

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**ROTARY ENGINE.**—Alexis F. Gillet, Kearney, Neb. This engine is preferably constructed with two steam chambers, with pistons arranged to operate alternately, and the abutment or slide valve is formed with two apertures, and operated for variable movements by the piston, the valve alternately connecting the main chamber with the steam inlet to drive the piston and the valve pocket to cushion the valve. It has a solid base portion and channel way connected therewith, providing for a sufficient steam abutment to hold the valve against the piston. The engine is constructed of few parts, and the piston travel and abutment movement are regular, the usual jarring and thumping being avoided.

**ROAD WAGON.**—Clarence Gillett, Gloversville, N. Y. This invention relates to traction engines propelled by steam, compressed air, electricity, etc., providing a simple and durable road wagon, adapted to carry passengers or freight, and to be propelled at a high rate of speed and easily steered as desired. The boiler is preferably of the Shipman style, to utilize oil as a fuel for generating steam, and the wheels are so mounted that they will readily pass over any obstructions in the road.

**FURNACE TO TREAT ORES.**—Charles J. Fauvel, London, England. This is a furnace for the treatment of refractory ores containing precious and other metals, and is one in which the oxidizing of the impurities is effected by a current of hot air entirely out of contact with the furnace gases, so that the ore will be delivered in what is known as a "sweet" condition. The furnace is so constructed that the oxidizing current is separately heated, and the passages are so arranged that neither the ore nor the oxidizing current can at any time come in contact with the products of combustion of the fuel, while the flues for the latter are designed to secure its utilization to the utmost extent. The furnace is also applicable for utilizing the silver in the ore by adding the chlorinating medium.

## Railway Appliances.

**CAR COUPLING.**—George W. Mahan, Cold Spring Harbor, N. Y. This is an automatic coupler of strong, simple, and durable construction, which embodies the principle of the old-fashioned link and pin coupling, and is so constructed that the pin by its weight will hold the link in position to enter an opposing coupling. The device may be operated to uncouple from either the top or the sides of the car, so that the brakeman need not go between the cars to uncouple them.

**RAILWAY BLOCK SIGNAL.**—Frank B. Burt, New York City. This invention provides a simple mechanism for the expeditious and positive operation of a block signal system, in which the signal will remain set in the block while the train is in the block, but when the train leaves the block, in setting the signal of the block it enters, the signal of the block it leaves is taken down or concealed. The mechanism of the system is brought into action by a trip mechanism carried by a car or by the engine, and at each block it is connected with the signal of that block and the signal of the block in advance.

**CLAMP.**—Walter Hewitt Robinson, St. Paul, Minn. This is an improvement on a formerly patented invention of the same inventor, for a clamp which can be readily applied and manipulated for conveniently removing or replacing the cap and spring in air-brake cylinders. The construction of the clamp is strong and simple.

**RAILROAD CONSTRUCTION.**—Eliphalet L. Arnold, Georgetown, Texas. This invention provides for building an all-metallic railroad, to be strong, not very expensive, and which can be rapidly laid. The cross ties are essentially triangular in cross section, are hollow, to be filled with ballasting material, and each has a horizontal cross brace near the top serving as a support for rail-supporting chairs. The tie has a dovetailed recess to receive the rail-supporting chairs or wedges, by which the track rails are held firmly on both sides throughout their entire length, so that if a rail should break at any point it would still be held in place, and there is no chance for the rail joints to settle. Thus a perfectly smooth road may be made.

## Mechanical.

**LOOM LET-OFF MECHANISM.**—Jeremiah C. Bill, Willimantic, Conn. This is a very sensitive and automatic mechanism, whereby, as soon as the slightest pull is exerted upon the warp, friction disks are so moved that the warp beam is turned a sufficient distance to let off the warp required by the working of the loom. An arm mounted to swing, and controlled from the warp beam, is connected with a friction disk adapted to engage a second friction disk geared with the warp beam and driven from the operating mechanism of the loom.

