

## ENGINEERING INVENTIONS.

Messrs. Wendell P. and Charles H. Norton, of Thomaston, Conn., have patented improvements in engine valves of locomotives. The improvements consist in a novel system of slide valves, placed in the heads of the cylinders, and restricted respectively either to admitting or exhausting the steam, and such a construction of the chambers that short steam passages are obtained, thus reducing the waste of steam and providing complete drainage for the cylinder.

Improvements in iron railroad ties have been patented by Mr. James H. Meacham, of Petersburg, Va. The improvements consist in an iron tie cut away in its central portion at its sides to allow the tie to settle in the center when the road is "soft," and yielding readily to the pressure at the ends of the ties, and avoiding the danger of breaking. The weight and cost of the tie are also reduced.

Improvements relating to log beams and logging devices have been patented by Mr. Robert M. Beck, of Westminster, Md. The log beam has on its side vertical recesses that receive dove-tailed fender blocks that protect the beam, and are easily removed and replaced as they are worn. A standard formed of two parallel uprights is secured to one end of the log beam, and constitutes a guide for the block in which the dog is secured. The screw rod that carries the dog up and down engages with a spring-actuated block, having a concave threaded surface. When the spring block is drawn back the dog drops, entering the log, requiring less time and labor than when run down by the screw.

Improvements by which the ordinary portable engine is adapted to be used as a traction engine, have been patented by Mr. John A. Miller, of Wadesville, Ind. The engines are fixed in an inclined position on the sides of the boiler, the piston rods extending through both ends of the cylinder, the rods on one end being adapted to take hold of the crank shaft of the band wheel, and on the other end to devices for applying power to the wheels for moving from place to place.

An improved box for the cam shaft of stamp mills has been patented by Mr. Henry Bolthoff, of Central City, Col. In this improvement cushions are interposed both at top and bottom between the cam shaft boxes and their support, whereby the shocks of the cam shaft will be much less injurious to the stamp mill than when the boxes are bolted fast to rigid supports.

A safety step upon which the brakeman can stand, thus avoiding the danger incurred from stumbling over rails or ties in coupling cars, has been patented by Mr. Samuel M. Berry, of Omaha, Neb. The ends of the cars have secured at each side a U shaped bar that extends down from the bottom of the car to near the rail, the sides of the bars being united by a cross rod, forming a step upon which the brakeman stands.

Mr. Antonio Samper, of Paris, France, has patented improvements in apparatus for transmitting motion. In the usual system the belts are subjected to considerable tension in tightening them to increase the power, the tension tending to deflect the shafts; but in this invention the power is increased by applying the belt to more of the surface of the pulleys, thus giving the belts more adhesion, and as a consequence more power. The apparatus is simple and effective.

An improved car coupling has been patented by Mr. Stephen C. Collins, of Oregon, Mo. The coupling pins are attached to vertically swinging tumblers, that are held up in an open position, by a trip dog. This dog is struck by the coupling link, when the cars are run together, letting the coupling pin fall through the link into the lower part of the draw bar, where it has support against the draught. The tumblers are raised by levers extending to the outside of the car, so that it is not necessary to go between the cars to couple or uncouple them.

Mr. George Clef, of Palatka, Fla., has patented improvements in head lights for locomotives. The head light is provided with glasses, placed on one or both of its sides, that show any desired colored light, the glasses being illuminated by the ordinary lamp of the head light, whenever covers with which the glasses are provided are removed. These colored lights are used at night time for signaling trains.

Improvements in the construction of concrete abutments, bridge piers, etc., have been patented by Mr. James Burns, of San Antonio, Tex. The abutments are built in sectional moulds, made of planks and battens firmly nailed and held together by bolts and clamps, the moulds being adapted to be placed one above another as the height of the structure increases. The moulds are supported against lateral pressure by rods that pass through the structure, and are removed when the material hardens. Mr. Burns has also patented devices by which artificial stone curbing may be made and hardened in the trenches where it is to remain, thus saving the cost and trouble of setting.

