

## ENGINEERING INVENTIONS.

Messrs. Benjamin F. Tiffany, of Ionia, Mich., and Fred. M. Tiffany, of Aurora, Ill., have patented an improved manner of attaching brake shoes to the brake shoe head. The shoe has flanges at its ends, and a wing on one of its sides, that is adapted to be passed into a recess on the edge of the brake shoe head, the ends of the head passing under the flanges on the end of the shoe. The head has apertured lugs above and below the recess, through which a pin is passed for holding the shoe to the head.

Improvements in smoke burners for furnaces have been patented by Mr. James Johnson, of North La Crosse, Wis. The smoke burner consists of an elongated hood or half tube, that projects through and fills the top half of the doorway of the furnace and passes down into the fire box at an angle of about forty degrees. By this device the air is conducted down on to and among the burning fuel in the bottom of the fire box, consuming the smoke produced by the combustion of the fuel.

Mr. Francis J. Carney, of Brooklyn, N. Y., has patented an improved steam valve. The valve plug is threaded externally, and is provided with two or more side openings. The valve box is threaded internally, and is of such size that the valve plug screws into it. Suitable devices are provided for packing the valve stem. As the valve plug is never entirely removed from the port no foreign matter can enter between the sides of the plug and the port, and the valve remains tight.

Mr. John M. Taylor, of Fredericton, Can., has patented an improved window for locomotives, cars, steamboats, pilot-houses, etc. The window consists of a frame fitted with two sashes, glazed with glass or other transparent material, and a heating coil of pipe arranged between the glasses. The heating coil has an inlet and exhaust connection with the boiler, and keeps the window heated and free from ice and snow. Mr. Taylor has also patented a device to enable the engineer of a locomotive to see ahead clearly when the engine is enveloped in smoke and steam. A funnel-shaped pipe projects from the cab window, ahead of the smoke stack, sufficient to prevent the snow thrown up by the plow from obscuring the front. The front end is closed with a window, and the tube and window are heated by steam pipes connected with the boiler.

Improvements in balanced slide valves have been patented by John J. DeLancey, of Binghamton, N. Y. The valve is made hollow and rectangular in form, and between the valve and a face plate fitted in the upper part of the steam chest is a slotted balance plate. The upper edges of the valve are slotted to receive square packing bars, and beneath the bars are springs to hold them against the balance plate. In the sides of the valve are apertures for the admission of steam to the grooves. Suitable devices are provided for filling and adjusting the parts.

Messrs. Leon Debarnot and Jules Jacquot, of Buenos Ayres, have patented improvements in the class of locomotives that have the boiler and the body of the tender hung below the wheel axles. The pivot joint that connects the engine and tender consists of two pairs of rigid plates, that mesh together in horizontal planes and are held by a vertical pin, and form the stoker's platform.

Mr. John Gates, of Portland, Ore., has patented improved devices for operating the valves of direct acting steam pumps. The steam and pump cylinders are of the usual construction, the connecting piston rod having the usual block for operating the valve mechanism, consisting of two parallel bars pivoted to and connected by upright bars pivoted near their centers on the frame of the pump. The lower parallel bar is provided with adjustable stop blocks, against which the blocks on the piston press to move the bars, and the upper bar is hinged to the valve stem. Novel devices are provided for reversing the engine and regulating the throw of the valve.

An automatic car brake, in which the power for operating the brake is obtained from the rotation of the car axle, has been patented by Mr. Benjamin F. Smith, of Alabaster, Mich. On one end of the car a slide buffer rod is fitted with spiral springs that keep it moved forward, and at the opposite end of the car the buffer rod is rigidly fixed. When the engine is reversed, the movable rod slides to operate devices that connect with the axle to drive sprocket wheels and chain that connect with a spur wheel on which is a winding drum that winds the brake chain to control the brakes.

