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Artificial Stone.

Mr. Hodgson's Fire-Proof Stone, the claim of which may be seen in the list of patents granted this week, is affirmed to stand intense heat better than granite, or even than many varieties of fire brick. The granite or quartz used in its manufacture is readily made friable in the usual way, by heating and plunging in water, and neither the materials nor the process appear to be very expensive. It is worthy of attention.

#### Corn Hasking Machine.

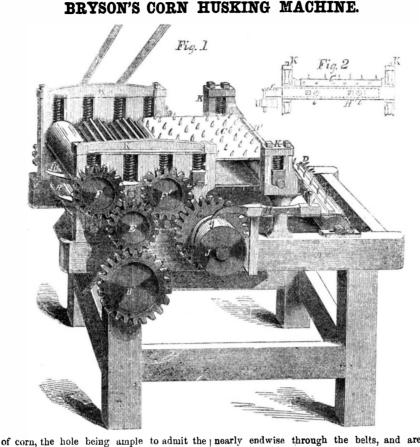
This engraving illustrates a machine already in practical and successful use, for not only ridding corn of its husks and nub, or stem, but for so crushing and cutting the husks, and more especially the short portions of stalk termed the nub, that they are prepared for fodder by the same operation.

One important feature of the machine is but partly in sight in the main view, and is added above it at fig. 2. The principle features of the machine consist, 1st, in means for cutting off the nub or nubbin; 2d, in devices for carrying forward the ear thus treated, and for agitating and loosening the husks, and 3d, in powerful rollers slightly fluted. which seize all the loose parts and draw them through, grinding and cutting them fine by the same operation, while the ear of corn, being rejected by the rollers on account of its size and its smooth, hard character, is quietly dropped into a depository below.

The power may be of any kind, and may be applied at any point in the train of wheels. In the engraving it is applied to the shaft of the wheel, B, by means of a belt acting on a light and loose pulley on its further extremity. This gives motion to E, and this again to F and F', and also by gears on the further extremities to a roller between them. Both F and the unletterred roller are fluted, though not as deeply as appears in the engraving, and both, in common with F, are kept down by stiff spiral springs as represented, upon the rollers, E and R below. These constitute the train of rollers which treat the fodder, the roller, R, being armed with knives to complete the operation, and discharge it finely cut.

There are two endless belts, the upper of which, C, is armed with spikes, the lower, D, is armed with both longitudinal slats and spikes. Both belts move in the same direction, and with different velocities, and serve to carry the corn forward, loosening the husks, and present it in such a manner to the fluted rollers that the latter are certain to deprive it of all the loose material before allowing it to fall through the narrow space re maining between them and the belt. The rollers which carry the upper bolts are also, as represented, pressed down by springs, so as to cause the belts to rub with some violence on the ear of corn in passing through, but these springs are much weaker than those on the boxes carrying F', etc.

The device for cutting off the butt or nubbin is a vibrating knife, I,-figs. 1 and 2. It is mounted immediately back of the cross bar, H This cross bar has two holes counter- riveting, but, although it requires much great-



nub with the roots of the husks. The knife, I, is connected at its near extremity to the lever, H, and this lever is actuated by ranning in the oblique groove, g, in the surface of the pulley or cam, J, so as to receive a quick reciprocating motion.

The attendant takes an ear of corn in each hand, presents them butt foremost to the countersunk holes and then drops them on the belt, to seize two more. The ears thus pass

Hayes' Method of Mounting Artificial Teeth.

Conspicuous among the many quite recent

improvements in dentistry stands the con-

struction of continuous or solid gums, for

with the plate, when a full set or any consid-

erable portion of a set is supplied. Although

the validity of the patent therefor has been,

and still is, sharply contested, we believe the

material manufactured by Dr. John Allen, of

this city, composed of flinty substances which

melt at a little less heat than the teeth, is the

most popular for the purpose, as it is almost

free from any disposition to contract, and thus

to warp the plate when exposed to the in-

tense heat required in the baking process.

The old process still in vogue with many

dentists, employs teeth having each a corres-

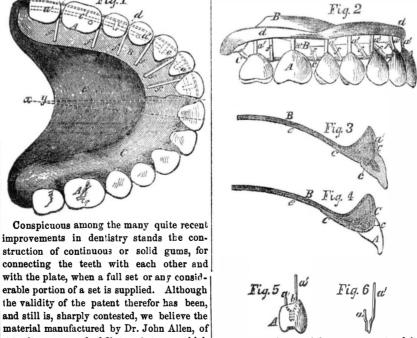
ponding short portion of gum cast on it,

ready for attaching to the plate by simple

thrust against the husking rollers, where they stand like rejected suitors, until by the continued agitation they are turned quarter around, and dropped through, a process which allows ample time for the rollers to seize and remove all the loose integuments.

Further information may be obtained by addressing the patentee, Mr. Robert Bryson, at Schenectady, N. Y., or Eliphalet Nott, D.D. President of Union College, same place

progressive men in the profession are now adopting the continuous gum, on account, partly, of its greater strength and superior



appearance, but mainly on account of its cleanliness. The patched up sets, made of teeth and gums in fragments simply riveted, are full of joints, forming cavities where food and saliva lodge and become offensive unless cleansed with extreme care, and it is obviously impossible, from its construction, ever fully to cleanse the narrow and crooked fissures thus made.

The improvement represented in the accompanying engravings, relate to methods of sunk, so as almost to receive a full-sized ear er mechanical skill in the operator, the really attaching the teeth to the plates by wires, etc.,

which are soldered before the gum composition is laid and finally covered by the same. The earthy composition of the gum is strong, but not sufficient of itself to hold the teeth with certainty in biting very hard substances, and even if it were, a connection of some kind is always absolutely necessary to confine the teeth in exactly the right positions until the composition hardens. We cannot be expected to teach the profession all the details for applying this invention, nor all the points of difference between this and other methods, but will endeavor to set forth its general features.

The heat necessary to consolidate properly the porcelain or earthen gums, forbids the employment of the usual metals in connection. Gold or silver, which melt at from 1800° to 2300° Fah., would be of no service as bands or ties, and even when used as solder for the quite unfusible platinum, melt and would, if used in any sensible quantities, flow away unless confined by the surrounding earths. In this invention platinum plates are used as a foundation, and platinum wires as the means of attaching the teeth thereto, after whic'i the whole is nicely covered with the melted composition, taking care to fill all the interstices between the wires, and to apply the proper oxyds of gold, etc., for producing the proper pink tint natural to the real healthy gum, after which the whole is melted at a very high heat and turned out perfect.

Fig. 1 is a set of teeth represented partly supplied with the gum composition. Fig. 2 is a side view of the set before the composition was applied; fig. 3 is a vertical section through the same, the section passing through the center of a tooth ; fig. 4 is a similar section between two teeth; fig. 5 is a tooth properly wired according to this invention before its introduction into the set, and fig. 6 is the wire (a flattened strip of platina) introduced in the tooth before it is baked. We may remark here, that these teeth, as well also as those above mentioned more generally employed, are manufactured on a large scale from a kind of porcelain, and sold to the profession, and are not, as supposed by many, made up on the spot where used, by the skill of the operating dentist alone.

Commencing with fig. 6, and proceeding backward, we may describe a a as the short bent wire introduced deeply in the base of each tooth in the course of manufacture. Fig. 5 is a tooth complete with the ends of the wire projecting. Figure 4 shows a tooth in place, B being a plate accurately swaged to correspond with the form of the gums and roof of the mouth, and e a smaller plate similarly swaged to cover the roof of the mouth alone. C is the earthenware material The little circle, c, shows a cross section of a stout wire which travels continuously around the whole set to steady them, and f is a brace stretching from c to D, and soldered to each Fig. 3 shows similar parts, but with the short end, a of the original tooth wire bent around and soldered to c, while the long end, a', is extended up and soldered to B. Fig. 2 shows all the parts in place, and indicates, by the letter d, a kind of folded edge (equally visib'e on figs. 3 and 4) formed on the edge of B. Fig. 1 explains itself, and it is only necessaro to add that the additional plate, e, is soldered on, and the edge, d, is turned down, both for the same purpose, i. e., to offer better facilities for joining the gum composition, earthenware, or porcelain, C, to the other parts by a perfectly smooth and flush joint, so that the set, when complete, shall be as nearly like the natural mouth as possible. Teeth thus set are much preferable to the old method on every account, and we believe usually cost considerably more.

For further information regarding this improvement address the inventor, George E. Hayes, Buffalo, N. Y. Patented Jan. 27, 1857.

# 218

# Scientific American.



[Reported officially for the Scientific American.] LIST OF PATENT CLAIMS issued from the United States Patent Office FOR THE WEEK ENDING MARCH 3, 1857.

[Remainder of last week's issue.]

IRemainder of last week's issue.] MACHINES FOR MAKING AXES-Chas. Hutchins, of East Douglass, Mass.: In the foregoing I have described three machines which are employed in the successive operations to produce axe polls; but I do not wish to be understood as making claim to the mechanical construc-tion of either of the said machines, as substantially such machines have been used separately for other purposes, alt hough under modifications which would not answer the purposes specified. Nor do I wish to be understood as ilmiting my claim of invention to the use of machines constructed specifially as described, as they may be modified in the production by which they are rendered use-ful in the production by which they are rendered use-ful in the production by which they are rendered use-ful in the production by which they are rendered use-ful in the production by which they are rendered use-ful in the production by which they are rendered use-ful in the production by which they are rendered use-ful in the production by which they are rendered use-ful in the production by which they are rendered use-ful in the production of axe polls. I claim the proparation of the bar or block of iron by longitudinal rolling between rolling dies operations on face in nombination with the cross rolling between segment dies under a mode of operations substantially as de-scribed in combination with the cruited swell on the edges of the cheeks, substantially as described and for the pur-pose specified.

pose specified. GRINDING CARD CYLINDERS-Jonathan Parker, o Biddeford, Me.: I claim she combination of the stop motion or mechanism. o: the feed mechanism, or that which produces the reciprocating traverse motion of the grinder, as specified.

SEWING MACHINES—S. F Prait, of Roxbury, Mass. -claim producing successive corrugations, or folds in the cloth, substantially in the manner described, for the pur pose of feeding the cloth or the production of the pose of feeding the cloth of the present stitches. And I also claim the combination of the lifter spring, I, the nipper spring, K, the rod, H, and the flattening spring P, they operating together and upon the cloth, essential-ly as specified.

BY as Specified. BEVELING AND JOINTING STAVES-Erastus M. Pit-man. of Warren Co., Va. 1 do not claim the reciproca-ting plane having reversed bits, or the manner of its mo-tion. But I claim the combination of the reciprocating plane, A, having reversed bits, cc, and the motion referred to, and the carriage, D, with the inclined ways, E E', con-structed, arranged, and operated in the manner and for the purposes shown and described.

the purposes shown and described. GENERATING STEAM—C. F. Pond, of Hartford, Conn.: I do not claim either singly or in combination the boiler pumps, steam chest, or the surrounding the same with steam or heated air; nor do I claim any part of said ap-paratus by itself, nor the generation of steam by bringing water, either in large or small quantities, in contact with metal, heated directly by fire. I claim the method of generating steam from water in-troduced in numerous fine jets, and thrown upon heated metallic surfaces, substantially as described, when this is combined with the heating of the said metallic surface on which the jets of water are to be thrown to be evap-orated, by the contact of steam, generated in a separate boiler connected therewith, for circulation and other purposes, substantially as described. Content the contact of steam, generated in a separate

purposes, substantially as described. CENTRIFUGAL FRICTION CLUTCH.—Rensselaer Rey-nolds, of Stockport, N. Y. . I claim the employment in the combination substantially as specified, of the sector friction brakes sliding radially in the wheel or pulley which rotates before the clutching takes place, and usually termed the loose pulley that the other wheel or fust pulley may be clutched by the friction of the brakes due to the centrifugal force generated by the rotation, and by which they are forced onward against the inner periphery of the wheel to be clutched, as described, thereby clutching the parts by a force no greater than that due to the friction produced by the centrifugal force under the determined proportions, weight, and rotative velocity of the friction brakes.

force under the determined proportions, weight, and rotative velocity of the friction brakes. Locus-J. Christian Reithmuller, of Pittsburgh, Pa.: I am aware that tumiler plates with notches similar to those described have been used before in locks, and I therefore disclaim distinctly the use of the same. But I claim the peculiar arrangement of the tumbler plates, t', in the box, F, viz.. the tumbler plates project-ing and receding alternately sidewise, their guiding grooves, ff ff, in the box, F, being made accordingly deeper and shallower alternately, and also separating the tumbler plates by a small space, this whole arrangement of the plates, t, being for the purpose of allowing each spring, h, to act on its respective tumbler plate freely, without interfering with or disturbing the free play and action of the plates or springs adjoining. And I further claim the providing of one of the tum-bler plates with the tongue, r, and the recesses, ss', in the bolt tumbler, E, operating together as described, and for the purpose of securing the bolt tumbler, E, in itspo-sition when the lock is in its locked or unlock ed state. And I further claim the promosination of the key and bit plate. I am perfectly aware that bit plates and kays of similar construction have been used before separately, and 1 therefore do not claim any of these parts when used separately. But I claim the same, when combined in the manner substantially as described.

substantially as described. SoAP MIXTURE-Isaac Roraback, of the Parish of Caddo, La.: I claim the compounding of them in such proporions as to form a solid of suitable consistency which I believe exceels any other soap in its suitableness for cleansing clothes of every description, and for toilet purposes generally, as well as in point of cheapness, con-veniency, and dispatch with which it is made.