**QUILL WINDER.**—Corry Jones, Long Island City, N. Y. This winder has a frame to be secured to the loom or other machine, and on the frame is journaled a hollow slotted spindle provided with a disk and a fast and loose pulley, a traveler actuated from the spindle having a slot and a thread guide, while a vertically movable rod actuated by the rise of the quill has an arm on its lower end in the upward path of which is a pivoted brake arm, a belt shifter being loosely engaged by the brake arm. The device is very effective and positive in operation, and not liable to get out of order.

**WRENCH.**—Walfrid A. Aberg, New Westminster, Canada. This is a strong and simple wrench arranged to permit of moving the jaws into any desired angle relative to the handle, so as to turn nuts in close quarters. It has a swinging head having a polygonal head at its axis, an outwardly swinging locking arm being pivoted to the handle at right angles to the axis of the wrench head, and having a polygonal opening at one end to receive the polygonal head and lock it, there being also means for locking the swinging arm in place.

**TILE MACHINE AND CUTTER.**—John Fernald, Wellington, Ill. This is a simple and strongly

constructed machine for quickly and accurately producing pipes or tiles of different sizes, from clay or composition of like consistency. The larger pipes or tiles may be delivered vertically, while the smaller ones leave the mill in a horizontal position, the pipe or tile being automatically cut off in required lengths from a continuous bar or cylinder coming out from the formers.

**CONCENTRATOR.**—Joseph A. Coombes, London, England. An improved hand power device, for conveniently and thoroughly separating gold from gravel and alluvial beds, is afforded by this invention, it being also designed to save precious metals from pulverized quartz and tailings without the aid of water, quicksilver, or chemicals. The gravel or other material to be treated is placed in a hopper, from which it is passed over a series of sieves, and thence into a hopper where it is subjected to a draught caused by an exhaust fan, the arrangement being such that the currents of air are broken up and eddies are produced to facilitate the collecting of fine float gold.

**CAM FOR STAMP MILLS.**—George A. Thompson, Tombstone, Arizona Ter. This is a cam for lifting the stamps, and is made in sections for conveniently fastening it on the shaft or removing it without disturbing the other cams or parts on the shaft. The cam comprises two interlocking toothed sections, each provided with a hub portion, a sectional band engaging the hub portions being provided with lugs for the reception of bolts.

**TIMBER MORTISING MACHINE.**—Charles P. Turner, Johnstown, Pa. This machine is especially designed for producing mortises in large timbers or in heavy beams, and its construction is such that vertical or horizontally placed augers or boring tools may be brought into action as may be desired, the cutters being also capable of removing material between the adjacent bores or apertures made in the timber or beam. The entire machine is portable, and may be placed upon beams or upon a table.

**LATHE CENTER.**—William C. Roe, Honolulu, Hawaii. An outer center engaging the work to be turned is mounted to turn on an inner fixed or dead center, the latter having the usual shank adapted to engage the tail stock or the main head stock spindle in case the device is used as a live center. The device may be quickly applied and arranged to be conveniently adjusted to bring irregular work into a true position for turning it correctly.

**WEIGHT MOTOR.**—John G. Ball, Cheshire, Ohio. This motor is more especially designed for actuating pumps, operating for a certain predetermined time and then stopping automatically. It consists of a lever connected at one end with the machinery to be driven and at its other end pivoted to a pitman connected with a crank arm attached to a shaft belonging to a train of gear wheels connected with a drum on which winds a rope carrying a weight.

## Agricultural.

**PLOW.**—Charles H. Gerrard, Xenia, Ill. The beam, the shank, and the handles of this plow are so constructed that shares of different kinds, adapted to be used upon soils of a wide variety of character, may be quickly and conveniently attached to the beam and shank. The plow is very simple, strong, and inexpensive, and its colter may be easily removed, or it can without trouble be carried upward out of the way. The invention comprises various novel features of construction and combination of parts.