Mr. Vernon C. Jarboe, of Wyandotte, Kan., has patented improvements upon the hoisting apparatus for which his application for letters patent was allowed him August 3, 1881. The shafts upon which the winding drum and power wheel are placed are journaled in the frame of the apparatus in line with each other. On the inner end of the shaft of the power wheel is a fixed clutch, and on the adjacent end of the winding shaft is a sliding clutch and a loose clutch cog wheel. With this construction the apparatus is easily adapted for speed or power in lifting.

A combined fish plate and nut lock has been patented by Mr. Daniel Faulkner, of Paris Cross ing, Ind. The inner fish plate is of the ordinary construction, and the outer is thicker and extends to the top of the rail, having on its lower edge a flange forming an acute angle with the plate. A key, beveled on its lower side to fit the angle, has on its upper side a series of recesses corresponding with the bolts in the rails, one of which is the form of an acute angle, the others being square. When the nuts of the rails are turned square the key is driven under locking them. The nut over the angular recess is turned to fit the angle, locking the key in its place.

Mr. John Milton, of Hamilton, Va., has patented improvements in the construction of railway cars by which the telescoping of cars is avoided. The diagonal corner of each end of the car is made independent of the frame timbers of the main structure, but is fastened to the same to fill out the outline of the car. If the cars are driven together with great force these parts are disconnected and the cars wedge past each other instead of telescoping.

Improvements in car couplings have been patented by Mr. William H. Swinford, of Cherokee, Ala. The drawhead and coupling pin are of the usual construction, the head of the coupling having an opening through which passes the inner end of a lever, that is pivoted to the end of the car and projects from its sides where it is provided with a crank. A chain attached to an arm on the lever is also attached to a U-shaped ball pivoted to the end of the car. When the lever is pressed down the pin is raised, and when it is turned the ball raises the link for coupling.

## MECHANICAL INVENTIONS.

Messrs. Thomas A. Lewis and George W. Call, of Urbana, Ill., have patented improvements in two wheel cultivators. The cultivators are so constructed that they may be used with or without a tongue as the nature of the work may require. The wheels are so attached that they may diverge laterally to allow the axles and cultivator beams to maintain their proper relations to the beam of the cultivator. Devices are also provided for regulating the depth of the plows, and for raising the plows from the ground for transportation.

Mr. Joseph S. Cook, of Whitinsville, Mass., has patented improvements in mandrels for holding saws at an inclination for cutting grooves. Usually saws are fastened in this manner by the use of two beveled washers. With this mandrel four beveled washers are used, and the saw can be adjusted by these to any desired angle. To prevent the washers from turning on each other they are provided with notches and pins that enter the notches.

Mr. John E. Clement, of Peabody, Mass., has patented improvements relating to a machine shown in letters patent, No. 247,014, for whitening leather. The improvements consist in a novel arrangement of mechanism for rocking the cutter shaft, and also in devices by which the grinder shaft is reciprocated, to move the grinder back and forth from one side of the cutter head to the other. These devices simplify the machine and make its operation more perfect.

## ELECTRICAL INVENTION.

Improvements in armatures for dynamo electric machines have been patented by Mr. Henry B. Sheridan, of Cleveland, O. The armature core is a hollow iron ring nearly square in its cross section, and is provided with ribs that cross its periphery, and their tapering ends are bent over and secured to the sides of the core. The helices are wound around the ribs and are held in place by plates secured by screws to the outer sides of the ribs. With this construction the greatest possible part of the helices is brought into the magnetic field.

## TEXTILE INVENTION.

Mr. James A. Parr, of Lowell, Mass., has patented improvements upon the knitting machines, for which letters patent were granted to him, March 18, 1879. In these machines yarns of different colors are automatically manipulated for producing striped goods, and the improvements consist in devices by which the adjustment of the thread, guides, and other mechanism for moving the yarns in and out of action is facilitated, and also in mechanism by which the cut off ends of the yarn are made to appear on the wrong side of fabric only. Mr. Parr has also patented a pattern wheel having a plain portion upon which is secured a sufficient number of removable strips, to form a continuous plain surface of circular form. The plain surface may be broken at any point by removing one or more strips to give a greater variability of movement to the tappet lever for introducing or severing the different colored yarns in knitting horizontal stripes.

