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Drilling and Boring Machine.

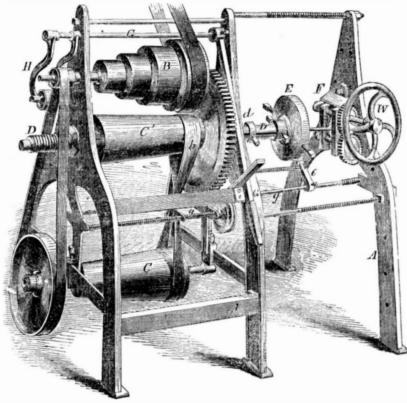
The annexed figure is a perspective view of the Universal Machine for Drilling, Screw Cutting, and Boring, for which a patent was granted to Joel P. Heacock, of Marlboro', Stark Co., Ohio, on the 27th ult., the claim of which was published in the last number of the SCIENTIFIC AMERICAN.

A A represents the framing; B are the pulleys on the driving shaft; C' is a cone pulley, with an opening through the entire length of its center, through which passes the mandrel shaft, D; this shaft has a screw cut on part of its length, and works in the thread of a nut in the interior of pulley, C'; this pulley may be said to be the nut of the mandrel screw shaft. which is moved backward and forward, advancing in boring, drilling, &c., and then running it back without changing the direc tion of its motion. This is done as follows:-In the shaft, D, near the chuck, E, there is a groove; in this, behind ring d, is a feather (not seen) which keys said shaft with the large cog wheel. This cog wheel receives motion from the driving shaft by a pinion (not seen,) and thus it moves the mandrel, but gives it the backing motion. The forward feed of the mandrel is obtained by the lower cone pulley, C, which drives the upper cone pulley, C', by the belt, b. The lower cone pulley is driven by a belt, I, passing over a small pulley on the outer end of the driving shaft, and over a large pulley on the outer end of the lower cone shaft. As the belt, b, passes over the larger end of the lower cone pulley, and the narrow end of the upper one, C', the latter receives a more rapid motion than the shaft, D, by the direct driving of the cog gear, consequently as its interior has a thread upon it, the screw shaft, D, of the mandrel must feed forward for drilling or boring, &c. To feed back the screw mandrel, the motion of the lower pulley, C, has only to be arrested, when the pulley, C', acts as a stationary nat, and by shaft D still revolving in the same direction, it feeds itsel backwards.

The belt, I, is hung quite slack, and is rendered tight to drive the lower pulley by a tightening or hanging pulley, H, which is secured to the outer end of an oscillating shaft, G. To the inner end of this shaft (forming a continuous connection) there is attached a lever, G, which hangs down, as shown, when thrown out of action. By elevating the lower end of this lever, the tightening pulley, H, will be forced against the belt, I, thus making it taut and giving it motion, thereby driving the lower cone pulley, C, which gives motion to the upper cone, C', by the belt, b, and feeds the mandrel forward. By throwing down the lever, G, the tightening pulley, H, is pushed back from belt. I, and the motion of the lower cone. C, is stopped, also that of the upper cone, C', and the mandrel shaft, D, then feeds back by the pinion on the main shaft driving the cog wheel on the mandrel, D.

On the forward part of the frame there are vibrating shipping devices, to make the mandrel move backwards, after the tool has done its work. g is an arm or rod inserted in seats in the uprights, and connected with the catch or lock arm, f, On the front rod, g, is a small

DRILLING AND SCREW CUTTING MACHINE.



inwards so as to be pressed forwards by the then becomes equal to that of the screw of pulley, C, and the mandrel, D, feeds forward, boring with a drill, cutting a thread with a tap great deal of ingenuity. in a nut, or on a bolt with a die. When the which tilts the clutch arm, f, and the end of is then thrown out, and the motion of the lower pulley, C, ceases. As has been explained, the mandrel, still rotating in the same direction, feeds back of itself. The trigger, e, is set at any point, so as to reverse the mandrel for any desired length of feed. The belt, b, holds the cone pulley, C', firm, while the mandrel bar is feeding back. This belt can be set on the pulleys at any point, to give the mandrel more or less motion as it is moved from the grade of feed. The ring, d, on the mandrel in the front, has a pointed screw pin, which projects into the slit or groove in the mandrel.— As the mandrel is fed back the pin presses against the feather in the groove which keys the cog wheel to the mandrel, forcing it against the shoulder of the cone pulley, C', thus acting like a friction coupling, and gives motion to the upper cone pulley, and as its motion useful machines may be obtained.

chuck, E, when the latter has advanced to the the mandrel the latter ceases to feed backrequired distance. The edge of the arm, f, has ward. The ring, d, therefore regulates the notches in it, and the lever, G, when raised, is back feed of the mandrel and the trigger, e, the set in one of these, and held there when the forward feed, so as to feed the mandrel bar the mandrel is set to feed forward. The tightening required distance to execute any work the mapulley, H, now gives motion to the lower cone chine has to perform. These devices, and the way they are arranged and operate, exhibit a

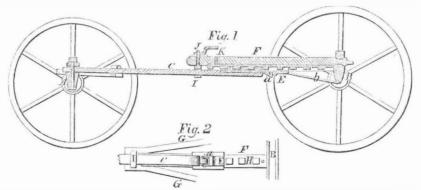
F is the box or jaws for supporting the artichuck, E, holding the tool, has advanced to the cles to be operated upon. It has two jaws, proper distance, it presses against the trigger. one on each side, through which pass two screws—each having a right and left hand lever G drops down, the tightening pulley, H, screw cut in it. By turning the wheel, W, both of these jaws will advance together—parallel-and center and grip the article to be acted upon. A tap is now shown in the figure in the act of cutting a thread in a nut in the jaws of F. The lever, G, is shown as being just thrown out of catch with the arm, f, and the mandrel is beginning to back, after having completed its work. By turning the wheel, W, to the left, the jaws open and the nut may be taken out and another inserted. This machine center towards the end, thus giving the desired is capable of doing all kinds of boring, from the smallest boxing to the largest steam engine cylinders, fly wheels, car wheels, &c. Also drilling and screw cutting, which is performed without change or alteration of machinery, tools only excepted.

By letter addressed to Mr. Heacock, at his residence given above, more information about patent rights and the manufacture of these

fig. 2 an inverted plan view of the accompanying engravings.

In fig. 1, A represents the front axle of a vehicle, and B the back axle. C is the reach, the front end of which is attached to the front axle in the usual manner. The back part of the reach has a cog bar attached to its upper surface, said bar having a slide, E, fig. 2, connected to its outer end by a hinge or joint, a. F represents the center piece of the hounds, G, which are attached to the back axle, B .-These hounds are constructed in the usual way; the back ends of the hounds, G, are fitted upon the upper edge of the back axle, and braces, b, are secured to the underside of the axle and to the under side of the hounds. The under side of the center piece, F, has a cogged bar attached to it. The sides of the cogged bar extend a short distance beyond each side of the cogs, as shown in fig. 2, and the slide, E, has recesses in its inner sides, in which recesses the sides or edges of the cogged bar, H, fit. I is a clasp, which has a screw rod, J, attached to its upper end, said screw rod passes through the end of the center piece, F, of the hounds, and has a nut, K, upon it above the center piece. The reach, C, passes through the clasp, I, and the cogs on one bar fit between the cogs on the other, the clasp, I, and slide, E, keeping the cogs geared or fitted into each other. By this arrangement it will be seen that the reach, C, cannot move horizontally from the center piece, F, of the hounds, in consequence of the coggod bars, and the cogs cannot become loosened or ungeared from each other in consequence of the clasp, I, and slide, E. In case the reach requires to be either extended or shortened, the center piece, F, is raised by unscrewing the nut, K, and the cogged bars are then ungeared, and the slide, E, may be moved outward or inward, on the center piece, F, to the desired point, and the clasp, I, again screwed up to the center piece, F. The joint, a, in the slide, E, allows the center piece, F, of the hounds to raise. This improvement is extremely simple, and the reach may be extended or shortened in a moment of time, and with the greatest facility. The reach also is strong, much more so than the ordinary one which are weakened by bolt holes made through it in order to render it capable of being extended. The back axle also is kept in proper position, and is not allowed to turn or cant inwards, as is the case with the ordinary reach, in consequence of the sagging or depression of the reach at its center, or where it is connected to the center piece of the hounds.

By letter addressed to J. R. Selover, Prattsburgh, Steuben Co., N. Y., more information respecting the sale of patent rights, &c., may be obtained.



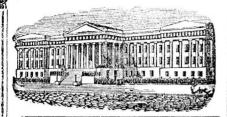
PATENT CARRIAGE REACH.

On the 16th of October last a patent was | Y., for the extension Carriage Reach illustrated dog or trigger, e, which projects upwards and granted to Edwin Wilson, of Prattsburgh, N. by fig. 1, a vertical longitudinal section, and its own telegraph.

Railway Telegraphs.

We believe there is only one railroad in the country which habitually and constantly employs the telegraph, and that is the New York and Erie, which, at its own expense has erected wires along its entire line. The expense of putting up this telegraph was some \$50,000, and the cost of operating it is about \$30,000 a year; yet the Superintendent, Mr. McCallum, states that the value of the services rendered by it is more than \$100,000 a year. By its means each Division Superintendent maintains a constant control over all the trains in his division, and it frequently happens that every train is running under special orders transmitted by the telegraph. Indeed, whenever any train is more than ten minutes out of time, the fact and cause of the delay are at once reported to the General Superintendent for his action. Thus every employee on the road is held to constant accountability for any delay occasioned by his fault.

Every railroad in our country should have



[Reported Officially for the Scientific American.] LIST OF PATENT CLAIMS Issued from the United States Patent Office FOR THE WEEK ENDING DEC. 4, 1855.

Suspending Ships' Yards—Thos. Batty, of Brooklyn, N. Y.: I claim the arrangement of the yard, the beam, i, and the crane, e e', substantially as and for the purposes set forth.

[1'he foregoing is part of an improvement for which one patent has already been secured by Mr. Batty. Two grants were required in order to cover the entire inven-tion. The improvement consists in a peculiar method of attaching standing topsail yards to the mast, whereby the mast is relieved from strain by the weight, while the yard. at the same time, can be conveniently moved and swung about. This invention is more particularly useful on ves sels where Forbes', Howe's, and other new rigs are em ployed.]

CUTTING PILE FABRICS—E. B. Bigelow, of Boston, Mass.: I claim the employment of a rotating cutter, in combination with take-up rollers, substantially in the manner and for the purpose specified.

HANGING WINDOW SASHES—E. W. Bullard, of Hard-vick. Mass.: I claim the improved mode described, of wick. Mass.: I claim the improved mode described, of hanging and fastening sashes, which consists in beveling one side of the sach sa, and combining therewish a corresponding wedge or beveled strip, moved up and down, as described, or in any other way, by which arrangoment the modes set forth of fastening, loosening, and removing the sashes from the frame are secured.

sashes from the frame are secured.

MILITARY SADDLES—Daniel Campbell, of Washington, D. C.; I claim, first, placing the arch of the connecting strap of the holsters below the pommel of the saddle, and supporting the holsters upon projections from the fraward ends of the side bars of the saddle-tree, or their equivalent, substantially as set forth.

Second, I also claim covering the holsters by means of the roof piece, B, attached to the connecting strap of the holsters, and the covers, C C, which are pivoted to the sides of the holsters, substantially as set forth.

I also claim constructing the valise of two connected receptacles, D D, which are supported immediately in the rear of the legs of the cautel, substantially in the manner and for the purpose set forth.

Making Plow Mold Boards—Thos, A, Chandler of

MAKING PLOW MOLD BOARDS—Thos. A. Chandler, of R. ekford. Ill.: I claim the forming eccentric roller, B. clamp piate, D. with the cam lever, G. and the pressplate, T. when constructed, arranged, and operated substantially in the manner and for the purpose set forth.

SAWING OUT AND TAPERING BLOCKS OF MARRILE— J. A. Cole, of Washington, D. C.; I claim attaching the saws to swinging frames, ff, by pivots at each end, which will admit the shoes, b. b, turning to any angle to follow guides, e.e., the whole being arranged in the manner and for the purpose set forth.

CHAMFERING THE EDGES OF SHOE SOLES, &c.—O. R. Dinsmoor & L. J. Bartlett, of Salisbury, N. H.: We claim the combination and arrangement of the lever gauge and spring presser with the knife blade or chisel, substantially as specified, the same being used in manner and for the purpose essentially as explained.

FLUES AND DAMPERS IN COOKING APPARATUS—J. R. Elder, or Westbrook, Me., and Wm. J. Thorn, of Hollister, M. uss. We claim the arrangement of the dampers, 4, 5, 10, 18, and R S, in combination with the oven flues, 14, 15, and 13, in the manner substantially as described, for regulating and controlling the heat, for the purposes specified.

RAILROAD CAR COUPLING—J. T. England, of Baltimore, Md.: I claim the described coupling, consisting of a ball, so arranged in the buffer head as to support, at its lowest position, the pin, and to be pushed away and allow the pin to fall on the introduction of the link, as set forth.

Wool Combing Machines—Peter Fairbairn, of Leeds and John Hargrave, of Kirkstall, Eng. Patented in England, Nov. 6, 1852: We do not confine ourselves to the precise arrangement of machinery, as described.

But we claim, in machinery for opening, combining, and drawing wool, flax, and other fibrous materials, combining one and the same machine, two or more rotary gill cylinders, fitted with advancing and receding gills, and rotating at different speeds, for the purposes set forth.

CUTTING OUT BOOT AND SHOE SOLES—J. W. Hatch, of Rochester, N. Y.: I claim, first the, projections, d d', at different distances on the face of the wheel, and the fork, e e, on the sector lever, b', having its prongs at different elevations, combined and operating, substantially as set forth.

