

RECENTLY PATENTED INVENTIONS.
Engineering.

ROTARY ENGINE.—George H. Graham, Ridgeland, Ill. This engine is designed to be simple and durable in construction while being very effective in operation and utilizing the motive power to the fullest advantage. The invention provides principally a spring-pressed valve within a casing in which a friction roller is journaled and from which a valve stem extends, a lever being pivoted on the stem and springs pressing against the lever, there being a lubricant-receiving space in the rear of the roller. Three of these valves, arranged radially and sliding in suitable bearings in the rim of the cylinder, are located on the peripheral surface of the piston, between the vanishing points of curved flanges arranged near the ends of a radially extending head of the piston, close to the inner sides of the cylinder.

BOILER FEEDER.—Heinrich Rauser, Charles Wieber, and Alexis Sokoloff, Moscow, Russia. In combination with the boiler and feed pump is an ejector connected with the boiler and in communication with the valve chamber of the pump, a float arranged in the boiler controlling a valve connecting the ejector with the boiler. The invention also comprises other novel features, the improved boiler feeder being completely automatic in operation, preventing a dangerous filling of the boiler and also giving a signal in case the water should sink to a dangerous level, while the construction is of a simple and durable character.

AERIAL TRAMWAY.—Emilio Prunetti and Giambattista Avignone, Sierra City, Cal. This invention relates to suspension tramways operated by gravity, to transport loads in receptacles from an elevated to a lower plane in a speedy and safe manner, as in the conveying of ore from mountain deposits to reducing plants. Combined with an endless cable are two upright frames on which are mounted two horizontal grooved pulleys, with a brake mechanism, while in connection therewith are two wire rope tramways, and windlass supports therefor, cars being mounted on the tramways and oppositely connected to the endless cable.

DREDGE.—John H. Kuoni, Marysville, Kansas. This invention provides an improvement in what are known as "clam shell dredges," simplifying their construction and making them more easy to operate, the dredge being more particularly adapted for cleaning wells and similar purposes. It consists of a bottomless receptacle to the opposite sides of which are hinged shovels, while to opposite ends is secured an arched bail having a central loop or aperture through which passes a rod, chains connecting the shovels and the rod, and a locking bar pivoted to one of the shovels being connected with the rod by intermediate devices.

GRAVEL SCREENING MACHINE.—Franklin T. Gilbert, Walla Walla, Washington. A continuous treatment of gravel is provided for by this machine, whereby a number of separations of the coarser from the finer grades will take place. The machine has a series of rotary screens of different mesh, the coarsest receiving water and gravel direct from the flume or hopper, which serves to throw aside the coarsest gravel but allows to pass the water and finer grade of gravel, which is led to the next finer screen, where the same operation is repeated and so on with the remaining screens, the waste water being utilized to drive the screen-operating shafts. According to another patent granted the same inventor, the machine comprises a main frame formed with a series of bins, over which receiving troughs are mounted step by step, each trough having a closed receiving and an open discharge end, the discharge end of one trough being over the receiving end of the next succeeding one, while a series of screens of different mesh is interposed between the meeting ends of the several troughs, to successively separate the larger particles from the water and deflect them to their respective receiving bins. In operation the screens are constantly shaken or agitated by a reciprocating bar.

Railway Appliances.

AIR BRAKE.—Ray G. Coates, Punta Arenas, Costa Rica. In this brake the cut-off and exhaust of the brake cylinder pressure is controlled by the action of the brake cylinder pressure and the train pipe pressure on the one hand and the auxiliary reservoir pressure on the other hand, each acting on a suitable flexible diaphragm. A governing or triple valve is provided with an auxiliary diaphragm, subject to the pressure in the brake cylinder, to assist the pressure of the train pipe acting upon the principal diaphragm of the ordinary valve in controlling the supply and discharge of the cylinder, for the purpose of maintaining in the cylinder any desirable pressure. Another invention, for which also a patent has been granted the same inventor, relates to automatic air brakes in which the brakes are set by a reduction of the pressure in the train pipe. This invention provides an improved triple valve by which the brake cylinder may be supplied with air at the full auxiliary reservoir pressure or any part of that pressure, any loss due to leakage when the brakes are set being restored from the auxiliary reservoir pressure, the valve being used in connection with a reservoir of such size that the pressure in it does not noticeably fall by the loss of one charge of air to the brake cylinder. The triple valve has an auxiliary governing piston connected to and moving the main governing piston of the valve, the cylinder of the auxiliary piston being connected by proper ports with the brake cylinder.

