

## ENGINEERING INVENTION.

An improved compound beam engine has been patented by Mr. Gideon B. Massey, of New York city. Instead of the cylinders being arranged side by side, as usual, the low pressure cylinder is placed vertical, its rod connecting to the beam of the engine; and the high pressure cylinder horizontal, and connected to the crank on the shaft. The horizontal cylinder passes through the vertical cylinder at its mid length, at one side of its axis, to allow the piston rods to pass each other, and in the sides of the horizontal cylinder are the steam ports to the vertical cylinder. The vertical cylinder being divided, two pistons are secured to the same rod, that work in opposite ends of the cylinder, and the cylinder ends are connected by a pipe that allows the air to pass back and forth as the pistons reciprocate. At the ends of the horizontal cylinder are exhaust and steam ports communicating with the main steam and exhaust openings, and the valves are provided with suitable means for their operation.

## MECHANICAL INVENTIONS.

Messrs. Henry H. James and John C. Dunbar, of Bangor, Me., have patented an improvement in sifting grates. The grate bars are provided with projecting prongs on each side, and each bar has a downwardly projecting arm attached to its middle part. The ends of the bars rest in recesses on the upper side of the grate frame. This frame is pivoted at its front and rear in suitable bearings in the stove frame, and it swings on these pivots. The ends of the downwardly projecting arms of the grate are passed through slots in a bar, under the center of the frame, held to the arms by pins, and when the bar is moved lengthwise the grate bars are rocked. The front pivot of the grate frame is surrounded by a cam sleeve which passes into a recess on the front end of the bar under the grate. The outer end of the flange sleeve fits a square opening in a crank, by which it is rotated.

An adjustable scale for weighing light articles has been patented by Mr. Rosendo Torras, of Brunswick, Ga. Two knife edged scale beams are pivoted in the sides of a casing, and the inner end of each beam has a convex rack that engages with a pinion mounted on a shaft journaled in blocks hanging from the top of the casing, and supporting a segmental rack, mounted on and connected with the same shaft. This rack engages with a pinion attached to the pointer of a dial plate on the front of the casing on which the weight is indicated from left to right and from right to left. On the outer end of each of the scale beams are receiving plates, to which are attached weights to keep them in a horizontal position.

A rock drill, that will rapidly bore a straight hole in rock, and will not follow the seams, has been patented by Mr. William H. Silsby, of Orleans Bar, Cal. The drill is provided with a cutting edge at its lowest point, and with offsets in its sides forming cutters, each cutter projecting beyond the one next below it. The parts connecting the cutters are inclined toward the center of the drill. The lowest cutting edge is beveled from the flat sides of the drill, but the offset cutting edges are flat below.

Mr. George D. Spielman, of Cincinnati, O., has recently patented an improved padlock. A jaw which has a recess in its front end is pivoted in the lock case, and its inner end is round and has two recesses. A spiral torsion spring is wound around its pivot and forces it to swing outward. A series of slightly different shaped spring tumblers, all of which have a different shaped projection at the lower end, are pivoted in the casing. The casing has a transverse slot in its rear, and through this the key is passed into the lock. The key has as many projections and recesses in its front end as there are tumblers in the lock. The casing is provided with a rigid jaw which has a stud at its front end that fits into the aperture in the pivoted jaw. When the key is passed into the lock the tumblers all move back and the torsion spring throws the swinging bar back.

## MINING INVENTION.

An improved furnace for treating the ores of mercury has been patented by Messrs. Edward G. Hall, of Healdsburg, and Myron D. Haskins, of Guerneville, Cal. In the wall of the furnace, near its bottom, is an arched top fireplace, and above it are two similar chambers. Above these is a cylindrical chamber, having a funnel shaped bottom, communicating by pipes with the middle chambers. In this cylinder are diaphragms that extend nearly across the chamber, and a vertical shaft is journaled in the chamber which has arms projecting nearly to the walls, each arm being placed in the space between the diaphragms. In use the upper chamber is filled with ore and lime, the shaft is rotated, and as the ore becomes partly roasted, it is discharged into one of the middle chambers and becomes separated and broken up so that the mercury is liberated, and is conveyed to the condensing chamber.

