IMPROVED VALVE SEAT.

Jacob F. Cock, Rockville Centre, N. Y.—This improvement consists in providing a valve seat of leather or other elastic or yielding material, placed in a channel cut in the bottom of the pump cylinder around the valve opening, or placed in a channel in an annular plate, which may also contain the packing for the lower end of the pump cylinder, and to which the valve may be attached. The object of this invention is to provide a valve seat which shall not readily wear, and which will permit the valve to close tightly, and which may be readily repaired. In applying this invention to new pumps, in the process of manufacture the valve seat or lower portion of the pump cylinder is grooved around the valve opening, and in it the rubber or leather valve seat is placed.

IMPROVED GRADING MACHINE.

Irven Coppock, Alba, Mo.—This is a machine to be employed for farming purposes, grading streets and roads, cutting ditches of all kinds, breaking ground for railroad cuttings, etc., and loading it at the same time directly on a wagon running in connection therewith; and it consists of an adjustable main frame supporting a plow that is raised and lowered thereon by suitable mechanism, and which throws, by a shovel or scoop-shaped mould board, the earth on an endless belt that is placed at suitable inclination, and driven by pulley and chain connection with the axle of the main wheels.

IMPROVED LOCOMOTIVE SPRING.

James Jenkins, Cortez, Nev.—In this invention the upper spring contacts with, and rests with its ends upon the ends of the lower. Median clips, employed to embrace the edges of springs, are connected by a spiral spring and internal flexible connection; while clips prevent lateral displacement between the middle and ends. Guide straps allow a free and independent movement to each of the springs upon the other, but not in a lateral direction.

IMPROVED LUBRICATOR.

George W. Gageby and William James, Johnstown, Pa.—This lubricator is for automatically lubricating the cylinders of engines; and it consists of two valves oppositely arranged upon the ends of a common stem, and provided with seats upon opposite ends of a chambered tubular conductor that connects the oil cup and steam chest, and is so arranged that steam pressure from within the steam chest closes the valve against the seat on the lower end of the tubular conductor, and a removal of the pressure from the steam chest allows the valve to drop and permits the lubricant to enter the steam chest.

IMPROVED KEY HOLE GUARD FOR LOCKS.

Calvin H. Covell, Stockton, Cal.—In this invention the casing of a door lock is applied to the door by recessing the same from the inside to the thickness of the lock, so as to leave the door strong enough, and without being weakened to the same extent as by the common mortise lock set in from the edge of the door. A face plate closes the lock from the inside, and is attached to the door by fastening-screws. The sliding latch bolt is guided in the casing and operated by turning the knob spindle in either direction, being engaged by extensions of the guide socket of the knob spindle, the extensions bearing against the lugs of the recessed interior part of the latch bolt. The latch bolt is acted upon by a spiral spring, that throws the same instantly forward when the knob is released. The outer section of the latch bolt is screwed into the wider interior section, and may thereby be readily detached for the purpose of reversing the external section of the latch bolt according to the side of the door to which the lock is to be applied. The external section of the latch bolt is guided in a suitable metal lined recess of the door, the guide recess connecting the edge of the door and the lock casing. The spiral spring is placed outside of casing, and around the exterior section of the latch bolt, between the casing and the enlarged end of the latch bolt, which arrangement of bolt section and spring reduces the width of the casing, and admits the carrying back of the lock from the edge of the door, leaving solid wood where it would otherwise have to be cut away. A pivoted guard plate swings at the inside of the casing adjoining the wood, and closes, when placed in position by its operating pin, the lock against the introduction of a key or instrument from the outside. The pin swings in curved slots of the casing and face plate. The guard plate forms an additional safeguard against the opening and picking of the lock from the outside. The lock is, therefore, of special advantage for outside doors, hotel, and such other rooms that are desired to be secured from the inside.

IMPROVED APPARATUS FOR INTRODUCING POWDERED FUEL INTO FURNACES.

