

## ENGINEERING INVENTIONS.

An eccentric having means for connecting it adjustably to a shaft, so that the motion imparted by the eccentric may be reversed, has been patented by Messrs. George T. and Dwight W. Metcalf, of Hillsdale, Mich. The eccentric is slotted and is loosely secured to a block that is rigidly fixed to the shaft. A slide inclosing the block and having a diagonal rib that fits in a corresponding groove in the eccentric is adapted to move longitudinally upon the shaft, thereby reversing the action of the eccentric.

Improvements in steam piston valves have been patented by Mr. William S. Hughes, of Long Island City, N. Y. The engine cylinder is formed with the usual exhaust and steam ports, and the valve case is cored longitudinally to receive a tube that forms the seat for the valve, the valve being a hollow piston, to one end of which the valve rod is connected directly, the valve working steam tight and needing no stuffing box. By a suitable arrangement of the openings in the valve it is made self-balancing.

Improvements in rotary engines have been patented by Mr. D. M. Johnson, of Trinity College, N. C. A wheel, having a solid rim rounded on its sides, has formed in it a series of cavities alternating on the opposite sides. A steam chest or boiler fits snugly to the face and sides of the wheel rim so as to cover the cavities. A transverse slide fits openings connected with steam ports, and is operated to oscillate to admit steam to the cavities by alternate pins placed on the face of the wheel.

Messrs. William H. Sanders and Henry H. Talley, of Petersburg, Tenn., have patented improvements in sawmill dogs. The head block of the sawmill moves transversely on the log carriage. The dog is pivoted to a standard on the head block, and has at its pivoted end a segmental geared head that engages with a corresponding segmental head on a lever to which power is applied to force the dog into the log. The standard is adapted to be raised and lowered according to the size of the log, and to be rotated to turn the dog away from the log.

An improved water elevator has been patented by Mr. Henry F. L. W. De Romilly, of Paris, France. A partly covered drum is secured to an upright rotating spindle, and supplied with water which rotates with the drum. A fixed pipe is so bent at one end as to present its open end to the current of water. The other end of the pipe leads to an ejector nozzle immersed in a reservoir of water. The velocity of the water in the ejector carries it to a height depending on the speed of the rotation of the drum.

An improved car coupling has been patented by Mr. Frederick W. Brooks, of Oak Grove, Wis. The coupling pin is held in an elevated position ready for coupling the cars, by means of a vertically sliding frame. This frame is released by the backward movement of the drawhead, when the cars are backed together, causing the pin and frame to drop, and the pin to pass through the drawhead and coupling, thus automatically coupling the cars.

Mr. David E. Grove, of Dallas, Texas, has patented an improved plow for removing snow from railroad tracks. A car has an adjustable funnel at its front end, that raises the snow from the track, and endless aprons carried upon rollers at the bottom and sides of the car carry the snow back to a second series of aprons and rollers that carry the snow to the side of track and out of the way.

An improved rotary engine has been patented by Mr. William D. Cook, of Harvard, Neb. The piston of the engine is smaller than the cylinder, leaving an annular space between them. At one side of the piston an abutment projects against the inner surface of the cylinder. Steam is admitted through suitable ports, and carries the piston. When it is nearly around the steam escapes through an exhaust port. After passing this port the abutment raises a valve, and passes again in front of the steam pressure. Suitable devices are provided for reversing the engine.

Mr. William L. Fisher, of Bay City, Mich., has patented an improved car coupling. The mouth of the coupling head is made hopper shape, and is formed in two parts, the upper part being hinged to and fitted in a recess in the lower part. In a recess in the throat of the coupling head, back of the pin hole, is a stirrup that holds the pin in an elevated position. When the cars are backed together the link moves the stirrup back, allowing the pin to drop and couple the cars.

Mr. Otis D. Thompson, of Elkhart, Ind., has patented improvements upon a windwheel for which letters patent were granted him December 14, 1880. The improvements consist in the peculiar manner of attaching the sails to the rims of the wheel, and also in attaching the vane or governor to the wheel in such a manner that a strong wind will strike it before reaching the wheel, and turn it on its pivot, to put the wind wheel out of the wind to protect it from being shocked by sudden gusts.

