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### The Rice Crop.

The "Georgetown Times" says :—"The last rain we have had was on the 28th August.—Since that the wind has been at N. E., giving us a delightful cool change, and making a delightful time for the rice harvest, which has generally commenced, and with the prospect of an average crop. The large fields, gently fanned by the wind and shaking the golden grain, present a most interesting sight, and if the present prices continue, will gladden the hearts of our planters.

The "Savannah News" says :—We are now at the first day of autumn, and it is with much pleasure that we state that the harvesting of the rice crops, which with us takes place during the last days of August, is now nearly finished, that the weather has been most propitious, and the crops will yield well.

The weather has now turned cooler, with a clear sky and healthy atmosphere.

[This is cheering news. Good crops safely harvested, is profitable and beneficial both to those who plant and reap, and those who buy and eat.

### The Meteor.

A splendid meteor was seen by many persons in this city on the evening of Friday, last week. It passed with great velocity from East to West, and appeared to be about the size of the full moon—a huge globe of light, with a luminous tail of great length and brilliancy. Many superstitious notions were at one time connected with meteors, as well as comets. They were termed by the illiterate *fiery Dragons*, and were held to be procrastinators of calamitous events, both to nations and particular families. They were looked upon as the signs of death to some member of the family over whose house one was seen passing. With the light of knowledge, such superstitions are fast fading away. Still, we are very ignorant of what those meteors are, and we have yet much to learn.

### Danger from the Comet.

Professor Jewett, of North Carolina, it is said, has predicted that the comet which is now on a visit to our system, will cross the orbit of our planet at such a point as to influence our globe, perhaps deluge it with water by its tail swashing into the Pacific or Atlantic oceans, and sending up the spray far higher than the mountains of the moon. We have no fears of such a result, but if it comes, we cannot help it. If it were a case of electric discharges, we would at once refer the subject to Mr. Merriam.

### Another Fire Annihilator Exploded.

For some time past, one of Phillips' Fire Annihilators has been on exhibition at the Merchant's Exchange News Room, Boston. On Monday morning the 5th inst., this machine exploded, filling the room with a dense smoke, which greatly alarmed the inmates, who forthwith decamped.

Where were Barnum and Dr. Colton ?

### Cruelty to Animals in New York.

No less than 577 horses died in New York during the last month. There is more cruelty displayed to animals in New York, we believe, than in any other city in our country, perhaps in the world.

## IRVING'S STEAM BOILER.

Figure 1.

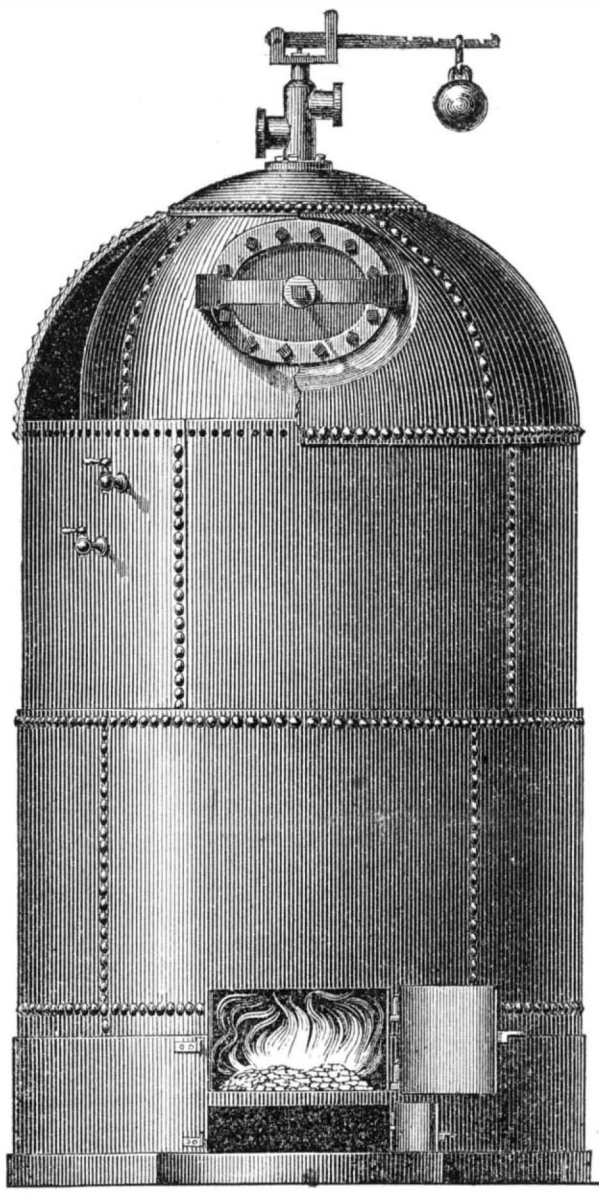
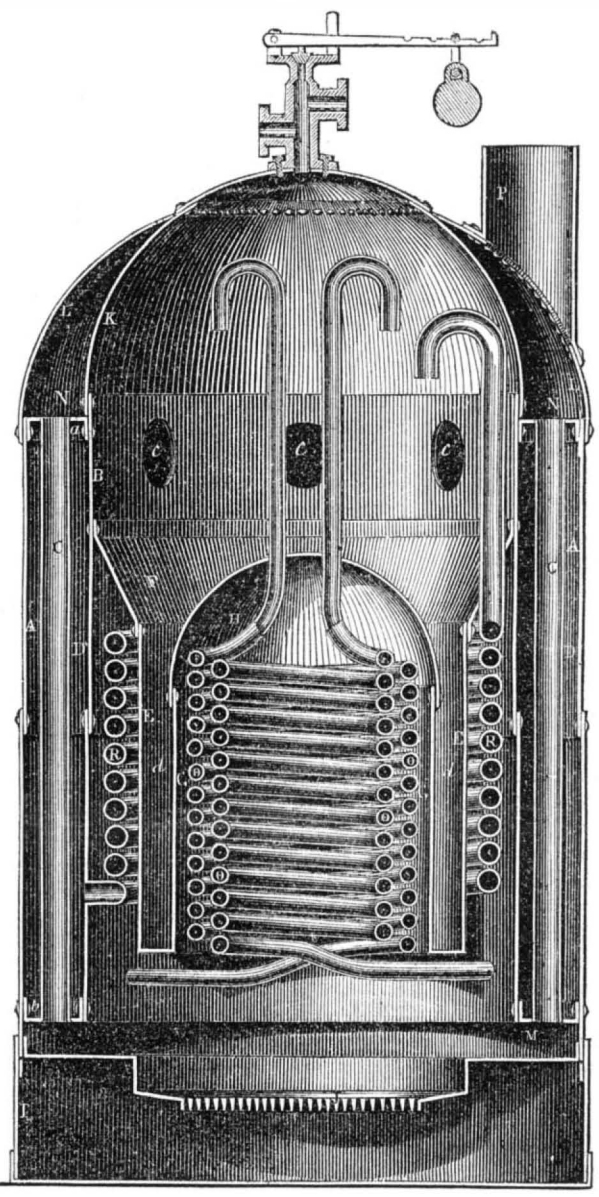


Figure 2.



The annexed engravings are views of the improvements in Steam Boilers, for which a patent was granted to Benjamin Irving, of Green Point, L. I., and assigned to the Irving Boiler Company, of this city, on the 30th ult., the claim of which was published by us last week.

Figure 1 is an outside view of the boiler; figure 2 is a verticle section of it, and figure 3 is a plan view. The same letters refer to like parts. The improvements which are comprehended in this boiler, have in view a more perfect combustion and saving of fuel. A very large heating surface is presented without subjecting any part of it, when working properly, to a very intense heat. It is guarded against explosions, and combines compactness and strength. Economy in fuel and construction, safety, strength, and durability, are therefore claimed as the results of this invention.

The outer shell of the boiler consists of an outer vertical cylinder, A, within which is a smaller cylinder, B, of nearly the same height. The shell, A, and the cylinder, B, are united at the bottom and near the top by two annular plates, *a* and *b*, to which are fitted the ends of a series of tubes, C C, which are placed at equal distances in the annular space, D. The cylinder, B, terminates at the upper end in a dome, K, and the cap of the shell, A, consists of a dome, L, which is less concave than K, and meets it near the centre. Within the cylinder, B, is a shorter and smaller cylinder, E, whose upper end is united by a hollow frustum of a cone, F, to B. Within the cylinder, E, is another one, G, united to E, at the bottom, and terminating in a dome, H, at the top; I is a circular base or foundation which may be of cast-iron, upon which rests the cylinders, A and B; it forms the ash pit and fire place, and supports the fire grate, J, which is of a circular form, and lies under the interior cylinders. Around the top of the fire place, and below the annular plate, there is a circular flue, M, connected by tubes, C C, with the flue, N, between the upper domes. O O, are two coils of lap-welded pipe within the cylinder, G; their lower ends communicate with the lowest part of the space between cylinders, A B, their upper ends rise through the dome, H, and pour their contents into the steam-chamber. The space, D, between, A and B, and the space, *d*, between cylinders, E G, not occupied by pipes, C C, are "water jackets;" *c c* are holes forming communications with the inner and outer water jackets, at top and bottom, having the effect to keep the water in them level; R R is a coil of pipe inside of the outer water jacket, and entering it at the lower end, which may be used to dry the steam, or for generating steam.—When used for the former purpose, the steam is conducted from the chamber, K, through a pipe into the coil, R, and carried out for use to the engine by a pipe for that purpose. When the coil, R, is used to generate steam, the upper end of it is carried through the dome, H, and its contents are emptied like the inner coils into the steam chamber. There may be one or more coils within and outside of the inner water jackets, and they may be connected at the bottom with one or both water jackets. The coils and water jackets may be increased or diminished in boilers, made in this manner, as desired The water is contained in the water jackets, coils, and in the chamber above, and in the water bottom when used for that purpose. The forms of the water jackets and coils, and their connections with each other, and with the steam chamber, tend to preserve a water level in the jackets, but not in the coils for generating steam. The action of the heat of the fire upon the heating surfaces, tends to draw the water from the the jackets into the coils, making it flow upwards through them, and into the steam chamber above, in a continual stream or streams, so that the pipes are kept full; while there is any water in the jackets, the water is kept circulating continually through the coils into the steam chamber, and from the steam chamber down through the water jackets, and from them into the coils again, and so on continually. If the water gets low in the water jackets, the water that flows through the coils into the steam chamber keeps the surfaces moist, thereby preventing the plates from burning, and obviating the danger of explosions. The heating surfaces of the boiler consist of the cylinders, G E, the greater part of cylinder, B, the coils of pipe, the cones, H, K, and F, and the tubes, C C. The products of combustion rise into cylinder, G, and between cylinders B and E, and heat the coils and other surfaces. The heat also passes through the flue, M, into the pipes, C C, and into

[Continued on the next page.]

### What is Doing to the Ericsson ?—Heat.

The Ericsson Hot Air Ship, having all her former engines taken out at Green Point, was removed three months ago to the North River side to have great alterations made in her machinery, at the engine works of Hogg & Delamater. We have not visited this vessel in her new berth, nor do we know personally what changes are making or are to be made in her new engines, but we have been informed that the *new engines* making for her are identical in nearly every particular with those of Dr. Stirling. If the former engines of the Erricsson were completely successful, as asserted by so many persons, why were they taken out? Has not the result so far confirmed all we said about the impossibility of hot air being able to compete with steam? It has. Why is it then, that those papers who deceived the public with false representations about its success, have not said a word about their being mistaken? We cannot look upon their conduct as that of honest journalists. Capt Ericsson has shown himself to be a most skillful adept in the Fabian tactics of literature, in staving off his discussion with Major Barnard.

An article on the mechanical action of heat by F. Ronbaud, translated from "L'Illustration," has been published in one of our city magazines, which commences thus:—"When a body is exposed to the action of heat, there is produced the phenomena of dilatation, that physicians explain by saying that the caloric has penetrated a body, and taken the place of the air or water, or other substance interposed in the pores of the body. In order to penetrate a body thus, the caloric has had to overcome a certain resistance, and to exert a mechanical action. In consequence, caloric is a force that can be utilitized in the arts and in machines identical with the steam engine. It is this idea that Capt. Ericsson is endeavoring to realize in his new caloric engine."

There are not a few errors in the above, mixed up with some truth. It speaks of caloric as a ponderable body, which it is not, for it penetrates a body, and does not displace either air or water in the pores of the body, but combines with the air or the water. &c., producing dilatation. The caloric or heat when it enters water, forms steam. It is not correct to say "the mechanical force of caloric," any more than it would to say "the mechanical force of force." It requires the combination of caloric with a known ponderable body to produce mechanical force. Water is the best substance known to us when combined with heat to produce the most economical mechanical effects in moving bodies. We have many strong arguments in proof of this, which we have not yet advanced, because we deem it prudent to reserve some charges against such a guerilla machine as the "hot air engine," which no doubt will make a second advent by-and-by, and perhaps reproduce not a few speech, and paper feats superior to any it has yet made. We perceive that Prof. Barnard, of the University of Alabama, has a long article in the last number of "Silliman's Journal," on a proposed improvement of Ericsson's engine. It is an exceedingly dull article, and exhibits a decided want of practical knowledge in engineering.

### Burning Fluid.

According to a record kept by Mr. E. Merriam, there were, during the year ending September 1st, 1853, some thirty-three fatal and disastrous explosions of burning fluid and kindred preparations, mostly in the cities of New York, Brooklyn, Williamsburgh and vicinity, in which nineteen persons were killed, twenty-three persons fatally or severely injured, three persons slightly wounded, and some three or four buildings fired. The preparations alluded to are buring fluid, camphene, spirit gas, rosin oil, etc.