George K. Stevenson, Valparaiso, Chili.—The object of this invention is to introduce powdered or granular fuel, such as coal, coke, or similar hydrocarbons, to furnaces adapted thereto in such a manner as to insure a more perfect combustion and more intense heat than heretofore; and the invention consists in connecting the fuel tube with furnace by a sleeve and tube, the latter of which is provided with a twisted plate that is made adjustable, as hereinafter described. The fan heretofore used exclusively in the attempts to introduce powdered fuels has not given satisfactory results, on account of the uncertainty of the blast of the fan, except at a given high velocity, which circumstance has been the cause of either their failure or of greatly diminished value.

IMPROVED ATMOSPHERIC GAS ENGINE.

Joseph Wertheim, Bornheim, Prussia.—This invention relates to an improved combined atmospheric gas engine, in which the explosive force of a suitable gas and air mixture and the atmosphere pressure are utilized as motive powers; and it consists, mainly, of a cylindrical explosion dome, connected by a siphon pipe with a reservoir. In this pipe, but at its lower part, is a paddle wheel, arranged in a casing with curved chutes, on which the power of the explosion in the dome and of the atmospheric pressure created by the vacuum therein is exerted by means of water or other liquid. The explosion may be produced by a suitable mixture of illuminating gas and air that is admitted into the explosion dome, and ignited by a slide valve with an igniting mechanism. The explosion forces the liquid, through a double valve arrangement of the siphon pipe, paddle wheel, casing, and connecting channels, into the liquid reservoir at the end of the siphon pipe, and back again by the vacuum formed in the dome and pipe, imparting, by the forward and return motion, a continuous rotary motion to the paddle wheel. The liquid valves control the escape of the gases from the explosion chamber, in connection with the return of the liquid, by means of a slide valve and interior pendent float valves, any mechanically escaping liquid being returned by a small collecting chamber and pipe to the liquid reservoir. The regulating device is operated in connection with the fly wheel of the paddle wheel shaft, interrupting temporarily the explosions in the dome when the speed is too fast.

IMPROVED COMBINATION TOOL.

Isham U. Malphurs, Gainesville, Fla.—This is an ingenious combination of monkey wrench, gimlet, screwdriver, and pipe tongs or nippers. The lower end of the wrench bar forms one jaw of the tongs, the opposite jaw being pivoted to said bar. The end of the pivoted jaw handle is fashioned out into a screwdriver, and the gimlet is attached to the back of the movable jaw of the wrench.

IMPROVED COTTON CHOPPER.

John H. Gilleland, Peak's Hill, Ala.—The new feature in this machine consists in two levers, which are pivoted, near their lower ends, to each other and to a cross bar of the frame, so as to work upon each other like the parts of a pair of scissors. In the adjacent faces of the lower ends of the levers are formed half-round notches, which, when the said ends are closed upon each other, form a bearing for the forward journal of the chopping shaft, which may consequently easily be detached.

IMPROVED FRICTION CLUTCH.

Samuel Peppard, Oskaloosa, Kan.—This is an improved device to take the place of cranks and pawls for transferring motion, which shall have no dead point, and will act at once when the power is applied. The side or face of the wheel or other object to be driven is made conical, to correspond with the faces of conical rollers, which revolve loosely upon the journals of an axle. The middle part of the axle is widened and has angles formed upon its opposite sides. The axle has a hole through its center, through which a shaft passes. The hub of a disk, to which power is applied, revolves upon the shaft. The face of the disk is made slightly conical, and has inclines formed upon it, so that when the disk is turned slightly in one direction it will be wedged by the rollers between the wheel and the ring, so as to carry the said wheel with it in its revolution.

IMPROVED CLAMP FOR HOLDING RATCHET DRILLS.

Louis Beland, North Springfield, Mo.—This is an improved apparatus for holding and feeding ratchet drills employed in drilling fish plates while in place on the rails. It consists of a clamp formed of two parallel bars of iron or steel, which serve as ways for a sliding nut, through which the clamping or feeding screw passes. The said bars are connected at each end with hooks of peculiar form, which are capable of engaging with the lower side of the rail. The nut carrying the feeding screw is capable of being adjusted to any number of holes within the limit of the length of the parallel bars.

