cell by dovetailing two brass combs, having alternate teeth knocked out, and filling up the spaces between the interlocking teeth with the selenium. A modification of this pattern is made by fastening a brass disk on wood, and sawing it across until it consists of radial sectors, which are afterwards connected by selenium. While trying to use amorphous phosphorus in place of the latter substance he found the phosphorus evolved a current which varied with the pressure on the phosphorus, and the idea occurred to him that a microphone could be made from it, which would not generate its own electricity. He therefore took a shallow wooden box having a brass bottom, and spread a layer of phosphorus upon it, a thin flexible brass lid covering the box and touching the phosphorus. Wires from a telephone were then connected to the metal top and bottom of the box, and on speaking into a mouthpiece directed to the thin brass cover, the words were distinctly reproduced. The varying pressure of the sound waves on the phosphorus after some moments, discovered that he was lying under traits would be valuable was that of producing a standard established an undulating current, which, passing through

# [August 6, 1881.

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ing was being consumed and flesh eaten away by the liquid. female, and had combined them; and it was remarkable how He was taken up and carried in an insensible state to a a certain average of faces was found to be almost identical. farmhouse near. The skin and muscles of his left upper 'Mf. Galton also exhibited a number of what he called typiarm, near the shoulder, had been destroyed for some dis- cal portraits. One was the face of an idealized criminal, tance, laying bare the hone. The left foot and ankle were formed from a combination of seven portraits of criminals, similarly destroyed, as were also several other parts of his others were the faces of consumptive patients, and a third

tion of tissue was the cause of death two hours after the Royal Engineers. In one case he had combined the portraits of twelve officers, in another the portraits of eleven

The coroner, in addressing the jury, said the case seemed privates, and in a third he had combined the portraits of to be one of accidental death. It was dangerous for a man officers and privates. In each instance Mr. Galton said the individualty marking each class was strongly brought out accident to happen. Seeing what had been the result of the idealized portrait was better looking than the faces from which it was made.

> In conclusion, Mr. Galton referred to the use which phothe process could be turned to a most interesting account in

When a battery was included in the circuit the sounds were remarkably clear and loud and free from the grating which disturbs the carbon microphone. Professor Blyth also finds that the cell, which is really a form of loose contact, operates as a receiver as well as a transmitter, and will of itself emit articulate sounds under the influence of the vocal current.



#### Silicon in Steel Rails.

Dr. Dudley's formula for the composition of steel rails allows 0.04 per cent of silicon, but other experiments show that ten times that amount of silicon can be admitted, and still retain an excellent physical character. The allowance and idealized. He also pointed out how, in every case, the of this margin is fortunate, because of the inability of determining when silicon is removed, as can be so exactly determined in the case of carbon.

Out of 35,000 rails on Swedish state railways, only 4 tographers might make of composite portraits. He thought broke in the winter of 1880, under a composition of 0.20 to 0.30 carbon, and 0.1 to 0.3 eilicon. The diverse views held the production of family likenesses. Artistic excellence was by different experts, and various conclusions arrived at, of no consequence in the negatives, and all that was neces- show that much yet remains to be determined by experisary was that the portraits should be taken under the same ment, before the best composition for a steel rail can be

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## Busicess and Versonal.

The Charge for Insertion under this head is One Dollar a line for each insertion ; about eight words to a line Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

Inventors can exhibit Models free of charge at Bunsell's Museum, Broadway corner 9th St., New York Ex-cellent opportunity to interest capitalists, as the best class patronize the institution.

Ball's Variable Cut-off Engine. See adv., page 76. Baxter Wrenches fit peculiar corners. Indispensable to first-class mechanics. Greene, Tweed & Co., N. Y.

An experienced and competent Engineer wants a situation Address R. M. Lodge, 25 S. Del. Ave., Phila., Pa. The best tonic we know of is Van Beil's "Rye and Rock." Try it.

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C. Heinen's Wagon Spring, illustrated in SCIENTIFIC AMERICAN, July 9, 1881, p. 19. U. S. Patent is for sale, or will license to manufacture on royalty. Address Christopher Heinen, Fort Laramie, Wyoming Territory.

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Linen hose, rubber hose, cotton, rubber, and leather belting. Greene, Tweed & Co., 118 Chambers St., N. Y. Agricultural Engines for sale cheap by S. J. Benedict, East Randolph, N. Y.

For Sale .- A complete set, except for year 1870, or

U S. Patent Office Reports, from 1947 to 1871, inclusive : Official Gazette of U.S. Patent Office from 1872 to 1877 inclusive. Address P. O. Box 2937, New York.

Wanted-Good Boiler Floats. Box 498, Bellevue, Ohio The Common Sense Dry Kiln prevents check, warp,

or hardened surface. See St.Albans M'f'g Co.'s adv.p.60. For Sale,-Turret Lathe, with Chaser Bar. No. 1 and 4 Boot Blowers. B. & W., 261 N. 3d St., Phila., Pa.

Tarred Roof's, Sheath's Felts, Wiskeman, Paterson, N.J. Supplement Catalogue.-Persons in pursuit of infortion on any special engineering. mechanical, or scientific subject, can have catalogue of contents of the Sci-ENTIFIC AMERICAN SUPPLEMENT sent to them fr The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physi-

ce. Address Munn & Co., Publishers, New York. Abbe Bolt Forging Machines and Palmer Power Hampecialty. S. C. Forsaith & Co., Manchester, N. H.

List 96 - Description of 2,500 new and second-hand hachines, now ready for distribution. Send stamp for the same. S. C. Forsaith & Co., Manchester, N. H.

Combination Roll and Rubber Co., 27 Barclay St., N. Y. Wringer Bolls and Moulded Goods Specialties. Punching Presses & Shears for Metal-workers, Power

Drill Presses. \$25 upward. Power & Foot Lathes. Low Prices. Peerless Punch & Shear Co., 1158. Liberty St., N.Y. The Eureka Mower cuts a six foot swath easier than

a side cut mower cuts four feet, and leaves the cut grass standing light and loose, curing in half the time. Send for circular. Eureka Mower Company, Towanda, Pa. Pure Oak Leather Belting. C. W. Arny & Son, Ma-

sufacturers. Philadelphia. Corresponden e solicited. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

Wood-Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O. Cope & Maxwell M'f'g Co.'s Pump adv., page 45.

Experts in Patent Causes and Mechanical Counsel Park Benjamin & Bro., 50 Astor House, New York.

Split Polleys at low prices, and of same strength and appearance as Whole Fulleys. Yocom & Son's Shafting Works. Drinker St., Philadelphia, Pa.

The Sweetland Chuck. See illus. adv., p. 46. Malleable and Gray Iron Castings, all descriptions, by

Erie Malleable Iron Company, limited, Efie, Pa. National Steel Tube Cleaner for boiler tubes. Adjustsbie,durable. Chalmers-Spence Co.,10 Cortlandt St., N.Y.

Clark Rubber Wheels adv. See page 28. Corrugated Wrought Iron for Tires on Traction En

gines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittab'g, Pa. Best Oak Tanned Leather Belting, Wm F. Fore-

pangh, Jr., & Bros., 581 Jefferson St., Philadelphia, Pa. For best Duplex Injector, see Jenks' adv., p. 60.

Nickel Plating,-Sole manufacturers cast nickel and odes, pure nickel salts, importers Vienna lime, crocus, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 erty St., New York

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Yools. E. W. Bliss. Brooklyn, N. Y. 4 to 40 H P. Steam Engines. See adv. p. 61.

Machine Knives for Wood-working Machinery, Book Binders and Paper Mills. Also manufacturers of Soloman's Parallel Vise, Taylor. Stiles & Co., Riegelsville.N.J. Skinner's Chuck. Universal, and Eccentric. See p. 46.

Geiser's Patent Grain Thrasher, Peerless, Portable, nd Iraction Engine. Geiser M'f'g Co., Wayne ro. Pa. Tight and Slack Barrel machinery a specialty. John vood & Co., Rochester, N. Y. See illus. adv. p. 78. Houston's Four-Sided Moulder. See adv., page 76. Houghton's Boiler Compound contains nothing that can injure the iron, but it will remove scale and prevent its formation. Houghton & Co., 15 Hudson St., N. Y.

Long & Allstatter Co.'s Power Punch. See adv., p. 77. For Mill Mach'y & Mill Furnishing, see illus, adv. p. 77.

For Mining Mach'y, see ad. of Noble & Hall, p. 76. New Economizer Portable Engine. See illus. adv. p. 76. The Chester Steel Castings Co., office 407 Library St , Philadelphia, Pa., can prove by 15,000 Crank Shafts, and 10,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Combined Concentric and Eccentric Universal and Inlependent Jaw Chucks. The Pratt & Whitney Co., Harttord, (onn.

The I. B. Davis Patent Feed Pump. See adv., p 77. Rne's New "Little Giant" Injector is much praised or its capacity, reliability, and long use without repairs. Rue Manufacturing Co., Philadelphia, Pa.

Rowland's Vertical Engine. Wearing parts of steel. Broad bearings. F.C.& A.E. Bowland, New Haven, Conn. Wm. Sellers & Co., Phila., have introduced a new

injector, worked by a single motion of a lever. For Shafts, Pulleys, or Hangers. call and see stock

kept at 79 Liberty St., N. Y. Wm. Sellers & Co Saw Mill Machinery. Stearns Mfg. Co. See p. 78.

Wiley & Russell M'f'g Co. See adv., p. 45. Don't buy a Steam Pump until you have written Val-

ey Machine Co., Easthampton, Mass. Use the Vacuum Oils. The best car, lubricating, enand cylinder oils made. Address Vacuum Oil Co. No. 3 Rochester Savings Bank, Rochester, N. Y.



HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely f a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEwarr referred to in these columns may be had at this office. Price 10 cents each

(1) H. K. asks what is the velocity of steam through a six inch pipe open at the end, at a pressure of 90 lb., 60 lb., and 100 lb. A. 90 lb. above atmosphere, 1,413 feet velocity per second; 60 lb. above atmosphere, 1,447 feet velocity per second; 100 lb. above atmosphere, 1,464 feet velocity per second.

(2) E. G. asks at what age German carp, nder favorable circumstances, spawn. A. Under favorable conditions, the second year.

(3) B. & P. ask for a receipt for making armine ink, such as is used with rubber hand stamps. A. Dissolve a sufficient quantity of good fuchsine (aniline red) by trituration in warm glycerine. See inks, in SUPPLEMENT, No. 157.

(4) G. S. H. asks: What will remove moke stains from ivory ? I have a valuable set of chessmen which have passed though a fire and were smoked badly. A. Immerse the pieces in benzine, and go over them with a brush. We know of nothing that will dissolve the sooty matter.

(5) A. J. asks: Can the dark part of the oon be photographed? A. Mr. Janssen has succeeded in pluotographing the lumière cendrée, or " earthshine" on the moon when three days old. In the photograph the "continents" were to be distinguished clearly from the "seas." This disposes of the view sometimes advanced, and held by some eminent astronomers, that the "new moon in the arms of the old " was an optical illusion.

(6) E. M. asks: When and where was the first telegraph used in this country ? A. The first tele graph line in this country was established on Long land, by Harrison A. Dyar. The signals wer by frictional electricity. We can't give exact date.

water being drawn off and returned to the retort, and this is repeated until distilled water ceases to come over mixed with oil. The rectification of the oil is performed without water, by the careful application of heat just sufficient to cause them to flow over pretty rapidly, so that they may be kept heated for as short a time as possible.

(9) H. R. asks how to make a strong paste that will not sour. A. Try the following: Four parts by weight of glue are allowed to soften in 15 parts of cold water for some hours, and then moderately heated till the solution becomes quite clear; 65 parts of boiling water are now added with stirring. In another vessel 30 parts of starch paste are stirred up with 20 parts of cold water, so that a thin milky fluid without lumps is obtained. Into this the boiling glue solution is poured, with constant stirring, and the whole is kept at the boiling temperature. After cooling, 10 drops of carbolic acid are added to the paste. The paste must be pre served in closed bottles to prevent evaporation of the water, and will in this way keep good for years.

(10) D. W. S. asks how to make and apply a good aquarium cement. A. A good cement is com-posed of 8 oz. of linseed oil, 4 oz. of tar, and 1 lb. of resin. These are allowed to melt together over a gentle fire. If too much oil is used, the cement will run down the angles of the agnarium; to obviate this, it should be tested before using by allowing a small quantity to cool under cold water, and if not found sufficiently firm, allowing to simmer longer, or have more tar and resin added. The cement should be poured in the angles of the aquarium while in a liquid state, but not when boiling, or it would most assuredly crack the s. The cement will become firm in a few minutes, and the aquarium may then be tilted up in a different position while a second angle is treated likewise. This omposition adheres firmly to the glass, is so pliant that it may be pressed into any shape by the fingers, and it does not communicate any poisonous quality to the water

(11) W. M. M. writes: 1. I have some giass pickle jars of 18 fluid ounces capacity, inside measure 3% diameter by 8% deep. I have nine jars, and can get eight more same as these, and I want to make a battery for experimenting electric light, electroplating, etc., and I want to know the best way to fit them up, using carbon and zinc ? A. For general experimental purposes a plunging battery is best; for continued use the bichromate battery with a porous cell is best; but your bottles would be too small to admit of the use of a porous cell. See SUPPLEMENTS, Nos. 157, 158, 159, for information in regard to batteries. 2. Is it best to put a zinc between two carbons. or a carbon between two gincs, or one carbon and one zinc, or is some other material better than carbon ? A. Use two carbons and one zinc, placing the zinc between the carbons. 8. What solution is best: Smee solution of water and acid, or bichromate of potash ? A. Use a bichromate solution and amalgamate the zincs. 4. If all the positives and all the negatives are connected. will it be the same, and give the same power, as if it was all one surface and in one cell ? A. Yes. 5, Is it quantity or intensity that is needed to produce light and heat ? A. For experiments with limited battery power the elements should be connected for intensity. 6. Can you give a description of a small powerful micropho one that will repeat ordinary conversation carried on in a room about 30x10x12-and is it. necessary to use an induction coil in the circuit of the microphone and receiver, and what kind of receiver can be used with it ? A. Use the Blake transmitter and the Bell receiver. An induction coil is essential.

(12) C. H. B. asks how to prepare the mixture used in the storm glasses sold on the streets. A. The mixture is made as follows: Place in a long narrow bottle or test tube, camphor gum, 21/2 drachms; spirits of wine. 11 drachms. When the camphor is dissolved add the following mixture: water, 9 drachms; saltpeter, 38 grains; sal ammoniac, 38 grains. Dissolv these salts in 9 drachms of water before mixing with the camphorated spirits, then shake the whole together. Cork up tight, and seal with wax, then make a small hole through the cork with a red hot needle, so as to have a small clean hole. Heavy atmosphere will cause the salts to rise; a light atmosphere, to fall. Cost of mixture, 10 or 15 cents.

(OFFICIAL.)