## ELECTRICAL INVENTION.

A device which provides for conveniently laying underground telegraph wires, and for access to such wires, has been patented by Mr. Warren D. B. Smith, of Boston, Mass. A box is provided which is composed of continuous sides, a top of removable sections, and bottom pieces connecting the side pieces at intervals. At suitable intervals the box is provided on its inside with coverall flanges which receive wire holders, having diagonal slots to receive and retain the wires. Between the holders, at each side, are posts fixed on the bottom cross bars, also slotted to receive wires. It will be seen that the wires are held securely and separated whether the line be straight or upward or downward.

## TEXTILE INVENTION.

Mr. Alvin Woodman, of Lewiston, Me., has patented a machine to be used for tenting cloths, making them of uniform width, without distorting the checks or plaids. At the feeding end of the frame is a roller carrying the cloth. The spreader, size box, squeezing rolls, and carrier rolls are of the usual construction, except that the spreader is made adjustable and the spreader bars are fluted diagonally from the center outward. From the rollers to the straightening mechanism at the other end of the machine are two endless chains to carry the cloth. Between the end of the chains and the drying cylinders is fitted a system of adjustable rollers through which the cloth is passed and by which the cloth is delivered to the calendering rollers with the figure correct as designed.

## AGRICULTURAL INVENTIONS.

Mr. Jerome L. Bergen, of Flatlands, N. Y., has patented an improved distributor for uniformly distributing fine fertilizers. The frame of the machine consists of two side bars connected by cross bars, and between the forward ends of the side bars is journaled a wheel. On the rear part of the frame is a hopper made open at its bottom, except a narrow strip at the rear side. To the center of this strip is pivoted a distributing apron, that is connected at its edge to the hopper by a strip of flexible material, and in the apron, in front of the hopper, is an opening through which the fertilizer falls. The amount of the fertilizer distributed is regulated by an adjustable valve. The hub of the wheel is connected by gear wheels, lever, and connecting rods to the apron to vibrate it laterally to discharge the fertilizer as the machine advances.

An ingenious and efficient machine for hulling rice has been patented by Mr. Shad B. Denney, of Summit, Miss. In the side bars of the frame of the machine is journaled a cylinder, on the face of which are longitudinal ridges, and to one of its journals is attached a crank. From standards on the side bars of the frame are suspended two parallel plates, made in the form of annular sections. In the inner surfaces of the parallel plates are grooves to receive the edges of steel vibrating plates, so arranged that the upper plate will be nearly vertical and the lower nearly horizontal, and they are held closer or farther from the cylinder as is desired. The rice to be hulled is fed through a hopper and is carried around by the corrugations of the cylinder, and passes beneath the inner edges of the steel plates by which the hulls are torn from the kernels of rice.

An improved fruit picker has been patented by Messrs. James R. and Joseph A. Williamson, of Brunswick, Ga. A basket formed of a series of metal strips is secured to the upper end of an adjustable handle which has at its lower end a detachable knee piece. Shears are pivoted to the upper end of the handle in such a manner that the blades rest on the upper edge of the basket, when they are open, and springs on the outer sides of the basket hold them open. Cords attached to the blades of the shears extend down the handles, and by pulling this cord the shears close and clip the stem of the fruit.

Mr. William W. Winegar, of Chambersburg, Ill., has recently patented an improvement in grain drills, by which trash is prevented from collecting in front of the drill hoes. The frame, axle, and wheels of the grain drill are of the usual construction. To the axle of the drill is attached a cam device to operate a lever attached to the upper end of a holding bar that drops by its own weight and holds the trash that may collect in front of the adjacent drill hoes until the drill passes it, when the bar will be raised by the cam and carried forward so that it may again drop in front of the drill hoes. Any desired number of holding bars may be used.