IMPROVED CAR COUPLING.

Oliver Crum and Milton Crum, Monsey, N. Y.—This car coupling couples in reliable manner without danger to the attendant; and the drawhead has an inclined lateral locking piece. A swinging top hook is raised or lowered for uncoupling and coupling by a swinging bridge operated by a lever arm of the shaft of the coupling hook, so as to uncouple simultaneously the coupling. The interlocking hooks are readily detached in case one of the cars is thrown off the track. The drawhead also has considerable side play, and is capable of resisting more fully the concussions of the cars.

IMPROVED CHUCK FOR METAL-TURNING LATHES.

Jay H. Harris, Sacramento, Cal.—This chuck consists of a pair of jaws that may be made to project more or less beyond the lathe center, and which may be closed tightly on the shaft by a nut, which closes them by following their inclined sides. Dogs are placed eccentrically in the ends of the jaws, which prevent any slipping of the work. This device is quite simple, and is well calculated firmly to hold shafts and other objects to be turned.

IMPROVED DEVICE FOR DRAWING PULLEYS FROM SHAFTING.

Henry F. Casterline, Grand Detour, Ill.—In repairing shafting it is frequently necessary to remove the pulleys; but these after long usage often become set very tightly, so that to take them off involves the expenditure of considerable time and labor. The present invention suggests an ingenious device for the purpose, which consists of swinging hook levers that are forked and curved inwardly at the ends, which spring over the pulley. The levers are pivoted to at traveling screw head that serves to pull the pulley by a screw shaft. A loose pin is clamped into the socket end of the screw, and may be taken out and exchanged for others of different lengths, so as to bear on the shaft end and fit the lever hooks to the pulley, admitting the device also to be used as a jack screw by putting a plate at the center of the screw head.

IMPROVED COAL-HOISTING APPARATUS.

Guiseppe Paci, New York city.—The object here is to hoist coal, bricks, and other articles from vessels directly into the carts by utilizing the power of the horses pulling said carts. There is an inclined endless belt, with step-shaped parts, to be operated by the carthorse for rotating a drum, on which the hoisting rope is wound. The cord runs over guide pulleys of a supporting frame and of a bucket-conveying carriage, that locks and unlocks a fixed button in automatic manner to convey the load or lower bucket. The work of the endless stepping belt is stopped or interrupted by a lever actuating a double clutch and brake mechanism of the winding drum shaft. A weighted lever and swinging hub-locking standard secures the cart in stationary position while the horse is working.

IMPROVED TUBE SHEET AND FASTENING FOR TUBES OF STEAM BOILERS.

Daniel Hess, Greenville, Miss.—The object of this invention is to enable the defective fire tubes of steam boilers to be removed with convenience and dispatch, and without injuring the tube sheets. To this end, the patentee countersinks the holes or apertures in the tube sheets to receive screw nuts, which are applied to the ends of the fire tubes for securing or fastening them to the tube sheets.

IMPROVED SHACKLE.

Henry W. Dilg, Portland, Oregon.—This invention consists in constructing the shackle of two parts or curved bars having a loose jointed or detachable hinge connection at one end, and one of them made of angular form at the other end, whereby it is adapted to be locked to the companion bar.

IMPROVED MOUNTING FOR PORTABLE ENGINES.

Robert M. Beck, Westminster, Md.—This invention relates to an improved mounting for portable engines, designed with a view to simplicity, cheapness, and substantial construction; and it consists in the improved means of supporting the boiler and its engine upon wheels, and strengthening and bracing the same in its attachment.

IMPROVED CAR WHEEL CHILL.