### Table Rock.

All the "Table Rock," once so famous at Niagara Falls, is now in the boiling cauldron below. The remaining portion of it fell with a tremendous crash on the morning of the 9th instant.

### New York Railroads.

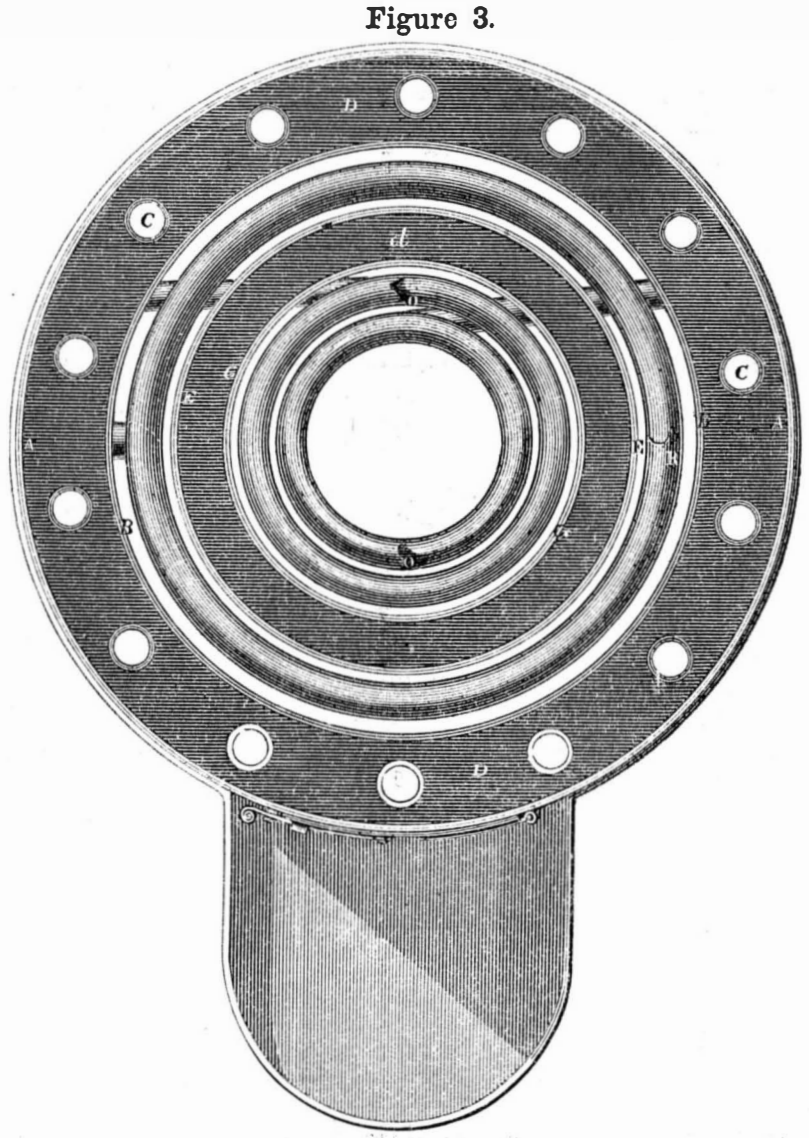
There are twenty-one hundred miles of railroad in operation in the State of New York, and ten thousand more under contract.

[Continued from the First Page.]

the top flue, N, which communicates with the chimney, P. The steam generated from all these heating surfaces rises into the steam chamber, K, from whence it is taken off to the engine by a pipe.

A very large heating surface is presented in this boiler in a very small space, and these surfaces are covered with a small quantity of water, so as to absorb the heat rapidly and generate steam in the best way, to save the escape of heat in the gases of combustion. The boiler is intended to be kept full of water except the dome, K, which affords sufficient steam room. It is almost impossible that the water level can be reduced in the water jackets to such a degree as to be dangerous. The form of the boiler is well adapted to withstand great steam pressure.

**Figure 3.**




One of these boilers has been in operation at the porcelain manufactory of Cartlidge & Co., Green Point, L. I., for nearly a year, and it has given great satisfaction, and saved more than half the fuel previously expended in a cylindrical boiler to do the same work.

More information may be obtained by letter addressed to the assignees.

### What our Readers think of the Scientific American.

The author of the annexed letter is the inventor of the celebrated oil press which bears his name, and his good opinions both cheers and encourages us to greater and renewed efforts to make the "Scientific American" more worthy still of the esteem of such excellent and honorable judges:—

Messrs. Editors.—I have been a subscriber to your paper for two years, and I now wonder how I had got along previously without it, I find it it invaluable. A hundred dollars a year expended in other ways would not furnish me with the same amount of useful and interesting information. In fact, I should be at a loss where to go for many things if I were not furnished them here. And I had rather furnish my workmen, and particularly my engineers, with the paper at my own expense, rather than they should be without it, for the items which they would get in it would make them much more useful in my business. I make these remarks for your encouragement; I hope they will remind you that your labors are appreciated.

Yours, &c., D. L. Latourette

St. Louis, Sept. 2, 1853.

### Suspenders---Their Benefits.

It is the prevailing fashion, especially in cities, for men to dispense with suspenders, and support their pantaloons by having them made to button tightly around the person, above the hips.

It is our settled conviction, that this practice is decidedly detrimental to health. Much has been justly said against tight lacing, as applied to females; and of suspending heavy skirts to the hips, by fastening them tightly around the waist or loins, where there are no ribs or other bony frame-work to resist the compressive power.

We admit that half a dozen skirts weighing many pounds are worse for the constitution of the wearer than the drawers and pantaloons as worn by the men, but worse only because the quantity is greater, and the pressure necessary to sustain them is more. The principle is the same. Females should suspend their skirts mainly by the shoulders.

The hips of boys and men are constitutionally narrower than thse of the female; and therefore the clothing thus worn requires to be tighter, to prevent slipping down.

Around the waist and hips, the very place where freedom of action and expansion should, of all the other parts of the trunk, be enjoyed, there is tightnesss, compression, and a destructive lack of freedom.

We plant ourselves on this point, and claim that our position cannot be disturbed, viz.: the animal economy, from head to foot, should never be dressed in such a manner as in the least degree to cramp the freedom of any action of the body or limbs. Let this be the rule with all, and one-half of our doctors might be spared to cultivate the soil.

[The above is from the "New York Phrenological Journal," and contains no small amount of sound sense and solid truth. A case within our own knowledge, of inflamation of the bowels, which resulted in the death of a young man, 23 years of age, was caused, we believe, by the too tight belting of his pantaloons around his waist. Light elastic suspenders are more comfortable than tight lacing the waist.

A new sort of carriage has been constructed for the Orleans Railroad, France. It is a complete house, consisting of a drawing-room, bedroom, kitchen, and wine cellar, with icing apparatus for fifty bottles of wine; in fact, apartments furnished elegantly and comfortably. It was built under the immediate direction of the Comte de L——, and he can now travel at home from one end of Europe to the other.

### Our Steam Navy—The Princeton.

Since we published a brief history of our Steam Navy (page 381 of our last volume) many of our cotemporaries have directed public attention to it, by publishing, in some cases the whole, and in others, extracts of our article. One of our objects has been obtained already, and we hope that a searching investigation as to the causes of the inferiority of our steam frigates will be instituted, which will result in good to the country.

It is a shame to our navy managers that the most recent steam frigate built has been, so far, an entire failure: we allude to the "Princeton." A correspondent of the New York "Times," writing from Pictou, Nova Scotia, about her performances, in protecting our Yankee fishermen, says:—

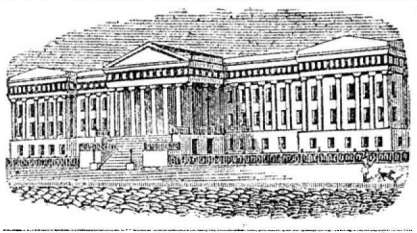
"The U.S. steamship 'Princeton' arrived here on Saturday night at 9 o'clock, after grounding twice in sight of the light-house, while in charge of a branch pilot. She left the Gut of Canso on Saturday morning, about six o'clock. The day was beautiful, and the 'Princeton' was making more miles under steam than ever before. About mid-day the alarm of fire was sounded, the men were beat to quarters, the hose and fire apparatus were brought into play, and by the vigilance and activity of the officers, the danger was soon over. An hour afterwards smoke was pouring out from the hold, and another beat to quarters was sounded. The axmen cut away the felt and lead and clap-boarding in the vicinity of the boilers, and the wood was found to be thoroughly charred. The coal in the bunkers was so hot as to make it advisable to overhaul this black, bituminous furnace-food before trusting it another day in its quiet, sombre, but volcanic cell. Accordingly, to-day, the decks and the coal-heavers are one color. Mr. Shock, the able, skillful, and reliable chief engineer of the 'Princeton,' has made some improvements in his department, by which more steam is generated than she could on Saturday use, with a saving of over one-third of a ton per hour. The amount of coal consumed while steaming from Eastport, Maine, to Halifax, N. S., was 39 1-2 tons in 38 hours—an average of one ton and and three-tenths per hour. Steaming from Halifax to the Straits of Canso, 18 1-2 tons in 25 hours, showed an average of three-fourths of a ton under Mr. Shock's improvement. From Canso to Pictou she carried 20 pounds of steam, performed 32 1-2 revolutions, and accomplished eight knots. This is the 'Princeton's' utmost—her climax of speed under the most favorable circumstances."

From this extract (if correct) we learn that the slothfulness of the "Princeton" is not owing to a want of steam, but something else, and that it is dangerous to "fire-up" and keep a good head of steam on. The boiler quarters must be badly planned on the one hand, and either the engines or the screw-propeller (we do not know which) badly constructed or planned on the other. We have seen it stated in some of our cotemporaries, that Chief Engineer Isherwood, who has written so much in some of our magazines about the performances of our naval steamships, had charge of the construction and fitting up of the machinery, boilers, and screw of the "Princeton. This may not be correct; somebody, however, is to blame—but who that person (or persons) is, we cannot tell. Our object, however, is not to reach individuals, but the system—as our whole Steam Navy is a disgrace to our country.

### A Juvenile Æroneaut.

Charles Wise, aged 17 years, son of Mr. John Wise, the well-known æroneaut, ascended in his father's baloon, the "Irene," from Shanondale Springs, Va., last week, in the presence of a large concourse of spectators. The ascension took place at 20 minutes past 2 o'clock P. M., and at 10 minutes after 4 the baloon descended on the farm of Mr. E. Turner, five miles above Shepherdstown.

It is only great souls that know how much glory is in being good.



]Reported Officially for the Scientific American.]

## LIST OF PATENT CLAIMS

### Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 30, 1853.

HEMP AND FLAX BREAKING MACHINES—By O. S. Leavitt, of Maysville, Ky.: I do not limit myself to the precise construction and arrangement of parts specified, as I have only described the mode of application which I have essayed with success.

I claim the combining apparatus, as described, in connection with the pieces which move alternately up and down, to hold the hemp or flax against the action of the combs.

MACHINE FOR DISTRIBUTING AND COMPOSING TYPE—By Wm. H. Mitchel of Brooklyn, N. Y.: I do not claim arranging the composing apparatus so that each type has to travel nearly the same distance to the point of delivery from the point at which it is dropped, as this has been effected by grooves, but I am not aware of any apparatus in which a combination of belts has been arranged with a view to all the types taking an equal time to travel from the point of deposition to the point of delivery, thereby carrying the types with certainty, and avoiding all liability to stick or get into disorder.

I do not limit myself to the precise arrangement of the belts as long as the same end is attained, neither do I limit myself to the number or size of the parts, as these must be varied to suit the types, and the capacity required. But I claim, first, the feeding belt or belts combined with the inclined plane, wheels, and grooves, to distribute the type in the manner specified.

Second, I claim the mode shown for forming the distributing stick, with the points, spring, lips, and keys, so as to drop one type at a time on its side, as specified.

Third, I claim the bridge and for m of groove to separate the thick from the thin types as they slide down the incline, as specified.

Fourth, I claim a series of belts of length increasing towards the point of delivery of the types, in combination with a diagonal belt to receive and convey the said types from the series of belts to the composing table, or other point, in the order in which the types are dropped on the series of belts, as specified.

Fifth, I claim fitting the key for dropping the types so that it shall give a partial rotary motion to the shaft, to operate on the fork, or any analogous device to drop the types.

Sixth, I claim the fork and blocking piece or stopper, to drop one type at a time, when moved by the key, or any similar means, as specified.

Seventh, I claim the composing wheel to receive and set up the types, either in the composing or distributing apparatus, as specified, and I claim the combination of the said wheel with the fingers on the wheel or with the bar, to supply said wheels, as specified.

GRAIN HARVESTERS—By Frederick Nishwitz, of Williamsburgh, N. Y.: I claim, first, the combination of the fingers and cutters, or their equivalents, constructed, arranged, and operating as described.

Second, I claim the employment or use of the flanged pulleys, arranged as shown, for the purpose of throwing or detaching the grass or grain from the belts.

[A notice of this invention is published on page 228 of volume 8.]

GRINDING AND SHAPING METALS—By Samuel Darling, of Bangor, Me.: I claim the combination of the holder of the article to be ground with a grindstone or grinding disc, as set forth, so that the article and the stone will change positions relatively to each other during the operation in three directions, namely, towards each other, and parallel with and transverse to the axis of the stone.