A combined signal and speed indicator for railroad cars has been patented by Mr. Walter J. Kidd, of Logansport, Ind. It consists in a revolving flash signal or target, mounted on the roof of a car or on the front of the engine, that derives its motion by a belt from the axle of the car or engine. When the disk is revolving, it indicates that the train is moving, and the rapidity of its revolutions indicates the speed of the train.

A construction car for railroads has been patented by Mr. Ephraim N. Wing, of Green Bay, Va. A platform car is provided with a horizontal derrick arm on which a traveling block runs, and is also provided with suitable tracks on which hand trucks are moved. Mechanism is secured to the car for moving the traveling block back and forth over the derrick arm, and for moving the car forward on the rails as the work is done.

## MECHANICAL INVENTIONS.

A boiler tube expander, consisting of straight cylindrical rolls, set obliquely or spirally in the roller cage, and made without journal bearings at their end, has been patented by Mr. Zachariah J. Fer-

guson, of Jackson, Tenn. A guard for preventing the expander from entering the tube too far, and the form and arrangement of the rollers, enables the instrument to expand the tubes more without bursting than is done by expanders in common use.

Improvements in the class of horse power in which a vertical shaft is revolved by power applied to horizontal levers, have been patented by Mr. James T. Graves, of Wilson, N. C. In this invention devices are provided by which the levers are secured tangentially to the shaft instead of passing centrally through it, enabling the animals moving around the shaft to pull at right angles to the levers instead of obliquely. The draught hook is also of such shape that the draught is directly from the end of the lever.

An improved chuck for watchmakers' lathes has been patented by Mr. George R. Metten, of Helena, M. T. The outer end of an ordinary split chuck is recessed to receive a stepped disk, that is clamped by the contraction of the chuck. The disk is centrally apertured, and has one or more steps on each side, each disk being adapted to receive two or more sizes of work. Disks may be provided for all sizes of work, and all used with one chuck.

Mr. Edwin T. Pettit, of Marshalltown, Ia., has patented a device for perforating paper that is so constructed that the cutting edge of perforator rests a little below the printing surface of the type, so as not to interfere with the inking, but when the press comes together, the perforator is elevated by suitable devices to perforate the sheet a little before the impression is taken, and when the pressure is removed to return below the surface of the type.

## AGRICULTURAL INVENTIONS.

Mr. Charles W. Love, of Fairpoint, O., has patented a track clearer for mowing machines. To a coupling hinged to the end shoe of the cutter bar are secured two boards, attached to each other at an angle, and provided with two slightly bent rods, one attached to the rear end of the boards and the other to the hinged coupling. With this clearer the grass is moved back from the edge of the uncut grass, and pressed down upon the stubble.

A device for marking ground, for the purpose of directing the course of driving for a cornplanter as it passes to and fro across the field, has been patented by John J. Farrar, of Aurelia, Ia. The marker is attached to the outer end of a guide stick that is pivoted at its inner end in the cross bar of the planter. The guide stick is moved up and down by a hand lever, and is provided with suitable devices for controlling it, and is extended from the side of the planter to reach and mark the ground as desired.

## TEXTILE INVENTIONS.

A machine for sticking and scalding naps to felt hats has been patented by Mr. Seymour C. Palmer, of South Norwalk, Ct. A vat has journaled on its upper edges three large cylinders, to the journal of one of which a pulley is attached to receive a driving belt. An endless belt passes over these cylinders and under smaller cylinders journaled near the bottom of the vat, and on the face of the belt are cross cleats. By this device the hats are thoroughly worked and the nap firmly fixed.

Mr. William Chesterman, of Sheffield, Eng., has patented a measuring tape made of fibrous material woven in such a manner that the warp threads shall be alternately over and under one weft thread, and the weft threads shall be alternately over and under two or more warp threads. In this manner the tape has the corrugations in the threads of the warp are slight, and the tape is less liable to contract or expand than tapes woven in the usual manner.

