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JAY'S MORTISING AND BORING MACHINE

Fig. 1

NO. 30.

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Heavy Fly Wheels and Grist Mills.

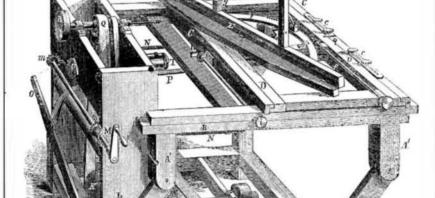
While some correspondents have written to us stating that heavyfly wheels were positively necessary to prevent backlash and to produce equable motion in flouring mills, Messrs. Hatfield & Smith, of Cuyahoga Falls, Ohio, inform us by letter, that after several years' experience, they have formed the opinion that "a heavy fly weeel is but a poor remedy for a badly constructed steam engine." They assert that if a steam engine is properly proportioned, with the valve arranged for the work it has to perform, it will run well with a light fly wheel. The performances of the mill engine described on page 208 (whereby ten bushels of wheat were ground to each bushel of fuel consumed), they consider good. They (H. & S.) have put up an engine of 12-inch bore cylinder, 24-inch stroke, boiler 26 feet long, 42 inches in diameter, with two 16-inch flues, set in brick arch, which turns out sixty barrels of flour in twelve hours running, using thirty bushels of slack or dross coal, which only costs one dollar per tun in that place. This mill belongs to Mr. Thayer. of Akron, Ohio. If we allow four bushels of wheat for each barrel of flour made, no less than eight bushels of wheat are ground to each bushel of slack consumed. This is doing good work certainly. They have also put up quite a number of engines of the same character for other parties, both for grinding grain and sawing wood, in which coal, wood and sawdust are employed for fuel, and with the same satisfaction as to results. They gear their engines for the piston to travel at the rate of fire hundred feet per minute; cut off steam at half stroke, and use a single slide valve.

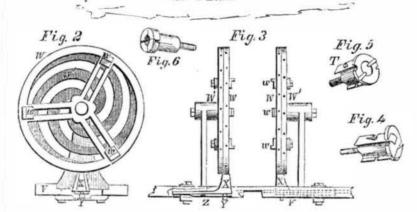
A Good Sign.

The editor of Hall's Journal of Health, an excellent monthly, published in this city,

"In passing through the city, or entering houses for the first time, we find ourselves deciding upon the character of the inmates from the newspapers we see at the door, and the periodicals lying about; and we feel a guarantee that there is refinement and elevation within when we see the Home Journal, Scien-TIFIC AMERICAN, Musical World, Littell's Living Age, and publications of that stamp These four might be profitably taken by every family in New York, and ought to be taken in thousands where they are not; for they are always chaste, always instructive; nothing in them to blunt the moral sense, or offend our religious sentiment. In these, and some one good religious newspaper, there is as much reading of this sort as the generality of our households can profitably indulge in."

THE next meeting of the American Association for the Advancement of Science will be held at Baltimore, Md., on the last Wednesday of this month (April).





The number of machines which will perform many operations, and combine within the limits of a compact frame, appliances which render them useful for a multitude of purposes, are daily becoming more numerous. Amongst the most prominent of these is the machine we are about to describe, which is the invention of J. M. Jay, of Canton, Ohio, and was patented by him July 28, 1857.

Of our engravings we will describe first the perspective view, Fig. 1. A are four legs bound together in a frame, and having hinged to them links, a, which are again hinged to the legs, A', of a supplemental frame. To B are secured cross slides, C, one of them having two small sliding stops, c, upon it. In ing a frame, E, provided with a cogged arc, F, so that it can be set at any angle by the rod and worm wheel, f. G is an upright stand for holding stuff, and being provided with two spring-fastened angular catches, g, and so arranged that it can be placed at any angle by means of the sliding bar and screw, H. There is a small stop screw which regulates the depth of the mortise, seen at h, and operated by the milled head, i. The frame, B, can slide to and from the tool on A', and it is generally held back by two spiral springs, not shown in the engraving.

I is a band wheel on a shaft, J, that receives

the power, and gives motion to K placed in a vertical frame, L; this frame, L, also carrying a shaft, M, that has two bevel wheels, m m, upon it, by turning which, the screws, N, are rotated, and the frame, A', raised or lowered to the tool. O is a lever, having a band, P, attached to it, the other end of which is connected with the back of B, so that by depressing O, the frame and contained stuff is brought against the tool. Q is a band, which passes over one tool arbor that has a wheel, R, on one end, so that the machine can be driven by hand, and a tool, S, in a recess in its other end. The belt, Q, communicates with K, and derives its motion from it. T is a tool in an arbor below, that is operated by Q these slides there moves the frame, D, carry- and also rotated by it. This lower arbor is placed in a sliding frame, U, so that it can be lifted up or down, and adjusted in the most desirable position. The stuff to be mortised is placed on the frame, E, at any desired angle, and by means of a pin in D, catching against the stops, c, the length of the mortise is determined. The two notched plates, g, are used in boring round stuff, and in fastening a chair pillar, when you wish to mortise one; the extra arbor cuts tenons of any thickness, by simply raising or lowering it.

Fig. 6 is a hollow auger for cutting round tenons. Fig. 4 is a tool for turning chair backs, and Fig. 5 smoothens or cuts any stuff.

There is an almost endless variety to the tools that can be employed in this machine, for the various purposes to which it can be applied. For the purpose of turning carriage hubs, the frame, D, has to be removed, and the face plates, W, (of which Fig. 2 is a front, and Fig. 3 a side view,) on the pieces, V, put in its place. These face plates are each composed of two pieces, W and W'; W having three slots, direct from the center to the edge, and straight, and W' having spiral slots, from the center to the edge; in these slots work slides or catches, w, so that by turning W' they will firmly grasp the hub, and a spring catch, X, fitting into the holes on the rim of the face plates, holds it secure while being shaped. Z is the spring of one of these catches, part of V being broken away.

This is a most convenient and compact machine. Any more information concerning it can be obtained by addressing the inventor as

Steam Squirrel Hunting.