WASHING MACHINES-Louis C. Rodier, of Detroit Mich: I do not claim a washing machine having a flex-ible apron or jacket suspended upon springs, and partly enclosing a revolving cylinder armed with ordinary

enclosing a lower of the second secon

TIN. PANS\_E. F. Parker and J. Smead, of Proctors-ville, Vt.: We claim a milk pan with a struck up bot-tom, and united to the side in the manner and for the purpose described.

purpose described. Projscrinks—Malcom Shaw, of Sandwich, Mass. I an aware that double shells with separate chambers for explosive and incendiary materials have been used. I therefore do not claim such, independent of the devices combined therewith. I claim the improvement upon this kind of shell, whereby I am enabled to use melied metal as the incen-diary material, and which consists in lining the chamber of the incendiary material with some non-conducting and reiractory substance, such as pipe clay, black lead, &c., and perforating the iron, to allow, he escape of the gas thereform, thereby providing against premature ex-plosion, and retaining the heat in the melied metal

MOLD CANDLE MACHINE-Benjamin D. Sanders, of Holliday's Cove, Va.: I claim causing the wick center-ing slide, c to stretch and hold the wick in the mold by is operation on the wick when bent over the slide, and said bent portion of the wick having the drawn candle attached or suspended to it in rear of the notched edge of he slide, essentially as set forth.

PORTABLE FIRE-ARMS -John Tilton and William Floyd, of Rock House, 0 , We claim the combination of the levers, b and d, spring, f, and bridle, a. arranged and operating substantially as described, for effecting the simultaneous release of the trigger and removal of the muzzle cover.

PROJECTILES FOR RIFLED CANNON-John M. Sig-ourney, of Watertown. N. Y. . I claim recessing the cyl-indrical part of cylindro.conical abot and shells in such a manner that the contact of the said shot and shells with the bore and grooves of the gun be confined to the pro-jecting ribs. J. and belts, A. which belts and ribs are fin-ished to fit the bore and grooves with precision, substan-tially as set forth.

OPERATING SUPPLY AND DISCHARGE UPERATING SOFPLY AND DISCHARGE VALUES OF HYDRAULC ENGINES. Homer H. Stuart, of New York City: I claim arranging the four flap valves on the rock shaft, R, to operate in the separate compariments of the two valve boxes, placed at one end of the cylinder, and operating the same by gmeans of the silding arch piece. (6, connected with arms at opposite ends of the said rock shaft, R, and driven by the vibrating arm, D, of the main rock shaft, B, of the engine, substantially as set forth. [The engine to which this invention chiefly applies is semi-rotating or vibrating piston variety, like the well-known steam engines of the war steamer " Prince-

ton." The valves receive their motion from an arm on the end of the main rock shaft. B. and are worked very suddenly, and by a motion beautifully adapted to this class of engine.]

class of engine.] CAST IRON PAVEMENTS—Chas. J. Shepard, of Brook-lyn. N. Y. I do not claim double inclines in themselves, as wooden paving blocks have been formed as pairs of double wedges set in alternate opposite directions. But I am not aware of any metallic paving block having ever before been formed in a polygonal shape with the verti-cal or nearly vertical sides to steady the blocks, and with the inclines around the upper parts of said sides taking projections from the adjoining blocks, which projections are unequal distances from the angles of the blocks to prevent any two coming opposite to each other, when laid as specified. I claim forming polygonal metallic paving blocks with the inclines, 2, at the upper part of the straight sides and with the projections, 3 3, to take the inclines of the adjoining blocks at unequal distances from the angles of said block, substantially as and for the purposes speci-fied.

fied.

HUSKING CORN-Hiram Strait of Covington, Ky. I claim the toothed drum, D, with its projecting saw or knife, K, and cam, X, in combination with one or more ear holders, V I H, arranged substantially as specified. I also claim the ear holders, V I and H, when con-structed and arranged substantially in the manner speci-fied

DOOR SERINGS-Leopold Thomas, of Allegheny ( Pa.: I do not claim the use of the spiral spring, c

Pa. : I do not claim the use of the spiral spring, c, nor the roller, b, the use of compound lever, g h, in combi-nation with the connecting arms, K K, and spiral springs, c, or their equivalent, in the manner and for the purposes set forth.

MELODEONS-Thomas F. Thornton, of Buffalo, N. Y. I claim the combination of an extra adjustable lever, E with each of the push-down pins, b2, in the manner substantially as described. [By pulling a knob, both banks of keys are united, so

that quadruple notes will be sounded by playing upon one set of keys. There is an arrangement within for accurately adjusting the keys. The above couple is simple in construction, easily applied, effective, and durable. We regard it as a valuable improvement.]

We regard it as a valuable improvement.] GUIDE WHEELS FOR R. R. CARS—JOO. B. Wicker-sham, of New York City: I do not claim guide wheels, as these have before been used against the inner sides of the track. But I am not aware that said guide wheels have ever before been used in connection with a grooved rail, thereby lessening the 'likbility for the car to run off the track, as set forth, when said guide wheels are each provided with a separate attachment for allowing of their rise and fall independently of each oth r, to pass any ob-structions, as specified. I claim the guide wheels, D D, at the front and rear ends of the car, when combined with the grooved rail, and attached to the car, in the manner and substantially as and for the purposesspecified.

HARVESTERS-David Watson, of Newark, N. J.: I do not claim separately an endless apron for discharging the cut grain from the platform, for endless aprons, and in some cases gates, have been previously used for the same nurnose some cases gates, have been previously used for the same purpose But I claim the gate, J, in combination with the in-clined endless apron, I, and platform, H, when arranged and operated in the manner and for the purpose speci-fied.

[In this harvester provision is made for discharging the cutgrain from the platform in sheaves or gavels, and also for regulating the size of the sheaves. It also pro vides for attaching the finger-bar to the main frame of the machine in such a manner that the sickle is allowed to rise and fall, and thus to conform to the surface of the ground, and pass easily and safely over obstructions.— The gate is ingeniously arranged to be easily operated by the driver at will, so that the gavels or sheaves may be always of the proper size, whether the grain be thick or

thin.] SEED PLANTERS—Firman Goodwin, of Astoria. N. Y. . I claim arranging the seed hoppers and seed cylinders, and the mechanism which operates the seed cylinders upon movable bars, D. in combination with the double crank, J. and frame, A, in the manner and for the pur-pose set forth.

[See engraving and description of this invention on other page.]

other page.] HULLING AND SCOURING WHEAT—Joseph Weber, of Braysville, Ind.: I do not claim a polygonal surfaced drum or cleaning chamber having a roughened surface for land the substantial surface for I am aware such have been used for many purposes. I claim, first, the polygonal chamber, A, when made substantially in the manner described, so that the grain will be turned over and over during its descent through the chamber, and be rubbed without bing broken. Second, The curved and notched arms, as, in com-bination with the polygonal chamber, A, when construct-ed and used for the purpose described. Third, The combination and arrangement of the poly-gonal chamber, A, curved and notched arms, as, and the scribed.

scribed.

scribed. VALVES FOR STEAM ENGINES—Norman W. Wheeler, of Clincinnati, O. : I do not claim actuating simultaneous-ly the induction and eduction valves by means of steam derived from the working sylinder. I do not claim the passage of the piston over the exhaust port at the ter-mination of a stroke, which not bolect is merely to cubiop and arrest the motion of the piston. I claim. first, actuating the release valves of a steam engine by means of theam of therefore by the passage of the working cylinder, nover and based approved from the working cylinder, nover and based approvide prosts, when the reling valves are actuated by other wars. Becond, Actuating the receiving valves of such fragment from the second such and the second super the value of the stantially as described or in any equivalent wars.

substantially as described, or in any equivalent way. Second, Actuating the receiving ralves of such engine by means of the differential pressure of steam flowing into the steam cylinder, when the resistance to be over-come arises in whole or in part from steam pressure upon one of a pair which are connected together subst ntially as described, or in any equivalent way. Third, Opening the exhaust passages into the cylinder near each end thered, but within the stroke of the piston, for the purposes set forth. Fourth, Connecting Puppet valves together in pairs, so that steam pressure upon the one which is closed will hold its fellow open as set forth.

will hold its fellow open as set forth. PLATES FOR FIRE PLACES AND GRATES-F. E. Pitts, of Nashville, Tenn.: I am aware that grated, reti-culated and perforated plates, (the last being described in the patent granted to Jacob Cohen, April 15, 1850.) have heretofore been used in the throats of fire places or flues of stores, also that a fire back composed of metallic plates arranged like the slats of a window blind, is de-scribed in the patent for a cooking store granted to G Smith and H. Brown, May 15, 1847. I claim none of these, I am also aware that it has been proposed to place a grate with angular barssimilar to mine in the flues of cooking ranges. I do not claim the plates op laced. I claim the back plate for fire places and grates, con-structed with the series of angular ridges, furrows and slots, in the manner and for the purposes described.

AGING LIQUORS-Anson Wolcott and A. Spencer Wolcott, of East Bloomfield, N. Y.: We claim the em-ployment of swinzing shelves, or their equivalents, for the purpose of gently agitating the liquors, while they are exposed to a moderate heat substantially as described.

[Wines and liquors are in general esteemed in propor n to their age. Various expedients have been resorted to for giving to liquors "age" more rapidly. In ancient times the wine was placed in skins, and hung up in the fire, where it would receive a gentle heat. A constant movement of the particles of the liquid was thus d, and the qualities due to age were obtained in less time than when not exposed to warmth. The mode frequently adopted of late years to obtain "age" in the least period of time is to put the liquors on board of ships, and send them on voyages through the tropical climates The gentle undulations of the sea combined with the heat of the atmosphere in the tropics give both motion and warmth to the liquids by which their qualities are sensi. bly improved. In other words, "age" is thus imparted to them, and liquors are increased in price in prop to the number of times they have crossed the equator. Messrs. Walcotts' improvement consists in subjecting the liquors to what may be termed an artificial sea voyage. They place the liquor upon shelves, which are gently swung to and fro the apartment being suitably heated and kept dark. Heat and undulation are thus conveviently communicated, and the desired "age" is obtain ed in much less time than by any other known method. This improved process continued for one year gives a value to the liquors which requires four years' time to attain by the ordinary means.]

METALLIC ROOF-Wm. E. Worthen, of New. York City: I claim a roof composed of U shaped metallic beams, which themselves are a portion of the covering, and of arching metallic plates, plain or corrugated, con-necting said beams, and composing the rest of the cover-ing, the whole being constructed substantially in the manner described.

manner described. REFLECTORS FOR LOCOMOTIVES AND OTHER LAMPS -Isaac Carleton, of Brooklyn, N. Y., Assigner to John Wybird, of Baltimore Md. I make no claim to the passing of an air tight tube through the reflector, separate-ly considered, nor do I claim protecting the reflector by a glass, conforming to its surface and hermetically sealed at the chinney openings and the rim of the reflector as shown in the patent of Alonzo Farron, dated April 14.

1098. I claim the air tight glass cylinder. B. passing through the reflector, in combination with the glass, G. hermeti cally sealing the mouth of the reflector, arranged and operating substantially as and for the purpose set forth.

MASTIC ROOFING MATERIALS—N. A. Dyar, of Lynn Mass., Assignor to himself and Seth D. Woodbury, o same place: I claim the employment of sulphuric acid (or an acid having a similar effect) in the treatment o substances or composition scontaining hydro-carbons, it the manner and for the purposes essentially as described

specified are imparted to the copper or its alloy. SEDING MACHINES-L B. Myers and H. A. Myers, of Massillon, O. Assignors to themselves and Isaac Myers, of same place . We aware that rollers, valves and slides have been used in seed drills for distributing the seed, therefore, beingold devices we do not claim them. Neither do we claim an aperture, nor two piston heads on ner od separately. We claim measuring and distributing grain seeds or fertilizers, by two or more piston heads, and one rod or the manner and for the purpose substantially as de-scribed.

scribed. SHIPS STEERING APPARATUS—J. B. Holmes, of New York City, Assignor to J. R. Pratt, of same place: I do not claim the manner of moving the rudder by means of a rack and pinion oparated by gearing. I claim, first, the arrangement of a pinion on the end of the tiller working into a stationary curved rack attached to the deck of the vessel in connection with a friction roller working against a smooth stationary surface to pre-vent the rudder from being pressed out of its place, in the manner substantially as described. Second, I claim the arrangement of attaching the pinion to the end of the tiller, in connection with a beam into a stationary rack by the action of said lever for the purpose of producing a friction sufficient to hold the rud-der there by in any desired position, at the same time to lock the gearing to prevent any back lash on the steering wheel. Surge' CARETARE I B. Holmes, of New York City.

SHIPS' CAPSTANS-J. B. Holmes, of New York City. Assignor to J. R. Pratt, of same place : I claim the verti-cal recesses; C, and welps extending the whole length of the barrel of the capstan, and allowing of two or more turns of the cable around the capstan as set forth.