Second, the application of the spring friction bar, h, to the yoke, I, for preventing the return of the sector lever, before the proper time, in the manner specified.

[The above invention is an improvement on a machine for the same purpose, patented a few months since, by Messrs. Hatch & Churchill. The cutting is done by means of hollow punches, which have the shape of the sole or other article to be produced.

The object of the present improvement is to do away with certain inconveniences contained in the other ma-chine, and thus enable one person to operate and attend the same, where several were before required. Without engravings it would be difficult correctly to describe the connection of the parts. It will be sufficient to say that the invention is a good one and effects an important saving of labor.]

BURGLAR'S ALARM—H. L. Hervey, of Quincy, Ill.: I do not claim decoys, of themselves, as decoys are not new, But I claim the combination and arrangement of levers, F, springs, a, stop levers, D and E, slotted levers, C, key levers, B, flat sided levers, G G2, connecting levers, Ill 2, and links, J, varying the alarm at pleasure, by means of the stop levers, D and E, and for drawing the bolt, as

HAND COTTON PICKERS—Geo. A. Howe, of Worcester, Mass.: I claim the endless belt or chain of gatherers, F, ranged, and operated the purpose set forth. ed substantially in the manner and for

BURGLARS' ALARM—Sam. Hamilton, of Tolland, Mass. Disclaiming the clock devices and bells, I claim constructing an alarm with an actuating pull knob, b b; having a catch spring, c, watch disk, b t, formed with a tube, c, together with the rail, d d d, figs. 3 and 4, the blocks, k t l, libks, n, n, book spring, c, x o, s, liding blocks, s t. k † L, links, n n, hook spring, ox o, sliding blocks, st, with catch devices, t! !!, the secret spring strip, '† †, through all of which, in combination with clock-work devices, are actuated, bells or alarms, J & & &, substantially in the manner described and for the purpose set forth.

BAGASSE FURNACES—S. H. Gilman, of New Orleans, La.: I claim the pit, D, located between the furnace and the boilers, in a passage way, B, as described and for the purpose specified.

I also claim the perforated blast pipe, G and L, of the feed opening, as arranged and described, and for the purpose specified.

FEET WARMERS—Henry Forncrook, of Elbridge, N. Y. I claim the arrangement of the angular supports. O. upon the inner box, thereby providing the foot warmer with a hot air chamber; also with substantial supports for the outer box, in the manner described, for the purposes

MILITARY WAGONS—Jos Francis, of New York City: I wish to be understood as not ciaiming the transportation of boats, or segments thereof, in cradles on roads or railroads, as that has tefore been done.

I claim, first, constructing the iodies ofroad wegons and like vehicles of corrugated plate metal, supported by a bottom frame permanently attached thereto, so us to serve to support the iron tody at all times, and be used as a sled upon which todrag the superstructure, when taken off its wheels, as set forth, and made water-tight for transportation, as specified.

wheels, as set forth, and made water-tight for transporta-tion, as appecified. I also claim the mode of attaching and detaching the running gear, so as not to passany bolts which are liable to wear and cause a leak through any part of the water-tight body, but simply to connect the same with the frame as shown at fig. 3, by the outside connections and traces, so as to securely brace the iron body in proper form, and be permanently united therewith.

Le permanently united therewith.

CUTTING THE FRONTS AND BACKS OF VIOLINS—Matthias Keller, of Philadelphia, Pa.: I claim, first, the slides B and C, with the pattern, M and J, lever G, and spinder, P, with its cutter, I, the whole being arranged and constructed substantially in the manner set forth, for the purpose of forming any numter of exactly similar backs and fronts of violins from one pattern.

Second, the supplementary lever, Q, with its connectives, R S and J, in combination with the levers, K and G, and slot, k, for the purposo of forming the cancave sides of backs and fronts of violins, without changing the pattern used tor forming the convex sides and for the purpose of the purpose of the supplementary that the purpose of the supplementary is the convex sides.

to be a sea and from so your states and for the purpose of giving the said backs and fronts a gradual and correct tapering thickness.

AMALGAMATORS—Edward N. Kent, of New York City:
I do not wish to be understood as making claim broadly to
an apparatus for the separation of gold or silver from foreign substances, which consists of a vessel containing a
column of water with mercury at the bottom, and with
agitators above the mercury, and in which the substances
to be separated are supplied below the surface of the water, and telow the discharge.

I do claim the employment of double action paddle
wheels which rotate on their own axis, and revolve about
a vertical axis, substantially as described, within and in
combination with a column of water in a vessel having
the discharge at or near the top, substantially as specified,
and for the purpose set forth.

And I also claim sustaining the paddle wheels in the
column of water from above, and causing them to rotate
on their axis, by the weight of the h-avy pan resting on
the peripheries above, that mercury may be applied in
combination therewith, at the bottom and below the
wheels, substantially as and for the purpose specified.

[This valuable improvement was fully illustrated by

[This valuable improvement was fully illustrated by engravings, and described in our paper week before last.]

Locks—Bdward Kershaw, of Boston, Mass.: Now. I am aware that locks have Leen heretofore made with the bolt in the form of a disk, and rotating about a center; and also that tunnelers have been used in connection with such lock bolt, which had a movement with the bolt, and parallel to its axis, and were placed in position by pushing in the key; therefore, I do not claim either of these. But, in connection with a rotating lock bolt, or its equivalent, I claim the combination of the shank, b, and segmental tumblers, C U, with the tubular recess of the lock case enclosing the same, with their several sutordinate appendages, co-operating with each other substantially as described.

Pumrs—flosea Lindsey, of Ashville, N. C., I claim the horizontal cylinder, E. a.d pipe, C. connected as shown, the cylinder being provided with valves, b b, and piston rods, F. F. the piston rods being operated as the pipe, C, and cylind r. E. rotate by the curved flanch, I, as shown and descr. bed, for the purpose specified.

[Mr. Lindsey places his pump at the bottom of the well and operates it in the following manner: A hollow tube extends down the well having a pump barrel attached and placed longitudinally across its lower end. The pump barrel is furnished with a piston rod that extends entirely through: two pistons are attached to the rod, so that when one movesin, the other withdraws; reciprocating motion is communicated to the pistons by means of a hollow cam ring placed in the well on the same level as the piston rod; the tube is revolved at the top of the well by means of a winch; the pump barrel being carried around with the tube, the ends of the piston rod come in contact with the camring, and the pistons move in and out, forcing the water up through the tube. There is no limit in the hight to which water may be thus carried.]

Locks—J. H. Pomerey, of Bloomington, Ill.: I claim on spring locks or latches the use of the spring bolt or catch, M. N., or its equivalent, so constructed as to be operated by the door frame or keeper to release the bolt and fasten the door in the manner substantially as set forth.

Photographic Bayit-Isaac Rehn, of Philadelphia, Pa.: I claim the overflowing bath, with the conducting trough and receiving chamber, or their equivalents, as set forth.

Boot TREES—Jas. H. Sampson, of Grafton, Mass.: I claim the combination and arrangement of the three levers a.d the screw, M. applied to the section A and B, of the tree, and made to operate together, substantially as specified.

fied. 1 also claim the combination of the spring lever catch with the foot, C, and front section, B, in the manner described and for the purpose specified.

SELIF-REGULATING HOT BLAST FOR FURNACES—Chas. Schinz, of Camden, N. J.: I claim the use of the pipe, h, and the bar, i i, when arranged as set forth, and operating conjointly, by means of suitable gearing upon the eccentrics, v v, for opening and closing the valves, z z, substantially as described, so as to divide a given volume of air of varying temperature and pressure into proportionate parts, and for the purpose set forth.

CLOTH STRETCHING ROLLERS—Nathan Simmons of Providence, R. I.: I claim the cloth stretching roller or cylinder, imparting to its sectional stretchers while the roller is in revolution, consecutive movements, in one direction or away from the middle of the roller, in the order as described, and by mechanism substantially as specified, or any mechanical equivalent

SPOKE MACHINES—Thos. R. Markillie, of Winchester ll.: I claim the arrangement of the cam, U, on the pat

SPOKE MACHINES—Thos. R. Markillie, of Winchester, Ill.: I claim the arrangement of the cam, U, on the patterns V, in combination with the tracer, S, and a spring, a, in the manner and for the purposes descrized.

I also claim the particular arrangement of the rotary cutter and tracer in combination with the plate that supports them, suspended in the manner and for the purposes described.

Machines for Scouring Knives—G. M. Morris & J. Newton, of Watertown, Conn.: We claim the machine described and shown for scouring knives, the same consisting of two scouring rollers, D. D., and a trough containing the cleansing material, said rollers leing arranged over each other above the trough, and each of them formed of a series of woolen, or other absorbent elastic disks, arranged on a screw shaft, B, and forced and confined compactly together by two movable metallic disks, F. F., substantially as, and for the purpose set forth.

[The scouring is done by means of two rollers covered.]

[The scouring is done by means of two rollers covered with woolen cloth. The knife is placed between the rollers, which are then revolved by means of a crank. Most of the old knife-scouring contrivances are large, clumsy, and hard to operate; but the present improve ment is small, neat, portable, and very easily operated. The lower roller turns in a tray which contains the scour ing powder or mixture, which is taken up by the roller, and thus constantly brought in contact with the knife The peculiar manner of securing the woolen to the roller shafts, as set forth in the claim, makes the cloth last for a very long time, and prevents it from ever becoming ragged. For family use this invention is truly admirable.

HAND SOWERS—Moses D. Wells, of Morgantown, Va.: a claim effecting the seed discharge and regularing the amount of the same by means of the double inclined planes, f. of bar P. reciprocating without the hopper, the adjustment and operation being su isstantially as described.

adjustment and operation tening substantially as described.

Machines for Preparing Cotton Seed for Planting—R. C. Wrenn, of Covington, Ky.: I claim pads 5, in combination cylinder, 1, and teeth, 1 1 and 4, in combination with hopper slide, combined and arranged substantially in the manner and for the purpose set forth.

CONNECTION BETWEEN REGULATOR VALVE AND GOVERNOR'S STIM—John 'I rem; er, of Philadelphia, Pa.; I caim eff-cting the connection between the throthe valve cut-off, or other regulator valve and the governor stem, by means of a pin, d, working within a slot, a, or against a bearing lace, the said slot or bearin, g face having an e-cape opening, b, opposite to which the pin, d, is trought, by the cessation of the operation of the governor, wherev, by the pin is allowed to e-cape from the said slot or bearing face, and there; y effect the disco. nection of the governor from the valve or cut-off instantaneously, to allow the lurpose, to stop the engine immediately after the governor roce ases to operate, the said jui, d, being attached to the governor rod, and the -aid slot or learning face, a, and e-cape opening, h, teing in or upon the lever of the throtte valve or cut-off, or what is equivalent, the pin teing artached to the said lever, and the slot or bearing face and e-cape openings being in the connecting rod of the governor, or in a plate connected therewith, or what is equivalent, by a toothed rack and segment, substantially as described.

[In the ordinary steam engines, no provision is made for

[in the ordinary steam engines, no provision is made for the control of the engine in case the governor becomes suddenly inoperative. If, by reason of its driving belt or gear giving way, or by other accidental cause, the governor is stopped, it leaves the throttle valve wide open and the steam full in the engine. An increase in the speed at once takes place, which often results in doing much injury to the machinery.

The principal object of the present invention is to tach the governor entirely from the valve the instant it becomes inoperative, and at the same time to close the valve by means of a spring or weight applied for that purpose, and thus stop the engine. Another object is, to regulate the movement of the valve while the governor is in operation.

We regard the above as an important improvement, and presume it will find a very extensive introduction. It is quite simple in its nature, and readily applied to all kinds of steam engines.]

of steam engines.]

WATER WHEELS—John II. Gatiss, of Franklindale, Pa., assignor to Abraham Edwards, of Towanda. Pa.: I am aware center vent water wheels have been used, and that the shafts of such wheels, as well as the wheels them-elves have been enclosed in a flume, these, therefore, I do not claim.

But I claim the arrangement of the gates, passages, and buckets of a center vent wheel, such as described, so that the water may act upon each bucket simultaneously, and with equal force, first striking them at their very lowest points, and heid thereto by the lips or flanges, and then escaping to the center discharge, as set forth and shown

MACHINE FOR CHANNELING STONE—John Taggart, of Roxbury, Mass., assignor to himself and Vernon Brown, of Boston, Mass.: I claim supporting the operative machinery of the drill saws by means of standards, U. U., extening down therefrom, and resting upon the bottom of the grooves in the stone, by said drills, the same enabling said operative partsor machinery to move downward with the drills in proportion as they may cut into the stone.

BLIND FASTENER—Daniel B. True, of Lake Village, N. H.: I disclaim the mere contination of bent levers for opening and ciosing the blind from the inside, as such device is well known, though requiring distinct adjustment for fastening and unfastening the blind.

Leiaim the arrangement of the spring bolt at the extremity of the outer lever, and connecting said lever with the blind, as described, so as to be self-fastening, and withdrawn by the same lever movement, operating the blind as, and for the purpose described.

[Phis is a very ingenious and excellent arrangement of levers for opening and closing window blind shutters from the inside of the apartment, without raising the win-There is a lever connected with each blind, which passes through the bottom window-sill into the apartment where it terminates in an ornamental knob. The blind i_s operated by simply pulling and pushing the knob. This

is operated by simply pulling and pushing the knob. This is one of the best improvements of the kind that we have seen. It is cheap, and easily applied to every window.]

MACHINES FOR PARING AND SLICING APPLESS—Levi Van Ilce-sen, of New Haven, Conn.: I claim the combination of a spring with a sliding machine, when combined on the substantially as described, that is, with an arrangement whereby the fork carrying the apple may be turned, so as alternately to be brought into play with the paring kniie, and with the slicing wheel lein; at the same time thrown into gear in the former case, and out of gear with the latter.

gear with the latter.