An economical and effective cotton press has been patented by Mr. M. M. Scherer, of Batesville, Ark. The lint room contains a vertically sliding table, turned by a crank attached to its axis, and raised or lowered by ropes passing over pulleys, and wound upon a windlass. When the table is at its lowest limit it forms the top of the space in which the follower moves. The cotton is received from the gin into the lint room, and when a sufficient amount of cotton is in the room, the table is raised and revolved half a revolution, and the cotton is thrown beneath into the space before the horizontal follower, by which it is pressed into a bale in the baling chamber. The horizontal follower is moved with great power by a series of levers and rods which are operated by ropes and a windlass at the opposite end from the gin. Mr. R. H. Brown, of Marion, Va., may be addressed for further information.

## MISCELLANEOUS INVENTIONS.

An improved air vent for vessels from which liquids are to be poured has been patented by Mr. George Janeway, of Junction City, O. The vent is cone shaped, and opens at its smaller end into the vessel containing the liquid. The upper end of the cone is provided with a cover having a central orifice. Near the center of the length of the cone is a circular diaphragm, which is concave downwardly and has a central orifice, on which is placed a ball valve which closes the orifice when the diaphragm is horizontal. When the vessel is tilted to pour out the liquid the ball rolls by gravity on the diaphragm, uncovering its central hole, and allows the air to pass into the vessel. The orifice is always closed by the ball valve except when the vessel is tipped to pour out the liquid.

Mr. Henry R. Cassell, of New York city, has patented an improved method of making metallic panels, by which the best works of art can be reproduced in the shape of panels. The work of art is first photographed and the negative or positive exposed upon a sensitized metal sheet. The sheet is then treated in the usual manner, and the result is an engraved metal sheet, containing the lines of a work of art intended to be reproduced either in relief or intaglio. This metal sheet is then covered with a japan, or other suitable enamel, and after thoroughly drying or hardening it, the surplus of the enamel is removed by grinding, until the raised part of the metal sheet is entirely laid bare, and the enamel is even with the surface of the metal. The enameled sheet is then electroplated, and the whole produces a very striking and beautiful effect, the enamel representing the original engraving upon a surface of gold and silver.

A new game apparatus consisting of swinging a suspended ball to strike pins or other objects set up on a suitable platform, has been patented

by Mr. George R. Spear, of Brooklyn, N. Y. Suitable standards are attached to a base, and from the top of these a ball is suspended by a cord. At the bottom of the standard is a platform upon which balls or pins are supported, the platform being spotted for the proper arrangement of the pins or balls. The board holds a series of fixed pins in front of the pins or balls to be struck, between which the suspended ball must be accurately thrown. The inventor combines with the platform and pins a wheel of fortune and a checker board, that may be removed from the board and replaced when desired.

Mr. Edward Wensch, of Vienna, Austria, has patented an improved escapement for watches, etc., and it consists in a balance wheel provided with an eccentric pin and with an eccentric on its arbor, the eccentric being between the prongs of a fork on the upper end of a pivoted anchor provided with two teeth and an arm for checking the escapement wheel at intervals, and locking, releasing, and pushing back a pivoted lever provided with a projection, and operated by a spring or weight, which lever acts on the eccentric pin of the balance wheel.

A bobbin spindle which has less friction in the creel than those in common use, and will at all times maintain a sufficient and uniform tension, has been patented by Mr. James Warren, of Fall River, Mass. The spindle is tipped at its lower end or bearing with a metallic tip that is perforated at the bottom or small end. The perforation, when the tip is on the spindle, permits the spindle point to protrude slightly, or stand flush with the lower end of the tip. With this construction the friction of the spindle is greatly reduced by reason of the partial metal point, and it is prevented from running too freely in the creel by the contact of the wood of the skewer with the creel socket insuring a tension that will not vary so as to break, stretch, or otherwise injure the roving, or cause it to be unduly twisted.

Mr. George B. Owen, of Winsted, Ct., has patented an improved gong bell that gives a louder and more musical tone than bells of ordinary construction. The base of the gong, secured to a clock case, receives the end of a bent standard, the other end of which is screwed into the center of a circular plate having an inwardly projecting flange around its edge, and on its outer side the end of the gong is fastened. In the flange of the circular plate is screwed a rod that is bent at right angles, with its free end turned against the back of the clock case to cause the case to act as a sounding board.