SAW MILLS—By Andrew Ralston, of West Middletown, Pa.: I claim, first, sawing logs or other descriptions of timber into lumber by means of a reciprocating saw operated in a horizontal positio , as set forth.

Secondly, I claim such an arrangement and combination of the horizontal saw with the other parts of the saw mill, that the saw will run through and beyond each end of the log, or other description of material operated upon, and whilst in that position, will be automatically let down a distance equal to the thickness of stuff desired to be cut, and the motion of the carriage reversed to bring the saw again into action without stopping the machine, and so on until the log or other material operated upon shall be entirely sawn into the dimensions required, as set forth.

Thirdly, I claim connecting the operating pitman, with the saw gate, through the medium of a secondary pitman, connected with the saw frame and saw gate, substantially as described, so that the operating force shall be applied in a directio n nearly coincident with that of the saw in its successive positions, for the purpose set forth.

MACHINE FOR CUTTING SHEET METAL—By Stephen P. Ruggles, of Boston, Mass.: I claim so hanging a traversing and a fixed cutting blade, one or both, as that their cutting edges shall not overlap or come in contact with each other, by which means I am enabled to divide sheets of metal without twisting or warping their edges, and at great saving of power, substantially as described.

I also claim connecting the upper and lower portions of the frame when each carries one of the cutters on eccentric bolts, suitably provided with screw and nut or their equivalent, for giving the blades on the said two parts of the frame a perfect adjustment one above the other, as described.

PAPER FILES—By Daniel Winslow, of Westbrook, and Perley D. Cummings, of Portland, Me.: We do not claim a file or bill holder as made of two plates of wood or pasteboard, or metal, held together and upon the file of paper by one or more elastic bands; but we claim the combination of the plates with the elastic bands, so arranged as that the side edges of the top plate shall be bent down upon the bands and hold them securely, while the side edges of the bottom plate are turned, but left far enough from the bottom plate for the bands to move freely between them and the said plate, the edge lips of both plates being so beat inwards, and rounded on the corners as to protect the bands from being chafed or worn, as described.

MACHINES FOR SPLITTING LEATHER—By Charles Weston, of Salem, Mass.: I claim the arrangement, as described, for exerting a constant and uniform pressure upon the leather, and at the same time allowing the spring plate to yield to the inequalities of the hide, the same consisting in a spring rack for holding the arm which is connected to the spring plate, by the turning shaft and cams, as set forth.

APPARATUS FOR PURIFYING GAS—By William Wigston, of New York City: I claim constructing the scrubber or float with a cavity, to receive the gas above the surface of the fluid, and partly submerged passages leading from the said cavity through the sides of the float to allow the escape of the gas from the cavity, and cause its distribution over the surface of the fluid in thin streams to produce a diffused contact with the fluid, as described.

Mr. Wigston is an experienced Gas Engineer, and has introduced several valuable improvements in its manufacture. A notice of this invention is published on page 252, Vol. 8.]

MACHINERY FOR CUTTING AND BENDING METALLIC DISCS—By Elliot Savage (assignor to Franklin Roys & Edward Wilcox,) of Berlin, Conn.: I claim the combination and arrangement of the roller M with the roller B, and the bending roller, so as to operate together, and independently of the clamps, as specified.

SHINGLE MACHINES—By Elijah Valentine, of Palmer, Mass. (assignor to Abel Bradway, of Monson, Mass.: I claim the series of rollers &c., placed above the platform, when they are combined with the ledges, which rise from the sides of that portion of the platform that receives the rived shingles to be operated upon, and so arranged that when a rived shingle is first carried forward, the said rollers will be elevated above its upper surface by the said ledges, and when the driver is drawn back, it will at the same time pass from under the said shingle, and from under the rollers, thereby allowing the shingle to fall upon the platform, and the rollers to fall in succession upon the upper surface of the shingle, for the purpose of giving to the said shingle such a shape and position upon the platform, that it will be carried outwards again by the next forward movement of the driver and be operated upon by the dressing knives, as set forth.

FOR THE WEEK ENDING SEPTEMBER 6, 1853.

STRAW CUTTERS—By Jas. T. Asbury, of Taylorsville, N. C.: I claim the combination of the three cutting knives, as described, with the recessed arms, whereby one-third of the feed of straw is cut successively by each knife, the protruding uncut portion passing through the recesses in he arms during the operation, as specified.

NUT CRACKERS—By Philos Blake, Eli W. Blake & Jno. A. Blake, of New Haven, Conn. Ante-dated March 6, 1853.: We do not claim the use of jaws forced together by a lever, to crack nuts, since that device is found in the common nut cracker; nor do we claim the mere divergence of the jaws, irrespective of their position in relation to the axis of motion, since the jaws of the common nut cracker diverge when opened to receive a nut; and it also diverges in a plane which is at right angles to the axis of motion, and consequently nuts of different sizes are received between them at different distances from the axis; whereas, the jaws of our instrument diverge in a plane which is parallel to the axis of motion, and consequently nuts of different sizes are received between them, at the same uniform distance from the axis of motion, which condition, or a near approximation thereto, is indispensable to the cracking of nuts of different sizes, between jaws whose motions, are limited by stops in both directions, as described.

We claim, therefore, first, the divergence of the jaws in a plane which is parallel to the axis of motion, as described, whereby nuts of different sizes, are all received at a uniform distance from the center of motion.

Second, We claim the divergence of the jaws in a plane parallel to the axis of motion in combination with the two stops, collectively, which limit the motions of the movable jaw, as described.

Third, We claim the divergence of the jaws in a plane parallel to the axis of motion in combination with their extension beyond the supports of the axis whereby the line of the axis of motion is brought in close proximity to the acting faces of the jaws, without impairing free access to them to introduce and remove the nuts.

In the foregoing claims we do not intend to confine ourselves to a strict parallelism between the plane of the jaws and the axis of motion, since it is obvious that some variation therefrom would not defeat the object aimed at, by approximating to parallelism in distinction from placing the plane of the jaws at right angles to the axis of motion, as in the common nut cracker. Indeed we have contemplated as a possible improvement the placing the outer ends of the jaws a little further from the axis of motion than the other end, with a view to have them act on large nuts, through a space somewhat greater than in smaller ones.

MACHINE FOR EDGING LEATHER STRAPS—By James Barnes, of Franklin, N. Y.: I claim the combination of the parallelogram and inverted dividers, as a regulating gauge to work in front of the edge of a curved knife, so that strips of leather of different widths may be rounded to feather edges, with the same perfection without the change of knife or any part of the machine, the whole being as described.

PRINTING PRESSES—By Victor Beaumont, of New York City: I do not claim a type cylinder or any particular mode of holding the type in place or the using any portion of the periphery of the type cylinder for a distributing surface.

But I claim, first, the combination of two or more impression cylinders with a type clinder, so arranged as to print all over on one side a continuous sheet of paper, as described.

Second, the combination of the eccentric and rod, and the folder, so arranged as to lay the continuous sheet in piles, after being printed on one side, as described.

Third, the combination of the indented knife with the roller, and so arranged as to cut the sheet into proper length, as printed.

PIANOFORTES—By Wm. Compton, of New York City: I claim the means shown and described for securing the strings into the angles of the T's by the combined operation of the up-bearing bridge or rest, to which the T,s are connected, and crossing and drawing the strings together at said bridge or rest, for the purpose of relieving the sounding board or rest plank of vertica pressure, as specified.

SEALING PRESERVE CANISTERS.—By Henry Hunt, of Brooklyn, N. Y.: I claim excluding air from articles put up in closed canisters, or other vessels, by providing the canister or other vessel with a metallic tube, or its equivalent, attached thereto, and after the air has been exhausted through said tube, pressing it together air-tight, that it may be soldered or cemented to render the joint permanently air-tight, as described.

HORSE COLLARS—By Jos. R. Lindner, of New York City: I claim the union of the hame plate and collar, in combination with the lock plates, as set forth.

I also claim the triple fastening of the lock plates, in combination with the outward and backward spring of the hame plates, as set forth.

[A notice of this invention is published on page 52, Vol. 7.]

STRAW CUTTERS—By John Moyle, of Martinsburgh, Va.: I claim the combination of the rake and holder, constructed as described, for feeding the straw to be cut, and binding it to the box, as specified.

PRINTING PRESSES—By Chas. Montague, of Pittsfield, Mass.: I claim such a combination and arangement of the cylinder and bed, that whilst one sheet is receiving its impression, the sheet to receive the next impression will be carried forwards upon the cylinder, nearly to the bed, for the purpose of being in readiness to commence receiving its impression the moment after the bed starts upon its next forward movement, as set forth.

PRINTING PRESSES—By Charles Montague, of Pittsfield, Mass.: Having described my press for printing on a continuous sheet, I claim the combination of the intermittently winding cylinder and feed roller, or their equivalents, with the reciprocating pressure cylinder and bed, and rollers, arranged and operating in such a manner as to successively make an impression on the continuous sheet, at each movement of the bed, as set forth.

In combination with a double set of inking rollers, I also claim the arrangement of the arms for inking both sets of rollers from a fountain placed vertically below the impression cylinder, substantially as described.

FEED APPARATUS TO GAS GENERATORS—By Stephen Meredith, of Erie, Pa.: I claim the peculiar construction of the retort, as described, viz., having the retort of the cylindrical shape or of other suitable shape, and placing within it a revolving cylinder, which, as it rotates, constantly presents a heated surface to the fluid, and converts it into gas, preventing the fluid from cooling the retort, and also preventing the formation of any incrustation on the same, as set forth.

[Our readers will find a notice of this useful invention on page 276, last Volume.]

BOTTLE FASTENINGS—By James Spratt, of Cincinnati, Ohio: I claim the application of the cup or cavity, and aperture, for sealing preserved edible substances, as set forth.

MACHINERY FOR PLANING METALS—By W. W. Spafford, of Boston, Mass.: I claim the combination of the receiving table or plate and its arm (composing the radial arm) the adjustable center-pins, or their equivalents, and the brace, together with the main planing table, and its supporting frame, the same being made to operate as specified, and for the purpose of adapting the planing machine to planing in curved lines, as set forth.

COUNTERFEIT COIN DETECTOR—By Gideon B. Smith, of Baltimore, Md.: I claim a gauge or hole just large enough to permit the genuine coin to pass through, arranged in combination with a lever, acting below said gauge, balanced, so that the weight of such coin will depress it so as to let said coin slip down through said gauge, which is too small to allow any spurious coin to pass which is larger than the genuine, the lever being so balanced that any coin lighter than the genuine will not be heavy enough to depress it; so that all spurious coin, whether too large or too light, will stop in the gauge, while the genuine will slip through and fall out below, as described.

COTTON GINS—By Henry L. Weeks, of Hannahatchie, Geo.: I claim, first, arranging and securing the boxes in which the ginning rollers operate, in a revolving or adjustable frame or box, or its equivalent, so that the rollers can be adju ted, or set at such an angle as may be requisite or desirable, as the condition of the cotton or other circumstances may require, so as to discharge the seed, or facilitate the falling from the rollers after the cotton is drawn off by the rollers.

Second, giving to the feeding aprons, or equivalent feeding devices, different velocities, for the purpose of spreading, distributing, or drawing apart, the balls of cotton, so that sand and dirt may fall out, and not be carried to the ginning rollers.

Thirdly, passing the cotton, after it is ginned between double aprons, or equivalent devices, when said aprons or devices move with less velocity than the ginning rollers, for the purpose of compressing and making more compact the cotton after it is ginned.

MAKING TWISTED GUN BARRELS—By Thos. Warner, of Chicopee, Mass.: I claim, first, a new manufacture of gun barrels, made out of solid bar, with the fibres of the metal having a gradually increased twist from the inside to the outside, as specified.

And in the process I claim making twisted barrels by twisting a bar of metal of the required size, when in a heated state, and then boring out the caliber, for the purpose specified.

PADDLE WHEEL—By Benj. Irving, of Green Point, N. Y.: I claim arranging and combining the floats so as to form a series of buckets of rhombic, or substantially similar form, as set forth.

We would state, that we have seen a working model of this paddle wheel tested with a model of those in common use, and the test was favorable to the new wheel. We would like to see this wheel fairly tried for some time on a steamship or steamboat, in order that all its qualities might be fully tested, in comparison with the common radial bucket wheel.

STRAW CUTTERS—By Thos. Allison, of Milton, N. Y.: I do not claim cutting straw in an oblique direction by means of spiral knives set obliquely around the periphery of a cylinder which has its axis set parallel with the axis of the feed trough, and which operate in combination with a parallel feed roller.

But I claim the construction and arrangement of the adjustable feed roller, which is made gradually tapering from its ends to its center, or middle, in the line of a curve, and arranged at an angle to the axis of the feed trough, and made to operate in combination with the cylinder of straight knives, and thereby facilitate the operation of the machine, as set forth—this arrangement rendering the machine less expensive and more easy to be managed and kept in order.

[This is a very simple improvement and is likely to take the place of spiral knives which have been so much in use; it operates on the same principle but under a different construction.]

CORN SHELLERS—By L. H. Davis, of Kennet Square, Pa.: I claim the introduction of the wheels and arms attached to the springs, and regulated by the screws, as described, for the purpose of stripping the ear of the kernels, as specified.

I also claim the flanges upon the gear covering for protecting the gearing from the admission of shelled corn, as set forth.

CORN SHELLERS—By Porter Dickinson, of Amherst, Mass.: I claim the combination of the revolving spring shellers, with the tooth rollers, operating as described.