# INDEX OF INVENTIONS

Letters Patent of the United States were Granted in the Week Ending

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Baby Jumper, J. D. Snyder	Axle truss, wagon, M. W. Jory	343,915
<ul> <li>Bag machine, W. C. Cross. 231,55</li> <li>Bala tei botzeile, H. L. Howe. 235,00</li> <li>Ballang case, C. H. Merry. 235,00</li> <li>Ballang case, C. H. Merry. 235,00</li> <li>Band, wank, C. H. Mores. 235,07</li> <li>Bellover, J. H. F. Hanawita 255,08</li> <li>Bellover, J. H. F. Hanwita 255,08</li> <li>Bellover, J. H. F. Hanwita 255,08</li> <li>Bellover, J. H. F. Hanwita 255,08</li> <li>Bellover, J. H. S. Bhaw. 235,08</li> <li>Bilover, S. B. Bhaw. 235,08</li> <li>Bilover, S. B. Bhaw. 235,08</li> <li>Bilover, S. B. Bhaw. 235,08</li> <li>Bilover, S. Berger, S. Borger, 255,08</li> <li>Boot, See pulley block.</li> <li>Bloot. See soulley block.</li> <li>Boot. See soulley block.</li> <li>Boot. See soulley block.</li> <li>Boot. See soulley block.</li> <li>Boot holder, L. W. Noyse. 255,08</li> <li>Boot and aboe conclust, machine for flanging.</li> <li>Huribut &amp; Kennard. 253,00</li> <li>Boot and aboe conclust, machine for flanging.</li> <li>Huribut &amp; Kennard. 253,00</li> <li>Boot and aboe conclust, machine for flanging.</li> <li>Brack See alley brook. 245,70</li> <li>Brace See alley brook. 245,70</li> <li>Broce See alley brook. 245,70</li> <li>Brace See and brook. 245,70</li> <li>Brace See and brack. 255,70</li> <li>Brace See See and See and See and See and See and See a</li></ul>	Axle, vehicle, G. Schreyer	248.790
<ul> <li>Bag machine, W. C. Cross. 231,55</li> <li>Bala tei botzeile, H. L. Howe. 235,00</li> <li>Ballang case, C. H. Merry. 235,00</li> <li>Ballang case, C. H. Merry. 235,00</li> <li>Band, wank, C. H. Mores. 235,07</li> <li>Bellover, J. H. F. Hanawita 255,08</li> <li>Bellover, J. H. F. Hanwita 255,08</li> <li>Bellover, J. H. F. Hanwita 255,08</li> <li>Bellover, J. H. F. Hanwita 255,08</li> <li>Bellover, J. H. S. Bhaw. 235,08</li> <li>Bilover, S. B. Bhaw. 235,08</li> <li>Bilover, S. B. Bhaw. 235,08</li> <li>Bilover, S. B. Bhaw. 235,08</li> <li>Bilover, S. Berger, S. Borger, 255,08</li> <li>Boot, See pulley block.</li> <li>Bloot. See soulley block.</li> <li>Boot. See soulley block.</li> <li>Boot. See soulley block.</li> <li>Boot. See soulley block.</li> <li>Boot holder, L. W. Noyse. 255,08</li> <li>Boot and aboe conclust, machine for flanging.</li> <li>Huribut &amp; Kennard. 253,00</li> <li>Boot and aboe conclust, machine for flanging.</li> <li>Huribut &amp; Kennard. 253,00</li> <li>Boot and aboe conclust, machine for flanging.</li> <li>Brack See alley brook. 245,70</li> <li>Brace See alley brook. 245,70</li> <li>Broce See alley brook. 245,70</li> <li>Brace See and brook. 245,70</li> <li>Brace See and brack. 255,70</li> <li>Brace See See and See and See and See and See and See a</li></ul>	Baby jumper, J. D. Snyder	243,808
laie tie buckle. H. L. Howe	Bag machine, W. C. Cross.	243.857
Ball. See travet ball.       243,94         Band cutter and scatterer, H. A. Shaw.       243,94         Beef cattle, process of and appartus for hand- ling, slaghtering, and drassing, J. H. Sparrov 243,00       Bellows, J. H. F. Hank wits.         Borth, ship, S. Shaw.       243,96         Bit. See bridte bit.       243,96         Bloom, artificial Jamestown, T. O. Townsend.       243,96         Bok. See claipsible bost.       Torpedo bost.         Bolt. See claipsible bost.       Torpedo bost.         Bolt. See claipsible bost.       70,7000 bost.         Book cover shield, E. E. Johnson       243,96         Book cover shield, E. E. Johnson       243,96         Book and shoe counters, machine for flanging, Huribat & Kennard.       243,97         Boot and shoes, cording and turning machine for, P. Rainaud       243,74         Box. See allejh brace.       243,75         Box. See allejh brace.       243,77         Box. See allejh brace.       243,77         Box. See allejh brace.       243,78         Box. See allejh brace.       243,77         Box. See allejh brace.       243,78         Box. See allejh brace.       243,78         Box and shoes, ording and turning machine for flanging.       243,78         Box and shoes, ording and turning machine for flanging. </td <td>Bale tie buckle, H. L. Howe</td> <td>243,904</td>	Bale tie buckle, H. L. Howe	243,904
Ball. See target ball.       243.00         Band cutter and scatterer, H. A. Shaw.       243.00         Beard, wash, C. H. Moore       243.00         Berlows, J. H. F. Hanswitz       243.00         Berlows, J. H. F. Hanswitz       243.00         Berlows, J. H. F. Hanswitz       243.00         Bitt. See bridte bit.       243.00         Block. See polley block.       3000m, artificial Jamastown, T. O. Townsend.       343.00         Board. See electito circuit plano sounding board,       243.00         Book. See otala boller.       243.00         Book, detachably covered. W. L. Denning.       243.00         Book detachably covered. W. L. Denning.       243.00         Book and aboe boot.       200.00       243.01         Boot and shoes, covring and turning machine for flanging.       243.01         Boot and shoes, ovring and turning machine for p. P. Rainaud       243.01         Bottes, needking box for, S. Cary.       243.01         Box analing machine, F. Toepfer.       243.02         Bracelet. G. R. Howe.       243.00         Bracelet. W. H		
land cutter and scatterer, H. A. Shaw. 243.00 Badin, wah. C. H. Moore. 243.07 Beil cours, J. H. F. Hank wits. 243.00 Beilows, artificial Jamestown, T. O. Townsend. 243.00 Boord. See electric circuit plano sounding board, a witho board. 243.00 Boord. See electric circuit plano sounding board, a witho board. 243.00 Boord. See electric circuit plano sounding board, a witho board. 243.00 Book detachably covered. W. L. Deming. 243.00 Book detachably covered. W. L. Deming. 243.00 Book detachably covered. W. L. Deming. 243.00 Book and shoe counters, machine for flanging, Huribat & Kennard. 243.01 Boot and shoes, cording and turning machine for, P. Rainaud. 243.73 Botties, packing box for, S. Cary. 243.74 Boot. See allejb brace. 243.70 Box. See allejb brace. 243.70 Brocolet, G. R. Howa. 243.70 Brocolet, G. R. Howa. 243.70 Brocolet, G. R. Howa. 243.70 Brocolet, G. R. Howa. 243.70 Brother, H. W. Libbey. 243.73 Brithm, end H. H. Wares. 243.70 Brother, Med. H. W. Libbey. 243.73 Button machine, Z. B. Pierce 243.94 Button machine, Z. B. Pierce 243.94 Button machine, Z. B. Pierce 243.94 Button machine, Z. B. Pierce 243.94 Car coupling, J. B. Ament. 243.73 Button polishing machine, T. Guilford. 243.97 Button polishing machine, T. Guilford. 243.97 Cane. See tes canister. 243.94 Car, stock, H. V. Libbey. 243.94 Car coupling, J. B. Ament. 243.94 Car acoupling, J. B. Ament. 243.94 Couparity, J. J. Padden. 243.94 Couparity, J. B. Akwood. 243.95 Coupling, See ear oncoupling. Shaft co		
Basin, wash, C. H. Moore		040 004
Beef cattle, process of and appartus for hand- ling, staghtering, and drassing, J. H. Sparrov 243,00 Bellows, J. H. F. Hank witz 243,00 Bellows, J. E. F. Otto		
Har, elanghtering, and dressing, J. H. Sparrov 25,000         Bellow, J. H. F. Hanwitz       25,000         Borth, ship's, S. Shaw.       25,000         Bite, See bridle bit.       24,000         Block. See polley block.       Bloom, artificial Jamestown, T. O. Townsend.       35,810         Bour, See stand boller.       243,000         Boller. See stand boller.       243,000         Book, detachably covered. W. L. Deming.       243,000         Book odder, L. W. Noyes.       243,000         Book and shoes counters, machine for flanging.       243,000         Huribat & Kennard.       243,000         Boot and shoes, oorling and turning machine for .P. Rainaud.       243,000         Boot and shoes, oorling and turning machine for .P. Rainaud.       243,000         Bors anding machine, F. Toepfar.       243,000         Bracelet, G. R. Howa.       243,000 <t< td=""><td></td><td></td></t<>		
Bellows, J. H. F. Hannwitz       245.86         Borta, shipya, B. Shaw       245.86         Bitz, See bridle bit.       245.86         Bloom, articleal Jamastown, T. O. Townsend.       345.86         Boott, See palley block.       Bloom, articleal Jamastown, T. O. Townsend.       345.86         Boott, See Collapsible bost.       Torpedo bost.       545.86         Bolte. Cange and the conterner of the conten	Beef cattle, process of and apparatus for hand-	
Berth, ship's, S. Shaw	ling, slaughtering, and dressing, J. H. Sparrow	243,809
Berth, ship's, S. Shaw	Bellows, J. H. F. Hankwitz	243,886
Bicrele, E. C. F. Otto		
Bit. Bee bride bit. Block. See palley block. Bloom, artificial Jamestown, T. O. Townsend. 343,80 Board. See electric dirouit piano sounding board, switch board. Bout. See stand boller. Roth Esedang die. A. Pond. 343,00 Book order shield, E. E. Johason 243,00 Book detachably covered. W. L. Deming. 243,00 Book detachably covered. W. L. Deming. 243,00 Book and shoe sounters, machine for flanging. Huribut & Kennard. 253,00 Boot and shoes counters, machine for flanging. Huribut & Kennard. 253,00 Boot and shoes, oorling and turning machine for, P. Rainaud. 57, Sery. 243,75 Boox. See alleb brace. 253,70 Boraelet. G. R. Höwe. 253,70 Bracelet. G. R. Höwe. 254,70 Bracelet. R. H. T. Liber. 254,70 Butcho pointher machine. T. Gulford. 254,70 Cahe and anap book. F. L. Clark. 213,70 Cahe and fruit stand, revolving. J. C. Kooh. 237 Cahe and fruit stand, revolving. J. C. Kooh. 237,70 Cate coupling. J. B. Atwood. 254,50 Car. stock. J. J. Padden. 253,50 Car. stock. J. J. Padden. 253,50 Car. stock. J. J. Padden. 253,50 Car. stock. for making ornament. 253,50 Car. stock. for making ornamental. J. S. Atwood. 254,50 Car. stock for making nornamental. J. S. Atwood. 254,50 Car. See stand boiler cleaner. 254,5	Bicycle E C F Otto	248 950
<ul> <li>Bloch, See palley block.</li> <li>Bloom, artificial Jamestown, T. O. Townsend</li></ul>		440,000
Bloom, artificial Jamestown, T. O. Townsend, 343,81 Board. See electric dirout piano sounding board, switch board. Boat. See calapsible boat. Torpedo boat. Boller. See stand boller. Rot heading die. A. Pond. Book oter shield, E. E. Johason 345,70 Book detachably covered. W. L. Deming. 243,90 Book and ahoe sounters, machine for finging. Huribat & Kennard. 243,90 Boot and ahoe sounters, machine for finging. Huribat & Kennard. 243,90 Boot and ahoes, oorling and turning machine for, P. Rainaud. 243,90 Boots and ahoes, oorling and turning machine for, P. Rainaud. 343,70 Botz, See alle box. Bracelet G. E. Biohards. 243,90 Bracelet G. E. Biohards. 243,97 Bracelet G. E. Biohards. 243,79 Bracelet G. E. Biohards. 243,97 Bracelet, G. E. Biohards. 243,97 Bracelet G. E. Biohards. 243,97 Bracelet gauge, W. H. Howes. 243,70 Bracelet gauge, W. H. Howes. 243,70 Bracelet gauge, W. H. Howes. 243,97 Bracelet gauge, W. H. Howes. 243,97 Bracke and anap book, F. L. Clark. 243,97 Button molifer, W. H. Howes. 243,97 Button moliher, Z. B. Pierco. 243,77 Button polishing machine, T. Guilford. 243,77 Cane coupling, J. E. Ament. 243,98 Cane so becurs. W. I. Taylor. 243,98 Cane so becurs. W. I. Taylor. 243,98 Cane so becurs. W. I. Taylor. 243,98 Can, Store trait stand, revolring, J. C. Koob. 243,78 Car, stored, H. M. Biohardson. 243,97 Car coupling, J. B. Ament. 243,98 Car, stored Hury, W. A. Cushman. 243,97 Car, toron Hurg, J. B. Ament. 243,98 Car, stored Hurg, J. B. Ament. 243,98 Char,		
Board. See electric dircuit piano sounding board, switch board. Boute. See stand boller. Both resulting die. A. Pond. 243,007 Book cover shield, E. E. Johnson 243,007 Book cover shield, E. E. Johnson 243,007 Book and shoe counters, machine for fianging, Huribut & Kennard. 243,007 Boot and shoes counters, machine for fianging, Bottas packing box for, S. Cary. 243,007 Bottas packing box for, S. Cary. 243,007 Bottas packing box for, S. Cary. 243,007 Bottas and shoes, cording and turning machine for, P. Rainaud. 255,007 Brace. See aleigh brace. 243,007 Bracelet, G. R. Howe. 243,007 Bracelet, G. L. H. Thomas. 244,049 Button, noithing, machine, T. Guilford. 243,007 Cake and snap book, F. L. Clark. 243,007 Cake and fruit stand, revolving, J. C. Koch. 243,07 Caniter. See tes canister. 243,047 Caniter. See tes canister. 243,047 Car coupling, J. E. Ament. 243,047 Car coupling, J. E. Arbona. 243,047 Car coupling, J. E. Arbona. 243,047 Car coupling, J. E. Arbona. 243,047 Car travel, J. B. Atwood. 243,077 Cartrer. See tes canister. 243,047 Car travel, J. B. Atwood. 243,077 Cartrer. See tes canister. 243,047 Car travel, J. B. Atwood. 243,077 Cartrer. See tes canister. 243,047 Car travel, J. B. Atwood. 243,077 Cartrer. Carter. 243,047 Cartrer. 244,047 Cartrer. 243,047 Convertible		
svitch board. Boit. See Stand boller. Boit. See Stand boller. Book cover shield, E. E. Johnson 243.07 Book, detachably covered. W. L. Deming. 243.07 Book detachably covered. W. L. Deming. 243.07 Book and shoe southers, machine for flanging. Huribat & Kennard. 2007. Boot and shoes coving and turning machine for, P. Rainaud		343,516
Boot. See Collapsible boat. Torpedo boat.         Roller. See stand boller.         Book cover shield, E. E. Johason       243,957         Book cover shield, S. E. Johason       243,957         Book holder, L. W. Noyes.       243,957         Book holder, L. W. Noyes.       243,957         Book and shoes counters, machine for flanging, Huribut & Kennard.       243,957         Boot and shoes, cording and turning machine for, P. Rainand.       243,957         Boox andigmachine, F. Toepfer.       243,957         Boox andigmachine, F. Toepfer.       243,957         Bora naling machine, F. Toepfer.       243,957         Bracelet, G. R. Hiowe.       245,707         Bracelet, J. N. Boots.       345,967         Bracelet, C. E. Bichards.       345,967         Brochet, J. N. Boots.       345,967         Button, polithing machine, T. Guilford.       245,967         Button, polithing machine, T. Guilford.       245,967         Button, polithing machine, T. Guilford.       245,967         Car. souping,		
Boiler. See stand boller.       243.07         Book cover shield, E. E. Johnson       243.07         Book, detachably covered, W. L. Deming       243.07         Book and shoe sounters, machine for flanging.       243.07         Huribot & Kennard       243.07         Boot and shoes could and turning machine       243.07         Bottes a sching box for, S. Cary.       243.73         Bottes packing box for, S. Cary.       243.73         Bottes packing box for, S. Cary.       243.74         Box, Ree axle box.       243.74         Bracelet, G. R. Howe.       243.74         Bracelet, G. E. Bichards       243.74         Bracelet, G. E. Bichards       243.74         Brooler, M. H. Howes       243.74         Brooler, M. H. J. N. Books.       245.71         Brooler, M. Hill, Jr.       243.71         Button machine, Z. B. Pierce       243.72         Cake and fruit stand, revolving, J. C. Koch	switch board.	
Rott beading die. A. Fond.       943.70         Book, detachably covered. W. L. Deming.       243.70         Book holder, L. W. Noyes.       243.70         Book holder, L. W. Noyes.       243.70         Boot and aboe scenard.       243.75         Boot and aboe hoel Brown & Feover       243.42         Boot and aboes, cording and turning machine       707.7.         For. P. Rainaud       243.75         Bott and aboes.       243.75         Bottes, See alle box.       243.70         Bracelet, G. R. Howe.       243.70         Bracelet, G. R. Howe.       243.70         Bracelet, G. R. Howes.       243.70         Bracelet, J. N. Boots.       243.80         Bracelet gauge, W. H. Howes       343.90         Broton bolder, W. Hill Jr.       345.90         Bucton polising machine, T. Guilford.       343.70         Button polising machine, T. Guilford.       343.70         Button polising machine, T. Sprick.       243.92         Camer obsectra. W. I. Taylor.       243.93         Camer obsectra. W. Jaylor       243.92	Boat. See Collapsible boat. Torpedo boat.	
Rott beading die. A. Fond.       943.70         Book, detachably covered. W. L. Deming.       243.70         Book holder, L. W. Noyes.       243.70         Book holder, L. W. Noyes.       243.70         Boot and aboe scenard.       243.75         Boot and aboe hoel Brown & Feover       243.42         Boot and aboes, cording and turning machine       707.7.         For. P. Rainaud       243.75         Bott and aboes.       243.75         Bottes, See alle box.       243.70         Bracelet, G. R. Howe.       243.70         Bracelet, G. R. Howe.       243.70         Bracelet, G. R. Howes.       243.70         Bracelet, J. N. Boots.       243.80         Bracelet gauge, W. H. Howes       343.90         Broton bolder, W. Hill Jr.       345.90         Bucton polising machine, T. Guilford.       343.70         Button polising machine, T. Guilford.       343.70         Button polising machine, T. Sprick.       243.92         Camer obsectra. W. I. Taylor.       243.93         Camer obsectra. W. Jaylor       243.92	Boiler. See stand boiler.	
Book cover shield, E. E. Johnson       243.00         Book holder, L. W. Noyes.       243.00         Book and aboe counters, machine for flanging.       243.01         Boot and aboe heel Brown & Feover       243.01         Boot and aboes, coroling and turning machine       243.01         Boot and aboes, coroling and turning machine       243.01         Bottes, packing box for, S. Cary.       243.02         Box nalling machine, F. Toepfer.       243.00         Bracelet, C. R. Howe.       243.01         Bracelet, C. R. Howe.       243.01         Bracelet, C. R. Blobards       243.02         Brotler, meat, H. W. Libbey       243.01         Brotler, meat, H. W. Libbey       243.01         Brotler, Mark, H. W. Libbey       243.01         Button machine, Z. B. Pierce       243.02         Can reaming can. Milk can.       243.02         Cans act proveled.       243.02         Car coupling, J. H. Shorman       243.02         Car coupling, J. Chanon & Robison       243.02         Car coupling, J. Chanon & Robison       243.02         Car actage, M. Morie		949 047
Book Adder, L. W. Nores.       243.92         Boot and shoe sounters, machine for flanging.       143.92         Boot and shoe heel. Brown & Peover       243.91         Boot and shoe heel. Brown & Peover       243.91         Boot and shoe heel. Brown & Peover       243.91         Boot and shoe heel. Brown & Peover       243.75         Bott and shoe sources.       243.75         Bott and shoe sources.       243.75         Bott and shoe sources.       243.70         Brace See aleigh Drass.       243.92         Bracelet, G. R. Howe.       243.70         Bracelet, J. N. Boots.       243.92         Brochet and snap hook, F. L. Clark.       243.70         Brochet and snap hook, F. L. Clark.       243.70         Button machine, Z. B. Pierce       243.73         Button machine, Z. B. Pierce       243.73         Button machine, Z. B. Pierce       243.74         Button polishing machine, T. Guilford.       243.94         Button machine, J. T. Mayor.       243.94         Button polishing machine, T. Guilford.       243.94         Button machine, Z. B. Pierce       243.94         Car brake, friction, T. Sprick       243.94         Car coupling, J. B. Ament       243.94         Car coupling, J. B. Ament<	There academic die. A. Fond	440,901
Book holder, L. W. Nores.       243,22         Book and shoe courters, machine for finging,       243,91         Book and shoes, coroling and turning machine       767, P. Rainaud.         Box, See acle box.       243,72         Box, See acle box.       243,72         Box, See acle box.       243,52         Box nalling machine, F. Toepfer.       243,50         Bracelet, G. R. Howe.       243,70         Bracelet, G. E. Bichards       243,70         Bracelet, G. E. Bichards       243,70         Brooler, mest, H. W. Libey.       243,71         Broom holder, W. Hill, Jr.       243,72         Broom holder, W. Hill, Jr.       243,72         Bucke bottom, reversible well, W. H. Boce       243,70         Button machine, Z. B. Pierce       243,72         Car, and are, See tes canister.       243,72         Car, and are, See tes canister.       243,72         Car oupling, J. B. Ament       243,92         Car, ratiway, A. F. Martel.       243,92 <td>BOOK COVER Shield, E. E. Jonnson</td> <td>243.706</td>	BOOK COVER Shield, E. E. Jonnson	243.706
