

Cellulose.

Dr. Mitscherlich, of Darmstadt, has devised a method of making paper stock (cellulose) from wood by a chemical process, which differs somewhat from those previously in use. The chief peculiarity of this process, which is in use already in Prussia and Saxony, says the Hesse *Generbeblatt*, consists in this, that the incrusting substance of the wood is not destroyed, but only separated from the cellulose, and eventually rendered soluble.

In this process, it is not necessary to cut the wood up very fine, as in the Sinclair process, but only to split it up like ordinary firewood for a parlor stove. A chemically prepared solution of lime is boiled for six hours with the wood under a pressure of 3 atmospheres. After the boiling, a portion of the incrusting material is found dissolved in the liquor, and part of it in the pores of the wood, from which it is extracted by a suitable squeezing apparatus.

If it is desired to make a very valuable paper stock, which shall be as white as possible without bleaching, they only employ white wood as free from rosin as possible, like poplar, linden, etc. These kinds of wood are not decolorized any farther in this process, and the albuminoid and gummy substances are mostly dissolved. The success of this process depends less on the pressure during boiling than on the temperature, which must not exceed 248° Fah.

The use of oak wood for paper stock offers one advantage, namely, that the tannin contained in it is obtained as a by-product, and the solution thus obtained can be very profitably employed for tanning, as experiments in this direction have abundantly proved. The solution which runs off from the wood, or expressed from it, in this new process, is already so concentrated that evaporation seems superfluous, and is only undertaken when a very concentrated solution of tannic acid is required either for transportation or for keeping. The other chemicals contained in the lye are in no way a hindrance to the tanning process, but rather aid it. Experiments show that hides prepared in the usual manner, when simply laid in this liquor, were perfectly tanned in ten days.

NEW BOOKS AND PUBLICATIONS.

THE ANDES AND THE AMAZONS, OR ACROSS THE CONTINENT OF SOUTH AMERICA. By Professor James Orton. Third Edition, revised, and enlarged, with Maps and Illustrations. New York city: Harper & Brothers.

In 1867, Professor Orton set out on his first journey across Equatorial South America, and the record of his travels is embodied in the first edition of the present work. In 1873, he made a second expedition, and navigated the Amazons from Para to Yurimaguas, thence over the Andes to the Pacific coast and down to Lima. The main objects of the journey were scientific, and they included a special study of the Marañon region, of which little has hitherto been known, besides the collection of facts illustrating the commercial resources and possibilities of the Valley of the Amazons. We need hardly say that Professor Orton has accomplished his task thoroughly and well, for our readers are already familiar with portions of his journey through the admirable letters which he forwarded to the *SCIENTIFIC AMERICAN* from many interesting points along his route. Those who have read these fascinating recitals, and desire to know more of the strange region which they describe, will gladly welcome the present volume, in whose copious pages details, necessarily abbreviated in the newspapers, are presented in full. The illustrations are excellent and lavishly supplied. By them, and together with the two large maps added, the reader cannot fail to realize the journey so lucidly described by the author.

Recent American and Foreign Patents.

NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

IMPROVED DUMPING CAR.

David Manuel, Readville, assignor to himself and Ezra G. Perkins, Hyde Park, Mass.—This consists of a body supported on rockers, which work on rocker beds mounted on the perch of the car, and having links so connected with the rockers as to allow them to work freely, and at the same time keep them on the rocker bed; and it also consists of a contrivance of the brakes to swing together with the wheels.

IMPROVED STENCH TRAP.

Edward F. Hutchins, Toronto, Canada.—In order to so improve the metallic stench trap in common use that the bursting of the same by freezing is avoided, and that the detaching of the trap for cleaning or melting the ice may be readily accomplished, this inventor proposes a stench trap made of an elastic material, connected in a detachable manner to the pipes.

IMPROVED VELOCIPEDE.

R. Walcot Laurence, New York city.—This invention consists in mounting the steering wheel on the reach of a lever pivoted to the seat and arranged in an axle guide, extended forward to the foot rest. It can be worked by the feet to guide the carriage while the propelling power is applied by hand, and the carriage can also be guided by the driving wheels by turning one faster than the other.

IMPROVED METALLIC ROOFS.

Francis C. Conklin, Monroe, N. Y.—This consists in the combination, with a shingle roof, of strips often extending from peak to eaves, also strips nailed at the butt of each row of shingles, and a wood strip arranged along the margin and edge of the two strips. The latter are similarly connected by hooked flanges.