IRON CAR BRAKES—By Stephen Morse, of Springfield, Mass.: I claim the spine having the point of suspension and socket, with the open spaces and brace plates, in combination with the rubber or friction surface plate, as set forth.

BRICK MACHINES—By Hiram Sands, of Cambridge, Mass., and Gary Cummings, of West Derby, Vt.: We do not claim the mode of operating the mould carriage by means of a crank acting upon bars running across or attached to the mould carriage, as that has been employed before in the brick machine of James Dane, patented October 24, 1848; nor do we claim the mode of operating the pressing piston, by means of a lever, actuated by revolving cams, and connecting rod; nor do we claim the arrangement thereof with the cam shaft made to pass beneath the pug mill, and thus operate the mould carriage by means of a reversing gear applied to said shaft, as the like arrangement is contained in the patent of Dane, Healy & Cummings, Aug. 5, 1851; ante-dated June 17, 1851.

But we claim the modification of such arrangement, by substituting for the shaft, with reversing gear, the shaft with continuous motion operating the carriage, and producing the intervals of rest, by means of the crank pin acting alternately upon the studs connected with the mould carriage, whereby we obtain greater certainty and precision of action in the machine, with greater simplicity and durability.

Also, in combination with the piston and the lever, we claim the slot in the lever, the slotted bearings and the movable fulcrum pin, the connecting fork and hand lever, the same being for the purpose of increasing or diminishing the amount of pressure of the piston on the clay in the mould, as specified.

PRINTER'S INK—By Samuel H. Turner, of Brooklyn, N. Y.: I claim the employment of colophoric tar, produced and combined as stated, both in the manufacture of printing ink, and also as a varnish used by printers to modify the condition of their ink to suit the temperature of the weather, and the kind of work to be executed, as specified.

#### DESIGNS.

MILK STOOL FRAME—By P. A. Palmer, of Leroy, N. Y.,

COOK STOVE | By Frederick Schultz, (assignor to Chas. & Samuel Gilbert, of Philadelphia, Pa.

PARLOR STOVE—By Garrettson Smith & Henry Brown (assignor to J. G. Abbott & Archilus Lawrence,) of Philadelphia, Pa.

STOVE—By S. W. Gibbs, of Albany, N. Y. (assignor to North, Chase & North, of Philadelphia, Pa.

COOKING STOVE—By Wm. F. Gray, of Penn Township, Pa. (assignor to Abram & Jos. Cox, of Philadelphia, Pa.

## Tanning---Eaton's Short Process.

The annexed specification is that of Prof. Eaton, for which a patent was granted on the 10th of August, 1852. Many inquiries have been made of us—respecting its nature, merit, and the kind of leather produced by it. We must say, it is "the eating of the pudding which affords the best evidence of its good or bad qualities."

SPECIFICATION OF A. K. EATON, OF ROCHESTER, N. Y., FOR IMPROVEMENTS IN TANNING LEATHER.

My invention consists of a combination with my tanning liquor of certain substances which have the effect of facilitating its action, and also of preventing the extraction or other matter of the bark or substance, from which the tannin is obtained, from acting injuriously upon the leather.

In order to tan hides and other skins by my improved process, they may be first soaked, unhaired, and bated by the usual processes.

When the bating is accomplished they are ready for the tanning liquor, which may be prepared from any vegetable substance from which tannin is usually obtained by adding to the decoction of the substance certain chemical substances, which facilitate the action of the tannin, and, at the same time, prevent the extractive matter of the decoction from injuring the leather. One of the most convenient sources of tannin is the ordinary "Terra Japonica," or catechu of commerce, and it is especially adapted to my process, as the chemical substances which are mixed with it prevent it from having any injurious effect upon the leather, however strong the decoction be made. To tan with this substance, prepare a solution of one hundred and seventy pounds of japonica in a sufficient quantity of soft water to receive one hundred calf skins. This solution is best prepared by steeping the japonica in hot water and straining the liquor through a cloth when cold. To this liquor add eleven pounds of sulphate of potash and six pounds of alum (double sulphate of alumina and potash.) The bated skins are immersed in this liquor after the grain has been set by a weak tanning liquor, a greater or less period, according to their thickness and porosity. Sheep skins are thoroughly tanned by an immersion of from one to ten hours in the liquor. Calf skins require to be immersed from one to six days, and hides require a proportionably longer period, which varies from six to twenty days.—After the first hundred skins have been tanned, there is still much tannin left in the liquor as well as a part of the alum, and the whole of the sulphate of potash; it is therefore brought up to its original tannin strength by the addition of japonica alone, and is employed to tan a succeeding parcel of skins.

In the process above described, the sulphate of potash induces so rapid an action of the tannin upon the skin that the extractive matter of the vegetable substance from which the tanning liquor is made, has not time to act; this is peculiarly the case when japonica is the substance employed, as it is well known that if bated skins be submitted to a liquor made from it alone, in the ordinary manner, they are spoiled, for the catechuic acid injures the animal fiber, while, by combining sulphate of potash with the liquor, the injurious influence of this acid is prevented. The alum improves the quality of the leather, as a portion of the alumina of the alum combines with the gelatine of the skin and adds greatly to the impermeability of the leather. Alum is not essential in tanning calf skins.

If japonica cannot readily be obtained, tanning liquor may be prepared from sumac, or the various barks generally employed, by adding to the decoction sulphate of potash alone, or sulphate of potash and alum.

Leather tanned by the process above described is remarkable for its pliability, strength and impermeability. The former of these properties is believed to result from the absence of vegetable extractive matter; the strength results from the fact of the animal fiber being uninjured by the process; and the impermeability is due both to the thorough action of the tannin and to the alumina combined with the leather.

Having thus described my process of tanning leather, what I claim as my invention, and desire to secure by Letters Patent, is the combination of sulphate of potash with the tanning liquor, substantially in the manner and for the purpose herein set forth.

[We have tested, for six months, a calf skin tanned by this process, in a pair of boot uppers. It has proved to be excellent wearing leather. It was stated to be tanned by this process in six days; but the skin was no doubt a good one, independent of the method by which it was tanned.

We cannot—in a chemical point of view—see what superior effects can be produced in tanning by the sulphate of potash, any more than the chloride of sodium (common salt,) the use of which has been long known to tanners, excepting some change takes place in the sulphated salt itself, whereby the sulphur unites with the skins and produces a vulcanizing effect—which change cannot take place by the process described, so far as our experience and reasoning extend.

## Bedouin Arabs Distanced.

When, on the 6th of June, a locomotive was run for the first time on the Egyptian Railroad, the Bedouins galloped alongside on their horses for some time, until they found they had no chance of keeping pace with the locomotive.

# New Inventions.

### Tobacco Pressing Machine.

The annexed engraving is a perspective view of a machine for pressing plug tobacco, for which a patent was granted to A. A. Parker, of St. Louis, on the 27th of April last year. This machine is on exhibition at the Crystal Palace, and as the tobacco trade of our country is very extensive, it attracts, and justly should, the attention of all those engaged in the tobacco business.

The tobacco is received into a hopper, then carried forward, and fed into moulds or cells in a rotary disc box, in which it is pressed into plugs by toggle jointed levers, and from which it is discharged in plugs, into a receiving long pressure box, where all the elasticity of the compressed tobacco is destroyed, and the plugs rendered incapable of swelling again, and from which they are discharged, firm and permanent in packing shape and size. Means are also employed in this press to keep the moulds or cells, and all the contact parts of the machine, clean and free from the gum and liquorice of the tobacco.

A is the frame of the machine, and B is the driving handle of the main shaft; this shaft is driven by belt and pulley, as in the Crystal Palace; C is a pinion wheel gearing into and driving the cog wheel, D, from the shaft, E, of which it may be said all the peculiar motions are transmitted; F is a sector cam on this shaft; it has two pins on its inner face, and as it revolves, these pins take into the arms of the spoke wheel, H, which moves said wheel two arms for every revolution of F; G is a wheel on the stud of H, it gears into a wheel coupled with the one J, which gears into the pinion, K, and revolves its shaft, L. On the other extremity of this shaft is secured the mould or cell disc, M, in the compartments of which the tobacco is pressed. By the motions described, it will be observed that the mould disc, M, has an intermittant rotary motion, and that one quarter of it (one cell) is moved every revolution of the shaft, E; N N are pitmans secured on the shaft, E, and attached to the toggle jointed levers, O O. These levers press the tobacco in the moulds, for as the shaft, E, revolves, the levers, N, being placed eccentrically on it, as they draw down, they make the levers, O O, force a pressing head into the cell or mould of M, and press the tobacco firmly in the same; the toggle jointed levers will recede when the levers, N, change their position in rotation. There are four pressing heads, P, they are not secured to the ends of the levers, O, but rotate with an intermittant motion on a small slide shaft. The reason for this arrangement is that after a presser head or plunger has pressed about twelve plugs, its face gets gummed up, and will not press well.—To obviate this difficulty, a clean presser head is presented after twelve plugs are pressed, by the dirty one being turned down by a rod operated by a small pinion; the unclean plunger dips into a trough of water below, and is scrubbed with a small brush, and so on, the presser heads rotate, press, get dirty, and are cleaned. At the back of the cell or mould disc, M, is the solid plate wheel, W, the bottom of which forms the solid back of the mould or cell, in which the plugs of tobacco are pressed. When a plug is pressed the levers, O O, recede and that cell or mould rotates, until it comes opposite to the receiving compressing box, Z, behind, into which the pressed plug is discharged or forced by the thrusting rod, Y, which is secured to the wheel, X, eccentrically, which gives it a reciprocating motion. Thus there is one cell or mould of M, filling, one in which the tobacco is being compressed, one being discharged, and one passing empty to get filled, all the time. The mould boxes are filled or fed from hopper, V, into which the loose roll of tobacco is placed by two feeders, S and T, the one S, receives it from the hopper and carries forward as much as will be a plug, to the one T, which then takes it forward and forces it into a cell or mould of M. The feeding motions of T and S are by levers, R and T; the one R is operated by a cam, Q, on shaft E, which forces it forward, and then it springs back to feed forward another plug. The back of the pressing cell—the plate wheel, W, is kept clean and free from gum, because it gears into teeth on the back of M, and revolves. As this wheel revolves it is met with a spunge at one side, and above that it is oiled with the two roller rubbers. This softens the tenacious gum of t e tobacco, which is then easily scraped off by the broad scraper seen at the left hand side.—This enables the moulds or cells of M always to have a clean back. This is essential to the successful working of a tobacco pressing machine. The common presses for pressing tobacco are very defective; this one is new entirely, in principle, construction, and all its operations.

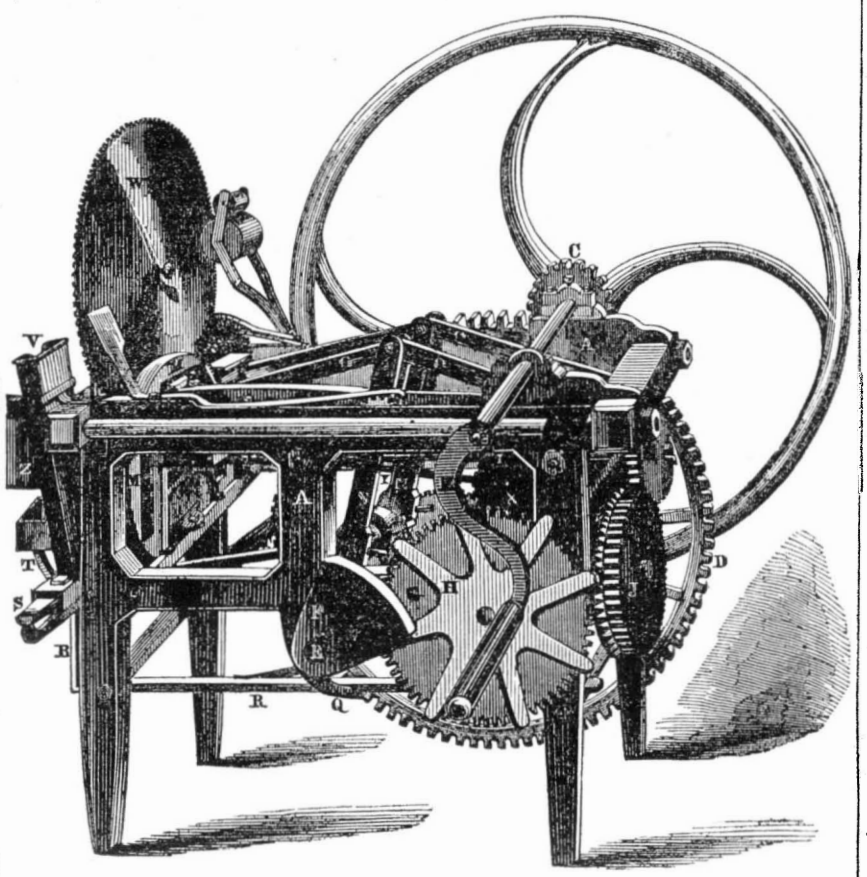
The receiving compressing box, Z, into which the plugs are discharged from the moulds or cells, embraces a principle essential to the success of a tobacco-pressing machine. If the tobacco was freely discharged when quickly pressed into plugs, it soon would lose its form and compactness. This receiving compressing box has its bottom, top, and sides, composed of endless belts, and it is of such a size as to hold the plugs under pressure while confined for about half an hour, during which time the plugs lose their elasticity, and always retain their form after they are discharged. This machine presses about 20 plugs per minute, and the receiving compressing box contains a great many plugs, as it is somewhat long. When full, as one pressed plug is thrust in by the lever Y, one is discharged, ready to be packed up, and so on continually.

