

## ENGINEERING INVENTIONS.

A new device for adjusting the packing of a piston, so that it will fit very closely in the cylinder, has been patented by Mr. James Preston, of New York city. The piston is formed of a valve cage attached to the end of a rod, the lower edge of the cage being provided with an external beveled flange, and of a beveled ring, attached to the ends of a fork, secured to the lower end of the tube surrounding the rod of the valve cage. Between the beveled ring and the beveled flange on valve cage a packing is held, which is wound spirally around the valve cage. The rod of valve cage and the tube are adjusted to press the packing more or less, by means of nuts and threads at their upper ends.

Mr. Edward B. Meatyard, of Geneva, Wis., has patented an improved hoisting apparatus of the class in which one bucket or car counterbalances another. Three or more friction pulleys of proper diameter for one or more ropes are provided with deep spur cog rims, of larger diameter and less face than the pulley. A rubber ring, that forms a cushion for the rope, is fastened between the cog rim and an annular plate, fastened on the side of the pulley. With this construction the rope is saved from the wear that it usually has when a drum is used.

A power wheel, to be operated by the current of a stream, has been patented by Mr. Walter M. Coffman, of Elizabethtown, Tenn. A circular track divided into two nearly equal horizontal sections, one placed above the other and connected by inclines, is placed on the top of a suitable frame in the current of a stream. At the center of the track a vertical shaft is journaled in the frame, and to the shaft radial arms are hinged, having castor wheels on their under sides that move on the circular track, and also have buckets at their outer ends. As the arms rest down on the track, those on one side are in the water and carried by the current, while the arms on the opposite side are raised out of the water.

Mr. Maxcy R. Hall, of Fairmount, Ga., has patented improvements in steam pumps, in which the main pistons and the valve mechanisms are made interdependent upon each other, so that one cannot work without the other. The piston of the main steam and water cylinders are in line with each other and are attached to the same rod. On each of these cylinders are small auxiliary steam and water cylinders, also in line, and their pistons connected by the same rod by means of tappets properly placed. The movement of the main steam piston operates the piston of auxiliary chamber, also operating the valves of auxiliary water chamber to control the inlet and outlet of the water.

An improved car coupling has been patented by Mr. William C. Donaldson, of Atchison county, Kan. It consists in a link attached to a rack bar placed in a groove in the drawhead of the car, the link being drawn back into the drawhead and thrust out again by means of a pinion that engages with the rack bar and is operated by a shaft and crank that projects from the side of the car. A similar device is used for raising and dropping the coupling pin.

Mr. George W. Dudley, of Waynesborough, Va., has patented an improvement in the rotary engines described in patent No. 236,007. In that engine the seat of the exhaust valve was arranged to oscillate for the purpose of reversing the engine, but in the improved engine, the seat is made stationary, and is provided with a plug valve by means of which the exhaust may escape at either end of the exhaust valve, and an improved means for shifting the valve in reversing the engine have also been provided.

Mr. William E. Harris, of New York city, has patented improvements in ore grinding and amalgamating machines. The ore is fed into a hopper and passes into the space between horizontal grinding plates and is crushed. As it is crushed it is fed outward by centrifugal force, and escapes at the outer edges of the plates into a circular trough, where it is further pulverized between ring grinding plates and the sides of the trough. In amalgamating ore the ground pulp is fed into the hopper, with sufficient water to carry off the tailings, and a quantity of quicksilver is placed in the circular trough, and the mill revolved at a slow rate of speed.

An improved automatic car coupler has been patented by Messrs. Elmer A. Converse and Nathaniel T. Griffin, of Monticello, O. The drawheads of the cars are of the usual construction, except that a longitudinal oblong mortise is provided instead of the round hole for coupling pin. Instead of using round pins, broad flat plates are set edgewise to the coupling links, the lower ends of the plates being closed on the front side so that when the end of the link strikes the pin the pin will be forced up, and when the end of the link has passed will fall back and thus couple the cars.

