

**IMPROVED FEATHER RENOVATOR.**

Nathan P. Chaney, Pottsdam, N. Y.—The hollow drum for holding the feathers is constructed in two parts, of which the upper one is detachable and reversible for convenience in operating the machine. In the lower part is a perforated tube for introducing the steam, and a canal for carrying off the water of condensation, the canal being covered by a wire screen to prevent the feathers from falling into it. The drum also contains a revolving shaft with arms for stirring the feathers, and there is a steam jacket to the lower part, to which steam is admitted from a suitable boiler.

**IMPROVED ANIMAL TRAP.**

Henry F. Barnett and William Carpenter, Weston, Mo.—The animal sees the bait upon a hook through the open front end of a decoy box, and, approaching it, he enters the said box, walking upon the tilting platform. His weight causes the back end of the platform or door to descend, and he is precipitated into a lower box, whence he cannot escape. The door returns to a horizontal position as soon as its back end is released from the weight of the animal, and the trap is reset.

**IMPROVED SPIRIT LAMP.**

Sylvanus S. Robinson, Holden, Mo.—This invention provides an improved combined spirit lamp and blowpipe for the use of mechanics, chemists, and students. It consists in the particular construction and arrangement of a detachable water receptacle or boiler, located above some of the burners of the lamp, and provided with one or more steam pipes with small orifices, which open near one of the burners, so that the heat of a part of the burners generates steam, which, issuing from the orifices of the steam pipes, forms a blowpipe, which directs the flame of the burner outwardly to a point or focus for convenient use.

**IMPROVED GAS REGULATOR.**

Leander E. Fish, Washington, D. C.—This improvement rests in the construction and arrangement of purifying pans in the base of a gas regulator for the purpose of eliminating the heavy hydrocarbons which would have a tendency to impair the sensitiveness of the regulator. The pans are formed with inwardly inclined sides, so that each pan forms a support for the next one above, the inclination also affording means for lifting out the pans. The improvement further consists in a tapering water sealing trough, which is made by simply attaching a single strip of metal to the perpendicular side of the tank, thus simplifying and cheapening the construction of the seal, and diminishing the chances of overflow. The regulator proper is also of an improved form, being constructed conformably to the principle of the tapering water seal.

**IMPROVED PLANISPHERE.**

Paul Kuhnel, New York city.—By this device a view of both the terrestrial and celestial hemispheres is obtained, the course of the sun on the ecliptic (and thereby the increase and decrease of the days and nights during the year) illustrated, and also the distance and latitudes of different places on the earth, as well as the steamship connections of the different parts of the globe, indicated. The invention consists of two centrally pivoted and jointly revolving disks, provided with polar projections of the two halves of the earth on one side, and polar projections of the heavens on the other side. The ecliptic is indicated by arc-shaped grooves, along which a movable carriage, representing the sun, traverses. A graduated scale indicates the latitude and distance of any point on the globe.

**IMPROVED FIREMEN'S SUITS.**

John W. Ostberg, Stockholm, Sweden.—This is an air and water proof suit that covers the entire body, and is continually flooded with water, which is introduced by pipe connection with the hood, covering the head gear or helmet of the dress. The helmet is tightly applied to the body-covering dress, and the dress strapped to the body, air being supplied to the inside to keep out the smoke by an air supply pipe and pump. The helmet is provided with a hollow valve mask, through which the water is continually flowing, passing by a connecting tube to the hood that is fitted on the face mask and extended over the dress to shed the water over the same.

**NEW AGRICULTURAL INVENTIONS.**

**IMPROVED CORN PLANTER.**

John V. Reams, Midland City, Mich.—The essential features are ingenious and novel devices, for throwing the seed-dropping mechanism out of gear and raising the furrowing plows from the ground simultaneously, and also for operating the seed wheel independently, when thrown out of gear with the revolving axle.

**IMPROVED PLOW.**

William R. Pool, Havana, Ala.—This invention consists in a stock, which is combined with a forked piece, having sharp projections and a pair of blocks. The attachment is used with a narrow share for forming a smooth surface at bottom of furrow for the reception of cotton seed, and the working face is provided with forks that embrace the standards, and are fastened thereto by a bolt or rivet. It has also a shoulder. Small blocks press out the upper part of the furrow, that it may more conveniently receive manure and corn when the same are to be inserted.

**IMPROVED FENCE POST.**

Eugene Powell, Delaware, O.—The upper ends of wooden blocks inserted in the ground are notched transversely to receive the cross head, which is made of wrought iron, bent to form eyes, which receive the sharpened ends of the stakes. The ends of the rails of the adjacent panels are placed alternately between the stakes and one upon the other. The upper ends of the stakes are secured to each other by staples.