Messrs. David Clark and John Lee, of Hazelton, Pa., have patented a steam brake mechanism for locomotives and tenders. A small steam cylinder is attached to the rear part of the engine frame, and to the piston is hinged an arm that connects with a rocking shaft and levers to operate toggle bars, to the outer ends of which are pivoted brake shoes that engage with the rims of the drive wheels. From the rock shaft suitable devices are also operated to move the brakes of the tender. The devices are operated by foot pedals in the cab of the engine.

Improvements in fan blowers have been patented by Mr. Edward F. Schneider, of Racine, Wis. A pair of fan wheels having spiral blades, the blades of the two wheels being pitched in opposite directions, are arranged side by side, a little distance apart, on the same shaft. When the wheels are turned, the air is delivered each way along the shaft into hoods, and carried by branch pipes into one main pipe. The two currents may be used separately if desired.

Mr. John McLachlin, of New Orleans, La., has patented improvements in the running gears of railway cars. The trucks of the car are provided with a tongue that has at its end a curved head piece that

abuts against the curved face of a block on the bottom of the car. The blocks are connected by rods on which are spiral springs, and when the wheels of the truck have passed round a curve, the springs draw the wheels back to a parallel line.

## METALLURGICAL INVENTIONS.

Improvements in mortars for stamp mills have been patented by Mr. Henry Bothoff, of Central City, Col. The mortar is divided horizontally, at about the middle, into two sections, an upper housing section and the lower section, the mortar proper. The two sections have an elastic packing between them and are connected by bolts. The upper section is also divided vertically, the parts being held together by bolts. By this construction the mortar can be taken in pieces for repairs and for transportation.

Improvements in apparatus for amalgamating gold and silver ores have been patented by Mr. Walter Hamilton, of New York city. A vertical pipe of suitable length conveys the ore discharged into it by a chute, to near the bottom of a large basin partly filled with amalgamating material. The upper part of the pipe passes through a fire chamber, so that the ore is properly heated, the weight of the ore causing it to be forced out at the bottom, and rise through the amalgamating material.

Mr. Hamilton has also patented an apparatus in which upper and lower pans are connected by a pipe for the passage of the amalgamated ore from the upper to the lower vessel, and an elevator for raising it again from the lower to the upper vessel. A furnace keeps the amalgamating substance melted, and suitable devices are also provided for distributing the ore and removing the refuse.

## ELECTRICAL INVENTION.

Mr. John W. Weakley, Jr., of Bond Hill, O., has patented an improved electric brush. This brush is for the relief of nervous complaints. On the back of an ordinary metallic brush is placed a battery an induction coil. In the back of the brush is a recess containing a copper or other metal plate, so placed as to rest on the metallic pins of the brush. The electric current is carried through the pins to the scalp or body.

## TEXTILE INVENTION.

Improvements in perforated plates for forming hat bats have been patented by Mr. Seymour C. Palmer, of South Norwalk, Ct. The perforated plate is made with three radial division lines and a curved division line parallel with its circumference, and has angular plates attached beneath the radial division lines. With a plate thus constructed the bat will be formed in sections, and the edges of the body sections will be thinner along the edges to be lapped, making the body when finished of even thickness.

## AGRICULTURAL INVENTIONS.

An improved form of cultivator tooth, by which a more perfect and uniform pulverization of the soil and easier draught are secured, has been patented by Mr. Robert L. Turner, of Olena, O. The tooth is formed with a shank portion, and a wider blade portion, the end of which is curved to one side. The body of the tooth is secured to the frame in an inclined position, and the blade portion enters the ground with a shear cut, while the curved portion scrapes and pulverizes the earth more and more to the end of the blade.

Improvements in peanut planters by which they are adapted to drop peanuts accurately without bruising or breaking their skins have been patented by Mr. James R. Ayers, of Petersburg, Va. The feed wheel of the planter has alternate projections and recesses formed on its periphery. Conical cups are secured to the projections, that are adapted to receive one peanut at a time from the hopper and deliver it by gravity into the recesses, the recesses carrying it to the ground.