Mr. Joseph T. Mills, of Brooklyn, N. Y., has patented a cheap and efficient fire escape, consisting of a ladder composed of small chains connected by rounds of iron. A winding drum, to which one end of the ladder is fastened, is journaled in blocks secured upon the roof of the building. The winding drum has a crank and a ratchet and pawl for holding the reel. The reel is released by means of a small chain attached to the pawl and running down the wall of the building in easy reach from the windows.

Messrs. John H. Baldwin, of Port Jefferson, and Charles S. Baldwin, of New York city, have patented an improved vehicle spring by which a carriage body can be set low without impairing the strength and flexibility of the spring. Upon the forward axle is secured a half elliptical spring, in the usual manner. Side springs are hung by loose shackles to the ends of the axle springs, and are rigidly attached to metal cross bars to which the body is bolted. By these means a durable and cheap construction and a low setting body are provided.

We find among recent inventions an improvement in bracelets, patented by Mr. William Link, of Newark, N. J. The main part of the bracelet is formed of two semicircular plates, hinged together and having flanges soldered on the outer edges of the plates. These flanges are made hollow, and triangular in cross section, and when the flange is soldered fast to the plate, the wider portion re-enforces and stiffens the plates, making them strong and durable, and prevent their injury by ordinary usage. By this construction, all the parts of the bracelet can be made very light, and yet strong and durable.

An improved wagon which permits of weighing coal at the point of delivery and in the presence of the purchaser, has lately been patented by Mr. Henry R. Robbins, of Baltimore, Md. The body of the wagon has at its corners heavy braced standards. An iron shell fits into and fills the body of the wagon and rests upon its bottom, and is fastened at its corners to ropes passing over pulleys at the tops of the standards, and thence around pulleys to a windlass provided with differential drums. These drums enable one man to raise the shell, and at the same time give it sufficient inclination to the rear to discharge its contents. With the shell of the wagon is combined weighing scales, so attached to its shell that when it is raised it rests upon the scales.

An improvement in dashboards for sleighs has been recently patented by Mr. Emil Rattey, of New York city. The main frame of the dashboard is rectangular in form, and within it is an inner frame composed of tubes slotted lengthwise to receive the edges of a wire netting provided with a bead of metal soldered to the netting; these beads being within the tubes prevent the netting from being drawn out of the slots. The ends may be also secured in the same manner if desired.

Mr. William H. Brownell, of Brooklyn, N. Y., has patented a receptacle for artists' materials, for safe keeping and convenient use. Internally the body of the box is divided into compartments for receiving brushes, pencils, colors, etc., so that they are kept from rolling, and at the end of the tray is a hinged flap that covers and protects the paint ends of the brushes. At one side of the box is a lug, projecting over the palette, and inside of the cover is a projection that rests upon the palette when the cover is closed, thus holding all the materials in their places. The sketching pad is held in the cover by projections and a spring catch when the box is closed. The pad is held for sketching between the front of the box and the upper edge of the cover, and the cover is held to the pad by rubber bands that connect the box and cover.

A novel holder for attaching spectacles to shades or the rim of a hat or cap, has been patented by Mr. Joseph A. Shone, of Salem, Miss. The invention consists of a clip attached by a thumb screw to the under side of a shade or hat rim, and carrying an adjustable folding bar to the lower end of which the spectacles are attached. When the spectacles are not in use the device may be folded up against the under side of the shade or rim, but when they are to be used the device is unfolded, and they are suspended before the eyes of the wearer.

Mr. Thomas J. Porter, of Fleetwood, England, has patented an improved type-setting device by which the work of the compositor is greatly accelerated. The type are placed in troughs that hold them at such an angle that they will slide freely down to its lower end, and are there retained so that the lowest letter in each trough is in position to be raised by a plunger. The plungers for raising the type are placed on one bar and are caused to act simultaneously by a treadle. The troughs are placed at a little distance apart, and each alternate one terminates at its lower end about an inch and three-quarters higher or lower than the one next to it, so as to enable the compositor to take up the types readily.