Swacing Inon-Junius Foster, of Brooklyn, N. Y. Assignor to John Herbold, George Kuhn and Junius Fos ter, of same place, I claim adjustable block, f, and rol lers, h and i, set on and moved by the lever, g, whe combined with the pattern, c, and flanch, 1, the whole constructed and operating substantially as specified.

constructed and operating substantially as specified. NAUTICAL ALARM-E. L. Seymour, of New York City, Assignorto J. G. Wright, Chas. Wright, and H. I. Geyer, of same place: I claim the combination of frame, rods, hammers, axles, springs, pendulum, levers and gongs of bells, substantially as above described, to be placed upon buoys, floats or vessels of any kind, for the parprosed causing alarms and giving warning of rocks, abodits or other dangers upon the coast or at sea, and T do not mean to confine myself to any particular materials in the construction of the same nor to the placing of the ring, levers and springs above or below the center of oscilla-tion, but to vary the position of the same, and of the gongs, and their number, as I may deem desirable, so long as I achere substantially to the description. BEDUCIE AND NEWSCHILL

REDUCING AND SNORTHING HOW USERVICED THICKNESS-TRISTAM D. Knight, of Charleston, Tenn. I do not restrict mysel to the cylindrical form of the grinder, as the disc or some other form might, under cer-tain circumstances, be substituted with advantage. Wither do I confine myself to the use of an emery grinding surface, as many other things are well known for abrading and polishing wood, which might be employ-in the blace of comery.

srinding surface, as many other things are well known for abrading and polishing wood, which might be employ-in the place of emery; and as an example I will mention rasps and files, but the variety of such thing is too well known to require special enumeration, and too numerous to be particularized in a specification. I claim the combination of the reducing saw, with the finishing grinder, for the purpose described. POINTING AND THREADING SOREWS-D. M. Roberi-son, of Manchester, N. H. I claim a pointing tool, ar-ranged in connection with one or a series of threading tools, and traversed slower than the threading tools, and so far in advance of them as to form the point of the screw blank and prepare if or the threading tools substantially adscribed; and I make this claim whether the pointing tool are traversed by the devices described, or by such other devices as will answer the purpose. We stantially as described, whether it is operated by the devices described, or such others as will answer the pur-lowing the purpose of the screw I claim the plate our set M. When made to traverse I claim the plate our set M. when made to traverse

pose. I claim the guide or rest, W, when made to traverse substantially as described, whether it is operated by the devices described, or such others as will answer the pur pose. RE-ISSUE.

BREECH LOADING FIRE ARMS-B. F. Joslyn, of Wor-cester, Mass. Patented Aug. 28, 1855. I claim a cone

headed pin, with two or more expanding rings, substan-tially as shown and described for the purpose specified and in making the exterior of a breach pin, as described, come shaped for the purpose as above set forth; also, combining the same with the radial or hinge breach, substantially as shown and described.

ADDITIONAL INFROVEMENT. LOOMS-J.O. Leach of Ballston, N.Y. Patented Oct. 30, 1855-Additional improvement, July 8, 1856 : I claim the change in the relative position of cams 2 and 4,6 and 8, in the manner and for the purposes substantially as set forth.

THE FOLLOWING WERE ISSUED FOR THE WEEK ENDING MARCH 10, 1857.

ENDING MARCH 10, 1837. STOP-MOTIONS FOR STEAM STREIMS-John T. Ack-ley, of Philadelphia, Pa.: I claim the rod, G, with its nuis, e and e', in combination with the spring lever, H, having two fulcrums, h and i, and the spring catch lever, L, the said rod, G, being operated—in case of accident-by the cross head of the steam engine, or other conveni-ent working part of the same, and the said catch lever, L, being connected to the eccentric rod, or to a xtop valve in the steam pipe, and the whole being arranged and constructed substantially in the manner and for the purpose set forth.

purpose set forth. CUT-OFFS OF STEAM ENGINES-John F. Allen, of New York City: Iclaim, first, the arrangement of the sliding cut-off valves, A A', to work on a separate seat arranged inside of the seat of the main valve, and having' a precisely similar arrangement of ports to the seat of the main slide valve, substantially as described. Second, Though I do not claim the closing of the cut-off valves by steam pressure, I claim the foot pieces, k k', and levers, 11', attached to opposite ends of the main slide valve, and operating in connection with pistons, E E', that are attached to the cut-off valves, and work in cylinders connected with the main steam passages, and with spring cites, J J', that retain the said pistons and adjustable sliding pieces, n n', or their equivalent, sub-stantially in the manner specified. [This invention may be adapted to any slide valve ent

[This invention may be adapted to any slide valve engine at present in use, at small expense, using the same steam chest and slide valve. It is, on this account, one of the most desirable of the many inventions lately developed for cutting off the steam instantaneously, and hence without any previous unnecessary contraction of the passages at any point between the commencement of the stroke and the half stroke of the piston. It would add greatly to the economy of most engines now running.]

GRINDING SAWS-EMANUEL Andrews, of Elmira, N. Y. I Claim connecting the saw to the mandrel by the ball joint, for the purpose of adjusting it to the position of the rollers while being operated on by the stones, whether these act conjointly or independently, and to prevent straining the saw, as specified Second, the plate, g, for the purpose of allowing me to guide and grind a saw even in thickness, regardless of its hard or soft parts, thus perfectly balancing the saw, as set forth and described.

FELT CLOTH-Geo. C. Bishop, of Norwalk, Conn., I claim, in contradistinction from forming a bat for felt cloth, by carding from laps, a bat made from ropings or rovings, carded and formed substantially in the manner described.

PLATES FOR TEETH-A. A. Blandy, of Baltimore, Md. Ante-dated Dec. 11, 1856: I claim casting the plates of artificial teeth of an alloy, substantially as described, suitable for such a purpose from its chemical and physi-cal properties, and that practically will not shrink or ex-pand in solidifying.

Purper-J. F. Brickley, of Winchester, Ind. : I claim arranging a rod in connection with the valve of the pump so thatsaid valve may be closed or opened at pleasure by the user, for converting an ordinary lifting pump into a lifting and forcing pump, or vice versa, as set forth, and for the purpose explained.

lifting and forcing pump, or vice vorsa, as set forth, and for the purpose explained. MELODENS-Billey Burditt and Hatsell P. Green, of Brattlehoro, Vt. We do not claim to be the first inven-tors of musical instruments in which two or more notes in different octaves are sounded by pressing a single key. for we are eavare that counded by pressing a single key. for we are eavare that counded by pressing a single key. for we are eavare that counded by pressing a single key. for we are eavare that counded by pressing a single key. for we are eavare that counded by pressing a single key. for we are eavare that counded by pressing a single key. for we are eavare that counded by pressing a single key. for we are eavare that so to for connecting levers has its own fulcrum board, one of said boards is hinged and ren-dered movels, so that its set of levers may be thrown in or out of connection with their corresponding keys by raising or lowering the fulcrum board. The employment of double fulcrum boards involves increased expense in construction, and want of compact-ness. Besides, the end connection between the levers and the keys require to be flexible, to certain extent, which is expensive, lacks accuracy, is liable to become loose, cannot be adjusted readily, nor conveniently removed or applied to the instrument. But, by our arrangement, the levers are all fulcrumed on one and the same fulcrum board, which slides, and thus brings the levers into or out of connection with the keys. Our plan is simpler, more compact, cheaper, and more easily applied than the invention above described. The ends of our levers are united by means of ridged ad-usting screws, by which the levers may be adjusted with the fulcrum board and levers may also be removed or replaced readily, without the necessity of puting the end of each individual lever, one by one, into its loop by hand, as in Whipple & Bowe's device. We do not claim the combination of levers with push down pins, that have shoulders or collars upon them. This is seen in H. N.

1253. Neither do we claim any part or feature of the described invention, which is seen in any other analogous instrument, but to the best of our knowledge and belief it is new to have all the levers fulcrumed upon a single movable board as set forth. We claim having the fulcra of the connecting levers, B B, located upon a single movable board. C, substantially as described.

[This is a simple and very effective improvement.]

Rock DRILLS-Thos. H. Burridge, of St. Louis, Mo.: I claim the combination of the sliding head, N, with the ratchet guide piece, M, bumper, O, spring, R, rod, b, and drill bar, A, Y, when said parts are constructed and ar-ranged for joint operation, substantially as set forth.

HARVESTERS-Hiram Clark, of Rochester, N. Y. I onot claim double cutter bars; nor an advancing and lonoi claim double cutter vars; not an average and withdrawing stoke. But I claim giving to each of the cutting bars, alter-nately, an advancing upward stroke against the grain, as specified.

HARVESTING GRAIN-Geo. R. Crane, of Caldwell, N. J.: I claim operating the bars, M N, to which the rake teeth, a, are attached, from left to right, by means of the straps, O, or, roller, P, cord, f, and spring, Q, when the same are constructed and arranged, in relation to each other, within the divider or shield, X, in the manner and for the purpose set forth.

WIRE ROPE-Joseph Cushman, of Racine, Wis. : First I claim the strangement of the two sets of reels, e and j, in combination with the carriage, E, whereby the strands may all be adjusted and drawn out to the proper length simultameously, as set forth. Second, I claim the swinging arms, m, in combination with the traveling top, H, when constructed, arranged and operating in the manner substrailly as and for the purposes set forth.

Purposes set forth. RAISING OR LOWERING FARM GATES TO ALLOW THEM TO PASS OVER OBSTACLES—Dennis E. Fenn, of Tallmadge, O., I claim the section, H, with the slot, h, spring, J, stud, g, section, L, arm, I', and the notched plate, K, when arranged and operating substantially as described, for the purpose set forth. I also claim the slide, E, and pawl, E', when combined in the manner and for the purpose set forth.

In the manner and for the purpose set forth. OPERATING SAW MILL DOGS-GOO. W. Hearn, of Princess Ann, Md.: I make no claim to operating the head blocks from the movement of a single ratchet wheel. Nor do I claim the separate movement of the head blocks. But I claim the longitudinally moving shaft, S', in com-bination with the shaft, S, and the clutches, ff', arranged and operating as specified.

No.

# Scientific American.

ESCUTCHEON FOR KEV-HOLES-Edmund Field, of Greenwich, Conn.: I do not claim the broad idea of jointing metallic or other bars by means of hinges or piv-ots, as this is everywhere well known. Buta key-hole drop made in two parts, pivoted to-gether has never before been known. It is a new article of manufacture, possessing virtnes and advantages not seen in any other article of the kind. I claim the key-hole drop, C, composed of two parts, b o, pivoted together. [Many of our bast locks are fitted with the

[Many of our best locks are fitted so that the face of the key-hole is recessed or sunk some quarter inch or more below the general plane of the surface of the door or chest. This construction is stronger and more elegant than to have the key-hole flush, but it does not admit  $o_{\mathbf{f}}$ an escutcheon in the usual form, as there is not room within the recess for such to be turned aside. This simple invention provides a hinge in the escutcheon, and thus completely surmounts the difficulty.]

thus completely surmounts the difficulty.] COILING STERL SPRINGS—Perry G. Gardiner, of New York City I I claim, first, the cone mandrel. c. 4, con-structed in two pieces, so that the spiral cone will slide off and upon the straight part of the mandrel, the straight part having the slotor groove, and being an eccentric, so that one edge of the slot will be lower than the other, and gradually rising round to the other edge or side of the mandrel, ar above described. Second, the construction and arrangement of the slid-ing frame, T, for carrying or feeding up the steel plate upon the cone mandrel, and having attached to it the table, Q, self adjustable to any required inclination, for supporting and holding the steel plate while being drawn in upon the mandrel, and sustaining the adjustable roll-ers, n', n, with their adjustment, to suit any required thickness of the steel plate. Third, the arrangement of the loose or sliding pressure roller, U, so as to have the lateral motion upon theakle, b, by means of the arms, VY, attached to the sliding frame, T, and the simultaneous graduated downward spiral cone. Fourth, the combination of the sliding frame, T, and

movement to press and guide the steel plate upon the spiral cone. Fourth, the combination of the sliding frame, T, and the parts attached to it, and the pressure roller, U, and the intermediate guide plate, 18, with the cone mandrel, ed, arranged and operating in a direct motion, or re-versed, as described. Fifth, the arrangement by which the wheel, G, is thrown in and out of gear, so as to connect or disconnect the shaft, L, with the shaft, S', by which the conection or disconnection may be made by hand or by the operation of the machine itself, at the proper moment, in the man-ner and by the means above specified.

SHEARING STEEL PLATES-Perry G. Gardiner, of New York City, I claim the arrangement of the mova-ble bracket plate, M, so as to adjust the lower steel cut-ter, q, to the upper steel cutter, a f, as required, the ad-adjustable stop or guide plate, T m', and the guide bars, q and r. upon the tables attached to M, and the eccentric lever, S, the whole combined, arranged, and operating in connection with the shears, in the manner and for the purposes above described.

Junnicators soft STRAM Ewoive CVLINDERS-John Henwood, of New York City. I claim the piston, B, having the oil cup attached by a hollow stem, and provided with a valve, j, working in an oil cylinder, C, hat is provided with an arrangement of passages, eff substantially such as described, leading to the steam cyl-inder, valve-chest, or other part to be lubricated, and with a cock, having an arryngement of passages, eff th k, to correspond with add pasages from the oil cylinder,

[This is, in effect, a very simple and easily worked pump for the important purpose of injecting oil to any part when opposed by pressure. The small piston is raised by hand, and the small cylinder fills very naturally with oil, after which, by turning a cock, the pressure of the steam or other fluid is made to act above the pis ton, and thus to aid in forcing the oil to the place de sired.]

SITCA.J NIFPLES-WM. Cleveland Hicks, of New Haven, Conn.: I claim my improved nipples (two ormore prongs with or without hooks, for withdrawing loaded balls or cartridges from breech-loading fire-arms, as described) for the purpose of igniting percussion and discharging loaded balls or cartridges. And secondly, my method of using one, two, or more nipples, or prongs, with hooks as described, to withdraw carcidges or loaded balls from breech-bading fire-arms, by causing said hooks to indent or spring the rim of a cap or primer, as described, and by catching hold of said rim, to withdraw the loaded ball or cartridge by the act of drawing back the nipples, all substantially as described and specified. EXAMENTING CAST IRON-GEO. W. Holley, of Ningara.

and specified. Example Ling Cast IRON—Geo. W. Holley, of Niagara, N. X. I claim the process of covering the skeleton or core plate and core rod, in the manner described, with the compound or composition with which it is pro-posed to cost or cover the iron, and then pouring the melted iron on or around said compound or composition, and melting or softening the same so that it will adhere to the surface of the iron as it becomes cold. The same process may be used for coating or covering copper, brass, and other metals.