QUARTZ CRUSHING MACHINES—Richard Vose, of New York City: I claim supporting the center of the inclined vessel, A, upon a semi-spherical hub, a, which works in a raised perforated socket in the plate, C, whils the depressed portion of the periphery of said vessel is supported upon a horizontal plane or track, by which I am enabled to impart the requisite movements to the said vessel, through the medium of a shalt descending from its hub, a, and in connection with the said method of supporting and operating the inclined vessel, A.

1 also caim discharging the contents of the said vessel through an aperture in the descending operating shaft, substantially as set forth.

In connection with the described peculiar manner of supporting and operating the vessel, A, I also also claim the combining of the periphery of said vessel with the supporting frame by means of the springs, s, s, or their equivalents, for the purpose of steadying the movements of said vessel, and preventing it from turning upon its axis, substantially as set forth.

Gimlet—Chester C. Tolman, of Shelburne Falls, Mass.,

GIMLET—Chester C. Tolman, of Shelburne Falls, Mass, assignor to James Sargent & Daniel P. Foster, of same place: I claim constructing the lower or outer of the two screw threads or ilanches, B B, of the gimlet in rounded or curved paratolic form, and having the sides of said portions of the threads or flanches brought to a sharp or cutting edge, the screw or worm, c, being used or not as desired.

[The spindle of this gimlet is provided with two screw threads, which, at the lower end of the spindle, are sharpened into cutting edges, as set forth in the claim. The resultis, that the gimlet cuts its way through the stuff with remarkable ease and rapidity, making a smooth hole, and never clogging up. Cheap, simple, and effective, this implement, we feel confident, will become a public favorite.]

MACHINERY FOR OPERATING AND FEEDING COTTON TO THE GIN-Major B. Clarke, of Newman, Ga.: Having described my machine for opening and cleaning cotton, preparatory to ginning. I claim the arrangement of the toothed feeding roller, a. the adjustable gate, b, and the adjustable comb, e.g., with each other, substantially in the manner and for the purpose set forth.

RI-ISSUE.

Machine for Sticking Pins in Paper—Samuel Slocum, of Providence, R. I. Patented Sept. 30, 1841. Extended Sept. 30, 185: I claim separating the pins laterally, one by one, from the lower end of a pile, sliding by gravity between guides, by combining with such chained way, between guides, by combining with such chained way, between guides, or grooved or notched instrument, substantially as described, so that when the groove or notch is brought in the line of the channel way, the lowest pin of the pile shall enter the groove or notch, and by the lateral motion separate it from the pile without any conflict of the heads, the surface of the said instrument beyond the groove or notch acting as a stop to prevent the further descent of the pile until a groove or notch be again brought in line, substantially as set forth.

I also claim the channel way between guides for the described, in combination with one or more guide grooves, and one or more followers, working in the guide grooves, and one or more followers, working in the guide grooves, and one or more follower connected therewith, substantially as described, for guiding the; in or pins as pushed foward, the employment of a clamp or holder for clamping or holding the paper in the required position during the operation of inserting the pin or pins.

And finally, I claim, the combination of the channel way for the column of pins between guides, the guide groove or grooves, or notches, the follower or followers, and for the purpose specified.

Recent Foreign Inventions.

Jean Panet, a French inventor, has taken out patent for propelling cars on railroads by a column of water taken from a fall of water. The method is described by him as follows: "The railway is constructed in the ordinary manner of existing railways, but between the two lines (the same tube serving for both) and along the entire length a tube is sunk into the ground at a depth of from 1 foot 6 inches to 3 feet. This tube receives casings to receive smaller ones for the pistons by which the motion is given; these smaller tubes, again, are furnished with valves and levers. The principal tube is closed at its upper extremity, and at the upper part water is introduced from a brook or river where there is a fall of water. It will be found that the water introduced into the tube exerts an equal pressure on every part of it, and gives the necessary power. The carriage is moved by the force of the water contained in the reservoir tube, and may be constructed with four or six wheels; it is furnished with two levers, four balances, and one slide for moving them. The levers are placed one on each side of the carriage, serving to regulate the opening of the valves; the levers and balances are arranged in pairs, and in such a manner that they move in an opposite direction, so that the speed can be regulated at will, and they are fixed or movable by means of the slide; the balances receiving the pressure from the pistons give the motion,"

The advantages of this invention M. Panet sets forth as follows: "Water being the principal agent, there is no fear of scarcity of propelling power, as it can be renewed in the course of the distance by introducing a fresh supply of water as often as may be deemed advisable. The water, after having been employed for propulsion, can be used for various purposes in those parts where it is scarce. But the chief advantages of the system are, that no fuel would be required, and no explosions would take place."

M. Panet would have a fine field for putting his invention into practice on the Lockport and Niagara Falls Railroad, by employing the waters of the Niagara river for a propelling agent. But would this plan answer the purpose of railroad propulsion? Could it be used as economically as steam, and at the same time give as good results? It could not. The water from the highest falls in the world would be too sluggish in its action in comparison with steam, and would not answer the purpose of quick railroad propulsion. It is not the mere cheapness of the propelling agent that we now regard in modern engineering and commercial enterprize. If it were otherwise, no steamships would now be navigating the ocean, as the wind for driving sailing vessels costs nothing.

PREVENTION OF THE ALTERATION OF NOTES, Bills, &c.—Wm. Ross, of Falcon Square, London, has recently patented an invention for preventing the alteration of bank bills from one denomination to another. During the manufacture of the paper, when in a pulpy state, the characters or letters which indicate the denomination of the bill, whether "five," "ten," and so on, are imprinted upon it. This is accomplished by water-lining in the ordinary manner. To render the character impressed more apparent, it is proposed to print the words in colors, in such a manner that will secure the color penetrating the paper itself, which, by this means, will become part and parcel of the material, so that erasure will be impossible, without accomplishing the utter destruction of the substance upon which the impression is made.

It is estimated by Septimus Piesse that the total revenue derived from various sources, from the substances with which "Britannia perfumes her pocket-handkerchief," cannot be less than \$200,000 per annum.

The Chicago Press announces the discovery in La Salle County, Illinois, of deposits of cannel coal, in sufficient quantity to meet any demand that may be made upon it for fuel or manufacturing purposes.

During the past year, 82,199,190 pounds of tea were exported from Canton to England 5,895,490 pounds to Australia, and 31,007,115 pounds to the United States, 51.678 bales of silk were exported to England, and 1494 bales to the United States.

Scientisie American.

[For the Scientific American.] Improvements in Railroads

The improvement of our railroads is a subject that not only affects the dearest interest of the companies but the whole people, and the tween them, and such a thing as packing the the use of gun cotton in fire-arms, and in all facture of paper, the exclusive right of which best efforts of civil engineers should be directed to that branch of their business till the limit of speed depends upon the capacity of the engine.

The defects of the permanent way are very few, and most of them can be cheaply and speedily improved, and when the superstructure is built that is worthy to receive a rail, no doubt a rail will be found that shall not be a particle behind the structure in its perfection.

EARTHWORK-To commence at the foundation of the whole system, solidity is the great thing to be acquired, and upon that one idea is based the whole of the great results that have been, and are yet to be achieved.

Water is the great destroying element of all earthy structures, and its entire absence in the foundation of the road bed would soon place it beyond the action of frost or any perceivable deflection by the weight of the moving train. As it cannot be prevented from falling upon the surface, the next best thing that can be done is to remove it as soon as possible. A drain should be dug from three to four feet below the surface and tile laid therein, which will ensure its speedy removal in the most retentive soils. The experiment has been tried by experience agriculturists with complete success; and soils that could not be drained by open drains have been made productive by the covered drain, and at less cost. A covered drain, of sixteen inch caliber, seems to draw as much water from a field in the same time as an open ditch of ten times that capacity, so that, without doubt, a pipe drain of small size would do more towards removing the water from the road bed than both of the open ditches at the

But falling water is not the only source of annoyance; it is raised in the embankments by capilliary attraction to a great hight, but depending upon the character of the soil. In clay, loom, or sand, if water stands in the hill ditches it affects badly the permanency of the bank, no matter what its elevation may be, it reaches the surface of either of those soils, and completely saturates them, so that the ballast gradually sinks. The only method of preventing its rising to where it can affect the ballast is to cut it off with a drain; for if there is a free passage for the water where it can flow easily and quickly, it will surely find it, even if it is surrounded by compact clay. Circumstances will govern the number, size, and length of such drains, and the calculations are as easily made as for any other branch of railroad engineering.

Side ditches, however, should not be neglected. On the contrary, they should receive more attention than they ever have had. Water should not be permitted to stand in them on any account. The appearance, health of the country, and inconvenience of crossing, are not the only reasons for the abatement of the nuisance; they too often afford good watering places for the cattle at the crossings, besides a very tempting one for the neighboring farmer's stock. Thorough draining is the main thing needed to ensure the stability of the road-bed, and until that is effected, no great improvement need be looked for in the "permanent way."

Ballast-Gravel which comes the nearest to broken stone in quality—that which is neither too coarse nor too fine, which will pack firmly, and at the same time afford an easy escape for falling water—should in all cases be preferred. Inferior kinds might possibly be used over a drain, but if too fine, it will hold too much water, if too coarse, it cannot be well packed around the ties; an even, uniform, medium quality is preferable, and for a term of years will pay the extra cost of transportation. Clean sand has been used to a great extent, but would be far better were there a drain beneath it. Water will run up a bank of sand to a great hight if there is any in the ditches at the sides. In the drouth of 1854, six inches below the surface of a 10 feet embankment of clean b ach send, it was damp enough to pack into

The manner of using ballast is almost al-

no interest in its application—whose philo-powder, but owing to greater strength, force for sophical or mechanical knowledge is below the force, it is cheaper. The Governments of when Charles I. found his revenues short, get it under the ties, so as to make a hollow begravel anywhere excepting there has never entered their heads.

To ballast a road with gravel like children's playing marbles is the hight of folly, for the weight of the train causes the ballast to rise between the ties, and affords no permanency, yet this is the way most of the roads are ballasted. When ballast is placed upon the roadbed before the track is laid, it would be a grand plan to lay it about four inches thick, then go over it with a very heavy cast-iron roller, then another course of gravel and another rolling, and so on until the required depth was on; but if it is deferred until the track is laid, no very heavy trains should be allowed to move till the gravel is under and well rammed down. If this precaution be not taken, many of the rails will be bent, and will have to be replaced by straight ones, at great cost.

Ties-Durable timber, of good size, firm texture, and well seasoned, are the requisites of a good tie, and any one not answering this description should not be used. They ought to remain sound at least ten years, be large enough to give a good surface for the rail on one side, and a good bed upon the ballast on the other; firm enough to hold a spike well, and be well seasoned as a pre-requisite to soundness and firmness. A tie of soft wood (cedar, for instance,) gives beneath the rail, and if placed between two hard ones is as bad, practically, as though it was not well tamped up, for the train sags at that spot,-every wheel of the train sinking lower and lower. It is just as bad if the tie be small, for it cannot receive that support from the ballast that a large one does, neither can it give the bearing to the rail. If all the ties were equally firm on the ballast the smallest would not hold their faces equally well, for the concussions of a moving train tend to loosen them all, and the smallest must suffer first. As long as the jointed rail is used, more care will be required at this point than any other, unless a more perfect chair is introduced, or a short cross tie be found to answer more perfectly. Believing, however, that a perfect rail will be, if it has not already been invented, this imperfection, of course, will cease, and the ties will then have to be arranged in classes. They should first be selected as regards their firmness, and subdivided according to their size. If small, more of them should be used in the same space, and none but the best white oak should be used

CURVES-The elevation of the outer rail is too often left to the judgment of the track repairer, who is just as apt to get it too high as to have it too low. In either case it is wrong. The elevation that will exactly overcome the centrifugal force of the moving train at a certain rate per hour should in all cases be known, and all trains that are above the rate of freight trains should be required to conform to the standard in going round these curves. The concussions will then be comparatively light, if the calculations are perfect.

Parabolic curves give in practice all 'hat is claimed for them in theory, and would be one of the great improvements to be introduced as the rule and not the exception in this country. Other improvements, undoubtedly, will be suggested by those who have seen the defects of the system, for such I consider the above to be; but these are the main ones, and until they are radically improved or a new system substituted. we shall be content to move some thirty H. DE L. S.

Pompey, N. Y.

Gun Cotton and Gunpowder.

Inquiries having been made of us lately as to the use of gun cotton, and whether it could take the place of gunpowder, we have obtained the following information on the subject from the Smithsonian Institution, viz.:-Gun cotton cannot be made with anything like the same uniformity in strength as gunpowder, and its explosive property diminishes on being kept for any length of time. It can be used with safety in the discharge of fire-arms, but not with as much safety as powder. Its cost,

have made a great number of experiments on cases the reports of the engineers engaged in making the experiments were against its adoption in the place of gunpowder. In blasting rocks it is used extensively. The objections to its use are the inequality of its action compared with gunpowder, the effect on the gunis greater, its projectile force varies with the compression of it in the gun, it attracts more moisture, alters slowly from loss of acid, explodes under some circumstances at 154 deg. [Washington Star.

Adjusting the Number and Depth of Paddle-Wheel Blades.