IMPROVED FLOOR CLAMP.

William S. Spink and Wilber Mason, Providence, R. I.—This consists of a grooved base piece, with floor entering knives, a ratchet slide piece, and an operating lever, together with moving and locking pawls. The operating pawl has a tap pin that releases the locking pawl when the slide piece is to be carried back.

IMPROVED FASTENER FOR THE MEETING RAILS OF SASHES

George Edwards, Brompton Road, South Kensington, England.—This improvement serves to facilitate the disengagement of the devices previous to moving the sashes. It is also provided with means for drawing together the adjacent edges of the two sashes, to prevent rattling and exclude drafts. It is a simple and ingenious spring bolt, having a screw attachment whereby the sashes may be drawn together.

IMPROVED PLASTERING LATH.

Theophilus A. Scheller, Marysville, Cal.—This is an improved plastering lath, by which the plastering is firmly held without danger of drooping and without the use of hair or other binding material. It has dovetail mortises cut into the wood.

NEW AGRICULTURAL INVENTIONS.

IMPROVED ANIMAL TRAP.

William Wallace, Tarrytown, N. Y.—The stationary and movable jaws are pivoted together, and extend above the pivot a suitable distance to be closed quickly by a strong string. The stationary jaw has an extension forming a stake, by which the trap may be set up in the ground; also an arm on which the trip for setting and springing the trap is pivoted. The other jaw has a catch for hooking the trip. A lever, on the upper end of which the trip is formed, extends downward to the point where the jaws are to gripe the animal, and carries a yoke to be set in the runway, so as to be moved by the animals in attempting to pass under it.

COVER FOR THRASHING MACHINE TUMBLING RODS.

William R. Wilcox, Sterling Center, Minn.—This cover for the tumbling rods of thrashing machines will allow the knuckle joint to be oiled without removing the cover.

IMPROVED LAND ROLLER.

Fredus B. Hadley, Monterey, Ill.—This consists of an improved land roller, made hollow, and provided with ribs or flanges upon the inner surface of its shell and the heavy inner cylinder.

IMPROVED GRAIN SEPARATOR.

David E. Fisher, Patterson, Ohio.—For operating or shaking the screen shoe, a differentially ribbed and eccentrically mounted revolving cam is employed.

IMPROVED WEANING BIT.

Philip Heak, Toledo, Iowa.—This consists in the hollow bit having a V bend formed in its middle part, and perforated with a number of holes, and provided with the rigid arms. The rigid attachment of the arms prevents the bit from turning in the animal's mouth and getting into such a position as not to be effective.

IMPROVED PLOW.

Robert Cassidy, Thomas R. Lamb, and Chauncey L. Vaughan, Meloit, Kan.—This improved plow is without side draft, and of lighter draft than ordinary plows, and may be readily adjusted to run deeper or shallower in the ground, and to take more or less land, as may be desired. The plowshare is of special form, and has the cutting edge at right angles with the land slide. It is combined with a slotted standard, curved inwardly to bring the plow beam nearly over the center of the share.

IMPROVED WHEEL PLOW.

William A. Ruddick, Carthage, Mo.—This improvement consists of an A frame mounted on the plow beam transversely with a castor wheel on the apex of the frame, to run on the land. There is a larger wheel at the end of one of the bars of the frame, and a tongue connected with the base of the frame. Wheels are contrived for raising and lowering at will to adjust the plow for furrows of different depths, and for carrying the plow above the ground.

IMPROVED PLOW.

David H. Jarrard, Talladega, Ala.—This plow is so constructed that the plow standard may be adjusted to give any desired pitch to the plow, and may be held securely in place when adjusted, and which will support the wing of the plow plate to prevent it from being bent or broken.

IMPROVED MOWING MACHINE.

Charles B. Martyn, Waupun, Wis.—This improves the construction of reapers and mowers in such a way as to convert the long and unequal stroke of the connecting bar into two short and equal strokes of the sickle with a motion of uniform velocity.

IMPROVED BUTTER WORKER.

Charles Plyer, Hempstead, N. Y.—This invention consists of a concave dish with raised center, to which a swinging lever, of a shape corresponding to the dish, is swiveled. This is to be worked all around the dish for cutting up the butter.

IMPROVED GRAIN HEADER.

Charles K. Myers and John W. Irwin, Pekin, Ill., assignors to said Myers and Peter Weyrick, same place.—The object here is to improve the construction of grain headers, so that the reel may be moved farther from and closer to the cutter bar automatically as the cutter bar is raised or lowered to operate upon taller or shorter grain. The device includes five new mechanical constructions.

