ENGINEERING INVENTIONS.

Mr. Arthur E. Beattie, of Brooklyn, N. Y., has patented devices by which car brakes are worked by the motion of the tram. Journaled in frames below the car are two friction wheels, that can be adjusted up and down from the rail by means of a shaft, lifting chain, and lever. The shafts of the friction wheels are connected by suitable chains and pulleys to the brake chains, whereby, when the wheels are in contact with the rails, the chains connected with the brake chains will be wound on the axles of the friction wheels and the brakes pressed against the car wheels. When the frames are raised the brakes are loosened.

Mr. F. A. Richard Von Bernewitz, of Sedamsville, O., has patented an improvement in car couplings. The coupling bar has at each end a triangular head. Across the end of the car is a recess in which two blocks slide that are pressed together by spiral springs. The adjoining ends of the blocks are beveled toward each other, so that the triangular head of the coupling bar will fit against their beveled edges. Levers attached to each block are crossed and pivoted to each other and to a standard on the car frame, and when the levers are pressed down the blocks are separated, and when up, released; the springs behind the blocks press them together. The coupling bar is suitably supported, and when the cars are run together the wedge shaped head presses the coupling jaws apart, until the head passes back of the jaws, when the springs close them, coupling the cars.

Mr. William Coppin, of London, Eng., has recently patented improvements in paddle wheels for vessels. The vessel is of the usual construction, having at its mid length openings through its bottom for paddle wheels. The paddle boxes are air tight, and fit as snug as may be to the wheels, and the shafts of the wheels pass through airtight boxes. Air is forced into the paddle boxes and sufficient pressure maintained to force the water down, so that there is just sufficient to immerse the lower paddles. Channels are formed in the bottom of the vessel that extend its entire length, and are in depth about equal to the width of the paddles on the wheels. With this construction the wheels act in the most efficient manner for the propulsion of the vessels, and are protected from the action of the wind and waves.

Improvements in cable traction for street cars have recently been patented by Mr. Orlando H. Jadwin, of Brooklyn, N. Y. The clutch of the car consists of a foot rigidly attached to a slotted shank, forming one of the main jaws, and a rocking shoe, loosely pivoted to a shank, that slides in the slot of the other shank, and forms the other main jaw of the clutch. Upon the ends of the rocking shoe are supplemental rocking shoes, which always bear flat against the cable irrespective of the position of the main shoe. The cable is relieved of the weight of the clutch by means of springs or a balancing weight. The clutch is connected to the draw bar by a metal frame, so constructed that it will oscillate transversely to allow the clutch to be adapted to the varying angles of the cable.

Mr. Abraham O. Frick, of Waynesborough, Pa., has recently patented improvements in the construction of traction engines by which the following desirable results are secured: first, perfect freedom to vibrate vertically without destructive strains on the teeth of the gears; secondly, an elastic rotary strain from the engine, so that if the wheels are stopped by an obstruction the teeth of the gears will not be broken; thirdly, means are provided to accommodate the gears to the lateral swaying motion of the engine; and fourthly, an effective means is provided for imparting an elastic strain from the engine to the traction wheels, for moving either forward or backward.

MECHANICAL INVENTIONS.

Some improvements in rotary brushes have recently been patented by Mr. Charles O. Allen, of Grand Rapids. Mich. The central wooden core has bristle sockets bored in it from opposite sides, the holes nearly meeting, leaving a small hole formed by the screw of the bit to connect the two opposite sockets, to form a continuous hole. Tufts of bristles are then caught by looping two wires around their middle parts, and the bristles are drawn into the sockets from the opposite sides, the wires passing through the small hole in the middle. The free ends of the wires are then laced through the next sockets, and a second set of bristles are drawn in. This construction saves stock and holds the bristles very strongly.

An invention that relates to the manufacture of barbed metallic corrugated strips for fencing has recently been patented by Mr. Samuel H. Gregg, of Crawfordsville, Ind. A rod of iron or steel of oval form, in cross section, is passed through a pair of rolls provided with oval grooves having angular notches in their sides, lying opposite each other, the metal being forced into the recesses and forming spurs on the rod. The rod is then passed between rolls having flat square grooves, and is reduced to the desired width and thickness, and is then rolled through fluted rolls by which it is corrugated, to strengthen it and allow for expansion and contraction.