It appears that something more may be said upon paddle-wheels; we will therefore remark, that so long as the common rectangular floats continue to be used, the number and depth of them should regulate each other upon the principle "that the right-angled resistance from the surface of one paddle at its central (or upper) edge, should pass below, and entirely clear of the paddle before it." It is upon this principle that we can account for the results of experiments where, sometimes, onethird of a steamer's blades have been removed from their upper edges without diminishing the speed, but rather improving it. In such cases the arms have been too numerous for the width of the blades. All the upper parts, which extended above a point, from which a line drawn at right angles to the arm would pass to, or below the lower edge of the blade before it, was disturbing the fluid to no good purpose, but rather loading the wheel with dead water, which, instead of pressing against the ocean, impinged upon the pre-dipping paddles. If an equable distribution of resistance shall continue to be approximately sought in the periphery of common paddle-wheels, by using a large num ber of blades, instead of seeking for it in the true form of propelling blades, let the depth or breadth of the floats be reduced, as above, and subsequent changes will be found unnecessary. How many wheels have become water instead of "paddle" wheels, by guessing at the proper number and depth of their blades!-[U.S. Nautical Magazine.

Pennsylvania Soapstone.

An American in London, in a communication to the London Mining Journal, states that the same causes which contributed to the formation of soapstone in Cornwall, seem to have produced the same result in Pennsylvania. He

"On the banks of the river Schuylkill, ten miles above Philadelphia, the gneiss which, alternating now and then with mica schistand porphyry, has prevailed for the whole of that distance, is succeeded by an extensive tract of serpentine. The gneiss is much invaded by veins of trap and granite; and, at the junction, a great dyke of granite shows itself crossing the river. It is at this precise spot that the soapstone, in massive, irregular deposits, is seen. Nodules of serpentine are included in the deposit. The citizens of Philadelphia have good reason to remember this soapstone, since for a long time the doorsteps of their houses were invariably made from it. The rock wore away more speedily than the serpentine, which protruded in hard, indestructible, rough balls, not very genial to the soles of one's shoes. It is now wholly replaced by marble for doorsteps; but, for lining furnaces, where great heat is to be encountered, the soapstone is still extensively quarried and applied. It occurs on both sides of the River Schuylkill, here 300 feet wide, and on the east side is not less than 40 feet thick.

A singular fact attending the occurrence of this deposit may also, be here mentioned. The soapstone is interspersed with little nodules of iron pyrites. The portion of the rock in which this is most abundant wears off into a sugary substance. On being analyzed by a young Philadelphian amateur chemist, Theo. Rand, this substance was found to contain 8 per cent. of epsom salts-(sulphate of magnesia.")

Foolscap Paper.

Every body knows what "Foolscap paper" ways left to the care of those having little or weight for weight, is a little more than gun- is, but would perhaps be puzzled to tell how it a very fusible and brilliant alloy.

medium. The only idea with them has been to France, Prussia, Austria, Russia, and England, he granted certain privileges amounting to monopolies, and among these was the manuwas sold to certain parties who grew rich and enriched the government at the expense of those who were obliged to use paper. At this time all English paper bore in water marks the Royal Arms. The Parliament under Cromwell made jests and jeers at his law in every conceivable manner, and among other indignities to the memory of Charles, it was ordered that the Royal Arms be removed from the paper, and the fool's cap and bells be substituted. These also were removed when the Rump Parliament was prorogued, but paper of the size of the Parliament's Journals still bears the name of "Foolscap."

Iron Rigging for Ships.

Two lines of ships (of about 800 tuns each) are running between Glasgow and Montreal, Canada. They are built of iron, and all their shrouds, stays, back stays, in fact, all their standing rigging is made of wire rope, with hemp centers, like that used on some inclined planes of railroads. This rigging looks very light, and is, in fact, lighter than hemp of equal strength. It holds less wind, and is not subject to stretch after being once set. Each shroud or stay terminates in a screw, by which it can be strained to any desired extent, and two men, in a couple of hours, can set up all the rigging, even in a storm. An improvement in the hanging of the yards is adopted in these ships, by which the yards are made to turn in their lifts, and roll up the sails upon them, from the deck, so that it is never necessary to go aloft to reef or furl them. These ships use the American steering apparatus, having a right and left handed screw upon the axis of the wheel, with rods from the screw boxes to a short tiller on each side of the rudder head, instead of the tiller rope,

Foot Prints of Reptiles in the Coal Strata of Pennsylvania.

At a recent meeting of the Boston Society of Natural History, Professor Wyman read an article on the foot-prints recently discovered by Professor Henry D. Rogers, in the Carboniferous Strata of Pennsylvania. He gave an analysis of the anatomical characters by which reptiles and fishes are distinguished from each other. He made comparisons between the form and structure of reptiles and the fins of fishes, showing that although they resemble each other as regards their functions, yet morphologically they are always distinct. There is no known fish, recent or fossil, the pectoral or vental fins of which could produce a series of traces like those discovered in the coal strata of Pennsylvania by Prof. Rogers.

Prof. Wyman, therefore, thought that, in the present state of knowledge, there was no ground for denying that the quadruped tracks found in the coal formations were made by

To City Subscribers.

So many complaints are made by our city patrons of the non-receipt of their paper by the carriers, that we would advise all who are about to commence taking the paper to call for it at the publication office, or obtain it at a periodical store in their neighborhood. One or two of the carriers serve the paper regularly; those the public, in their districts, know, and will continue to patronize; but others who serve it are so dilatory and unreliable that our subscribers are exceedingly annoyed by them, and blame us for an evil which is not in our power to remedy. Persons who will run their own risk in having the paper served them, may leave their names at our office, and they will be handed to a carrier, but we will not youch for his faithful strvices, nor receive money for nim.

The Scientific American can be found in all the periodical stores in this city, or Brooklyn, on the Thursday preceding the date of publication each week, or at the Office. Price 4 cents per copy.

Brilliants of Fahlun, so called, are made from 29 parts of tin and 19 parts of lead. They are

New Inventions.

Reports of Railroads

Oil—The custom adopted by the New York and Erie, and the Great Central New York Rilload, of keeping a correct record of the work done by each locomotive, and the different items of expense, and publishing monthly reports, must do good, by showing the directors, superintendants, engineers, and all concerned in such accounts, where the greatest loss is caused, and where the greatest gain is obtained. The Report of the General Superintendent, C. Vibbard, Esq., of the New York Central Railroad, for September, shows the number of miles run by each engine, and the quantity of oil used. The average number of miles run to one pint of oil was 16 69-100two miles more to the pint than in the previous month. The engine W. W. Corcoran, ran 50 65-100 miles to one pint of oil. This was the highest rate; the lowest only 6 13-100 miles, was by the locomotive Syracuse. It must have been sadly out of repair. What is the cause of the W. W. Corcoran performing so well? In the report for last month of Edward H. Jones, Master Mechanic of Albany & Utica division of the above railroad, we find that there was nearly two miles less run to the pint of oil than during the previous month. Has the maximum economy of oil been obtained on this railroad? We think not. We have no doubt but the engineers on this railroad will yet show a higher rate of duty done by the engines to one pint of oil than they yet have

Fuel.—The monthly reports of General Superintendent D. C. McCallum, Esq., of the New York and Eric Railroad are more elaborate than those of the Central Railroad. They embrace the work done by each engine, and give all the expenses separately. In his report for the last month (October,) we find that the average number of miles run to one pint of oil was 16 4-100—nearly two miles more than the previous month.

The general average of miles run to one cord of wood was 27 29-100-about two miles more than the previous month—while the average cost was four cents more, thus showing a decrease in the expense, no doubt; but the increasing cost of this kind of fuel is a serious question. On the eastern branch of this railroad the wood costs \$5 71 cts. per cord—a very high price-while on the Buffalo division it costs only \$2 94 per cord, and yet the expense of fuel per mile for drawing a tun load on this branch is about as much as on the Eastern branch. The engines on it seem to have been but half as economical of fuel. There is room for improvement here, and the energetic Superintendent will soon stick a pin in that spot. Fuel is the largest single expense, the average being 13 22-100 cts. per mile run; the repairs of engines amounts to 6 5-100 cts. per mile; oil and tallow, 1 23-100 per mile. Every effort must be directed to economize the fuel. No less than 12,516 cords were consumed on this road during the month of October; this amounts to $(12,516 \times 8 \div 5,280)$ 18 93-100 miles of cord wood, 4 feet high and four feet wide, and cost \$45,01668. Such a destruction of forest, amounting to 236 miles of cord wood per annum on this single road, must soon render such fuel scarce, and consequently dear. Coal-burning engines or cheap coke are the remedies to which all our railroad managers and engineers should be directing intense attention.

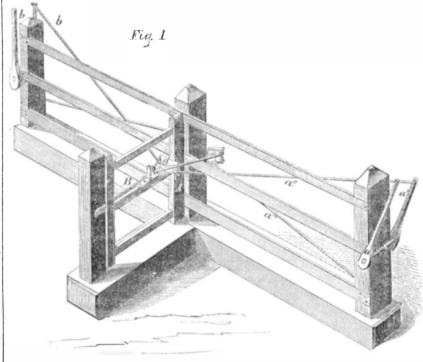
Spontaneous Combustion.

A correspondent, speaking of the fire at the coal mine at Beaver Meadow, Pa., which, it had been supposed, originated from spontaneous combustion, states that such is not the fact; that the fire in the dirt heap or coal dust at that place was the result of carelessness on the part of the managers of the mine, who allow their firemen to wheel or cart the hot ashes from the engine furnace on to the "dirt heaps." There are now, says our correspondent, three veins of coal on fire, or perhaps the same vein in three different localities, in the anthracite coal fields of Pennsylvania, but they have all been ignited by the carelessness of the miners.

The first was set on fire at Coal Castle many | ject of remark at Beaver Meadow. - [Philadelyears ago, and is still burning, like a slumber- phia Ledger. ing volcano, having destroyed, probably, mil-

[Would it not pay to extinguish this fire by lions of tons of coal, as the vein is the celebra- forcing steam and carbonic acid gas into the ted "Jugular," which varies from 60 to 120 mines, as was accomplished a few years since feet in thickness. The second was recently by Goldsworthy Gurney, in England. The set on fire at Tamaqua by some miners who burning coal mine which he extinguished had were digging their winter's coal at the out-cropping of the vein; and the third is the sub-Pennsylvania.

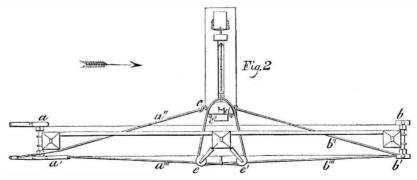
WEBER'S PATENT FARM GATES.



both ways, and a person riding in a vehicle or end to the segment at c', fig. 2. It will now be on horseback can, without dismounting, open seen that if the lever a is pushed forward by a the gate, and close it after he has passed person riding in the direction of the arrow,

The gate A, is hung upon pivot or swivel hinges, so as to swing freely both ways, and is fastened by the spring bolt B. On either side for both. The lever, a', is worked by the hand through a loop to keep them in place on the

Fig. 1 of the accompanying engraving is a | lever, a, as shown in fig. 1. The cord, a2, is perspective view, and fig. 2 is a plan view of a attached by one end to the top of lever a', and method of operating gates for farms, for which by the other end at c, fig. 2, to the semi-cylina patent was granted to John K. Weber, of drical segment, d, which is firmly fixed to the Seneca Falls, N. Y., on the 9th of Octoberlast. gate. The cord, a3, is attached by one end to The nature of the invention consists in the the lower part of lever a, and after passing peculiar mode of opening and closing gates, over guide pulley e, fig. 2, and around the periwhich are so hung as to be opened and shut | phery of the segment, is attached by its other the upper end of a' is carried forward, and its lower end backward, and that the action of the cord, a3, will be to open the gate in the direction of the arrow, and that the reverse motion of the gate there is a set of levers and cords so | of the lever, a, would shut the gate by means of arranged and connected with the gate and the cord, a2. The cords, b2 b3, from the upper spring bolt as to open the gate in a direction and lower ends of lever b', are arranged and from and in front of the person passing through. operate similarly to cords a2 a3, except that The two sets are alike in arrangement and they operate to open and shut the gate in a operation, and a description of one will answer different direction. The cords, a3 b3, pass



pulleys, e e'. It will be readily seen that a gate | By addressing communications to Mr. Weber, of this description must be fastened when at Seneca Falls, more information respecting closed, or it could be opened by the wind or rights, &c., may be obtained. by cattle in either direction, and in order to fasten the gate and control the fastening by means of the levers, a and b, the cords, a3 and tributed by us on the first of January, are rebolt. B. and as these cords alternately slacken and are drawn tight by the alternating motions of the levers, the spring bolt will be withdrawn and allowed to return to its place.

The gate is shown with a fence on one side; and it will be understood that when it is opened as described, by a person advancing in the direction of the arrow and putting up the lever, that it remains open until he passes through and closes it in the same way on the other side. The claim is for the arrangement of the levers, a a', b b', cords a2 a3, b2 b3, in combination with the spring bolt, B, for opening and closing the gates both ways, in the manner set forth.

Who'll take the Prizes?

Competitors for the large prizes to be disminded that the time for them to act is short Fifteen will win, while others must suffer disappointment. The question is, who will be the fortunate ones? The answer is, those who have exerted themselves the most, and obtained the largest number of subscribers. To some who have entered the arena of competition, the addition of a few more names to their lists, perhaps a single one, will save them the mortification of defeat. Think of that fact, and act accordingly.

The Hillotype Again.

The Rondout (N. Y.) Courier announces that the Rev. L. L. Hill has at last completed his invention of the Hillotype, and "has received gion of Honor.

an offer of \$30,000 provided he will go to Europe and obtain patents. This he does not deem a sufficient consideration for so brilliant a discovery." What a conscience. It is also stated that "he has recently made a great addition to his invention by reproducing the colors of nature on callodionized glass, and has relieved himself of the difficulty of using silverized plates."

Awards to American Exhibitors at the French Exhibition.

We publish herewith a list of the principal awards made to American Exhibitors at the French Exhibition,—nearly every article sent from the United States either received a medal or was honorably mention by the International Jury. We have not room for the whole list.

GRAND MEDALS OF HONOR.