**CULTIVATOR.**—Bluford T. Scott, Milford, Ill. This invention provides in one implement a combination of gopher blades and shovels, to first stir the ground with the shovels and then level it by means of the gopher blades. The shovels are kept away from the plants, but the blades run closer, so as not to endanger the roots, and from the manner of connecting the braces or adjusting bars of the blades, the outer end of the blade is always the lowest, so that it can run close to young plants, without injury. The blades are reversible, and may be adjusted to allow the operator to throw the soil to or from the plants as he may desire.

**PLANTER AND CULTIVATOR.**—John B. Burke and John F. Badger, Quitman, Ga. This invention relates to grain-sowing cultivators, and provides a machine that is easy to adjust and operate, not costly to build, and designed to be very durable. The plow may be of the ordinary construction, with a clevis in front to be connected with the draught chain or doubletree, but the plow can readily be held at any desired height, or drawn up out of engagement with the ground during the travel of the machine from one part of the field to the other. In a hopper-shaped seed box secured to the beam of the main frame is journaled a stirrer wheel, but the stirrer is removed and a dropping disk inserted for planting corn, an opening plow being then placed in advance of the seed dropper and a coverer plow at its rear.

## Miscellaneous.

**BREECH-LOADING SHOT GUN.**—Charles F. Hacker, Parsons, Kansas. This improvement is designed to afford greater simplicity, strength, and durability in the construction of locks, ejectors, and fore ends, together with a more perfect balance of the gun itself, and with greater safety in a hammerless gun. Combined with an annular hammer is a stationary hub or cylinder arranged within the hammer, and a coil spring arranged within the cylinder, while the gun barrels have independent ejectors, and a separate spring mechanism for throwing out the ejectors, push pins being connected with the spring mechanism and operated upon by the hammers to put the springs under tension to independently throw out the shells.

**AXLE LUBRICATOR.**—John W. Schoaf, McKeesport, Pa. The wheel hub has, according to this invention, an oil chamber surrounding its central tubular portion, the oil inlet being at one end of the hub and its outlet at the other end, which moves next to the contact surface. This outlet is closed by a spring-pressed ball valve, adapted to turn or roll as it abuts against the contact surface, and when not so engaged being held closed by the spring. The invention is likewise applicable to pulleys and analogous devices.

**SASH FASTENER.**—Robert D. Murphy, Baltimore, Md. This is an improved article of manufacture in which the fastener and lock consists of a disk with roughened exterior and eccentrically pivoted, oppositely projecting twin hooks having a shank pivoted to the disk. The device is very simple, and may be applied either to the sash or to the casing, holding the sash in any position in which it may be placed or locking it closed.

**DOOR CHECK.**—James S. Patten, Baltimore, Md. This is an inexpensive door check and stop, with a securing plate attached to the door in the ordinary manner, from which projects an arm on which is eccentrically pivoted an elastic disk. A flattened contact portion extends to each side of the axis of the disk, whereby stop faces at opposite sides of the pivot are provided when the contact portion is turned to engage the floor.

**VEGETABLE CUTTER.**—James S. Patten, Baltimore, Md. This device has a main supporting frame with a holder for receiving the vegetables, a reciprocating slicer knife, movable in the bottom of the holder, and a presser or follower which serves to press the vegetable against a reciprocating cutter platen or frame. The machine is simple and cheap in its construction, easily manipulated, and very effective for the uses designed.

**AWNING.**—Rodolph D. Thornton, Brooklyn, N. Y. The construction of this awning is such that the lower portion, which is usually open, may be closed by a screen, thus admitting of the window being kept open without the possibility of flies entering the room. The screen is so made and attached that it may be elevated with the awning, or be brought up close to the sash when occasion may demand. When the awning has a hood, the lower portion of the hood may also be closed with a screen held in fixed position.

**DISPLAY STAND.**—William E. Stow, Newborn, Ga. This invention provides a special construction and arrangement of parts of a revolving stand for exhibiting goods in connection with a canopy of netting, which may be raised above or lowered around the goods for their protection. Display wheels, on which may be placed sectional shelves, are loosely held upon a central standard, supported upon a suitable base, which is either portable, with casters or rollers, or may be a stationary fixture.