The pressing power of the press can be increased by extending or diminishing the distance between the back and front ends of the levers, they being attached to the cross-bar at the back of the machine, which can be shifted forward or back by the large screw rods, one of which is seen passing through them. This is an advantageous arrangement for graduating the pressing power.

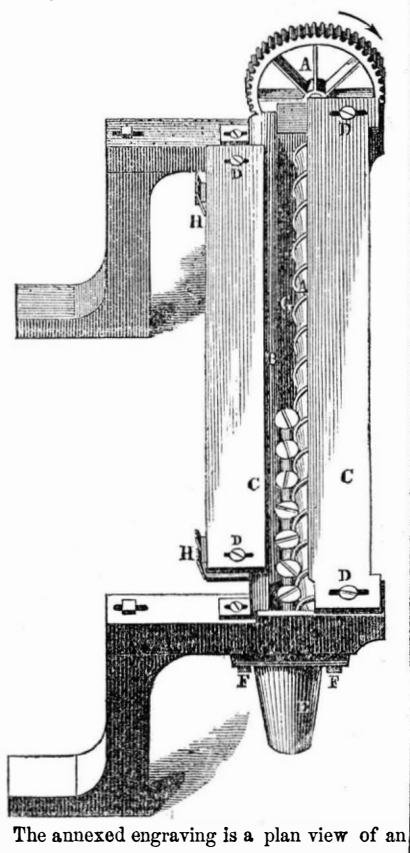
This is quite an original and excellent machine for the purpose specified. We have seen a great many certificates from very respectable persons, speaking highly of its qualities. We have examined the machine for ourselves in the Crystal Palace, and have never seen one like it before, and it will no doubt soon put all the old presses used for the same purpose *hors du combat.*

Mr. Parker resides in St. Louis, but is at present living in this city, and may be frequently seen at the Crystal Palace.

## PARKER'S TOBACCO PRESSING MACHINE.




### Improved Hopper for Screw Machines.




The annexed engraving is a plan view of an improved hopper for feeding *blanks* into screw machines, invented by James Greaves, of Utica, N. Y., who has a practical acquaintance with such machines, and knows what defects require to be remedied.

A is the screw shaft to carry the blanks along, and deposit one at each revolution; B is a rod which supports one side of the blanks, they sliding off at one end of it. The distance between it and the screw shaft, A, is regulated by set screws. The plates, C C are to keep out blanks having unturned heads, they being larger than those with turned heads, will not pass between the plates; these plates are regulated as to the distance between them by the screws, D D; E is the throat which guides the blanks to the fingers, it is fastened by the screws, F F, and projects in the inside up to the rod, B, and screw shaft. A number of throats of different sizes should be provided for each machine; G is a plate which projects under the rod and shaft for the purpose of keeping out all blanks that are too long; it is raised and lowered by screws. This is simply the feeder of a screw cutting machine, and a number of the blanks are now shown passing through it. Screw blanks is the name given to the pieces of metal intended to be made into screws; the heads are on them, but the threads are not cut. They are delivered by this machine like fingers to the screw cutting jaws. Mr. Greaves believes that this is the best screw blank hopper ever presented, and that it is a very great improvement on any that has ever been used before.—It is so simple in all its parts that every person will understand its construction and operation.

More information may be obtained by letter addressed to the inventor.

### Railroad Signals.

Wm. Wigston, of this city, has taken measures to secure a patent for a system of atmospheric railroad signals. The signals are raised and lowered on a railroad simultaneously with the changing of the switches by atmospheric pressure, so that information can be communicated to engineers of an approaching train at a considerable distance from it. The signals inform the engineers if the switches are properly arranged, and if there is any danger ahead. The invention consists in arranging along the track, at suitable distances apart, a series of upright signal cases, containing in the lower part of each an air pump, and having the signal cases in communication with one another by a tube supplied with a sufficient quantity of air to alternately raise and lower the signal of each case simultaneously with the shifting of a switch. The top part of the piston of each air pump is jointed to a vertical rod, which passes up through the case, and has a signal on its outer end. Each signal rod has a short arm which plays in a curved groove on the inside of the outer case, and as t e signal piston rises and falls, the signal is turned. The handle of the main air pump to operate the signals along the line, is connected by a rod and elbow shifter to the switch, consequently the signals are operated by atmospheric pressure simultaneous with and by the movement of the switch.

### Improved Carriage Top.

Eliphalet S. Scripture, of Green Point, L. I., has taken measures to secure a patent for an improvement in carriage tops. The object of the invention is to render the carriage top very convenient and portable, so that it can be put up and taken down with great ease, and removed so as to be folded up and stowed away in a small place when not used. The top has an adjustable and stretching spring bar, which is attached to a back bow, and secured in an adjustable step in combination with the folding front, in such a manner that it (the carriage top) can be folded up and taken down, and removed conveniently from the carriage if required. It can be applied to all vehicles requiring a carriage top.

### Extension Pencil Case.

An improvement in extension pen and pencil cases has been invented by Gilbert S. Clark, of this city, for which he has taken measures to secure a patent. The improvement consists in a peculiar arrangement of the pen and pencil slides, whereby an extension case is obtained for both pen and pencil, the pencil tube being placed within the pen slide, and the two, pen and pencil, can be operated separately.

### Extension of an Important Patent.

The patent issued July 17th, 1839, to Isaac Babbitt, for the use of soft metal linings for axles, gudgeons, etc., has been extended for seven years from July 17, 1853. We understand that A. B. Ely, Esq., 52 Washington street, Boston, has been appointed sole agent for Mr. Babbitt. This invention is one of great value, and is now in general use. Its use cannot now be continued without liability to the patentee.

We are frequently receiving letters from correspondents asking us if they can procure space in the Crystal Palace; we cannot answer such letters for the want of information upon the subject. Application should be made to the Superintendent of the Exhibition.

### The Missouri River.

A new mouth for the Missouri River has been cut into the Mississippi through a neck of land about half a mile above where it has been.—The object of the new cut is to prevent the washing away of the Illinois shore. Steamers now pass through the new cut.

### Setting Carriage Spindles.

A correspondent wishes information as to the best method (or a correct rule) for setting the journals of carriage axles. He asserts that there is a diversity of opinion among carriage makers on this point.

Scientific American.

NEW YORK, SEPTEMBER 17, 1853.

### Our New Volume.

We commence volume 9, of the "Scientific American," with a full dress of new and beautiful type. The paper in this volume will be superior to any in our former volumes, and will make a very handsome book when bound up at the end of the year. Our matter will be, as heretofore, compact and clear, and we shall endeavor to be more careful than ever in respect to its quality. Impartiality, with perfect independence of power or party, will characterize our reviews of all subjects of our criticism. Our correspondence embraces a wide area, and our contributors are men on whose information and statements the utmost reliance can be placed.—All the patent claims, as issued by the Patent Office, will be published every week, and all the notices of the Commissioner of Patents to those interested in the extension of patents, will be found in our columns. On this account no man interested in patents should be without the "Scientific American," and if he is wise for himself, he will not. There is not a manufacturer in our land but should be a subscriber, because he does not know but some invention may come up any week to revolutionize his whole business. Those who are content to plod along in stolid indifference to improvement are sure to fall behind in this age of progress. Every mechanic should read the "Scientific American;" unless he does so he cannot be an intelligent one, for it is the mechanics' paper, and the only one in this country. No paper can be of more advantage in a family, especially if there are sons in it who have an ingenious turn of mind, or young mechanics learning any trade whatever. We are very careful of the moral influence which should be exerted by such a paper, because such an influence is the most important of all. Our readers may expect a greater number of more beautiful engravings in this volume than have appeared in any of our former ones, and in every particular we shall endeavor to make it much superior to all its predecessors. It affords us no small degree of pleasure to know that many of our countrymen have been greatly benefitted in circumstances because they have been readers of the "Scientific American." Their minds have been directed thereby to invent improvements, which have been the means of advancing their fortunes, and elevating them in position. A paper of such importance to our mechanics should receive their universal support, and instead of 25,000 subscribers which we hope to have for this volume, we should have 100,000. There are at least 6,000,000 of our population interested in inventions, science, chemistry, and the arts; out of this number is it too much to expect 100,000 subscribers for such a paper as the Scientific American? It surely is not. Our old friends, we believe, will still use their good influence for the extension of its circulation. We believe that every place where the "Scientific American" is circulated and read is directly benefitted thereby; this consideration gives us confidence and warmness of heart in asking our people to become subscribers, because we feel that we offer them a paper of a real substantial and useful character, one which will do them good, and for which their money cannot be more profitably expended.

### Eight Years of Progress.

It is now eight years since the first number of the "Scientific American" was published. During these years, few though they be, many important improvements have been made, the progress of Mechanic Art has been great, and the national advantages in connection with it have neither been few nor far between. In 1845 there was not a good line of railroad in this State, west of Syracuse—all were laid with the flat rail, and were little better than "man-traps.' Our railroads were then but in their infancy, in number, quality, and management, in comparison with what they are now. There was not a single line of Telegraph then through our State, nor was there one, we believe, west of the Alleghenies: at the present moment there are more than 20,000 miles of telegraph wire in our country, binding its different parts together with electric cords. Then there was not a single Ocean Steamer belonging to our commercial marine, not one,—now we have nearly one hundred, and some of them the largest in the world, which nobly maintain the honor of our country at home and abroad. It is indeed cheering to reflect that although the paddle)wheels of no American steamship broke the waters of a single ocean eight years ago, that now they cleave the waters of every ocean and every sea, from the Bay of Manhattan to the shores of the German and Pacific Oceans. No American ocean steamship was then seen entering or leaving New York or any Bay in the United States, either upon or after a voyage: now, every week, from four to six magnificent steamships enter and leave our harbor, with the regularity of mail coaches. During the same period a new race of sailing vessels have also sprung into existence—we allude to our large clipper ships which have gained such renown for speed and beauty. Since 1845 Gutta Percha has been discovered—Steam Hammers introduced—Cast Iron Houses and Towers constructed, and a thousand inventions beside—the most useful and interesting of which have been illustrated and described in the eight Volumes of the "Scientific American" which have been published.

It would take up too much space to name all of these,—we can only allude to them and say it affords us no small amount of satisfaction that such improvements have been so intimately related to our own purpose of life,—that we have been the advocate and herald of many of them while they were in their cradles, and that their progress has been in some measure like our own. We believe that there is an intimate relationship existing between a paper devoted to science and inventions themselves. An intelligent and honest paper, devoted to such objects, is surely a powerful lever to lift them onward and upward. Our country has made greater progress in Science and the Mechanic Arts, during the past eight years, than during any similar numbes of years in her history. We make this statement without any reservation, for we know it cannot be refuted. The past affords us a solid foundation for the future progress of our country in mechanical improvements and discoveries in Science. It will be our object to labor zealously for such a useful purpose, for in doing so we experience a peace of mind, in striving to benefit our fellow-man, our country, and ourselves.

### Nothing Like India Rubber.

It was an old watchword with tanners and shoemakers, "There is nothing like Leather;" but this venerable motto must give way to the reply, "There is nothing like India Rubber."—This substance can be made soft, hard, elastic, stiff, thick and thin, into every shape, and can be adapted to almost every purpose: it can stand heat and cold—can be made into boots, caps, coats, canes, combs, and we do not know how many other things besides,—the last application of it is to artificial teeth. An "india rubber conscience" was something well known of old, but india rubber teeth to some may appear to cap the climax of its adaptation. This is not so, however: its application to judiciary bamboozlement affords one of the most wonderful and striking examples of the divisibility and extension of matter on record. All our readers will remember the celebrated legal contests between C. Goodyear versus Horace H. Day; and how, from Massachusetts to Jersey, year after year, Goodyear endeavored to vanquish Day, and at last, under the championship of the great Webster, he accomplished his purpose, and obtained an injunction. But, like John Barleycorn, who was hacked, mashed, and finally drowned, up has sprung the India rubber case again, and it is no longer Goodyear versus Day, but Day against his former pursuers. The tables are completely turned, and on the 6th inst. Day obtained an injunction against Dr. Hartshorn and D. & N. Hayward, at Providence, R. I., his former opponents, to prevent them manufacturing india rubber goods, unless the defendants should give bonds, with security, to be approved by the Court, to account for all profits arising from the use of Chaffee's invention, and to pay over the same according to the order of the Court. This decision was made by Judge Pitman, and it will no doubt be of great interest to our readers to know how the tables have been turned in H. H. Day's favor.

About eighteen years ago, all the india rubber goods made in our country were manufactured from india rubber dissolved by the spirits of turpentine into a pasty mass, which was afterwards spread upon cotton fabrics and dried. This method of dissolving india rubber was expensive, disagreeable, and the goods were of a very inferior quality to those now made. In 1836, Edwin N. Chaffee, a working mechanic of New Brunswick, N. J., made an invention which completely revolutionized the whole business, and he secured a patent for it August 31st of the same year. This discovery was nothing less than the rendering of India rubber soft and pasty by mechanical manipulation in machinery while hot, and spreading it upon the cloth in that state. This obviated the necessity of chemical solvents, and at the same time produced better goods. It has been stated that Chaffee's invention reduced the expenses of manufacturing india rubber goods to a third of what they were before. Charles Goodyear, of Massachusetts, by some means, became the owner of Chaffee's patent, and sold rights to various persons for manufacturing goods, realizing thereby an enormous amount of money. During the fourteen years of the patent, from 1836 to 1850, the proprietors of it, and the manufacturers of goods under it, pocketed millions of dollars for their own benefit; and how much do our readers think they, in their swelling generosity, paid to Edwin N. Chaffee, the inventor? They could afford to be generous, and many long-winded speeches were made by their counsel about patent pirates, and so on, whom they pursued as fringers. Well, they paid to E. N. Chaffee the enormous sum of $100. Oh what [india rubber] consciences some men have!