Boot and shoe neouters, machine for flanging, Huribut & Kennard. 243,91 Boots and shoe heel. Brown & Peover 243,94 Boots and shoes, oording and turning machine for, P. Rainaud. 243,75 Botties, packing hox for, S. Cary. 243,75 Botties, packing hox for, S. Cary. 243,75 Botties, Boe alegh brace. Brace. See alegh brace. Bracelet, G. R. Howe. 243,70 Bracelet, J. N. Books. 243,98 Broiler, mest, H. W. Libber. 243,71 Broche and snap book, F. L. Clark. 243,78 Buckle and snap book, F. L. Clark. 243,70 Button, cuff, L. H. Thomas. 244,99 Button machine, Z. B. Pierce. 243,73 Button machine, Z. B. Pierce. 243,73 Camera obscurs. W. I. Taylor. 243,73 Canser aoscurs. W. I. Taylor. 243,73 Canser aoscurs. W. J. Taylor. 243,73 Car coupling, J. B. Amento 243,73 Car coupling, J. B. Amento 243,73 Car, See creanning can. Milk can. 243,74 Car, rairway, A. F. Martel. 243,95 Car, rion railway, W. A. Cushman. 243,75 Car, rairway, J. F. Martel. 243,95 Car, rion railway, W. A. Cushman. 243,75 Car, rairway, A. F. Martel. 243,95 Car, rion railway, W. A. Cushman. 243,75 Car, raitok, M. O'Nesi. 243,95 Car, riotek, J. J. Padden. 243,95 Car, riotek, J. J. Padden. 243,95 Car, riotek, J. J. Padden. 243,95 Cartrage, child's, H. M. Richardson. 243,97 Casting stereotype plates, monif for, W. Scott. 243,95 Chains and bracelets, manufacture of ornamen- tal, J. H. Totten. 243,96 Chains, stock for making ornamental, J. R. & T. W. Yeeley. 243,96 Chains, attereotype plates, monif for, W. Scott. 243,96 Chains and bracelets, manufacture of caname- tal, J. Totten. 243,96 Chains, diver, S. B. Schneider. 243,97 Chains, Bee can outgo for, C. G. Emery. 243,97 Chains, Bee can outgo for, C. G. Emery. 243,97 Chains, Bee band cutter. 243,97 Convertible chair. A Goeler. 243,97 Convertible chair. B. Williams. 243,97 Convertible chair. B. Williams. 243,97 Convertible chair. B. Williams. 243,97 Coupling, See car coupling, Shaft c		
Huribut & Konnard       243,94         Boots and shoes, oording and turning machine       243,94         Boots and shoes, oording and turning machine       243,75         Box, Ree aking box for, B. Cary.       243,75         Box, See aking box for, B. Cary.       243,76         Bracelet, G. R. Howe.       243,70         Bracelet, M. V. Libbey.       243,71         Broom holder, W. Hill, Jr.       343,70         Buckte bottom, reversible well, W. H. Roe.       243,71         Button machine, Z. B. Pierce.       243,72         Button machine, Z. B. Pierce.       243,72         Button machine, T. Sprick.       243,73         Camera obscura. W. I. Taylor.       243,83         Cams rake, rifetion, T. Sprick.       243,73         Car coupling, J. B. Ament       243,83         Car oupling, J. B. Ament       243,83         Car oupling, J. Mason & Robison       243,73         Car coupling, J. Chason & Robison       243,73         Car coupling, J. B. Amoetal.       243,93     <	Book holder, L. W. Noyes	243,955
Huribut & Konnard       243,94         Boots and shoes, oording and turning machine       243,94         Boots and shoes, oording and turning machine       243,75         Box, Ree aking box for, B. Cary.       243,75         Box, See aking box for, B. Cary.       243,76         Bracelet, G. R. Howe.       243,70         Bracelet, M. V. Libbey.       243,71         Broom holder, W. Hill, Jr.       343,70         Buckte bottom, reversible well, W. H. Roe.       243,71         Button machine, Z. B. Pierce.       243,72         Button machine, Z. B. Pierce.       243,72         Button machine, T. Sprick.       243,73         Cans era eraming can. Milk can.       243,73         Car orauging, Johnson & Robison.       243,73         Car orauging, Johnson & Robison.       243,73         Car, ratock, M. O'Neal       243,74         Car, ratock, J. J. Padden.       243,94         Car orauging, Johnson & Robison.       243,73         Car orauging, Johnson & Robison.       243,76	Boot and shoe counters, machine for flanging,	
Boot and aboes, oorling and turning machine for, P. Rainand	Hurlbut & Kennard	243,917
Boote and shoes, coroling and turning machine for, P. Rainand	Boot and shoe heel. Brown & Poower	243 845
for, P. Rainaud       243,73         Botzies, packing box for, B. Cary.       243,73         Box, Ree azle box.       Box nalling machine, F. Toepfer       243,93         Brace. Ecs alleigh brace.       243,93         Bracelet, G. R. Howe.       243,93         Bracelet, J. N. Bocks.       243,93         Brochet and snap book, F. L. Clark.       243,73         Buckto and snap book, F. L. Clark.       243,73         Button pullsing machine, T. Guilford.       243,93         Button machine, Z. B. Pierce       243,73         Camera obscura. W. I. Taylor.       243,93         Car oupling, J. E. Ament.       243,93         Car, atock, M. O'Neal       243,93         Car oupling, J. E. Ament.       243,94         Car oupling, J. C. Koohson.       243,94         Car oupling, J. C. Moshan       243,94         Car oupling, J. C. Moshan       243,94		
Botz is epsking hox for, S. Cary.       243,755         Box nalling machine, F. Toepfer.       243,957         Bracelet, G. R. Howes.       243,757         Bracelet, Bauge, W. H. Howes       243,757         Brachet, H. W. Libbey       243,757         Bucket bottom, reversible well, W. H. Boe.       243,757         Button machine, Z. B. Pierce.       243,757         Button polishing machine, T. Guilford.       243,757         Button polishing machine, T. Guilford.       243,757         Cake and range book, F. L. Clark.       243,757         Button machine, Z. B. Pierce.       243,757         Button polishing machine, T. Guilford.       243,757         Cake and right sand, revolving, J. C. Koch.       243,767         Car brake, friction, T. Sprick.       243,767         Car coupling, J. B. Ament.       243,987         Car coupling, J. B. Ament.       243,987         Car, raiway, A. F. Marcel.       243,987         Car, raiway, A. F. Marcel.       243,987         Car, raiway, A. F. Marcel.       243,987         Car, r		
Box nalling machine, F. Toepfer.       243,907         Brace. See aleigh brace.       243,907         Bracelet, G. R. Howe.       243,707         Bracelet, C. E. Bichards       243,707         Bracelet, C. E. Bichards       243,707         Brocelet gauge, W. H. Hoves       343,007         Brochet and Ger, W. Hill, Jr.       343,987         Buckte and snap book, F. L. Clark.       213,707         Button, cuff, L. H. Thomas       244,997         Button machine, Z. B. Pierce       243,717         Button machine, T. Guilford       243,737         Button machine, T. Taylor.       243,937         Camera obscurs. W. I. Taylor.       243,937         Car brake, friction, T. Sprick       243,937         Car coupling, J. E. Ament       243,937         Car coupling, J. E. Ament       243,937         Car, ron railway, W. A. Cushman       243,937         Car, street railway, V. Robinson       243,937         Carride, A. Mol'Neil       243,937         Carride, J. E. Atwood       243,937         Carride, J. E. Atwood       243,937         Car, street railway, V. Robinson       243,937         Carride, Guid's, H. M. Richardson       343,937         Carratage, Old'a, H. M. Richardson       343,937 <td></td> <td></td>		
Box nalling machine, F. Toepfer.       243,90         Brace. See aleigh brace.       243,70         Bracelet, G. E. Howe.       243,70         Bracelet, G. E. Howe.       243,70         Bracelet, G. E. Howe.       243,00         Bracelet gauge, W. H. Howes       243,00         Brithe bit, J. N. Books.       243,00         Broller, mest, H. W. Libbey.       243,01         Brochet soutom, reversible well, W. H. Roe.       243,70         Bucket bottom, reversible well, W. H. Roe.       243,70         Button machine, Z. B. Pierce.       243,71         Button machine, Z. B. Pierce.       243,72         Button polishing machine, T. Guilford.       243,72         Button polishing machine, T. Guilford.       243,72         Cans ere areaming can. Milk can.       243,81         Cans, see crasming can. Milk can.       243,81         Car coupling, J. B. Ament       243,82         Car coupling, J. B. Ament       243,93         Car, raiway, A. F. Martel.       243,93         Car, raiway, A. F. Martel.       243,93         Car, atreet railway, W. Robinson       243,72         Car stock, J. J. Padden       243,96         Car, atreet railway, W. Robinson       243,76         Car, stock, J. J. Anden		248,756
Braceles, G. R. Horee.       23,70         Bracelet, C. E. Richards       23,77         Brotler, mest, H. W. Hoves       23,77         Brotler, mest, H. W. Libbey       23,77         Buckle and snap book, F. L. Clark       213,77         Button machine, Z. B. Pierce       23,72         Button polishing machine, T. Guilford       243,70         Camera obscura, W. I. Taylor       243,81         Cans opping, J. E. Ameent       243,92         Car coupling, J. H. Sherman       243,92         Car coupling, D. H. Sherman       243,92         Car, stock, J. J. Padden       243,92         Car, stock, M. O'Neal       243,92         Car, stock, J. J. Padden       243,92         Cartiage, P. Dansereau       243,92         Cartiage, P. Dansereau       243,92         Cartiage, Shild's, H. M. Richardson       243,92         Car		
Braceles, G. R. Horee.       23,70         Bracelet, C. E. Richards       23,77         Brotler, mest, H. W. Hoves       23,77         Brotler, mest, H. W. Libbey       23,77         Buckle and snap book, F. L. Clark       213,77         Button machine, Z. B. Pierce       23,72         Button polishing machine, T. Guilford       243,70         Camera obscura, W. I. Taylor       243,81         Cans opping, J. E. Ameent       243,92         Car coupling, J. H. Sherman       243,92         Car coupling, D. H. Sherman       243,92         Car, stock, J. J. Padden       243,92         Car, stock, M. O'Neal       243,92         Car, stock, J. J. Padden       243,92         Cartiage, P. Dansereau       243,92         Cartiage, P. Dansereau       243,92         Cartiage, Shild's, H. M. Richardson       243,92         Car	Box nailing machine, F. Toepfer	243,997
Bracelet, G. R. Howe.       243.70         Bracelet gauge, W. H. Howes       243.70         Bracelet gauge, W. H. Howes       243.70         Bracelet gauge, W. H. Howes       243.70         Bridle bit, J. N. Books       243.90         Brother, mest, H. W. Libbey       243.71         Brother, T. S. N. Books       243.93         Bucket bottom, reversible well, W. H. Boe       243.77         Bucket bottom, reversible well, W. H. Boe       243.77         Button off, L. H. Thomas       243.93         Button polishing machine, T. Gullford       243.72         Cans creaming can. Milk can.       243.94         Can socura, W. I. Taylor.       243.94         Car opuling, J. E. Ameent       243.94         Car oupling, J. E. Ameent       243.94         Car, ron railway, W. A. Cushman       243.76         Car, rion railway, W. A Cushman       243.94         Car, stock, M. O'Neai       243.94         Car, stock, M. O'Neai       243.94         Cartiage, child's, H. M. Richardson       243.94         Cartiage, child's, H. M. Richardson <td></td> <td></td>		
Bracelet, C. E. Bichards		243.704
Bracelet gange, W. H. Hoves		
Brites. See est brake.       194,89         Bridle bit, J. N. Books.       243,81         Brooler, meat, H. W. Libbey.       243,71         Brocket bottom, reversible well, W. H. Roe.       243,73         Buckto totom, reversible well, W. H. Roe.       243,73         Buttom machine, Z. B. Pierce       243,73         Buttom anchine, Z. B. Pierce       243,73         Camera obsoura. W. I. Taylor.       243,83         Can. See creaming can. Milk can.       243,83         Can oupling, J. E. Ament.       243,73         Car coupling, J. E. Ament.       243,93         Car, stock, M. O'Neal.       243,93         Car, stock, J. J. Padden.       243,93         Car, stock, J. J. Padden.       243,93         Carriage, P. Dansereau.       243,93         Cartiage, Seidl'a, H. M. Richardson.       243,93         Cartiage, Seidl'a, H. M. Richardson.       243,94         Carriage, P. Dansereau.       243,94         Carriage, Seidl'a, H. M. Richardson.       243,94         Casting stereotype plates, monda for, W. Soott.       <		
Brdle bit, J. N. Books		<b>363,905</b>
Broiler, mest, H. W. Libbey		
Broiler, mest, H. W. Libbey		
Broom holder, W. Hill, Jr		
Buckle and snap book, F. L. Clark. 213,75 Buckle and snap book, F. L. Clark. 213,75 Button, enff, L. H. Thomas. 248,47 Button machine, Z. B. Pierce. 243,75 Camera obsoura. W. I. Taylor. 243,85 Camera obsoura. W. I. Taylor. 243,85 Camera obsoura. W. I. Taylor. 243,85 Camera obsoura. W. J. Sprick. 245,75 Car coupling, J. E. Ament. 243,65 Car coupling, J. E. Ament. 243,85 Car coupling, D. H. Sherman. 243,95 Car, roin railway, W. A. Cushman. 243,76 Car, roin railway, W. A. Cushman. 243,76 Car, stock, J. J. Padden. 243,95 Car, stock, M. O'Neal. 243,95 Car, stock, J. J. Padden. 243,95 Car, stock, J. J. Padden. 243,95 Car, stock, J. J. Padden. 243,95 Carriage, P. Dansereau. 243,96 Carriage, P. Dansereau. 243,96 Carriage, P. Dansereau. 243,96 Cartiage, Selid's, H. M. Richardson. 243,97 Cartiage, Selid's, H. M. Richardson. 243,97 Cartiage, Selid's, H. M. Richardson. 243,97 Chains and bracelets, manufacture of ornamen- tal, J. H. Totten. 243,96 Chains. stock for making ornamental, J. B. & T. W. Feeler. 243,96 Chains. stock for making ornamental, J. B. & T. W. Feeler. 243,97 Chains. Bee convertible chair. Rocking chair. Opera chair. Chicken cholers compound, D. Croan. 243,87 Chains. Bee onvertible chair. Rocking chair. Opera chair. Chicken cholers compound, D. Croan. 243,97 Chack, drill, D. Slate. 243,97 Claup, J. C. Kile. 243,97 Claup. See hitch clamp. 243,97 Claup. See hitch clamp. 243,97 Claup. See store volope for, C. G. Emery. 243,97 Claup. See store boller cleaner. Wheat cleaner. Clock spring, E. Horton. 243,97 Claup. See store obler. 243,97 Claup. See store closet. 243,97 Claup. See other cleaner. 243,97 Correctible chair, S. Williams 244,07 Convertible chair and cot, E. Hatch. 243,97 Coult stor the coh, machine for outting green. V. Barker	Broom holder. W. Hill Jr	849 900
Buckle and anap book, F. L. Clark. 243,75 Button, cuff. L. H. Thomas 248,69 Button machine, Z. B. Pierce. 248,73 Button polishing machine, T. Guilford. 243,70 Cake and fruit stand, revolving, J. C. Kooh. 243,75 Camera obscura. W. I. Taylor. 243,80 Can. See creaming can. Milk can. 243,80 Car brake, friction, T. Sprick. 243,70 Car coupling, J. E. Ament. 243,80 Car coupling, J. E. Ament. 243,90 Car coupling, J. E. Ament. 243,90 Car, stook, J. J. Padden. 243,90 Carriage, child's, H. M. Richardson. 243,90 Carriage, child's, H. M. Richardson. 243,90 Cartiage, child's, H. M. Richardson. 243,90 Charing stereotype plates, mould for, W. Scott. 243,90 Chains and bracelets, manufacture of ornamen- tal, J. H. Totten. 243,90 Chains and bracelets, manufacture of ornamen- tal, J. H. Totten. 243,90 Chains stock for making ornamental, J. R. & T. W. Feeley. 243,90 Chains, stock for making ornamental, J. R. & T. W. Feeley. 243,90 Chains, stock for making ornamental, J. R. & T. W. Feeley. 243,90 Claur. 16, S. Rominger. 243,90 Claur. 16, S. Rominger. 243,90 Claur. 16, S. Rominger. 243,90 Claur. 243,90 Claur. 16, S. Rominger. 243,90 Claur. 243,90		
Button, cuff, L. H. Thomas		
Button machine, Z. B. Pierce. 243, 27 Button polishing machine, T. Guilford. 243, 70 Cake and fruit stand, revolving, J. C. Koch. 243, 75 Camera obscura, W. I. Taylor. 243, 75 Cans. See creaming can. Milk can. 243, 75 Can. See tea canister. 243, 95 Car coupling, J. E. Ament. 243, 75 Car coupling, J. E. Ament. 243, 75 Car, rion railway, W. A. Cushman. 243, 76 Car, rion railway, W. A. Cushman. 243, 76 Car, stock, M. O'Nreal. 243, 95 Car, stock, M. O'Nreal. 243, 95 Car, stock, M. O'Nreal. 243, 95 Car, stock, J. J. Padden. 243, 96 Car, stock, J. J. Padden. 243, 96 Car, stock, J. J. Padden. 243, 96 Car, stock, J. J. Padden. 243, 96 Carriage, child's, H. M. Richardson. 243, 97 Cartings, child's, H. M. Richardson. 243, 96 Cartings, child's, H. M. Richardson. 243, 96 Casting stereotype plates, mould for, W. Scott. 243, 96 Chains and bracelets, manufacture of ornamen- tal, J. H. Totten. 243, 96 Chains and bracelets, manufacture of ornamen- tal, J. H. Totten. 243, 96 Chuak. drill, G. S. Rominger. 243, 96 Clayar end cutter, J. Ochs. 243, 96 Clayar end cutter, J. Ochs. 243, 96 Clayar lighter, B. Schneider. 243, 96 Clayar lighter, S. W. Wardwell, Jr. 243, 96 Clayar stock stop, F. Schrumpf . 243, 97 Claner, See steam boller cleaner. Whest cleaner. Clooke stop, F. Schrumpf . 243, 98 Coupling. See car coupling. Shaft coupling. Hose coupling. Ches. 243, 96 Coupling. See car coupling. Shaft coupling. Hose coupling. Cure. 243, 96 Coupling. Se	Buckle and shap dook, F. L. UAPK	410,100
Button pollshing machine, T. Gullford	Button, cun, L. H. Thomas	248,996
Cake and fruit stand, revolving, J. C. Koch.       243 75         Camera obscura. W. I. Taylor.       243,611         Can. See creaming can. Milk can.       243,611         Can brake, friction, T. Sprick       243,721         Car coupling, J. E. Ament       243,822         Car coupling, J. E. Ament       243,823         Car coupling, J. E. Ament       243,723         Car, rion railway, W. A. Cushman       243,723         Car, stock, J. J. Padden.       243,823         Car, stock, J. J. Padden.       243,823         Carriage, P. Dansereau.       243,823         Carriage, ehild's, H. M. Richardson.       243,924         Carriage, child's, H. M. Richardson.       243,924         Carriage, child's, H. M. Richardson.       243,924         Caster, J. Toler       243,924         Casting stereotype plates, mould for, W. Soott.       243,924         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,924         Chair. Bee convertible chair. Rocking chair.       924,704         Chair. Bee convertible chair. Rocking chair.       924,704         Chair. Bee convertible chair.       243,924         Chair. Bee convertible chair.       243,924         Chair. Bee convertible chair.       243,924         Chur, drill, G.		
Cake and fruit stand, revolving, J. C. Koch.       243 75         Camera obscura. W. I. Taylor.       243,611         Can. See creaming can. Milk can.       243,611         Can brake, friction, T. Sprick       243,721         Car coupling, J. E. Ament       243,822         Car coupling, J. E. Ament       243,823         Car coupling, J. E. Ament       243,723         Car, rion railway, W. A. Cushman       243,723         Car, stock, J. J. Padden.       243,823         Car, stock, J. J. Padden.       243,823         Carriage, P. Dansereau.       243,823         Carriage, ehild's, H. M. Richardson.       243,924         Carriage, child's, H. M. Richardson.       243,924         Carriage, child's, H. M. Richardson.       243,924         Caster, J. Toler       243,924         Casting stereotype plates, mould for, W. Soott.       243,924         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,924         Chair. Bee convertible chair. Rocking chair.       924,704         Chair. Bee convertible chair. Rocking chair.       924,704         Chair. Bee convertible chair.       243,924         Chair. Bee convertible chair.       243,924         Chair. Bee convertible chair.       243,924         Chur, drill, G.	Button polishing machine, T. Guilford	243,702
Camers obscura. W. I. Taylor.       243,613         Can. See creaming can. Milk can.       243,643         Can. See tea canister.       243,747         Car brake, friction, T. Sprick       243,747         Car coupling, J. E. Ament       243,747         Car coupling, J. E. Ament       243,747         Car coupling, D. H. Sherman       243,747         Car, rintway, A. F. Martel.       243,745         Car, stock, J. J. Padden.       243,945         Car, stock, J. J. Padden.       243,945         Carriage, child's, H. M. Richardson.       243,945         Cartriage, child's, H. M. Richardson.       243,945         Caster, J. Toler       243,946         Caster, J. Toler       243,946         Chains and bracelets, manufacture of ornamental, J. H. Totten.       243,947         Chains stock for making ornamental, J. B. & T.       W. Feeley         Chair, See convertible chair. Rocking chair.       243,947         Chuck, drill, D. Slate.       243,947         Chuck, drill, D. Slate.       243,947         Chur, J. C. Kile       243,947         Chairs and bracelets, manufacture of ornamental.       243,947         Chairs and bracelets, manufacture of ornamental.       243,947         Chairs and bracelets, manufacture of ornamental.	Cake and fruit stand. revolving. J. C. Koch	243 781
Can. See creaming can. Milk can.         Canjster. See tea canister.         Cap, H. Neufeld.         Car coupling, J. E. Ament         Car coupling, J. E. Ament         Car coupling, Jonson & Robison         243,02         Car coupling, D. H. Sherman         Car, raiway, A. F. Martel.         243,02         Car, stock, M. O'Nreal.         Car, stock, M. O'Nreal.         Car, stock, J. J. Padden.         Carriage, P. Dansereau.         Carriage, Child's, H. M. Richardson.         Carriage, Child's, H. M. Richardson.         Caster, J. Toler         Castage, See baling case. Piano case.         Castar, J. Toler         Castar, J. Toler         W. Feley         Chains and bracelets, manufacture of ornamental, J. H. Totten         Chains stock for making ornamental, J. R. & T.         W. Feley         Chakr. Boe convertible chair. Bocking chair.         Opera chair.         Opera chair.         Chakr. Boheneder.         243,00         Chaun, J. C. Kile.         Chakr. Boheneder.         243,00		
Canister. See tea canister. Cap. L. Neufeld		440,010