## MECHANICAL INVENTIONS.

Mr. Austin Leyden, of Atlanta, Ga., has patented an improved cotton baling press, in which the follower of the press is operated with great force by means of a system of levers that receive their motion from racks worked by a ratchet lever, the lever being worked by an eccentric and toggle device driven by a quick running shaft. As the resistance increases in the press, the leverage of the system of levers increases, giving greater power for the greater resistance.

An improved feed roller for wood planers has been patented by Mr. Emmett H. Henderson, of Sanford, Fla. The feed roller consists of sectional rollers mounted on a shaft in such a manner that the sections may have a vertical motion on the shaft to rise and fall, according to the different thicknesses of the lumber to be planed. Independent pressure rollers are provided for each section, having springs by which the pressure is applied. Chain belts are used for driving the feed rollers so that the motion shall be positive. With this construction boards of different widths may be planed at the same time, and also tongued and grooved if desired.

An ingenious invention relating to wind motors has been patented by Mr. John McLachlin, of New Orleans, La. The wind wheel is provided with a turret that is secured at its base upon rollers and has an opening on one side, and within the turret are curved

plates that serve as deflectors to direct the wind current down upon the wind wheel. A vane secured to the turret keeps the opening in the turret always toward the wind. The wind wheel is of suitable construction to be operated by the wind currents deflected from the turret.

A vertical windlass, designed for unloading hay or straw from wagons into barns, etc., has been patented by Messrs. S. J. Miller and T. R. Ballard, of Millersville, Ill. The windlass is designed to be operated by horse power, and the winding drum, which is placed at the upper end of a vertical post, is loose to rotate on the post. The drum has combined with it mechanism for engaging it with the post, so as to rotate when draught is applied to a sweep secured to the post, disengaging it and applying a brake to check its free running if necessary.

Messrs. James D. Bratton and Henry H. Good, of Westmoreland, Kan., have patented improvements in the class of wagon brakes that are applied to the front wheel of vehicles, and operated by the team when holding back. A combination of levers, that are provided with brake shoes at their outer ends, have their inner ends connected by a pressure-equalizing device to a rod, secured to a sleeve sliding on the outer end of the tongue, and is pressed back to operate the brake by the neck yoke or pole straps of the wagon.

Improvements in springs and running gear for side bar vehicles have been patented by Mr. Andrew F. Shuler, of Arcanum, O. Each of the springs consists of a flat spring, one end of which is secured to one of the side bars near its end, is then curved downwardly, thence upwardly, to the bottom of the buggy body to which it is secured. From this point it is again curved downwardly and upwardly, its outer end resting on the bottom of the buggy near its outer side, thus providing a long and easy spring.

Mr. Samuel D. Webb, of Washington, D. C., has patented an improved locking-up device for type forms. Four quoins are used to lock up the form, each being provided with bearing surfaces of different lengths, and adapted to be reversed on a screw by which they are connected, so that a longer or shorter surface shall be presented to the form, as the case may require. The screw has a right and left hand thread, and when it is turned the blocks of the quoins are moved to or from each other.

Mr. Charles J. Gibson, of Bergen Point, N. J., has patented a rotary clutch consisting of two clutch sections, one of which has two sets of ratchet teeth, projecting toward each other, one inwardly and one outwardly, and both lying in the same plane. The other clutch section has a sliding catch that vibrates in a radial line between the two sets of ratchet teeth, when the driving section is moving backward, but engages with a positive movement either one or the other of the sets of ratchet teeth on the driven section when the driving section is moved forward.

An improvement in pumps has been patented by Messrs. Andro Enborn and John A. Anderson, of Augusta, Kan. The improvement consists in connecting to the handle of a pump, by suitable devices, a rotating bucket wheel, placed under the delivery spout of the pump. The weight of the water in the buckets rotates the wheel, and helps to operate the pump handle and lessens the labor of working the same. The water falls from the buckets of the wheel into a trough, and is conducted by a spout to any desired point.