## AGRICULTURAL INVENTIONS.

Improvements in riding attachments for plows have been patented by Mr. Charles H. Wance, of Lewisville, Ind. The plow is of the ordinary construction, and in front and rear of the plow standard are attached the ends of two bars that are connected near their inner and outer ends by crossbars, the whole forming the frame of the attachment. The frame is braced and secured to the clevis by a rod. The outer end of the frame is supported by a wheel, and by suitable devices the driver's weight is made to balance the plow and to cause it to plow deeper or shallower as is desired.

A machine for raking hay and loading it into a wagon has been patented by Mr. Otis D. Thompson, of Elkhart, Ind. The machine consists in a rake for collecting the hay, a revolving fork to carry it to an endless apron placed on a carrier frame, one end of which is at the rake and the other elevated above the wagon. These devices are attached to a sulky, and are driven by a sprocket wheel and chain from one of the sulky wheels. The carrier frame is adapted to be elevated and lowered from the driver's seat.

An apparatus adapted to sowing tobacco, cabbage, and other small seeds, has been patented by Mr. John F. Heady, of Ghent, Ky. The lower part of the seed box is cylindrical in form and the upper part vertical, and the ends are flanged caps that are secured in place by spring catches. The drive wheels are attached to an axle that passes through the center of the circular part of the seed box, and to which is attached a stirring reel to agitate the seed so that they will readily pass out through holes in the bottom of the seed box. A suitable handle is provided for moving the apparatus.

Messrs. Robert and Sidney T. Bruce, of Marshall, Mo., have patented a corn planter in which the seed dropping device is operated by a toothed metallic disk that is made to rotate through the plowed soil in contact with the hard ground underneath, avoiding the irregularity of the operation which results from driving in contact with the uneven surface of the soil. The dropping slide is operated by a crank shaft and pitman, driven by a pinion on the side of the disk.

Mr. John T. Cooper, of Somerville, Ala.,

has patented improvements in fertilizer distributors. A hopper is secured to the plow frame behind the plow, in which is a vertical shaft having at its lower end a tapering groove through which the fertilizer is distributed to the furrow. Devices are provided for raising and lowering the shaft to distribute more or less as desired. A cord passing around a pulley on the shaft is attached at its ends to the fore legs of the horse, the motion of the horse's legs rotating the shaft to prevent the fertilizer from clogging.

## MISCELLANEOUS INVENTIONS.

A holder for supporting sacks of various sizes for the packing of wool has been patented by Mr. Julius Holekamp, of Comfort, Tex. The base of the holder is slotted radially to receive standards having tenons on their lower ends that fit the radial slots. A ring that is made adjustable to fit bags of different diameter is secured to the upper ends of the standards, by hooks that are held and guided in slots in the standards. By these devices the holder is adjustable to bags of any length or size.

An improvement in trucks used for handling boxes, barrels, etc., has been patented by Mr. Joseph J. Swain, of Montevallo, Ala. A cant hook is attached to the frame of the truck in such a manner that it can be engaged with the npper end of the barrel or box, to enable the operator to tilt the truck back and pull the load on to it by the application of both hands to the upper ends of the handles. The cant hook is adapted to be shifted up and down on the truck for the height of the package to be handled.

A device for extinguishing a fire as soon as it originates, and giving an alarm at the same time, has been patented by Mr. Clemens Kupka, of Phillipsburg, N. J. Water stand-pipes reach to the ceilings of the rooms, and arms attached to the cocks of the pipes are held raised by cords suspended from the ceiling by loops of inflammable material. When a fire breaks out the loops burn, the arms drop, and the water cocks are opened. The arms also operate a fire alarm.

An improved arrangement of the knives of the class of pulp beating engines in which an internal cone revolves in a conical case has been patented by Mr. John E. Warren, of Cumberland Mills, Me. On the inner surfaces of the case and cone are steel knives, divided in uniform lengths, so that each section of the cone works against the corresponding section of the case. The knives are adjustably secured to move out or in, or endwise, to take up any wear or for adjustment.