FIRE-PROOF STONE—'Thos. Hodgson, of Brooklyn, N Y. i Claim the useful manufacture of a fire-proofarti ficial stone composed of felspar, mice, and quartz, and the other substances or materials described, in the manner and for the purpose set forth.

[This is a readily molded stone, intended as a substitute for plaster and stucco work, for architectural ornaments The material is pulverized granite, sulphates of lime zinc, and iron, also starch and tannin, peculiarly wetted and mixed, and allowed to stand a few minutes in an oiled mold. We shall recur to this again ]

WOODEN CHAIR SEATS-Edwin, Artemas, & Cheney Kilburn, of Burlington, Vt. We do not claim a wheel having its pariphery or face coated with sand or emery, for such wheels have been previously used for polish-

for such watch and the start of the start of

[Th's invention presents increased facilities for what is one of the most important of our wooden-ware manufactures. The screw alluded to urges the chair-seat pro perly against the wheel. The whole is much simple than the machines heretofore in use for the purpose, and the surfaces produced require no sand-papering.]

HTDRAULIC JACK-Geo. Lindsay, of New York City : I do not claim the device or arrangements of the pumps or working parts, or the safety and lowering valve. Nor do I claim the device or arrangements of the pis-ton rod. H, or of the ram, D. But I claim the arrangement of them all combined as

nstituting the specific whole machine, as shown and set forth. [The great merit of this over the admirable jack pump before in use, is its ability to serve either as means of di

rectly forcing apart or of as directly and conveniently drawing together. Hooks are provided for this latter end, and a new implement is thus produced of great practical value in many situations.]

CARRIAGE SPRINCS-Chas. A. McElroy, of Delaware Ohio. I claim the springs, o, pivoted as described, and stirrups, n, all arranged and operated in the manner and for the jurposes set forth.

STEAM SPADES-G. M. Ramsay, of New York City: I claim the alternate spades, J, in combination with the double crank shafts, l, constructed, arranged and operat-ng substantially in the manner and for the purpose set forth.

GUARD FOR BREASTFINS-J. M. Rose, of Springfield, Maxs.: I claim the additional guard, g h, as applied in the manner and for the purposes substantially as set forth.

\*

CUTTING SCREWS-Thompson Newbury, of Taunton, Mass. I claim the jointed elevator passing through the bottom of the feed pan, substantially as set forth. I claim the vibrating slotted guide piece, fixed to the carrier shaft, operated by arm. M, and pin, n, as set forth

forth. I claim giving the threading tool, for the purpose of pointing the blank, a motion independent of and slower than that required to effect the threading, substantially as set forth. I claim the catch wheel, C', with it pawl and stop, in combination with the leader worm. T, as set forth.

BENDING SHEET METAL—Daniel Newton, of South-ington, Conn. : I claim the application to double seaming machines, of a roller, containing an angular groove, in which the seam runs in the first revolution, substantially as described.

As described. CARPENTERS' PLANE-Oldin Nichols, of Lowell, Mass. I claim connecting the cap, D, to the plane iron, C, by the hock-headed bolt, E, with two nuts, F and G, thereon to hold them together, and then securing the iron to the plane stock, A, by a cam shaft. H, operating upon this same hock-headed bolt, which is so adjustable as to be lengthened or shortened, that any desired pres-sure may always be had to firmly hold the iron to the stock, by turning the cam shaft, and still allow the plane iron to be moved in or out of the plane, to cut a thick or thin shaving without further tightening q loosening is these parts being arranged and operated in the manner and for the purposes fully set forth T also claim the plate, g, secured to the plane stock, and the surface, e, of the cam shaft, H, to prevent wear of the hook and cam, and also to prevent the hook, E, and plane iron, C, from sliding back, when the cam shaft, H, is turned to tighten the iron to the plane stock, essen-ially in the manner and for the purposes fully set forth. T also claim the application of one single handle, B, to answer for and be secured to a whole set or any num-ber of plane stocks, either in the lower or elevated posi-tion, and changeable from one position to another, or from one plane to another, instantly, and be secured fram ythereto, by means of the hook K, and cam, L, or their mechanical equivalents, arranged and operated es-forth. P purpersume Duce two the server on the set forth.

PREVENTING DUST, ETC., FROM ENTERING THE WIN DOWS OF RAILROAD CARS-Philip M. Pyfer, of Balti more, Md. I claim the arrangement of rotary fans, D D or their equivalent, upon the outside of the body of the car, when empfoyed in conjunction with the window thereof, substantially in the manner and for the pur poses set forth.

VALUE GRAR OF DIRECT ACTION STREAM ENGINES-J. P. Ross, of Lewisburgh, Pa.: I claim the elastic lever, I, applied and operating substantially as described in combination with the oscillating yoke, H, the traveler, p, and the roller, r, or its equivalent, for the purposes set forth.

[By direct acting engines in this claim is meant those which have no crank motion or balance wheel, but re ciprocate directly, as in many pumping and blowing engines, and in some saw mills. The elastic lever and yoke give just sufficient lead, and yet ensure a full opening to the valve. This is an improvement in the engine

ing to the valve. This is an improvement in the engine illustrated in page 44 of the present volume. Furd GATES or FAVCETS-J. W. Smith, of Hart-ford, Conn.: I claim the slide, A, guided, secured and made adjustable, as described, by the screw pin, D, and nut, e, having a guiding flange, d, to travel within guide strips, f, when the same are used in connection with an soperating lever, E, loosely connected by recess, g, with said slide, for the more convenient removal of the parts and retention of the slide in case of breakage of the lever, and for the more free and independent operation of the parts, and so that the one bolt, D, holds the slide. Without the aid of the lever. I also claim, in the combination of the lever, E, and slide, A, or therewith, the fulcrums, i and k, at diffe-rent distances from the center of the slide and slotted arm, h, for operating in the manner and for the purposes substantially as set forth.

substantially as set forth. CHUCK FOR WATCHMAKERS' LATHE-Wm. Stephens, of Richmond, Ind.' I an aware that a chuck has been invented to be used in connection with cement for hold-ing the shaft and wheel: but these chucks will only allow concentric pivots to be turned. I would remark that by my improvement the ends of shafts may be drilled, either concentrically or eccentrically, to allow pivots to be fitted in the ends of the shaft, in case the for mer pivots of a shaft are broken off. This cannot be done in the usual lathe, nor by any tool used by watchmakers, I do not claim, separately, the sliding or adjustable jawa, D D, for they have been previously used in chucks, but I claim the sliding or adjustable back center rod, C, arranged substantially as described for the purpose set forth. IThis is a zaluable improvement in the facilities for

[This is a valuable improvement in the facilities for this fine branch of work, but cannot well be further explained without the aid of drawings. This chuck is par-ticularly adapted to the watchmaker's lathe by the same inventor illustrated on page 233, vol. 10.

TABLE GUAGE FOR CIRCULAR SAWING MACHINES-M. B. Tidey, of Ithaca, N. Y.: I claim the construction of a portable saw guage for the purpose and in the way substantially set forth.

substantially set forth. SUPPORTING THE TONGUES OF COACHES-Z B. Wakeman, of Beloit, Wis. I desire the use of the brace or braces, or their equivalent, attached to the reach, (or perch.) of a wagon or other carriage, in combination with a spiral spring, or spiral spring, applied to the tongue of a wagon, or other carriage, and pressing against the reach, for the purpose of giving direction and steadiness to the tongue, by c hecking its motion sidewise, keeping it in a straight line with the reach. (or perch.) while it supports it, and also preserves the set of axle in its true position, as set forth in the specification. But I do not claim a patent for raising or sustaining the tongue, in itself, as this has been done before in various mays; but I claim the arrangement and combination of parts as set forth for the purpose of giving direction and steadiness to the tongue while it supports it. Nor do I claim said pates, or any other arrangement or combination of parts, not used or described in this speci-fication.

BOMB FOR KILLING WHALES-N. Scholfield and Wm. W. Wright, of Norwich, Conn. Assignors to N. Scholfield aforesaid. We are aware that the fuse has been applied to bombs, by being inserted in a pipe, and molten metal afterwards poured in the end of the pipe around the fuse to encompass and hold it tightly, and other modes of fas-tening the fuse have been adopted, but we do not claim the mode here reierred to, or any heretofore used, nor do we claim the application of metallle wings or feathers to govern the direction of a projectile. We claim-First, Inserting the end of the fuse through a short holding pipe, or collar. G, and securing it firmly therein by compressing the same, and the drawing or forcing it with the end of the fuse pipe. having a conical en-largement at its rear end. Second, Enlarging the end of the fuse cord, by winding it with twine, or its equivalent, so that it cannot be drawn brough the pipe, and inserting it in the enut, A, to hold t securely. "Third. We claim the application of the sliding collar.

Similar to be a second i, which is had, i, to had i securely. Third, We claim the application of the sliding collar, h, on a projectile carrying a cylindric metallic plate covering the projectile, and either slit, to form wings, k or unsil as a cylindric case, and so constructed that the said collar, with the case, or wings, shall slide to the rear, after being discharged from the gun, either by the action of a spring, or the resistance of the air to guide its direc-tion.

of a spring, of the resistance of the art togende its uncer-tion. Fourth, We claim so constructing and applying these wings, k, that they may coincide with the cylindric surface of the projectile while in the gun, and that their rear ends may be thrown up therefrom, by their elasti-city, after being discharged, so as to stand in positions diverging from that surface, in the rear, substantially as described.

GRAIN CRADLES-S. D. Warren, of Lebanon, Ala:: I am aware that the fingers of cradles have been "gathered." I do not, therefore, claim the principle of so doing; but I claim the combination of the standards, C D F fingers H and sneed A, when so made and united so that by the bar G, said fingers may be gathered or ad-fusted as set forth, and for the purposes explained.

CIRCULAR SAWING MACHINE-C. P. S. Wardwell, of Lake Village, N. H.: I claim the arrangement of two or more saws or cutters in a swinging frame, so that selfue saw or cutter may be brough into a suitable position for action, while at the same time the other or others shall be removed from the way, in the manner specified, or in any equivalent manner; and this I claim, whether or not a central or axial saw, or cutter, is combined there-with, or with a single swinging saw or cutter.

Hoor-Pole Splitting Knips are of cutoff. Bridgewater, Mass. I claim the improvement of apply-ing a knife to the feed rollers, or the latter to the former, bymeaus substantially as described, so that one may be made to approach towards and recede from the other, essentially in manner and for the purpose as specified.

essentially in manner and for the purpose as specified. Sramping Figures in CARPENTER' SquARES-Heman Whipple, of Shafabury, Vt.: I claim, first, the arrangement of a series of chase bars, jointed at one side of the machine, when combined with the anvil gustain-ing the square, and with the hand wheel, h, rack, or racks i, and pawl i, for regulating the relative positions of the anvil and chase bars, substantially as and for the purposes specified. Second, I claim the arrangement of the levers, s a, and m, bolt y and y I, bars z and x, and slot v, and pin e, for the purposes and substantially as specified, whereby the one motion of the lever, a (by the treadle t.), first turns the bar, z, around to confine the chase bar z i

then gives the requisite compression of the chase bar at both ends on to the square or plate on the anvil, to retain the same firmly, while the chases are being separately struck into said square, as specified.

struck into said square, as specified. SELF-REGULATING WIND WHEEL-A. P. Wilson, of Salem, III. 1 do not claim, broadly, the application of weights to adjustable sails, whereby the sails, by the ac-tion of the wind, are adjusted, so as to present a greater or less surface to it, according to its velocity, for weights have been applied and arranged in various ways for effecting the purpose. But I claim constructing the sails of two parts, E F, at-tached, or fitted to inclined frames, which are secured to the arms, C D, the upper parts, F, of the sails, being infinged to their frames, a, and having weights, G, and cords, d, attached, substantially as shown and described for the purpose set forth. If Dis appages to be one of the part in the same to the

[This appears to be one of the most simple and effect tive of the many devices for regulating windmills, and one which involves very little mechanism.]

one which involves very little mechanism.] LUBRICATING GAS COCKS.—C. H. Johnson, of Boston, Mass., Assignor to himself and J. G. Hamblin, of same place: I do not confine my invention to making the stud, n, in the precise form and manner above set forth, as it may be otherwise constructed, so as to move into or out of the opening, o. I claim, when the tapering plug of the faucet or stop cock is drawn into the taular seat, by the action of the spring, f. as specified, combining with the seat tube, a, an entrance passage. k, and groove, l, and a movable stop, n, arranged substantially in the manner and for the purpose as specified, or, in other words, so as to enable a person to expeditionally lubricate the stop cock, without the necessity of entirely removing its plag from its seat tube.

THOS. SECOND ANCHOR SHACKLE-G. Gilmour, of Chelsea, Mass., assignor to himself and H. R. Olinkard, of same place I do not claim a hoisting block made with a pawl and tripping lever, so applied to the pawi as to enable a person to elevate the latter out of engagement with a chain, when passingaround the shear of the block. But I claim my new improved anchor shackle, as made with aspring pawl. D, and trigger, or latching ap-paratus, F F, etc., arranged with reference to the roller, B, and made to operate substantially as described. I also claim making the pawl forked, or with a recess, so as to enable it to straddle the chain as described.

#### RE-ISSUES.

CARDING ENGINE—A.D. Shattuck, of Grafton, Mass. Patented Sept. 23, 1856: I claim, first, the application to carding engines of two or more variable cylinders, ar-ranged and operated in the manner substantially as set forth, for the purpose of preventing the filling up of the main cylinder. forth, for the purpose of preventing the filling up of the main cylinder. Second, The use of a doffer in combination with strip-pers or cleaners, arranged and operating in the manner substantially as described, for the purpose of preventing the filling up of the main cylinder, and producing an uniform sheet.