C.H. McCormick, Chicago, Reaping Machine Chas. Goodyear, New York, India Rubber

MEDALS OF HONOR.

J. A. Pitts, Buffalo, Grain Separating Machine.

Bache & Saxton, Washington, Weights and ${f Measures}.$

Lieut. Maury, Wind and Current Charts

MEDALS OF THE FIRST CLASS.

Tousley & Reed, New York, Steam Engine. J. H. Manny, Rockford, Reaping Machine.

M. Allston, South Carolina, Rice Samples. Thos. Blanchard, Boston, Wood Bending

E. Richmond, Boston, Metal Cutting Machine.

I. M. Singer & Co., New York, Sewing Ma-

David King, Albany, N. Y., Model of Steam-

Secretary of the Navy, Model of a Vessel S. Colt, Hartford, Ct., Revolvers.

Merriam, Brewer & Co., Boston, Cotton

W. S. Seabrook, South Carolina, Cotton Samples.

A. W. Ladd, Boston, Pianoforte.

A. Mirmont, New York, Violins.

C. B. Stuart, New York, Dock and Steam boat Model.

MEDALS OF THE SECOND CLASS. Z. Thompson, Vermont, Specimens of Forest John S. Wright, Chicago, Harvesting Ma-

chine. Wethered Brothers, Baltimore, Steam En-

gine (super-heating.) John Harraday, New York, Machine for Cut-

ting Clothes. Sanborn & Carter, Portland, Me., Book Back-

ing Machine. F. & A. Wolle, Bethlehem, Pa., Paper Bag

Machine. Grover & Baker, New York, Sewing Ma-

Wheeler, Wilson & Co., New York, Sewing Machine.

J. Seymour, Newark, N.J., Sewing Machine.

Fowler & Preterre, New York, Dentistry.

J. Gurney, New York, Daguerreotypes.

G. Gemunder, New York, Violins.

HONORABLE MENTIONS.

Vergennes Scale Co., Vermont, Platform Scale.

Backus & Peaslee, New York, Machine for Washing Rags.

Nelson Barlow, New York, Planing Machine. C. Kline, New York, Chronometers.

Storms Brothers, Nyack, N. Y., Wooden

N. W. Kingsley, New York, Dentistry Benj. Moore, New York, Sawing Machine. J. T. King, New York, Steam Washing Ma-

Meade Brothers, New York, Daguerreotypes. Thos. Maskell, Franklin, La., Sliding Keel. N. Thompson, Jr., New York, Life Preserv-

ing Seat.

Madame Delpit, New Orleans, Snuff,-besides many others.

W. J. Valentine, President of the American Commission, residing in Paris; Marshall Woods, of Providence, R. I., Member of th Jury, and Alexander Vattemare, for services rendered in the American Department, were created by the Emperor, Chevaliers of the Le-



Scientific American.

NEW-YORK, DECEMBER 15, 1855.

Protection of Designs for Articles of Manufacture We learn from a recent number of the Phil adelphia Ledger that petitions are now in circulation in that city to obtain signatures, requesting Congress to extend the laws of copyright to all original designs to be printed on paper or cloth, or woven with other fabrics, and all original designs of forms or for orna menting any article of manufacture, so that the author or proprietor of such original design shall be entitled to an exclusive property there in for a term not less than three years. The Ledger takes occasion to commend this movement as a very proper one for the protection of persons engaged in the business of originating and preparing designs for articles of other sculptors. manufacture. It says :-

" Without such protection it is in vain to look for that improvement in manufactures which will enable our manufacturers to compete with the most expert and skillful of other nations. Those who expend money in improving their productions ought to have the benefits of such improvement. If they may be seized and used by others, without compensation, the moment parcels, we go for it, with all our heart: "prothey are perfected and made public, the inducement to persevere in such inventions is destroyed, and our manufacturers will be content, therefore, to be the servile copyists of others, and always be behind them in originality and skill Designs are just as much the result of labor, of money, and mind, as books and machines, both of which enjoy the benefit of is manufactured in the neighborhood of our legislative protection for definite periods of time, and the effect has been to stimulate, in a uffactured on a most extensive scale in all the high degree, both of these departments of in-

The remarks of the Ledger exhibit a true sympathetic spirit with inventors, but such a movement in the city of Philadelphia, rather surprises us. Such a law as the petitioners referred to pray for, is now in existence, and every new and original design can be protected by it, not for three years merely, but for seven years. This law was passed on the 29th of August, 1852. Section third of the Act says:

"A citizen or citizens, who, by his, her, or their own industry, genius, efforts, and expense, may have invented, or produced any new and original design for a manufacture, whether of metal or other material, or materials, or any new and original design for the printing of woolen, silk, cotton, or other fabrics, or any new and original design for a bust, statue, or bas-relief, or composition in alto or basso-relievo, or any new and original impression or ornament, to be placed on any article of manu facture; or any new and useful pattern, or print, or picture. either worked on, or printed, or painted, or cast, or otherwise affixed on any article of manufacture," &c., "on application for a patent to the Commissioner of Patents, on due proceeding had he may grant a patent therefore," &c.

This law fully covers all articles of design and ornament, and grants the authors of such, protection in their invention for seven years. The people of Philadelphia do not require any new law to protect the class of objects named by the Ledger, as the present law is very full and complete, embracing the marks adopted by tradesmen to distinguish their own manufactures, as well as all designs of artists.

The present law, however, might be amended so as to reduce the patent fee from \$15 to a smaller sum, such as \$5, or even one dollar. the caking of anthracite coal in the fire-boxes those engaged in the stove business, who thus exhibit great spirit,) take advantage of the law for protecting patterns, or articles of des gn; and we think it must be owing to their want of knowledge regarding the existence and provisions of such a law, or else it must be owing to the fee (\$15) being too high. We have no doubt but far more articles of design would be patented, if the fee were reduced to five dollars. As this sum would be sufficient to cover all the expenses of the Patent Office, in registering designs, it would be an act of national policy to reduce the fee to this standard. We have been informed that most of the de-

and paper print-works, are mere copies from the opinion that our coke burners do not sub-this inventor from licenses to use his shuttle, is the French, and simply for the reasons assigned ject their coal to such a high degree of heat, said to be over \$50,000 a year. Messrs. Singer by the Ledger, namely, that it will not pay to nor do they maintain the heat so long as they expend much money in getting up new designs, because they are seized upon and made use of by others in the same line of business, whenever they are made public. Now, while the fee of \$15 for a patent on a good design, can offer no excuse for a manufacturer not protecting every beautiful new pattern or design, we also believe that a cheaper means of protecting designs would promote a spirit to get up more original ones, and thus improve the national taste—transforming our pattern artists into original designers, instead of mere copyists of foreign patterns and designs. Our people have a fine taste for the beautiful; of this they have given samples to the world in the persons of West, Stewart, Alston, Cole, and a host of other distinguished painters; and in the persons of Powers, Greenough, Crawford, and

We go for the encouragement of improvements in all things—in articles of taste as well as utility. If by reducing the patent fees for designs from fifteen to five dollars, will be the means of encouraging a taste for getting up beautiful original designs for machines such as lathes, frames of steam engines, &c., calico patterns, &c., and even handsome labels for gress and improve," is our watchword.

The Manufacture of Coke.-Railroad Fuel.

The substance named "coke" is simply coal harcoal. It is but little known in our country except in cities where gas is made from bituminous coal, and in those localities where iron bituminous coal fields. In England it is mancoal mining districts, and is used extensively for smelting iron, copper, and other ores. It is employed in all the brass and iron foundries there, and is the only fuel used on locomotives. The manufacture of it, therefore, is an important business in that country, and why not in ours? We have bituminous coal fields of an area so large that those of England, in comparison to them, are like mere onion beds to extensive plantations; and yet we have been informed that the quality of our coal is unsuited to the manufacture of coke, and in this respect is inferior to English coal, especially for locomotive fuel. We do not believe this we are confident that as good coke for fuel can be made from some kinds of American coals as from English coals. If so, would it not be well to manufacture it, and use it on railroads as a substitute for wood fuel? The price of wood is continually rising in the Eastern States, and the railroad companies must soon be driven to adopt some other kind or fuel. Thus, on the Western or Boston and Albany Railroad, the bill for fuel last year exceeded that of the previous one by \$50,000, and that of the previous year exceeded that of 1852 by \$50,000. The increasing expense for wood on this railroad has greatly exceeded the natural increase of business, and the Directors of it are deeply impressed with the necessity of obtaining a cheaper substitute. If coal-burning locomotives can be made to run more economically, and can be as easily managed as those which now use wood, then nothing more is wanted, for assuredly, it must be more economical to use anthracite coal forfuelthan to use cooked coal, (coke) or wood. But if good coke can be obtained cheap, there is no difficulty in the method of using it for locomotive fuel, like that which has hitherto been experienced in Very few artists or manufacturers (excepting of these engines. We apprehend that the coke which has been tried and condemned on several railroad experiments was not well made. We Hudson River Railroad with the coke obtained and for the simple reason, we believe, that the coal from which it was made was subjected to a much higher heat in the retort than the Pennsylvania coal, which was coked in ovens. There is a manifest advantage in subjecting bituminous coal to a very high heat in coking it. The longer and higher the heat to which it \$100 to \$140. is exposed the more it contracts, and conse-

the defective coke that was experimented with and condemned on several of our railroads.

It may be said that coke can never be manufactured cheap enough at our great bituminous coal fields in the valley of the Ohio, so as to be carried to the East and used for fuel; it having more bulk than anthracite coal, its carriage must be more expensive, therefore it is much wiser to exert every energy to incite every faculty of inventors to produce perfect anthracite coal-burning locomotives. These reflections are indeed worthy of being acted upon; they touch the very root of the matter, but at the same time they should also excite the owners of mines in our bituminous coal fields to greater exertions in the manufacture of good coke. All the volatile products of coke ovens have hitherto been allowed to escape into the atmosphere, no attempt has been made to save them. Now we believe that it might be found profitable to manufacture a superior kind of coke, save the volatile products, and employ them for useful purposes, especially the ammonia contained in them, which might be saved and converted into valuable salts for agricultural purposes.

We have received communications from time to time, from various correspondents engaged in the iron manufacture in different parts of Pennsylvania, Virginia, and Ohio, requesting information respecting the removal of sulphur from coal in making coke. We remember the tenor of one received about three years since, which ran thus :- "Do you know any method of removing the sulphur from coal in the manufacture of coke, which I use in smelting my iron? I believe it is the principal cause of making inferior iron, and if it were entirely removed a very improved quality would be the result." We could not then give him the desired information, but now we have something to say on this very point. At the late meeting of the British Association of Science, Prof. Calvert read a paper on the iron manufacture, in which he stated that by mixing about hall a bushel of common salt with every tun of coal in the coke-oven the coke so made gave off no sulphurous fumes, and when used in a cupola in smelting, it produced iron much closer in grain, and 20 per cent. stronger than that made from common coke. This coke was also superior for locomotive use. This information may be of importance to some of our iron manufacturers, who might also try the effects of salt in their blast furnaces, as Prof. Calvert stated, that when thus used it improved the iron, though not to such a degree as by using the purified coke.

Hints on the Value of Patents

We are informed that a sale of a portion of the right to Wood's Patent Shingle Machine has lately been made at Albany, N. Y., for the sum of \$35,000. It is a good invention, and the purchasers will probably quadruple their investment in a short time.

It is understood that the Messrs. Jerome, of New Haven, Conn., the celebrated clock makers, have recently purchased a portion of the right to Robertson's patent Sewing Machine for the sum of \$30,000. This sewing machine is said to be a remarkable novelty. In size it is scarcely larger than the little sewing birds ple that a child of five years can operate it with success. For the use of families and inknow that in some experiments made on the dividuals the invention appears to be admirable. We are told that a seampstress with the from our city gas works and some from Penn- | aid of one of these machines, will be able to do sylvania, the former proved to be far superior, | in one day the ordinary hand labor of an entire week. The Messrs. Jerome are at present engaged in constructing machinery for the manufacture of this improvement on a large scale, and in January next will be ready to fill orders. Retail price of the machine, \$10. The best sewing machines of the other makers cost from

Speaking of sewing machines reminds us of signs or patterns used in our calico, oil cloth, quently the more dense it becomes. We are of the profit on Howe's Patent. The income of N.Y. is lighted with the Benzole light.

& Co. are said to be making money at the rate should do in their coke ovens. These defects of \$75,000 a year from their sewing machines. in the manufacture of coke, rather than the The Wheeler and Wilson Sewing Machine Co. quality of our bituminous coal, we are of the are understood to make \$30,000 per annum. opinion, have been the cause which produced We might speak of a number of other very successful inventors and manufacturers in this line of business, but it is unnecessary.

Rights for Sandford's Patent Hand Corn Planter, we are informed, have been sold to the amount of \$30,000. Wakefield's Patent Hand Corn Planter has been sold for a still larger sum; a single manufacturer of this invention at New Haven, Conn., is said to have realized a profit on the same of \$40,000 during the past

Wm. Mount Storms' Patent Cloud Engine is reported to have been sold to a company of wealthy gentlemen in this city. Capital stock paid in, \$500,000, of which a large proportion was received by the inventor.

D. W. Clark, of Bridgeport, Conn., is understood to have received \$30,000 for his Patent

One half of a certain patent Curtain Fixture contrivance, which permits the curtain to be raised or lowered from the top, is said to have sold for \$4,000.

A small portion of the right to Smith & Fenwick's Patent Apple Paring Machine lately brought \$2,000.

Creamer's Patent Car Brake is said to have been purchased by a company for \$250,000.

A single right to use Winter's Patent Wood Sawing Machine has been sold to a certain railroad company in this vicinity, we are told, for \$2,000.