CAR COUPLING.—William P. Clark, Elberton, Ga. This improvement is designed to afford an extremely simple and efficient device, easily secured to a car, and enabling the cars to be automatically coupled, which may be operated without danger, and can be readily converted into an old fashioned coupling if necessary. It consists of a hollow drawhead in which is pivoted a protruding latch with beveled head and a side recess, a locking pin with an inclined shoulder on one side being held to move vertically through the drawhead, while an adjacently mounted crank rod has a crank connection with the locking pin. The comp-

ling is practically a double one, and should one of the latches be broken by a strain, the other one would hold to prevent the separation of the cars.

RAILROAD SWITCH.—Clifford E. Nowlin, Battle Creek, Mich. This switch is designed to be conveniently operated from an engine or car to facilitate the switching of trains and allow them to make a siding quickly and with perfect safety. The switch rails are supported by a movable switch plate to which are secured cables extending parallel with the track and extending over guide pulleys and sprocket wheels, above which are mounted spring-pressed castings, connected with the sprocket wheels by a pitman and crank. Side rails arranged parallel with the track are pivoted to the castings, and means are provided for depressing the side rails from the train, the mechanism consisting of a sleeve on the locomotive in which is held a spring-pressed shaft carrying a contact wheel, there being a cushion for the shaft and a screw mechanism for adjusting it.

Mechanical Appliances.

FLAX HACKLING MACHINE.—John Erskine, Wolfhill Mill, Ligoniel, near Belfast, Ireland. This invention consists principally of a nipping device for ending the flax or fiber, a finishing hackle operating on the fiber in conjunction with the nipping device. The fiber holder has a vertical sliding motion, and gripping or clamping plates open and close on the ascending and descending of the holder, clamping the fiber held by it, the nipping device below the clamping plates consisting of two revoluble rollers adapted to pass the projecting fiber for ending it. Combs operate to comb the fiber when the holder ascends, brushes operating in conjunction with the combs, while tow catchers arranged below the combs remove the tow or combings.

WOOL CARDING MACHINE.—David Lamson, Elmira, N. Y. In this machine the parts are arranged around the main cylinder in a manner designed to rapidly and nicely straighten the fibers without any unnecessary work, and so that each part will give a forward motion to the stock operated upon, delivering it in good condition, with a material saving of labor, to the doffer. A licker-in is placed in advance of the main cylinder and a doffer is placed behind it, a tumbler and fancy being disposed one above the other between the licker-in and the main cylinder, a worker arranged between the tumbler, fancy and main cylinder, and a series of workers and strippers arranged around the upper part of the main cylinder, the workers being placed in advance of the strippers.

PUNCHING MACHINE.—Robert H. Ireland, New York City. A punch especially adapted for punching plate iron, beams, channels, and other structural shapes is provided by this invention. The machine can be controlled to carry the punch to engage with the article or to reciprocate above without engaging with it, as the operator may desire. The frame has upper and lower girders separated by transverse blocks, the lower girders carrying a table and there being a stationary casing in which is journaled a crank shaft between the upper girders, a block in the casing having vertical movement and having an opening through which the crank arm of the crank shaft passes. The blocks are adapted to receive a punch, a frame sliding vertically in the opening of the block, while a block sliding laterally in the frame has a pivotal connection with the crank arm of the crank shaft. The machine is designed to accomplish the operation of punching as rapidly as the pull rod can be drawn outward.