In 1850, Edwin N. Chaffee applied for an extension of his patent, and Mr. Ewbank granted it. The extension was opposed by H. H. Day with fierce pertinacity, and after it was granted, he published long articles, with lawyer's opinions attached, asserting that the Commissioner of Patents had granted the extension illegally. This single act of Mr. Ewbank, of extending the patent of this poor inventor, deserves great credit. After the extension, which, according to law, gives no favor to the former owners, H. H. Day sagaciously found a way to become its sole proprietor. The terms are far more favorable, we believe, to Mr. Chaffee, and we hope he will realize (as he deserves) a handsome fortune out of it for his old age. It is by the extension of the patent that the position of the parties have become reversed, and H. H. Day is now the pursuer of H. H. H., (Hartshorn, and the Haywards.) We have not a single word of praise for Mr. Day, unless he pays Chaffee well for his invention, and if he does, for that we will give him credit. As for those who have made themselves rich by Chaffee's invention—the Company against whom the conditional injunction has been granted having made $250,000 of clear profits in 14 years—we have no language to express our feeling. They have been flaunting about in their gilded array, while the man who made them increase in riches has been for fourteen years generously rewarded with the bounteous sum of $100. Oh! shame! There are men in our country who pretend to be the friends of inventors, and terribly savage upon patent pirates, that are really the plunderers of genius, the horse leeches of inventors.—We defend and uphold the owners of patents in their rights, and we know that there are many generous men in our country who have purchased patent rights, and liberally rewarded the inventors. We do not find fault with those who buy a patent right at a low price, when there are doubts about its profits, but those who buy such rights and make money by them, should not, in their prosperity, forget the inventors. The owners of Chaffee's patent have been a company of monopolists. They have done evil to our country by keeping up the prices of such goods for their own benefit, and to the hurt of all others. Such conduct we always must condemn, because such men do great injury to the rights of inventors in the community by raising prejudices against patents which are granted intentionally to benefit inventors, not their crafty deluders.

### Inventions and Discoveries---Gutta Percha.

It cannot be denied that the mechanical inventor has produced many revolutions in the world, and such revolutions as have not merely changed the ways and workings of one or a few kingdoms, but have completely changed the ways of *men*—they have revolutionized the world. At the same time, we are equally indebted to chemistry, for her beneficial and useful discoveries, and perhaps this field, for improvement and progress, is much wider than that of mechanism. The discovery of gutta percha was only made a few years ago, and yet to what purpose is it not now applied. It is used for a hundred different purposes, and no other substance is like it, and were it cheaper it would, no doubt, be used to an hundred-fold greater extent than it now is. There are some hopes of a cheap substitute being discovered, and we trust that the experiments instituted will lead to such a favorable result. By recent news from Europe, we learn that Dr. R. Riddell, of Madras, in making experiments on the Muddar plant of India, found that its milky juice, when dried, became tough and hard like gutta percha, and precisely analogous to it. It is charred by sulphuric acid, converted into a yellow resinous substance by nitric acid, and but little, or not at all, acted on by muriatic or acetic acid or alcohol. Spirits of turpentine dissolves it into a viscid glue, which, when taken between the thumb and finger, pressed together and then separated, shows numberless minute threads, all which results correspond with those of gutta percha. The Muddar also produces an excellent fibre, useful in the place of hemp and flax. An acre of land cultivated with it would produce a large quantity of fibre and juice.

We may be allowed to indulge a hope that this substance will yet be cultivated in the United States; at the same time we exhort our people to look out for such discoveries from the natural products of our own country.

### Our Title Page.

Our readers, we know, will all be pleased with the beautiful and appropriate frontispiece on our last number. The two figures represent science and practice conversing together, or Venus the beautiful, and Vulcan the swarthy but strong-armed forger of bolts and bars. The Patent Office of the United States is represented behind the figures, on an elevation in the distance. A steamboat and steamship, together with a line of telegraph, flank a viaduct on the New York and Erie Railroad, along which the iron horse is seen panting with his huge train. Agricultural and various instruments are represented, to show that industry and the arts are the true emblems of our country's greatness and glory.

The ornamental work was designed by Otto Heineigke, and the mechanical by Chas. Parsons. The engraving was executed by Frank Leslie; Wm. Filmer was the electrotyper of it, and it was printed by E. J. Johnston.

### Our Prizes.

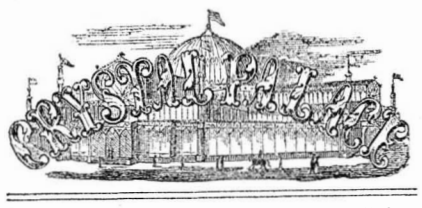
We would again direct attention to our prizes, they are more numerous and of more value than those offered last year. They are free as air, and worth contending for. Those who endeavor to obtain subscribers have many arguments to advance to those whom they may solicit to subscribe. We commend to their attention the article headed "Our New Volume."

Clubs can obtain the "Scientific American" at a very low price; it is really the cheapest mechanical paper in the world.

### The New York Sun.

The twentieth anniversary of this extensively circulated newspaper was celebrated on Saturday evening, the 5th inst. The whole building was grandly illuminated, brilliant fireworks were displayed, and a sumptuous banquet was given by the proprietor to his employees and invited guests.

The utmost cordiality of feeling prevailed, and the whole affair reflected much credit upon Mr. Beach, whose enterprizing management has placed the "Sun" among the most influential and successful papers of the day, its circulation is understood to be much greater than any other daily paper in the world. Continued success to the New York "Sun" and its enterprizing manager.




It is now two weeks since the Crystal Palace was opened in the evenings, and the experiment so far has been highly successful. The machinery is now nearly all arranged, and presents much that is interesting to mechanics, manufacturers, and patentees, and owners of patent rights. A great number of patented machines are on exhibition, and the majority of them have been illustrated in our columns, thus showing that the "Scientific American" is truly "the Repertory of American Inventions." To all of these machines we will direct special attention in some future number, and make such remarks about them as may be proper and instructive.

Street Sweeping Machine.—There is one machine in the English Department to which we wish to direct the attention of the New York City Authorities especially; we allude to the machine for sweeping streets, which has been sent over from Manchester, we believe: No city in the world expends more money for street cleaning, and yet there is not one, we venture to say, that has as dirty streets as New York. Some desirable change is wanted to effect a reform in street cleanliness. What shall it be.—We have more than once directed the attention of our people to the sweeping of streets by machinery, and five years ago we published an engraving of an American machine, on page 16, Vol. 3, invented for the purpose by C. Bishop, of Easton, Pa. We also described what had been done in Manchester, England, in keeping the streets clean by machinery, still our city authorities are always behind, and never move, until driven, into any improvement or reform.—We now solicit them to visit the Crystal Palace in body and examine this machine, and see if it will not waken up some spirit in their lazy minds to sweep off the mud and filth of our public thoroughfares. This street sweeping machine is of the size of an ordinary cart, and can be drawn easily by one strong horse. It is stated, (but for the truth of which we will not vouch) that it will do the work of fifty men. It sweeps up a swath of mud six feet wide, as fast as a horse can walk. Formerly these machines, in addition to sweeping, were used also to cart away the material; but the loss of time thus occasioned, induced inventors to add to its power to clean, and leave the work of removal to be performed by attending vehicles. The one on exhibition is on the improved plan, and should be used here, at least sufficiently to show its capacity. Their cost does not exceed $300.

The dirt is swept up by brushes revolving on an endless apron, and deposited in the box of the cart. Messrs. Mayor and aldermen walk up to the Crystal Palace and examine this mud cart. Is it not a shame to you, that they have to send over from the old city of Manchester (from old slow John Bull, as we sometimes call him) a dirt cart to instruct you in city cleanliness. Oh you old foggies, cast away your night caps.

Sewing Machines.—No machines at the Exhibition attract so much attention as four sewing machines which are placed in the East Nave, and which are in continual operation all day long. Two of these machines are known by the name of "Singer's Sewing Machines," the others are those of A. B. Wilson, combining his latest improvements. Both of these sewing machines have been illustrated and described in the "Scientific American," Singer's on page 49, Vol. 7, and Wilson's on pages 297 and 298, Vol. 8. We refer all those who desire to get a full description of the nature, construction, and operation of these machines to the pages mentioned; no where else can such information be obtained. As sewing machines are now exercising a great influence in various manufacturing operations in our country, and as we believe every family that can afford to buy one will yet do so, it is very important that all our people should be fully informed about them, in respect to their qualities, and also in respect to their patent claims, so that no person may purchase ignorantly and bring himself into trouble.

These machines are very conspicuous at the Exhibition; they are placed on platforms, and each is attended by an experienced young woman, who finds more observers of both sexes than any other person in the Palace. Singer's machines make more noise than Wilson's, but the latter seem to have the greatest number of admirers; they are certainly the neatest sewing machines yet produced.

Machine and Hand Labor.—When sewing machines were first introduced in this city, we received not a few thrusts from a periodical published here for some time, and which pretended to be a generous advocate of women's rights, and commiserated the poor seamstresses in this city, on the approaching destruction of their business, denouncing us for advocating the introduction of such an invention, even although it was an improvement. Such pretended friends of our working people always do them more injury than good, by their short sighted views and indiscreet language. Sewing machines have not taken the bread from a single female in our land, and the substitution of machine for hand labor, in all cases, has increased, rather than diminished the demand for manual labor. Machinery has indeed changed the occupation of many, but in doing so it has relieved men and women from drudgery, and elevated them to more noble employments. In 1846 we believe there was not a single garment in our country sewed by machinery; in that year the first American patent on a sewing machine was issued. At the present moment thousands are wearing clothes which have been stitched by iron fingers, with a delicacy rivalling that of a Cashmere maiden. Let no one of our readers who visits the Crystal Palace fail to pay particular attention to the operations of the sewing machines.

Rotary Pumps.—There are two rotary pumps at the Exhibition which attract much attention, because they are conspicuous objects, both in number and position. One is the piston pump of Albigence Carey, which was illustrated on page 345, Vol. 3, "Scientific American," and the other is the centrifugal disc pump of Stuart Gwynne, of this city, which was illustrated with a number of engravings on page 89, Vol. 8, "Scientific American." No other pumps at the Crystal Palace are so well placed for show and operation. We allude to them, not merely because they were published in the "Scientific American, but because they are really so prominent among all the rest of the machines, and because a knowledge of the interior of these pumps can be obtained by reference to the engravings referred to, while no one can tell how they are constructed inside by merely seeing them operate at the Crystal Palace. A large boiling column of water, like a huge fountain foaming up from subterranean depths, near the sewing machines, at the entrance of the Machinery Department, is driven by Gwynnes' pump. Carey's pumps are situated on a platform in the machine room near the entrance. Carey's Rotary Pump has movable sliding pistons operated by an interior cam. Gwynne's pump has no piston and no slide. It takes the water in at the centre of the disc, and throws it out at the circumference by centrifugal action—not a distinct force. The driving force is the steam engine which communicates motion to the shafts of the pumps through belts and pulleys. Both pumps are worthy of attention, and they command it.

Mr. Ewbank, in his work on Hydraulic Machines, states that no rotary pump had been invented equal in every respect to the reciprocating pump. His work was published some years ago; in another edition he would have to make a different statement. For a great many purposes, especially in paper and sugar mills, and for draining purposes, the centrifugal pump, which requires no packing, and is wholly composed of metal, does work for which no other pump can be economically employed.

The sewing machines and the rotary pumps are so near the entrance of the Machine Room that a notice of them comes naturally first in order. We have no doubt but all our readers who have examined the engavings and read the descriptions of these machines in the "Scientific American," and who have never seen any of them in operation, will be pleased with us for directing their attention to them. There is no man but would be more edified and enlightened with the operations of any machine, the first time he saw it in operation, if he had read an illustrated description of it previously. This is one great advantage which the readers of the "Scientific American" have in visiting Industrial Fairs, and which they certainly will have in visiting the Crystal Palace. It is easy to see how they must be more intelligent in respect to new machinery and progress in the arts than other people, it must be so, it cannot be otherwise. In visiting a machine shop the movements and operations of many machines cannot be discerned; they are cased up, and their outside moving parts cannot give any person a correct idea of what they are in principle and construction, hence the benefit which the readers of a mechanical paper derive from illustrated descriptions of new machines.

To Exhibitors.—We have a word of advice to give to you, not all of you, but the great majority. Why do you not label all your articles, and put on the price of them? It would be for your benefit, you may depend upon it: the place where the goods or articles were manufactured, the place where they can be purchased, and the given price, would be the means of selling many things which will not have a single purchaser. The special nature of the improvements in every machine, should be placed upon it with a printed or well written circular. Every work of artistic merit should have the name of the artist on it. Manufacturers and employers, as an act of justice to their operatives, should place the name or names of the persons who executed the work upon the articles which they exhibit. "Honor to whom honor is due," but not all to the agent exhibitor, nor manufacturer. There are some goods marked with "From the Globe Mills," "The Glasgow Mills," &c., and that is all we know about them. This is not right, neither is it wise on the part of the manufacturers, and above all, it is not exactly just on the part of the agents. The Commissioners of the Exhibition should demand of every exhibitor to put a correct and full label on every article he exhibits.