NEW TEXTILE MACHINERY.

MECHANISM FOR OPERATING TAKE-UP ROLLERS FOR KNITTING MACHINES.

Ira Tompkins and Albert Tompkins, Troy, N. Y.—This consists of the tension spring employed to regulate the tension of the cloth interposed between the crank rod and the rod for working the take-up pawl lever. It is so arranged that when the machine does not deliver cloth for any reason, as when not making stitches, the spring will compress and allow the crank rod to work its regular course, while the pawl lever will be held by the tension of the cloth until the cloth is delivered from the machine again.

IMPROVED SELVAGE GUARD FOR LOOMS.

John H. Mills, Lisburn, Pa.—This is a wire finger, with a spring lever fitted to a little block, to be so attached to the loom temple that the finger projects down past the selvage at the point where the filling is beaten up, so that the shuttle draws the filling around said finger until it arrives at the box at the other side. The reed then strikes the spring lever, and raises the finger out of the loop after the shuttle enters the box. The guard moves along with the temple relatively to the cloth, so that it is always in the right position. There is a guard on each side for each selvage. The object is to make the selvage more uniform and regular than it is ordinarily made.

IMPROVED HOSE GOODS.

Henry G. Hubbard, Middletown, Conn., assignor to Russell Manufacturing Company, same place.—The invention consists in an improved hose goods, having one or more selvages upon one edge, and two or more upon the other edge, to interlap with each other in forming the seam.

NEW CHEMICAL AND MISCELLANEOUS INVENTIONS.

IMPROVED REED ORGAN STOP ACTION.

Henry Smith, Gananoque, assignor to himself, Joseph George, and Charles Mee, Kingston, Canada.—This consists of a cam lever, pivoted to the key board, and connected to the stop, and so arranged as to act directly on the valve or mute, making a simple and cheap contrivance.

IMPROVED INHALER.

George L. Crosby, Hannibal, Mo.—This invention consists in combining a glass stopper, having an acid receptacle and air passages, with a grooved stopper and tubes. From the acid receptacle the fumes are drawn down through a tube into the liquid in the body of the inhaler, to be inhaled through a flexible tube.

IMPROVED FAUCET.

Patrick Skelly, New York city.—This relates to improvements in faucets for barrels of all kinds, that a tight seating of the stopcock without leakage, and a superior and readily applied coupling with the liquid-conveying pipe, are obtained.

IMPROVED SOAP FRAME.

Daniel Whitaker, Boston, Mass.—This soap frame can be conveniently set up and taken down, and its side and end plates are more firmly connected than others of its class. The base of the frame is made in three parts, secured to each other by transverse screw bolts, whereby they are adapted to enter grooves in the base of frame, and are attached thereto by hooks and staples. The end portions of the frame have clamping bars attached, whereby they may be locked to the sides, in such a manner as to hold the ends vertical, and form a tight joint between them and the sides; and lastly, the side portions of the frame are provided with truss-like braces, whereby they are prevented from buckling, warping, etc.

IMPROVED END FASTENING FOR SUSPENDERS.

John H. Murfey, New York city.—A clip of sheet metal is contrived for fastening one or two ends to the buckle, hoop, loop, or other device, for connecting the end to the principal strap. The said contrivance is such that the clip can be made by stamping or punching it out at one blow of a press, and can be fastened on the strap without sewing, riveting, or other means required to puncture or slit the end.

IMPROVED HARNESS CLAMP.

James McCormick, Glidden, Iowa.—This consists of rubber-faced metal plates for attachment to the jaws of harness makers' sewing clamps, to hold the leather to be sewn without injury to it, and, at the same time, firmly. The said plates are constructed with a groove in the face side, which receives the rubber facing, and holds it without other fastenings.

IMPROVED EVAPORATING PAN.

Sydney S. Connor, Amite City, La.—This consists in an improvement in evaporating pans by providing them with detachable partitions having angle bars to make tight connection with the bottom.

IMPROVED PEDAL ATTACHMENT FOR CABINET ORGANS.

Benjamin L. Boomer, Campello, Mass.—This is a contrivance for closing up the opening in the front of the case for the pedals, and fastening and unfastening the panel which closes it by the desk. The object is to make a better and neater appearance, and protect the instrument from dust, mice, etc.

IMPROVED STOPPER FOR SHIPS' RUNNING GEAR.