A novel device for supporting the doors of ticket cases, such as are used in railroad offices, has been patented by Mr. Melvin H. Tappan, of La Cygne, Kan. A lever is pivoted near the back of the case, having a pawl to engage with a ratchet pivoted to the side of the case. The brace that holds the door is pivoted to the end of the pawl lever. By these devices the door may be securely held at any desired height.

A head protector that is adapted to the use of bee keepers and as a protection against mosquitoes and other poisonous insects, has been patented by Mr. Robert W. Turner, of Kosse, Tex. The protector consists of a skeleton mask, made of thin strips of spring steel like that used in hoop skirts, and is to be covered with netting. The strips are secured to each other adjustably to adapt it to any sized head.

An improvement by which the tongues of vehicles are made so as to be quickly attached and detached, has been patented by Mr. John L. Metcalfe, of Waynesborough, Pa. To the rear end of the tongue a pintle rod is secured. A pair of hooks are secured to the axle tree in such a manner that the pintle rod may be dropped into the hooks, where they are retained by gravity latches, which move in a plane parallel with the axle, and prevent the rod from getting out of the hooks.

An improved clothes pounding washing machine has been patented by Mr. Joseph I. Dalbey, of Frankfort, Ind. The machine is adapted to be used on any ordinary washtub, and consists in a peculiar arrangement of a standard swinging bar and a lever, whereby a pounder connected to and operated by the lever may be moved up and down to pound the clothes, and carried in any direction to pound the clothes in any part of the tub.

Mr. Valentine Gilsinger, of Charleston, Ark., has patented improvements in wagon brakes. The improvements consist in the devices for applying and holding the brakes. Parallel curved ratchet bars are secured to the side of the wagon box, and between the bars a lever moves that is pivoted at its lower end, and has pivoted to it a lever upon which is hinged a wide pawl that engages with the teeth of both rack bars. The levers are so arranged that when the levers are both seized the pawl is raised, and by moving the lever the brake is applied.

Improvements in ventilators have been patented by Mr. Alexander B. Summers, of Brooklyn, N. Y. The usual cap covers the top of the ventilating shaft. A series of openings are arranged spirally one above another in the shaft, and uptakes are secured at the openings on the inner walls that cause any current of air entering the openings to be directed upward, causing a suction in the ventilator.

Mr. Thomas Atkinson, of Galena, Kan., has patented an improved provision safe. A casing covered with wire cloth, and made in two sections hinged to each other, is mounted loosely on a vertical shaft. The casing surrounds a series of brackets and shelves attached to a sleeve, also mounted upon the vertical shaft. With this construction the safe is easily taken down and can be closely packed for transportation.

An improvement in stoves and furnaces, by which the smoke, soot, and other products of combustion are consumed, has been patented by Mr. Abraham M. Wayne, of Quincy, Ill. A hot air chamber placed over the fire pot heats air that is deflected by a funnel shaped plate on to the surface of the fire in the pot, consuming the gases, smoke, and soot.

An improved stove cover lifter has been patented by Mr. William F. Shuter, of Manistee, Mich. The instrument is constructed in such a manner

that it is adapted to be used as a lifter for stove covers, pots, and bake pans, or plates, and as a tack puller and hammer, as a glazier's tool for setting window glass, and also as a can opener. The implement is cheap, durable, and adapted for all the purposes mentioned.

Improvements in the construction of watchmen's registers have been patented by Mr. Charles E. Sanford, of New York city. The object is to improve the register for which letters patent were granted to James Dunning, April 25, 1871, in such a manner that the marker will change its position automatically each day, and also so that the door of the register cannot be opened until the time for which it was set has expired.

A new flavoring extract to give sirups and sugars the flavor of maple has been patented by Mr. Josiah Daily, of Madison, Ind. The extract is a decoction of hickory bark, or wood, and may be added to any kind of sugar or sirups, producing a sirup that tastes very much like the genuine maple sirup.

Mr. William C. Allen, of West Union, O., has patented an improved wood sawing device for use with an ordinary hand saw buck. The saw is an arc of a circle, of which a pivot in the center of the top of the frame is the center. The frame is pivoted in a slot in a standard through which it swings and in which the frame is adapted to be raised and lowered. This device enables the operator to work the saw with both hands.