Cap, H. Neufeld.       243.94         Car coupling, J. E. Ament       243.70         Car coupling, J. H. Sherman       243.92         Car, ron railway, W. A. Cushman       243.92         Car, stock, M. O'Neal.       243.92         Car, stock, J. J. Padden.       243.92         Car, stock, J. J. Padden.       243.92         Car, stock, J. J. Padden.       243.92         Carriage, P. Dansereau.       243.92         Carriage, Child's, H. M. Richardson.       243.92         Carriage, Child's, H. M. Richardson.       243.92         Carster, J. Toler       243.92         Caster, J. Toler       243.92         Caster, J. Toler       243.92         Chains and bracelets, manufacture of ornamental, J. H. Totten       243.92         Chains stock for making ornamental, J. R. & T.       243.92         Chairs stock for making ornamental, J. R. & T.       243.92         Chuak, drill, G. B. Rominger.       243.92         Chuak, drill, G. S. Borninger.       243.92         Chuar, drill, G. S. Borninger.       243.92         Chuar, drill, G. S. Borninger.       243.92         Clagar end cutter, J. Ochs       243.92         Clagar end cutter, J. Ochs       243.92         Clagar lighter. B. B. Schneider		
Car brake, friction, T. Sprick.       243,63         Car coupling, J. E. Ament.       243,63         Car coupling, D. H. Sherman       243,70         Car, ron railway, W. A. Cushman.       243,70         Car, river, A. F. Martel.       243,85         Car, stock, J. J. Padden.       243,86         Carriage, P. Dansereau.       243,86         Carriage, child's, H. M. Richardson.       243,96         Carriage, child's, H. M. Richardson.       243,96         Caster, J. Toler       243,96         Casting stereotype plates, mould for, W. Scott.       243,96         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,96         Chains, stock for making ornamental, J. B. & T.       W. Feeley         Chair, Bee convertible chair. Rocking chair.       0pera chair.         Opera chair.       243,96         Chuck, drill, G. B. Rominger.       243,96         Churn, J. C. Kile       243,96         Chair. Bee convertible chair. Bocking chair.       0pera chair.         Chicken cholers compound, D. Croan.       243,96         Churn, J. C. Kile       243,96		
Car coupling, J. E. Ament       243,62         Car coupling, D. H. Sherman       243,07         Car, iron railway, W. A. Cushman       243,62         Car, iron railway, W. A. Cushman       243,62         Car, stock, M. O'Neal       243,62         Car, stock, M. O'Neal       243,62         Car, stock, M. O'Neal       243,62         Car, stock, J. J. Padden       243,62         Car, stock, J. J. Padden       243,62         Carriage, P. Dansereau       243,62         Carriage, child's, H. M. Richardson       243,92         Carriage, child's, H. M. Richardson       243,92         Casting stereotype plates, mould for, W. Scott       243,92         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,92         Chair. See convertible chair. Rocking chair. Opers chair.       243,92         Chuck, drill, G. S. Rominger       243,92         Chur, J. C. Kile       243,92         Cigar end cutter, J. Ochs       243,92         Cigar end cutter, J. Ochs       243,92         Cigar end, S. Bohneider       243,92         Cigar end, S. Bohneider       243,92         Cigar end cutter, J. Ochs       243,92         Cigar inp, See steam boller cleaner. Wheat cleaner       243,92		
Car coupling, Johnson & Robison.       248,79         Car, ron railway, W. A. Cushman.       243,95         Car, railway, A. F. Martel.       243,95         Car, stock, M. O'Neal.       243,95         Car, stock, J. J. Padden.       243,95         Carriage, P. Dansereau.       243,95         Carriage, P. Dansereau.       243,95         Carriage, P. Dansereau.       243,95         Caster, J. Toler       243,96         Casting stereotype plates, mould for, W. Scott.       243,96         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,96         Chairs. Stock for making ornamental, J. B. & T.       W. Feeley         W. Feeley       243,96         Chuck, drill, O. Siate.       243,96         Chuck, drill, O. Siate.       243,97         Churn Id. W. Dobson       243,96         Cigar lighter. B. B. Schneider.       243,97         Clarent cutter, J. Ochs       243,96         Cigar mould, B. Roman.       243,97         Clarent cutter, J. Ochs       243,97         Chuck, drill, D. Siate.       243,97		
Car coupling, Johnson & Robison.       248,79         Car, ron railway, W. A. Cushman.       243,95         Car, railway, A. F. Martel.       243,95         Car, stock, M. O'Neal.       243,95         Car, stock, J. J. Padden.       243,95         Carriage, P. Dansereau.       243,95         Carriage, P. Dansereau.       243,95         Carriage, P. Dansereau.       243,95         Caster, J. Toler       243,96         Casting stereotype plates, mould for, W. Scott.       243,96         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,96         Chairs. Stock for making ornamental, J. B. & T.       W. Feeley         W. Feeley       243,96         Chuck, drill, O. Siate.       243,96         Chuck, drill, O. Siate.       243,97         Churn Id. W. Dobson       243,96         Cigar lighter. B. B. Schneider.       243,97         Clarent cutter, J. Ochs       243,96         Cigar mould, B. Roman.       243,97         Clarent cutter, J. Ochs       243,97         Chuck, drill, D. Siate.       243,97	Car coupling, J. E. Ament	243,895
Car coupling, D. H. Sherman       248,98         Car, iron railway, W. A. Cushman       243,785         Car, stock, M. O'Nesl       243,855         Car, stock, J. J. Padden       243,955         Car, stock, J. J. Padden       243,955         Car, stock, J. J. Padden       243,957         Car, stock, J. J. Padden       243,957         Carriage, P. Dansereau       243,957         Carriage, Alld's, H. M. Richardson       243,957         Casting stereotype plates, mould for, W. Scott       243,957         Chains and bracelets, manufacture of ornamental, J. H. Totten       243,957         Chains is tock for making ornamental, J. B. & T.       W. Feeley         Chains, Stock for making ornamental, J. B. & T.       W. Feeley         Chains, Stock for making ornamental, J. B. & T.       W. Feeley         Chains, Stock for making ornamental, J. B. & J.       243,950         Chain, Stock for making ornamental, J. B. & J.       243,950         Chuck, drill, D. Slate       243,950         Chuck, drill, D. Slate       243,950         Chura, J. C. Elle       243,951         Chura, J. C. Elle       243,951         Chura, M. W. Dobson       243,951         Clagar inghter, B. B. Schneider       243,957         Clagar inghter, B. B. Schneider<	Car coupling, Johnson & Robison	243,707
Car, iron railway, W. A. Cushman.       243 76         Car, railway, A. F. Martel.       243,96         Car, stock, M. O'Neal.       243,96         Car, stock, J. J. Padden.       243,96         Car, stock, J. J. Padden.       243,96         Car, stock, J. B. Atwood.       245,27         Carriage, P. Dansereau.       243,96         Carriage, child's, H. M. Richardson.       243,97         Carriage, See baling case.       Pinno case.         Casting stereotype plates, mould for, W. Scott.       243,96         Chains and bracelets, manufacture of ornamen-       243,96         Chains. stock for making ornamental, J. B. & T.       W. Feeley         Opera chair.       243,96         Chuck, drill, G. S. Rominger.       243,96         Chuck, drill, G. S. Rominger.       243,96         Churn J. C. Kile       243,96         Cigar end cutter, J. Ochs       243,96         Cigar end cutter, J. Ochs       243,96         Cigar end, S. Bohneider.       243,96         Cigar mould, S. Bohneider.       243,96         Cigar end cutter, J. Ochs       243,96         Cigar end cutter, J. Ochs       243,96         Cigar end cutter, J. Ochs       243,96         Cigar mould, S. Bohneider.       243,96		
Oar, railway, A. F. Martel.       243,95         Car, stock, M. O'Neal.       243,95         Car, stock, J. J. Padden.       243,96         Carriage, P. Dansereau.       243,96         Carriage, child's, H. M. Richardson.       243,96         Caster, J. Toler       243,96         Caster, J. Toler       243,96         Caster, J. Toler       243,96         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,96         Chains, stock for making ornamental, J. B. & T.       W. Feeley         W. Feeley       243,96         Chuck, drill, G. S. Rominger.       243,96         Churn, J. C. Kile       243,96         Churn, J. C. Kile       243,96         Cigar mould, B. Boman.       243,96         Cigar mould, B. Boman.       243,96         Cigar mould, B. Roman.       243,96         Cigar mould, B. Boman.       243,96         Cigar mould, B. Roman.       243,96		
Car, stock, M. O'Neal       241,962         Car, stock, J. J. Padden.       243,963         Car, stock, J. E. Atwood.       243,963         Carvinge, P. Dansereau.       243,963         Carriage, P. Dansereau.       243,963         Carriage, enblid's, H. M. Richardson.       243,963         Carriage, enblid's, H. M. Richardson.       243,963         Casting stereotype plates, mould for, W. Scott.       243,963         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten.       243,963         Chains. stock for making ornamental, J. B. & T.       W. Yeeley         Chicken cholers compound, D. Croan.       243,963         Chuck, drill, O. S. Rominger.       243,964         Churn, J. C. Kile       243,964         Cigar end cutter, J. Ochs       243,964         Cigar end cutter, J. Ochs       243,964         Cigar mould, S. Homan       243,964         Cigar end cutter, J. Ochs       243,964         Cigar mould, S. Homan       243,974         Cigar mould, S. Homan       243,974         Cigar mould, S. Homan       243,974         Cigar end cutter, J. Ochs       243,974         Cigar end cutter, J. Ochs       243,974         Cigar mould, S. Homan       243,974         Cigar inghter, B. B		
Car, stock, J. J. Padden.       243,90         Car, street railway, W. Robinson.       243,90         Carviage, J. E. Atwood.       243,82         Carriage, child's, H. M. Richardson.       243,90         Casting stereotype plates, mould for, W. Scott.       243,90         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten.       243,90         Chains. stock for making ornamental, J. R. & T.       W. Feeley         Opera chair.       243,90         Chuck, drill, G. S. Rominger.       243,90         Chura, J. C. Kile       243,90         Churn, J. C. Kile       243,90         Clagar end cutter, J. Ochs       243,90         Cigar mould, S. Bohneider.       243,90         Cigar mould, S. Bohneider.       243,90         Cigar end cutter, J. Ochs       243,90         Cigar mould, S. Bohneider.       243,90         Cigar mould, S. Bohneider.       243,90         Cigar mould, S. Bohneider.       243,90         Cigar end cutter, J. Ochs       243,90         Cigar mould, S. Bohneider.       243,90         Cigar be hi	One stock M OW	4790, 2000
Car, street railway, W. Robinson.       243,79         Car wheel, J. E. Atwood.       243,80         Carriage, P. Dansereau.       243,80         Carriage, child's, H. M. Richardson.       243,90         Carriage, See baling case. Piano case.       243,90         Caster, J. Toler       243,90         Caster, J. Toler       243,90         Caster, J. Toler       243,90         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,90         Chains, stock for making ornamental, J. B. & T.       W. Yeeley         Opera chair.       0pera chair.         Opera chair.       243,90         Chuck, drill, G. S. Rominger.       243,90         Churn J. C. Kile       243,90         Clarar mould, S. Roman.       243,90         Clarar lighter, B. B. Schneider.       243,90         Clarar lighter, B. B. Schneider.       243,90         Clarar Backers envelope for, C. G. Emery.       243,90         Clarar lighter, B. B. Schneider.       243,90         Clarar Backers envelope for, C. G. Emery.       243,90         Clarar Backers envelope for, C. G. Emery.       243,90 </td <td>LANK BURNE BLEVINCES</td> <td>949 02-</td>	LANK BURNE BLEVINCES	949 02-
Car wheel, J. E. Atwood.       243,62         Carriage, P. Dansereau.       243,63         Carriage, child's, H. M. Richardson.       343,97         Carriage, See egg and fruit carrier.       243,68         Casting stereotype plates, mould for, W. Scott.       243,68         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten.       243,68         Chains, stock for making ornamental, J. B. & T.       W. Feeley         W. Feeley       243,78         Chair. See convertible chair. Booking chair.       0pera chair.         Chicken cholers compound, D. Croan.       243,68         Chura, J. C. Kile       243,78         Clay and outler, J. Ochs       243,79         Clay are nd cutter, J. Ochs       243,79         Clay are nd cutter, J. Ochs       243,79         Clay are nould, B. Roman       243,79         Clay are out et al. J. Chais       243,79         Clay are nould, B. Roman       243,79         Clay are nould, B. Roman       243,79         Clay are steam boller cleaner.       243,69         Clay are steam boller cleaner. Wheat cleaner.       243,69         Clook spring, E. Horton       243,99         Clook spring, E. Horton       243,99         Clook stop, F. Schrumpf       243,99		
Carriage, P. Dansereau.       243,96         Carrier, See egg and fruit carrier.       243,97         Casting stereotype plates, mould for, W. Scott.       243,96         Casting stereotype plates, mould for, W. Scott.       243,96         Chains and bracelets, manifacture of ornamen- tal, J. H. Totten.       243,96         Chains. stock for making ornamental, J. B. & T.       W. Feeley         W. Feeley       243,76         Chair. See convertible chair. Bocking chair.       00         Opera chair.       243,96         Chuck, drill, D. Slate.       243,96         Clagar end cutter, J. Ochs       243,96         Clagar end cutter, J. Ochs       243,96         Clagar mould, S. Boman.       243,96         Clagar ighter, B. B. Schneider.       243,96         Clagar ighter, B. B. Schneider.       243,96         Clagar ighter, B. B. Schneider.       243,96         Clagar base ster closet.       213,97         Claset. See stam boller cleaner. Wheat cleaner.       243,90         Closet. See water closet.       243,90         Closet. See water closet.       243,90         Cloke stop, F. Schrumpf       243,90         Convertible chair and cot, E. Hatch       243,90         Convertible chair, S. Williams       243,90 </td <td>Car, stock, J. J. Padden</td> <td>243.960</td>	Car, stock, J. J. Padden	243.960
Carriage, P. Dansereau.       243,96         Carrier, See egg and fruit carrier.       243,97         Casting stereotype plates, mould for, W. Scott.       243,96         Casting stereotype plates, mould for, W. Scott.       243,96         Chains and bracelets, manifacture of ornamen- tal, J. H. Totten.       243,96         Chains. stock for making ornamental, J. B. & T.       W. Feeley         W. Feeley       243,76         Chair. See convertible chair. Bocking chair.       00         Opera chair.       243,96         Chuck, drill, D. Slate.       243,96         Clagar end cutter, J. Ochs       243,96         Clagar end cutter, J. Ochs       243,96         Clagar mould, S. Boman.       243,96         Clagar ighter, B. B. Schneider.       243,96         Clagar ighter, B. B. Schneider.       243,96         Clagar ighter, B. B. Schneider.       243,96         Clagar base ster closet.       213,97         Claset. See stam boller cleaner. Wheat cleaner.       243,90         Closet. See water closet.       243,90         Closet. See water closet.       243,90         Cloke stop, F. Schrumpf       243,90         Convertible chair and cot, E. Hatch       243,90         Convertible chair, S. Williams       243,90 </td <td>Car, stock, J. J. Padden Car, street railway, W. Robinson</td> <td>243,980 243,796</td>	Car, stock, J. J. Padden Car, street railway, W. Robinson	243,980 243,796
Carriage, child's, H. M. Richardson.       243,971         Carrier. See egg and fruit currier.       243,981         Caster, J. Toler       243,981         Casting stereotype plates, mould for, W. Scott.       243,981         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,981         Chains. stock for making ornamental, J. B. & T.       243,981         Chains. stock for making ornamental, J. B. & T.       243,981         Chair. See convertible chair. Bocking chair.       0pera chair.         Opera chair.       243,981         Chuck, drill, G. S. Rominger.       243,981         Chur, J. C. Kile.       243,991         Chur, J. C. Kile.       243,991         Churn, J. C. Kile.       243,991         Churn, J. C. Kile.       243,991         Clagar end cutter, J. Ochs.       243,992         Cigar end cutter, J. Ochs.       243,993         Cigar mould, S. Bohneider.       243,993         Cigarette papers, envelope for, C. G. Emery.       243,993         Clasher. See steam boller cleaner. Wheat cleaner.       213,993         Clock stop, F. Schrumpf       243,993         Cook, stop, F. Schrumpf	Car, stock, J. J. Padden Car, street railway, W. Robinson	243,980 243,796
Carrier. See egg and fruit carrier.       243,960         Caster, J. Toler.       243,960         Casting stereotype plates, mould for, W. Scott	Car, stock, J. J. Padden Car, street railway, W. Robinson Car whoel, J. E. Atwood	243,980 243,796 248,826
Caster, J. Toler       243,98         Casting stereotype plates, mould for, W. Scott.       243,98         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,98         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,98         Chains. stock for making ornamental, J. B. & T.       243,78         Chains. Stock for making ornamental, J. B. & T.       243,78         Chains. Stock for making ornamental, J. B. & T.       243,78         Chains. See convertible chair. Bocking chair.       243,78         Chuck, drill, O. Slate.       243,90         Churn, J. C. Kile       243,90         Cigar Ighter, B. B. Schneider.       243,90         Cigar Ighter, B. B. Schneider.       243,90         Cigar mould, S. Boman.       243,90         Cigar mould, S. Boman.       243,90         Cigar Ighter, B. B. Schneider.       243,90         Cigar mould, S. Boman.       243,90         Cigar mould, S. Homan.       243,90         Clapsering, E. Horton       243,90         Coloset. See water closet.       243,90         Code, stop, F. Schrumpf       243,90         Convertible chair and cot, E. Hatch       243,90         Convertible chair, S. Williams       244,00         Converetible chair, S. Williams </td <td>Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau</td> <td>243,960 243,796 248,826 248,860</td>	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau	243,960 243,796 248,826 248,860
Caster, J. Toler       243,991         Casting stereotype plates, mould for, W. Scott.       243,991         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten       243,991         Chains, stock for making ornamental, J. B. & T.       243,991         Chains, stock for making ornamental, J. B. & T.       243,991         Chair, See convertible chair. Bocking chair.       0pera chair.         Opera chair.       243,991         Chuck, drill, G. S. Rominger.       243,991         Chur, J. C. Kile.       243,991         Chur, J. C. Kile.       243,991         Chur, J. C. Kile.       243,991         Churn, J. C. Kile.       243,991         Churn, J. C. Kile.       243,991         Clagar end cutter, J. Ochs       243,991         Cigar mould, S. Bohneider.       243,991         Clagar mould, S. Bohneider.       243,991         Clagar would, S. Horton       243,991         Cleaner. See steam boller cleaner. Wheat cleaner.       243,991         Clock spring, E. Horton       243,991         Coloset. See, water closet.       243,991         Coloset. stop, F. Schrumpf       243,991         Coloset. stop, F. Schrumpf       243,991         Coloset. stop, F. Schrumpf       243,991         Conve	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson	243,960 243,796 248,826 248,860
Casting stereotype plates, mould for, W. Scott 243,963         Chains and bracelets, manufacture of ornamen- tal, J. H. Totten	Car, stock, J. J. Padden Car, street railway, W. Robinson Car whoel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier.	243,960 243,796 248,826 248,860