John W. Knight, New York city.—The object of this invention is to prevent the chafing and wear of the sail of a vessel from the rope or buntline by which it is drawn up; and it consists of a stopper attached to the mast or any part of the rigging by which the rope is held, so that it will hang loosely over the sail, and so that when the fall of the rope is hauled in, it will let the rope go free.

IMPROVED METAL TOY.

William A. Harwood, Brooklyn, N. Y.—This improvement in toy horses consists of a contrivance of the support by which the horse is mounted on the wheels, so as to be elevated and to make a stronger support than is now used, and yet employ less metal to do it. It consists of a narrow strip of metal or wire, bent so as to make a light support, and at the same time stiffen the metal.

IMPROVED BREECH-LOADING FIRE ARM.

Ira M. Earle, Gullford Center, Vt.—This consists of a hammer contrived to explode the cartridge and close the breech at the instant, the said hammer moving as the radius of a circle, and forming, with the housing, arcs of concentric circles, in such manner that it bears at all times the same relative position to the solid housing, which supports it in its rear, and sustains the shock of the explosion. The hammer cannot explode the cartridge till it is in position to close the breech. The invention also consists of the shell extractor, so arranged that it is operated by slight extension or continuation of the thumb pressure in the motion of cocking the piece.

IMPROVED COUNTER STIFFENER FOR BOOTS AND SHOES.

George W. Simpson, Federalsburg, Md.—This consists in a skeleton counter or back stay made of spring steel, and consisting of the parallel bars and the cross bars, having their projecting ends bent inward to adapt it to be applied to boots and shoes. Its object is to prevent boots and shoes from being run over at the heel.

IMPROVED FISH TRAP.

James McRoberts, Toledo, Iowa.—This is an improved trap for catching fish at the outlet of lakes and ponds, and in other places so constructed as to prevent the escape of the fish within the trap when another fish is entering, and to prevent the smaller fish from being destroyed by the larger ones.

IMPROVED ARTIFICIAL FLOWERS.

Mrs. Eliza F. Penley, Brooklyn, N. Y.—This consists of flowers, leaves, and other articles cut of layers of rattan pith or other wooden strips, wound in continuous strands or coils and cemented together, the leaves being attached to a suitable stem.

IMPROVED PASSENGER REGISTER.

William Mehan, Hoboken, N. J.—In the doorway of a car is pivoted a vertical shaft to which a turnstile is attached. In the floor of the car beneath one side of the stile is placed a weighted platform, of such a size that the passenger cannot step over it. A set of ordinary registering wheels is so arranged as to turn the first wheel of said register through the space of one tooth at each depression of the platform.

IMPROVED LETTER BOX.

France Iersche, New York city.—This consists of a letter box with two or more downward inclined letter spaces, with slotted bottom parts, so that the letters may be seen through the openings in the doors of the adjoining boxes below.

IMPROVED BALE TIE.

Boall Hempstead, Little Rock, Ark.—This improvement consists in a buckle slotted at one end so as to allow the bale band to be fastened thereto by simply bending it around the same, thereby economizing bands; and having at the other a button upon the under side, having two extensions, one of which is larger than the other, which button is adapted to pass through a slot in the other end of the bale band and thus secure the band around the bale. The button may occupy any position with respect to the buckle, and the arrangement is such that to loosen the band the buckle must be brought to a position that the strain of the band will not naturally allow it to assume, thus insuring a secure fastening.

IMPROVED FAUCET ATTACHMENT.

Harry L. Sadler, Brooklyn, N. Y.—This invention consists of a screw threaded bushing of the faucet hole, in connection with an interior tube, having recesses, and a wooden closing plug. The plug tube has interior projections, that are engaged by lugs of a hollow and threaded key that screws into the bushing and carries in a socket with wooden lining, the faucet, opening or closing the key by the insertion or withdrawal of the faucet key.

IMPROVED FISHING ROD REEL.

Charles L. Noe, Bergen Point, N. J.—This consists of a brake for stopping the overrun of the line after the lead has fallen into the water. It is composed of a plate fixed on a joint, so as to be borne on the spool by a spring, and having a thumb lever, by which to hold it off until the moment the lead strikes.

IMPROVED PROCESS OF RESTORING CRAPE, LACES, ETC.