Mr. Albert J. Gary, of Denison, Ia., has patented devices for transmitting the rotary motion of wind wheels directly to the work, avoiding the crank motion commonly used. The shaft of the wind wheel is attached to a horizontal shaft which has bearings in the top of the wheel supporting, and revolves about an upright shaft to which it is connected by bevel gear wheels, to impart the rotary motion of the wind wheel to the shaft. This shaft gears in like manner to a horizontal shaft supported near the ground, from which the motion is transmitted by cone pulleys for any work desired.

An improved saw mill dog, by which logs are held more firmly on their carriages, has been patented by Mr. James B. Finch, of Bozeman, M. T. To the under side of an ordinary mill dog is hinged an auxiliary dog, the jaws of the two dogs projecting toward each other. To the upper side of the lower dog a curved toothed rack bar is attached, that passes through a slot in the forward part of the upper dog and has at its upper end a handle. On the upper side of the main dog in front of the rack bar is swiveled a toothed lever that engages with the curved rack, and when the lever is pressed down the dogs are forced into the log, and if raised the dogs are withdrawn from the log.

## ELECTRICAL INVENTIONS.

An electric safety elevator has been patented by Messrs. Henry B. Sheridan, of Cleveland, O., and Hermann A. Gorn, of New York city. The well of the elevator has, in diagonally opposite corners, toothed racks, with which worms secured to the shafts at the corners of the cars engage. The worm shafts are operated by gears driven by an electric motor placed on the top of the car. By means of a sliding clutch operated by a handle in the car, the gears are adapted to run so as to move the car up or down as desired. The same inventor has patented an improved regulating mechanism for electric lamps. A pivoted lever, carrying an armature on each end, interposed between high resistance and low resistance magnets, is connected by bars provided with spring pawls to a toothed wheel on which are placed cone pulleys carrying the carbon supporting chains, whereby, when the electric current passes through the low resistance magnets, the carbons will be separated, and when it passes through the high resistance coils, the carbons will be moved toward each other. Suitable devices for regulating the action of the electric current are also provided. An improvement in electric lamps, by which the carbons are moved with great steadiness and regularity, has also been patented by Mr. Sheridan. It consists in providing the carbon holders with friction rollers that move upon the guides, causing them to move down and up so easily that they

will be affected by the most delicate changes in the current. They move steadily, without any jar, maintaining a uniform light.

## AGRICULTURAL INVENTIONS.

Mr. Charles W. Dutcher, of Milltown, New Brunswick, Can., has patented an improved potato digger, in which the potatoes and soil are raised by a scoop from the hills and carried by means of paddles, operated by a chain belt from the axle of the digger, over a slotted frame, back to a shaker frame, which is vibrated by means of a zigzag projection on the inside of the drive wheel of the digger, and the potatoes are separated from the soil.

Messrs. H. R. Burger and J. B. Simpson, of Fin Castle, Va., have patented improvements in square harrows, which consist in curved springs attached to the side bars of the harrow and crossing each other over center, where a seat is secured for the driver, and in the peculiar manner of attaching the ends of the side bars, so that the harrow adapts itself to any unevenness of the ground, and also in the means of securing the harrow teeth to the frame.

A novel device for carrying hay to be stacked to the top of a stack has been patented by Mr. Johan C. Testman, of Wisner, Neb. An inclined way up which the hay is to be carried to the top of the stack is supported on a frame. A rake is placed in the inclined way, and is drawn from the ground to the height of the stack by a rope running through a sheave at the top of the frame, and thence through guide pulleys to the horse that works the rake. The hay being gathered about the foot of the way, the rake is set into it, and the rope drawn to haul the hay up the inclined way and discharge it upon the stack, the operation being quickly and easily performed.

## MISCELLANEOUS INVENTIONS.

Mr. Edwin Cyrus, of Augusta, O., has patented improvements in millstone dress, intended for making middlings previous to regrinding. The dress of the bedstone has intermediate furrows between the quarter furrows, and near the center of the stone are transverse channels that connect all the furrows. The runner stone has intermediate furrows between the quarter furrows, and the lands of each of the quarter furrows are connected with each other. The furrows are made gradually more shallow towards the periphery of the stone. By this dress the grain is distributed evenly and uniformly, and a better quality and greater quantity of middlings are produced.