SAWMILL ATTACHMENT.—Thomas J. Williams and Tiberis S. Murray, Ironton, Ohio. This attachment is designed to be conveniently applied to any kind of a circular, band, or veneer sawmill, to enable the mill to rapidly and accurately saw beveled lumber, as weather boards, shingles, etc. On the front face of a frame adapted to be connected to the sawmill carriage is a rock shaft on which a series of sawmill dogs are mounted to rock with the shaft, the dogs having adjustable teeth projecting beyond their front faces to grasp the timber to be sawed, while the frame is provided with means for rocking the shaft and its series of dogs. The thickness of the beveled strips is regulated by adjusting the sawmill head blocks in the usual way, and different adjusting shafts may be used with the attachment to regulate the bevel of the strips.

HAMMER.—Arthur Chambers, Williams Bridge, N. Y. The head of this hammer has a side opening extending through to the eye and having beveled walls, and an elastic or slightly elastic plug of rubber or leather or similar material is fitted in this opening, the inner face of the plug being beveled, and the handle securing the plug in position. This forms a hammer having a side striking face with some elasticity, and combines in a measure a mallet and a hammer without diminishing in the least the adaptation of the hammer for its usual work.

Miscellaneous.

OXIDES OF METALS MANUFACTURE.—William H. Birge, Franklin, Pa. This invention provides an improved apparatus for manufacturing oxides from readily oxidizable metals at a low cost. A nozzle comprising a disk extending into a spraying recess has a central aperture for the passage of molten metal to the top of the disk, a hot air blast connection leading to the recess under the disk. As the apparatus is arranged, an air compressor is not required for forcing the necessary amount of air into the oxidizing chamber, only such force of hot air blast being required as is necessary to spray the molten metal on top of the disk and force the sprayed metal up into the oxidizing chamber.

RIFLE SIGHT.—Robert W. Parker, Camp Huachuca, Arizona Ter. This device has a base adapted for attachment to a barrel and a supplemental base moving transversely on the main base, a vertically swinging sight leaf provided with a projection extending at right angles therefrom and having a peep hole for use when the leaf is swung down. The base has a

vertical portion at its rear, on the front edge of which is a series of gauge marks to serve as a wind gauge, and indicate the degree to which the supplemental base should be moved to one side or the other. The sight is designed to be easily brought to any desired adjustment to enable the rifle to be quickly and accurately aimed.

CAPODASTRO.—Henry Dahman, Cambridge, Minn., and Theodor Blomgren, Stanchfield, Minn. This invention consists of a cushioned plate adapted to extend across the strings on the neck of the instrument, a yoke pivotally connected with the plate, a clamping arm pivoted on the yoke and adapted to engage with its free end the under side of the neck, and a hand lever to press the arm into contact with the neck of the instrument. The device can be quickly and conveniently placed and locked in position, and is designed to uniformly hold, quickly tighten, and shorten the vibrations of the several strings on the neck of the instrument whenever it is desired to raise the tone to a higher key.

WATCH IMPROVEMENT.—Roswell E. Moreland, Trenton, N. J. This invention provides a stem winding and setting mechanism in which the winding pinion is capable of both a rotary and end movement, remaining in gear with the crown wheel in any position. Means are also provided whereby the winding stem or arbor may be expeditiously and conveniently attached to the winding pinion, the entire mechanism being so constructed that the pendent setting is operated independent of any attachment in the case, and can be attached to any ordinary winding stem or arbor, such as commonly used in stem-winding watches.

SHEARS.—Anton Prohaska, Hoboken, N. J. The cutting blades of these shears are preferably made of sheet steel, by stamping or otherwise, while the handles are preferably of cast metal. A spring plate, held in position by a screw screwing into a pivot integral with one of the members, presses the cutting edge of one blade on the cutting edge of the other, so that a fine cut can be made at all times, and the cutting edges are self-grinding.