Chains and bracelets, manufacture of ornamen- tal, J. H. Totten.       243,99         Chains, stock for making ornamental, J. B. & T.       W. Feeley         W. Feeley       243,79         Chairs, Bee convertible chair. Bocking chair.       Opera chair.         Opera chair.       243,99         Chuck, drill, G. S. Rominger.       243,99         Chuck, drill, G. S. Rominger.       243,99         Chuck, drill, D. Slate.       243,99         Churn J. C. Elle       243,99         Clagar end cutter, J. Ochs       243,99         Cigar ighter, B. B. Schneider.       243,99         Cigar mould, S. Boman.       243,99         Clagaretic papers, envelope for, C. G. Emery.       243,99         Clagaretic papers, envelope for, C. G. Emery.       245,97         Clamp. See hitch clamp.       243,99         Clock spring, E. Horton.       243,99         Code, stop, F. Schrumpf.       243,99         Code, stop, F. Schrumpf.       243,99         Constroper, J. S. Lees.       344,00         Convertible chair, S. Williams       243,99         Cooling rolls, journais, and shafts. W.	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See baling case. Piano case.	243,960 243,796 248,826 248,860 248,973
<ul> <li>tal, J. H. Totten</li></ul>	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood. Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Caster, J. Toler.	243,900 243,796 243,826 243,960 243,973 243,978
Chains. stock for making ornamental, J. B. & T.       W. Feeley       243,76         Chair. See convertible chair. Bocking chair.       Opera chair.       243,76         Chicken cholers compound, D. Croan.       243,86         Chuck, drill, G. S. Rominger.       243,76         Churn, J. C. Kile.       243,90         Churn J. C. Kile.       243,90         Churn Id. W. Dobson.       243,90         Cigar mould, S. Roman.       243,90         Cigar mould, S. Roman.       243,77         Clark papers, envelope for, C. G. Emery.       243,77         Clark papers, envelope for, C. G. Emery.       243,90         Clock spring, E. Horton.       243,90         Clock spring, E. Horton.       243,90         Clock spring, E. Horton.       243,90         Clock stop, F. Schrumpf.       243,73         Code, stop, F. Schrumpf.       243,73         Collapsible bost, S. W. Wardwell, Jr.       243,90         Convertible chair and cot, E. Hatch.       243,73         Contor on the cob, machine for cutting green, V.       347,70         Barker       243,73         Cooling rolls, journais, and shafts, W. B. Jones       243,73         Coton or other press, H. L. Freeman.       243,73         Cotton or other press, H. L. Freeman. <td>Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Caste. See bailing case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott</td> <td>243,900 243,796 248,826 243,960 243,973 248,996 243,961</td>	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Caste. See bailing case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott	243,900 243,796 248,826 243,960 243,973 248,996 243,961
W. Feeley	Car, stock, J. J. Padden Car, stock, J. J. Anden Car, street railway, W. Robinson Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Caste. See baling case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen-	243,900 243,796 243,826 243,960 243,973 243,996 243,961
Chair. See convertible chair. Bocking chair. Opers chair.       243,02         Chicken cholers compound, D. Croan.       243,02         Chuck, drill, G. S. Rominger.       243,07         Chuck, drill, G. S. Rominger.       243,07         Churn, J. C. Kile       243,01         Churn Id. W. Dobson.       243,01         Clarn J. C. Kile       243,02         Cigar end cutter, J. Ochs       243,02         Cigar mouid, S. Bohneider.       243,02         Cigar mouid, S. Roman.       243,02         Cigar mouid, S. Roman.       243,02         Cigar mouid, S. Roman.       243,02         Cigar mouid, S. Horton.       243,02         Cleaner. See steam boller cleaner. Wheat cleaner.       243,02         Clook spring, E. Horton.       243,02         Clothes washer, E. H. Murray.       243,04         Cock, stop, F. Schrumpf       243,04         Collag rbibe boat, S. W. Wardwell, Jr.       244,03         Convertible chair and cot, E. Hatch.       243,04         Convertible chair and cot, E. Hatch.       243,04         Corn from the cob, machine for cutting green, V.       Barker         Barker       243,03         Cotton or other press, H. L. Freeman.       243,03         Cotton press. revolving, J. M. Shaw	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See baing case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten	243,900 243,796 343,826 243,960 343,973 243,968 243,961 243,969
Opera chair.       243,68         Chuck, drill, G. S. Rominger.       243,77         Chuck, drill, D. Slate.       243,70         Churn, J. C. Kile       243,70         Churn Iid, W. Dobson.       243,60         Cigar end cutter, J. Ochs       243,70         Cigar mould, S. Boman.       243,70         Cigarend exter, J. Ochs       243,70         Cigarend exter papers, envelope for, C. G. Emery.       245,97         Clast, spin, E. Horton.       243,00         Clooks, stop, F. Sohrumpf.       243,70         Colhapatble bost, S. W. Wardwell, Jr.       243,70         Convertible chair, S. Williams       244,00         Convertible chair, S. Williams       244,00         Cooling rolls, journais, and shafts, W. B. Jones.       243,70         Corn from the cob, machine for cutting green, V.       344,00         Barker       243,70       243,70         Coton or other p	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Caster, J. Toler Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T.	243,900 243,796 243,826 243,860 243,973 243,988 243,981 243,999
Opera chair.       243,68         Chuck, drill, G. S. Rominger.       243,77         Chuck, drill, D. Slate.       243,70         Churn, J. C. Kile       243,70         Churn Iid, W. Dobson.       243,60         Cigar end cutter, J. Ochs       243,70         Cigar mould, S. Boman.       243,70         Cigarend exter, J. Ochs       243,70         Cigarend exter papers, envelope for, C. G. Emery.       245,97         Clast, spin, E. Horton.       243,00         Clooks, stop, F. Sohrumpf.       243,70         Colhapatble bost, S. W. Wardwell, Jr.       243,70         Convertible chair, S. Williams       244,00         Convertible chair, S. Williams       244,00         Cooling rolls, journais, and shafts, W. B. Jones.       243,70         Corn from the cob, machine for cutting green, V.       344,00         Barker       243,70       243,70         Coton or other p	Car, stock, J. J. Padden Car, stock, J. J. Andden Car, street railway, W. Robinson Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Caste. See baling case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley	243,960 243,796 248,826 248,960 243,973 243,968 243,961 243,969 243,765
Chuck, drill, G. S. Rominger.       248,977         Chuck, drill, D. Slate.       248,971         Churn, J. C. Kile       243,901         Churn Id. W. Dobson.       243,901         Clagar end cutter, J. Ochs       243,901         Cigar mould, S. Bohneider.       243,902         Cigar mould, S. Roman.       243,902         Cigar end cutter, J. Ochs       243,902         Cigar mould, S. Horton       243,902         Closet. See steam boiler cleaner. Wheat cleaner.       243,902         Closet. See water closet.       210,902         Clothes washer. E. H. Murray.       243,903         Colost, stop, F. Schrumpf       243,903         Collapstible boat, S. W. Wardwell, Jr.       244,003         Convertible chair and cot, E. Hatch.       243,903         Convertible chair and cot, E. Hatch.       243,903         Cooling rolls, journais, and shafts, W. B. Jones       244,003         Corn from the cob, machine for cutting green, V.       243,903         Barker       243,903       243,903         Cotton or other press, H. L. Freeman.       243,903	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See bailing case. Piano case. Caster, J. Toler Castang stereotype plates, mould for, W. Soott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. B. & T. W. Feeley Chair. See convertible chair. Rocking chair.	243,960 243,796 248,826 248,960 243,973 243,968 243,961 243,969 243,765
Chuck, drill, G. S. Rominger.       248,977         Chuck, drill, D. Slate.       248,971         Churn, J. C. Kile       243,901         Churn Id. W. Dobson.       243,901         Clagar end cutter, J. Ochs       243,901         Cigar mould, S. Bohneider.       243,902         Cigar mould, S. Roman.       243,902         Cigar end cutter, J. Ochs       243,902         Cigar mould, S. Horton       243,902         Closet. See steam boiler cleaner. Wheat cleaner.       243,902         Closet. See water closet.       210,902         Clothes washer. E. H. Murray.       243,903         Colost, stop, F. Schrumpf       243,903         Collapstible boat, S. W. Wardwell, Jr.       244,003         Convertible chair and cot, E. Hatch.       243,903         Convertible chair and cot, E. Hatch.       243,903         Cooling rolls, journais, and shafts, W. B. Jones       244,003         Corn from the cob, machine for cutting green, V.       243,903         Barker       243,903       243,903         Cotton or other press, H. L. Freeman.       243,903	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See bailing case. Piano case. Caster, J. Toler Castang stereotype plates, mould for, W. Soott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. B. & T. W. Feeley Chair. See convertible chair. Rocking chair.	243,960 243,796 248,826 248,960 243,973 243,968 243,961 243,969 243,765
Chuck, drill, D. Slate	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See baling case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains, stock for making ornamental, J. R. & T. W. Feeley Chair. Bee convertible chair. Rocking chair. Opera chair.	243.900 243.796 248.626 248.626 248.960 343.973 248.998 243.999 243.766
Churn, J. C. Kile.       243,914         Churn Iid, W. Dobson.       243,964         Cigar and cutter, J. Ochs       243,964         Cigar lighter, B, B. Schneider.       243,964         Cigar mould, B. Boman.       243,724         Cigar papers, envelope for, C. G. Emery.       243,724         Cigar fighter, B, B. Schneider.       243,724         Cigar anould, B. Boman.       243,724         Cigar anould, B. Boman.       243,724         Cigar fighter, S. B. Schneider.       243,724         Cleaner. See steam boller cleaner. Wheat cleaner.       243,924         Cloke spring, E. Horton.       243,924         Clothes washer, E. H. Murray.       243,924         Coffan, D. R. Johnson.       244,931         Collapsible bost, S. W. Wardwell, Jr.       243,931         Collapsible bost, S. W. Wardwell, Jr.       243,934         Convertible chair, S. Williams       244,037         Convertible chair, S. Williams       244,034         Corn from the cob, machine for cutting green, V.       343,934         Barker       243,934         Coton or other press, H. L. Freeman.       243,934         Coton or other press, H. L. Freeman.       243,934         Cotton press, revolving, J. M. Shaw.       243,934	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Caster, J. Toler Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. B. & T. W. Feeley Chair. Bee convertible chair. Bocking chair. Opera chair.	243.900 243.796 248.826 248.960 343.973 248.998 243.981 248.999 248.765 243.683
Churn Iid. W. Dobson.       243,86         Cigar Ighter, B. B. Schneider.       243,86         Cigar Ighter, B. B. Schneider.       243,98         Cigar mould, S. Boman.       243,73         Cigar Expers, envelope for, C. G. Emery.       245,87         Clamp. See hitch clamp.       243,73         Cleaner. See steam boiler cleaner. Wheat cleaner.       245,907         Clock spring, E. Horton       245,907         Closet. See water closet.       243,737         Code, stop, F. Schrumpf       243,737         Coffin, D. R. Johnson.       243,937         Convertible boat, S. W. Wardwell, Jr       243,944         Convertible chair, and cot, E. Hatch       243,737         Corn from the cob, machine for cutting green, V.       344,014         Corter, J. S. Lees.       344,111         Cooler. See milk cooler.       243,737         Corn from the cob, machine for cutting green, V.       343,825         Corret, C. V. Turner.       243,937         Cotton or other press, H. L. Freeman.       343,937         Creaning can, D. W. Potter       343,937         Creating can, D. W. Potter       343,937         Crucible for melting metals, J. Pedder       343,937         Crucible for melting metals, J. Pedder       343,937	Car, stock, J. J. Padden Car, stock, J. B. Atwood Carriage, P. Dansereau Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See baling case. Piano case. Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opera chair. Chicken cholers compound, D. Croan Chuck, drill, G. B. Rominger	243.980 243.786 343.286 243.980 243.988 243.988 243.989 243.766 243.685 243.9878
Cigar end cutter, J. Ochs       243,65         Cigar lighter, B. B. Schneider       243,78         Cigar mould, B. Boman       243,78         Cigarette papers, envelope for, C. G. Emery       243,78         Cicanp. See steam boller cleaner.       243,90         Closet. See water closet.       243,90         Cotk, stop, F. Schrumpf       243,78         Codin, D. R. Johnson.       243,78         Colapstble boat, S. W. Wardwell, Jr.       243,90         Convertible chair, and cot, E. Hatch       243,78         Cooling rolls, journals, and shafts, W. B. Jones       243,70         Cooler. See milk cooler.       243,70         Corrent folls, journals, and shafts, W. B. Jones       243,70         Corr from the cob, machine for cutting green, V.       343,60         Barker       243,70       243,70         Cotton or other press, H. L. Freeman       243,70         Cotton press, revolving, J. M. Shaw       243,90         Couting con, D. W. Potter       243,70         Crucible for melting metals, J. Pedder       243,70         Culitvato	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, P. Dansereau Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Caster, J. Toler Caster, J. Toler Caster, J. Toler Caster, J. Toler Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. Bee convertible chair. Bocking chair. Opera chair. Chicken cholera compound, D. Croan Chuck, drill, G. S. Rominger	243.980 243.796 343.826 243.980 343.973 243.981 243.981 243.989 243.766 243.765 243.903 343.978 243.905
Cigar lighter, B. B. Schneider.       243,93         Cigar mould, S. Roman.       243,73         Cigarette papers, envelope for, C. G. Emery.       243,73         Cigarette papers, envelope for, C. G. Emery.       243,73         Clamp. See hitch clamp.       248,073         Clock spring, E. Horton.       243,073         Clock. See water closet.       243,003         Clothes washer, E. H. Murray.       243,033         Coffan, D. R. Johnson.       243,033         Convertible chair, S. W. Wardwell, Jr.       243,034         Convertible chair, S. Williams       244,013         Coolar, See milk cooler.       243,733         Cooling rolls, journals, and shafts, W. B. Jones.       243,734         Corn from the cob, machine for cutting green, V.       343,641         Cotron or other press, H. L. Freeman.       243,734         Cotton or other press, H. L. Freeman.       243,735         Cotubing. See car coupling. Shaft coupling.       343,693         Crucible for melting metals, J. Pedder       243,736         Crucible son method of and composition for lining       343,993         Crucible son teshod of and composition for lining       343,993         Crucible son teshod of and composition for lining       343,993         Culivator teeth, attaching, C. M. Stevens (r)	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Caste, See baling case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opera chair. Chicken cholers compound, D. Croan Chuck, drill, G. S. Rominger Chuck, drill, D. Slate Churn, J. C. Kile	243.960 243.796 243.826 243.960 243.961 243.961 243.961 243.765 243.665 243.665 243.665 243.973 243.973 243.973
Cigar lighter, B. B. Schneider.       243,93         Cigar mould, S. Roman.       243,73         Cigarette papers, envelope for, C. G. Emery.       243,73         Cigarette papers, envelope for, C. G. Emery.       243,73         Clamp. See hitch clamp.       248,073         Clock spring, E. Horton.       243,073         Clock. See water closet.       243,003         Clothes washer, E. H. Murray.       243,033         Coffan, D. R. Johnson.       243,033         Convertible chair, S. W. Wardwell, Jr.       243,034         Convertible chair, S. Williams       244,013         Coolar, See milk cooler.       243,737         Control be chair, S. Williams       244,014         Cooling rolls, journais, and shafts, W. B. Jones.       243,734         Cooling rolls, journais, and shafts, W. B. Jones.       243,704         Corn from the cob, machine for cutting green, V.       343,604         Barker       243,604       243,705         Cotton or other press, H. L. Freeman.       243,705         Cotubing. See car coupling. Shaft coupling.       343,604         Crucible for melting metals, J. Pedder       243,705         Crucible for melting metals, J. Pedder       243,705         Cultivator, R. K. Niece.       243,705         Cult	Car, stock, J. J. Padden Car, street railway, W. Robinson Carriage, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See baling case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opera chair. Chuck, drill, G. S. Rominger Churn, J. C. Kile Churn, Id. W. Dobson	243.980 243.796 243.890 243.980 343.973 243.980 243.961 243.969 243.765 243.663 943.978 243.806 243.909
Cigar mould, S. Boman.       243,72         Cigarette papers, envelope for, C. G. Emery.       243,72         Cigarette papers, envelope for, C. G. Emery.       243,72         Cleaner. See steam boller cleaner. Wheat cleaner.       243,927         Clock spring, E. Horton       243,027         Clock spring, E. Horton       243,027         Clock stop, F. Schrumpf       243,027         Coffin, D. R. Johnson       243,927         Confin, D. R. Johnson       243,923         Convertible chair, S. Williams       244,001         Convertible chair, snd shafts, W. R. Jones       243,703         Corn from the cob, machine for cutting green, V.       343,903         Corter, C. V. Turner.       243,903         Cotton or other press, H. L. Freeman       243,703         Cotton press, revolving, J. M. Shaw       243,903         Creaming can, D. W. Potter       243,903         Crucible for melting metals, J. Pedder       243,903         Crucible groweling.       243,703         Crucible for melting metals, J. Pedder       243,703         Crucible for melting metals, J. Pedder	Car, stock, J. J. Padden Car, street railway, W. Robinson Car wheel, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See bailing case. Piano case. Caster, J. Toler Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Rocking chair. Opera chair. Chuck, drill, G. S. Rominger Churn, J. C. Kile Churn Id. W. Dobson Cigar end cutter, J. Ochs	243.980 243.786 248.806 243.960 243.961 243.961 243.765 243.765 243.765 243.978 243.978 243.978 243.965 243.965
Cigarette papers, envelope for, C. G. Emery	Car, stock, J. J. Padden	243.980 243.796 348.836 248.800 343.973 248.998 243.981 248.999 248.765 243.498 248.965 248.978 248.905 248.905 248.965 243.956 343.956
Clamp. See hitch clamp.         Cleaner. See steam boller cleaner. Wheat cleaner.         Clock spring, E. Horton.       243,00         Cloke washer, E. H. Murray.       243,90         Cock, stop, F. Schrumpf	Car, stock, J. J. Padden	243.980 243.796 348.836 248.800 343.973 248.998 243.981 248.999 248.765 243.498 248.965 248.978 248.905 248.905 248.965 243.956 343.956
Cleaner. See steam boller cleaner. Wheat cleaner.         Clook spring, E. Horton	Car, stock, J. J. Padden Car, street railway, W. Robinson Carriage, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See baling case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opera chair. Chuck, drill, G. S. Rominger Churn, J. C. Kile Churn, Id. W. Dobson Cigar end cutter, J. Ochs Cigar induction and the compound of the compound of the chair. Cigar mould, S. Bonneider Cigar mould, S. Bonneider Cigar mould, S. Bonneider	243.280 243.786 248.286 248.860 243.973 243.986 243.981 243.989 243.786 243.785 243.085 243.905 243.905 243.991 243.905 243.945 243.945 243.940
Clock spring, E. Horton	Car, stock, J. J. Padden Car, street railway, W. Robinson Carriage, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See baling case. Piano case. Caster, J. Toler Castang stereotype plates, mould for, W. Soott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opera chair. Chuck, drill, G. B. Rominger Churn, J. C. Kile Churn, J. C. Kile Churn, J. C. Kile Churn di W. Dobson Cigar end cutter, J. Ochs Cigar mould, B. Roman Cigar mould, B. Roman Cigartic papers, envelope for, C. G. Emery	243.280 243.786 248.286 248.860 243.973 243.986 243.981 243.989 243.786 243.785 243.085 243.905 243.905 243.991 243.905 243.945 243.945 243.940
Closet. See water closet.       243,04         Cock, stop, F. Schrumpf	Car, stock, J. J. Padden	243.980 243.796 243.860 243.960 243.960 243.961 243.961 243.765 243.765 243.978 243.978 243.906 243.979 243.905 243.965 243.978