A correspondent writing from Stockton, Cal., informs us that ground squirrels are so numerous in that region that they are a perfect pest to the farmers, as they destroy a very large portion of their crops. As much as \$100,000 are expended annually in California in purchasing strychnine, arsenic, and phosphorus, to destroy them, but these poisons seem to produce no useful result in diminishing their numbers. Our correspondent, however, has, we think, hit upon a plan, which, when he carries it out, will put them to route most effectually. He proposes to get a steam boiler of about four-horse power, mount it on a wagon, draw it out to the fields, get up steam, and conduct it into their holes by a pipe, and thus steam the "varmints" in their dens. These squirrels live in what are called "towns;" their holes are very numerous, and in clusters, and the passages underneath are all connected. By taking the steam pipe, therefore, and inserting it in a hole, then closing all the others in the vicinity, and letting on the steam, a whole community will thus be steamed at one operation. When this is accomplished, he will proceed to the next township, and extinguish its subterranean inhabitants in the same manner, and so on until the whole of squirreldom in that region is subdued by the all-conquering power of steam.

Discovery in Electricity.

Dr. C. G. Page, of Washington, D. C., has discovered that positive electricity will extinguish the flame of a lamp, and negative electricity will increase it. When the flame of about two inches hight is charged positively, from a powerful machine, it is rapidly shortened to total extinction. When the flame is charged negatively, it is immediately enlarged, a portion of it being impelled down around the wick tube for the distance of an inch, and a portion also elongated above. This discovery, it is thought, may serve to throw some light upon the many unsolved caprices of lightning.

[The above is taken from the New York Evening Post, but we have also seen it in several other papers. Supposing the discovery to be true, we would really like to know what light it can throw upon "the many unsolved caprices of lightning."-EDS.

The blasting necessary to obtain material for the construction of the harbor of refuge at Holyhead, North Wales, still continues; and on one occasion 200,000 tuns of rock were blasted at once by 21,500 lbs. of gunpowder.





Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 23, 1858.

[Reported officially for the Scientific American.]

Pumps—J. B. Atwater, of Brooklyn, N. Y.: I claim the arrangement of the plunger, E, and cylinder, A, with their respective enlarged portions, c d. constructed and operating as and for the purpose set forth. [This is an arrangement of the plunger and other

parts of the pump, so that the water as it is Prised and pumped up, is made to act as an efficient packing, and the pump is thereby rendered extremely simple and durable, and susceptible of being operated by a very small expenditure of power.]

small expenditure of power.]

Printing Press—Henry A. Bills, of West Winsted, Conn., and Stephen W. Wood, of Cornwall, N. Y. Patented in England, Jan. 28, 1858. We claim, first, Setting a form of type upon flat rotating forms or beds in separate and independent columns arranged alternately upon the peripheries of cylinders, with corresponding cylinders upon whose peripheries are segments of impression cylinders, the whole arranged substantially as described.

Second, Grooving or notching types, and keying them by independent keys to a bed or form in the manner and for the purpose substantially as set forth.

SELF-ADJUSTING DOO SILL—Geo. C. Bigelow, of Worcester, Mass.: I am aware that strips have been arranged in and on doors, to close the space between the door and sills, and that strips have been used in windows, that were forced out by springs behind them. These I do not claim.

But I claim constructing a movable door sill that shall be level or even with the floor when the door is opened, and when it is closed shall beraised to form a close fit to the bottom of the door, by means of the spring levers, substantially as set forth and described.

WALKING STICK GUN—Robert R. Beckwith, of New York City: I claim the combination of the hammer, E-pin, C, sleeve, F, and the locking lever, I, as and for the purposes set forth.

[See a description in another portion of this paper.] Love a description in another portion of this paper.]
RAILROAD RAILS—Leverett Ball, of Auburn, N. Y.:
I claim the use of plates, inserted at the middle and
ends of the sections of compound rails in combination
with said sections locked together throughout their
whole length, thus binding the rail together like a solid
continuous rail, the whole being constructed and arranged substantially as set forth for the purposes specified.

SECURING THE WHEELS OF CARRIAGES, &c.—Adolphus Bruns, of Davenport, lows: I hereby disclaim being the inventor of wheels with independent axles or of revolving axles running upon friction rollers, they having been heretofore used.

But I claim securing the wheels upon the independent revolving axles, in the mannerset forth.

CASTING METALLIC CHEESE Hoors—Timothy Brown, of Georgetown, N. Y.: I claim the combination of the cylindrical guiding and supporting mold-piece, A, provided with the flange bottom, a, and side projections, b b, the semi-cylindrical mold-piece, B, and the guide top, C, all arranged in relation to each other as described, and united by the rods, c and d, substantially in the manner and for the purpose specified.

SELF-ADJUSTING DAMPER FOR HOT ARE FURNACES—Ebenezer Barrows, Jr., of Brooklyn, N. Y.; I do not claim broadly the employment or use of valves or dampers placed in the hot air conducting pipes of airheating fornaces, for they have been used for similar or analogous purposes.

But I claim placing the valve or damper, F, in the lower part of the hot air conducting pipe, C, when said valve is so hung or arranged to operate as and for the purpose shown and described.

[A notice of this will be found on another page.]

[A notice of this will be found on another page.]

COTTON GINS—H. W. Brown, of Millsville, N. J.: I am aware that a roller and vibrating and stationary plates have been previously used for ginning cotton, but arranged in a manner different to that shown; so far as I am aware, no provision has been made for the ready discharge of the seed from the cotton; I therefore do not claim, broadly, a roller, B., vibrating plate, L. and pressure plate. R., irrespective of the arrangement and connection with the parts shown, as these are seen in the patent of Fones McCarthy, dated July 3, 1340.

But I claim the roller, B, stripping plate, L, and pressure plate, R, arranged as described, in combination with the yielding or vibrating feed board or plate, W, provided with the rods, o, the rods, n, and doffer, N, the whole being arranged to operate conjointly as and for the purpose set forth.

[This is described on another page.]

[This is described on another page.]

OSCILLATING FUNDS—Ezra Cope and J. W. Bragg, of Cincinnati, Ohio: We do not claim the movement, nor the arrangement of any part of our pump separately considered.

