

## ENGINEERING INVENTIONS.

An improvement in screw cutting attachments to ratchet drills has been patented by Mr. William M. Turner, of Pensacola, Fla. The ratchet works either right or left handed, for cutting right or left hand threads, and for drilling, or turning screws, in situations where the ordinary ratchet will not work. The invention consists also of a novel attachment for feeding the drill.

An improved car coupling has been patented by Mr. Edward M. Richardson, of Laconia, N. H. The invention consists in a drawhead in which is pivoted a block having its outer end forked. Between the shanks of the fork a cam is pivoted whose lower edge is curved and its upper edge provided with side projections. The coupling pin rests on the upper edge of the pivoted cam, and when the link enters the drawhead it raises the cam, whereby it will be moved from under the coupling pin, which drops and passes through the link into the drawhead.

An improved steam tuyere has been patented by Mr. Lewis G. Heybrock, of Omaha, Neb. The invention relates to a tuyere operated by a steam jet, for use with smelting and other furnaces, also with boiler furnaces, for promoting combustion, and the operation of the tuyere is to inject a mixture of steam and air into the fire, thereby causing more complete combustion and more intense heat. When used with a forge, the tuyere is placed in the same manner as an ordinary tuyere. In smelting furnaces or any furnace intended for heating, smelting, or refining metals, the tuyere is to be placed so that the jet shall strike the flame at a point where the greatest heat is required.

An improved refrigerator car has been patented by Mr. Benjamin N. Bugbey, of Sacramento, Cal. The invention consists of a layer of clay, plaster of Paris, or other porous absorbent material, located between the outer shell of boards and an inner partition of the car. Perforated pipes are arranged for the circulation of water throughout the clay or plaster for saturating it, and which produces a cooling effect by evaporation. A layer of pulverized charcoal is closely packed between the partitions of the sides of the car. This charcoal answers the double purpose of keeping the articles *in transitu* sweet, and at the same time affords an excellent non-conducting substance.

## MECHANICAL INVENTIONS.

Mr. Edson L. Bracken, of Dawson, Ill., has patented an improved knotting mechanism for grain binders. This invention is of rather intricate device, and engravings would be necessary in order to give an adequate description.

Mr. Frank X. Myer, Jr., of Logan, O., has recently patented an improvement in that class of wagon wheels in which metal rods are used for the spokes. The hub, in which the spokes are secured, has flanges for the ends to rest in, and when completed, the wheel has a light and graceful appearance and is very elastic.

Mr. Andrew J. Conner, of Louisville, Ky., has patented an improved machine for preparing tin plates for roofing by uniting the ends of a series of tin plates in such a manner that they will form one continuous roll, band, or strip. The machine at the same time cuts the edges of this strip of metal smooth and even, and in a continuous straight line.

An improved wrench has been patented by Mr. Loyd H. Swan, of Oxford, Ind. The object of this invention is to facilitate the tightening of the nuts on railroad joints, and the novelty consists in the mode of supporting the wrench by a frame attached to the track and a pair of horns connected to the frame for holding the frame in place, and prevent the bolt from slipping.

A simple drawing roller for spinning and drawing frames has been patented by Mr. George Hill, of New York city. The roller is made of shreds of leather of all kinds, which are mixed with glue and oil in suitable proportions. This mass when thoroughly mixed is moulded and pressed around a mandrel of metal, the periphery of which is grooved to receive the leather mass which is pressed upon it.

An improvement in horse power sweeps for grinding mills has been patented by Mr. Edward M. Wilcox, of Whitewater, Wis. The object of the invention is to relieve the mill of the one sided pressure occasioned by the weight of the sweep itself, and it consists in attaching to the end of the sweep an iron arm carrying a castor wheel or roller, which rests upon the ground and supports the weight of the sweep.

An improved felly tightener has been patented by Mr. Archimedes Galbraith, of Amadore, Mich. The invention consists of right and left threaded screws which work within internally threaded bars, the latter of which have jaws for clamping to the felly, and two pairs of fastening bars, together with certain other provisions for tightening the felly, either by drawing or pushing, without removing the tire, and, if necessary, without removing the load which may be upon a wagon.

An improved automatic weighing scale has been patented by Mr. Nicholas A. Jones, of Leavenworth, Kan. The invention relates to a machine for weighing and filling from a cask, bin, or other bulk supply into packages of stated quantities any material which will flow through a spout. A valve operating mechanism is connected by a connecting rod with the steelyard of the scales, for cutting off the flow of the material when the required quantity shall have been filled into the package.

Mr. Fish Eccles, of Auburn, N. Y., has patented a novel and improved grinding and polishing machine. This invention consists essentially of a chuck for holding hollow ware to be ground and polished on the inner surface. The article is mounted by a pivotal connection upon the carriage by which it works to and from the emery ball, and is so geared with a feeding screw and a spring that the chuck turns on its pivot to present the irregular surfaces of the vessels to the polishing ball.