An improved automatic brake for wagons has been patented by Messrs. Charles J. LeRoy, of Palestine, and John W. Henson, of Dallas, Tex. On the reach and hounds of the wagon is supported a rocking brake arm, that is connected near its ends to the rear bolster by rods, and is connected by a rod at its center with the short end of a lever pivoted to the under side of the reach. To the long end of the lever a spiral spring is attached, which draws it rearward, while it is also connected by means of a chain with the doubletrees of the wagon. The doubletrees are supported loosely, and slide backward and forward, in a guide placed upon the tongue. When power is applied the doubletrees draw the chain, moving the lever and the brake arm, to hold the brake shoes out of contact, but when the power is released the spiral spring brings the shoes into contact.

Mr. Jacob A. Wagner, of Quincy, Ill., has patented improvements in presses designed to be operated by animal power for pressing and baling hay, etc. The invention consists in a novel and ingenious application of power to the plunger of the press, by means of compound levers with adjustable attachments to change the leverage, so that a very powerful action may be obtained toward the completion of the pressure. The main lever of the machine is made to operate all the parts. After the material has been sufficiently pressed to form a bale, it is secured by ties or wires in the usual manner.

Improvements in rock drilling machines have recently been patented by Mr. Joseph L. McClughen, of Ozark, Mo. The feet of the machine are provided with rollers that can be swung under them to move the machine. The drill carrying frame is pivoted to an upright standard on the base frame, and can be turned to set the drill at any desired angle, and is held in position by a spring catch and segmental rack bar. The drill is raised and lowered by means of a crank and worm gear. In operation when the crank shaft is rotated, a tappet raises the drill frame, which, after the tappet passes, is forced down by a spring, thus giving a rapid reciprocating motion to the drill, which is also turned as it reciprocates. A coil spring raises the drill off the rock when it strikes, and prevents the drill bit from catching in the sides of the cavity made by it.

An improved three-wheeled vehicle adapted to be propelled by hand for road service, has been patented by Mr. John L. Lowrey, of LaGrange, Ind. The frame of the vehicle is curved at the front end and square at the opposite end, and is mounted on an axle journaled in boxes on the under side of the frame. The axle has traction wheels, one of which is fast and the other loose. The front of the frame is mounted on a caster wheel, that is turned to steer the vehicle by a vibrating bar moved by the feet of the operator. For applying driving power, a handled cog wheel, connected by proper intermediate gearwheels with the axle, is mounted on a support near the seat of the rider.

A device that facilitates the dumping of wagons has recently been patented by Messrs. Henry S. Bernhart and Isaac R. Ritter, of Reading, Pa. The wagon box has a false bottom that is inclined from the front toward the rear, and its rear end has an opening and a spout, the opening having a suitable gate for closing it. The box rests on a frame, and the wagon is constructed with two adjustable circular racks at the rear end of the frame, and a circular rack with an extensible arm at the front of this frame, and with suitable gearwheels, sprocket wheels, and a driving chain for operating these racks, whereby the box may be raised and inclined by the front and rear racks; or the rear racks may be disengaged, so that the front end of the box will be raised only.

An improved combined cider mill and press has recently been patented by Mr. William W. Bard, of Elizabethtown, Ky. At the ends of the frame of the machine rollers are journaled, over which an endless apron made of hair cloth passes. From these rollers the apron passes between a series of vertical compressing rollers, so arranged that each succeeding pair is nearer to each other, and are all revolved with equal speed. In front of the vertical rollers is a guide, that turns up the edges of the apron so that it will pass between them in a fold, and apples fed upon the apron are held by its upturned edges and carried between the rollers. The liquid pressed from the pomace falls upon a tray and passes to a proper receptacle.