William Wilmington, Toledo, O.—The object of this invention is to cast a wheel with such an arrangement of the chilled portion of the tread as would give the greatest wearing qualities, and at the same time preserve such form and amount of unchilled surface to the tread as will entirely, or to a necessary extent, relieve the tension which is the result of casting wheels with the entire face of the wheel chilled to a uniform depth. The improvement consists in constructing the chill with an inner recess at the outer edge of the portion forming the tread, and with a number of transverse grooves, running from said recess across the inner face of the chill, both of which grooves and recess are to be filled with sand or non-chilling material to conform to the face of the chill preparatory to casting the wheel.

IMPROVED WROUGHT IRON BRIDGE.

William H. Miller, Curwensville, Pa.—This consists of a truss made of six-sided frames of iron placed upright in a line and clamped together. The top and bottom chords are provided and the structure is stayed with plates and braces in a manner calculated to make a light and strong bridge, capable of sustaining great weight, and being very stiff against lateral vibration.

IMPROVED STUMP PULLER.

Joseph Richter, Jordan, Minn.—This invention consists in the combination of a shaft, ratchet wheels, two pairs of pawls, connecting rods, chains, and holding pawls with each other and with the frame; in the combination of the cords or chains and the hooks with the pawls, the connecting rods, and the levers. When the rear ends or handles of the levers are raised, the weight of the rear pawls will hold both pawls in gear with the ratchet wheel; and when the rear ends or handles of the said levers are lowered the weight of the rear pawls will hold both pawls in gear with the ratchet wheels. By operating the levers, the shaft will be turned, winding up the chain, and drawing the stump. The shaft is held from being turned back by the resistance of the stump when the levers are being raised to make another stroke by the pawls, which engage with the teeth of the ratchet wheels, and are pivoted to and slide upon a rod, attached to the rear posts of the side frames. The outer ends of the pawls project to serve as weights to hold their engaging ends against the teeth of the ratchet wheels, and as handles for sliding them away from the said wheels.

IMPROVED CAR COUPLING.

Charles G. Case and Daniel Gould, Davenport, Iowa.—This consists in a swinging and spring cushioned coupling hook, provided with an upwardly projecting shoulder connected with a top shoulder in the opposite drawbar by a swinging cam. When the cars approach each other the coupling hooks enter their corresponding cavities, and may then be locked by side levers. The uncoupling is also readily accomplished by swinging the cams down so as to release the hooks from the top shoulders of the drawbars.

IMPROVED COTTON PRESS.

Charles T. Mason, Sumter, S. C.—This consists in the arrangement, in a suitable frame, of two screws, each provided with a right and left hand thread, and two followers or platens, between which the cotton is pressed, supported upon, and moved in opposite directions by the said screws. The object is to throw the entire pressure of the followers on the compressing screws and thus obviate the necessity of making heavy and expensive press frames, and also to increase the rapidity with which the press may be operated.

IMPROVED AUTOMATIC BRAKE LOCK.

Garhard H. Roling, Bellevue, Iowa.—This wagon brake is operated automatically in going down hill by the neck yoke, and released by the strain on the whiffletrees when on level ground. The alternating application and release of the brakes by the automatic action of the horses, according to the nature of the ground, is thus produced in effective and reliable manner. The brake is also automatically released whenever the wagon has to be moved backward.

IMPROVED CRACKER MACHINE.

John Rannie and Alexander Rannie, Palmyra, N. J.—This machine is designed especially for use in the manufacture of what are known in the trade as "soft" goosd, such as ginger snaps, lemon snaps, bon-bons, fancy dessert biscuits, etc. It may, however, be used with advantage for the manufacture of any kind of crackers. The construction is such as to prevent the dough from adhering to and clogging the cutters, to indicate the exact thickness of dough that is passing from the feed rollers to the cutters, to stamp the dough with various devices before it passes to the cutters, to enable the scraps to be readily separated, and to prevent the cakes of dough from turning over as they pass from the feed apron to the pans upon the delivery apron.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED TUNING PIPE.