Mr. John C. Ferree, of Marysville, Ia., has recently patented an apparatus that combines all the machines a farmer needs, after plowing the ground, to put in a crop of grain. The devices combined are a harrow to prepare the ground, a device for marking the ground, for sowing the seed, for harrowing in the seed, and for rolling the ground, thus completing the work in once going over the ground.

Improvements in straw cutters have been patented by Mr. James T. Flanagan, of St. Marys, Kentucky. The cutter box is made with inclined sides and a flat bottom. The knives on the cutter bar are inclined reversely to the sides, and a pointed cutter works opposite the bottom of the box. This arrangement gives long cutting edges, and all the edges draw cut, thus making a straw cutter that cuts easily and rapidly.

Mr. Edward O. Cook, of Worcester, Mass., has patented improvements in potato diggers. A scoop set in an inclined position, so that its forward end will enter the ground and raise the potatoes and soil, is supported from the axle of the digger, and adapted to be raised or lowered from the driver's seat. Paddles operated from the axle push the potatoes and soil back over the scoop and on to a vibrating screen that separates the potatoes and the earth.

Messrs. James M. Thomas D. and Nelson Toy, all of Washburn, Ill., have invented an improved check row attachment for corn planters. To the seed boxes of the planter is attached a cross bar that projects beyond the sides of the planter frame. On the ends of the bar are pivoted guide pulleys which carry a rope that extends across the field and is knotted at suitable intervals. The knots of the rope pass through and move levers that operate the seed dropping mechanism.

Mr. Jacob Van Zandt, of Marshall, Tex., has patented improvements in cotton gins. The gin is of the usual construction, and below the brush will bevelled edges boards are placed, with the bevelled edges in the form of an arc, concentric with the brush roll and extending from a point near the saw to a point opposite the lowest point of the dust roll. The boards serve to straighten the cotton fiber or lint and give it a finer and lighter appearance.

## MISCELLANEOUS INVENTIONS.

A machine for compressing lozenges from dry powder, and for other work of a similar character, has been patented by Mr. Charles Kilgore, of Utica, N. Y. A circular disk is pivoted at its center to turn on a bed plate. The disk has near its edge suitable apertures to form the compressed article, and the bed plate has corresponding apertures. By means of cam mechanism, vertical plungers having dies at their lower ends compress the substances fed into the apertures from a hopper, the device being automatic and working rapidly.

Mr. Thomas McNicholas, of Memphis, Mo., has patented improvements in brick moulds, consisting in a mould having its bottom divided longitudinally into narrow strips, corresponding in number to cells of the mould, the strips being connected at their ends by bars. By this arrangement air is admitted more freely, under the bottom, at the beginning of its rise when lifted off the bricks, permitting the bricks to pass easier from the mould and leaving them smoother, as there is no suction in the mould.

Mr. Jacob F. Scherer, of New Bremen, Ill., has patented improvements in sawing machines, intended for sawing logs and cordwood. The working parts are supported by a horizontal frame, and consist of devices by which the circular motion of a crank wheel is converted into rectilinear motion for operating a drag saw. A curved bar, that is hinged at one end to the frame, passes over the log to be sawed and is secured under a ratchet bar at its free end, holding the log firmly to its place.

Mr. Charles S. Barnard, of New York city, has patented a drop handle. The handle is formed of a knob having a longitudinal perforation forming a shoulder near the upper end of the knob. Upon this end a cap is placed and secured by filling the cap and the perforation with melted metal. The knob is secured to the front of the drawer in the usual manner. A stamped plug placed in the lower end of knob completes it.

An elastic bearing for spinning spindles has been patented by Mr. Albert R. Sherman, of Pawtucket, R. I. The bobbin spindle is stepped in a yielding or oscillating bolster permitting it to vibrate freely with the bolster, so that it will run steadily and at a high rate of speed, the bolster leaving the spindle free to rock slightly for maintaining its center of gravity when carrying an unevenly wound bobbin.