Mr. John H. Newell, of Scottville, Ill., has patented a device for regulating the motion of windmills for supplying water. A float is placed in the water tank, that when the water rises to a high level in the tank, operates to trip a weight that pulls the wind wheel around into the plane of the tail vane and stop the pump. This weight is held until the fall of the water to the low level trips a heavier weight than the first, and lifts the first weight to release the windwheel, and allow it to work. At the same time the first weight is set to be held, so that the wheel will continue to run, until the float rises again and it is tripped, thus automatically regulating the supply.

AGRICULTURAL INVENTIONS.

Mr. Enos M. Miles, of Lawrence, Kan., has recently patented an improved corn planter. The planter is mounted on wheels that serve the purpose of sustaining the weight of the machine, imparting rotation to the axle, and thereby rotating, reciprocating the seed slide, and rolling down the furrow in which the seed is dropped. By means of a valve of peculiar construction the dropping of seed is automatically done, and may also be dropped by means of hand levers at the will of the operator. Mechanisms are also provided for dropping the seed at any required point, so as to check row.

Mr. Dallas Carr, of Chandlerville, Ill., has patented a device designed to be applied to a sulky plow for equalizing the draught when using four horses abreast. Combinations of levers of different lengths, and proper adjusting devices, are connected with pivoted crossbar of the draught devices, on opposite sides of the plow beam, for equalizing the draught by giving to the pair of horses nearest the plow beam the shortest working leverage, and to the pair the further from the beam the longest leverage. Provision is also made for adjusting the plow to work at different depths and to cut furrows of different widths.

A combined revolving spader and roller has recently been patented by Mr. Enos M. Mills, of Lawrence, Kan. The spader consists of a series of cutters that are successively forced out of a revolving cylinder through slots on its periphery by means of suitable devices in the interior of the cylinder. The spaders are drawn back again into the cylinder by the retraction of coiled springs. In combination with the spader, and on the same axle, is an auxiliary roller that serves to roll the ground after it is spaded.

A machine for cutting the weeds from between cotton rows and for chopping out the cotton plants for thinning them, has been patented by Mr. John M. Walden, of Fort Valley, Ga. The frame of the machine consists of four longitudinal bars, secured to each other at a little distance apart. In the spaces between the outer and inner bars are placed the wheels that carry the machine, and between the inner bars is placed the wheel that operates the chopper to thin out the plants. A little in advance of the wheels, and suspended from the frame, are the hoes that cut the weeds. Next after the hoes follows the chopper, and after the chopper hoes to throw up the earth against the plants. The construction and arrangement of the chopper is such that the forward thrust of it is very quick, after which it rests, and is drawn forward to cut the plants as far as desired, and is quickly returned.

MISCELLANEOUS INVENTIONS.

An improvement in burglar alarms has been patented by Mr. Peter Moran, of Philadelphia, Pa. The clock mechanism and gong are of the usual construction, and are placed in a box and secured at a proper point upon the wall. Setting wires or cords lead from the window or door with which it is desired to connect the alarm, over friction rollers to the box into which they pass, and are attached to rods that have at their opposite ends springs that hold the wire taut and allow the rods to be drawn. Any movement of the rod is communicated to the alarm by means of studs on the rods that operate a pivoted lever.

Mr. John W. Albright, of Yarmouth, Ia., has patented a new fastening for horse collars. The collar is made open at the bottom and closed at the top. The fastening consists of two parts, one of which is made with sockets and end slots, the other having catch bolts to engage with the end slots, whereby the collar is fastened and unfastened. The collar can be narrowed or widened by screwing the bolts out or in. To one part of the collar is secured a leather flap that overlaps the joint between the ends of the collar, to prevent the pole strap from being drawn into the joint. The flap has a keeper to receive the pole strap, and prevent its dropping when the collar is unfastened.

Mr. William Teeple, of Watertown, D. T., has patented improvements in stoves whereby hay and straw may be effectively burned for heating and cooking purposes. The base of the burner is made square, and deep enough to provide space for a large ash pan, and in a circular opening in its upper surface is pivoted a grate. Over and outside of the grate is placed a sheet iron cylinder, and on its top is an inner flat cover, and an ornamental outer cover. Inside of this cylinder is a smaller cylinder formed of parallel bars connected at their ends by rings. A cylinder in which straw is packed is adapted to open when it is passed into the grated cylinder, and leave the straw when it is drawn out. The space between the grated and sheet iron cylinders gives draught for burning the straw.