Visiters.—We have been frequently asked for advice as to the best manner of viewing the Exhibition, *where* the most interesting things are placed, &c. It is impossible to give advice about such things. The only advice we can give, is to examine every department carefully-

Shoe Pegging by Machinery. — Cheap Shoes Expected.—On Friday of last week, a special invitation was given to the members of the press, and some others as *distingue*, [Governors and Generals,] to witness the operations of a shoe-pegging machine, invented by A. T. Gallahue, of Pittsburgh, Pa.—patented on the 18th of last month. This one is made almost entirely of iron, costs $150 to $200, and will probably weigh some two or three hundred pounds. It will peg a shoe or boot, two rows on each side (leaving a small space at the heel and toe) in three minutes, cutting its own pegs. One man only is required to operate it, without auxiliary power. We understand that one is now in practical operation in Pittsburgh.

We do not know how many pairs of shoes a good workman could peg by hand in a day, but from what we have been told, and the feats we have read of by some shoemakers, it appears to us that this machine is as yet a peg too slow to supersede hand labor. One shoe pegged in three minutes, amounts to 120 pairs in twelve hours, and at this rate it requires an attendant. It is indeed true that a boy or a girl can attend it, and a number of such machines can be driven by one shaft, like power-looms. The principle is in it, however, and the knell of hand-pegged boots and shoes has been rung.

We will shortly publish an engraving of this ingenious machine, and will present more information on the subject.

Weighing and Packing Machine.—A very ingenious and useful machine for weighing and packing up packages of tea, coffee, spice, &c., is exhibited by Slater & Steele, Jersey City.—The material is fed from a hopper over head, is weighed in its descent from the hopper and discharged in pounds, half pounds, or otherwise as may be required, into a tunnel resting in a square box, into which a paper has already been conveyed by the machine. The box forms one link in an endless chain of boxes revolving around a platform, and moving on a few inches, receives through the tunnel a square stamp just fitted to it, and thence passes to another, until the fourth delivers it pressed into a solid mass and enveloped.

The Machinery in General.—All the machinery is not yet in order, nor has it all arrived. New models are constantly being introduced, and their shining and strange effect contribute in no small degree to the general appearance of the building.

Among the novelties entered for exhibition are several contributions from American mechanics. A beautifully finished foot-lathe for turning ivory and small work generally, attracts considerable attention. It is the production of a youth 14 years of age, the son of Mr. James Stuart, of No 15 Canal street. Another contrivance that attracts much notice is Miniss' Locomotive Invalid Chair—the invention of Mr. Miniss, of Meadville, Penn., and is patented. The chair rest on three wheels, the fore wheel being on a novel double-action joint, enabling the person occupying the chair to drive himself by the hand in any direction about the room, or on any level surface.

The American Department.—Every one of our acquaintances who has visited the Crystal Palace, and of whom we have asked the question, "What do you think of the American Department," have answered us with sparkling eyes, "I feel proud of it." Yes, every American must feel proud of it, for it presents proof to corroborate what we asserted two years ago, viz: "Had London been as near to America as to the continent of Europe, our people would have astonished the inhabitants of the Old World, who in general have an idea that in this new country we cannot do anything, and have not anything like the old nations. Any person from abroad possessing such an opinion, has but to step into the American Department in the Crystal Palace to get converted.

**Railway Horse Powers.—Information Wanted.**

Some one from Baltimore has written us for information concerning a patent on a design. The signature is too grotesque for our imagination, therefore we are compelled to answer through the paper. The question is as follows:—"Could a design of the following character be protected by a patent, viz., the present endless chain or railway horse-power with a circular saw combined, for the purpose of sawing cord wood in the street, the machine to be portable, moving from one point to another on wheels."

We hope our correspondent will take no offence when we suggest that we can scarcely believe that Baltimore contains, in 1853, a person so ignorant of invention. Almost every railroad station in the country is provided with just such a machine as is here proposed to be patented *as a design.* We advise our correspondent to read the "Scientific American" very carefully, and purchase a copy of the Patent Laws to study during the coming winter evenings.

**Steam Gauges—Moreau's and Eastman's.**

Our readers will recollect that we published engravings of the steam gauge of J. Eastman, of East Boston, Mass., in our last volume;—since that time we have received a letter from E. H. Ashcroft, of Boston, accompanied with a circular, on which are engravings of Fountain Moreau's steam gauge—a French invention—which was patented in the United States August 20th, 1847. This patent Mr. Ashcroft purchased, and is now the sole proprietor and manufacturer of the gauges. He asserts that Eastman's gauge—as published by us—is identical with that of F. Moreau's, and the use and sale of which would be an infringement of the patent which he has purchased. We have not examined the Letters Patent of F. Moreau, but the engraving on Mr. Ashcroft's circular, presents a gauge similar to that which was illustrated as "Eastman's" on the page referred to above.

**A Boomerang Propeller.**

The Lady Eglington arrived at Quebec last week, in 13 days from Liverpool, and reached Montreal the 14th day. This steamer has recently been fitted up with the new propeller, known as the Boomerang, from its resemblance to the Australian weapon so called. It is the invention of Sir Thomas Mitchel, and was patented in the United States a few weeks ago.

### TO CORRESPONDENTS.

N. C., of Ill.—We think vulcanized India rubber would answer a good purpose to connect saddle trees. Try it; the cost cannot be much. We do not think a patent could be secured. Something would depend upon its utility and method of construction.

S. W. W. of Mich.—Mr. Crosby claims, in his patent of 1851, a circular saw, with both faces convex, when this is combined with a guide for spreading apart the plank to prevent the saw from binding, not limiting himself to the precise construction and arrangement. The invention is a good one, we believe.

T. Y., of Iowa.—A life-preserving trunk is a new thing in name, but perhaps not in principle. Send us a sketch and description for examination, and we will advise you.

R. G. G., of N Y.—Attaching a thermometer to a steam boiler, for the purposes set forth in your letter, is not a patentable subject. It has been done before.

D. D., of Ill.—Merely coupling two ploughs together is not patentable. We do not discover anything more than this in your "Double Corn Plough."

D. B., of N. J.—Your railroad telegraph is perfectly feasible, and is a most excellent plan to prevent accidents, and it should be established on all our railroads. But we do not know what advice to give at present in respect to your interrogation.

E. & A. R., of N. Y.—If the case referred to is reported, we shall notice it. G. W. Beardslee, of Albany, N. Y., can give you any information upon the subject.

S. S., of Ill.—The law requires every patented article to be marked as such, with the date of the patent.

J. H. B., of Mich. Some weeks since we published a machine of M. Schoonmaker for turning spokes. We think it not a very expensive machine. Copper wire, we suppose, can be had at any hardware store. The stamp was torn off the letter we sent you.

A. J. of Mich.—We caution youagainst purchasing any right in an invention until you know what it is. We presume there is no patent.

J. S. L., of N. Y.—Your method of preventing cars from running off the track while turning curves is not new or patentable. Several printed references could be given.

J. P. A., of Va. We do not find on exhibition at the "Fair" such pumps as you appear to require. The chain pump is well liked here. It is simple and durable.

J. S., of Va.—Your plan for preparing newspaper directions appears to be new, but we cannot discover its advantages. You had better drop it. Your case is regularly filed. We do not advise foreign applications in this case.

S. G., of N. H.—Your inquiries havebeen submitted to the publishers of the "Illustrated News" for their attention.

D. B. K., of O.—We simply require a brief description of the operation of your machine, with a statement of the advantages you claim for it over other machines for the same purpose.

E. S. G., of S. C.—The application of a weight to machinery for operating a churn dash, or anything else, is not patentable.

W. T., of Me.—Your idea is to obtain an endless whipsaw. There may be advantages in it, but we cannot see them. It would not cost much for you to rig one up and test it.

J. Z. A. W., of Phila.—According to Dr. Scoresby, the waves of the Atlantic never rise higher than 30 ft., but in the Pacific and Indian oceans they rise to twice that height.

R. G. G., of N. Y.—A pump to spread and agitate the water in the boiler has been proposed, but it is supposed that a better practice is to feed in the water in spray and gave only a small quantity in the boiler at once.

B. B., of N. Y.—An inventor who intends to apply for a patent should make a small substantial model of his invention, place it in the hands of a competent agent with a full explanation of its operation, etc., this is all that is necessary on the inventors part, except to sign the papers when ready, and furnish the fees; the patent fee is $30, and the agent would charge according to the amount of time and labor, say from $25 upwards.

J. M. M., of Mich.—Your wheel will operate well, and as you say, the velocity can be given by gearing, but it is not patentable, for the same kind of wheel has been in operation in this city, and we saw it four years ago

E. S. Hulbert, Bernardstown, Mass., is a practical hoe maker, and can furnish J., of Powelton, Ga., with such information as he may desire.

R. Y. Russell, of Newman, Geo., wishes the best machinery for dressing and making sash doors, &c.

W. H. H., of N. J.—We are not familiar with the best implement in use such as you want.

C. T. W., of Ky.—Yours received, and the amount is paid over to Fowlers & Wells.

G. H., of Wis.—No patent could be secured for the application of a chilled mould-board to a cast-iron plow.

J. B. C., of Tenn.—The blocks named in yours of the 16th ult. cannot be furnished.

H. P. A., of Geo.—We have been informed that the Smyrna figs are boiled in sugar for a few minutes, then dried in the shade and rubbed with dry sugar.

M. E. D., of N. Y.—If you have the same amount of water and height of fall for both wheels, the 13 feet one will produce the best effects.

J. L., of Ohio—We are well aware that the magnet which closes the local circuit is called "the receiving magnet,' but the name is wrong—it should be called the "relay magnet."

J. R. M., of Ohio—The specification, drawings, and model of your machine were sent to the Patent Office before the receipt of your letter of the 29th ult.

T. S. J., of Ohio—There are a great number of patents on head and tail blocks for saw-mills: send us a sketch of yours and we will examine it. The Burglars Alarm is old.

L. R., of Del.—We have not published much upon windmills: G. B. Farnham, of this city, can give you all the required information.

G. F. McM., of Ill.—You had better use Morse's Air Distributor for your furnace: address L. Morse & Bro., Athol, Mass.

J. T., of C. W.—We cannot give you any encouragement until we can clearly investigate the nature and action of the invention. Send a sketch and description. Our correspondents would save much time, and trouble to us and themselves if they would always accompany their letters with sketches of their inventions. Mere written descriptions of any machine, unless very simple, will not answer our purpose for examination.

J. H., of Wis.—We shall attend to your case at once: have a little patience with us, now, if you please. $35 received.

R. A., of Pa.—Most certainly not: your proposition is absurd and manifestly ridiculous; we cannot descend to publish such "stuff," it is nothing else.

F. B. H., of Ind.—An engraving of your machine will cost $15; it will be necessary for you to send us your Letters Patent, that we may take such views as are illustrated in your document.

R. C., of N. Y.—We will examine very carefully your alleged improvements in tanning and write you.

R. W. A., of Ct.—To execute engravings of a style and magnitude commensurate with your invention, would cost you $20. We have nothing in our possession to get up engravings from, and you had better send your Letters Patent.

J. B. S., of Pa.—We would like to see the model; we do not see what advantages you obtain without the shaft of the wheel.

S. C., of Va.—The way to remove the incrustation, is to empty the boiler, then slightly heat up, when the scale can be cracked off with a mallet; it can also be chipped off inside. To prevent incrustations, coat the flues with a mixture of coal tar, soap, and black lead; put on thin with a brush.

D. K., of ——.—Your plan for stopping a train might answer the purpose if it did not increase the liability of throwing the train from the track: it would, in our opinion certainly do this.

A. H. Holmes & Bro., of Pittsburg, Pa., want a first rate machine for making bolts.

W. H., of Ill.—We are unable to give the information you desire in regard to the manufacture of the sugar of milk.

T. S., of N. Y.—You must address your application for space to J. E. Holmes, Superintendent of the Machine Department Crystal Palace, stating specifically the amount of space required.

T. H. D., of N. H.—Your apparatus for regulating the flow of gas is new, we think.

H. B. G., of Ala.—There are a number of patents on shingle sawing and splitting machines; you had better show us what you have done and we will examine into its novelty: we cannot act understandingly upon mere hints.

J. N., of N. J.—Patents in England can be secured after their issue in this country: whoever tells you to the contrary don't know. We know nothing of Collins' invention: we don't believe he every invented anything.

C. V. A., of N. Y.—There is nothing new or patentable in your churn dash—the principle is old and well known in rotary churns: don't fool your time away upon it.

F. McM., of N. S.—Your description of a Flying Machine has been received. The "atmospheric screw," as you term it, has been tried here on two occasions with different balloons: in both cases it was a failure; the screw was exactly the same as yours; we saw both balloons.

W. F., of Mass.—It is not possible for balloons to operate successfully by any known contrivances while they require such a volume to elevate the aerial navigators; the difficulty lies in their necessary great size.

T. E. J., of Ky.—We see no difficulty in blasting by the manner you propose. Gun cotton ignited by the electric spark would be the very substance and plan we would propose. It is a wonder to us that all blasting of rocks is not done by the battery; the only reason we can give is that the men who follow such an occupation are ignorant of its importance.

C. C. S., of N. Y.—If you wish manufacturers to know that you have such articles for sale advertise them, the best vehicle for this purpose is the Scientific American. A daily paper is the worst of any. Manufacturers and mechanics look to the Scientific American for such advertisements.