Messrs. Andrew B. Banghart and Charles H. Treat of Frankford, Del., have patented improvements in wooden table casters, by which they are so constructed that they will not warp or split. The base, center part, top and bottom holder, are held together by a screw rod which passes through the other posts and screws into the top post. The various parts of the caster are made of timber built up of veneers of different colored woods.

An improved method of attaching the block of a brake shoe to the brake bar has been patented by Mr. Edwin S. Davis, of Kelseyville, Cal. The blocks are secured to the brake bar by means of clamping jaws and a clamp screw, the jaws being formed on a band clip fitting around the brake bar. By this device the block is firmly held to the bar, and is adapted to be shifted on the bar as may be desired.

Mr. Jean Jacques Magne, of Les Lilas, France, has patented a process for reproducing all kinds of prints with absolute exactness and without injury to the original. The process consists in impregnating the prints to be reproduced with an acid solution containing alcohol, prior to taking the impression. Mr. Magne has also patented a fluid ink composed of albumen, bichromate of an alkali, ferrocyanide of potash, a suitable coloring matter, and water.

An improvement in iron fence posts has been patented by Mr. Frank Schmitz, of Cornell, Ill. The base of the post is constructed in two parts, each part having an interlocking web, and when the parts are joined together the base is pyramidal in form, to resist being thrown out of the ground by strains or frost. The bottom ends of the upper parts of the post are formed to correspond with the shape of the base, and the parts are held together by iron bands.

A cheap and strong bale tie, that can be unfastened without compressing the bale, has been patented by Mr. John B. Allou, of Nashville, Tenn. An elliptical ring is first secured to one end of the bale strap, by passing the end of the strap through the ring and bending it back to form a loop. A second ring is then placed on the band over the lap, and when the strap is put around the bale, the free end is passed through both the rings, and back over the second ring and under the first, securely locking the strap.

A hand lever press for pressing dried fruit, etc., into small packages has been patented by Mr. Andrew J. Hunt, of Albany, Or. To a suitable base uprights and cross piece are secured, forming a vertical frame. To the crosspiece a lever is pivoted in such a manner that when it is pressed down it forms a toggle that retains it in that position, the follower in the box keeping the fruit pressed until another box is filled. The fruit becoming set does not expand when the pressure is removed.

A combined calendar and letter box has been patented by Mr. William L. Caldwell, of Chicago, Ill. The invention consists in a box, constructed so as to hold in its front and expose successively a series of calendar cards. Back of the calendar cards is a space for letters. The box is made from one piece of paper, the cost being such as to make it a suitable article for use for advertising purposes.

Messrs. Henry C. and Joseph R. Still, of Austin, Tex., have patented improvements in the forks of saddle trees, by which greater strength is secured. The fork and pommel of the saddle tree are cast from malleable iron in one piece, the neck of the pommel being cast hollow for greater lightness. The upper end of the pommel is cast open, the opening being closed by a cap of wood which gives finish to the pommel.

An improvement in wire netting, by which the edges are finished in such a manner that they cannot catch on objects, has been patented by Mr. Gustav

Pickhardt, of Darmstadt, Germany. The link sections of the netting are formed of one or more spirals, screwed into each other, and a connecting wire passed through the loops formed of the overlapping parts of the spirals. The ends of the spiral wires and the connecting wires are bent over on the ends of the sections, finishing the edges of the netting.

Mr. Alfred S. Clark, of New Orleans, La., has patented a novel combination consisting of a foot scraper and brushes for cleaning boots and shoes. A fixed brush is secured at the back of the scraper for cleaning the bottom of the boot, and a brush hinged at each side of the scraper is used for the sides of boots. These brushes are hinged, so that they may be swung apart to permit passing the foot between them, and under another brush to clean the top of the boot.

Mr. Harvey W. Burr, of Gloversville, N. Y., has patented improvements in gloves and mittens that prevent the ripping or tearing of the wristlets from them. A tongue of the leather of the glove extends from the glove across the wristlet, so that the glove may be drawn on to the hand by pulling on the tongue instead of on the wristlet.