Clothes washer, E. H. Murray.       942,944         Cock, stop, F. Schrampf       245,783         Coffin, D. R. Johnson.       243,913         Collapsible bost, S. W. Wardwell, Jr.       244,003         Convertible chair, S. Williams       244,004         Cooling rolls, journals, and shafts, W. B. Jones.       243,004         Corn from the cob, machine for cutting green, V.       243,004         Barker       243,004       243,004         Cotton or other press, H. L. Freeman.       243,004         Cotton press, revolving, J. M. Shaw.       243,004         Cotaon press, revolving, J. M. Shaw.       243,004         Cution for and composition for lining       243,004         Creating can, D. W. Potter       243,004         Crucible for melting metals, J. Pedder       243,005         Culitvator, R. K. Niec	Car, stock, J. J. Padden Car, street railway, W. Robinson Carriage, J. E. Atwood Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Caster, J. Toler Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Rocking chair. Opera chair. Chuck, drill, G. S. Rominger Chuck, drill, G. S. Rominger Churn, J. C. Kile Churn Id. W. Dobson Cigar end cutter, J. Ochs Cigar Highter, S. B. Schneider Cigarette papers, envelope for, C. G. Emery Clamp. See hitch clamp. Cleaner. See steam boller cleaner. Wheat cleaner	243.280 243.786 248.286 248.286 243.988 243.988 243.988 243.786 243.765 243.005 243.905 243.905 243.905 243.905 243.905 243.905 243.905 243.905 243.905
Cock, stop, F. Schrumpf	Car, stock, J. J. Padden Car, street railway, W. Robinson Carriage, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carrier. See egg and fruit carrier. Case. See baling case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opera chair. Chuck, drill, G. S. Rominger Churn, J. C. Kile Churn, J. C. Kile Churn IId. W. Dobson Cigar end cutter, J. Ochs Cigarette papers, envelope for, C. G. Emery Clamp. See hitch clamp. Cleaner. See steam bolier cleaner. Wheat cleaner Clook spring, E. Horton	243.280 243.786 248.286 248.286 243.988 243.988 243.988 243.786 243.765 243.005 243.905 243.905 243.905 243.905 243.905 243.905 243.905 243.905 243.905 243.905
Coffin, D. R. Johnson.       248,913         Collapathle boat, S. W. Wardwell, Jr.       244,014         Convertible chair, S. Williams.       244,014         Convertible chair, and cot, E. Hatch.       248,773         Convertible chair, S. Williams.       244,014         Convertible chair, and cot, E. Hatch.       248,773         Convertible chair, S. Weilliams.       244,014         Convertible chair, and cot, E. Hatch.       248,773         Convertible, journais, and shafts. W. B. Jones.       243,703         Corn from the cob, machine for cutting green, V.       344,014         Correct, C. V. Turner.       243,803         Cotton or other press, H. L. Freeman.       243,903         Cotton press. revolving, J. M. Shaw.       243,903         Coupling. See car coupling. Shaft coupling.       Hose coupling.         Hose coupling.       Creaming can, D. W. Potter       243,903         Crucible for melting metals. J. Pedder       243,903       Cutivator, R. K. Niece.       243,903         Cultivator, R. K. Niece.       243,903       Cultivator, R. K. Niece.       243,903         Cultivator, R. K. Niece.       243,903       Cultivator, R. K. Niece.       243,903         Cultivator, R. K. Niece.       243,903       Cultivator, R. K. Niece.       243,903	Car, stock, J. J. Padden	243.980 243.786 248.806 243.960 243.961 243.961 243.765 243.765 243.765 243.978 243.978 243.978 243.965 243.965 243.965 243.965 243.965 243.965 243.965
Coffin, D. R. Johnson.       248,913         Collapathle boat, S. W. Wardwell, Jr.       244,014         Convertible chair, S. Williams.       244,014         Convertible chair, and cot, E. Hatch.       248,773         Convertible chair, S. Williams.       244,014         Convertible chair, and cot, E. Hatch.       248,773         Convertible chair, S. Weilliams.       244,014         Convertible chair, and cot, E. Hatch.       248,773         Convertible, journais, and shafts. W. B. Jones.       243,703         Corn from the cob, machine for cutting green, V.       344,014         Correct, C. V. Turner.       243,803         Cotton or other press, H. L. Freeman.       243,903         Cotton press. revolving, J. M. Shaw.       243,903         Coupling. See car coupling. Shaft coupling.       Hose coupling.         Hose coupling.       Creaming can, D. W. Potter       243,903         Crucible for melting metals. J. Pedder       243,903       Cutivator, R. K. Niece.       243,903         Cultivator, R. K. Niece.       243,903       Cultivator, R. K. Niece.       243,903         Cultivator, R. K. Niece.       243,903       Cultivator, R. K. Niece.       243,903         Cultivator, R. K. Niece.       243,903       Cultivator, R. K. Niece.       243,903	Car, stock, J. J. Padden Car, street railway, W. Robinson Carriage, J. E. Atwood Carriage, P. Dansereau Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Cartier. See egg and fruit carrier. Cade. See baling case. Piano case. Caster, J. Toler Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opers chair. Chuck, drill, G. S. Rominger Chuck, drill, D. Slate Churn lid. W. Dobson Clgar lighter, B. B. Schneider Cigar mould, S. Roman Clgar tighter, S. B. Schneider Claum, J. C. Klie Claum. J. C. Klie Claure. See steam boller cleaner. Wheat cleaner Closet. See steam boller cleaner. Wheat cleaner Closet. See water closet.	243.980 243.786 243.966 243.960 943.973 243.988 243.989 243.989 243.685 943.978 243.805 243.805 243.805 243.919 243.965 243.935 243.945 243.945245
Collapsible bost, S. W. Wardwell, Jr.       944,00         Convertible chair, S. Williams       944,00         Convertible chair, S. Williams       944,01         Convertible chair, and cot, E. Hatch       948,77         Conveyer, J. S. Less       944,111         Cooling rolls, journals, and shafts, W. B. Jones       243,70         Corn from the cob, machine for cutting green, V.       948,611         Cotra or other press, H. L. Freeman       943,611         Cotton or other press, H. L. Freeman       943,961         Coupling. See car coupling. Shaft coupling.       943,963         Hose coupling.       943,783         Crucible for melting metals, J. Pedder       243,783         Cratibles, method of and composition for lining plumbago, J. Pedder       243,783         Cultivator, R. K. Niece.       243,963         Cultivator teeth, attaching, C. M. Stevens (r)       9,783         Cutter. See band cutter.       243,963         Dental plates, etc., apparatus for forming, R. J.       943,651	Car, stock, J. J. Padden	243.980 243.786 248.860 248.860 243.986 243.986 243.986 243.786 243.786 243.808 243.983 243.808 243.980 243.960 243.966 243.980 243.98
Convertible chair, S. Williams       244.01         Convertible chair and cot, E. Hatch       248,77         Convertible chair and cot, E. Hatch       248,77         Convertible chair and cot, E. Hatch       248,77         Cooler. See milk cooler.       243,70         Corn from the cob, machine for cutting green, V.       348,82         Correst, C. V. Turner.       243,82         Cotton or other press, H. L. Freeman.       243,92         Cotton press, revolving, J. M. Shaw       243,92         Coreating can, D. W. Potter       243,93         Creaming can, D. W. Potter       243,73         Crucible for melting metals, J. Pedder       243,73         Cultivator, R. K. Niece.       243,33         Cultivator, R. K. Niece.       243,34         Cutter. See band cutter.       243,93         Cutter. See band cutter.       243,93         Dental plates, etc., apparatus for forming, R. J.       243,93	Car, stock, J. J. Padden	243.980 243.786 248.860 248.860 243.986 243.986 243.986 243.786 243.786 243.808 243.983 243.808 243.980 243.960 243.966 243.980 243.98
Convertible chair and cot, E. Hatch	Car, stock, J. J. Padden	243.980 243.786 248.836 248.860 243.961 243.961 243.969 243.765 243.968 243.978 243.965 243.900 243.956 243.900 243.956 243.900 243.956 243.901 943.946 243.911
Conveyer, J. S. Less.       244.115         Cooling, rolls, journals, and ahafts, W. B. Jones 243,700       243,701         Corn from the cob, machine for cutting green, V.       Barker       243,801         Corset, C. V. Turner.       243,801       243,801         Cotton or other press, H. L. Freeman.       243,901         Coupling. See car coupling.       Shaft coupling.         Hose coupling.       Shaft coupling.         Creaming can, D. W. Potter       243,901         Crucible for melting metals, J. Pedder       243,701         Culivator, R. K. Niece.       243,805         Culivator, R. K. Niece.       243,905         Culivator, R. K. Niece.       243,905         Cultivator, Bee band cutter.       210,905	Car, stock, J. J. Padden	243.980 243.786 243.966 243.960 943.973 243.988 243.989 243.989 243.989 243.989 243.965 243.965 243.965 243.965 243.965 243.965 243.965 243.975 243.900 243.975 243.901 243.965 243.975
Cooler. See milk cooler.         Cooling rolls, journais, and shafts. W. R. Jones 243,700         Corn from the cob, machine for cutting green. V.         Barker	Car, stock, J. J. Padden	243.980 243.786 248.860 243.963 243.966 243.961 243.969 243.766 243.766 243.766 243.806 243.960 243.940 243.946 243.946 243.946 243.946 243.946 243.946 244.044
<ul> <li>Cooling rolls, journais, and shafts, W. E. Jones 243,700</li> <li>Corn from the cob, machine for cutting green, V. Barker</li></ul>	Car, stock, J. J. Padden	243.980 243.786 248.860 243.986 243.986 243.981 243.989 243.786 243.786 243.786 243.786 243.987 243.806 243.93 243.806 243.93 243.806 243.75 243.801 243.75
Corn from the cob, machine for cutting green, V.         Barker       243,83         Corset, C. V. Turner.       243,81         Cotton or other press, H. L. Freeman       243,97         Cotton press, revolving, J. M. Shaw       243,98         Coupling. See car coupling. Shaft coupling.       243,98         Creaming can, D. W. Potter       243,90         Crucible for melting metals, J. Pedder       243,90         Crucibles, method of and composition for lining       243,70         Cultivator, R. K. Niece.       243,80         Cultivator, R. K. Niece.       243,80         Cultivator, R. K. Niece.       243,90         Cultivator, Bee band cutter.       243,90         Dental plates, etc., apparatus for forming, R. J.       243,95	Car, stock, J. J. Padden	243.980 243.786 248.860 243.986 243.986 243.981 243.989 243.786 243.786 243.786 243.786 243.987 243.806 243.93 243.806 243.93 243.806 243.75 243.801 243.75
Barker       243,83         Correct, C. V. Turner.       243,61         Cotton or other press, H. L. Freeman.       243,67         Cotton press, revolving, J. M. Shaw.       243,965         Coupling. See car coupling. Shaft coupling.       243,965         Creaming can, D. W. Potter       243,785         Crucible for melting metals, J. Pedder       243,785         Crucibles, method of and composition for lining plumbago, J. Pedder       243,785         Cultivator, R. K. Niece.       243,985         Cultivator, R. K. Niece.       243,985         Cultivator teeth, attaching, C. M. Stevens (r).       9,785         Cutter. See band cutter.       243,985         Dental plates, etc., apparatus for forming, R. J.       243,851	Car, stock, J. J. Padden Car, street railway, W. Robinson Carriage, J. E. Atwood Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Casting stereotype plates, mould for, W. Scott Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opera chair. Chuck, drill, G. S. Rominger Chuck, drill, G. S. Rominger Churn, J. C. Kile Churn, J. C. Kile Churn, J. C. Kile Claurn, J. C. Kile Claurn, J. C. Kile Claurn, S. B. Schneider Cigar end cutter, J. Ochs Cigarette papers, envelope for, C. G. Emery Clamp. See hitch clamp. Cleaner. See steam boller cleaner. Wheat cleaner Clock spring, E. Horton Clocke, stop, F. Schrumpf Coffin, D. R. Johnson. Convertible chair, S. W. Wardwell, Jr. Convertible chair, S. Williams Convertible chair and cot, R. Hatch Convertible chair, S. Menson	243.980 243.786 248.860 243.961 243.961 243.969 243.765 243.765 243.909 243.765 243.909 243.909 243.905 244.005 245.005 245.00
Corset, C. V. Turner.       243,611         Cotton or other press, H. L. Freeman.       243,611         Cotton press, revolving, J. M. Shaw.       243,661         Coupling. See car coupling. Shaft coupling.       243,661         Hose coupling.       243,661         Crucible for melting metals, J. Pedder       243,661         Crucibles, method of and composition for liming       243,761         Cultivator, R. K. Niece.       243,763         Cutter. See band cutter.       243,965         Dental plates, etc., apparatus for forming, R. J.       243,951         Victor.       243,951	Car, stock, J. J. Padden	243.980 243.786 248.866 248.860 243.986 243.986 243.986 243.986 243.766 243.766 243.987 243.806 243.93 243.806 243.93 243.806 243.93 243.806 243.93 243.806 243.93 243.806 243.93 243.93 243.946 243.75 243.946 243.75 344.019 244.715 244.715 244.716
Corset, C. V. Turner.       243,611         Cotton or other press, H. L. Freeman.       243,611         Cotton press, revolving, J. M. Shaw.       243,661         Coupling. See car coupling. Shaft coupling.       243,661         Hose coupling.       243,661         Crucible for melting metals, J. Pedder       243,661         Crucibles, method of and composition for liming       243,761         Cultivator, R. K. Niece.       243,763         Cutter. See band cutter.       243,965         Dental plates, etc., apparatus for forming, R. J.       243,951         Victor.       243,951	Car, stock, J. J. Padden	243.980 243.786 248.836 248.860 243.961 243.961 243.961 243.765 243.965 243.978 243.965 243.978 243.965 243.945 243.945 243.9555 243.9555 243.9555 243.95555 243.9555555555555555555555555555555555555
Cotton or other press, H. L. Freeman	Car, stock, J. J. Padden	243.980 243.786 248.860 243.963 243.963 243.969 243.766 243.766 243.766 243.766 243.969 243.969 243.969 243.969 243.960 243.946 243.946 243.946 243.731 243.946 243.731 243.946 243.75 344.009 244.019 244.75 344.119 243.706
Cotton press, revolving, J. M. Shaw	Car, stock, J. J. Padden	243.980 243.786 248.860 243.963 243.963 243.969 243.766 243.766 243.766 243.766 243.969 243.969 243.969 243.969 243.960 243.946 243.946 243.946 243.731 243.946 243.731 243.946 243.75 344.009 244.019 244.75 344.119 243.706
Coupling.       See car coupling.       Shaft coupling.         Hose coupling.       243,960         Creaming can, D. W. Potter	Car, stock, J. J. Padden	243.980 243.786 248.860 243.986 243.986 243.986 243.986 243.786 243.786 243.786 243.786 243.983 243.980 244.980 244.98
Hose coupling. Creaming can, D. W. Potter	Car, stock, J. J. Padden	243.980 243.786 248.836 248.860 243.961 243.961 243.969 243.765 243.968 243.978 243.765 243.900 243.765 243.900 243.755 243.900 243.755 243.901 243.905 243.930 243.755 243.901 243.765 243.901 243.765 243.901 243.765 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.901 243.755 243.90
Creaming can, D. W. Potter	Car, stock, J. J. Padden	243.980 243.786 248.860 248.986 248.986 243.981 243.989 243.989 243.989 243.989 243.989 243.989 243.989 243.989 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.912 243.912 243.913 244.014 243.755 344.014 243.755 344.014 243.979 243.618 243.979
Crucible for melting metals, J. Pedder       243,78         Crucibles, method of and composition for lining plumbago, J. Pedder       243,78         Cultivator, R. K. Niece.       243,98         Cultivator teeth, attaching, C. M. Stevens (r)       9,78         Cup. See oil cup.       9,78         Cutter. See band cutter. Cigar end outter.       243,96         Dental plates, etc., apparatus for forming, R. J.       743,651         Victor.       243,851	Car, stock, J. J. Padden	243.980 243.786 248.860 248.986 248.986 243.981 243.989 243.989 243.989 243.989 243.989 243.989 243.989 243.989 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.912 243.912 243.913 244.014 243.755 344.014 243.755 344.014 243.979 243.618 243.979
Crucibles, method of and composition for lining plumbago, J. Pedder	Car, stock, J. J. Padden	243.980 243.786 243.986 243.986 243.981 243.981 243.989 243.989 243.989 243.985 243.986 243.986 243.986 243.986 243.986 243.986 243.987 243.901 243.901 243.901 243.910 243.911 243.913 243.920 243.913 243.920 243.913 243.91
plumbago, J. Pedder	Car, stock, J. J. Padden Car, street railway, W. Robinson Carriage, J. E. Atwood Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Carriage, child's, H. M. Richardson Casting stereotype plates, mould for, W. Scott Casting stereotype plates, mould for, W. Scott Chains and bracelets, manufacture of ornamen- tal, J. H. Totten Chains. stock for making ornamental, J. R. & T. W. Feeley Chair. See convertible chair. Bocking chair. Opers chair. Chicken cholers compound, D. Croan Chuck, drill, G. S. Rominger Chuck, drill, G. S. Rominger Churn, J. C. Kile Churn Id. W. Dobson. Cigar end cutter, J. Ochs Cigar lighter, B. B. Schneider. Cigar lighter, B. B. Schneider. Cigar Expers, envelope for, C. G. Emery Clamp. See hitch clamp. Closet. See steam boller cleaner. Whest cleaner Cloke syning, E. Horton Cots, stop, F. Schrumpf Convertible boxt, S. W. Wardwell, Jr. Convertible chair, and cot, E. Hatch Convertible chair, S. Williams Convertible chair, S. Williams Convertible chair, S. W. Wardwell, Jr. Convertible chair, S. Williams Convertible chair, S. W. Wardwell, Jr. Convertible chair, S. Williams Convertible chair, S. W. Wardwell, Jr. Corner, Cov. Turner. Cotion or ther press, H. L. Freeman Cotton press, ervolving, J. M. Shaw Coupling. See car coupling. Shaft coupling. Hose coupling. Caes Corneling can, D. W. Potter	243.980 243.786 243.986 243.986 243.981 243.981 243.989 243.989 243.989 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.913 244.014 243.715 243.918 243.928 243.929 243.929
plumbago, J. Pedder	Car, stock, J. J. Padden	243.980 243.786 248.860 243.963 243.963 243.969 243.766 243.766 243.766 243.766 243.766 243.960 243.960 243.940 243.946 243.946 243.946 243.731 243.946 243.731 243.946 243.731 243.946 243.75 344.004 244.004 244.014 244.75 344.119 243.706 243.829 243.818 243.969 243.829 243.969 243.969 243.969
Cultivator, R. K. Niece	Car, stock, J. J. Padden	243.980 243.786 243.986 243.986 243.986 243.981 243.989 243.766 243.766 243.766 243.766 243.93 243.900 243.956 243.930 243.930 243.930 243.93 243.946 243.75 243.946 243.75 243.913 344.009 243.75 344.119 243.706 243.75 344.119 243.706 243.829 243.829 243.829 243.829 243.829 243.969 243.969 243.788
Cultivator teeth, attaching, C. M. Stevens (r) 9,78 Cup. See oil cup. Cutter. See band cutter. Cigar end outter. Decoy duck, L. H. North	Car, stock, J. J. Padden	243.980 243.786 243.986 243.986 243.986 243.981 243.989 243.766 243.766 243.766 243.766 243.93 243.900 243.956 243.930 243.930 243.930 243.93 243.946 243.75 243.946 243.75 243.913 344.009 243.75 344.119 243.706 243.75 344.119 243.706 243.829 243.829 243.829 243.829 243.829 243.969 243.969 243.788
Cup. See oil cup. Cutter. See band cutter. Cigar end cutter. Decoy duck, L. H. North	Car, stock, J. J. Padden	243.980 243.786 248.286 248.986 248.986 248.986 243.989 248.989 248.786 243.989 243.989 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.985 243.913 244.014 244.715 344.014 244.715 344.014 243.706 243.929 243.939 243.939 243.939 243.939
Cutter. See band cutter. Cigar end outter. Decoy duck, L. H. North	Car, stock, J. J. Padden	243.980 243.786 248.286 248.860 243.986 243.986 243.989 243.989 243.766 243.766 243.766 243.989 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 244.014 243.75 344.019 243.913 244.913 243.913 244.914 243.75 344.014 243.75 344.919 243.929 243.951
Decoy duck, L. H. North	Car, stock, J. J. Padden	243.980 243.786 248.286 248.860 243.986 243.986 243.989 243.989 243.766 243.766 243.766 243.989 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 244.014 243.75 344.019 243.913 244.913 243.913 244.914 243.75 344.014 243.75 344.919 243.929 243.951
Dental plates, etc., apparatus for forming, R. J. Victor	Car, stock, J. J. Padden Car, street railway, W. Robinson	243.980 243.786 248.286 248.860 243.986 243.986 243.989 243.989 243.766 243.766 243.766 243.989 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 243.900 244.014 243.75 344.019 243.913 244.913 243.913 244.914 243.75 344.014 243.75 344.919 243.929 243.951
Victor	Car, stock, J. J. Padden	243.980 243.786 248.286 248.860 243.961 243.968 243.969 243.766 243.766 243.766 243.766 243.806 243.978 243.905 243.905 243.905 243.905 243.905 243.93 243.93 243.93 243.93 243.946 243.75 344.014 243.75 344.014 243.75 344.014 243.75 344.014 243.75 344.014 243.75 344.014 243.75 344.99 243.839 243.839 243.969 243.961 243.951 9.783
	Car, stock, J. J. Padden	243.980 243.786 248.860 248.960 248.960 248.960 248.960 248.960 248.960 248.960 248.766 248.960 248.978 248.900 248
Die. See bolt heading die.	Car, stock, J. J. Padden	243.980 243.786 243.986 243.986 243.986 243.986 243.986 243.986 243.986 243.986 243.987 243.986 243.987 243.900 243.935 243.900 243.935 243.930 243.946 243.93 243.946 243.75 243.946 243.913 944.014 243.75 243.946 243.913 944.014 243.75 244.119 243.706 243.829 243.829 243.829 243.829 243.829 243.829 243.93 243.961 243.951 9.783 243.954