**PIANO STOOL.**—Charles O. Parsons, Milwaukee, Wis. This is an inexpensive stool, which is vertically adjustable, but which does away with the ordinary screw, and has a revolvable seat, which may be fastened at any desired height, so as not to be accidentally changed. In the central bore of the usual pillar is a sleeve, in one side of which is a vertical row of holes, either one of which may be engaged by the lower end of a spring-pressed latch pivoted in a hollow shaft extending vertically through the sleeve, the upper end of the latch being connected with a horizontal push rod terminating in a push button in the edge of the seat. The button is to be pushed in when the seat is to be raised or lowered, the latch entering the nearest hole when pressure on the button is released.

**RAZOR.**—Carl R. Evertz, Brooklyn, N. Y. This invention provides a razor stock with a detachable blade, and means for making a quick and secure connection of the blade with the stock or back piece, and to permit the blade to be removed readily and safely for interchange with similar blades. It is designed to furnish a set of blades with a single stock and handle, so that a dull blade may be removed and replaced by a sharp one.

**SPOOL THREAD CABINET.**—James W. Hayden, Lewisport, Ky. This cabinet has a closing lid or cover, and may be of any size or shape, and within it are cells, preferably arranged in transverse rows or clusters, in which the spools are arranged in single columns, to be delivered therefrom by pulling a knob, which in turn operates a releasing device. The invention covers various novel details of construction and combinations of parts.

**WAGON BOX STRAP.**—Godfrey W. Bauder, Sheldon, Iowa. This invention relates to that variety of straps used to connect the floor and side pieces of wagon boxes at the corners, and which are also adapted to secure the end boards or gates in place. Its body portion has parallel ribs forming a groove in which the end gate may be held, while a flange overlaps the end of the side of the wagon body, and another flange rests on its top at the corner, the two flanges serving as braces.

**LIFTING DEVICE.**—Willis L. Brown, Lake Geneva, Wis. This device comprises a light frame, preferably made of gas pipe, to a cross piece at the upper end of which is pivoted a lever, the device being readily set up and adjusted, and arranged for conveniently lifting and supporting stoves, safes, and other heavy objects, for setting or removing them. It may be readily folded up in small space when not in use.

**SHELLS FOR PLATED WARE, ETC.**—William McAusland, Taunton, Mass. Oval and oblong shells for hollow plated ware are, according to this improvement, produced of ductile or plastic material by first making a round, seamless shell, and then expanding it to an oval or oblong by introducing successively sectional former blocks of different size and shape, to be expanded progressively by a tapering plug forced centrally through. By this method not only metal shells may be shaped, but also those of pasteboard, wood fiber, rubber, and other materials.

**GRAIN SCOURER.**—Archibald P. Campbell, Portage la Prairie, Canada. This scourer comprises a revolvable perforated cylinder, the perforations adapted to receive the grain and means for delivering grain into the cylinder and removing it therefrom, while revolvable brushes are held to impinge on opposite sides of the cylinder shell. The perforations are slightly larger on the inner side of the cylinder than on the outside, and the kernels of the grain catch in the perforations and are brushed, being thence dropped into a discharge spout.

**MUSICAL INSTRUMENT ATTACHMENT.**—William Leiner, Milwaukee, Wis. This is a simple device for attachment to harps, zithers, etc., a sliding and yielding supported bar above the strings of the instrument carrying dampers adapted to contact with strings, and mechanism for shifting the relative positions of the

dampers. It may be conveniently operated to change the key, and is arranged to damp all the strings except those in actual use, thus facilitating easy and nice playing.

**RUB FLUTE.**—Balilla Carpigiani, Philadelphia, Pa. In a suitable base is held a row of rods of different heights, preferably of wood, each rod terminating in a socket, the sockets being connected together by a silken cord or other brace. Each socket has a removable top section, by changing which the tones of the instrument are changed. The instrument is played with gloved hands, the gloves being resined and drawn longitudinally along the rods, the long rods emitting relatively deep tones and the short rods sharper tones.