Aaron Joseph Shriver, Baltimore, Md.—This invention relates to a novel process of cleaning and restoring rumpled and faded crape, lace, and other similar thin material. It consists in immersing the fabric in a specially prepared solution consisting of alcohol, a suitable dye stuff, and shellac, and afterwards subjecting the material to the action of steam, which brings out the color of the dye and crimps the fiber, the shellac serving to hold the fiber in its crimped form, so as to present the original texture of the fabric when new.

IMPROVED COMBINED STEREOSCOPE AND GRAPHOSCOPE.

James Lee, New Brighton, N. Y.—When the lens holder is raised into an erect position it is caught and held by a spring catch, and is thus not liable to fall back and mar the instrument or break the lenses. Wings or side shields are employed to keep the light from the eyes when using the instrument. Said wings may be closed against the lens holder.

IMPROVED TUG BUCKLE.

Herbert C. Ward, Willmar, Minn.—When the draft strain comes upon the buckle the ball slips forward, and the tug is clamped between a cross bar of the ball and a front cross bar of the buckle frame, thus relieving the tongue from the most of the draft strain. The principal use of the tongue is to prevent the tug from slipping when the draft strain is being applied, and to prevent the said tug from working loose.

METHOD OF UTILIZING THE LEATHER OF CARD CLOTHING.

Frank E. Brummit, Walpole, Mass.—This inventor takes the old card clothing as it now comes from the mills and is thrown away, removes the teeth, and gums the leather with gum tragacanth. He then resets the leather with new teeth, pricing the holes in the opposite way to the first setting, so that they will not go in the same holes which they would be liable to do if set in the same direction. The gum fills the old holes, and in some measure restores the leather to the original condition for receiving and holding the teeth.

ANKLE SUPPORTS FOR SKATES AND IMPROVED SKATES.

Julius Drucklieb, Jersey City Heights, N. J.—The first invention consists of an outwardly curved supporting rod that is applied to a socket pivoted to the side of the runner. The supporting rod makes it easier to beginners to learn to skate, while it gives to the accomplished skater a support for the lower muscles, so that he can hold out longer and practice with less fatigue. The second invention relates to such improvements in skates that the same may be instantly and rigidly applied to the heel and sole of the shoe. A set screw allows the adjustment of the skate to any size of heel, while a swinging lever produces, by being carried up until retained by a stop lug, on the runner, the tight attachment of the skate to the boot heel, releasing the same when the lever is lowered and the gripping of its sharp edge is discontinued. The front part of the boot or shoe is connected to the skate by an adjustable toe holder.

IMPROVED CARTRIDGE.

Albert Hall, New York city.—This relates to improvements in the construction of paper cartridge shells, by which the same are considerably stiffened, and the anvil rigidly and strongly secured in position in the shell. The invention consists of a diametrical anvil, made in one piece with an encircling socket tube, retained securely by a paper shell and metallic cap piece.

IMPROVED SHOE FASTENING.

William J. Vitt, New York city.—The flap is fastened to the upper by a number of tubular clips applied to the shoe. The clips of the flap and upper are arranged to alternate with each other, and connected by a string that is secured by a knot to the lowermost clip. The string is then passed through all the clips, the upper end giving readily for the opening of the flap in putting on or taking off the shoe. The end of the string is applied to and rigidly retained by a suitable clamping device, and then passed through a hole or eyelet of the upper to the inside to be wound around the ankle.

NEW HOUSEHOLD INVENTIONS.

IMPROVED SASH FASTENER.

Thomas Hill, Portland, Me.—The invention relates to a fastener so constructed and applied as to lock the upper and lower sash together in any adjustment. The fastener consists of a notched and slotted plate, secured to the side bar of the upper sash, and a button or catch pivoted to the top of the lower sash, the arrangement being such that the catch works in the slot of the plate, and engages the notches thereof to hold the sash at the desired height.

IMPROVED WASHING MACHINE.

Franz M. Hellstrom, Lawrence, Kan.—The rubbing surface of the suds box is formed by attaching half-round strips of wood at their ends to strips of zinc. The movable rubber is formed by attaching half-round strips of wood to the curved edges of segmental disks. When the levers are arranged in a vertical position their ends rest against cleats attached to disks of the movable rubber, against which they are locked by catches, so that the rubber will be operated by operating the levers.

IMPROVED KNIFE-SCOURING MACHINES.

Herbert Symonds, Troy, N. Y.—In this device the polishing powder is fed downward to the polishing pads from the reservoir. There is also a new mechanical construction of the pads.

IMPROVED BOLT.