A single right to use Kitson's Patent Cotton Picker, sold to a certain factory, brought the inventor, if our information is correct, the sum of \$2,300.

We could fill our paper with facts like the above, if we were to take time for their collection. They are of use and interest as illustrating the value of all kinds of patent property; they are likewise encouraging and stimulating to inventors. It is chiefly for this latter reason that we have presented them. At the present moment we think of no class of individuals who enjoy such golden opportunities of success as those whom Providence has favored with a genius for mechanics. We are not surprised that this country so abounds with new inventions; the only wonder is, that there are not ten patents where one now exists. The demand is far greater than the supply.

The long evenings of winter present ample time for thought, and should be constantly improved. Those who have tried to invent, but failed, should try again. If effort be earnest and continued, the light will at last break through.

Persons who invent, or become interested in inventions should remember one thing: no discovery is of much pecuniary value in this country until it is patented. The first step, theretore, after an invention has been thought out, is to secure its advantages, by law, as soon as possible. A neglect of this simple duty has, in many instances, been the means of dashing from the lips of the inventor, the cup of happiness which he was about to quaff. It is an old maxim that tells us "Delays are dangerous." In regard to the obtaining of patents this is emphatically true.

Woodworth Patent Remonstrances

At the request of several of our subscribers, we have had printed a large number of petitions against the extension of the Woodworth used by the ladies, and may easily be carried Patent, which we are anxious to have distribin the pocket. In external appearance it is uted as soon as possible. They ought now to highly ornamental. Its construction is so sim- be put in active circulation for signatures: let this be done without delay, and there is not much fear of the result. Upon the receipt of two three-cent postage stamps, we will forward a petition and pre-pay the postage.

Send in your orders as fast as possible.

Australian Expedition.

An expedition has been fitted out in Australia to explore the Victoria river. The party is composed of eighteen persons, and will be absent three years. It is believed they will bring back much to add to the treasury of natural and geological knowledge.

The factory of Mr. Kellog, in Skeneateles,

British Association for the Advancement of Science.-No. 3.

BINOCULAR VISION—Sir David Brewster read a paper on this subject. Prof. Dove had pubin connection with this subject some years ago, and showed in his paper that when different colors at the same real distance are regarded by the eye they appear to be at different distances; this is also the case when a white surface is compared with a black. Now M. Dove argues if a white surface and a black one be stereoscopically combined, one of them must be seen through the other. Taking a figure for the left eye with a white ground, and a second figure of the same object on a black ground for the right eye, when these two figures are combined, a beautiful effect is observed; the figure starts into a relief, and its sides appear to possess a shining metallic luster. This is the case when the surface of each single object is quite dull and lusterless. On this experiment M. Dove founds a theory of luster, supposing it to be produced by the action of light received from surfaces at different distances from the eye. An example of this is the effect observed on looking at varnished pictures; one portion of the light comes from the anterior surface of the varnish, and the other from its posterior surface, the action of both of these conspiring to produce the observed luster. The metallic luster of mica is direct their attention was the Cuneiform In- British Association met next year, he hoped to also referred to by M. Dove as an example of the same kind. In his communication Sir David Brewster controverted the theory here laid down, and based his objections on the following remarkable experiment:-where a white sur face without definite boundary, and a black surface of the same kind, are regarded through the stereoscope no luster is observed. Sir David | ing was, however, reduced by the Semitic race therefore infers that the luster is due not to the rays from one surface passing through the other to the eye, but to the effort of the eyes

combine the two stereoscopic pictures. CURIOUS MOTIONS ON THE SURFACES OF ALCO-HOLIC LIQUORS-A paper on this subject was read by J. Thomson. The phenomena of capilliary attraction in liquids are accounted for according to the generally received theory of Dr. Young, by the existence of forces equivalent to a tension of the surface of the liquid, uniform in all directions, and independent of the form of the surface. The tensile force is not the same in different liquids. Thus it is much less in alcohol than in water. This fact affords an explanation of several very curious motions observable, under various cir cumstances, at the surfaces of alcoholic liquors. One part of these phenomena is, that if, in the middle of the surface of a glass of water, a small quantity of alcohol, or strong spirituous liquor, be gently introduced, a rapid rushing of the surface is found to occcur outwards from the place where the spirit is introduced Another part of the phenomena is, that if the sides of the vessel be wet with water above the general level surface of the water, and if the spirit be introduced in sufficient quantity in the middle of the vessel, or if it be introduced near the side, the fluid is even seen to ascend the inside of the glass until it accumulates in some places to such an extent that its weight preponderates, and it falls down again. The manner in which Mr. Thomson explains these two parts of the phenomena is, that the more watery portions of the entire surface having more tension than those which are more alcoholic, drag the latter briskly away, sometimes even so as to form a horizontal ring of liquid high up round the interior of the vessel, and thicker than that by which the interior of the vessel was wet. Then the tendency is for the various parts of this ring or line to run together to those parts which happen to be most watery, so that there is no staple equilibrium, for the parts to which the various portions of the liquid aggregate themselves they become too heavy to be sustained, and so fall down. On this matter Mr. Thomson exhibited a very decisive experiment by pouring water on a flat silver tray, previously carefully cleaned from any film which could hinder the water from thoroughly wetting the surface The water was about one-tenth of an inch deep. Then, on a little alcohol being laid down in the middle of the tray, the water immediately rushed away from the middle, leaving a deep hollow there, which laid the tray bare of

all liquid, except an exceedingly thin film .-These and other experiments, which he made with fine lvcopodium powder dusted on the surface of the water, into the middle of which he lished an account of some beautiful experiments introduced alcohol gently from a fine tube, were very simple, and can easily be repeated. Certain curious return currents which he showed by means of the powder on the surface, he stated had not yet been able fully to

> ON THE ANCIENT STONE WRITINGS OF THE BABYLONIANS AND ASSYRIANS-The following is an abstract of an interesting discourse before the Association on the above subject, by the celebrated Col. Rawlinson: "Col. Rawlinson began by saying he feared

the vastness, as well as to a great extent the

novelty, of the subject would prevent him do-

ing it anything like justice in the very limited

time he had at his disposal. The excavations

which had been carried on in Assyria and Babylonia had been continued through six or seven years—they had ranged over tracts of country one thousand miles in extent—the marbles excavated would be sufficient to load three or four ships, and the historical information contained in them would exceed ten thousand volumes in clay. Of course, in dealing with such a subject he could only select a portion of itand even of that he could only communicate the heads. The part to which he wished to scriptions. This phrase merely signified the wedge-shaped form of writing, and was not employed in any particular language or by one particular nation. The cuneiform system of letters was a species of picture writing, invented, not by the Semitic inhabitants of Babylon, but by those who preceded them. This writto letters, and adapted to the articulation of their language. Their mode of writing consisted of several elements—the picture-writing, and the phonetic, which was equivalent to the alphabet of their language. He had been able to obtain among the ruins of Nineveh a tablet which actually exhibited the several developements of this system of writing into a regular alphabet. The cuneiform inscriptions were divided into three branches-Persian, Scythic, and Assyrian—and it was on the third of these that he wished to say a few words. About twenty years ago his attention hrd been directed to a series of inscriptions in cuneiform characters on a rock at Behistun, near Kermaixhah. The tablet was divided into three compartments, giving three different versions of the same inscription, and on the simplest of these, the Persian, he set to work, and found, by comparing it with the two others that they corresponded, with the exception two or three groups, from which, on further investigation, he made out Hystaspes, Darius, and Xerxes. By means of these proper names he obtained an insight into the Persian alphabet, and by analyzing the names of the ancestors of Darius and Hystaspes, and obtaining a list of the tributary provinces of Persia, he managed to form the alphabet. This was, however, but the first step; the great object being to decipher the Assyrian inscription, and this could only be done by comparing it with the Persian. The tablet was situated on the face of the rock, five hundred feet from the ground, with a precipice above it of one thousand two hundred feet, and in order to reach it it was necessary to stand on the top rung of a ladder, placed almost perpendicular. Nor was this all, for there was still the Babylonian to be copied, and it was engraved on the overinto the rock, hanging a rope from one to the as in 1827, there are now seven different estab other, and while thus swinging in mid-air, lishments in Newark alone, whose sales amount tunate discovery of the ruins of Ninevah fur nished a great mass of documents to which it tumuli, or any appearance of a ruin, trenches were sunk, galleries opened, and in almost every case they came upon the remains of inscribed tablets. The decipherment of these inscriptions led to important results in an ethnological point of view, both as indicating the race to which the writers belonged, and affording important information with reference to the habitat of races and their migrations.-

Among the many points which they were now enabled satisfactorily to settle, he alluded to the connection between the Turanian and Hamic families, and to the occupation of Western Asia by the Scythic, and not the Semitic race. He also mentioned that from the inscriptions he believed it could be shown that the Queen of Sheba came from Idumea. An erroneous impression was at one time in circulation that the information obtained from the inscriptions was adverse to Scripture. But so much was it the reverse of this, that if they were to draw up a scheme of chronology from the inscriptions without having seen the statements of the Scriptures, they would find it coincide on every important point. He then mentioned some circumstances with reference to the mound at Birs-Nimroud, which he had recently uncovered, and which he found laid out in the form of seven terraces. These were arranged in the order in which the Chaldeans or Sabeans supposed the planetary spheres were arranged, and each terrace being painted in different colors, in order to represent its respective planet. He also mentioned a small ivory cylinder which he had discovered, and round which were engraved mathematical figures, so small that they could hardly be seen with the naked eye, and which could not have been engraved without the aid of a very strong lens. In concluding, he said that before the be able to bring before them the decipherment of several highly important inscriptions.

Gratitude to Improvers of the Iron Manufac-

The city of Newark, N. J., is celebrated for various kinds of manufactures, such as jewelry, carriage making, patent leather, and malleable iron castings. A number of companies are engaged in the two latter kinds of manufactures: they employ a great number of persons, and the fame of their productions is coextensive with our country's commerce. The Tribune of the 4th inst. contains a very interesting article on the subject, and attributesjustly we have been informed—the introduction of both of these manufactures to Seth Boyden, an ingenious and enterprising Massachusetts mechanic, who took up his abode in Newark about thirty years ago. At that time an endless variety of small iron articles now made of cast-iron, were fabricated by forging them of wrought-iron, from the fact that common cast-iron is exceedingly brittle, and does not possess the quality of toughness. The distermed malleablizing, was one of the most important inventions ever made. It was wellknown in England before it was in our country, but was kept a profound secret. In 1825 some malleable iron castings having been imported from England by David Beach, of Newark, they arrested the attention of Seth Boyden, and he immediately commenced experiments to discover the process; and he labored for years, until success crowned his enterprise and efforts. The process of malleablizing or rendering cast-iron tough, consists in submitting common articles of cast-iron to a high heat, for several days, in an iron box, separated from one another by iron filings, and then allowing them to cool very slowly. Soon after Seth Boyden discovered how to render cast iron tough, he erected a foundry in Newark, in company with some others, and commenced business. At that time malleable iron castings sold readily for 30 cents per pound; their price now ranges from nine to sixteen cents. Inhanging ledge of rock, which there was no stead of only one small foundry doing the means of reaching but by fastening tent-pegs whole malleable iron business in our country copying the inscription. An insight into the to \$375,000 per annum, and there are various system of writing being thus obtained, the for- like foundries in other different cities. And how has Seth Boyden been rewarded for his discovery, and the valuable contribution which might be applied. Wherever they had found he has made to the solid wealth and industrial progress of our country? The Tribune says he is now working as a journeyman in a Newark machine shop. It is stated that he had made considerable money, but he never loved it for its own sake; his desire has been to elaborate useful ideas for the good of the community, and so when he has made money by one useful discovery or in the way of business, he

making experiments to discover new improvements. Such men as Seth Boyden are public benefactors, they do more for the material prosperity of their country than the most renowned orators or statemen. We hope that Seth Boyden will never know the approach of penury. If the citizens of Newark ever allow this to be the case, they will never escape the obliquy of ingratitude.

Republics have been accused for pre-eminence in ingratitude, but are monarchial governments stainless in this respect? Let us take a case and try it. The greatest improvements ever made in the manufacturing of wrought bar iron wereinvented by Henry Cort, a native of Lancaster, England. In the years 1783 and 1784 he obtained two patents; one rendering cast iron malleable in a reverberatory furnace heated by the flame of coal to avoid the impurities of the fuel mixing with the metal in a fluid state—the process called puddling. The other invention was the manufacture of bar iron, by passing the puddled iron in blooms, through fluted or grooved rollers. These two inventions are now used in the manufacture of bar iron in every civilized country under the sun. All nations are his debtors; the benefits conferred upon them by his inventions are beyond calculation. His improvements have reduced the cost of making bar iron 66 per cent., and have been the means of saving, to Great Britain alone, no less, it is calculated, than £300,000,000 sterling in sixty years, and have raised that country from being an importer of iron from Russia, America, and other countries, to be the greatest iron manufacturer and exporter in the world. And how was Henry Cort rewarded for his inventions by a grateful monarchy? In making his experiments he expended a private fortune of more than \$100,000, and when he had them perfected he was obliged to take into partnership another person who could furnish some capital to carry on the business. His partner was a deputy of the British Navy, who saw at once the value of the improvements, and invested £27,000—about \$115,000, which he privily applied from the public funds entrusted to his care. He soon afterwards died, and when his accounts were examined, it was found he was a public defaulter. His effects were then seized by the government, and with them the two patents of Henry Cort, whose business was destroyed, and from this blow he never recovered, and a few years afterwards he died a ruined and broken-hearted man. It is indeed true that when reduced to poverty in covery of rendering cast-iron tough by what is 1794, upon the representations of several bankers and merchants in London, Wm. Pitt obtained a pension for him of \$1000 per annum, which he received for only six years, his death having occurred in 1800.