William G. Cook, Jersey City, N. J., assignor to himself and D. M. Read, New York city.—The object of this invention is to furnish an improved reed instrument, which shall be so constructed that it may be adjusted to sound any note of the scale, and which may be used as a tuning pipe and as a toy musical instrument. The invention consists in the combination of the slotted sliding bar, having an index plate formed upon its outer end, the lever, and the pivoted fulcrum bar, with the slotted frame, the reed, and the case.

IMPROVED OIL STOVE.

Jacob M. Chamberlain, Albany, N. Y.—This stove, for burning kerosene and other oils, consists in the arrangement of an oil reservoir, provided with a space for water upon its upper surface, and an oven, and flues and dampers for controlling the direction of the smoke and utilizing the heat. It also consists in a vessel of peculiar construction for heating or cooking purposes.

IMPROVED BEVEL.

Albert Devoe, Oneonta, N. Y.—This is an improved extension brace rule, by which the bevels at both ends of a brace, and the mortises for a brace, may be readily laid out at any angle of the same, the brace rule being also conveniently used as a mitering and try square. It is composed of sliding and slotted main pieces, that are connected by a guide and clamp screw, and provided with graduated end rules, which are adjusted on the main pieces by additional clamp screws.

IMPROVED BALE TIE.

John L. Sheppard, Charleston, S. C.—The buckle is approximately hook shaped, and pivoted to the band. The free end of the band is looped around the bent free arm of the buckle. In effecting the lock, the buckle is turned on its pivot, so that the loop of the band will slide under the bent end of the buckle arm. The tie is simple, strong, easily manipulated, and cheap.

IMPROVED UMBRELLA.

Emerson Folsom, Toledo, O.—This improved folding or telescoping umbrella or parasol may be readily arranged into small and compact shape for being conveniently carried, packed, or stored, or drawn out for use as a common umbrella or parasol, the mechanism being of simple, yet strong and durable, construction; and it has a telescoping stick and ribs that are locked by spring catches when drawn out for use, in connection with the runner and tip holder.

IMPROVED TYPE WRITER.

William H. Snider, Angus, Ontario, Canada, assignor to himself and Jonas T. Bush, of same place.—The object of this invention is to so improve the key levers for type writers that either a considerable reduction in the number of keys may be made, or the application of the keys be enlarged to a considerable extent, so that the speed of the type writer may be increased and the working of the same facilitated. The invention consists of a compound key lever, obtained by attaching a steel spring, with a type at the movable end, to the rear end of the same, and arranging one or more letters on the key itself, so that by depressing the key either the letter of the spring or the combination of spring and key letters be formed.

IMPROVED PAPER BOX.

Richard H. Foster, Gloversville, N. Y.—This invention relates to packing boxes for that class of gauntlets that are provided with stiff wrists; and it consists of a square box provided with internal corner pieces or blocks, and with a central elevated table at the bottom of the box, and a removable piece that is received by notches in the inner corners of the blocks, the object being to provide a box in which gauntlets may be packed without injuring the stiff portion of the wrist. The box and the corner pieces may be made from pasteboard, wood, or other suitable material. The advantage claimed for the invention is that gauntlets having stiff wrists may be packed in boxes of this description without injury to their form.

IMPROVED FEED BAG FOR HORSES.

George C. Booth, New York city, assignor to himself and Robert Gibson, of same place.—The mouth of this feed bag is attached to a band or hoop of wood or iron, to which is hinged a cover for closing the bag, and which, when the bag is in use, acts as a stay or brace for holding the bag in the required position, being hooked into the hame or breast straps of the harness. There is a peculiar arrangement of cords for sustaining the bag, by which it is prevented from swinging, and is held steadily. It is claimed that the bag is always in the position required for feeding; it throws no impediment in the way of breathing; it can be readily attached and detached; and it folds compactly with or without the feed contained. The annoyance to the horse of inhaling the dust of the feed is entirely obviated, and the head is relieved of the weight of the bag, giving freedom of motion to the horse's head, avoiding the wasting of feed by the movement of the head.