Francis Robinson and John H. Ferris, Trenton, N. J.—This consists of a bolt that slides and turns in a barrel by means of an inclined elliptical collar of the bolt bearing on the correspondingly beveled end of the barrel. The bolt is retained in locked position by a shoulder or seat of the handle.

IMPROVED CARPET STRETCHER.

Joseph S. Ingham, Knoxville, Pa.—This is an ingenious combination of lever and pulley for drawing the edges of carpets out taut.

IMPROVED DOOR BELL.

James M. Hinchey, Philadelphia, Pa.—This consists of a bell mechanism operated by a swinging lever that winds up a spring and rings the bell on a release of the pull, by the action of the spring and transmitting gear wheels.

IMPROVED HEATING ATTACHMENT FOR STOVES.

Lars M. Madson, Daneville, Dak. Ter.—This is an improved heating attachment to cooking and heating stoves, by which the heat of the fire gases is more completely utilized before escaping into the chimney. It consists of a sectional pipe, made of jointed elbows at suitable inclination, and supported on the stove and on an adjustable brace standard.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED PROJECTILE.

James M. Pollard, New Orleans, La.—This invention consists in a projectile having a central cylindrical portion, with ends symmetrically tapered to a conical or paraboloidal form, the rear end of the projectile being upset or molded with a raised circumferential bur, which is of less diameter than the cylindrical portion, and has a convex end. The double paraboloidal form adapts the projectile to the least resistance from the air, while the raised bur acts in the nature of a guide, as a feather to an arrow.

IMPROVED FEATHERING PADDLE WHEELS.

John H. Clow, Orange, Wis.—Certain improvements are made in that class of paddle wheels designed for the propulsion of boats in which the paddles are pivoted upon one side of the center so as to feather or move edgewise in rising from the water so as not to carry dead water. The invention consists mainly in the particular construction of a locking bolt, arranged to be operated by a lever and cam, and located in the central part of the wheel so as to engage with the middle part of the paddle, and lock or release the same at the proper time.

IMPROVED PORTABLE DERRICK.

Shirwood Y. Reams, Belleville, Texas.—This consists of an adjustable crane mounted on a truck platform, having an overhead frame for the support of the upper end of the crane post, and braces for staying the frame. The crane can thus be turned around to overhang the sides. The whole is a simple apparatus, which may be moved readily from place to place by hand or by horse power.

IMPROVED WINDMILL.

James Ward, Winnemucca, Nev.—This consists of an upright wheel with spirally curved floats, in connection with a corresponding number of fixed and hinged and weighted shutters, of which the latter are regulated by weights and a connecting governing string.

IMPROVED AUGER HANDLE.

James Magers, Gervais, Oregon.—By suitable construction, a locking plate prevents the bit from turning in the handle when the auger is in use, and at the same time allows the bit to be readily detached and attached when desired.

IMPROVED SAW SET.

Henry Itskin and John Gregg, Rockfield, Ind.—This is a set to be used with the hammer. It has a wedge-shaped notch in the end, and a gage to regulate the position from the side of the saw, so that by placing the notch on the point of the tooth, and hammering the end of the tool, the same as an upsetting gage, the tooth will be set by bending it laterally. There is also an upsetting notch in the tool to adapt it for both kinds of teeth.

IMPROVED NUT LOCK.

Samuel Henry, Chenoa, Ill.—This improved nut lock is formed of a curved plate, having its ends curved upward, and having notches with inclined sides and straight bottom formed in said ends, to adapt it to be applied to the nuts of a pair of bolts.

IMPROVED TIRE UPSETTER.

Ebenezer B. Rose, Goshen, assignor to himself and George M. Bull, New Baltimore, N. Y.—The tire or other iron to be shrunk is heated, placed upon plates, and clamped against toothed blocks by eccentrics. Then one plate and its toothed block and eccentric are forced forward, shrinking the iron.

IMPROVED MACHINE FOR MAKING WEDGES.

John Lennerton, Truro, N. S.—The first part of this invention consists of two revolving cylinders fixed upon a shaft furnished with four cutters in each cylinder, so arranged as to cut the wedges to the required thickness and taper. The second part consists of two other revolving cylinders, similar to the first pair, so arranged upon the same shaft as to cut the wedge to the required width. The third part consists of a circular saw and movable table top, so combined and arranged as to cut the wedge to the required length, and working in conjunction with the other parts.

IMPROVED TIMING ATTACHMENT FOR WATCHES.