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Money received on account of Patent Office business for the last two weeks, ending Saturday, Sept. 10:—

J. O., of N. Y., $10; A. F., of Ohio, $30; A. E. B., of N. Y., $30; J. B., of Ct., $50; F. C. G., of N. Y., $40; M. H., of N. Y., $56; N. S., of R. I., $50; L. & T., of Wis., $72; O. B. T., of Pa., $20; A. B. C., of Pa., $60; D. W., of N. Y., $10; C. C., of R. I., $50; J. H., Jr., of Mass., $35; A. J., Jr., of N. Y., $30; C. W. B., of N. J., $30; W. C. W., of Mass., $30; N. B., of R. I., $30; W. E. B., of Ala., $30; S. W., of N. Y., $30; P. & C., of N. Y., $30; D. H. B., of N. Y., $50.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the last two weeks ending Saturday, Sept. 10:—

W. E. B., of Ala.; J. S. B., of Pa.; G. W. C., of Geo.; F. C. G., of N. Y.; H. L. R., of Mich.; P. E. B., of Mass.; O. B. T., of Pa.; J. J., of N. Y.

### A Chapter of Suggestions, &c.

MISSING NUMBERS—Mail Subscribers who have failed to receive some of the numbers of Vol. 8, are informed that we are able to supply them with any of the numbers, from 1 to 52, EXCEPT the following, and those we are ENTIRELY out of—Nos. 2, 4, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 48, 49.

READY FOR DELIVERY—We have just received from the Binders 100 copies of Vol. 8, Scientific American, which will be sold to the first applicants at $2,75 per volume. We also have about 50 complete sets of Volume 8, in sheets, which will be sold at the subscription price—$2 per set. Those who apply first will stand the best chance to get their orders filled, for after the above number are sold no more can be obtained at any price.

TO CORRESPONDENTS.—Condense your ideas into as brief space as possible, and write them out legibly, always remembering to add your name to the communication: anonymous letters receive no attention at this office. If you have questions to ask, do it in as few words as possible, and if you have some nivention to describe, come right to the business at the commencement of your letter, and not fill up the best part of your sheet in making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

PATENT LAWS, AND GUIDE TO INVENTORS—We publish, and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

BINDING.—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office, and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

FOREIGN SUBSCRIBERS—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the present volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all: price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engraving executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post-office at which they wish to receive their paper, and the State in which the post-office is located.

# Scientific Museum.

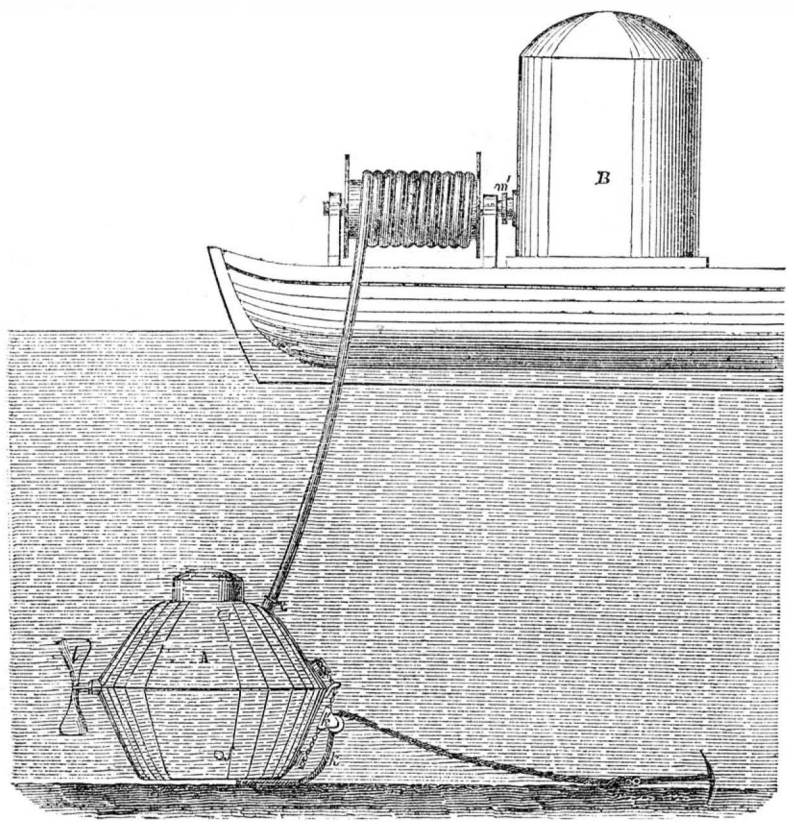
### Improvement in Diving Bells.

The annexed engraving is a view of an improvement in diving bell apparatus, invented by E. W. Foreman, of New Rochelle, N. Y., a young man who lost his life last year while bathing. A patent was granted to his brother as administrator on the 23d of last month, the claim for which will be found on page 406, vol. 8. The assignee of the patentee is H. W. Sears, of this city.

We consider that all improvements relating to submarine apparatus are of much importance to such a great commercial country as ours; hence we have always endeavored to spread abroad much useful information on the subject. In the first number of our last volume we presented an illustrative description of blasting rocks under water by the electric spark, without the use of a diving bell; but the diving bell is for the purpose of doing under water what no other machine nor apparatus is capable of doing; hence it will always be used, and every improvement made in it should attract attention.

The figure of the dividing chamber, A, is made up of the frusta of two cones joined at their bases. At the top is an opening by which the workman enters, having a cover fitting air-tight, which may be secured from within. The bottom also has a hole in it, with a cover. Around the edge is a rim. The use of this rim is to retain within the vessel any object the explorers may take in through the bottom. There are a series of tanks arranged around the sides of the diving-chamber; these are the air and water reservoirs for regulating the specific gravity of the chamber. Each tank is connected with the others by two sets of pipes; the one set being at the top, and the other at the bottom. The upper pipe is for the supply of air, and the lower one for water. The supply of air is obtained from a reservoir (carried upon a boat or float) by means of a flexible tube, C, extending from it to the diving chamber, where B is the reservoir, and it is by filling the tanks with water, wholly or partially, that the buoyancy of the chamber, A, is regulated; *g* is the end of a pipe to which the flexible air-tube, leading from the reservoir, B, is connected outside, while it communicates within by means of a branch having a stop-cock with one of the tanks, and then the main pipe passes down near the bottom, and discharges by another stop-cock into the general chamber A. There is a pipe for discharging air from the tanks. This pipe has a stop-cock in it, and is beside covered by a valve of common construction on the outside, and opening outwards. There is a pipe for emptying the tanks of water, which discharges outside and also through the bottom; there being here a valve of common construction opening outwards. The air may likewise be introduced into and discharged from the tanks by separate pipes; an arrangement which will sometimes be required, as the proper balancing of the vessel will depend upon it. The chamber is further supplied with an arrangement for anchoring it to the bottom for holding it in one place, or to afford the means of shifting its position. The anchor, which may be of common construction, is attached by a cable, *k*, through a traversing sheave or block, *k'*, and the end, after passing over k', is taken in through a hole in the bottom, where it may be wound upon a windlass. The block *k'* is fixed to an endless chain passing over two rollers, one near the bottom, and the other near the middle of the diving chamber A. The upper roller is fixed to a shaft which passes through the side of the chamber, A, and terminates in a crank, by which it can be turned round. This movement from within effects the traverse of the pulley *k'*, up and down, and so changes the angle or direction of the pull upon the anchor. The various positions which may thus be given to the block, *k'*, afford a means of regulating the degree of force with which the chamber is held to the ground; for if the cable be adjusted to pull from the bottom of the chamber, A, it will exert little force in keeping it upon the ground; and, on the contrary, if the block, *k'*, be raised, the anchor will act more effectually to hold the chamber upon the ground. At *l* is a propeller rudder. This is a common screw, fixed upon a shaft passing through into A, and having a crank to set it in rotation. The box supporting the shaft is formed on the principle of a ball and socket joint, thus any direction may be given to the shaft, so that by it the chamber, A, may be propelled within a certain arc in various directions, the anchor forming the centre about which the motion would take place. The flexible air tube is exhibited at C. It is so constructed as to be capable of being coiled or uncoiled without interrupting the passage of air; for this purpose it is combined with a hollow-shafted reel. The end fixed upon the reel opens in the hollow shaft, one end of which is stopped, the opposite end entering the reservoir, B, through a stuffing-box, by which means the air may pass out of B through the shaft, thence through the tube coiled upon it, and be thence discharged into A, so that no more tube need be in the water than is sufficient to reach the diving-chamber. The air-reservoir, B, must be constructed of a material capable of sustaining a great degree of pressure.

## FOREMAN'S DIVING BELL.




The mode of operating with the apparatus will be as follows: The diving-chamber, floating upon the surface of the water, is anchored so as to stand over the bed of the wreck or other object to be explored, or as nearly so as may be. The reservoir, B, is then charged by means of an air-pump with as much air as can be forced into it, and the flexible tube, C, is attached to A. The workmen enter with such tools as they require, and the top is shut down and fastened. The tanks, at first, contain only air at the pressure of the atmosphere. The air-cock is then opened, and also a cock at *f;* the latter of which allows water to flow into the tanks, and forces the air out, which decreases the buoyancy of A so much that it sinks. As the chamber descends, the cock, *g*, is opened so far as to allow a sufficient amount of air to be sent in from the reservoir, B, to sustain respiration, and also to counterbalance the pressure of the water outside, for the ascertainment of which proper gauges will be employed. The specific gravity of the vessel may be regulated for any depth of water it is to go, by properly proportioning the water and air in the tanks, so that it may be held in suspension at any depth the operators may please. In this manner the upward and downward motions are effected, while the traversing motion along the bottom is obtained by means of the anchor and the rudder.

If the apparatus lie in a current, it can be worked along it by means of the cable, *k*, being wound or unwound within, while to go from side to side the propeller-rudder is worked. As soon as the chamber is over the proper spot, the cover to the bottom hole is taken off, when the water will be kept back by the pressure of the air from within, and the workmen can then begin their operations. Light is admitted within the vessel by the insertion of heavy plate glass, or bulls'-eyes, in the top and sides. The buoyancy of A should be such that on emptying the tanks of water and filling them with air, it will rise to the surface with the additional weight of such articles as may have been taken from the bottom. As soon as it is desired to rise to the surface, water is expelled from the tanks by the force of the air from the reservoir, B, which is then admitted in at the top, the water passing out by the bottom pipe, *f*, from which there is a communication with the outside.

It is intended to combine with the diving-chamber a second chamber, placed below the lower opening, and to be formed of several pieces, which is intended to act as a moveable coffer-dam.*

* We refer our readers to the claim to see what is new to this apparatus.

### The American Yacht Silvie Beaten.

The American Yacht Silvie, the property of a gentleman at New Rochelle, was beaten this year in the race for the Royal Prize. The successful Yacht was the Julia, of only one half the tonnage of the Silvie, and is quite new, having been built on improved lines. The Silvie came in second; the time was 7 hours, 7 minutes, 3 1-2 seconds for the Julia, the Silvie's time was 6 minutes, 38 1-2 seconds longer. The owner of the Silvie, L. A. Depaw, at once challenged the Julia for another race; we do not know if the challenge was accepted.

### Serious Steamboat Accident.

The steamboat Bay State, while on her passage to this city from Fall River, on the night of the 8th inst., broke her crank pin, by which the cylinder lid was smashed to pieces, and a great discharge of steam took place into some of the rooms where the passengers were sleeping, by which four persons lost their lives.—The verdict of the Coroner's Jury threw no blame on any of the officers of the boat, or the makers of the machinery.

### Improvement in the Manufacture of Iron.

The "Pittsburgh Dispatch" states that a valuable improvement has recently been made in the manufacture of iron by J. Finch, of that city. The nature of the improvement is not described, but it is stated that the common grey iron of Pittsburgh has improved so much in strength by it, as to sustain more than 20,000 lbs. extra on the square inch. The improvement is made in the puddling process, and is applicable to all kinds of iron.

There are some that live without any design at all, and only pass in the world like straws on a river—they do not go, but are carried.

### Heat and Comets.

When some persons get notions of a peculiar character into their heads, it is curious to witness the reasons they advance, and the proofs they bring forward in support of their opinions. The recent comet has called forth the philosophic deductions of a correspondent of the "New York Tribune," in proof of great heat as the usual accompanyment of such visitations. He asserts that the comet of 1811 was accompanied with a highly heated atmosphere, and that the present comet was the same that Beilas discovered in 1826, and that its periodical revolutions were calculated by E. Clausen, and found to be 6 3-4 years, which he says would make it cross the ecliptic on the 29th Oct., 1852. How he makes out the recent comet to be Beilas', in order to prove its connection with the great heat of our atmosphere this summer, by his own proofs, is enough to puzzle the best spiritual medium in our country. Beilas' comet appeared last year and was seen at Rome, consequently the present comet cannot be the same, and his conclusions about heat and comets are simply erroneous.

### Inventions.

Some one thus sums up a few of the advantages of modern inventions:—"One boy, with a Fourdrinier machine, will make more paper in a twelvemonth, than all Egypt could have made in a hundred years during the reign of the Ptolemies. One girl, with a power-press, will strike off books faster than a million scribes could copy them before the invention of printing.—One man, with an iron foundry, will turn out more utensils than Tubal Cain could have forged, had he worked directly to this time.

In the course of one month there will be a double track all the way to Albany on the Hudson River Railroad. Good.