SAW MILLS-WM. P. Wood and Saml. DeVaughan, of Washington, D. C., assignees of G. W. Hedge, of Brook-lyn, N. Y., assignees of Lemuel Hedge, of New York City. Patented May 8, 1849. We claim the means above described to regulate the deflection of the saw blade when at work, that is tosay, the application of the feed rollers to the back of the saw blade, for the purposes set forth

forth. We also claim the driving power to the lower pully, b, when the saw is designed to work in its downward mo-tion, substantially as set forth.

#### DESIGNS COOKING STOVES-Allen Comstock, of Quincy, Ill.

STOVE DOORS-M. C. Burleigh, of Great Falls, N. Y. [Pleasing effect on the eye is the whole object of this It involves a central ornament within an annusign. lar bead and radial corrugations on the face or panel of the door, with various beads around the edges of the panel.]

FLOOR OIL CLOTHS-James Hutchinson, of Lansing burgh, N. Y., Assignor to J. E. Whipple and. S. E. Has kell, of same place.

# Bending Steamed Wood.

MESSRS. EDITORS-In late numbers of your journal I have noticed frequent mention of machinery for bending timber. The principle which effects the purpose (and without the application of this principle timber cannot be successfully bent) as has been described, consists of an end pressure to prevent the separation of the fibres on the outer surface while in the act of bending. This principle is not new. We have had it in successful operation for several years, and can bend any kind or quantity of wood we ever tried after being properly steamed. On my machine we have bent poplar timber taken from near the heart of an old tree, and every mechanic knows this to be the most obstinate of timber to bend, to form near half of a circle, whose diameter was twelve inches, the stuff bent being inch and a half square, and after being dressed hardly any mechanic would discover that it was not the natural growth. This machine has been exhibited at the Mechanic's Institute and State Fair, with timber that was bent upon it, and elicited the admiration of all who saw it. The machine I speak of is used at the Tennessee Plow Factory, in Nashville. The device is not patented, but is public property, and for the benefit of your readers interested in bending timber, I will briefly describe it.

My machine has an iron form of the shape

desired to make the inner curve of the timber when bent, and an iron lever, with one end made thin and pliant, to bend with little resistance. This lever has a hook on the end, to attach it to the form, across the end of the timber, and a shoulder on the other end, outside of which is a nut, to screw the shoulder up against the end of the timber. When the timber is properly steamed, it is placed on the form; the lever is hooked on the end, and screwed up close against the other end, and then pressed down to its position. In the middle of the lever is a joint similar to a strap joint, with a long mortise through, to receive a key. Sometimes as the bending proceeds it is necessary to drive the key in and make the lever shorter between the shoulder, in order to effect a perfect bend : and again in bending timber that is very tough it will so strongly resist a compression of the fibre-or if the growths are large it has the same effect—that the nut on the end of the lever must be unscrewed when the timber is partly bent, to admit of stretching a little; this will secure a perfect bend, and obviate the tendency of the fibres to kink on the inside of the curve. This key and nut on the lever gives the operator entire control of the timber, and enables him to manage every piece as circumstances may require. THOMAS SHARP.

## Nashville, Tenn., March. 1857.

Proper Pressure to Blow-Off Boilers.

MESSRS. EDITORS-Will you be so kind as to inform me if it makes any difference how high the pressure of steam is in a boiler when blown off, if the fire is first withdrawn so as not to injure the boiler? I find nothing on the subject in any books that I have on the steam engine. C. A. C.

Yes. It makes a great difference in the incrustation of a boiler whether water is discharged hot or cold. If water is calcareous, it tends as soon as boiled down a little to deposit a crust on the whole interior. It happens that hot water, instead of as might be naturally supposed holding a larger quantity of these earthly particles, does not hold as much as cold, and hence arises the difference in effects in blowing off at different pressures, and consequently at different temperatures. If the water be blown out of a boiler at full pressure, it only carries out with it the particles then undeposited, (except, of course, a certain quantity of mud stirred up mechanically); but, if allowed to cool before it is withdrawn, the cold water will dissolve a part of the scale. Wiessenborn's valuable preventer of incrustion is based on the supeperior tendency of heated water to deposit, and the fact of this tendency is well known to chemists, and to many engineers, though not to all. The engineers of the propellers running between this city and Philadelphia keep their boilers perfectly clean, by taking care to draw out their water cold at the end of each trip, and replace it by new, while if they experimentally or carelessly once blow it off under pressure, they coat the whole interior with a thin white limy scale. The steamers plying between this port and Fall River do not lie long enough at either end to so cool their boilers complete, but do so as far as possible, even by pumping in cold water before blowing off; and as a general rule it may be said always cool downyour boiler, and let the water flow out softly if you can, in preference to blowing it out under steam.

# Balancing Slide Valves.

It is a question of some interest whether Mr. Worthington, or any one else, claims to have a patent on the use, in every way, of a balance iston working in a cylinder, and connected to a slide valve, so as to partly annihilate the effect of the pressure thereon. It is in common use, and has been for several years. The locomotive, " Iron Duke," in the London Exhibition, 1851, had her valves thus balanced.

D. D. Owen, the state geologist, reports the existence of great deposits of brown Hematite ore in Kentucky, which yield an average of from 62 to 66 per cent of pure iron.

Cunningham's Self-Reefing Topsails, an invention by which the sail is rolled up by revolving the yard, is in successful use on a number of English vessels.

219

Rew Inventions.

220

#### Inventions Wanted-Ventilation.

A great portion of the United States has a peculiarly dry climate, especially favorable for the preparation of dried fruits, etc., or for the curing of hay, and which renders unnecessary many expedients generally adopted in the more humid climate of Great Britain. Thus, for example, the practice of almost continually stirring the grass is here abandoned with advantage, and the labor of hay-making is much lessened by simply spreading, and only once turning over in a day. It is not true, as might be supposed from this, that we have less rain in a year than European countries, or a less number of rainy or cloudy days and hours, but the weather, when clear, rapidly assumes a state of great dryness, which has even been supposed by some injurious to health, but this supposition has not been borne out by statistical facts. It may be possible, however, that some portion of the difficulty experienced in finishing some very finely surfaced textile fabrics, expensive broadcloths for example, in this country, may be due to the hygrometric condition of the air, and it may be worth while to investigate the question how far the best condition may be attained by artificially preparing the air of manufactories. We conceive it would not be in any wise difficult, to afford proper ventilation in a large factory, and yet admit the air through a passage so provided with water surfaces or jets of steam that any desired degree of moisture may be added thereto, and it would not be absolutely impossible, even on so large a scale, to absorb moisture by the use of potassa or of sulphuric acid, and thus absolutely compel the air to assume any hygrometric condition desired. There are various pulmonary diseases and rheumatic affections, and very possibly many fevers, in which the moisture or absence of it in the air has a very important influence, and it might be of great importance to adapt such a device, if successful, to the ventilation of hospitals. We all know the effect of stoves in drying the air and producing stupidity and headache, and also the effect of water liberally evaporated thereon as a preventive of these bad effects. We merely throw out these thoughts as suggestions to the active minds of our inventors.

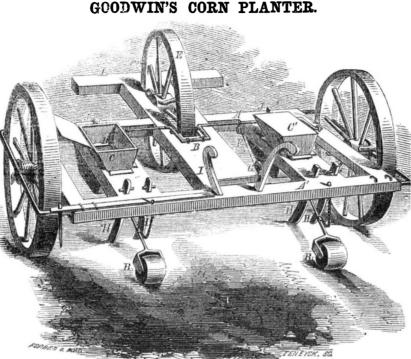
# The Stirling Talabot Patent Process for Iron

We last week described Stirling toughened iron as cast iron in which a quantity of wrought iron had been melted or dissolved by mixture, basing the assertion on the experiments as originally conducted some six or eight years ago at the ---- foundry by the inventor. A patent, designated at the head of this article, by the same inventor, Morries Stirling, represented in French journals as being now brought more prominently before the iron trade, seems to be a modification, perhaps an improvement thereon.

The present invention is described as consisting in running iron from the blast furnace, in the usual way, into molds of cast iron, sand, or other material applicable to the purpose, in which a mixture of oxyd of iron, with ligneous or other combustible matter has been previously placed. Hæmatite in fine powder-as free as possible from foreign matter, especially clay-mixed with an equal bulk of wood sawdust answers well. The character of the pig iron is changed by the chemical action which ensues on its contact with the mixture, and the resulting iron is much improved for particular purposes, especi lly for the manufacture of malleable or wrought iron. The advantages of the process are described to be, first, in puddling the pig iron so made there is a saving in time, varying from one-third to one-half, according to the nature of the iron, and, consequently, an economy in fuel to the same extent, with considerably less waste of iron. Second, the process of refining is rendered unnecessary, and third, the quality of the malleable iron is placed more under the control of the manufacturer by the combination of other metallic oxyds with the oxyds of iron; thus, by the

#### use of zinc, increased fibrousness and strength addition to the expense of manufacture is are obtained; by the use of tin increased caused by the use of the process, when oxyds hardness with a crystalline texture; and by of iron and woody matter are alone used, as the use of oxyds of iron and woody matter the quantity of oxyd decomposed and abalone, improvements in the quality is produced-the latter advantage being most perceptible in cases of inferior iron. Its advo- plies more particularly to the Welsh and cates say that no change is required in the North of England iron. The saving in the

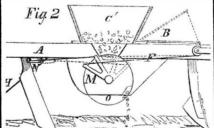
sorbed is sufficient to cover the cost of the mixture. The saving in time in puddling apconstruction of any furnace or other ap- use of Staffordshire iron, they allege, has been paratus used in making the iron, nor is there | found to be from twenty-five to thirty minutes any change in the mode of working, and no 'out of an hour.



Scientific American.

The accompanying engravings represent a planter for which a patent has just been issued to Mr. Firman Goodwin, of Astoria, in this State. It is designed to operate by horse power, to plant two rows at a time, and to excavate, plant, and cover, at one operation. Provision is made for giving the rows any desirable distance apart, and for planting the corn in hills at variable distances in each row. Altogether the machine seems to be one of the best for planting on a large scale, as in the rich alluvial lands of the West. The body is a light frame, A, supported on two carrying wheels as represented, drawn by

a horse attached to suitable thills at L-not represented. It is lifted at pleasure or controlled by the handles, I, held by the atten-



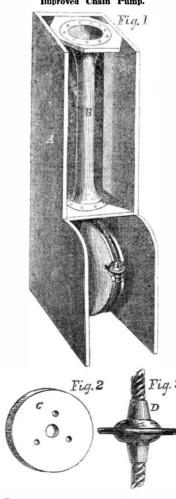
dant. The wheel, E, traveling a little in advance gives motion to the dropping devices which latter are located beneath the seed reservoirs, C and C'. The portions of the frame on which these seed reservoirs, with their attachments, are supported, are moveable in the frame, A, and may be set and secured at any required distance apart. A side elevation of one of these parts, with its attachments complete, is shown by fig. 2. The plow, K, opens a shallow furrow in advance of the planting operation, and the plows or scrapers, H H, standing a little oblique to the motion of the machine, inclines the earth back again to cover the seed, while the roller, R, travelling behind ensures a smooth surface. The planting device itself is the chief peculiarity, and is shown most plainly in fig. 2.

The wheel, O, containing a cavity in its periphery to receive the seed, is partially rotated on its axis, so as to empty the contents into the furrow as often as the string, F, attached to the arm, M, is pulled. This string, after passing tbrough a pulley as represented, is attached to the lever, B, which extends continuously along the frame, as represented, and receives motion at intervals from pins, e, inserted in the sides of the wheel, E.

serted at pleasure in the wheel. and the seed will consequently be planted at corresponding intervals. A spring, N, is provided, which by its tension moves back the parts of the planting devices to their original positions so soon as the lever, B, is released. The result of the whole combination is a continuous excavation for and covering of the seed, and a quick intermittant action of the planting devices as each pin, e, acts on and lifts the lever, B, and the corn is planted in hills under the perfect control of the attendant, though without any

labor on his part. Fuller information concerning this invention may be obtained by addressing Mr. Goodwin, as above

Improved Chain Pump.



The accompanying engravings illustrate an Two, three or more of these pins may be in- improvement in Chain Pumps, patented by

Mr. Edmund Morris, of Burlington, N. J., Feb. 10th, of the present year. Mr. Moiris claims that this is a "perfect pump." It operates on a principle now first developed in its application to pumps, namely, that instead of packing the bucket the log itself is packed.

In the cut, A is a wooden chamber-the front taken off to exhibit the interior-in which is placed a tube, B, of india rubber, flaring at each end, and supported in a vertical position by cross-blocks above and below. The lower block fits water-tight ; the upper one has its corners taken off, so as to allow the water from above to descend through the corner holes and surround the tube in the chamber so as to press it into water-tight contact with each bucket as it rises through it. Below is the lower reel for the chain to pass over, with notches for the buckets to fall into.

The proportions adopted by the inventor for ordinary domestic and farm purposes are such that the chamber is about 4 inches square inside, and the rubber tube 18 inches long by 1 1-2 inch bore, and 1-4 thick. The chamber, thus containing the whole real working part of the pump, is spliced at the top by adding a rough addition long enough to reach to the top of the well, and is then lowered to its place at the bottom.