Thaddeus Ackley, Warren, Ohio.—A spiral spring is arranged between a top plate and a grooved disk, and serves to throw the disk into contact with the spurred catch at the instant when the lever releases the disk-lifting spring. The spurred catch engages the grooved disk at any position, so as to instantly turn the same with the arbor, and move thereby the second wheel. By pulling out the controlling lever the disk is detached from the spurred catch, and thereby the second hand stopped, the lever being pushed in at the moment when the timing is to begin, so that the second hand moves until, by pulling out the lever, it is stopped again, so that the time taken up by the race is indicated in reliable and convenient manner.

IMPROVED MECHANICAL MOVEMENT.

Miner G. Mosher, Wichita, Kas.—This is an improved device for converting a reciprocating into a rotary motion which has no dead points. It mainly consists in the combination of a U fork, provided with two pairs of hook paws, with the wheel provided with the bolts; and in the combination of the three three-armed or T bars and their connecting rods or chains with the U bar or fork and with the two sets of hook paws.

IMPROVED STEERING PROPELLER.

Flavius J. Ashburn, West Union, W. Va.—This consists of propeller blades arranged horizontally on and hinged to vertical crank shafts suspended from a horizontally revolving frame above the water; and connected by their cranks to the crank of a shaft in the center of the carrying frame, and around which they swing. All the paddles thus face in the same direction, so that in the forward motion they turn upon a hinge and work edgewise, and in the back motion they work broadside against the water to propel the boat. This invention also consists of a stationary crank around which the bucket swings, made to be turned in either way, and provided with means for turning it, which may work either by the engine or by the pilot wheel, whereby the direction in which the paddles act is changed at will to reverse the motion of the boat, and to utilize the propeller for steering it.

IMPROVED METHOD OF ANNEALING PLOW MOLD BOARDS.

Eli H. Babcock and John C. Whiting, Canandaigua, N. Y.—The object of this invention is to enable chilled mold boards and other chilled castings to be cooled without warping or being strained, and thus keep them in exactly the required shape. It consists in removing the castings from the chills as soon as they are cool enough to be handled, placing them in hot forms, and cooling them under pressure, and under a gradually diminishing heat.

IMPROVED CAR TRUCK SHIFTING APPARATUS.

Robert H. Ramsey, Cobourg, Canada.—This invention consists of a couple of trucks on each side of the track on which is the car whose trucks are to be shifted, carrying a beam extending across from one to the other under the car body at each end. There is a depressed portion of the main track, down which the trucks to be removed run, and detach from the car, while the latter runs on the beam carried by the side trucks, which run at the same time on level tracks. The trucks to be connected are run up the grade, and thus brought into connection with the car.

IMPROVED KEY-HOLE GUARD.

John La Blanc and Xavier St. Pierre, San Francisco, Cal.—This consists of a sliding guard plate operated by a crank pin, sliding in a segmental recess of the face plate of the lock, and in a slot of the guard plate.

IMPROVED AUTOMATIC CAR BRAKE.

Ira Robbins, Hughesville, Pa.—This invention relates to an improved construction of car brake, designed to apply or remove the brakes automatically, or by hand, as may be desired. It consists chiefly in the arrangement of a bellows operated continuously by the car wheels, which is employed for releasing the brakes by acting upon a tripping rod when the cars stop; in the mechanism operating in connection with said bellows; and in devices for automatically applying the brakes by the impact or concussion of the cars.

IMPROVED CAR COUPLING.

Nicholas Darrow, Hempstead, Texas.—The cars are arranged with spring buffers, of which the buffers of one car have side-extending guard plates, to which the tapering heads of the buffers of the adjoining car are fitted. The guard plates guide and assist in the coupling of the cars, and also prevent the cars from swinging too much from one side of the track to the other.

IMPROVED NUT LOCK.

Isaac Van Kuran, Omaha, Neb.—This consists of a washer of steel over a cavity in the fish plate, and surrounding the bolt, so that the pressure on the bolt on the fish plate is transmitted to the surface of the plate surrounding the cavity by the washer. This allows of any required amount of pressure, and at the same time affords a spring with sufficient reactionary power against the nut at all times to prevent it from becoming slack, so as to work off or unscrew.

IMPROVED CAR COUPLING.

Jacob F. Rochm, Hiawatha, Kan.—When the drawheads approach for coupling, the spring-supported links enter the mouth of the corresponding cavities at opposite sides of the drawheads, strike against the pins, so as to throw them back and push them in upward direction on the guides, to allow the passage of the links. When the links have entered beyond the pins, lever handles are thrown forward, and the pins dropped by the concussion of the drawheads, so as to couple the links.