**IMPROVED ANIMAL-WEANING BITS.**

Alfred Bartlett and Alfred J. Bartlett, Jr., Toledo, Iowa.—This is an improved anti-sucking bit for calves, etc., which is not liable to be stopped up by hay or grass, and which allows the ready removing of the same without taking the bit out of the mouth of the animal. It consists of a hollow bit, with central perforated swell, stationary end loops, and open ends. It is cleaned by introducing a wire rod through its hollow portion.

**IMPROVED PLOW.**

Asa H. Piland, Margarettsville, N. C.—This relates to plows of that class in which detachable sweeps are employed, for the cultivation of cotton and corn in the earlier stages of its growth; and it consists in the peculiar construction of a combined moldboard and sweep or bat wing, made in a single piece, whereby, it is claimed, the plow is enabled to stand much greater service and harder strains without requiring repairs.

**IMPROVED WIRE FENCE BARB FORMER.**

Rheubin H. Pooler and William T. Jones, Serena, Ill.—The object of this is to apply three-pronged barbs to the wires of wire fences. In applying the barbs, the single prong is inserted in the cavity of a pair of pinchers, with the outer side of each parallel prong resting against a jaw of said pinchers. The barb and pinchers are then made to straddle the fence wire, and the pinchers are closed, which forces the parallel prongs across the wire in opposite directions.

The pinchers are then opened and removed, leaving the barb firmly attached to the wire.

**NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.**

**IMPROVED CHILDREN'S CARRIAGE.**

William E. Crandall, New York city.—The body of the carriage has the two frames of its top, the cover, and sashes in the frames made severally independent and detachable to facilitate packing and transportation.

**IMPROVED ADJUSTABLE KEY GUARD.**

James S. Wilson, Trenton, N. J.—This device includes a bar which, after the door is locked, is slipped into the keyhole beside the key and is turned partially round. Attachments of the bar are then firmly secured to the key handle, so that it is impossible to turn the key without first detaching the said device, and that cannot be done from the outside of the door.

**NEW MECHANICAL AND ENGINEERING INVENTIONS.**

**IMPROVED SOLDERING TOOL.**

August Goetze, Baltimore, Md.—This invention relates to an improved construction of soldering iron especially adapted to capping cans of preserved fruits, vegetables, oysters, and other articles of food. The invention belongs to that class of soldering irons in which the copper block is attached to a hollow tube which is provided with a handle and adapted to be rotated about a central shaft, and also made vertically adjustable thereon. The improvement consists in the mode of attaching the soldering blocks to the tube to insure greater strength and durability.

**IMPROVED SELF ACTING GRAPNEL.**

Jean Baptiste Toselli, Paris, France.—According to one arrangement, this grapnel is expanded by being suddenly raised while immersed in the water. The second arrangement, on the other hand, is made to expand by the act of lowering in the water; but in both cases the resistance of the water is the agent by which the arms of the grapnel are caused to expand or close together without any mechanical aid. This device, which is as simple as it is ingenious, will be found fully described and illustrated on page 214, volume XXXI of this journal.

**IMPROVED TRACK CLEANER.**

Silas T. Bentley and Jacob Estep, Union, Iowa.—This invention relates to a novel construction of machine mounted upon a platform car, to be used for cleaning snow from railroad tracks whenever the same become blocked by drifts. It consists in the particular construction of a derrick mounted upon a platform car and pivoted in the center so as to turn readily to one side, with the devices operating in connection therewith. Said derrick carries at one end a frame work in which is pivoted a scoop which may be raised and lowered by a windlass with pulleys and a cord attached to a bale on the said scoop. To the derrick above the scoop is pivoted a frame carrying a cut-off for the scoop after it is forced into the snow bank, which cut-off divides the snow in the scoop from that outside, and is operated through a cord, pulley, and windlass. The rear of the frame carrying the scoop is provided with a spring catch, with cord and windlass for dumping and restoring the scoop to its proper position upon its pivots.

**IMPROVED RAILROAD RAIL.**

Samson Sutton, Lisbon, Iowa.—This is a railroad rail constructed of two symmetrical rail sections joined in longitudinal direction and having a central wooden core. As the joints of the rail sections reach only half way across the rail head, the other half bears the wheel, and allows the wheels to pass thereby over any shrunken joint without battering, jolting, or breaking.