How boundless was this generosity of the British Government and the British public to this inventor. Just think of the paltry sum of one thousand dollars per annum, doled out to him, when his inventions were saving to the public of more than £10,000,-000 per annum and in 1853 no less than £65,000,000 sterling. And for this great public benefit the British Government paid him altogether twelve hundred pounds—about six thousand dollars—while he himself had spent a private fortune of \$100,000 in perfecting his invention. Oh what ingratitude. Can any Republic be more ungrateful; has any Republic ever exhibited so much ingratitude? We think not. Do not let the British public throw the blame of such ingratitude upon their government; they hold the public purse strings, and the blame must rest on them. One of Henry Cort's sons and three daughters, each over seventy years of age, we understand, are now living in indigent circumstances in England, while, the nation has grown rich on their father's discoveries. If the Monarchy desires to show its gratitude, here are worthy objects for its display. May such charges never have to be made against our own country.

A Great Traveler.

The celebrated Dr. Barth, the German traveler, who has recently returned from Africa to Europe, traveled 12.000 miles in that strange and pestilential part of the globe. His explorations of Central Africa rank as high, and ar just as important, as the contributions of Cook to the geography of the Pacific, and those of has been impelled by a restless desire to use it in Humboldt to the knowledge of Ame: ca.

TO CORRESPONDENTS.

H. H., of England-We have examined the drawing of your alleged improvement in street sweeping machinery.
We regret to inform you that it does not em'race an
thing upon which a patent can be secured. In Vol. 3 of the Sci. Am. we published an engraving of a machine almost identically like yours. It has n ver been brought into successful use here, therefore we conclude that it is incapable of performing as well as more modern contriv-ances for the purpose. The fact of your having taken a patentat home will not aidyouin procuring one here,— The invention must stand upon its novelty, and unless it possesses this necessary quality the application would be rejected. You could not assign your right to an American citizen, and thus avoid paying \$500 as patent fee.-Your views in regard to this fee required of an English ui ject are perfectly correct, and we are ashamed of our government for allowing this disgraceful feature of our patent system to exist. We hope it will be wiped out this

R. R., of Pa.—We are very glad to hear that you are intending to work against the Woodworth Patent extension this winter. There is no doubt whatever that attempts will be made to get it extended. Its owners will struggle so long as there is the smallest gleam of hope, and will hang on like a dog to a root. Their efforts must be defeated by public opinion, freely and frankly expressed. No under-handed nor unfair course need be pursued. We condemn everything of the sort; there is no necessity for it. Remonstrances will effect the object if care be taken to get them signed by those who are hon estly opposed to the extension. We hope our friends gen will see to it that petitions are freely circulated

W. T. G., of Ind.—Your letter covering \$25 to pay for three months' insertion of the advertisement referred to came duly to hand.

T. S., of Pa.—Your apparatus is the same as Savery's engine patented in England in 1393. This was the first application of steam to the raising of water of which there is any published account. You will find it in Dr. Lard-ner's, or almost any other history of the steam engine.

L. E. O. C., of N. Y.—We understand you to mean the use of a spiral wheel instead of a scroll, if so, the plan is neither new nor patentable.

T. II., of Ohio-We find nothing new in your water

J. H., of Pa.-Your perpetual motion device contains all the elements of success that we have ever seen, or expect to see, in such contrivances. When you can put a gear wheel on the North Pole, and connect with it a main shaft running down to this part of the world, you can have perpetual motion, but not sooner.

W. W. D., of —Making the end of the nozzle of a

hose pipe with lips like a tea kettle, would not, we think

J, H., of Tenn.—The surveying instrument you describe

D. B. T., of Ohio-Making car axles of bundles of wrought-iron rods is not new. Your particular way of combining them would perhaps be patentable; but we fear that a fortune could not be made from the grant.

J. R. H., of Ohio-Address J. D. Johnson, Bridgeport, Ct., for shingle machine. \$1 received.

C. S. P., of Pa.—Address the Goodyear Rubber Co,, New York, for rubber. \$1 received.

E. R., of Md.—The sails of a windmill should have an

inclination of fifteen degrees.

H. H. R., of Ct.—We have carefully examined the

sketch and description of your apparatus for the treatment of inflected spine, by balancing a frame on gudgeons and supports, upon which the patient is secured. We find by reference to the list of patents that an invention almost precisely like yours was patented in 1829, by J. K. Casey, of this city. The editor of the Franklin Journal commended it very warmly in an article published about the time the patent was issued. Nothing has since been heard of it that we are aware of. There is therefore no chance for you to get a patent on yours.

G. A. W., of Me.-Your plan of floating valuables in case of the sinking of a ship, is useful, but it is old and not pat

A. K. S., of Pa.—The change in your model is approved VV. C. T., of Vt.—There is just a chance for a patent on your metal cutting machine and that is all we can say C. G., of Texas-Probably o: \$2 you can get a violin instructor. Address W. Hall & Son, N. Y.

W. M., of Md.—We are not acquainted with the engine

G. R., of Ohio-A steam engine of three or four horse powers will drive your small planer. To drive your planer, two circular saws, a tenoning machine, an upri 3ht saw and lathe you ought to have no less than a twelv horse power engine. A six horse engine might answer your purpose, by running two or three of your machines at once, as in all likelihood, from the nature of your business, you may not have constant work for the tenon

business, you may not have constant work to ing machine and the saws at the same.

W. R., of N. Y.—Your yellow powder is a suboxyd of mercury; you will find it described on page 785. Booth and Morfit's Encyclopedia of Chemistry.

A. H. N., of Mo .- With a blower you can use the coal on your farm under your boilers without any difficulty. Don't throw down your brick chimney to put up an iron one, as the brick is the lest. If you make the throat of your chimney of the same area as the flues of your boil-er, you cannot go wrong. There is actually no positive rule for the hight of a chimney. The higher you build it the better will be the draft. If you put one up eighty feet high, it should give you plenty of draft.

N.B., of —...—We think a patent might be secured aponyour piston packing. You failed to give your addre.ss

A. D. S., of Me.-We are not able to refer you to any one who makes portable apparatus for roasting and grinding coffee. We presume any warehouse that keeps household articles articles could supply you.

W. H. D. Galliagd, Pendleton, S. C.—wishes to procure a lathe for turning spokes.

H. S., of N. Y .- Merely galvanizing wire for screens could not be patented; there must be some new process for doing this. If you merely use the commonly understood process then you could not secure a patent for it.

J. T. Clarke, of Blairsville, Pa.—Wishes to obtain the

most approved hub boring and mortising machine.

M. B. Tidey, of Dundee, N. Y.—Wishes to procure the best spoke tenoning machine in use. We do not know where a copy of the list of patents published in 1847 can be obtained. It does not contain the claims. These can be found in the Patent Office Reports, issued yearly, and also in the Sci. Am.

G. A. W., of Me.—Several good devices have been patented, which will successfully feed blank paper to the pricting press. The trouble is in printing both sides. The sheet does not issue quite straight from the press, and, as yet, no feeding apparatus has been made that feeds the sheets correctly when they are unevenly laid together.— The feeding first for the impression is easily done by mech anism, as the sheets are all evenly laid; the difficulty is to feed for the second impression.

D. N. D., of Mass.-The sketch of your straw cutter has been examined. The employment of two series of circu lar knives whose edges pass each other in the manner shown in your plan is not a new invention. We have seen the same thing on exhibition at one of the late Fairs of the American Institute.

J.D.H.; of Ill.—In Vol. 6, Sct. Am., we published a series of articles upon water wheels, which you will find very useful. The Volume can be had bound for \$2,75. You can find Herbert's Encyclopedia in any well-selected public library. We do not think it can be had at book stores.
S. J. W., of Mich.—There is nothing Patentable in your

invention, unless it be the mere arrangement of parts.— There are several methods already in use of heating air by the exhaust steam, to supply the fire, to the exclusion of the cold atmosphere, and it has been proposed to employ the waste heat to heat air as a motive power, but the expansive force imparted by the air would be so small that it never would compensate for the additional ma-

Money received at the SCIENTIFIC AMERICAN Office on account of Patent Office business for the week ending Saturday, Dec. 8, 1855 :-

T. R., of N, Y., \$15; G. & Co., of O., \$250; J. C. P., of N. J., \$25; J. E. H., of Tex., \$15; A. S. B., of Mass., \$30; J. A. A., of N. Y., \$30; G. C. H., of Mass., \$30; M. M., of La., \$55; O. L. R., of N. H., \$30; J. J. J., of Mass., \$30; M. F., of N. Y., \$25; D. W. C., of Conn., \$250; B. J. R., of N. Y., \$10; H. B. S., of Vt., \$30; J. V. W., of N. Y., \$30; D. E. H., of N. Y., \$25; R. E., of N. Y., \$25; R. B., of N. Y., \$25; C. E. B., of N. Y., \$25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 8:-

J. E. C., of Mass.; A. B. S., of Pa.; I. C., of N. Y.; J. L. & Co., of Ill.; C. P., of Mich.; J. E. II., of Tex.; S. I. C., of S. C.; A. M. G., of N. Y.; T. D., Jr., of Pa.; J. E., of R. I.; J. R. H., of N. J.; D. E. H., of N. Y.; A. S. B., of Mass.; P. C. G., of O.; A. H. C., of O.; R. E., of N. Y.; S. & B., of Mich. (3 cases); R. B., of N. Y.; C. E. B., of N. Y.; J. J. J., of Mass.; J. H., of O.

Important Items.

GOING RAPIDLY—The back numbers of the present volume are fast being exhausted, and those who desire the numbers of Vol. 11 complete, must not wait much longer before remitting their subscriptions, else they will be disappointed.

Models-We shall esteem it a great favor if inventor will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

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vention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and enclosing \$1 as

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\$500 ment.—Any person desirous of investing a large or small amount in a patent right, that the profits of which will clear the whole cost in one month's sales. Can which will clear the whole cost in one month s sales. Ca. find an opportunity by addressing Box 2,627 this city.

14 4*

IMPORTANT TO INVENT-ORS.

TMPORTANT TO INVERTORS.

TEMIE UNDERSIGN. In having had Ten years and foreign countries, begt o give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over three thorecand Letters Patent have been issued, whose papers were prepared at this Office, and on an average officen, or oin-throt of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of beginners, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 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 improvement should 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 any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, at the preparent of the patents obtained by Americans in foreign countries are secured through us, while it is sulk Inown that a very large proportion of all the patents applied for in the U.

E HAVE ALWAYS ON HAND and manufacture to order, with the newest and most practical improvements, Surveyor's Compasses, Transits, Theodolites, &c., warranted to give satisfaction. Also Swiss drawing instruments. AMSLER & WIRZ, 211 Chestnut st., Philadelphia. 14 6eow

Sawing Machine.—This machine will cut two sides or any typer, or straight, as desired. State, county or shop rights for sale. The above device is simple, and with as little friction as any before the public. All letters addressed to G. W. BISHUP, 25 Debevoise St., Brooklyn, N. Y., will meet with due attention.

Machines.—The subscriber is constantly manufacturing, and has now for sale the best assortment of the, samrivalled machines to be found in the United States. Prices from \$55 to \$15.0\$ Rights for sale in all the unoccupied Towns in New York and Northern Pennsylvania, JOHN GIBSON, Planing Mills, Albany, N. Y. 14 3m* MPORTANT INVENTION—Patented August 14th 1855. "Garratt's Metal" for Journal Boxes of all kinds

1855. "Garratt's Metal" for Journal Boxes of all kinds, It is anti-friction, absorbs the oil, not liablle to break, it can be made cheaper than either brass or Babbitt metal, and after many long and severe tests, has been found to surpass all other metals ever used for the purpose. For the purchase of either State, county, or shop rights under this patent, apply to JOS. GARRATT, Senr., Madison, Indiana.

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INGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or ail of steamships, steamboats, propellers, high and low ssure engines, boilers and machinery of every descrippressure engines, soliers and machinery of every description. Broker in steam vessel, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic self-adjusting Conical Packing, Faber's Water Guage, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for holisting and steering purposes, Machinery Oil of the most approved kind, etc.

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CHARLES W. COPELAND, Consulting Engineer, 64 Broadway,

THE ARTISAN HOUR NAI—A Monthly Record of the progress of Civil and Mechanical Engineering, Steam Navigation, Shipbuilding, and the Industrial Arts, Chemistry, &c. Published in London, and for sale in numbers and volumes by CHAS. H. HASWELL, Consulting and Superintending Engineer, 4 Bowling Green, New York. Drawings and specifications of Steam Machinery, in all its branches, furnished upon application.

PATENT IRON FRONT.—Dyott's Patent Furnace: Ludwig's Patent Machine for Felling Trees; (refer to Ser. Am., Sept. 8, 1855, No. 52). Harrison's Patent Grain Mills. For all the above, information can be had of GEO. C. BARNEY, Agent, 16 Kilby St., Boston.

GTICE TO PLOW MANUFACTURERS.—
JOSHUA GIBBS, of Canton, O., has invented a machine for Grinding and Polishing plows. Jy addressing the patentee, a cut and directions for making and using will be farwarded, also the term of three months will be granted to test its titly at a davantages. Cost for creeting the machine will not exceed \$15.

D. BARNETT, Malleable and Gray Iron Works Hamilton, corner McWhorter street, Newark, N J. Orders promptly attended to.

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P. N. FITZGERALD, Counsellor at Law—
late Principal Examiner in the U. S. Patent Office—has removed from Washington, D. C. to the city of New York, 271 Broadway, (corner of Chamters St.) As heretofore, his practice is confined to Patent Cases, which he will prosecute or defend, as counsel, tefore the Supreme and Circuit Courts of the United States, also before the Patent Office, or the Judges having jurisdiction of appeals therefrom.