But we claim the described arrangement of two single acting oscillating plunger pumps to oscillate upon a single trunnion, placed between them as shown, in comination with the employment and use of two or more induction ports in the one chamber of the trunnion, and two or more eduction ports in the other chamber of the trunnion, arranged to alternately communicate with corresponding ports or openings and pas ages in each cylinder, substantially as and for the purposes set forth in the specification.

MEAT CHOPTERS—Plumer H. Chesley, of Lynn, Mass. I claim the arrangement of the cogged wheel, theseries of spring cutters and cleaner with each other, operating substatially in the manner and for the purposes as de-

FIRE-PROOF CEILING—J. B. Cornell. of New York City: I claim my improved method of constructing fire-proof ceilings beneath wooden beams, viz., by sus-pending combined metallic lath sections beneath the aforesaid beams, and then coating said sections on both sides, substantially as set forth.

HOT AIR FURNACES—John Child, of Elyria, Ohio: I do not claim the gradual heating of air in its approach to the fire chamber of a furnace.

But I claim the arrangement whereby I effect the gradual heating and an active circulation of air by the arran ement of the horizontal prolonged passage, A B and C D, surrounding the fire chamber and the raifying chambers, E E and F, above the fire chamber, constructed and operating as set forth.

SEWING MACHINES—F. S. Coates, of New York City: I am aware that there are many devices for opening or spreading the loop in single thread sewing machines, therefore I do not claim as new the expansion or spreading the loop in such machines.

But I claim the combination of the spring, 8, with the feed, K. and hook, I, for the Purpose of expanding the loop in sewing machines, as set forth.

Mode of Connecting the Sections of Metallic Funer.—J. W. Cochran, of New York City: I claim the inclined arms, i, attached to the ends of the sections and cople, h, for securing and connecting the same, substantially as set forth.

METHOD OF CLEANSING GAS GENERATOES—Saunders Coates, of New York City: I claim the mode of clearing the retort by the admission of atmospheric air at the top of said retort, in combination with the draft pipe for carrying off the products of combustion, the whole being arranged in the manner substantially as set forth.

BINDING ATTACHMENT TO REAPERS—A. F. French, of Franklin, Vt., assignor to G. I. Stannard, of St. Albans, Vt.: I claim the revolving rake formed of the curved teeth, b, attached to the shatt, A, the rods, D, curved as shown, so as to form the receptacles, e, f, and the elastic strips, k k, connected with the lever frame, F, the above parts being combined and arranged to operate substantially as shown, with or without the rod, or bar, for the purpose set forth.

[A revolving rake is employed in this invention with stationary curved rods, a band holder and band adjuster, so that the grain may be bound by an attendant as rapidly as it is cut by the reaping machine to which the device is attached.1

MACHINE FOR CUTTING THE LEAVES FROM THE SUGAR CANE PREPARATORY TO GRINDING—Calvin Dickey, of Mercersburg, Pa. : I claim the cutting device formed of the cutters, a attached to a tubular fianch, A, the whole being constructed and arranged so as to operate substantially as and for the purpose set forth.

[We give a notice of this in another column.]

HAYCOCK PROTEOTORS—O. R. Dinsmoor, of Auburn, N. H.: I claim combining with the cover, elastic ground connections, and a center pin. C. to extend into but not through the hay, the whole being arranged so as tooperate with respect to the haycock, substantially as described, when applied thereto.

REGULATORS FOR ROVING OR YARN—Daniel Dermond, of Philadelphia, Pa.: I do not claim the controlling of the movement of the heckle chain through the agency of the upper feed roller.

But I claim the combination of the pulley, G. the system of spur gearing, the shaft, A. pulley, B. and enclosed box, G. with the ratchet, a, and Position stop, d. the whole arranged, applied and operating substantially as and for the purpose set forth.

[This invention is principally intended to be applied to the jenny for spinning rope yarns, but may be adapted to other machinery for drawing and roving or spinning hemp or other fibrous materials of similar

HOMINY MILLS—F. B. Drake and J. W. Teal, of Indianopolis, Ind.: We claim the combination and arrangement of the perforated disks, D D D, with the fan, K K, when constructed and arranged substantially in the manner and for the purposes set forth.

Sawing Staves—H. H. Evarts, of Chicago, Ill.: claim the arrangement of the machinery as described and shown in the specification and for the purposes set

METALLIC BOATS—Joseph Francis, of New York City. Patented in England July 21, 1856: I claim preparing sheets or plates of metal for torming boats for corrugations composed of a series of flat or nearly flat surfaces united by a curved or nearly quarter circle corrugation, substantially as and for the purposes specified. I also claim the manner specified of varying the size and proportions of corrugated metallic boats made from sheets pressed in one size of dye by forming the corrugations near the center parallel or nearly so, and increasing or decreasing the number of central plates, formed with such corrugations, substantially as and for the purposes specified.

WATELTIGHT WASHSTAND—Christian Gees, of New York City: I claim, first, The raised flange, ridge, elevation or projection upon the basin, in combination with the counter sunk marble slab to fit such flange for the purpose set forth.

Second, I claim the cap-like attachment upon the flaucet fitting closely over the projection upon the marble slab through which the flaucet passes, for the purpose set forth.

ROOFING CEMENT COMPOSITION—Robert Glennon, of New Orleans, La.: I disclaim the compositions patented by R. H. Smith and C. R. Milks, in 1857, as differing from my invention.

What I claim is the composition made up of the ingredients specified, in substantially the proportions and in the manner set forth.

GRINDING ATTACHMENT TO PUG MILLS—D. H. Gage, of Dover, N. H.: I claim the combination of the double series of rotating arms, E. E. and F. F., with the stationary arms, a d, and the dish-shaped grinder, C, when the said parts are so shaped and arranged as to operate in conjunction with each other, substantially as set forth.

ROTARY STEAM ENGINES—J. B. Groomes, of Carmichael's, Pa.: I make no claim to the radial piston attached to the shaft, as equivalent devices are well known. Neither do I claim the introduction and exit

whom. Neither do I claim the introduction and exit of the steam through the shaft.

But I claim the flanged cylinders, a a, cneasing the shaft at its transverse perforations, i c, and packed as described between the flanges and the cylinder heads, in combination with the steam channels, e and d, often shaft, and the induction and eduction pipes, D and E, communicating with the annular spaces between the flanges of the cylinders, the whole operating as set forth.