## METALLURGICAL INVENTION.

Mr. Horace E. Henwood, of New York city, has patented an improved apparatus for separating gold and silver from powdered ores and fine sand. The amalgamating pan is secured by means of hollow arms to a sleeve on a vertical shaft, and through these arms quicksilver is projected against the inner sides of the pan by means of a fan blower. To the upper end of the vertical shaft is attached a conical plate, upon which the sand or ore falls from a hopper and is distributed against the sides of the pan, thus being brought into contact with quicksilver and amalgamated. Suitable devices are provided for operating the parts.

## ELECTRICAL INVENTION.

An improved electric conductor for fire alarms has been patented by Mr. Paulin A. Charpentier, of Paris, France. The conductor is composed of two copper wires, each covered with silk steeped in paraffin. To these wires a third wire is joined, that is made of some easily fusible metal, and the three are covered with non-conducting material. Each of the copper wires is connected with one pole of the battery, and when the heat in a room is sufficient to melt the fusible wire, the copper wires are connected by soldering, and a circuit formed and alarm given by a bell in the circuit.

## MISCELLANEOUS INVENTIONS.

Improvements in the ornamentation of fur and other goods have been patented by Mrs. Amalia Mayer, of New York city. The improvement consists in inserting in fur or fluffy goods, at numerous points, hairs having beads or "bugles" attached to their outer ends, and also in the material or article thus ornamented. The beads attached in this way add very materially to the beauty of the goods.

Mr. Nels. W. Hawkenson, of Litchfield, Minn., has patented an apparatus for drying damp or wet grain. A fan draws dry air from a suitable source and delivers into the bottom ends of upright perforated tubes, arranged to project up through the grain in a bin. The tubes are closed at their tops, and the dry air is forced through the grain, drying it. By suitable devices the dried grain next to the pipes is drawn off, the damp grain taking its place to be dried.

A clothes washing apparatus, adapted to be used in connection with oil or gas stove, has been patented by Mr. Dennis McDonald, of Niagara Falls, N. Y. The apparatus consists in a rectangular frame divided by a vertical partition into two compartments, one of which serves as a wash tub, and the other to support a boiler over an oil or gas stove. The boiler is of the fountain kind, and is made narrow at its bottom to give room for the heat of the stove to circulate around it.

Mr. Reuel Barnard, of Tuskegee, Ia., has patented improvements in end gates for wagon boxes. The end gate is constructed in two sections, connected by hinges. The outer ends of the sections are provided with hooks that engage with staples in the ends of the side boards, in such a manner that the hooks pass behind the ends of the staples, when the ends of the end board are placed between the cleats of the side board. The end board is then straightened to close at the joint, and is securely held in this position by a lever hasp and pin.

An improved shelf support has been patented by Mr. Aaron Cole, of Fillmore, Mo. The support consists of a base plate of any desired size and shape, on the upper surface of which there is a hollow upward extension provided in its interior with a screw threaded nut, with which a screw threaded shank engages that extends from the under surface of a plate, similar to the base plate. By this device shelves may be supported at any desired height.

An improved fire escape has been patented by Mr. Charles P. Wilson, of Summit Point, W. Va. A carriage that will hold one or more persons is provided with a rope and grappling hook. The hook is secured to any solid place in the room, and the opposite end of the rope is wound around a series of rollers journaled in the carriage near its bottom. These rollers are clamped by the weight of the person or persons in the carriage, and controlled so as to let them down slowly to the ground.

Mr. Orin Parker, of Washington, D. C., has patented an improved process for preserving meats, etc. The process consists in drying air by subjecting it to a freezing temperature, and then raising the temperature above the freezing point, and passing the cold air into the preserving room; the object in raising the temperature being to prevent the freezing of the articles to be preserved. Meat preserved in this way may be kept a considerable time after it is removed from the room.

Mr. William E. Marold, of Terre Haute, Ind., has patented a compound to prevent the hair of the head from falling out, and produce a new growth of hair in cases of baldness. The compound consists of decoction of hop roots, grapevine buds, and rosemary.