ROW BOAT FOOT REST.—John J. Sherman, Traverse City, Mich. This device consists of a central stationary inverted T shaped rail secured longitudinally in the bottom of the boat, and a sliding transverse foot board adjustable on or along the upright web of the rail, the whole forming a center slide adjustable foot rest or brace. By the support of the foot board upon the central rail in the bottom of the boat, the pressure of the feet is more directly conveyed to the center or keel line of the boat instead of to either side, making the steering easier, while the central fixed rail forms ballast in the bottom of the boat.

GATE HINGE.—Gabriel Rohrbach, Del Rio, Texas. The improvements shown in this invention may be applied to any swinging gate, but they are specifically adapted for use in connection with gates for yard and park inclosures, the hinges being adapted to hold the gate in open position. The hinge consists of two brackets having overlapping leaves and having a pintle connection, the leaf of the bracket attached to the gate having inwardly inclined slide flanges, in combination with two spring hooks adapted for attachment to the gate post and to engage the flanges. The gate when hung normally rests in closed adjustment, owing to the relative inclination of the bearings or leaves on the hinges, but when the gate is opened in either direction it is slightly elevated, and will close with a slight impetus.

DOOR SECURER.—Columbus F. Cardwell, Bridal Veil, Oregon. This device consists of a plate formed at one end with a toothed angular arm adapted to engage the door jamb, bearings being formed on one side of the plate in which slides a bar having an angular arm extending from its inner end and having notches in its outer end to engage the outer bearing, a brace being pivoted to the plate on the opposite side from the bar, and the brace having points to engage the door jamb or casing. This fastener is designed for ready and temporary attachment to any door for securely locking it, and may be folded up for conveniently carrying it.

CASTER.—Caughy S. Fleming, Shelbyville, Ind. This invention relates to two-wheeled casters for furniture, trucks, etc., providing therefor a caster capable of tilting in its support, thereby enabling it to more readily ride over obstructions. The spindle or support has a horizontally ranging member on which is a loose sleeve, the axle of the wheels passing through the sleeve and spindle, while the axle has its bearing in the sleeve and is capable of tilting with it independently of the supporting spindle.

HARNES.—William H. Violett, Grand Junction, Col. By this invention a snap connection is provided at one end with a hook to engage the neck yoke ring and at its other end with a loop and a hook adjacent thereto, there being a double spring tongue for closing the hooks, and one of the holdbacks being secured in the loop and the other in the adjacent hook. By this improvement the wear on the holdback strap resulting from its sliding back and forth in the yoke ring is avoided, and the connection with the yoke may be easily and quickly made.

SLING CINCH.—Denis O'Sullivan, Spokane Falls, Washington. This is a device for securely fastening packs upon the pack horses, mules, and burros used in mountainous countries, and permits the pack to be quickly and securely attached and as easily removed when desired. It is composed of a strap having at one end a metal fastening consisting of a hook having a lateral outlet, with an anti-friction roller in the bend of the hook, a cramping pawl closing the outlet and having at its other end a plate or attachment provided with an offsetting eye.

ANIMAL SHEARS.—Charles and Harry Burzon, Malin Bridge, near Sheffield, England. This invention relates to improvements in instruments for shearing or clipping sheep or other animals, having for its object to enable the crosshead or forked end of the vibrating lever, by which the reciprocating motion is imparted to the upper cutters, to adjust itself freely to the plane of the cutting surface of the lower cutters,

upon which the upper cutters work. An improved means is also provided of applying pressure to the upper cutters, to maintain a constant steady pressure sufficient to insure efficient cutting action without requiring great nicety or care in making the adjustment.

PNEUMATIC TIRE.—William R. Foster, Bermondsey, England. A tubular tire with closed ends wrapped around the wheel rim, the ends tapered to lap over each other and make a scarf joint, is combined with a jacket or cover in the form of a complete annulus of nearly tubular cross section, but with a slot extending around its inner circumference, the jacket being adapted to envelop the tire and its edges, and being detachably secured at intervals to the back of the wheel rim. With this improvement the tire may be readily removed and replaced by another in case of injury without entirely removing the cover of the tire from the wheel, and without dismounting the wheel from the machine.