**MACHINE FOR DESCRIBING AND CUTTING REGULAR CURVES.**

Frank A. Polsley, Jackson Court House, W. Va.—In using the machine to describe a curve, a cone is so adjusted that, when revolved, the edge of a wheel may describe the required curve upon the face of the said cone. The paper upon which the curve is to be drawn is secured to the table, and the pencil is adjusted to rest upon it. Then, by turning the table, the point of the pencil will describe the desired curve. When the curves are to be cut, a table is substituted which has two dovetailed grooves formed across its face at right angles with each other, and intersecting each other at the center of the table. In these grooves are inserted four dovetailed blocks, to which are attached two pins at a little distance apart, to receive and hold the object to be cut. The blocks are so adjusted that the cutter, while cutting the curve, may pass between the pins.

**IMPROVED PISTON PACKING.**

William W. St. John, Pisgah, Mo.—This consists of a piston packing wider on the under side than elsewhere, for the purpose of bearing the weight of the piston and piston rod, in addition to the packing pressure, without greater wear than in the other parts.

**IMPROVED WATER WHEEL.**

Nelson M. Prince, Concordia, Kas.—This is a contrivance of two gates, so pivoted on opposite sides of the wheel and connected together that the water pressure is balanced. It is claimed that the gates work easier, and the form is such that each one makes two chutes, through which the water enters upon the wheel tangentially, giving good results.

**IMPROVED BOOT HEEL AND EDGE POLISHING MACHINE.**

Leopold Graf, Newark, N. J.—This is a polishing machine for finishing the edges of the heels and soles of boots and shoes, whereby two polishers—one for the heel and the other for the sole—are operated by one and the same driving shaft, in such manner that both operations may be carried on at the same time. There is, beside, a simpler and better contrivance of the gear by which the polishers are operated; an arrangement for obtaining a better action for the polishers, and a higher speed of them for a given speed of the driving shaft, an improved contrivance for gaging the polishers to edges of different thicknesses, and of an improved clamp frame for holding the shoe.

**IMPROVED HOLDER FOR GRINDING NEEDLES.**

Henry M. Dixon, Brooklyn, E. D., assignor to himself and Robert E. Dunham, Jamaica, N. Y.—This consists of a little tube with notches in the side, suitably shaped for inserting sewing machine needles, so that the points will project at the end suitably for grinding them. The tube forms a holder, which can be held and turned uniformly, so as to grind the points round and true.

**IMPROVED FIRE ENGINE.**

Clinton W. Clapp, Wappinger's Falls, N. Y.—This consists of a couple of receivers for carbonic acid gas and a steam pump, so combined and fitted with hose and nozzle for discharging the water and the gas that, by alternately charging the receiver and working off the gas through the pump, the gas can be employed as the motive agent for the pump, and, at the same time, the exhausting gas can be used separately or together with the water for extinguishing the fire.

**IMPROVED MIDLINGS SEPARATOR.**

Morris N. Elwell, Oneonta, N. Y.—This inventor proposes a verti-

cal draft box, in the upper part of which are a number of inclined slats, for breaking and distributing the stream of middlings and the current of air. Said slats are at the entrance of a horizontal box, along which the particles carried over from the vertical box are carried over a hopper, into which the final separation is made by a lighter current up the spout. The middlings are fed into the upper end of a box from a hopper, shoe, and regulating slides, and the bran is discharged through a fan. Below this apparatus is a duplicate set, in which the middlings are treated again in the same manner by air currents set in motion by another fan.

**IMPROVED WATER WHEEL.**

Henry Waltner, Hamilton, Ohio.—This invention consists of buckets hinged to the periphery of the wheel to close in for passing cut-off partitions, employed to utilize the dead pressure of the water. The said buckets are provided with an arm which extends inside of the periphery of the wheel and strikes a stud on the lower part of the case. This throws out the bucket so as to take the water immediately after passing the cut-off. Among the advantages claimed is that the device works with any head of water, also under back water. It employs the whole periphery of the wheel for the utilization of the water power, and gives the advantage of the full pressure of the solid column of water of a given head of water, without the necessity of an accelerated motion.

**IMPROVED PUMP.**

Benjamin Eby and Jacob S. Fiester, Kinzer, Pa.—To the pump barrel beneath the frost line is attached a right angled spout, against the mouth of which is pressed a valve. The valve is pivoted to an arm attached to the spout, and to its inner end is attached the lower end of the connecting rod, which is pivoted to a trigger, which is pivoted to the pump barrel in such a position that, when the handle is lowered, it may strike and press it downward, uncovering the mouth of the nozzle and allowing all the water above the frost line to flow out, so that it cannot freeze. As the handle is raised to work the pump, the valve plate is again raised against the spout by a spring, to prevent the entrance of air into the pump barrel.