IMPROVED METALLIC GIRDER.

John L. Nostrand, Brooklyn, E. D., N. Y.—In the neck of the head or flange is formed a longitudinal groove or channel, to receive the edge of the web, where it is secured in place by bolts or rivets. By this construction, beams of a greater strength can be made by using the same quantity of iron, or of an equal strength, by using a less quantity of iron, and also, the strain is transferred from the rivets to the shoulders of the heads, against which the edges of the web rest.

IMPROVED WATCHMEN'S TIME DETECTOR.

Jacob H. Massey, Allentown, Pa.—This is a watchman's time detector, which is applicable to a building for inside and outside use. It consists of a dial with concentric circles, revolved by a clock train, and operated by a suitable spring-marking device, in connection with a pull from the inside or outside of the building. The marking device is set for each day by a crank shaft engaging a rack of the marker.

IMPROVED LEATHER-STRETCHING MACHINE.

William Coupe, South Attleborough, Mass.—This is an improved machine for stretching leather for belts and other uses, so constructed as to stretch the leather evenly when varying in thickness, and which may be readily adjusted to stretch the leather to any desired extent.

IMPROVED VIBRATING PROPELLER.

John Forgic, Sr., and John B. Forgic, Jr., Hicksville, N. Y.—This invention consists of carrying paddles in the form of the slats of a window blind, and working alternately sidewise and edgewise to the water as the frames swing backward and forward. The said frames are pivoted at the upper end, in such manner that the lower end works parallel with the engine rod, to which it is connected, to be worked by the steam power applied directly to the rod.

IMPROVED DOUBLE-ACTING FORCE PUMP.

George W. Hooper, Greene, Me.—In using the pump, as the piston moves downward, a vacuum is formed above it, and the water is forced, by atmospheric pressure, through passages and a valve, and passes into the upper part of the cylinder. At the same time the water in the lower part of the cylinder is forced out, opening another valve, and passes into the pump tube and out through it. As the piston moves upward, the water passes in through other openings and valves, and passes into the lower part of the cylinder. At the same time, the water above the piston is forced into the pump tube.

IMPROVED VALVE GEAR.

John E. Giles, Hazleton, Pa.—The crank pin which works the valve is carried in a block in a slotted disk which slides along the disk for shifting the valves, and to the opposite side of the axis for reversing, and is worked by a sleeve on the shaft of the disk to which the shafting lever is connected. The disk is geared by a toothed rim with a wheel on the crank shaft (which gears are eccentric), by which the irregularities of the crank are overcome. For a lap valve, the slot in the disk for carrying the crank pin is arranged out of the center of the line of the axis of the disk to just the measurement of the lap and lead of one end of the valve.

IMPROVED BARREL FOR WATCH SPRINGS.

Sherman D. Johnson, East Haddam, Conn.—This invention consists of the combination of the mainspring barrel by suitable pawls with a separate toothed wheel around the barrel, that is capable of motion independent of the rim on the breaking of the spring.

IMPROVED CAR BRAKE.

Jacob Blanshan, Le Fever Falls, N. Y.—This relates to brakes on opposite sides of wheels, the object being to relieve the axles of the lateral pressure to which they are subject when the brakes apply to one side only.

IMPROVED SHARPENING MACHINE.

George W. Ingersoll and Harvey L. Fisher, Toledo, Iowa.—This is a new tool-holding device, whereby any cutting tool may be sharpened at an exact bevel without help, as one hand can turn the stone and the other guide the tool against the same. By rolling a gag rod, gouges may be ground with the same bevel in superior manner. It is readily adapted to any size of grinding stone.

IMPROVED FURNACE FOR BURNING SAWDUST, TAN BARK, ETC.

Frederic T. Kidder, Claremont, N. H.—This invention consists in using feeders under or in the bottom of the mass of the fine fuel, with which the stove is filled. The said feeders are pieces of wood extending from the front at the draught inlet along the stove to the back, and which, being ignited at the front end, burn slowly, together with the sawdust or tan bark immediately around them, while the heat, ascending up the bank of other fuel, converts it into charcoal, and prepares it for burning as it falls down to the fire. In case the fine material is very wet, perforated pipes are placed horizontally in the same, a little above the wood pieces, to conduct some of the heat into the mess, for drying it in advance of the fire, by passing from the tubes up through the fuel.