Mr. Charles Palmer, of Springfield, Tenn., has patented an improved case for showing and facilitating the weighing of shot or granulated material. A circular show case is divided into wedge shaped compartments by radial partitions, and is mounted on a vertical shaft journaled in a base. A revolving plate fits on top of the case, having an opening of the size of one of the compartments, through which the shot is poured. Each compartment has in its bottom an opening through which the shot is discharged into a receptacle or the scoop of a scale. These openings are closed by gates pivoted to the under side of the case, and held closed by a spring.

A device for regulating the flow of sap from the reservoir to the evaporating pan has been patented by Mr. Charles F. Mansur, of Weston, Va. The sap flows from the reservoir through a pipe in a box containing a valve, and from this box into the evaporating pan. As the liquid rises in the pan, a portion of it passes into an auxiliary vessel containing a float. The float is connected by a rod to the valve of the supply pipe, and as the float moves upward the valve is carried upward also until it is pressed on the end of the supply pipe, closing it and stopping the flow of sap. As the liquid in the pan is floated away the float descends, permitting the sap to flow from the pipe again.

Mr. Lachlan E. McKinnon, of St. Catharines, Ontario, Can., has patented improvements in dash boards for vehicles. The dash foot is made detachable, and has a square hole near its upper end through which the bolt holding the dash to the foot passes. Near each end the lower rail of the dash is slotted lengthwise, and the heads of the dash bolts are made of such shape that they may be passed through the slots from the inner side of the dash, and when turned a quarter revolution, they have a firm hold on the outer side of the rail. The neck of the bolt is made square to fit the hole in the dash foot, and prevent it from turning in the slot in the rail. With this construction the feet and dash are adjustable to different widths of carriage bodies.

Some improvements in revolving book stands have been recently patented by David T. Koser, of Riegelsville, Pa. Upon a tubular standard secured in a base, circular shelves are supported by flanged collars that are attached to the standard by set screws. A rod enters the upper end of the standard, and is adjustably secured by set screws, to the upper end of which is fixed a plate to cover the books on the shelves. In slots near the outer edges of the shelves filling segments are secured, that are constructed of sheet metal, in wedge form, and rounded on their outer edges and finished to imitate books. These are placed between books or series of books to fill out the spaces of the outer circle.

An improved book has been patented by Francis Endicott, of Clifton, N. Y., for carrying fishing flies and snelled hooks. It prevents the flies from becoming tangled, and allows of their convenient insertion and removal. The book is of the usual construction, except that at the top or bottom of each leaf metal clips are attached, and at the opposite end of the leaf are retainers that consist of spiral springs sewed at one end to the leaf and formed at the other end with a hook for attaching the snell. A strong thread passes through each spring and through the leaf, that holds the springs in place when the flies are detached, and at the same time allows the spring to stretch.

Mr. Thomas Clapham, of Roslyn, N. Y., has patented devices by which the centerboards of vessels are arranged and operated outside of the vessel. The upper edge of the centerboard fits squarely against the keel or bottom of the boat, and is held in this position by rods or chains that work within tubes, attached to the inner side of the bottom of the vessel, and extend above the water line. The rods are firmly held by washers and nuts above the ends of the tubes. By loosening the rods, the centerboard will be allowed to swing, so that it can be turned up at either side of the boat. By this construction the inconvenience of the center board box is avoided, and the center board can be readily detached for convenience in repairing.

A cheap pavement, that will harden on exposure to moisture and is durable and firm, has been patented by Mr. John Murphy, of Columbus, O. When road bed is graded, gravel is spread over it to the depth of about four inches, and is then rolled, and over this is spread about two inches of sand and pulverized slag. Upon this is placed a layer of stones, the small ends of which are downward. The interstices between the stones are filled with a grout composed of pulverized slag, clean sand, lime, silica, Portland cement, and ore dust. Stone screenings are spread over this two inches in depth, and the pavement is rammed, when another coat of grout is poured over it, and a light coat of sand spread over its surface. On the following day the pavement is ready for use.