A necktie and collar fastener of novel construction has been patented by Messrs. Adolph Platky and Emanuel Finsterer, of New York city. The fastener is made with an ordinary button head provided with a flat shank having an eye at its outer end to receive an open spring link, the link being kept in place by notches formed in ends of the shank eye.

A device for removing the salt produced in vats by the evaporation of salt water has been patented by Mr. Henry N. Hewlett, of Oscoda, Mich. An upwardly inclined way having sides about the same height of the sides of the vat is applied to one of its ends, and the salt is removed from the bottom of the vat and carried up the inclined way by means of reciprocating scrapers made to operate forward and backward along the bottom of the vat.

A convenient and effective device for taking up the wear in thill couplings preventing rattling has been patented by Messrs. Charles N. Smith and Tim Murphy, of Danville, Ky. In the bottom of the thill coupling is placed a block, having a concave inner surface and a wedge shaped flange projecting upward at its rear side. Between this block and the thill iron is a rubber, and over the rubber a facing plate. A screw which passes through the bottom of the coupling forces up the wedge plate and tightens the coupling.

Mr. Samuel C. Kennedy, of Worthington, Ind., has patented a machine for sawing cord wood. In upright posts, secured to the top of a rectangular frame, are journaled horizontal shafts, the lower one carrying a large cog wheel and the upper a small cog wheel. To one end of the upper shaft is attached a balance wheel having a wrist pin to which is attached a pitman that carries the saw. Motion is imparted to the devices by a crank on the large cog wheel, and suitable devices are provided for holding the wood to be sawed.

Mr. William A. Reddick, of Niles, Mich., has patented improvements in the construction of table forks. The fork is formed of two pieces of wire, one longer than the other. The long piece is doubled upon itself, and the ends bent to form two tines, and the loop end is bent to form a handle. The short piece is straight, and placed between the tines of the long piece, and extends to the lower part of the handle. The pieces are then secured together by wires or ferrules, and tinned together, forming a cheap and durable fork.

A cake pan, composed of an expansible rim, having a catch of peculiar construction by which the ends of the ring are held together under pressure to form a close joint, and a bottom that is adapted to spring the rim open when the catch is released, so that the baked cake may be removed without handling the heated pan, has been patented by Mr. John R. Connor, of South Oil City, Pa.

Mr. Orin Parker, of Washington, D. C., has patented an improved method of making ice and cooling in general. In the bottom of the freezing room is a tank for catching the water to be frozen into ice, and supported above a floor in the top of the room is a series of shallow tanks placed one above the other, and containing salt water. Through these tanks pipes carrying compressed air and pipes carrying water pass, their lower ends extending into the freezing room. The expansion of the compressed air, as it passes into the room from the pipe, reduces the temperature of the room, and the water being thrown into the room in a spray freezes as it falls into the tank in the bottom of the room.

Mr. Edward P. Waters, of Roseville, Ill., has patented improvements in harness trees and pads, by which the skirts may be adjusted to any required length and firmly held. The harness tree is provided near its ends with pockets for receiving the ends of the skirts, and the skirts are held in their place in the pockets by the terrets, and by loops attached to the tree. The upper end of the skirt has holes through any of which the terrets may pass, lengthening or shortening the skirt as desired.

An ironing board that can be easily raised or lowered and locked in position has been patented by Mr. James T. King, of Fowler, Ind. The board is supported by two cross-pivoted pairs of legs, the upper ends of one pair being hinged to the underside of the board at one end, the upper end of the other pair of legs being hinged to a ratchet bar that slides longitudinally on the under side of the board between guide strips, and controls the height of the table by being moved out or in through the guide strip.

An improved compound for making brick, tile, etc., has been patented by Mr. Henry H. Hunt, of San Antonio, Tex. It consists in combining hydraulic cement with a soft stone known as "magnesian limestone," which has heretofore been considered a waste material. The stone is ground, and the materials thoroughly mixed dry, and then wet up and pressed in moulds, and after being dried for one day are soaked in water for two days, when they are ready for use.