The reels, crank, and top are nearly similar to those in common use. But the chain and buckets are usually constructed differently. The chain used is made of galvanized wire rope, very strong, very light, perfectly flexible, and working almost noiselessly. The bucket is formed chiefly of a brass disk, C; being placed in a mold of suitable shape, and the cord passed through the center hole, melted solder is poured in, to fill the remaining cavities, and the bucket, D, comes out perfect, and firmly cemented to the cord. This chain is very durable, and is made very cheaply. But the common link chain now in use may also be used by those who prefer it.

Now the bucket being about one-eighth of an inch wider than the bore of the tube, and the tube hugging it very tight as it passes up, a vacuum is immediately created, and the water follows it as it does the piston of a well-packed syringe. Before one bucket escapes from the tube another enters it, and the whole friction of the pump is confined to the tube itself.

Nor does this pump lose its water. it is alleged, like most chain pumps, but a single turn of the crank causes it to flow. The pressure of the column of water in the log, acting through the openings in the upper block on the outer surface of the tube, creates an unintermitted binding of the tube against the bucket, which effectually prevents the pump from losing its water.

Further particulars may be had by addressing the patentee.

Speed of Millstones.-Tempering Picks. A correspondent, W. O. Jacobi, of Mellenville, N. Y., answers the query with regard to the best speed of millstones, that he runs a stone 4 feet in diameter 160 revolutions per minute, and always calculates to run the periphery of the stone at the same absolute velocity, no matter how large or small the stone is. On tempering mill picks he agrees with our former conclusions, and adds that charcoal or bituminous coal should be employed. Cool in water prepared as per G. S., as published in our last issue.

#### Automatic Oven.

The mammoth establishment constructed by Mr. H. Berdan, in Brooklyn, capable of baking into superior bread 540 barrels of flour in twenty-four hours has proved quite successful, and a number more are to be constructed on the same plan in this and other cities.

A correspondent, Mr. W. Westlake, of Wis., recommends sulphur as an excellent article to set tinner's solder when it is rough, in case rosin will not do it.

Wrought iron will crush together under a smaller strain than is required to rend it by a direct pull. With cast iron the reverse is true. These facts should be borne in mind in selecting material.

# Scientific American.

# Scientific American.

NEW YORK, MARCH 21, 1857.

### Stcam Engine Improvements.

The city of Buffalo is a good example of the attention now aroused to improving and testing steam engines. Three years ago, the shops of Buffalo and all the Lake cities were turning out direct-acting high pressure engines alone, and although they had attained to great perfection in the employment of suitable devices for very high pressure steam, and had succeeded in producing some of the most fast and economical propellers in the world. they adhered to that fixed style with great tenacity. Now, oscillating engines have almost completely displaced them, and although quite high pressure steam is very properly employed in the boilers, the benefits due to condensation are availed of in all the larger vessels by the introduction of all the usual apparatus for the purpose. In addition, the Buffalo ste m engine works are arranging for the construction of the Corliss engine, the mvention which has proved itself so eminently successful in the manufactories of the East for some five years past; the Messrs. Schultz are commencing the construction of the Woodruff and Beach style, another modern improvement; and the Shepard Iron Works, the largest and most successful in all that portion of the West, are getting out new, beautiful and highly economical styles of their own. Work is not as active as at some former periods, which is perhaps one reason why the leisure is afforded to construct new patterns, but all seem alive to the importance of knowing the best styles, and of allowing them to supersede the wasteful old methods either in stationary or marine engines. A few years will probably see our interior and Western engineering as far advanced as is that of our seaboard places; in fact, the former are in some points already ahead. The difference in the circumstances will always induce a necessary change in the details of much of the machinery common to the two sections; but the workmen of the Atlantic shores may be assured that the West is pro gressing with most rapid strides, even in the department which they have heretofore considered especially their own. The locomotives of the West, and to a considerable extent of the South, are now made on their own soil. The sharp, flat bottomed boats of the rivers are urged by machinery cast and finished within sight of their landings, and the hundreds of stout propellers plying the chain of lakes are actuated by well constructed oscillating cylinders bearing on richly burnished labels the names of Shepard, Cuyahoga, and other principal shops of their own ports. The largest sizes of engines for mammoth side wheel steamers and water works are still built in New York and Philadelphis, and forwarded in parts, as the Western tools are not equal to such operations; but only a few years or months may elapse before the West will be independent in the manufacture of engines unless the East can keep up, or in many points create, a reputation for very superior excellence in design or execution. The rivalry is wholesome, and the stimulus it affords hastens forward the prog ess of the industrial interests of the whole country. There is scarcely a branch of manufacture but is more or less dependent on steam power. Its perfection indirectly aids to cheapen the tools of the farmer, and to diminish the expenses of the poorest railroad traveler. All are linked in interests in this repect, and we hope to see the economy of fuel due to the perfection of the steam engine u timately progress many fold beyond its present most advanced position.

It is not generally realized, but the steam engineers of 1857 are vet in the condition of our forefathers, who used to balance the bag of corn on the back of the horse, by placing a big stone in the other end. We should like to publish, occasionally, in a few lines, the actual performance of any engines and boilers which are believed to be among the best

and coal consumed, and the work done, and add any circumstances important in connection. The best "duty " of any pumping engine we have heard of in America is the Beam Cornish Engine at Belleville, which pumps the water for Jersey City. This, when very carefully attended to for an experiment, a few weeks ago, lifted seventy-two million pounds one foot high with the consumption of 100 pounds of coal. The pumping engine at Hartford, tested in the same careful manner, attained a duty of sixty-two millions. Both these performances are better than any before attained in this country, we think.

Dressing Skins for Robes, Saddles, and Mats A correspondent requests us to give him information concerning the method of dressing skins " with the hair on." It differs but little in principle from that of tanning them for leather. In preparing skins for leather, they have to be deprived of their hair either by sweating or liming, this process is dispensed with in preparing robes. The fresh skins if they have to stand for some time before they can be treated, are first steeped in a brine of common salt; then lifted out of the brine and laid over a table or bench, with the hairy s de downward, all the fleshy parts scraped off clean with a knife, and the ragged edges cut off and trimmed. They are now ready for undergoing the preserving operations. If they are clean white sheep skins, intended for seats, saddles, or mats, they are steeped in a solution of alum for several days-from three to six-then lifted out, nailed on racks to stretch them to their fullest extent, and dried in the air; they are now ready for use. The strength of the alum solution employed should be at the rate of one pound of alum to every four pounds of skins, the alum being dissolved in sufficient quantity to cover the skins.

Calf, dog or other skins designed for robes are prepared in a different manner. After having all the fleshy parts removed as heretofore described, they are steeped in a bath of oak bark or sumac, or blackborry wood liquor, containing some alum in solution. A peck of ground oak bark is sufficient for tanning twenty pounds of skins; it will require twenty pounds of American sumac, or the same amount of young blackberry bushes to effect the same object. These are boiled in a close vessel for about three hours in water to extract their strength, then mixed with sufficient cold water to cover the skins in two separate baths (or else boiled at two several times). Three pounds of dissolved alum are also placed in each bath when they are ready for the skins; these are all placed in one of the baths at one time, and allowed to remain for three days, being turned in the interim every succeeding day, and then lifted out, dripped and placed in the fresh bath where they undergo similar operations during the next three days. They are again lifted out, nailed on racks, dried in the open air, and are then fit for use.

Skins are composed mostly of gelatine which is very liable to decompose by exposure to moisture and the atmosphere. To preserve them, they are brought into chemical union with some substance or substances, so as to form an insoluble compound. An acid in oak bark, willow, sumac and hemlock, has been used from time immemorial as the chemical agent, to form an insoluble compound with the gelatine of the skins by the process called tanning. Any other chemical substance that will produce the same effect may be used for the same object, and hence alum, which is a colorless substance, is employed for this purpose for white skins. Robes of skins require to be more elastic and soft than leather, hence they are not submitted to the tanning processes for such a long period. Young blackberry bushes impart to the skins greater softness than oak or sumac liquors.

To preserve skin robes from the attacks of insects, they should be submitted to a slight smoking in a smoke house, and then hung up in the wind for a few days afterwards. If found to be a little too hard when dried, they should be beaten with rods until they are quite soft. By attending to these directions carefully, persons living in the country may prepare their own skins with no more appain the world. Give us the amount of wood ratus than a barrel, a table, and a kettle.

The Best Roofing Materials.

A correspondent asks what is the best covering for roofs? The question is one of the many we are unprepared to answer, and we solicit the aid of any who, by practical experience, have determined either the value or worthlessness of the infinite variety of materials. The expense is a matter of the first importance on large buildings, and although a fire-proof character is important in many situations, there are others where this latter is of little moment. Roofs which, like the Boston Custom House, are of thick granite throughout, cemented with lead, may probably rank among the best in the world, and a simple covering of inferior boards slightly overlapping at their edges, is in most situations undoubtedly the cheapest. Between these extremes are a host of materials and processes, some of which we are assured possess great merit, and have not yet been sufficiently published. Do not attempt to ventilate through our columns all the theories you may form on the subject, but give us facts as they have occurred within either your experience or observation.

There are several manufacturers of patent fire-proof paint who furnish a very cheap material for covering wooden roofs. Messrs. Corliss & Nightingale, of Providence, R. I., cover the roofs of their very extensive onestory buildings with a kind of mineral paint. procured in great quantities near by. Will they allow us to publish the characteristics of such clay or other earth, that others may perhaps find equally good without expense?

There is a painter in the Third avenue in this city, who has been very successful in applying a kind of liquid cement to roofs, and there are hosts of patents for compounds for this purpose. The great difficulty, we think, with most organic compounds in this application has been its inclination to crack after a few years, or even months. The correspondent who started the inquiry says :--- "We have been using coal tar on a flat roof, but it contracts and cracks, and will not answer," and inquires "how would Burnettized cloth answer by painting ?"

An article on this subject in the New York Tribune last year, probably written by Mr. Solon Robinson, recommended the following :-- "There is a tarred paper sold at five cents a pound, one pound of which will cover a yard square, or say half a cent a foot; but this paper is rather thin, and we should prefer the thick, spongy straw board paper used for light, cheap boxes. It does not require to be strong, and perhaps the cheap article alluded to will answer perfectly; if so, a roof can be made for one cent a foot. This paper comes in rolls, and may be laid in courses up and down or across the roof, so that the edges are lapped, and tacked with common 6 oz. tacks, which would be very much improved by using leather under the heads, as is often used in tacking carpets. The composition for covering a paper roof is made of the following ingredients: good clean tar, 8 gallons; Roman cement, 2 gallons; rosin, 5 lbs.; tallow, 3 lbs.; boil and stir, and thoroughly mix altogether, and use hot, spreading it evenly, in a thick coat over the paper, which should be tacked upon thoroughly seasoned boards -kiln-dried are best. The roof may be quite flat, rising only one foot in twelve. In nailing on the paper, lap the courses as you would shingles, and commence putting on the composition at the upper edge and work down and while the coating is still hot, let a hand follow and sift on sharp grit sand, pressing it into the tar with a trowel or back of a shovel. When the first coat is cool, go over with a and again with a third, once in five or six years as long as your house stands, and you will have a tight roof. In place of the Roman cement, you may use very fine, very clean sand."

# Weishing Gold Quartz.

Everybody knows how the old Grecian philosopher ascertained the proportion of gold in the King's crown, to determine the honesty of the goldsmiths, which was simply that of finding its specific gravity by weighing it first in air and then in water, and estimating the difference. Pure gold being denser than alloy the specific gravity is greater, and knowing the specific gravity both of gold and the

silver with which it was mixed in the crown he found the proportion by this means very readily. An invention has recently been obscurely announced which is to ascertain the weight of gold contained in gold bearing quartz, but whether or not by any ingenious application of the same principle we cannot well determine. It is represented as simple and of little cost, and as ascertaining the amount of gold "by measures and weights, with an index and the use of the most simple rules of mental arithmetic. The principle can be applied to other metal and mineral substances, when composed of but two different specific gravities, and is easily adjusted to porous or solid quartz " In reply to an inquiry we unhesitatingly say that if the apparatus is capable of indicating with sufficient accuracy for this purpose, which must be extreme, its value is unquestionable.

221

# To Boys .-- Misapplied Labor.

All necessarily spend a part of their time to little or no apparent profit; but it should be only that which is spent in feeling the way -in fact, in experimenting. Be as careful not to spend in useless labor a particle of your energies as you are to cultivate a habit of labor itself. Don't let the fact that the American Institute, or some other old-coach concern, has allowed a few exhibitors to label their abortions "done with a jack-knife" or in some other equally foolish way, induce a belief that the public generally are interested in such ridiculous efforts. All whose esteem is worth having, look on such child's play as merely refined idleness. Don't spend an hour in it, except by chance and before you are conscious of it.

Ingenuity is a serious damage to some persons. Having "constructiveness" well developed, they begin, when boys, to labor hours and days in simply making something. Their highest ambition was to be thought ingenious and they succeeded. When older grown, the same plentitude of unguided ingenuity, and the same lack not only of judgment, but of any serious effort at cultivating that faculty is still discernible. They toil and construct, but accomplish nothing. They are not men who make money for themselves or benefit their race. They are pitiable monuments of misdirected talent.

Have a purpose, then, in all you do. If a certain scheme looks promising when sifted, push it ahead, and a few dozen failures will give you considerable skill in that same sifting process. You will frequently find the object, when attained, too small to pay for time and care invested, but will always have the satisfaction of acting not under the blind impulses of "genius" alone, but guiding it by a noble God-given and carefully cultivated judgment.

## The Patent Extensions.

Congress has adjourned, and left the entire batch of patent extensionists in a most wretched state of confusion, their schemes have failed, and there is now no other alternative left to them but to return home, pocket the loss of money spent, and dispel their happy visions for the future. Their last hopes have fled, as it is understood that President Buchanan, is wholly opposed to special legislation for the benefit of a few hungry monopolists who desire to bestride the public.