An improved machine for sawing and channelling roof boards has been patented by Mr. Daniel W. Williams, of Springville, Cal. The improvements consist of automatic feeding, reversing, and setting gear, whereby two bolts may be applied to the saw at one

and the same time, one being fed up to the saw while the other is being run back for resetting. The inventor attaches to the frame, gauges in advance of the saw, so that the bolts will be grooved on the under side at the same time that the boards are sawed off.

A novel camera shutter, which operates in such a way that the camera may be operated by a person at some little distance, has been patented by Mr. Charles H. Scofield, of Utica, N. Y. The invention consists of a flexible tubing connected with a camera shutter, and so constructed that when air is forced into the former for distending it, the shutter of the lens aperture will be removed. The air is forced into the tubing from a rubber bulb or reservoir held in the hand of the operator, and connected with the former by a rubber pipe which may be of any length as required.

An improved foot power has been patented by Mr. Arthur W. Bush, of Boulder, Col. This invention consists in a contrivance for converting a treadle motion into rotary motion; and it consists of a shaft carrying a driving pulley with a ratchet collar affixed thereto or to its shaft, and a clutch loose thereon, and having a stud or projection combined with a drum provided with a sleeve or collar inclosing the said ratchet and clutch, and having an oblique slot, which receives the clutch, stud, an intermediately coiled rope or its equivalent, a treadle, and a carrier roll or pulley.

A box nailing machine for making cigar or similar boxes has been patented by Mr. Samuel Avery, of Phoenix, N. Y. This invention possesses considerable novelty, and by its use it would seem to be a great labor saving machine. There is provided an inclined slide down which the nails are passed, the imperfect ones falling through the opening in the slide into a receiver below, while perfect nails pass down until they fall into position to be driven into the box. This feeding and driving operation is accomplished by a sliding driver operated by a treadle, which not only inserts the nail in the box with accuracy and precision, but drives it home. As many slides as desired may be arranged parallel to one another, all of them being operated in the same manner and with equal facility.

An improved fence loom has been patented by Messrs. Daniel E. Merrick and George Q. Adams, of Quincy, Ill. The machine consists of means for twisting the wires between the pickets, the wires being drawn off from suitable spools attached to the machine. The machine also consists of means for feeding the pickets between the strands of wires, of means for moving the pickets outward just before the wires are twisted in the rear of them, of a winding drum for receiving the web of pickets, of means for giving the winding drum intermittent movement, and of means whereby the distance of each intermittent movement of the drum is automatically decreased as the web accumulates on the drum, and of devices for regulating the movements of the different parts. The inventors suggest that their loom is equally adapted for weaving tarred rope or cords as it is for weaving wire.

A novel apparatus for cleaning cisterns, which obviates the necessity of withdrawing the water from the well or cistern, has been patented by Mr. Willis M. Prather, of Kansas City, Mo. In cisterns, wells, and reservoirs of water, sediment and filth of various kinds collect at the bottom, rendering the water unfit for use. Mr. Prather constructs an apparatus with a scraper and brush, so arranged that they conduct the sand or sediment of whatever kind to the center of the reservoir, where a barrel-shaped cylinder is located, in which a pump is so arranged as to take all the slime or sediment up through the cylinder without disturbing the surface of the water. To prevent the action of the brushes from fouling the water above the bottom of the pump barrel, there is inserted in the well a cover just the size of the cistern. This cover is mounted on a ring, and is provided with springs which facilitate its introduction into the cistern.

An improvement in the construction of the tower and turn table of windmills has been patented by Mr. Ira W. Russell, of Storm Lake, Ia. On any suitable base are mounted four vertical posts parallel to each other and held in position by proper supports and braces, and on their upper extremity is located the turn table, mounted upon wheels, and which revolves on a groove prepared for it. The pump shaft passes up between the supports and gears with the horizontal or wheel shaft by bevel pinions. The arms of the wheel, which may be made of wood or metal, are bolted into a hub, and the vanes are pivoted on these arms in such a way as to cause them to be turned by the unequal pressure of the wind, and so that in case the wind becomes excessive the vanes will turned edwise, thus decreasing the speed, or stopping the wheel entirely. In this arrangement the wheel of itself swings around to the leeward of the tower, and does not require a tail to keep it in position.

## AGRICULTURAL INVENTIONS.

An improved harrow, the invention of Messrs. Alexander Goodhart and George Hemminger, of Carlisle, Pa., has recently been patented, the object of which is to enable varying the angle of presentation of the teeth to the line of draught, and to allow the yielding of the teeth when coming into contact with an obstruction, to obviate strain upon the team and prevent breaking of the harrow.

Mr. William C. Moore, of Springfield, Mo., has patented an improved garden implement, combining a plow with a wheel barrow, intended for the use of market gardeners and farmers. The plow or cultivator is so arranged under the wheel barrow as to be folded up out of the way when not in use. A rake attachment may also be applied for smoothing the ground after the plow has done its work.

An improved cultivator has been patented by Mr. George Allen, of New Berne, N. C. The invention consists of a cultivator adapted for cultivating both sides of the rows of plants at once. To the rear end of an ordinary expanding and contracting harrow is attached a set of cultivator teeth supported on a cross tie to the central beam of the cultivator. An adjustable draught rod is provided, which allows the horse to draw obliquely to the cultivator, so that it will run along the rows while the horse travels between them.