Mr. Robert McShane, of Brooklyn, N. Y., has recently patented a double stroke gong bell, that can be readily changed for right or left hand connections, as required for use. The supporting plate, gong, and hammer are of the usual construction. The trip is formed with three arms, one engaging with the operating lever, and the others with the hammer arm. The operating lever is pivoted to the supporting plate, and is provided with two lugs on one of its edges, one above and the other below the pivot. A spring connects from a stud placed opposite the pivot of the lever to one of the lugs. When a right hand connection is made the spring connects with the upper lug, and when a left hand connection the spring is placed on the lower lug.

Messrs. Lewis Coates and Joel T. Criswell, of Collamer, Pa., have patented an improved butter print or press by which butter is quickly and evenly formed into cakes of required weight without previous weighing. The press is a sliding box, in which the butter is placed, and pressed on a printing block, by a follower, moved by suitable levers. The follower is provided with an aperture, and as the compression chamber contains more butter than is required for the cake, the surplus butter is forced out through the aperture, and the finished cakes have exactly the same size and weight.

An automatic grain sampler, to be used in combination with a grain weighing and delivering apparatus, has been patented by Mr. Washington Hawes, of Port Richmond, N. Y. The receiving and weighing devices are of the usual construction. From one side of the receiving vessel a tube projects, that receives from the vessel and holds a given quantity of grain, forming a measuring sampler. At the inner and outer ends of the tube are valves that are operated by rods and eccentrics on the tube attached to the rock shaft, that opens and closes the delivery valve of the receiver. By this means each draught of grain is sampled.

Mr. William T. Abbott, of Fort Wayne, Ind., has patented a stock car in which cattle may be separated from each other by means of partitions hinged to a vertically adjustable frame that is raised and lowered from the top of the car by screws, and a space for the storage of food for the cattle is provided when the frame is let down. Feed troughs are also suspended by screws, to be let down for the use of the cattle. These parts may be all raised to the roof of the car, when cattle are not to be carried, when the car can be used for other freight if desired.

A device by which the bearings and wearing surface of watch movements may be easily supplied with small and suitable quantities of oil has been patented by Mr. William W. Martin, of Salem, Or. The oiler consists of a handle containing an oil reservoir, provided with an attached hollow needle point for depositing the oil. By simply touching the point of the tube to the surface to be oiled, the oil will be deposited from the tube in very small quantities, just sufficient for properly lubricating the bearings and wearing surfaces.

A lantern that can be easily attached to the collar of a lamp of ordinary construction has been patented by Mr. Charles F. Anderson, of Bay City, Mich. The body of the lantern is provided with a movable bisected bottom, and the bail of the lantern passes through the top of the frame at diagonally opposite corners and through braces at the bottom of the frame, and is secured to the outer angles of the bottom pieces. It is bent in such shape that when it is pressed down the bottom pieces are thrown apart, and when it is drawn up the pieces close together to grasp and hold the collar of the lamp.

A combined tape line and shears for measuring and cutting ribbons, etc., has been patented by Mr. John C. Kullman, of Marshall, Ill. A tube projects from the reel case of the tape line, through which the outer end of the line is passed, and to the end of the tube shears are secured. A loop is placed on the tube in which the middle finger of the hand is placed, and the shears are so constructed that the movable part of the shears are easily operated by the thumb of the hand. The tapeline is drawn with the article to the proper distance, and a cut is made with the shears.

A device by which the tires of wheels may be tightened, when they have become loose, has been patented by Mr. Sylvanus B. Robison, of Valparaiso, Neb. An iron felly section, having a longitudinal slot, is secured to the tire and the wooden felly at one side of an opening in the tire. A slotted bar is attached to the tire on the opposite side of the opening, and works in the longitudinal slot of the felly section. A wedge or key driven between the ends of the two slots tightens the tire by drawing the opposite ends together.