**MUSIC BOARD.**—Harry S. Sharpe, Seattle, Washington. A series of connected bars is provided with notation lines, and between the adjacent bars music characters are adapted to be inserted, each having a rearwardly extending lug to hold the character in proper position relative to the notation lines. The improvement is designed to facilitate the teaching of music, permitting of readily inserting or removing the music characters as desired.

**PENHOLDER DESIGN.**—Dent L. Lydick, Quaker City, Ohio. This is a combined penholder and paper cutter, whose lower stem portion is a tube, while the upper portion represents a feather, having one straight marginal edge.

**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.

**THEORY OF STRUCTURES AND STRENGTH OF MATERIALS.** By Henry T. Bovey. New York: John Wiley & Sons. 1893. Pp. xv, 817. Price \$7.50.

The preface states that this work deals with that portion of applied mechanics which has to do with the design of structures. It therefore will be found to develop into a very full and exhaustive treatise on the strength of material, truss and girder calculations, and all those matters which are now acquiring such importance in the architectural and engineering worlds, where the use of iron and steel of known constants enables exact mathematical calculations to be applied to the practical dimensions of the members of bridges and buildings of all kinds.

**MANUEL THEORIQUE, INSTRUMENTAL ET PRATIQUE D'ELECTROLOGIE MEDICALE.** Par G. Trouve. Paris: Octave Doin, editeur. 1893. Pp. xxii, 788. Price 8 francs.

Gaston Trouve is well known as a constructor of a wide range of electrical apparatus. A great deal of his material was invented for use in a medical application of electricity. The present work is largely devoted to his own different apparatus, but notwithstanding that, his researches and work have been so complete that it will be found a very good treatise on the titular subject. A bibliography is given, and numerous illustrations and tables of data give value to the work.

**ENGINE ROOM CHAT.** By Robert Grimshaw, M.E. New York: Practical Publishing Company. 1893. Pp. 144. Price \$1.

A very graphic presentation of the engineer's difficulties and the advice often given in a humorous or sarcastic vein make this little work excellent reading. The author is known as a very spirited writer, and in this book he has made full draft upon his humorous powers. The advice he gives is excellent, and it really seems as if the presentation of his advice in this humorous form would make it a more suitable dose than when given in more serious shape.

**PHOTO-ENGRAVING.** A practical treatise on the production of printing blocks by modern photographic methods. By Carl Schraubstadter, Jr. 8vo. Pp. 132, 60 engravings, cloth. Published by the author at St. Louis. Price \$3.

This book will fill a want long felt for a treatise which will enable an amateur or professional photographer to make good printing blocks. Zinc etching is by no means an easy process to work, and really requires practical instruction from a man in the business if the highest class of work is to be attempted. With a book like Mr. Schraubstadter's it is possible to make excellent engravings after a few weeks' practice. The process of making wet plate negatives is well described, and full details of the preparation of the zinc, the etching and finishing are given. Half tone work comes in for a share of attention, though the subject is not as fully treated as it might be. The simple and double washout processes, as well as the swelled gelatine process, are also described. Altogether the work is a very satisfactory addition to the literature of the subject, which is by no means meager. It is a book which will be well received by amateurs.

**COPY FOR PHOTO-ENGRAVING.** By Carl Schraubstadter, Jr. St. Louis, Mo. 24mo. Pp. 25, paper. Price 25c.

A valuable little work giving full information in regard to the paper, pens, and ink which will obtain the best results in the hands of the photo-engraver.

**CATALOGUE OF AMERICAN LOCALITIES OF MINERALS.** By Edward Salisbury Dana. New York: John Wiley & Sons. 1893. Pp. 51. Price \$1.

This reprint of a very practical portion of Dana's Mineralogy will doubtless be acceptable to many collectors, enabling them to get the list of localities at a nominal price.

**WATERDALE RESEARCHES; OR, FRESH LIGHT ON THE DYNAMIC ACTION AND PONDEROSITY OF MATTER.** By "Waterdale." London: Chapman & Hall, Ltd. 1892. Pp. xvi, 293.

The author has addressed a special preface to his American readers. The aim of the author, it seems, is