Mr. Isaiah Hancock, of Fayetteville, Tenn., has patented an improved cultivator plow, in which the beams of the plow are united by means of curved pivot bars and straight holding and adjusting bars, so that the beams shall be rigidly held at any desired distance apart. The plow handles are united to both the plow standards and to the beams to make them firm, and their upper ends are adjustable. The plowshares are provided with auxiliary wings that may be attached or detached without removing the shares from their standards.

A novel combined hay rake and loader has been patented by Mr. Charles S. Dame, of Lanark, Ill. The forward part of the frame is provided with teeth hinged at their rear ends, and having shoes hinged to their forward ends, the said teeth resting upon a tripbar suspended from the frame by connecting rods and bent levers, so that the teeth can be readily raised from the ground. The rear part of the machine is provided with a carrier and an adjustable elevator. The inclination of the elevator may be regulated to any degree required, to receive the hay or grain from the teeth and deposit it upon a wagon or in a window.

An improved bundle separating attachment for self-binding harvesters has been patented by Messrs. Charles A. Ruddock, of Benson, and Nathan S. Ruddock, of Granite Falls, Minn. The invention consists in the combination with the binding table of a self-binding harvester, of a V-shaped supplementary table secured to the edge of the binding table, and a curved arm projecting from the outer edge of the supplementary table, which device serves to facilitate the separation of tangled and intermingled bundles of grain, and prevents the discharged bundles from drawing upon the grain being bound, and also prevents the pulling of the binding wire or cord out of place, and disarranging the binding mechanism.

Mr. John G. Coburn, of South Carthage, Me., has patented an improved dumping wagon. A friction wheel is mounted on an axle, on which one of the driving wheels is locked, to cause the friction wheel to rotate with the driving wheel. Between the friction wheel and the bottom of the wagon box a smaller friction wheel is jammed, this smaller friction wheel being journaled in the ends of adjustable hangers loosely mounted on the sides of the large friction wheel. The wheel is locked on the axle by means of a clutch ring operated by a rope or chain extending to the front end of the wagon. This rope runs over a pulley on a rocking shaft which is attached to the front axle. The rocking shaft is provided with a handle lever, by which the operator discharges his load.

An improved corn planter and cultivator has been patented by Mr. John C. Weiss, of Pittsburg, Kan. The invention consists of a frame mounted on a pair of truck wheels, and carrying a plow through which the corn is dropped from the hopper to be covered by the earth falling in behind the plows, and by rollers located behind the hopper to pack the earth over the corn. The slide in the bottom of the hopper is opened by a lever which is operated automatically by tappets connected with pinion wheels to the axle of the machine, and which is set in motion by the revolution of the wheels of the machine. The dropper slide, by means of levers, may be operated by hand, and the automatic system dispensed with. The wheels of the machine are replaced the distance of three rows or twice the distance of the hoppers apart, so that they constitute a self marking device, by running one wheel in one of the tracks previously made.

## MISCELLANEOUS INVENTIONS.

A lead pencil, so constructed that the lead may be clamped in any desired position by means of a spring actuated clamp has been patented by Mr. Jacques Senn, of New York city. A single piece of metal doubled upon itself, forming a split tube for the lead, with lateral double wings extending along a portion of the length of the tube and bearing against it, supports the tube, giving it increased strength.

An improvement in setting window panes designed to fasten glass panes in sashes without the use of nails, pegs, or putty, has been patented by Mr. Theophilus Tanner, of Osage, Neb. This invention consists in a rubber strip provided with a longitudinal slot increasing in width toward its interior. The window sash has end and cross pieces provided with a groove to receive the strip which holds the glass.

A new prepared flour has been patented by Mr. Philip Thorpe, of New York city, the object of which is to manufacture a prepared flour which needs only to be mixed with water to form a dough for use. The invention consists in thoroughly incorporating butter deprived of its water with flour and baking powder mixed together in the proper proportions, which will keep for a long period, and requiring only the addition of water to form a dough.

A novel book rest and manuscript holder, provided at the same time with a reading mark and eye protector, has been patented by Mr. Charles C. Koehl, of Paterson, N. J. The device consists in a plate provided with springs for holding a book, and with a curtain attached to a roller, which curtain is raised or lowered to cover that part of the book or sheet that has been read, and thus forms a book mark and an eye protector.

An improved wagon rack has been patented by Mr. Abraham Landis, Sr., of Elkport, Ia. By this invention a wood rack is readily converted into a hay rack, which is also adjustable to proper conditions for carrying bags of grain and the like, and has an attachment for securing the binding pole usually employed to secure the hay on the rack, said attachment being also useful as an end gate attachment to facilitate the loading of heavy products.

Mr. Ferdinand King, of Atlanta, Ga., has patented a novel direction plate and label holder for cars, the object of which is to indicate to passengers and trainmen the destination of said car. It consists in a metal frame composed of two plates having a central chamber with a glass in front, which chamber holds a card bearing an inscription and is retained by a pivoted door, the metallic marginal face of the plate being provided by casting or engraving with general instructions.

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