Mr. Joshua E. Howard, of Grape Vine, Tex., has patented improvements in the ventilating attachment to hearths, patented by William S. Winfield, April 6, 1875. The improvement consists in extending the ventilating box downward sufficiently to project into the room below, and providing its front face with an air passage above the ash box, so that a current of air will always pass up from the room below that to which the ventilator is applied, and not be obstructed by the ash box.

A new fastening for a shoe lace has been patented by Messrs. Ewen C. C. Henderson, of Picton, and Thomas A. McDonald, of Durham, N. S. The invention relates to the class of shoes laced with a single lace. One of the flaps of the shoe above the holes or hooks for lacing, has three holes, arranged in a triangle, and through these holes the lace is passed in such a way that the end of the lace will be firmly held by a part of the lace on the outside of the flap.

Mr. John B. Gleason, of Dayton, O., has patented an improved car coupling, consisting of a hook-headed catch that is pivoted between the sides of the draw bar, and is concaved in its rear end, having rounded projections at the corners. Behind this hook is a sliding block, rounded to fit the concavity of the hook, and is held to it by a spring placed back of the block. In the center of the rounded end is a cavity into which one of the arms of the hook fits when the hook is open, to retain it open. The hook is opened and closed by levers secured to and operated from the sides of the car.

A new device for propelling vessels has been patented by Mr. August Bracht, of Baltimore, Md. The vessel is propelled by the action of currents of water or steam forced from a suitable reservoir in the vessel through pipes so constructed that where the currents of water or steam leave the pipes two currents are forced violently against each other, forming a broad flat jet by which the vessel is propelled.

Mr. George F. Hoefler, of Chicago, Ill., has patented an improved coupling, consisting in a draw head, divided lengthwise by a vertical partition into two compartments, one of which contains a sliding plunger pressed out by a spring, and the other compartment has its outer side formed of a swinging latch wing having at its free end a slot into which a stud on the side of the opposite draw head passes when the cars are coupled. Levers connected with plungers draw them back for uncoupling.

A bearing for propeller shafts, that can be adjusted to take up wear without removing the propeller from the shaft, has been patented by Mr. George W. Zastrow, of Baltimore, Md. The bearing is constructed with a rectangular chamber, having its upper wall properly arched and lined, and a bearing block corresponding in shape to the chamber, and broader than the diameter of the propeller shaft, is inserted into the chamber and supported in contact with the shaft by means of a wedge plate, which is inserted under the block through an opening in the bearing. By inserting thicker wedge plates the wear of the bearing is taken up.

Mr. Charles T. Lanman, of Brookline, Mass., has patented improvements in metal planers for planing irregular forms. The tool holder and frame are connected by a screw to a rack bar that has at its lower end a small wheel that rolls over the pattern, and by suitable gear wheels the planing tool is caused to rise and fall automatically, to give the required shape.

A device for separating cockle from wheat has been patented by Mr. Abraham Life, of New Hampden, Va. A sieve, having spirally arranged ribs on its upper surface and two or more series of openings of just sufficient size to allow the cockle to pass through, has arranged over it a revolving brush for sweeping over the plate. The grain is fed down through an opening in the center of the brush, and as it is carried over the sieve, the brush holds the oblong kinds of wheat with their long diameters to the face of the sieve, and they pass over the openings, while the round cockle seeds drop through, the spiral ribs carrying the grain to the openings at the outer side of the sieve.

Mr. Frederic J. Gardner has patented improvements in sights for fire arms. The front sight is an opaque metal tube, arranged in longitudinal direction with the barrel of the rifle, having a transparent cross disk of glass, the disk having sight hole in its center. The glass does not obstruct any part of the target, and admits of the bull's eye being seen very distinctly through the hole. The rear sight has a transversely slotted body in which a cross slide having a sight hole moves for adjustment.