Improvements in twine holders have been patented by Mr. Charles W. Jones, of Lowell, Mass. The twine spool is mounted on a shaft journaled in eyes in a ring suspended from the ceiling. In this is also journaled a shaft having a curved arm, and to this arm a ring is attached that surrounds the ring in which the spool shaft is journaled. This outer ring is hung eccentrically, and is provided with a weight and a spring arm at the outer end. The twine passes through this eye, and when it is pulled down the weight swings up, and when the twine is cut the weight raises the end of the twine.

Mr. John A. Conwell, of Aurora, Ind., has patented a sled that is so constructed as to fold at the points where the runners and the top are united, and also to fold along the middle of the top, the object being to enable the manufacturer and shipper to economize space, and also to allow the sled to be folded and carried under the arm if desired.

An improved chocolate package, consisting in a box provided with a grater cover, that can be removed from the body of the box and used to grate the chocolate, has been patented by Mr. Henry McCobb, of New York city. In grating chocolate the grater is soon clogged from the sticky nature of the substance. With this box a grater is provided with each package, so that when the box of chocolate is used up and the grater becomes filled it may be thrown away.

An improved device for securing covers upon cans has been patented by Mr. Epaminondus Bottenberg, of Astoria, Ill. The can is formed with a flange near its top, and has the usual sealing ring and cover. On top of the cover is placed a spring plate having three arms that reach a little past the cover, their ends being turned up to form lips that receive and hold wire loops that are bent at their opposite ends to catch under the flange for sealing the can. The loops are applied by means of suitable pinchers.

Mr. Thomas F. Palmer, of Painesville, O., has patented improvements in re-enforcing seamless sheet metal boxes. The improvement consists in extending the contiguous sides of the metal around each corner, and connecting them at the ends by the surplus metal between the extensions, thus forming three thicknesses of metal around each corner, and making the corners strong and durable as well as water and gas tight.

An improved frame for car gongs has been patented by Mr. James M. Matheny, of Woodstock, Ill. The gong is of the usual construction, and is secured by a screw bolt to a metal holding bar that passes within the gong, and is bent out and then projects over the edges of the gong, the gong being suspended from the frame with its outer surface downward. With this shaped frame the hammer is supported so as to always strike the gong.

Mr. Adam Metz, of Burlington, Ia., has patented an improved meat chopper consisting of a rocking knife suspended by rods from a rocking shaft, the rocking shaft being connected by suitable connecting rods to a rotating shaft. The rocking knife being suspended in this way cannot cut into the block, and only cuts the meat on the block.

Mr. Isaiah W. Shoemaker, of Rosston, Pa., has patented a fireplace fender for attaching to the hearth of a grate. It is so constructed that it will fold down compactly within the hearth when not required for use, or the front may be wholly or partly open. The screen is also constructed so as to entirely inclose the fire, or the top be wholly or partly open, or if it is desired the top of the screen may be made of sheet metal to serve as a shade.

An apparatus for removing snow and ice from the sidewalks and streets has been patented by Mr. Francis D. Riker, of Brooklyn, N. Y., and it consists of a hollow cylinder resting upon the ground and revolving on rollers attached to the head of a furnace inside the roller, and held from revolving by suitable devices as the roller is moved. The furnace heats the roller, and the roller melts the snow as it is drawn along the walks.

An improved sash cord fastener has been patented by Mr. Charles Bush, of New York city. In the side of the sash stile, at a suitable distance from the top and edge, a pocket is made, and from the upper end of the pocket a slanting hole is made to the outer edge of the sash. In this pocket is placed a plate that has on its inner side an eye plate in which the knot of the sash cord is secured.

An improved device for fastening earrings, bracelets, etc., has been patented by Mr. George Krementz, of Newark, N. J. The fastener is composed of two segmental parts having at their upper ends knobs, one of the knobs being recessed to receive the end of an ear wire secured in the other, and at the lower ends plates adapted to be rotated on each other to swing one of the segmental plates out of the plane of the earring, to allow the lobe of the ear to pass for the ear wire.