Mr. James Iredale, of Toronto, Can., has patented improvements in oil stoves in which the oil receptacle is so constructed that the wick chambers are placed between central and side flues, the burners having double draught passages that insure more perfect combustion of the oil. On top of the jacket of the combustion chamber is placed an oven that is surrounded by a jacket, the products of combustion passing through the space between the two. Water heating and cooking utensils having hollow arms that project into the space between the bottom of the oven and the jacket are secured by hooks to the outer surface of the jacket. By these means the stove is adapted to do a large amount of work.

Some improvements in suspenders have been patented by Mr. Johann W. Holtring, of Barmen, Germany. They consist in uniting the rings to which the button hole straps are attached, by straps resting against the sides of the body, above the hips, whereby, when the suspender straps are attached to the rings, triple joints are formed, and the folding of the strap or under pressure on the body is avoided. The button-hole straps are attached to buttons placed at equal distances on the front and rear of the side seam of the pants.

A novel gag runner for check reins has been patented by Mr. William H. Chapman, of Middletown, Conn. The gag runner is made with a swinging loop that is swiveled on a bridge of a frame through which the check rein passes. The bridge has a spur projecting from its under side into an aperture in the check rein for holding the gag runner to the rein.

A device for supporting the body and wheels of a carriage for painting, and by which they may be adjusted in any desired position, has been patented by Mr. Eugene Cook, of Nashville, Mich. It consists of a hollow tube supported on a suitable base, and adapted to receive and engage with a screw threaded shaft, to the upper end of which is secured, by a double knuckle joint, a frame for supporting a carriage body, and devices for securing the body to the frame, whereby the body can be raised or lowered, or adjusted to any desired angle and clamped in that position.

An automatic device for feeding horses or other animals at fixed times has been patented by Mr. Eugene Wessells, of Peekskill, N. Y. The bottom of the hopper in which the feed is placed is a slide, and is pressed back against a spring, in which position it is held by one arm of a lever, the other arm of which rests against the flat handle of the winding key of the alarm of an alarm clock. When the alarm of the clock begins to operate the lever is released, and the spring throws the sliding bottom out of the hopper, allowing the feed to fall to the feed box.

A self-acting machine that applies a layer of jelly between two cakes, or a dressing of icing to the top of a single cake, has been patented by Mr. Daniel M. Holmes, of Cincinnati, O. By a peculiar construction and arrangement of devices, a row of cakes are fed on to a main belt, and carried under jelly boxes, where a definite quantity of paste is discharged and the supply is then positively shut off. As the cakes move along on the belt they pass under cake-holding tubes, from which cakes are carried by suitable devices and placed on the tops of the cakes that have passed under the jelly boxes.

Mr. Andrew T. Morrow, of Tonganoxie, Kan., has patented a light, cheap, and durable gate suitable for use with the barbed wire fence. The opening between the posts is closed by barbed wires secured at their stationary ends to rings on the post, and at their opposite or swinging ends are attached to a wooden bar having slits sawed in its top and bottom. Stay bolts are put through the slits near the inner ends that serve to keep the bars from splitting and as part of the fastening. On the side of the post next the bar are catch bars notched on their edges to receive the bolts of the bar. In closing the gate the lower end of the bar is placed on the lower catch, and the upper is drawn forward, stretching the wires, and is held to the upper catch by means of a weighted catch that is held closed.

Mr. Charles W. Allen, of Pine Ridge Agency, D. T., has patented improvements in billiard tables, consisting of the combination with the bed and frame of the table, of adjustable cleats to which the cloth is attached, and devices for operating the cleats, to stretch the cloth smooth and tight, and for removing it when desired. Also in combining with the bed and frame of the table, of arc shaped frames, and a spherical segment, and screw and nut, for placing and securely holding the table in a perfectly level position.

A crosscut sawing machine, having two saws, one of which is adjustable to cutting different lengths, has been patented by Mr. George A. Moffat, of Mineral Springs, Ark. The saws are both operated by one driving shaft to which they are connected by rods and eccentrics. One of the eccentrics is adapted to be readily shifted on the shaft for the different lengths to be cut. The saws are so pivoted to the connecting rods that they may be turned upright, and also to prevent them from falling below the line of the connecting rods.