Mr. Erastus B. Barker, of New York city, has patented improvements in focusing attachments for photographic cameras by which very accurate adjustments can be made. The rear frame of the camera is generally adjustable by means of a plate guided by and fitted to slide in a groove in the base piece, and is held in position by a binding nut. A bar attached at one of its ends to the rear frame of the camera body has at its opposite end a projection that passes into a longitudinal slot in the adjusting plate of the camera. Between this bar and the adjusting plate is a plate that slides between guides transversely across the adjusting plate, that is slotted obliquely to its line of motion. This plate is moved by a lever in reach of the operator, and serves to move the camera very accurately for adjustment.

Mr. Charles Altemiller, of New York city, has patented an improved shutter fastener for locking shutters when they are closed. The fastener consists in a pair of hook jaws pivoted in the sill plate of the window frame and pressed together by springs. Between their rear ends is a cam block for separating the jaws, which is attached to a handle that projects to the inner edge of the sill plate. A staple on the inner surface of one of the shutters is caught and held by the jaws when the shutter is closed, and by turning the cam block the jaws will be separated and the shutters released. Springs for turning or swinging the shutters outward are attached to the outer edge of the sill plate.

A device that may be readily attached to and removed from the underside of the seat of a wagon, for the purpose of carrying such tools as are liable to be needed by a teamster, has been patented by Mr. Chester L. Wentworth, of Mount Vision, N. Y. A metal plate of suitable size and shape is secured to the seat by thumb screws, and a bar that has its ends attached to the plate is curved between its ends in suitable form to receive such tools as are desired to be carried. The bar is provided with set screws, and the oil can and tools are held to their place by the pressure of the screws. The device is simple, strong, and durable, and the tools are always in place and accessible when needed.

Mr. Frederic G. Sackett, of Knox, Pa., has patented a means for protecting oil tanks from lightning. At a proper distance from the oil tank, the iron pipes that supply the oil for and discharge it from the tank, terminate, and are connected with the tank by pipes made of non-conducting material. From the end of the iron pipes electrical conductors pass to the ground, and are connected with the ground plate. These conductors should have sufficient capacity to discharge all the electricity that may accumulate in the iron pipes. It will be seen that this arrangement insulates the tank. The vent pipe in the top of the tank for gas is also of non-conducting material, and is of sufficient length to discharge the gas at some distance from the tank.

A combined ear trumpet and cane handle has been patented by Mr. Henry Waldstein, of New York city. The cane handle is made of metal or other suitable material, and has at its upper end a hollow bulb or head from which a hollow arm projects. A tube extends from the outer end of the arm through it, and passes into the handle of the cane, and is provided with a funnel-shaped mouth. The cane head has at its lower end a series of vertical slots, and the sound entering these slots passes into the bulb or head, and is deflected into the funnel of the tube. If the end of the hollow arm is placed in the ear, the sounds collected pass through the tube to the tympanum. This ear trumpet can be held to the ear without attracting attention, as it looks like an ordinary walking stick.

An improved mould for fire kindlers has been patented by Mr. James W. Burns, of Springfield, O. The mould is divided by partitions in such a manner that when the kindler is formed it will be in the shape of a Maltese cross. The chambers of the moulds are about twice the depth of the thickness of the kindler. The follow blocks are about half the depth of the chambers, and are secured to a strip of leather or other flexible material, in such a manner as to register with the chambers of the mould. The connections of the followers being flexible also allows them to be adapted to the thickness of the kindling material.

An improved fastening for sample envelopes, by which the envelope can be opened or closed, and secured, rapidly and conveniently, has been patented by Mr. Charles W. Ballard, of New York city. The end flap of the envelope is reenforced and has an aperture near its outer edge. A metal strip that has an open hook at its upper end, a closed hook at its lower end, and a projecting metal tongue opposite the lower end of the open hook, is secured on the back of the envelope. To close the envelope the flap is pressed down until the aperture near its edge is passed over the open hook. The projecting metal tongue prevents its opening accidentally.