RIBBON LOOMS—W. J. Horstmann, of Philadelphia, Pa.: I claim the bent rod, K. L., M. N. N., passing between the two headings of the trimmings or fringes and forming a back or edge over which the filling is worked substantially as described.

Pumps— . O. Joyce, of Cincinnati, Ohio: I claim the arrangement of the circular chambers having their valves operated as described, with the wedge valve, G, and its inlet and exit openings, the whole being arranged in the manner and for the purpose set forth and explained.

HOLDING BOLT FOR CARPENTER'S BRACKETS, &c.—
I claim the spiral pointed dog or pawl as used with the
bolt, to hold and secure carpenter's brackets for fasteners to buildings, as set forth.

Dyeing Yarn Particolored—D. B. Kerr, of New York City: I claim the method of arranging yarn in folds or loops of greater or less strength as a figure may require previous to the application of the eye, substantially as set forth.

I also claim the method of folding yarn as above set forth, in combination with the clamping of the same previous to the application of the dye, so as to preserve the integrity of the folds or loops, substantially as set forth.

forth.

I also claim the method of parti-coloring yarn by subniting it while clamped in folded loops of greater or
less length to the action of the dye, substantially as set
forth.

METHOD OF CLAMPING POLYGONAL PIECES IN PLAN NG MACHINES-J. W. Killam, of East Wilton, N. H. and the dog, K, in combination with each other, for the purpose described.

HARVESTRES—J. M. Long, Peter Black, and Robert Allstater, of Hamilton, Ohio: We claim, first, The combination of the lever box, b, guide piece, d, and short axle, a, with nut and screw. constructed, arranged and operating substantially as and for the purpose set forth.

forth.

Second, The stay rod, G, in combination with the bar, E, substantially as and for the purposes set forth. Third, Supporting the rear of the platform by suspension from the stay rod, substantially as and for the purposes described.

COMPOUNDS FOR HARDENING IRON AND STEEL—Chas. Pauvert, of Targe, France: I claim the use of the ingredients described. compounded in the manner specified, for converting iron into steel.

SUPERSTRUCTURE OF RAILWAYS—S. H. Long, U. S. A., of Louisville, Ky.: I claim, first, The combination of grade plates and ribbed sills, as set forth and for the purposes specified.

I also claim bolting the rails to the sill through the grade plates, in such manner as that the expansion and contraction (or creeping as it is termed) of the rails shall not be communicated to the grade plates, which allows said plates to retain their position regardless of the moving of the rails, substantially as stated.

RAILROAD CAR COUPLINGS—H. E. Loane, of Balti-timore, Md.: I claim the arrangement and combina-tion of the coupling bar, B, jaws, E E, F F, and holding plate, D, in the open mouthed coupling heads, substan-tially in the manner and for the purpose specified.

Plows—Thomas McConaughy, of Burnsville, Ala: I claim extending the piece, P. to which the point is secured rearward a distance nearly equal to its hight, and giving it increasing lower flanges at bottom, said piece being formed with thick bounding edges, and a thin plate filling the intermediate space, substantially as and for the purposes set forth.

GRAPHOTYPE—John McElheran, of Brooklyn, N. Y.: I claim the method described of producing the mold or matrix, wherein the metal is deposited by electrical action to form picture-types, or their equivalents of wax, applied to and in combination with a hard transparent, smooth and level plate, substantially in the manner set forth.

forth.

Presses for Extracting Oil from Linseed—Chas.

Moore, of Trenton, N. J.: I claim the combination of the ground plates, with the hair padding or such other padding as may be used, fastened to the plates of the press, with its edges made thicker than the body of the press, with its edges made thicker than the body of the press by links or staples and pins, and the plates to one another by links and pins, so arranged that the plates may be pressed together without cramping the links by which they are connected.

Corrow Bale Tiss—David G. Olmstead, of Vicksburgh, Miss.: I claim the clasp, A, and wedge, C, arranged and operating in combination with the band, B, with its bent extragalities, a a, substantially in the manner and for the purpose specified.

MACHINE FOR TURNING TOOL HANDLES, &c.—Hiram Plumb, of Honesdale, Pa.: I do not claim, broadly, and irrespective of the arrangement shown, the employment or use of a pattern in connection with cutters to a carriage, for such device has been previously used for the purpose of turning various articles.

But I claim the employment of roughening-offcutter, K, socket, J, forming cutter, M, pattern, , finishing cutter, Q, and stops, k, combined and arranged to operate as and for the purpose set forth.

[Full particulars of this invention will be found on anothernage.]

CEMENT COMPOSITION FOR ROOFING—Bradley L. Prime, of Hamilton, Ohio: I am aware that some of the ingredients used by me have been employed for onalogous purposes in various proportions, and in combination with various other substances. Therefore I do not claim, broadly, the employment of such substances in roofing composition.

But I claim the combination of the substances described, in substantially the proportions set forth, for the manufacture of a roofing composition.

STOVE HEATING APPARATUS—David J. Quimby, of Brooklyn, N. Y.: 1 do not claim the use or construction of the stove, nor combining a heating stove and heater in one apparatus, nor bringing a current of cold air to the heater, to be heated and diffused in the same

or another room.

But I claim the arrangement of the heating chamber,
B, provided with deflecting plates, D D', and apertures
in the top plate with the cold air flue, in connection
with the stove or furnace, A, constructed and operating

as described.

COTTON PRESSES—Hiram Ross, of Rockport, Ind.: I do not claim, separately, the toggles, E E', for operating the follower, D, for they are a common and well-known device, and have been previously used for similar and analogous purposes.

But I claim the toggles, E E', in combination with the lever, G, provided with the semi-circular projections, I J, and counceted with toggles by cords or chains F K, the whole being arranged to operate substantially as and for the purpose set forth.

[This is an improvement on that class of presses in

[This is an improvement on that class of presses in which a progressive power is obtained, and consists in the employment of toggles in connection with a lever, so arranged that the work is performed expeditiouly, and with moderate application of power.]