Improved Skinne	Portable	Enginee.	Erie, Pa.

Peck's Patent Drop Press. See adv., page 76.

For the best Diamond Drill Machines, address M. C. Bullock, 50 to 88 Market St., Chicago, Ill.

Fire Brick. Tile, and Clay Retorts, all shapes. Borgnet & O'Brien, M'T'rs, 22d St., above Race, Phila., Pa.

For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y.

Turbine Wheels; Mill Mach'y. O.J.Bollinger, York, Pa. Brass & Copper in sheets, wire & blanks, See ad. p. 76.

The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg. Mass. Clark & Heald Machine Co. See adv., p. 78. Wren's Patent Grate Bar. See adv. page 77. Diamond Drills, J. Dickinson, 64 Nassau St., N. Y.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 78.

The Improved Hydraulic Jacks. Punches, and Tube Expanders. B. Dudgeon, 24 Columbia St., New York. Ragie Anvils, 10 cents per pound. Fully warranted.

(7) A. C. and others inquire how to etch on steel A. The clean plate must be covered with an even film of wax, either applied while the plate is uniformly heated, or dissolved in alcohol and flowed on the warm plate. The etching fluid may be made as follows; Pyroligneous acid, 4 oz.; alcohol, 1 oz.; nitric acid, 1 oz., by measure. Or use iodine, 1 oz.; iron filings, half p a drachm; water, 4 oz. The lines are cut through the wax with a fine steel point, so as to leave the metal surface bare under the lines. The etching fluid is then poured on, and removed as soon as the metal is sufficiently etched.

(8) L. T. asks for a simple process for extracting oils from herbs. A. The volatile oils are generally obtained by distilling in a deep narrow report. the articles along with an equal weight of water; but some substances that give out their oil with difficulty are first soaked for twenty-four hours in twice their weight of water, to each gailon of which 1 lb. of common sait has been added, by which its boiling point is raised, and consequently the oil comes over more readily. The distillate separates into two layers, the Ax

	Digesting, evaporating, and refrigerating appa-
[Those marked (r) are reissued patents.]	ratus. E. Fox
	Powers
A printed copy of the specification and drawing of any	Disintegrating machine, A. P. Lipsey 248,928
patent in the annexed list, also of any patent issued	Doll head, F. Bartenstein
since 1995 will be downlobed from this office for one dol	Doll house, etc., Dorn & Crandall 243,878
since 1886, will be furnished from this office for one dol-	Door lock and burglar alarm, combined pocket,
lar. In ordering please state the number and date of the	J. A. Lee, Sr
patent desired and remit to Munn & Co., 87 Park Row,	Drain pipes, testing, F. Tudor 248,741 Drill. See seed drill.
New York city. We also furnish copies of patents	Drum, stove pipe heating, J. F. Weitsel
granted prior to 1966; but at increased cost. as the speci-	Edger. W. McDonald
fications not being printed, must be copied by hand.	Egg and fruit carrier, L. H. Page
	Electric machine, dynamo, J. J. Wood 248,746
Alarm. See fire alarm.	Electric wires, conducting. W. M. Conway 243,843
Album. E. S. Glover 248,772	Electrical armatures, machine for winding, J.
Alkali, grinding and sleving caustic, W. J. Men-	Brady
xies	Electro-magnetic motor, M. G. Farmer 243,769
Alumina, manufacture of sulphate of, B. E. R.	Elevator. See sucker rod elevator.
Newlands	Elevator, E. Raber

Album. E. S. Glover 248,772	Electrical armatures, machine for winding, J.
Alkali, grinding and sleving caustic, W. J. Men-	Brady 243.844
xies	Electro-magnetic motor, M. G. Farmer 243,769
Alumina, manufacture of sulphate of, B. E. R.	Elevator. See sucker rod elevator.
Newlands	Elevator, E. Raber
Amalgamator, J. Scott	Elevator safety attachment, P. Gately 248,771
Axle box, car, J. A. Rapp 248,792	Engine. See gas engine. Road engine. Pumping
Axie box, car, I. P. Wendell	engine. Steam and other engines.
Axle, carriage, A. E. Smith	Engine, C. L. Work
Axle skein, I. E. Ricketts	Envelope, document, J. W. Wilson (r) 9,792

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# [August 6, 1881.

92		~~~~~	. N	a
Evaporating apparatus, Brooks & Le Page 24	43,686	Organ action, reed, J. L. Hinners.		
Extractor. See nall extractor. Fabric. See knit fabric.		Paint for roofs, etc., metallic, J. S. Smith Paper bag machine, W. C. Cross		
Farm gate. C. P. Emery		Paper pulp grinding engines, securing the knives used in, G. Smith	248,783	Ι.
Farm gate, F. M. Smiley 24	43,988	Paper pulp, wood grinding machine for, B. F. Per- kins		1
Feathers, composition for cleaning and disinfect- ing, M. Beer	48,754	Paper slitting machinery, J. Flanders	243,767	
Fence, J. A. Marine		Parer and corer. apple. A. J. Rice Petroleum and tar, apparatus for refining, T.	243,725	
Fence, barbed, Bernard & Rice	43,835	Marrin	248,990	
Fence, metallic and barbed wire, M. Falcon 24	43,696	position for reudering, E. W. Poston		
Fence, portable. S. M. Coop 24 Fence wires, machine for barbing, F. L. Bestor 2		Piano case, upright, G. M. Guild Piano sounding board, M. J. Chase		
Fertilizer distributer, G. N. Joss		Pill machine. P. Cauhapé		
Filter, water, C. L. Ridgway 2	43,975	Pipe. See waste pipe.		
Fire alarm, T. Shaw		Pipes, device for threading, J. Miller Pitcher, ice. J. M. Blackburn		
Firearm, breech-loading, J. Borden, Jr 2 Firearm lock, Hewitt & Kimball 2		Plaiting machine, F. R. Smith Plant duster, S. Ruggles		
Firearm, magazine, A. Schneider	43,801	Planter, cotton, F. M. Kimes Plow, jointer, A. M. Ross	243,920	
Fire escape, W. Winkless (r)	9,790	Plow, steam, C. B. Bostwick	243,843	
Fire extinguisher, A. M. Barritt 2 Fisherman's reel, F. A. Loomis (r)		Pneumatic dispatch tube, T. J. Mayall Press. See cotton press. Cotton or other press.	248,784	
Fishway, A. B. Hendryx 2 Fork. See hay fork. Table fork.	43,893	Hay and cotton press. Protector. See telegraph wire protector.		
Form, adjustable dress, J. Hall 2		Puller. See thistle puller.	949 069	Ì
Furnace feeder, I. Erickson 2 Furnace for the reduction of ores and for the car-	40,094	Pulley block, J. W. Norcross Pulley for hoisting machines, S. Stuts	243,788	
bonization and decarbonization of iron, S. G. Clark	43.851	Pump, G. Wilson		
Furnace for the reduction of sinc, cinnabar, and other ores, S. G. Ciark	43.950	Pumps, automatic counterbalance to spear rods of mining, S. B. Connor et al	948 852	;
Gauge. See bracelet gauge.		Pumping engine, steam, Thomson & Evans	243,814	1
Game apparatus, A. B. Bullard 2 Game counters, etc., box for holding, J. H. La Bau 2		Railway cross tie, G. W. Vroman		
Gas engine, J. Robson	43,795	Railway switch, A. F. Martel	243,983	1
Gate, M. Faloon 2		Reel. Fisherman's reel.		
Gate, Fisher & Pitcher		Befrigerating apparatus by means of ammonia and other substances, T. Cook		
Brooks	43,685	Refrigerator H. A. Roberts (r)		
M. Fuller		Resawing machine, Connell & Dengler Rice separator, A. Moore	243,692	
Grain meter, C. Wais	44.006	Road engine, A. O. Frick	243,881	1
Grain scourer, H. A. Barnard	M3,830	Road engines, steering gear for, A. O. Frick Rocking chair, G. A. Nelson		
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Hame, J. W. Hudson 2	49,777	Sad iron heater, H. McConnell	243,935	
Hame fastener. Gelabert & Steinkuhler 2 Hammer, trip. S. Shetter 2		Safe, provision, A. Osborne Sawing machine, E. R. Hill		
Handle. See tea and coffee pot handle. Harness the strap holder, K. A. Blickenstaff 2	43.840	Sawing machine, circular, C. S. Beath Sawing machine, heading, stave, and spoke, J. G.	243,833	ì
Harrow, T. E. Jefferson	43,705	Wilson		
Hat fulling machine, J. Warton 2	43,743	Scales for hides and tallow, weighing, J.H.Sparrow		
Hats. soaiding napped, G. M. Wheeler 2 Hay and cotton press, M. H. & J. A. McBryde 2		Scourer. See grain scourer. Scraper, earth, H. W. Ball	243,681	
Hay fork, horse. P. Beardaley		Scraper, earth, W. Haslup Jeed drill, S. Huffman		
Heater. See sad iron heater. Heating. cooking, and drying apparatus, com-		Separator. See rice separator. Sewing and pegging jack, J. P. Busfield		
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Hitch clamp, J. Mathie 2 Hog Finging implement, A. L. Hill		Sewing machine, Mullikin & Hartley		
Hoisting drum, E. A. Beyer Holdback for hames, W. B. Hayden 2	M3,837	Sewing machine embroidering attachment, E. T. Thomas	243.740	
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holder. Holder for grinding tools. Gardner & Woodbridge 2		Sewing machine shuttle, E. S. Yentzer Sewing machine tension device, N. Duen	248.874	
Horn shavings. treating, J. Pathe 2 Horse rake, J. G. Thomas		Shaft coupling. universal, W. Johnston		
Horseshoe nails, machine for forging, C. W. Woodford		Signal. See railway signal.		
Hose coupling, M. Dillmeier 2	43,864	Skate, roller, E. J. Cox	243.979	
Hose coupling. compound, G. Westinghouse, Jr. 2 Hose nozzle, E. Madden		Slaughtering apparatus, J. H. Sparrow		
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Ice cream freezer, Reed & Cumming 2		Soap, R. A. McCullough Soap, manufacture of, P. Cassamajor	243,995	
Insulated telegraph wires, machine for making, T. J. Mayall	43,783	Soda, manufacture of, E. Solvay		
Insulators, compound substance for electric, T. J. Mayall	43,782	Spiders, machine for grinding, Washburn & Mer- ritt	244.010	, I :
Interlocking switch and signal mechanism. J. A. Bonnell		Spirit meter recording mechanism, J. Leede Spirits from grain, manufacturing distilled, T. A.	248,927	
Iron and steel, manufacture of ingot, W. Hains- worth		& W. T. Jebb	243,910	
Isinglass, etc., manufacture of. W. N. Le Page 2		Spring. See clock spring. Vehicle spring. Stand. See cuke and fruit stand. Rope stand.		ł
Jack. See sewing and pegging jack. Knit fabric, J. Nelson 2.	43,787	Stand boller, W. W. Austin Steam and other engines. P., Sr., & F. E. Bes-	243,680	i
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Lever for lifting jacks. etc., ratchet, J. S. Kirk- wood	43.922	Stereoscope and graphoscope, combined, L. Patt- berg	243.964	
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Trunk lock. Lock, W. D. Doremus		Stove rest for culinary and other articles, W. L.		
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Macerating beets, etc., machine for, A. Perret 24	43,722	Tanning process, R. Koenitzer	243,923	i