# Gil.

The New London Star claims that it is as easy to obtain pure sperm oil now, by applying at the right places in that city, as it was twenty years ago. This may be true; but, if so, it would be a great public convenience if these honest dealers would establish branches in the principal cities, as it is believed to be absolutely impossible to buy sperm oil in this city, except by going to the manufactories and watching it through all the processes.

### Heavy Cables.

A cable lately finished by a Liverpool firm for the steamship Adriatic, 80 yards long, weighs 50 pounds per link, and has been tested with a strain of 105 tuns. The same concern is making a cable for the Great Eastern, to weigh 80 lbs. per link. The length of the link in either cable has not been published.

# 222

# Scientific American.

# Source of the Sun's Heat.

The following is an abstract of Professor Thompson's (of England,) article-often referred to-in which he advocates the hypothesis, "that meteors falling into the sun give rise to the heat which he emits."

All the theories that have yet been proposed to account for the heat of the sun, he remarks, as well as every conceivable theory, must be one or other, or a combination, of the following three :-

1st. That the sun is a heating body, losing heat.

2d. That the heat emitted from the sun is due to chemical action among materials originally belonging to his mass, or that the sun is a great fire.

3d. That meteors falling into the sun give rise to the heat which he emits.

It is demonstrable that unless the sun be of matter inconceivably more conductive of heat, and less volatile, than any terrestrial meteoric matter we know, he would become dark in two or three minutes, or days, or years, at his present rate of emission, if he had no source of energy to draw from but primitive heat.

The object of the communication is to consider the relative capabilities of the second and third hypotheses to account for the phenomena

In the first place, it is probable that there are always meteors falling to the sun, since the fact of meteors coming to the earth proves the existence of such bodies moving about in space. It is easy to prove that meteors falling to the sun must enter his atmosphere or strike his surface with immensely greater relative velocities than those with which meteors falling to the earth enter the earth's atmosphere, or strike the earth's surface. Now, Joule has shown that immense quantities of heat must be generated from this relative motion in case of meteors falling to the earth -and it is all but certain that, in a vast majority of cases, this generation of heat is so intense as to raise the body in temperature gradually up to an intense white heat, and cause it to burst ultimately into sparks in the air, and burn, if it be of metallic iron, before it reaches the surface. Such effects must be experienced to an enormously greater degree before reaching his surface, by meteors falling to the sun, if, as is highly probable, he has a dense atmosphere. Hence, it is certain that some light and heat radiating from the sun is due to meteors.

It is estimated that the quantity of matter that would be required to strike, is about a pound to the square foot for every five hours. At this rate, the surface would be covered to a depth of thirty feet in the year, if the density of the deposit is the same as that of water. We find the source of meteors principally within the earth's orbit; and we actually see them there as the "zodiacal light," ac cording to Herschel, an illuminated shower, or rather tornado of stones. The inner parts of this tornado are always getting caught in the sun's atmosphere, and drawn to his mass by gravitation. The outer edge of the zodiacal light appears to reach nearly to the earth at present; and in past time it may be that the earth has been in a dense enough part of it to be kept hot, as the sun is now, by drawing in meteors to its surface. This calculation is according to Mr. Waterson's form of the theory, but, according to Prof. Thompson's, the fall of meteors must be twice that determined above. Then the whole surface would be covered annually to the depth of sixty feet, and the sun would grow in diameter a mile in eighty-eight years. Even at this rate, it would take 4,000 years to grow sufficiently to make the change apparent to the most refined observations.

A body of such dimensions as the sun might, by entering a cloud of meteors, become incandescent intensely in a few seconds, and on again getting to a position comparatively free from meteors, as suddenly become dark again.

A supposition that some of the fixed stars are suns irregularly supplied with meteors from a nebulous atmosphere, which revolves eliptically around, and occasionally envelopes them, may, on this hypothesis, be suggested which receives continued accessions from of stimulating and hastening the development hably require.

#### as a theory to account for the existence of periodically fixed stars.

If the sun is burning, and its conditions are similar to those of the earth, the fire would be choked, and by no conceivable adaptation of air and fuel, could keep a light for more than a few minutes. If it contains within itself all the elements of combustion, to give the amount of light and heat required would by demonstration cause it to burn away in 8,000 years. If the sun has been burning at that rate, it must have been of double diameter, quadruple heating power, and eight-fold mass only 8,000 years ago.

#### The Steamship Great Britain.

This iron steamship, once astonishingly large, has, since her last visit to this country. been employed both in the Australian trade and Government transit service, making, under steam alone, a maximum speed of 8 1-2 knots, at an average consumption of from 33 to 38 tuns of coal daily. She has now been again overhauled, and was to have left for Australia as both a full rigged clipper ship and a first class steamer, on the 15th of February.

The Liverpool Courier says that." the main mast weighs eighteen tuns, and is forty-three inches in diameter. The size of her spars have also been increased, so that she will now have nearly one-fourth more sail than she for merly spread. Above the lower masts all the spars are bran new. The lower yard of the Great Britain, which, like all her other yards is of pitch pine, is 105 feet long, and 25 inches in diameter. Her lower topsail yards are 90 feet long; her upper topsail yards 83 feet long; her top-gallant yards 60 feet long, and her royal yards 47 feet long."

### Science and the Industrial Arts.

The Philadelphia Ledger, in remarking up on the above subject, expresses the opinion that in the use of improved machinery American flour mills are far in advance of those in Europe. At the commencement of the present century, the French, as well as ourselves, introduced the system of creepers and elevators by which a considerable amount of labor was saved, and the operation of grinding rendered more complete; and from time immemorial it has been the custom . to drive the millstones from a large spur wheel, roand which they were placed, in the middle of the mill. This arrangement of the grinding process is still in use in many parts of France. 'The millstones are generally driven by straps or belts; in England, almost always by gearing.

A gigantic enterprise is contemplated in London, namely, the adoption of Mr. Stephenson's magnificent plan, to perfect a railway from London to Calcutta direct—the only interruption being at the Straits of Dover and the Bosphorus. By this route, the distance will be accomplished in less than a week. It will occupy ten years in constructing. A surveyor is now making flying levels.

### Hail.

The New York Almanac remarks that hail is chiefly restricted to the temperate latitudes, and in these is most frequent during spring and summer. Within the tropics it seldom falls at a lower altitude than from 1,500 to 2.000 feet above the level of the sea. The explanation usually given of this fact is, that the temperature, which increases downward to the surface of the earth, is constantly so high in those regions that hail never descends to a lower altitude than that above-mentioned without being melted.

The squall of wind, or whirlwind, which accompanies and ushers in the hail storm, is no doubt produced by the depression of temperature which the hail communicates to the lower atmosphere in its descent to the ground.

Hail presents every appearance of having frozen during its fall, and not like snow of freezing in the form of clouds. It has much puzzled meterologists to show why rain should ever get frozen in descending to a lower altitude, instead of melting and coming in the shape of rain. A cold current of air blowing suddenly in the direction of a rain cloud, is understood to be the immediate cause of most hail showers. The large size of hail stones is attributed to an accumulation during the progress of their descent. It is probable that the largest commences with a small nucleus,

vapory particles in the neighborhood. Accordingly, hail-stones are found to be smaller on the tops of mountains than in the neighboring plains and valleys, because, not falling so far, they do not augment their size by the addition of successive layers of watery vapor.

## Fountain of Blood in a Cavern.

E. G. Squiers' notes on Central America describe a wonderful effusion of a fluid resembling blood near the town of Vitud, in the State of Honduras. It appears that there is continually oozing and dropping from the roof of a cavern there a red liquid, which upon falling coagulates so as to precisely resemble blood. Like blood it corrupts, insects deposit their larvae in it, and dogs and buzzards resort to the cavern to eat it. Attempts have several times been made to obtain some of this liquid for the purpose of analysis, but in all cases without success, in consequence of its rapid decomposition, whereby the bottles containing it were broken. The small cavern or grotto during the day is visited by buzzards and hawks, and at night by a multitude of vampyre bats for the purpose of feeding on the unnatural blood. It is situated on the border of a rivulet, which it keeps reddened with a small flow of the liquid, which has the color, taste and smell of blood. In approaching the grotto, a disagreeable odor is observed, and when it is reached there may be some pools of the apparent blood in a state of coagulation. Dogs eat it eagerly.

The peculiarities of the liquid are considered due to the rapid generation in this grotto of some very prolific species of infusoria. The California State Journal remarking on the above observes that the estero of the town of Monterey contains a species of blood red infusoria. (the larvae of waterinsects.) which at certain seasons of the year smells precisely like fresh fish, or on exposure in a vessel, like putrid fish. In some seasons it has been found dried in flakes, and of the intense color of vermillion.

Laying the Great Telegraph. The Secretary of the Navy has ordered the U. S. steamers Niagara and Mississinni to proceed to England at the proper time this summer, to assist in laying down the submarine telegraph cable between Newfoundland and Ireland. The Niagara is the largest steam vessel of war in the world, and the Mississippi is the most powerful paddle-wheel steamer in our Navy. It is not yet known what two ships the English government will furnish to perform its part of the undertaking. The  $N_i a gara$  will receive on board at London or Liverpool one half of the cable, and the other half will be put on board the English naval propeller. A paddle-wheel steamer is to attend on the propeller for each nation, so that in case of accident the propellers may be taken in tow and proceed on the voyage -a part of the programme we omitted in our notice last week. As justly remarked by the daily papers in chronicling the fact, " It is a sign of advancing civilization when the ships of war of these two great nations thus meet in mid-ocean, not for a naval battle, but in a peaceful effort to join the two hemispheres."

# Controlling the Sex of Bees,

It has long been believed that the sex of bees can be controlled by changing the position of the comb. Thus the usual position of the drone cells, and also of the worker cells is horizontal; but if, after the eggs for the workers-which are neutral in sex-have been deposited, the cells be artificially changed from the horizontal to a vertical position, females or queens will be produced. It is now claimed as a discovery made by Mr. Samuel Wagner, of York, Pa., that the sex of bees are also controlled by the size of the cells. According to a statement set forth by a recent writer, the manner in which the bees proceed to make a queen, when a queenless hive is supplied with common worker cells and eggs, is as follows :- They gnaw the partitions of three cells away, and remove two of the eggs; the remaining one, when hatched, is fed with a substance termed by apiarians "royal jelly," which, according to experiments recently perfected, is elaborated in the stomach of the working bees, and has the peculiar property

of the insect which, when grown, proves to be a queen. Whereas, the remaining eggs, including those laid within the same minute as the one chosen for a larger development, are not hatched until five days after. If the egg which is chosen for elevation should prove, from want of others younger, to be more than four or five days old, the process will be a failure.

# Ingenuity of the Germans.

The following are some of the inventions generally credited to natives of Germany, and also the times when they were made known :---

"Saw mills in 850; sun dials in 898; fulling mills in 996; windmills and oil paintings, in 1100; spectacles in 1270; paper of linen rags in 1300; organs in 1312; gunpowder and cannons in 1318; hats in 1330; wire making in 1350; pins in 1379; grist mills in 1389; wood engraving in 1436; printing in 1436; printing presses in 1439; copperplate engraving and printing ink in 1440; cast types in 1442; chiming of bells in 1487; watches, letter posts or mails, etching and bolting apparatus, in 1500; gun locks in 1527; spinning wheels in 1535; almanacs, sealing-wax and stoves in 1546; telescopes in 1590; wooden bellows in 1610; microscopes in 1620; thermometers in 1638; mezzotint engraving in 1643; air pumps in 1650; electric machines in 1651; pendulum clocks in 1665; clarionets in 1690; white china ware in 1706; Prussian blue in 1707; stereotypes in 1709; mercurial thermometers in 1715; pianofortes in 1717; solar microscopes in 1736; the gamut in 1753; lithography in 1783."

These statistics, which we find floating in our exchanges, are probably not very reliable in regard to dates, in fact we feel certain that saw mills cannot be traced back so far, but the fact of nearly or quite all these important inventions originating in that country, is, we think, correct. Door locks and latches, the modern screw auger and gimlet, the cradle for harvesting, &c., are also credited to the Germans. At first thought, on reading the above, this patient, persevering, deep-thinking nation would appear to have introduced almost all the progress the world has seen.

### Another Man of Science Gone.

Jacob W. Bailey, Professor of Chemistry and Natural Sciences at the United States Military Academy at West Point, died of consumption last week. Among scientific men, none ranked higher than he, in departments of chemical and microscopical research. He had bestowed much care upon the examination of the Infusoria; and his discoveries in the minute botany of the coral formations added very greatly to his celebrity. Science has sustained heavy losses in the space of three or four months. In succession, its ranks have been thinned by the deaths of Hugh Miller, Andrew Ure, Wm. C. Redfield, E. K. Kane, and J. W. Bailey. Professor B. was president elect of the American Association for the Advancement of Science, which meets in Montreal in August next.

# Post Office Orders.

It has been recently stated that the British system of sending money orders has carried the equivalent of \$50,000,000 from place to place by mail, without the loss of more than \$2.00, while our system of "registering" letters is so notoriously inefficient that all well informed persons now prefer not to register them, as the act does not make the department responsible, but only serves to point out the money letters to thieves. In England no sums greater than £10 can be sent by Post Office orders, but in Canada as large sums as £25 can be sent, and under both conditions the plan is believed to have proved itself perfectly successful. The charge for each order is threepence or sixpence, and if larger sums than the limit prescribed are to be sent, it is only necessary to purchase two or more orders. It should be introduced here.

# The Great Eastern.

Preparations are pretty nearly completed at Portland to accommodate the mammoth steamship Great Eastern on her arrival. A new pier has been built, the depth of water at the end of which is 30 feet at low water. This is considerably more than the ship will pro-

# Scientific American.

CORRESPONDENTS.