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MPORTANT TO ENGINEERS AND MACHIN-ISTS-NOTICE—Those wishing to obtain the genu-ine articles of Metallic Oil and Grease, should send their orders direct to the manufacturer. AUGUSTUS YOCK-NEY, Office 67 Exchange Place, New York. No Agents employed. 16m*

The Supreme Court of the U. S., at the Term of ISS3 and ISS4, having decided that the patent granted to Nicholas G. Norcross, of date Feb. I2, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an intringement of the Woodworth Patent.

Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS, 208 Broadway, New York.

Office for sale of rights at 208 Broadway, New York.

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Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Pools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co." New Haven, Conn.

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THE EUROPEAN MINING JOURNAL, RAIL-way and Commercial Gazatta way and Commercial Gazette. A weekly newspaper, forming a complete history of the Commercial and Scientific Progress of Mines and Railways, and a carefully collated Synopsis, with numerous Illustrations, of all New Inventions and Improvements in Mechanics and Civil Engineering. Office 26 Fleet street, London. Price 66 for progressions of the commercial and civil Engineering.

Scientiste American.

Science and Art.

A recent number of the Siecle (Paris,) under the head of "Tansmutation," publishes an article upon the new discovery of turning paving stones into a substitute for silver, by M. Plee. He starts from the necessity of producing an equilibrium between the two metals, gold and silver, and says that such an equilibrium, want- pendent upon each other, and necessarily coning totally at the present moment, since the influx of gold from California and Australia, is of the utmost importance for trade; and remarks that the advanced state of science will assuredly not leave us in the impossibility of supplying the void left by the insufficient yield paraffine, etc., etc. of silver; and that we shall end either by extracting silver elsewhere than from the silver nature and properties of Fuel," followed by mines, or by discovering new metals to take its place. "There are, for instance," he observes "new metals noble and beautiful as the old ones, hitherto held to be not reducible, which are now perfectly reduced, and which, for the fabrication of every object till now fabricated in silver, would be a complete equivalent for it, and thus allow it to be exclusively consecrated to the monetary circulation." M. Plee follows up his assertion by the ensuing details :- " Take a thick lump of quartzose silex, reduce it to powder, mix this silex, when pulverized, with a sufficient quantity of alkali, fuse it, and you will obtain a soluble glass that you can dissolve so as to precipitate the silex it contains in the shape of a jelly. You then take this last product and have it filtered, then re-dissolved a second time in a cyanurated lixivium, so as to produce a compound cyanuret .-This operation will give you a fluid from which to extract the metal called silicium. Plunge into this liquid your utensils, whether of copper, zinc, tin, or lead, bring the electric process to bear upon them properly, and they will instantly be covered with the adherent plating of silicium, which is white as silver, and attains to the highest degree of luster under the polisher's hand." M. Charles Junot is the inventor of this new metal, and he has, according to the account given by M. Plee, spent years in indefatigable research; nor does the silicium appear to be the only substitute for al rank of keys, and with but slight, if any adsilver he has discovered. Two or three others are equally mentioned by M. Plee. The silicium, however, seems to be so difficult to distinguish from silver, that a learned French chemist has already presented to the Academy of Sciences a report on the necessity of devising fresh methods of analysis, in order to distinguish between the two metals. "Other chemists," he adds, "have other processes for the reduction of silicium, and all are setting to work at it. It is, therefore, to be expected that a complete transmutation will be effected. We shall from clay draw aluminum; from freestone, silex, and from sand, we shall extract silicium; these metals, given up to industry and fabrication, may replace silver for domestic purposes, and silver be thus entirely restored to monetary circulation."

The basis of silicon has been known to be a metal for a long time, but we have neverheard of it being obtained pure before. It may therefore be called a new metal, with great propriety. We are of opinion that it may yet be obtained at a lower cost than silver, but this will all depend on the discovery of improved process es for its cheap reduction from its ore, which is one of the most plentiful on our globe.

Chemical Technology.

has just issued Vol. 1 of "Chemistry Applied on exposure to light much more rapidly than to the Arts and Manufactures," by Dr. E. Ronalds and Dr. Thomas Richardson.

We have much pleasure in bringing before the notice of the public this new edition of the first volume of Knapp's Chemistry. As the authors say in their preface: "during the few vears which have elapsed since the publication of the first volume of our edition of Knapp, so rapid has been the growth, and so great the developement of those branches of manufacture more intimately connected with fuel, that, in preparing a second edition, we have found it necessary to re-write much of the original, so that it may with far greater propriety be called a new work rather than a second edition.

instigation of the governments of the United illustrated with excellent wood cuts. States and England into the chemical nature of coal, more particularly with reference to its adaptation to the generation of steam, and the recent legislative measures towards the prevention of smoke in large cities, have invested this subject with unusual interest."

A peculiar feature in this work is the arrangement of the subjects into groups, comprising those branches of manufacture which are denected in a commercial point of view. Thus, among the products obtained from dry distillation of fuel, will be found an account of the manufacture of pyroligneous acid and its salts, of ammonia and its salts, of coal-tar naphtha,

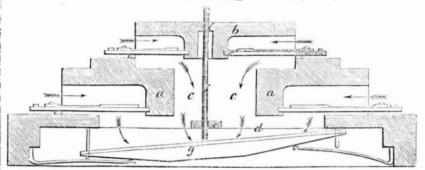
The first chapter is "Observations on the an article "On the effect of Heat upon Fuel," in the production of charcoal, coke, waste the production of Heat," for warming dwell- of the Nova Scotia, Allenheads, Bovey, German, ings, &c. The latest inventions of stoves, and other coals are inserted.

The elaborate researches undertaken at the grates, hot-water apparatus, furnaces, &c., are

Three hundred pages are devoted to "The application of Fuel to the production of Light." This is one of the most important parts of the book, and is most extensively illustrated. The subjects treated are fats, oils, tallows, wax, gas, &c., &c., with their most approved modes of manufacture, and the different lamps, &c., in which they are used. The article on safety lamps is the most complete ever written, and contains forty-five delineations. Much useful information may be obtained from the statistical tables, and the tables of the relative value of the different kinds of coal found in Europe

The authors, aided by several of the scientific men of England, have added a chapter on the subject, "What is Coal?" on the reply to which important interests depended, in the recent cause of Gillespie vs. Russell, in Scotland, and Gesner vs. Cairn, in New Brunswick. Two gases, etc., etc. "The application of Fuel to colored plates of the microscopic examination

MELODEONS---HUNT'S PATENT IMPROVEMENT.



This engraving represents a vertical transverse section through the reed-board of a melodeon illustrating the improvement for which | first board, whereby each pair of reeds of the a patent was granted to George G. Hunt, of Wolcotville, Conn., on the 23d of October last.

such construction of the "reed-board" that two, four, or even more sets of reeds may be added to the usual instrument, thereby increasing the quantity of tone or the fullness of the chords, or both, without requiring an additiondition to the heaviness of touch necessary in

As commonly constructed, the melodeon has two sets of reeds, the one being tuned either a second above or in unison with the other, and both being sounded by the opening of one valve. To this, two other sets have been added by introducing another reed-board of precisely similar construction, having its rank of keys situated above and in the rear of the keys of the first sets. These are tuned to some other interval, or in unision, as desired, and all number by any increase in the number of may be sounded by the lower key-board by reeds, but are only slightly lengthened, and in merely coupling the upper one to it, as is well an exhausting instrument the heaviness of known. The touch, however, of the keys used, it is obvious, must be now doubled in its heaviness and stiffness.

According to this improvement the reedboard of ordinary construction is divided along its central line, and the two parts removed a short distance apart, say one inch, as shown at reed-board, b, but having no pallets or valves Conn.

lodo-Nitrate of Silver.

collodion photographic process, has been found of potassium, and 50 centigrms. iodine in 45 to be a definite compound of the iodide and grms. water. [London Artizan. the nitrate of silver, its composition being rep-H. Bailliere, No. 290 Broadway, this city, resented by AgO, NO5+AgI. It is blackened those more recently prepared.

Chloride and bromide of silver do not yield similar double salts, which explains why nega-

tive photographs on bromide of silver alone are deficient in intensity.

upper board will be in the same vertical plane with a pair of the lower board. The divisions The nature of the improvement consists in between the reeds of the board, b, must now be continued down through the intermediate space, c, to the lower surface of a board, a, as indicated at d, and in each of these spaces a block, e, is put, having a hole bored through to serve as a guide for the valve-rod, f. One valve, g, of usual construction, will now cover the slot in the lower reed-board, and this slot is just so much longer as the two parts, a a, have been removed asunder. Two other sets of reeds may be added by removing the parts, a a, still further, and dividing the board, b, as before described for a, when another reedboard may be placed upon that. The valve, g, is represented as opened, and the arrows show the direction of the currents of air in an instrument operated by an exhausting bellows. The valves, it will be seen, are not increased in touch is but very slightly increased for each additional set of reeds. Any one set of these may be shut off by stops, as usual, so that the quantity of tone may be reduced at will.

of its own, and in which the reeds are placed

at the same distances apart as are those in the

This appears to be a very excellentimprovement. Other information relating to patent rights, &c., may be obtained by letter addressed a a. Upon these is placed another ordinary to the patentee at Wolcotville, Litchfield Co.,

NITRATE OF SILVER STAINS-These stains may be removed by a solution of 8 parts per- | vorably.—[Exchange.

chloride of mercury, and 4 parts sal-ammoniac This substance, the active principle in the in 125 parts water, or one of 5 grms. cyanide

Japan Cotton.

Samples of Japan cotton recently received either of its ingredients alone. It is unaffect- in this city, have a fine color, and the fiber has ed by, and insoluble in absolute alcohol, but is a greater number of barbs, so that i. will draw decomposed by water. Its proper solvent is a with proper handling, into a very fine thread. concentrated solution of nitrate of silver. It It has apparently a great many natural crooks may be obtained in regular crystals. Photo- in each fiber (this appearance may be given to graphic silver baths which have been for some it in dressing,) which renders it easier to spin, time in use, always contain a portion of this and makes a bat of it very elastic. From this compound, the reason of their superiority to cause, and a natural harshness, owing to the number of barbs in the fiber, it feels to the touch very much like wool.

> Pennsylvania now produces as much iron as was manufactured in Great Britain thirty years ago, and of a quality that compares very fa-

Literary Notices.

THE EDINBURGH REVIEW—The number for the present quarter of this able review published ly Leonard Scott & Co., No. 54 Gold st., this city, contains eleven power ful articles on various sutjects. The first is a review of the memoirs of King Joseph Lonaparte, and contains may incidents favorable to Joseph, and the reverse to his brother, Napoleon the Great. One article on the early Pilgrim Fathers of New England, is very unfavorable to their reputation as lovers of freedom. Essays to prove that the planets are inhabited, and vice versa, are not yet exhausted; one of the articles is a review of the recent pre-eminent works on this sutject. It displays an intimate acquaintance with astronomy. Although this review is the oldest in Great Britain, this number shows that it is edited with the same vigor as when Jeffrey sat in the editorial chair.

snows that it is edited with the same vigor as when Jeffrey sat in the editorial chair.

VILLAGE AND FARM COTTAGES—Messrs. Cleaveland and Backus Brothers, three of the most talented architec 80 or which New York City can boast, are the authors of a new work entitled as above. It contains a large number of splendid engravings representing a great variety of exterior designs and internal plans for dwelling houses, with statement, of their estimated cost. The buildings represented are chiefly those that are wanted by farmers, and residents in the country. Many of the designs, although beautiful in appearance, may nevertheless be realized for very moderate sums. Indeed, it has been one of the principal objects of the authors to acquaint the public with the fact, that it is just about as cheap to build a handsome looking, convenient dwelling, as a mean and awkward one. In this volume there are designs for houses costing from \$500 to \$600, which, for comfort and beauty are fit for princes to live in. The more costly designs are still more elegant. We believe that all who propose to build, whether their dwellings are intended to be small or great, will have their architectural ideas improved, and some of their money saved, by consulting the pages of this book. A portion of the work is devoted to information respecting the laying out of grounds, gardens, and the culture of fruit. New York, published by D. Apton & Co.

TEN YEARS AMONG THE MAIL BAGS—This is a hand-somely illustrated volume by Mr. J. Holbrook, a special agent of the U. S. Post Office Department. He marnates some of the most thrilling and remarkable circumstances connected with the discovery and detection of crime in the matter of mail robberies that we have ever read. Much li htis also thrown upon the interior workings of the American postal system. The author's tavels upon official business were very extensive, carrying him to all parts of the country, among all sorts of people, list descriptions of scenes and characters are vivid and life-like. Philadelphia, H. Cowperthwait; New York, J. C. Derby.

Philadelphia, H. Cowperthwait; New York, J. C. Berby.

The Kansas Region—by Max Greene.—The Author
is an amateur traveler, fond of roaming and adventure.
His volume is an easy, off-hand, interesting description of
Kansas, through which country he has repeatedly passed.
The book also contains directions to emigrants as to the
best routes, localities for settlers, outfits required, usages
of society, &c. Those who are looking Westward for
homes, or who desire to inform themselves respecting
matters and things in general out there, will do well to
consult this new work. Fowler & Wells, publishers, 308
Broadway, N. Y.

New York Hongrey Theorem.

NEW YORK HORTICULTURAL REVIEW—This is the title of a new monthly periodical, which has just appeared as a calcidate for the patronage of all those interested in horticulture. It is edited by C. Reagles, No. 208, Broadway, this city, and judging from this specimen number, he appears to be eminently qualified for his profession. The engravings in it are neat, and the subjects well chosen and skillfully treated.

"Mysteries of the Court of the Stuarts," by Wm. II. Ainsworth: T. B. Peterson, publisher, No. 102 Chestnut st., Philadelphia, Pa. Price 50 cents. Just issued.



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