REVOLVING CYLINDER STEAM ENGINES—Thos. Rogers, of Philadelphia, Pa.: I do not claim the arrangement of ports and Passages for the induction and eduction of steam.

steam.
But I claim the two L-shaped stationaryhollow steam heade, C D C D', applied and arranged substantially as described, to constitute stationary journals for the two hubbed drum or fly wheel. E. and bearings for the cylinder journals, while they also constitute valves for the induction and eduction of the steam, substantially as described.

[We have noticed this invention in another portion of this journal.]

CORN HARVESTERS—Thomas A. Risher, or Circleville, Ohio: I claim the arrangement of the concave shocker, I. clamp lever, J. and rest, k. with relation to cutters, a a, inclined arms, c c c c, belt, H, and guide, i, the whole being constructed and operated in the manner and for the purpose set forth.

CIGAR-LIGHTING CINDERS—Henrich Reemann of Hartford, Conn.: I claim the cigar-lighting cinders, compounded and formed as described, and for the pur-pose set forth.

TURNING AND SLIDING TABLES FOR RAILEOADS—William Sellers, of Philadelphia, Pa.: I claim interposing the central part or box between the ends of the truss rail beams, in such manner, substantially as described, as to make use of the width of the said central part or box as a portion of the length of the said beams, and the said beams and central box are so constructed and connected as to form a table entirely supported from the central part or box, substantially as described.

Stop-Motion for Hair Cloth Looms—R. J. Stafford, of Smithfield, R. I.: I wish it to be understood that I do not limit myself to the special construction or arrangement of parts as described.

But I claim all merely formal variations performing the same mode of operation by equivalent means.

What I claim is the mode of operation, substantially as specified, by means of which, in case the hook, nippers, or other instrument used to insert the weft of the as specified, by means of which, in case the hook, nippers, or other instrument used to insert the weft of the
cloth, fails to seize and draw in any one hair, or other
material intended, a disconnection is in consequence
effected between the gear that controls the action of
the several sets of heddles, and the source of motion before the relative positions of the several sets of heddles
to each other are shifted, and a new set opened, while
the other parts of the loom are permitted to continue
in operation, substantially as specified.

And I also claim the mode of operation, substantially
as epecified, by means of which the "signal messenger,"
(No. 6) during the backward beat of the bay is returned
to such a position, and whenever the hair or other material is inserted between the threads of the warp,
where it belongs, the geer which controls the action of
the several sets of heddles is again put in motion, as
set forth.

I also claim the "signal messenger," (No. 6) constructed, applied, and operated in the manner and for
the purpose substantially as described.

Gas Burner—Denis Sullivan and Michael McIntyre.

GAS BUENER—Denis Sullivan and Michael McIntyre, of Cincinnati, Ohio: We claim the construction and arrangement substantially as described, of the plug, C, regulating the flow of gas to any extent desired.

TIGHTENING THE TIRES OF CARRIAGE WHEELS—Robert B. Scott, of Philadelphia, Pa.: Disclaiming the exclusive use of taper keys for drawing together the two ends of the tire.

I claim the end, C, with its slotted lips, a, and the bent end, B, with its slotted enlargement, d, in combination with the taper keys, D and D', and bolt, E, when the two ends are arranged and adapted to each other, substantially in the manner set forth, and for the purpose specified.

PISTONS AND PISTON ROD CONNECTIONS—A. P. Samuel, of New York City: I do not claim generally transmitting motion from a fixed cylinder direct to the crank, without intermediate connections, by means of an oscillating cylinder rod.

But I claim a direct connection of the piston rod to the crank, with a fixed cylinder, by the use, or by the the means of, the arrangement of the movable boxes, G.G. in the piston, forming theiconnection between the piston and piston rod, in combination or connection with the part, d. x', moving upon the curved covers of the cylinder, the whole arranged substantially as and for the purposes set forth and specified.

SEWING MACHINES—James and Amos W. Sangster, of Buffalo, N. Y.: We claim the looper, when the several partsthereofare constructed and arranged to operate, in relation to each other, to the needle and thread, substantially as set forth.

Post for Field Fences—Heber G. Seekins, of Elyria, Ohio: I claim foot piece, A, having recess, s, and lugs, c c', in combination with the posts, said posts having apertures, d e', and recesses, f', said apertures and recesses so partitioned as to correspond with aperture a, and lugs, c c', of foot piece, A, in the manner and for the purpose substantially as set forth and described.

Provs—Daniel L. Tilton, of Mt. Carmel, Ill.: I claim the construction and arrangement, substantially as de-scribed, of the tines, J. operating in the manner and for the purposes explained.

RECIPEOCATING AND ROTARY MOTION—Isaac Van Doran, of Somerville, N. J.: I do not claim, generally, changing reciprocating into rotary motion by means of the gearing, B, and rotating wheel, A.

But I claim the arrangement of the wheel, D, and its projection, b, as described, so that the wheel, D, shall be constantly rotated by the use of d and b alone, without springs, sliding cogs, or any other mechanism.

MILL BUSHES—John Wells, of Baltimore, Md.: I disclaim concentric rims, the one secured to the shaft and the other to the stationary portion of the system, as such is not new, and does not constitute my invention.

But I claim the feathered spindle, S. and recessed flanged collar, a, resting upon plate P', in combination with plates, P' and P, the cylindrical guide, C, depending from the latter plate, when said parts are arranged for joint operation substantially as set forth.

MEAT-CUTTING MACHINES—Frederick Wolfersberger, of Salem Station, Ohio: I claim the segment plates aron case seation, Onio: I claim the segment plates arranged spirally on the roller between the pins, in combination with the knives, H, substantially as described.

COMPOSITION FOR VARNISHES—Damon R. Averill, (assignor to himself and James F. Davis.) of Pulaski, N. Y.: I claim the described composition of matter, consisting of water and acetate of lead, with spirits of turpentine and coal tar, for the purpose of making a cheap, quickly-drying, and superior varnish, substantially as set forth.

Since Peg Machine—Amos H. Boyd. (assignor to Samuel F. Caee.) of Saco, Maine: First, I claim the combination of the pointer, splitter, and intermittent feed of the block, operated conjointly, substantially as specified.