An ingenious and novel necktie fastener has been patented by Mr. Parker H. Rew, of Rochester, N. Y. A spring formed of wire is bent to form side loops from which the ends of the wire extend downward diagonally and cross each other, that portion of the spring between the loops being bent upward above the crossing of the ends of the wire to form a loop. The cross ends of the spring pass through a staple projecting from the back of the stiffening plate of the necktie bow. This fastener is easily attached to and detached from the collar button.

A novel mode of exhibiting photographic portraits and other pictures has been patented by Mr. Francis E. Mills, of Pittsburg, Pa. The invention consists in placing the portrait on a black ground a little distance behind a polished plane glass having a transparent center and opaque margins. Farther away in front of this glass is placed an opaque screen having a black center and luminous borders. These parts are so placed that when the light falls obliquely upon the picture, and it is viewed at a point at right angles with its plane, the card on which it is taken will be invisible, leaving the portrait standing, apparently statue-like in the air, while images of the luminous figures will appear around and beyond the portrait.

Mr. Charles Pontez, of Omaha, Neb., has patented a peculiar combination of dry and wet amalgamating devices for separating fine gold from silicious or black sand. The dry gold bearing sand and mercury are passed into a tube, in which they are thoroughly mixed, the sand and gold being thoroughly charged with mercury, after which they are subjected to the action of water and caused to pass with the water over a series of amalgamating plates, thoroughly separating the gold from the sand.

An invention for attaching a lantern to a carriage, or to a belt worn around the waist of a person, has been patented by Mr. Andrew J. Curtis, of Monroe, Me. Two wire arms provided with spiral springs clasp the top of the lantern, and are attached to an upright wire frame, the lower ends of which are bent outward and engage with the guards of the lantern. A vertical holding loop is attached to the upper clasp and held in a vertical position by the spiral springs.

Mr. William A. Baker, of Coloma, Mich., has recently patented an improved yoke for holding the tongue of wagons. The yoke is to be suspended under the horses, from straps attached to the back pad of the harness. It is flattened on its under side, and at its center is pivoted to the under side of the tongue, and is provided with four mortises, two on each side of the pole arranged so as to come on each side of the horse. In these mortises are secured straps that buckle to the straps of the back pads, and in these mortises are also buckled the hold back straps.

Mr. Eleazer Thompson, of Danbury, Ct., has lately patented an improved pedicyle. This invention is of the class of pedicycles that are mounted on two wheels, one of which is larger and in advance of the other, the wheels being connected by the foot support. The upright of the foot support may be strapped against the leg below the knee, and the journal of the main wheel will come in front of the line of weight of the person. In the rear end of the foot support is placed the small wheel, and the forward end of the support is curved downward. By this arrangement the forward or curved end of the foot board can be struck against the ground for moving the person forward.

Mr. Walter P. Prall, of Colusa, Cal., has patented an improvement in sulky hay rakes. To the upper side of the axle of the rake a rod is attached to which the upper ends of spring rake teeth are secured, and from this bar they pass up to and are coiled around a bar placed above and parallel with it. To the middle of the upper bar is connected a lever that is pivoted to the thills, and its upper end can be reached by the driver to raise the rake teeth and discharge the hay. A lever is also connected to the upper bar that can be reached by the foot of the driver. The hand lever and the foot lever move in opposite directions when raising the rake so that the driver can use both to the best advantage.

A velocipede sleigh has been patented by Mr. James B. Bray, of Waverly, N. Y. The drive wheel has a spiked periphery, and is contained in a forked frame swiveled in a vertical bearing in the back bone or main frame, and has handles at its top. Runners are rigidly attached to the main frame at its rear end, and the front runners are connected to its front end by a king bolt. Upon each side of the drive wheel are double crank pedals, which at their outer ends are connected with the front runners by rods, and when the main wheel is turned on its axis the front runners are simultaneously turned.