Mr. William H. Hall, of 242 East 23d street, New York city, has patented a combined horse collar and breast band, the breast band being attached to and extending down from the ends of the collar so as to fit tightly against the animal's breast, and is provided at its ends with trace buckles and loops, and near its top with terrets for thereins. The breast band is cut in such a manner that it inclines downward slightly from the ends of the collar, and fits close to the breast. It will not chafe or cut as a straight band does, and with this device the strain is distributed equally over the collar and the pad.

An oil can that will have a free flow of oil, and if upset will always be in a position to prevent the oil from flowing, has been patented by Mr. John Kaye, of Cardington, Pa. The nozzle of the can is arranged in an obtuse angle to the body, and directly opposite the mouth of the nozzle on the can is a counter balance weight that when the can is upset throws the nozzle up to prevent the escape of oil. To the filling cap is attached a tube that serves to admit air when the nozzle is turned downward.

Improvements in hay presses have been patented by Mr. George Ertel, of Quincy, Ill. The head against which the hay is pressed is in the upper part of a vertical chamber, in which a follower is worked up and down by means of a toggle lever, the lever being so arranged that it can swing each way. The follower is raised and carries up a portion of hay at every traverse of the lever. By suitable devices the hay is retained until the chamber is filled and firmly packed, the power of the lever increasing with the resistance to be overcome.

A device for more thoroughly and easily separating slate from coal has been patented by Mr. Fred. B. Parrish, of Wilkesbarre, Pa. The coal trough down which the coal passes has a transversely convex bottom by which the coal is fed and spread in thin layers on tables, at which the picker sits to pick out the slate as the coal is fed. The tables also have apertures through which the separated coal is dropped.

A simple and effective gate latch has been patented by Mr. Isaac Joyner, of Jonesborough, Miss. This latch consists of a forked bar of any elastic wood, secured at one end to the rear side of the gate in such a manner that the forks of the bar, when the gate is closed, shell engage in notches formed on both sides of a pointed head or catch secured in a proper position on the gate post.

A combined safety hook and buckle for harnesses has been patented by Mr. Francis A. Hake, of Cuero, Texas. The buckle is composed of a rectangular frame, in which a bar slides up and down, provided with small prongs for holding the strap that passes through the buckle frame. A hook made integral with one of the bars of the frame has a keeper that is placed in a slot made in the shank of the hook, and drop over the point to prevent the object placed in the hook from becoming detached.

An improved float for fishing lines has been patented by Mr. Oliver G. Wilson, of Gallatin, Tenn. The body of the float is made of suitable light material, and has a central opening through its length to receive a stem that projects above and below the body and is secured to it. Guide holes made in the ends of the stem pass out through the sides, and serve to produce friction on the line, and prevent the float from slipping when the line is suddenly jerked.

Improvements in the form and manner of attaching the springs to side bar buggies have been patented by Mr. William D. Ament, of Muscatine, Ia. The springs are attached to the side bars, by means of plates formed with a bent portion for receiving the bolt at the end of the spring. These plates are secured to the under side of the side bars by clips, and may be moved on the bars as may be desired. The springs are ogee shaped at the ends, and elevated in the center.

A hand power mechanism for working cross cut saws for sawing wood has been patented by Mr. Francis M. Elliott, of Summum, Ill. The driving gear is placed on upright posts secured to a bed sill a suitable distance above the ground to be conveniently worked. A beam projects from the posts, and has at its outer end a dog to be driven into the log to hold it. The beam is supported from the log, and carries the connecting devices by which the saw is moved.

A saddle-tree, especially adapted to the saddles used by stock drivers and for holding the lariat, has been patented by Mr. Theodore E. Meane, of North Denver, Col. The saddle-tree is of the ordinary construction, except that there is a small upwardly projecting neck instead of the full sized horn. On this neck is secured casing having in its top a wooden cap that is secured with the casing to the saddle. In this way a cheap substantial horn is made.