Second, The construction and arrangement of the transversely or circumferentially grooved or threaded rollers, as a means of feeding and holding the block or bolt for pointing, substantially as specified.

rollers, as a means of feeding and holding the block or bolt for pointing, substantially as specified.

Steam Gaces—Franz Burckle, (assignor to Edward H. Ashcroft,) of Boston, Mass.: I do not claim so attaching the piston to an elliptic spring that such piston shall be wholly supported by such spring, either with or without contact of the piston with the sides of the passage, or space within which the piston may move.

Nor do I claim connecting one end of a rod by a set of radial bars or toggles, while its etherend is supported by a spring, and the rod is carried through a tube, as shown in the drawings of No. 18,917 of United State a patents, for in my mode of supporting the piston and keeping if from contact with the sides of the passage through which it extends, the radial di-k spring not only performs the function of supporting the elastic diaphragm and centralizing the piston, but that of a spring, to draw the latter downward under any relaxation of the pressure of the steam.

Nor do I claim the employment of a collapsable hollow spring, or combination of concavo-vonvex springs, and their application to their case or frame, and a pitman, as shown in Grantoff & Albright's gage, as described in the London "Mechanics" Magazine." Vol. 65, page 295, wherein the collapsable spring operates by the lateral contraction on raising the pitman. The upper spring of the piston of my improved gage operates by latitudinal extension in elevating the piston.

But I claim supporting the upper end of the piston by the main spring, H, in combination with supporting the overend of the said piston by a radial disk spring applied to it and the elastic diaphragm, and operating not only to centralize the piston during its movements, or maintain it in a straight path, and out of contex with the sides of the passage through which it plays, but to operate in other respects as set forth.

I also claim fastening the main spring, H, at the middle part of the inferior hall with the lower part of the bexon or case, and making the piston pl

SEWING MACHINES—David W. Clark, of Bridgeport, Conn., (assignor to H. L. Clark, of Fairfield, Conn.): I claim first, The employment of an adjustable guide, N, constructed and arranged substantially as described, for the purpose of guiding the needle, J, and its thread, stripping the loop of needle, C, and placing the loop of needle, J.

Second, The combination of spring, O, with guide, N, for holding the needle, J, within the groove of the guide, substantially as described.

Third, The employment of a swinging plate, P, serving as a loop stop for both stitches.

CREAM FREEZERS-Enoch S. Farson, (assignor to himself and Henry H. Brown, of Philadelphia, Fa.: I claim the concave beater, p. in combination with a scraper, q. and an oscillating horizontally-placed cream cylinder, B, the same being arranged so as to operate together in the manner and for the purpose set forth and described.

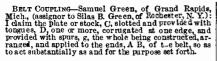
RAILEOAD CAR BRAKES—Daniel H. Feger, (assignor to himself and Mahlon M. Wombaugh,) of Cincinnati, Ohio: I claim the arrangement of the friction pulley, J. concentrically on the front axle, D. of the truck, and combining the same with the brake, E. E. and with the sliding buffer or pulling bar, N, by means of the pivoted vertical spring friction block, K. pivoted horizontarising and falling shoulder bar, Φ ZZ, and transverse pins, P P, said parts being arranged relatively to each other, and operating in conjunction, substantially as and for the purposes set forth.

and for the purposes set form.

KNITTING MACHINES—Joseph Vickerstaff, (assignor to Martin Londenberger.) of Phila elphia, Pa.: I claim imparting to two sets of thread guides the continuous vibratory movement, combined with the transposing movement described, by means of the cam wheel, L, acting in conjunction with the lever, K, and arms, p and p, or equivalent devices, for the purpose specified.



Scientific American.



[This invention consists of a metal plate or stock of oblong form, equal in length to the width of the belt to which it is applied, and firmly riveted to one end of the belt parallel with its edge. This plate or stock has one or more slots in it, in which slots tongues corrugated or grooved at one edge, and provided withspurs, are fitted. The opposite end of the belt is passed through the slot or slots in the plate or stocks, and, owing to its relative position with the tongues and plate, is firmly secured therein by the tension of the belt, and the two ends of the same are, consequently, firmly connected.]

TRACKS FOR CITY RAILWAYS—E. S. Gardner, (assignor to himself and John H. Gould,) of Philadelphia, Fa. Disclaiming the exclusive use of a continuous tube with a slot on the top, as a device employed in atmospheric realways.

a slot on the top, as a uevice empty.

I claim forming between the rails of a city railroad track, an underground tunnel, and hanging a series of pulleys within the same, said tunnel having a longitudinal slot near the level of the ground, and being otherwise so arranged that a rope may be used for drawing the cars along the track, without impeding the passage of the vehicles across the same.

SHIP'S BULKHEAD—Charles Maliphant, (assignor to Thomas West.) of New York City: I claim the arrangement of two or more thicknesses of crossed planking, the interposed felt, or other equivalent material, and the stanchions with each other, substantially as specified, and for the purpose set forth.

EGG-BEATER—Patrick Mihan, (assignor to himself and G. Davis,) of Boston, Mass.: I claim the beating apparatus, constructed and operating substantially as described, in combination with the portable plate or cover A, so that it may be either held in the operator's hand, or placed on the top of a vessel.

or placed on the top of a vessel.

Revol.ving Firelem—F. D. Newbury, (assignor to R. V. DeWitt, Jr.,) of Albany, N. Y.: I claim the lever, L, formed and fitted as described, for the purpose of cocking the hammer, holding the same when it has been cocked by hand, rotating the cylinder, and holding the cylinder firmly in the act of firing.

I also claim the hammer, with its pin, b, in combination of hammer, lever, ratchet wheel, and trigger, arranged substantially and for the purposes set forth.

RAILROAD CAR AXLE BOXES—R. N. Allen, of Cleveland, to it is combined to the proper series of the self-adjusting collar or washer, F, in combination with the slide partition, G, and packing, c, operating in the manner and for the purpose specified.

Second, I claim the box, B, and key, C, provided with articulating surfacess's', in combination with the key, D, for the purpose of relieving the axle from strain, and of conveniently removing and replacing the box, B, and collar, F, by simply relieving the axle from strain, without removing it, the whole being constructed and arranged substantially as specified.