A. C. M., of Pa.-How did Naterer measure 220 deg Fah. below zero ! We never heard before of such a lo temperature being obtained.

G. S. Y., of Miss.—Gun cotton is made by digesting cot-ton in sulpho-nitric acid. On page 212, Vol. 8, Scientific American, you will find a very full description of a good method to make gun cotton

W G. B., of Ala.-Saws strained between single springs are quite old. S. A., of Mass.—There is nothing new or patentable in

your projectiles, so far as described. W. McB., of Ohio.—We have no doubt that you desire to advance the best interests of inventors, and we are not prepared to say that your views in respect to the fees are are incorrect. They are, however, impracticable at present. Congress will not meet till next winter, and it is out of season now to advocate reforms in the law. Re-volve the subject in your mind and collect facts thereon till the next session; then let us hear from you again, if the subject still seems to you important. L. G. T., of Conn.—The price of the Ambrotype

Manual is probably about \$1. Fairchild & Co., 109 Nas-sau street, are the publishers. "Is Turkey rhuburb (Rheum Palmitum) cultivated in this country? It ap-pears to be a distinct species from the pie plant [Rheum Rhapontucum)." Can any correspondent inform him We have not the information.

W. R., of Fla-Small batteries were constructed and advertised quite extensively a few years ago for medical purposes. The price, we think, was \$9, and presume they can be had now in this city.

E. C., of C.—Your bomb to be exploded by concussion in striking would be defeated by the liability of the bomb to turn around while flying. The idea is very old, buy your form of it is probably new and worthless. We at tach no value to your suggestions on electricity.

E. L. M., of L. I.-No. "A large wheel turning in a wagon" would not "tend to propel the wagon in the opposite direction." nor in any other. Your magnetic per petual motion contains no elements of success. C H. C., of Conn.—"What would be the effect on a

body, the brig Advance for instance, if it had advanced to the north pole, and come in direct line with the axis o the earth ?" Answer: Nothing.

-" Effects are not patentable, but only the r of producing them. If you have a saw gummer operat. ing in some novel manner you can patent it, or if you pro-duce either by new or old means a substantially novel saw, you can patent it as a new manufacture, but you can not patent an effect alone, such as gumming saws rapidly T. B. T., of Ohio.-We are not sufficiently well ac quainted with the wild gooseberry to enable us to advise with you in reference to its value as a hedge.

S. C., of N. Y.-You have discovered a gas easily pro duced, with elastic power, sufficient to drive machinery like steam, and wish to condense it so that you may use the same over again, and thus obtain power at almost no cost. We consider the problem hopeless in the present state of the arts.

Wm Beswick.of Lancaster, Wis., wishes to purchase a water wheel best adapted to a stream with plenty of water, and only about five feet fall.

L. N. Y., of Nova Scotia.—You can procur saw gummer of Hoe & Co., this city.

J J. Fleming, of St. Paul, Ind., wishes to corn with some manufacturer of cast steel wire No. 24.

M. C. L, of C. W.-You can procure such a steam er

gine as you want of Wm. Burden, Brooklyn, N. Y. T. R., of N. Y.—The reason why your gas bill is as high since the price of gas was reduced as it was before, may be owing to a greater pressure of gas in the main pipe—a point which is now being investigated in this city. There are two kinds of gas meters, the wet and the dry. In the former the gas passes through a wheel, which it revolves in water, and its revolutions measures the quantity passing through. The dry meter is composed of flexible diaphragm chambers, which expand and contract as the gas fills and exhausts out of them. By the acts of expansion and contraction they register the quantity that passes through them.

P. W. B., of N. Y.-1st. Breech-loading fire-armswill not stand as much wear and tear as muzzle-loading pieces. 2d. They will shoot ball as well as any other 3d. They will not carry shot at all as they are invariably rifled. The great reason why breech-loading arms have come so popular is the convenience and rapidity of loading them

Junius, of N. Y.-Write to the Commissioner of Pat ents for a copy of Huff's patent for mastic roofing. If there is no such patent he will inform you.

H. W. M., of N. J.—Yes. It takes the same power to project a ball to a given hight as it does to raise it slowly to the same hight, and it would require the same power to generate the required velocity in the balls in your de vice as you could gain from their descent. Read " Bart lett's Mechanics," which you can buy for about \$2. S. P. C., of N. J.—" Vestiges of Creation" are on sale

in this city, price 23 cents. Hugh Miller's "Footprints of the Creator" is also for sale in all the principal book stores. Price \$1. We have already recorded our objec-tions to floats under waterfor an ocean telegraph. Your scheme of such floats with a ship attached above, for the men and instruments, would obviate them, but we con ceive it practically impossible to maintain such a floa at any considerable depth under weter. The many long cables to confine it must be very heavy, even if they are not loaded by accumulations of aqueous animals, and every structure will leak when exposed to great pres ure.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, March 14, 1857 :-

J. M. of N. Y., \$25. J. D. S. of O., \$25. J. B. of Ill. \$30; H. & B., of Eng., \$1065; J. P. M., of Mass., \$25; T B., of Mass., \$110; B. & Van P., of Wis., \$30; S. H, & Co., of Vt., \$30; H. B., of N. Y., \$47: O. J., of N J., \$25; Y. & J., of N. Y., \$30; W. T, B. R., of Ill., \$25; S. & M., of Wis. \$25; A. C. B., of N. C., \$37; E. H., of Iowa, \$26; J. V. J., of Mich., \$10; J. J. C., of Mass., \$30; C. F. H., of Ct., \$25, C. Van. B., of N. J., \$30; J. D. S. of Vt., \$30; W. S. R., of S. C., \$30; C. J., of Ct., \$30; F. T., of Mass., \$30 ; W. A. F., of Ct., \$30 ; W. M. S., of N. Y. \$100; D. P., of N. Y., \$30; G. M., Jr., of Ill., \$10: C. M

Y., of N. Y., \$30; J. O'B., of N. Y., \$30; K. & G., of Ill., \$65; E. B.B., of La., \$30; C. B., of M. T., \$60; C. & D. of N. Y., \$65; N.R. B., of N. Y., \$25: S. B., of N. Y. \$60 ; J. M. of N. Y., \$35. Specifications and drawings belonging to partie

the following initials have been forwarded to the Patent Office during the week ending Saturday, March 14, 1857 : D. K. A., of O.; W. A. F., of Conn. (2 cases); H. B., of N. Y.; N. J., of N. Y.; J. D. S., of O.; J. M., of N. Y.; M. G., of O.; J. P. M., of Mass.; R. H., of Vt.; S. H. & Co., of Vt.; O. J., of N, J.: W. T. B. R., of Ill; A. C.

B., of N. C.; S. & M., of Ill.; I. H. C., of Ill. (2 cases); C. F. H., of Conn.; E. H., of Iowa; N. R. B., of N. Y.; S. B., of N. Y., (2 cases); C. B. De F., of Conn; J. M., of

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give the most correct counsels to inventors in regard to the patentability of inventions placed before us for ex-mination. Private consultations respecting the patentability of in-ventions are held free of charge, with inventors, at our office, irom 9 A. M., un til 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improve-mentshould be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to invore wishing to learn the preliminary steps towards making an application. In addition to the advantages which the long experience sed great success of our firm in abtaining patents present to inventors, they are informed that all inventions pat-ented through our establishment, are noticed, at the prop-r time, in the Scurstript charge and substantial influence. Most of the patenta obtained by Americans in foreign countries are secured through us while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency. MUNN & CO. American and Foreign Patent Attornies, Principal Office 125 Fulton street, New York.

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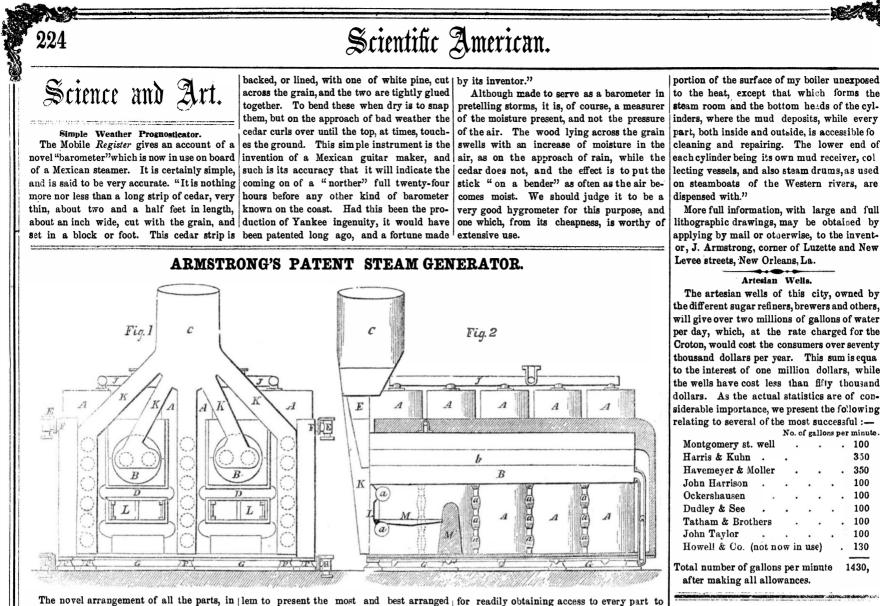
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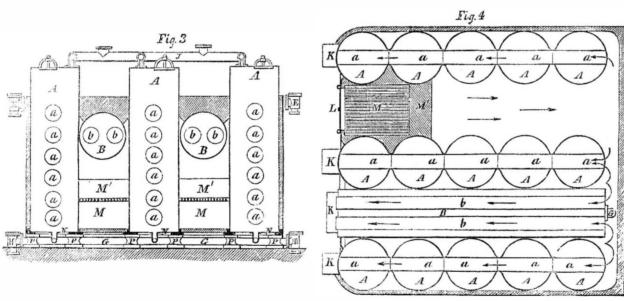


the boiler patented by Mr. John Armstrong, of New Orleans, La., in December last, is represented quite clearly in the accompanying engravings.

Since the very earliest period, in the history of steam engineering, the construction of the boiler, the part in which all the force is generated, (generally that of the most expense, and always that of the most danger reducing the quantity and weight of water, avoid, so far as possible, all objections, and in case of imperfection,) has been a subject of might have been anticipated without expe- especially to provide against deposits of mud discussion among all the parties interested, rience, but the necessity of providing for on the heating surfaces, a point which parties

beating surface at the least expense, would be conduct the repairs which, to a greater or less quite a difficult one, and of itself might ad- extent are continually required, so far confuses mit of a great variety of solutions, but in fact the subject, that there now exists almost as the matter is much more complexed by the many favorite varieties of boilers as there are introduction of other elements, which would constructors to build, steamboat owners or probably never occur to the merely specula- manufacturers to pay for, or firemen to attend. tive student. The necessity in many situations, as in locometives and steamboats, of consists of a combination of parts intended to which has yet in nowise abated. The prob- easily cleaning out in many situations, and using the water of any riv & flowing through

Mr. Armstrong's boiler or steam generator



Mississippi, know well how to appreciate. clear and concise, may be given in description.

The object of my invention, as representpossessing all the advantages of flued boilers in the proportions of heating surfaces to cubic plain cylindrical boilers in facility for cleaning and accessibility to all parts for repairing, and to possess the desirable quality of not having any portion of its heating surface exposed on its water) side to receive the sedimental deposits of the water; the bottom of the boiler on which the deposits fall, being at a point below the fire, and not exposed to it.

To accomplish the object of my invention as above stated. I arrange three rows of ver-

alluvial deposits, and especially that of the ponding to the size of boiler required; each | J, on the top end; E is the check valve of the row of vertical cylinders, A A A A A. The space between each row of cylinders, I make sufficient to form at one end the furnace, M. The top of the space between the rows of vertical cylinders I close by a common double flued boiler, B, the top of which is in in one chimney, C. the same horizontal plane as the top of the flues, a, in the vertical cylinders. The vertitheir water spaces by the pipes, G, on the tical cylinders, A, in size and number, corres- bottom, and in their steam space by the pipe, in any other form of boiler, there being no

cylinder, A, having a series of horizontal through which the feed water is admitted, and The language of the inventor, which is very flues, a, laying in the vertical plane, cutting | H is the blow-off valve through which the the centers of all the vertical cylinders in salt or muddy water is discharged. Each each row, and the flues in all the cylinders cylinder stands on two pedestals, P P, and laying in one series of horizontal planes, so has the usual man-hole in the top head. The ed in the engravings, is to construct a boiler that with the cylinders of one row standing three front cylinders of the three rows, are contiguous, or in contact with each other, a connected by two large pipes, D D, which series of flues will be formed, a a a a a a, ly- form a part of the fire front of the furnaces, contents of water, and all the advantages of ing in a vertical plane through, and the length and the bearer for one end of the grate bars. The flames or heated gases pass along between the rows of vertical cylinders, and return through the flues of the cylinders and those of the horizontal boiler, and discharge into the breechings, K K K K K, which all unite

> By thus arranging the heating surface in vertical cylinders with the heat applied to all cal cylinders are all connected together in sides of them, I utilize a much larger proportion of the boiler surface than is usually done

to the heat, except that which forms the steam room and the bottom heads of the cylinders, where the mud deposits, while every part, both inside and outside, is accessible fo cleaning and repairing. The lower end of each cylinder being its own mud receiver, col lecting vessels, and also steam drums, as used on steamboats of the Western rivers, are

More full information, with large and full lithographic drawings, may be obtained by applying by mail or otherwise, to the inventor, J. Armstrong, corner of Luzette and New

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