**IMPROVED LIFTING JACK.**

David Hiltabidle, York Road, Md.—This invention relates to that class of lifting jacks in which two lifting links are pivoted to an oscillating lever upon opposite sides of its fulcrum, and are arranged to operate alternately upon opposite sides of a double ratchet bar to lift the load. The invention consists in the construction and arrangement of devices operating in connection with the links for the purpose of releasing them from the ratchet bars.

**IMPROVED PROPELLER FOR BOATS.**

John W. Dolch and George Haydn, Baltimore, Md.—This invention belongs to that class of propellers in which a long spiral propeller is arranged to revolve in a cylindrical channel in the bottom of the boat, which channel opens into the water at both ends, and through which the water is discharged by the revolutions of the propeller to urge the boat forward. The invention consists in making the cylindrical channel with a detachable upper half, which is fastened by means of bolts to the said lower half, the upper detachable portion being provided with hangers, in which the ends of the propeller shaft are journaled so that the propeller is removable with the upper section of the channel.

**IMPROVED SHINGLE MACHINE.**

Moses Stewart, Dallas, Texas.—The object here is to improve the construction of the shingle machine known as the Everts rotary twelve-block shingle machine, in such a way as to prevent the blocks from jumping when the dogs strike them. The invention consists in an incline formed upon the rear ends of the guide plates for the stems of the dogs to slide down upon, so that the dogs may take hold of the blocks gently and without moving them from their place.

**IMPROVED RUDDER-INDICATING APPARATUS FOR VESSELS.**

Justus A. Briëbach, Clapton, England.—This is a device operated automatically by the rudder for the purpose of showing, at a distance, the position of said rudder, and, consequently, the direction in which the vessel is steering. The rudder is connected by rods to colored glass slides in a lantern, located in the forward part of the vessel. When the rudder is amidships, the slide carrying the colored glasses will be in its central position, and an equal amount of light of each color will be exhibited through the opening of the lantern; but when the rudder is moved over in one or other direction, the slide will be raised or lowered, and a greater amount of one or other color will be exhibited.

**IMPROVED SAFETY APPARATUS FOR RAILROADS.**

John B. Prohias, New York city.—This invention consists of an elevated rail at each side of the track and hook-shaped or grooved roller projections attached to the car. In case the main rails sink or otherwise fail, or the car wheels or axles break, the cars will catch on these side rails by the projection, and thus be prevented from injury. The contrivance is also designed to be such that, in crossing places where the ordinary rails cannot be well laid, the cars may run altogether by the grooved wheels on the guard rails, the latter being firmly supported on piles, and the wheels being suitably connected with the power.

**IMPROVED MACHINE FOR FINISHING BARRELS.**

Edmund W. Gillman, Long Island city, N. Y.—This is an apparatus for evening the staves, pressing on the hoops, dressing off the ends, and crozing and chamfering the barrels. The barrel, having truss hoops, is rolled into position between the presser rings, which at the time rest between the pushers. The latter are then pushed forward so as to press the ends of the staves strongly between the rings, to even the staves lengthwise. Pressure is next applied against the hoops, for pressing them on and tightening up the joints of the staves. As soon as the staves are pressed endwise and evened by the rings, they are dressed off true by a rotary cutter. A gage then runs against the ends of the staves to gage the distance of the evening, crozing, and chamfering tools from the ends, said tools being carried by a rotary cutter head.

**IMPROVED GOVERNOR.**

Bernard W. Johnson, Barry, Ill., assignor to himself, Joseph D. Partello, and John M. Ryan, same place, and Miller T. Greenleaf, Quincy, Ill.—Through the lower part of the valve stem passes a lever pivoted to some suitable support. The lever passes through a cage, in which is inclosed a glass cylinder half filled with mercury. The governor is so adjusted that the cylinder may be in a horizontal position when the governor is running at its proper speed, with about half the machinery to be driven in gear with the engine. If, now, some of the machinery is thrown out of gear with the engine, the rise of the balls tends to close the valve, and also raises the outer end of the cylinder. This causes the mercury to flow toward the inner end of said cylinder, and changes the leverage, so that the engine does not have to keep up its speed to keep the valve closed. If, on the other hand, more machinery is thrown into gear with the engine, the balls lower, and the outer end of the cylinder is depressed, causing the mercury to flow toward the outer end of said cylinder, giving more leverage against the centrifugal force of the balls, and bringing the engine to its proper speed quicker than the balls could do alone.