RE-ISSUES.

Machine for Making Hat Bodies—William Fasket, of Meriden, Conn. Patented January 23, 1846: I am aware that mechanical pickers of various constructions have been used in connection with pervious surfaces surfaces and exhausting fans, in the manufacture of hat bodies, and therefore do not claim such devices separately, or in their pre-existing combinations, as my inventions.

But L claim the described supports

ventions.

But I claim the described automatic method of forming hat bodies, having the required variation in thickness at their different parts, by supplying picked fibers to an exhausted former of the size and shape required, in such manner that a larger portion of picked fibers is supplied to that part of the former which corresponds with the thickest portion of the hat body, and a less portion to the other parts of the former, substantially as set forth.

I also delimits account.

I also claim the combination of a picking apparatus, a hat body former, an air-exhausting apparatus, and a conductor, the whole combined substantially as set

conductor, the whole constant of forth.

I also claim a bow-string picking apparatus, constructed and operating substantially as set forth, to pick fur presented to it by a suitable feeding and nipping apparatus.

METHOD OF EMPLOYING CENTRIFUGAL FORCE IN CASTING IRON PIPE—Thomas J. Loverove. of Palti-CASTING IRON PIPS—Thomas J. Lovegrove, of Baltimore, Md. Patented November 30, 1852: I claim forming pipes, or other castings, by centrifugal force, by couring the mold into which the liquid material is poured to write the same of the production.

eq. to revoive.

Grain Separators—John R. Mofilt, of St. Louis, Mo. Patented November 30, 1852: I claim, first, The endless chains, d, composed of metallic links provided with protuberances or depressions, when used in combination with suitable driving pinions, to impart a positive motion to the straw-carrier of a thrashing or separating machine, as explained.

Second, in combination with a receptacle in which the tailings are deposited by the winnowing apparatus, I claim the arrangement of the screw elevator, o, in relation to the thrashing cylinder, for the purpose offecturning the tailing to be re-thrashed, as set forth.

COPYING PRESS STAND—Charles H. Clayton, of New York City.

LEGS AND POSTS OF IRON BEDSTEADS—John P. Koch, of New York City.

CLASUS FOR METALLIO HOOPS—James R. Speer, of Pitteburgh, Pa. Patented December 1, 1888: I claim bending the ends of the clasp across the apertures, b and c. so as to present an opening in the clasp for the insertion of the bent ends of the bunds, at right angles, or nearly so, to the direction in which the bands are inserted in the clasp, in the manner and for the purposes described.

Lake Superior Iron.

Some very successful experiments have been made with Lake Superior iron ore, and marble as a flux, by which very excellent iron has been made by S. R. Gay, as we learn by the Lake Superior Journal. The experiments were made at Marquette, 411 charges being tried in a small furnace to test the flux, as it was supposed by many that it would not answer, but the iron was of a superior quality, and as the ore is plenty in that region, a great increase in the manufacture of the metal is anticipated. As marble is a carbonate of lime, there can be no doubt but it may be used for a flux in smelting where the common limestone cannot be obtained. For this purpose it should be reduced to very small pieces

Ventilating Mines.

The thorough ventilation of our coal and other deep mines is a question of much importance, and is becoming more so every day, as our mining operations are extending very rapidly. In older countries, especially England, where deep mining has been carried on for a great number of years, on a very extensive scale, it would naturally be inferred that the utmost perfection in ventilating agencies would have been reached long before this period, but such has not been the case. It is only within the past two or three years that the greatest improvement yet suggested in ventilating mines has been carried out in that country. This consists in the employment of positive machinery for the purpose, which has been erected at the Abercarn collieries. It consists of a rotary fan driven by a small noncondensing steam engine; and it has been constantly at work, day and night, for more than two years, without once being stopped for repairs. The common method of ventilating fiery mines heretofore practiced, has been by a large fire kept burning at the bottom of an up-shaft, at such a distance from the main shaft that the air rushing down the latter to feed the fire, passed through all the workings, and then escaped in a rarified column through the up-shaft. This method is rude and inefficient, affording no remedy for an increase of air, except by enlarging the fire, and it is rendered useless by being extinguished when an explosion takes place-just at the very time when a greater quantity of fresh air is most urgently required.

The rotary fan at the Abercarn colliery was put up by the ingeuious James Nasmyth, the inventor of the steam hammer; it is 131 feet in diameter, has eight vanes, made of plate iron, each 3 feet 6 inches wide, and 3 feet long, fitted on a horizontal shaft. It is enclosed in a plate iron case, with large openings at the center, and trunks for discharging, something like our blowers for furnaces: but it exhausts from the mine, thus causing the fresh air to rush down the main shaft, and pass through the workings to the up-shaft. The mine is 300 yards deep, has seven miles of railroad in it, and fourteen miles of working courses. About 3,000 tuns of materials-coal, iron ore, and fire clay-are raised from it weekly. The fan is driven at the rate of 60 revolutions per minute, and draws 45,000 cubic feet of air through the mine in that period. This quantity supplies an abundance of air for the miners; their health has been greatly improved, and they can now labor during a greater number of hours daily.

When an explosion takes place in a coal mine, the greatest danger of immediate snffocation to the workmen, arises, not so much by inhaling carbonic acid gas, as some have supposed, as by the lungs becoming clogged by inhaling fine flaky soot, which generally saturates the atmosphere. To avoid this danger, the miners who are not burned, generally cover their mouths and noses with their handkerchiefs, and lie down, but unless they receive a supply of fresh air very soon, they must perish. An explosion of some extent took place at the Abercarn colliery, since the above ventilating machinery was erected, but the flaky soot and foul air were abstracted, and the fresh air rushed in so rapidly that none of the miners lost their lives. It is believed that but for the rapid and effective action of the ventilating fan on the occasion, every person in the mine would have perished. he velocity of the fan can be augmented or very dangerous, this is necessary, in order to supply an increased quantity of fresh air on a sudden emergency. Our mining companies would do well to pay much attention to this

Laboratory-No. 1.