TEMPORARY BINDER.—Adolph A. Hunziker, St. Louis, Mo. This is designed to be a simple and efficient binder for temporarily binding magazines, loose pamphlets, blank books, etc. To the back support to which the covers are attached, at one end, are fixed hooks adapted to be entered between the leaves of the pamphlet as the latter is placed in the binder, a spring-held double hook, sliding in guides, being at the same time drawn out from the other end of the back support, the pointed ends of the double hook when released entering between the leaves of the pamphlet at the other end.

ROLL PAPER HOLDER AND CUTTER.—George M. D. Manahan, New York City. This is an upright device in which upright cutter frames with attached knives are arranged down both sides of the roll, the frames being hinged to a yoke or frame, while cords and weights operate to keep the knives up against the roll and follow it up as draught is made on it. The apparatus, instead of being carried by a main frame, and standing by itself away from the wall or in the middle of the floor, may be set up against the wall as an attachment to save room.

KNITTING AND FORMING HOSE.—Fredrick W. Simons, Philadelphia, Pa. This invention provides an improved method whereby the sock or stocking has its heel, foot, and toe knit continuously on a circular knitting machine without removal, transfer, or addition of any fabric knit on any other machine, the heel being knit continuously with the foot, and afterward cut, readjusted, and looped together. Any ordinary circular seamless knitting machine suffices in carrying out the invention.

GAME BOARD.—Edgar L. Williams, Rochele, Ill. This board consists of a case having pins of uniform size grouped in opposite ends and projecting vertically from the bottom, a taller pin being arranged between the groups of pins, and sliding lids held in the upper portion of the case, in connection with a series of rings to be thrown upon the pins. The game to be played on the board is designed to afford amusement to persons of all ages, there being enough elements of chance about it to make it interesting and exciting.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention and date of this paper.

NEW BOOKS AND PUBLICATIONS.

GEOLOGICAL SKETCHES AT HOME AND ABROAD. By Archibald Geikie, LL. D., F.R.S. With illustrations. New York: Macmillan & Co. 1892. Pp. x, 332. (No index.)

The delightful story of what Professor Geikie considers the turning point in his life, his first geological excursion when a mere schoolboy, opens the present attractive work. We then travel with the distinguished author over Scotland, England, France, Sweden, and America, with most fruitful results. The subject is presented from the more popular side, and gives a graphic aspect of the world's history as pictured in the mind of a leading geologist. The work is largely a reprint of scattered essays, and will be a welcome addition to the general as well as scientific library.

HEROES OF THE TELEGRAPH. By J. Munro. London: The Religious Tract Society. Fleming H. Revell Co., New York and Chicago, sole agents. Pp. 288. Price \$1.40. (No index.)

The lives of Wheatstone, Morse, Sir William Thomson and other notabilities in the electric world, past and present, are treated seriatim in this work, with many portraits of the subjects of the memoirs. It is a graceful tribute to the practical world's workers in electric science, to those who have shown how closely interconnected theory and practice may be.

DEAFNESS AND DISCHARGE FROM THE EAR. By Santuel Sexton, M.D., assisted by Alexander Duane, M.D. New York: J. H. Vail & Co. 1891. Pp. 89.

The treatment of the ear for its troubles by the more radical methods of treatment, based upon modern surgical methods, is advocated by the two authors of this short manual. Dr. Sexton appears as a strong advocate of these methods, and a number of cases successfully treated are detailed.

METHODS OF GAS ANALYSIS. By Dr. Walter Hempel. Translated from the second German edition by L. M. Dennis. London and New York: Macmillan & Co. 1892. Pp. xv, 384. Price \$1.90.

Dr. Hempel's methods of gas analysis have won for him a place comparable with that of Professor Robert Bunsen. The introduction of his absorption pipette really marked a new step in the difficult work of accurately analyzing commercial gases. The present man-