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Fire escape, W. Winkless (r)		Plow, steam, C. B. Bostwick 243,843	Wrench. See nut wrench.
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Gelatine prepared in the form of dried foam, R.		and other substances, T. Cook	bacco, and snuff, L. Truitt
Brooks	248,685	Refrigerator H. A. Roberts (r)	Clarets. P. W. Engs & Sons
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Hay fork, horse. P. Beardsley	243,652	Scraper, earth, W. Haslup 243,890	Toilet compounds, chemical, C. G. Am Ende 8,421
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Heater. See sad iron heater. Heating. cooking. and drying apparatus, com-		Separator. See rice separator. Sewing and pegging jack, J. P. Busfield	Advertisements.
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Holder. See book holder. Trace holder. Broom holder.		Sewing machine, shoe, H. Folsom (r)	tisements must be received at publication office as early
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Loe cream freezer, Beed & Cumming	243,972	Soap, R. A. McCullough	TANNING.—A VALUABLE TECHNI-
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Bonnell	243,841	Spirits from grain, manufacturing distilled, T. A.	length of time it required; modern innovation of quick-
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Jack. See sewing and pegging jack.		Stand boiler, W. W. Austin 243,680	SUPPLEMENT, No. 273. Price 10 cents. To be had at
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Lock. See door lock. Nut lock. Firearm lock. Trunk lock. Lock. W. D. Doremus	248,872 9,787 243,805 243,732	Stool, plano, H. M. Kitter	ADDRESS SOUTHWARK FOUNDRY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa.
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<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	248,872 9,787 243,805 243,732 248,018 243,900	Stool, plano, H. M. Kitter	ADDRESS SOUTHWARK FOUNDRY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stuntz to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduo- tions and observations by the subtor, and rules for the management of cisterns adopted by the Sanitary Com- mittee of Cincinnati. Contained in Scientrizic AMERI- CAN SUPPLEMENT, No. 277. Price 10 cents. To be had at this office and from all newsdealers.
Lock. See door lock. Nut lock. Firearm lock. Trunk lock. Lock. W. D. Doremus	248,872 9,787 245,905 243,732 248,018 243,900 243,773	Stool, plano, H. M. Hitter	ADDRESS SOUTHWARK FOUNDRY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. ('ISTERN WATER. — A REPORT BY Prof. C. R. Stuntz to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subnor, and rules for the management of cisterns adopted by the Sanitary Com- mittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, No. 277. Price Blocants. To be had at this office and from all newsdealers. A VALUARIE INVENTION.
Lock. See door lock. Nut lock. Firearm lock. Trunk lock. Lock W. D. Doremus	248,872 9,787 243,905 243,732 243,018 243,900 243,773 243,773	Stool, plano, H. M. Hitter	ADDRESS SOUTHWARK FOUNDRY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. ('ISTERN WATER. — A REPORT BY Prof. C. R. Stuntz to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subnor, and rules for the management of cisterns adopted by the Sanitary Com- mittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, No. 277. Price Blocants. To be had at this office and from all newsdealers. A VALUARIE INVENTION.
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<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,905 243,732 243,018 243,773 243,773 243,773 243,772 243,747 243,831 243,808 244,002	Stool, plano, H. M. Kitter.       243,794         Stove, cooking, C. Temme       243,739         Stove rest for culinary and other articles, W. L.       243,859         McDowell.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Swinming apparatus, W. Beeson.       243,854         Switch.       See interlocking switch. Railway switch.         Table fork, H. C. Hart.       243,859         Target ball, W. Wagner.       243,005         Tes and coffee pot handle, A. Bayley.       243,853         Tea canister, W. Welbourne (r).       9,789	ADDRESS SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, oheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrows, of Somerville, Mass., who has since secured his foreign patents, and, with logion capitalists, organized a stook company, who,
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,905 243,732 243,018 243,773 243,773 243,773 243,772 243,747 243,831 243,808 244,002	Stool, plano, H. M. Kitter.       243,794         Stove, cooking, C. Temme       243,739         Stove rest for culinary and other articles, W. L.       243,859         McDowell.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Swinming apparatus, W. Beeson.       243,854         Switch.       See interlocking switch. Railway switch.         Table fork, H. C. Hart.       243,859         Target ball, W. Wagner.       243,005         Tes and coffee pot handle, A. Bayley.       243,853         Tea canister, W. Welbourne (r).       9,789	ADDRESS SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, oheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrows, of Somerville, Mass., who has since secured his foreign patents, and, with logion capitalists, organized a stook company, who,
Lock. See door lock. Nut lock. Firearm lock. Trunk lock. Lock. W. D. Doremus	243,872 9,787 243,905 243,732 243,018 243,773 243,773 243,773 243,772 243,747 243,831 243,808 244,002	Stool, plano, H. M. Kitter.       243,794         Stove, cooking, C. Temme       243,739         Stove rest for culinary and other articles, W. L.       243,859         McDowell.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Swinming apparatus, W. Beeson.       243,854         Switch.       See interlocking switch. Railway switch.         Table fork, H. C. Hart.       243,859         Target ball, W. Wagner.       243,005         Tes and coffee pot handle, A. Bayley.       243,853         Tea canister, W. Welbourne (r).       9,789	ADDRESS SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, oheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrows, of Somerville, Mass., who has since secured his foreign patents, and, with logion capitalists, organized a stook company, who,
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,805 243,732 243,018 243,900 243,778 243,778 243,772 243,773 243,831 243,808 244,002 248,728	Stool, plano, H. M. Kitter.       243,794         Stove, cooking, C. Temme       243,739         Stove rest for culinary and other articles, W. L.       243,859         McDowell.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Swinming apparatus, W. Beeson.       243,854         Switch.       See interlocking switch. Railway switch.         Table fork, H. C. Hart.       243,859         Target ball, W. Wagner.       243,005         Tes and coffee pot handle, A. Bayley.       243,853         Tea canister, W. Welbourne (r).       9,789	ADDRESS SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, oheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrows, of Somerville, Mass., who has since secured his foreign patents, and, with logion capitalists, organized a stook company, who,
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,905 243,732 245,018 243,732 243,722 243,722 243,722 243,747 243,831 243,808 244,002 248,728 243,900	Stool, plano, H. M. Kitter.       243,794         Stove, cooking, C. Temme       243,739         Stove rest for culinary and other articles, W. L.       243,859         McDowell.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Suppositories.       243,859         Swinming apparatus, W. Beeson.       243,854         Switch.       See interlocking switch. Railway switch.         Table fork, H. C. Hart.       243,859         Target ball, W. Wagner.       243,005         Tes and coffee pot handle, A. Bayley.       243,853         Tea canister, W. Welbourne (r).       9,789	ADDRESS SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, oheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrows, of Somerville, Mass., who has since secured his foreign patents, and, with logion capitalists, organized a stock company, who,
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,905 243,073 243,018 243,018 243,773 243,722 243,773 243,831 243,808 244,002 243,728 243,900 243,900	Stool, plano, H. M. Hitter.       243,794         Stove rost for culinary and other articles, W. L.       243,795         McDowell.       243,897         Supporter.       243,897         Supporter.       243,897         Supporter.       243,897         Supporter.       Set runk cover supporter.         Supporter.       Set runk cover supporter.         Supporter.       Set runk cover supporter.         Supporter.       243,859         Supporter.       243,859         Supporter.       243,859         Supporter.       243,859         Supporter.       243,859         Supporter.       243,859         Switch.       Set interlocking switch.         Table fork, H. C. Hart.       243,829         Tank.       See distificating and automatic flush tak.         Tanning process, R. Koenitzer.       243,823         Tea canister, W. Wagner.       244,000         Tea canister, W. Weibourne (r).       9,789         Telegraph wire, compound, T. J. Mayall.       243,634         Telegraph wire, outcotr, T. Wallace       244,007         Telegraph wire, outcotr, T. Wallace       244,007         Telegraph wire, J. Goodman.       243,883	ADDRESS SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern watern, with table of analyses; deduc- tions and observations by the subtor, and rules for the management of cisterns adopted by the Sanitary Com- mittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN BUPILEMENT, No. 377. Frice Woents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, obeap, and efficient Gas Apparatus for gener- sting Illuminating Gas, the patent having just previous been issued to Geo. H. Burrows, of Somearrille, Mass. onsequently offer State of the businees, will con- fine their field of operation to the New England States with other State excepting New York and California, to any other State excepting New York and California, to any other State excepting New York and California, in any other State excepting New York and California, to any rights one-half the necessary capital to do businees, with for a corresponding interest in the businees.
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,905 243,073 243,018 243,018 243,773 243,722 243,773 243,831 243,808 244,002 243,728 243,900 243,900	Stool, plano, H. M. Ritter.       243,794         Stove, cooking, C. Temme       243,795         Stove rest for culinary and other articles, W. L.       McDowell.         McDowell.       243,859         Supporter. See trunk cover supporter.       243,859         Suppositories. composition for. L. Roth.       243,859         Switch. See interlocking switch. Railway switch.       243,859         Table fork, H. C. Hart.       243,859         Tank. See distificating and automatic flush tank.       7angt ball, W. Wagner.         Target ball, W. Wagner.       244,000         Telegraph quadruplex, S. D. Field.       243,689         Telegraph wire, compound, T. J. Mayall       243,984         Telegraph wire, Goodman.       243,384         Thisle puller, T. & A. Turnbull.       243,747         Tioket, pin, T. Moore.       243,748	ADDRESS SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- mittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of Jannary 8, of a simple, oheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrows, of Somerville, Mass., who has since secured his foreign patents, and, with looton capitalists, organized a stock company, who, fully aware of the magnitude of the business, will con- fughts one-half the necessary capital to do busineswith, for a corresponding interest in the business. Address Electric Gas and Purifying Machine Co., 85 State Street, Boston, Mass.
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,805 243,732 243,018 243,732 243,773 243,722 243,772 243,831 243,831 243,802 243,728 243,000 243,900 243,897 243,720	Stool, plano, H. M. Ritter.       243,794         Stove, cooking, C. Temme       243,795         Stove rest for culinary and other articles, W. L.       McDowell.         McDowell.       243,859         Supporter. See trunk cover supporter.       243,859         Suppositories. composition for. L. Roth.       243,854         Switch. See interlocking switch. Railway switch.       243,854         Table fork, H. C. Hart.       243,859         Tank. See districting and automatic flush tank.       243,852         Target ball, W. Wagner.       244,005         Tee and coffee pot handle, A. Bayley.       243,682         Telegraph, quadrupler, S. D. Field.       243,682         Telegraph wire, oompound, T. J. Mayall.       243,984         Telegraph wire protector, T. Wallace.       244,007         Telegraph wire protector, T. Wallace.       244,007         Telegraph wire protector, T. Wallace.       243,984         Telegraph wire protector, T. Wallace.       243,984         Thiste puller, T. & A. Turnbull.       243,986	SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health., on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subnor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers.
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,805 243,732 243,018 243,732 243,773 243,722 243,772 243,831 243,831 243,802 243,728 243,000 243,900 243,897 243,720	Stool, plano, H. M. Ritter.       243,794         Stove, cooking, C. Temme       243,795         Stove rest for culinary and other articles, W. L.       McDowell.         McDowell.       243,859         Supporter. See trunk cover supporter.       243,859         Suppositories. composition for. L. Roth.       243,854         Switch. See interlocking switch. Railway switch.       243,854         Table fork, H. C. Hart.       243,859         Tank. See districting and automatic flush tank.       243,852         Target ball, W. Wagner.       244,005         Tee and coffee pot handle, A. Bayley.       243,682         Telegraph, quadrupler, S. D. Field.       243,682         Telegraph wire, oompound, T. J. Mayall.       243,984         Telegraph wire protector, T. Wallace.       244,007         Telegraph wire protector, T. Wallace.       244,007         Telegraph wire protector, T. Wallace.       243,984         Telegraph wire protector, T. Wallace.       243,984         Thiste puller, T. & A. Turnbull.       243,986	SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health., on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subnor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers.
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<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,905 243,732 243,018 243,732 243,773 243,722 243,773 243,831 243,831 243,002 243,728 243,900 243,900 243,897 243,720 243,861 243,861 243,864	Stool, plano, H. M. Kitter.       243,794         Stove, cooking, C. Temme       243,793         Stove rest for culinary and other articles, W. L.       243,997         Sucker rod elevator, C. H. Cushing       243,895         Supporter.       See trunk cover supporter.         Supporter.       Set See See trunk cover supporter.         Swinch.       See interlooking switch. Railway switch.         Tale fork, H. C. Hart.       243,689         Target ball, W. Wagner.       243,082         Tea canister, W. Welbourne (r).       9,789         Telegraph wire, compound, T. J. Mayall.       243,689         Telegraph wire protector, T. Wallace.       244,007         Telegraph wire protector, T. Wallace.       243,817         Thistle puller, T. & A. Turnbul	SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health. on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subnor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Bocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, oheap, and efficient Gas Appearatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrows, of Somerville, Mass., who has since secured his foreign patents, and, with looton capitalists, organized a stock company, who, fully aware of the magnitude of the business, will con- ful extension field of operation to the New England States, consequently offer State or Territorial rights, in any responsible party, and will furnish any one buying such for a corresponding interest in the business. Address Electric Gas and Purifying Machine Co., 85 State Street, Boston, Mass.
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,805 243,732 243,018 243,018 243,778 243,772 243,747 243,831 243,831 243,808 244,002 243,728 243,900 243,897 243,900 243,897 243,861 243,894 243,894	Stool, plano, H. M. Ritter.       243,794         Stove, cooking, C. Temme       243,735         Stove rest for culinary and other articles, W. L.       McDowell.         McDowell.       243,859         Supporter. See trunk cover supporter.       243,854         Switch. See interlocking switch. Railway switch.       243,853         Table fork, H. C. Hart.       243,923         Target ball, W. Wagner.       244,005         Telegraph, quadrupier, S. D. Field.       243,984         Telegraph, quadrupier, S. D. Field.       243,984         Telegraph wire, compound, T. J. Mayall.       243,984         Telepraph wire, Goodman.       243,984         Thiste puller, T. & A. Turnbull.       243,984         Thiste puller, T. & A. Turnbull.       243,987         Torpedo boat, submarine, M. A. Hardy.       243,987         Toro	SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health., on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Woents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, cheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrow, of Somerville, Mass., who has since secured his foreign patents, and, with licoton capitalist, organized a stock company, who, fully aware of the magnitude of the business, will con- ful exceedently offer State or Territorial rights, in any responsible party, and will furnish any one buying such for a corresponding interest in the business. Address Electric Gas and Partifying Machine Co., 86 State Street, Boston, Mass. DATTERIES, CHEMICALS, AND MATE- rials, in sets or single, with Books of Instruction for Gold, Silver or Nickel Plating. THOMAS HAIL, Manufacturing Electrician. 19 Brommeld Street, Boston, Mass. Illustrated Catalogue sent free.
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,805 243,732 243,018 243,000 243,778 243,722 243,747 243,808 244,002 243,728 243,900 243,900 243,961 243,861 243,861 243,861 243,861	Stool, plano, H. M. Ritter.       243,794         Stove, cooking, C. Temme       243,735         Stove rest for culinary and other articles, W. L.       McDowell.         McDowell.       243,859         Supporter. See trunk cover supporter.       243,854         Switch. See interlocking switch. Railway switch.       243,853         Table fork, H. C. Hart.       243,923         Target ball, W. Wagner.       244,005         Telegraph, quadrupier, S. D. Field.       243,984         Telegraph, quadrupier, S. D. Field.       243,984         Telegraph wire, compound, T. J. Mayall.       243,984         Telepraph wire, Goodman.       243,984         Thiste puller, T. & A. Turnbull.       243,984         Thiste puller, T. & A. Turnbull.       243,987         Torpedo boat, submarine, M. A. Hardy.       243,987         Toro	SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health., on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Woents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, cheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrow, of Somerville, Mass., who has since secured his foreign patents, and, with licoton capitalist, organized a stock company, who, fully aware of the magnitude of the business, will con- ful exceedently offer State or Territorial rights, in any responsible party, and will furnish any one buying such for a corresponding interest in the business. Address Electric Gas and Partifying Machine Co., 86 State Street, Boston, Mass. DATTERIES, CHEMICALS, AND MATE- rials, in sets or single, with Books of Instruction for Gold, Silver or Nickel Plating. THOMAS HAIL, Manufacturing Electrician. 19 Brommeld Street, Boston, Mass. Illustrated Catalogue sent free.
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,805 243,732 243,013 243,732 243,772 243,772 243,772 243,772 243,831 243,900 243,728 243,900 243,900 243,897 243,900 243,897 243,901 243,897 243,801	Stool, plano, H. M. Ritter.       243,794         Stove, cooking, C. Temme       243,735         Stove rest for culinary and other articles, W. L.       McDowell.         McDowell.       243,859         Supporter. See trunk cover supporter.       243,854         Switch. See interlocking switch. Railway switch.       243,853         Table fork, H. C. Hart.       243,923         Target ball, W. Wagner.       244,005         Telegraph, quadrupier, S. D. Field.       243,984         Telegraph, quadrupier, S. D. Field.       243,984         Telegraph wire, compound, T. J. Mayall.       243,984         Telepraph wire, Goodman.       243,984         Thiste puller, T. & A. Turnbull.       243,984         Thiste puller, T. & A. Turnbull.       243,987         Torpedo boat, submarine, M. A. Hardy.       243,987         Toro	SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Blocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, cheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrow, of Nomerville, Mass., who has since secured his foreign patents, and, with livoton capitalist, organized a stock company, who, fully aware of the magnitude of the business, will con- ful excite excepting New York and California, to any responsible party, and will furnish any one buring such for a corresponding interest in the business. Address Electric Gas and Purfying Machines. Address Electric Gas and Purfying Machines. Address Battle Street, Boston, Mass. Data Silver or Nickel Pisting. THOM AS HALL, Manufacturing Electrician. 19 Brommeld Street, Boston, Mass. Illustrated Catalogue sent free.
<ul> <li>Lock. See door lock. Nut lock. Firearm lock. Trunk lock.</li> <li>Lock. W. D. Doremus</li></ul>	243,872 9,787 243,805 243,732 243,732 243,732 243,747 243,777 243,831 243,727 243,831 243,808 244,002 243,728 243,728 243,800 243,897 243,897 243,897 243,897 243,897 243,897 243,897 243,897 243,897	Stool, plano, H. M. Ritter.       243,794         Stove, cooking, C. Temme       243,735         Stove rest for culinary and other articles, W. L.       McDowell.         McDowell.       243,859         Supporter. See trunk cover supporter.       243,854         Switch. See interlocking switch. Railway switch.       243,853         Table fork, H. C. Hart.       243,923         Target ball, W. Wagner.       244,005         Telegraph, quadrupier, S. D. Field.       243,984         Telegraph, quadrupier, S. D. Field.       243,984         Telegraph wire, compound, T. J. Mayall.       243,984         Telepraph wire, Goodman.       243,984         Thiste puller, T. & A. Turnbull.       243,984         Thiste puller, T. & A. Turnbull.       243,987         Torpedo boat, submarine, M. A. Hardy.       243,987         Toro	SOUTHWARK FOUNDEY & MACHINE CO., 430 Washington Ave., Philadelphia, Pa. (ISTERN WATER. — A REPORT BY Prof. C. R. Stunts to the Cincinnati Board of Health, on analysis of cistern waters, with table of analyses; deduc- tions and observations by the subor, and rules for the management of cisterns adopted by the Sanitary Com- nittee of Cincinnati. Contained in SCIENTIFIC AMERI- CAN SUPPLEMENT, NO. 277. Price Blocents. To be had at this office and from all newsdealers. We gave a brief notice, in our issue of January 8, of a simple, cheap, and efficient Gas Apparatus for gener- ating Illuminating Gas, the patent having just previous been issued to Geo. H. Burrow, of Nomerville, Mass., who has since secured his foreign patents, and, with livoton capitalist, organized a stock company, who, fully aware of the magnitude of the business, will con- ful excite excepting New York and California, to any responsible party, and will furnish any one buring such for a corresponding interest in the business. Address Electric Gas and Purfying Machines. Address Electric Gas and Purfying Machines. Address Battle Street, Boston, Mass. Data Silver or Nickel Pisting. THOM AS HALL, Manufacturing Electrician. 19 Brommeld Street, Boston, Mass. Illustrated Catalogue sent free.
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•	Wells, casting head for oil, M. W. Kahle	240,709	i
	Wheat cleaner, magnetic, Delany & Morgan	243,862	Ī
	Wheel. See car wheel.		
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	Windmill, T. E. Peckham		8
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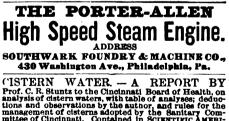
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