Atoms.-It is not derogatory to the human mind to say that it can neither comprehend great things nor small. It is a fact, that no man knows what an atom is; that is, an atom of any material in its smallest state of exist- under his feet.

ence. Very few can comprehend the size of the earth we inhabit, or of the sun, or of the planet Jupiter, which immense orbs are but a collection of atoms, and which, after all, are only a few of the countless worlds of the universe. We can conceive the existence of a small particle of marble, or of wood, or of sugar, or paper; but when the mind endeavors to form a conception of the smallest particle of any of these materials, it falters. When again it considers that what appears to be the smallest particle of sugar or of marble can be further divided, and that, in reality, these materials consist of three other atoms of matter united to form one particle or atom of sugar, marble, &c., the idea is perplexing. It is an ascertained fact, that sugar consists of carbon, oxygen, and hydrogen; but the ultimate size of the atoms of any of these elements is beyond the mind's comprehension. Nevertheless, chemists give to atoms of all the elements an ultimatum, and assign to them a definite weight-that is, a weight by comparision of one to another. It is found that when one substance unites with another, it does so always in a definite regular proportion; thus one hundred parts of oxygen always unite with double their weight of sulphur, four times their weight of selenium, and eight times their weight of tellurium, and so on with every other element, sometimes higher in weight, and at others lower, as the case may be; but it never varies for each specific element. Hence, after numerous experiments performed with the greatest care, chemists have fixed an atomic weight to all the elements, which is the proportion with which they combine with each other; though of different weight, yet they are atom to atom. SEPTIMUS PIESSE.

Difference of Sight and Hearing.

MESSES. EDITORS-I am rather fond of trying experiments on myself, and in consequence make observations that would, perhaps, occur to few others. I have just made one on which I should like your opinion, and at the same time communicate the fact to your readers. My sight is very good, never by any chance do I use spectacles, and yet for the last fifteen years I have observed that I am longsighted with my left eye, and short-sighted with my sight eye; and I can hear the ticking of a watch at a greater distance with my right ear than with my left. I should like to know if this is a common occurrence.

L. R. BREISACH.

The reason that one eye or ear is more sensitive than the other, is because each has a separate nerve, and one of these may be constitutionally stronger than the other, or one can be weakened by a bad light on one side, or too much exercise of the one member. As to the commonness of the occurrence, we never heard of the fact observed by direct experiment before; but any of our readers can try for themselves, by holding a watch at gradually increasing distance from each ear, until the ticking cannot be heard, and noting distance each side; a small ink-spot on a sheet of white paper will serve to test the eyes.—EDS.

How to Raise a Fallen Horse.

We have seen it recommended by a gentleman who has had much experience in the matter, that when a horse has fallen from the slippery state of the ground, the readiest method of enabling him to rise is to put an old rug or carpet under his diminished at pleasure; and as the mine is fore feet, and he will be able to get up at once. Many horses are seriously strained by their efforts to rise on slippery ground, and this is most particularly the case with those of high spirit, and frequently those of greatest value are so frightened by the fall that greater injuries to themselves, as well as danger to those in the carriage, ensue from vain efforts to get them up than by the fall. Let the driver leap down at once, and assist the horse to get in position to get up, at the same time placing the rug, carpet, or even an old coat,

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims :-

WALKING STICK GUN.-Robert R. Beckwith, of New York city, has invented a new walking stick gun; and although we cannot explain it so as to give any definite idea of it without the aid of drawings, yet we can say that it is very simple, and the mechanism to effect the cocking and letting-off of the hammer to fire the gun, is also of very simple construction.

DAMPER FOR AIR-HEATING FURNACES.-The object of this damper is to prevent the over-heating of air in the hot air conducting pipes of air-heating furnaces, when the register of the pipes is wholly or partially closed. This over-heating of the air in the closed pipes is attended with dangerous consequences, as adjacent woodwork is frequently ignited, and buildings are burned down, which is a great objection against the use of such furnaces for warming buildings, The invention consists in placing in the lower part of each hot air conducting pipe, a valve or damper, hung on an axis in nearly an equilibriated state, so that when the register of the pipes are closed, and the draft through them consequently stopped, the dampers will close by their gravity, and shut off the pipes from the the air-heating chambers, and when the registers are fully, or more or less open, the dampers will be opened to a corresponding degree by the draft. It is the invention of Ebenezer Barrows, Jr., of Brooklyn, N. Y. An engraving of this invention will shortly appear in our columns.

COTTON GIN. - This is an improvement in what is known as the "roller gin," for ginuing Sea Island or long staple cotton. The object of the invention is to expedite the process to a very considerable degree, without injuring the staple or fiber. The object is attained by the use of a roller, vibratory stripper, pressure plate, yielding feed-board, and screw, used in connection with doffers. Hiram W. Brown, of Mill'ville, N. J., is the inventor.

CUTTING THE LEAVES FROM SUGAR CANE. -Calvin Dickey, of Mercersburg, Pa., has invented a machine for the above purpose, previous to crushing or grinding the stalks for sugar. The invention consists in having a cutter attached to a tubular flanch, so as to form a hollow cutting cylinder—this cutting device being connected with a grinding or crushing mill in such a way that the stalks of sugar cane will be drawn through it by the rollers of the mill, and the leaves will be cut

MACHINE FOR TURNING TOOL HANDLES. -Hiram Plumb, of Honesdale, Pa., has invented a new machine for the above purpose. It consists in the employment of a series of cutters combined with a pattern and stops, so that the desired articles can be readily turned and cut successively from a bolt or stick, in an expeditious and perfect manner. The invention also consists in a peculiarity of the finishing tool, whereby the articles, as they are finished, are cut off from the bolt, and they present at their ends a smooth and finished appearance.

REVOLVING CYLINDER STEAM ENGINE.-This invention consists principally in two hollow stationary steam heads, applied and arranged to serve as journals for the main drum or fly-wheel of the engine, and bearings for the cylinder journals, while they also serve as valves to effect the eduction and induction of the steam to and from the cylinder. The inventor is Thomas Rogers, of Philadelphia,

The great iron district of South Wales has suffered from strikes very severely, and at the present time the men are only just coming back to work after a very protracted strike, the cause of which was a reduction of wages. This was a necessary consequence of the late hard times, but we are glad to chronicle the fact that the iron trade throughout the world is again on the improving scale.