RECENTLY PATENTED INVENTIONS.

Mechanical.

VALVE GEAR.—Frank J. Chriest, Fort McPherson, Ga. This gear is designed to give the desired stroke and a very high speed to the valve, permits of adjustment for lost motion, and permits more steam to pass into one end of the cylinder than into the other, if desired. A nut block is connected with the valve and adapted to receive an intermittent sliding motion from the eccentric, permitting of the valve remaining open for a long time at the end of the stroke, during the time the eccentric is moving into extreme positions and back, before a sliding of the valve again takes place. The exhaust can be opened quickly, left open a long time, and still close at the proper moment.

WRENCH.—Edward I. Morey, Durango, Col. This is a simple form of wrench, of such construction that when the wrench is in use the ratchet mechanism will be relieved from undue strain. As the distance between the jaws of the wrench is increased the handle is lengthened and the amount of leverage increased, the sliding section of the wrench adding strength to the handle where it is most needed.

WEDGE.—William I. Harmon, Mount Vernon, Washington. This inventor has devised an improvement in wedges for felling and splitting timber, the wedge having a wooden body and a metal frame, the head of the body projecting above the frame and being surrounded by a metal band. The frame has opposite beveled sides incasing the body, and provision is made for the expansion of the wooden body laterally in the frame.

LIFTING JACK.—Harvey Holahan, Harvey, Ill. This jack has a novel lever and pawl mechanism for raising and lowering the rack or ratchet lifting bar, and is adapted for general use or for employment as a car jack. In a hollow standard is pivoted a lever to which is pivoted a lifting pawl, a locking pawl being pivoted to the standard and a ribbon spring connecting both pawls. A horizontally adjustable slide is attached to the spring, and by the different adjustments of the slide the spring is held under different tensions as required to act on the pawls.

COAL ELEVATING APPARATUS.—George Haiss, New York City. This invention provides an adjustable support for an automatically filling coal shovel, the elevator portion being quickly projected over a vessel or removed out of the way. The apparatus provides for the complete control of the shovel by the operator in filling, transferring and emptying it.

HOOP FLARING MACHINE.—Max H. Ritzwoller, Peoria, Ill. For evenly flaring and bending iron and steel hoops, this inventor has devised a machine which permits hoops of different gages to be flared uniformly and freely, inexpensive hoop clamping attachments being readily applied to the machine without materially altering the drive gear mechanism. The feed shafts have each a fixed head member formed with a circular socket in its clamp face, an opposing yielding clamp head having a similar socket, and a washer held between the heads having its opposite faces filling the sockets in the heads.

Agricultural.

ROTARY HARROW.—James G. Ferrill, Batesville, Ark. This is an improvement in harrows having two toothed rotary sections hinged to a transverse coupling bar in such manner as to permit them to be placed in horizontal or vertical position, for work or for moving the harrow to and from the field. It has an outer annular rim with which are connected cross bars having a central spindle member upwardly projected, there being an inner annular member on the cross bars and pendent tooth members loosely connected with the inner and outer annular members.

PLANTER.—Caleb E. P. Hobart, Cherokee, Iowa. This is an improvement upon a formerly patented invention of the same inventor, the plungers or followers in the seed pockets being so made as to relieve the fender or smoothing device from undue friction by a possible overcrowding of the pockets, provision being also made for a more complete covering of the seed when dropped. A greater number of seed droppers is employed together with a shifting wheel for the shaft operating the droppers, the wheel having marking shoes serving as check rows, while an auxiliary marker lines the rows when necessary.

Miscellaneous.

FILTERING SACCHARINE JUICES.—William Eassie and Otto Schmidt, Kealia, Kauai, Hawaii. This invention provides a sand filtering apparatus consisting of a battery of tanks arranged in inclined series and provided with a feed pipe with inlets and valves for the several tanks, transfer pipes and valves connecting the tanks, and inclined troughs with rotary spiral conveyers being arranged to wash and convey the sand from one to the other. A carrier belt and an endless elevator belt with buckets carry the washed sand to the highest tanks.

METALLIC CEILING.—Valentine Moeslein, New York City. This ceiling is so formed as to permit of conveniently fastening the panels in place on a metallic furring frame secured to the joists without the use of wooden furring strips, at the same time forming perfect and very secure joints. The improvement covers a furring frame having longitudinal and transverse strips, each provided with a rail, and panels formed with flanges are adapted to be crimped on the rail.

WINDMILL REGULATOR.—Frank C. Rathbun, Ethan, South Dakota. Vanes are pivoted in the casting adapted to carry the wheel in different vertical planes and at different distances from the bore of the casting, a connecting rod having its ends pivoted to the vanes, the improvement being applicable to all windmills which have a horizontal axis, and being adapted to hold the wheel steadily in the wind, while it works automatically to swing the wheel out of the wind in case the wind becomes too heavy.

HINGE.—Arthur H. Gilman, Aurelia, Iowa. This is an invisible hinge when closed, conveniently applicable to lids, covers and doors or piano cases and other ornamental articles. It is very strong, and enables the cover or other part to which it is applied to close edgewise against the part to which it is hinged, leaving a perfectly smooth outer surface. A pair of leaves have their adjacent ends equally curved in opposite directions, and pivoted connecting levers are each pivoted at one end to the adjacent curved end of one of the leaves. A pair of braces is connected at one end to one of the leaves and at the other end to one of the connecting levers.

CUTTER FOR WELT TRIMMERS.—Gustaf A. Hultin, Chicago, Ill. For simultaneously trimming the welt and cutting a channel for the second inseaming, this inventor has devised a simple and cheap cutter, comprising a head having parallel rows of peripheral knives, the rows being of dissimilar lengths, and the longer knives having their cutting edges inclined outwardly and downwardly from the edge next to the shorter knives. The cutter is readily ground and made to trim the welts to any desired shape.

TYPEWRITER RIBBON MECHANISM.—Fred W. Overhiser, Cold Spring, N. Y. This inventor has devised means of automatically reversing the movement of the inking ribbon, and for a transverse movement of the ribbon, which is automatically operated in connection with the reversing mechanism. While the machine is operating the ribbon has a constant movement, and every portion of it is automatically brought in contact with the type, insuring uniform wear. An automatic reverse and transverse feed attachment is provided, applicable to any machine in which the ribbon is fed from spools on shafts.

FIREARMS PNEUMATIC FIRING DEVICE.—Isaiah H. Simpson, Brunswick, Me. The firearm is, according to this invention, connected at its breech end with a cylinder on the stock, and in the forward end of the cylinder is a partition with an opening for the passage of the firing pin. The latter is on a plunger or piston sliding in the cylinder, the piston being propelled forward to fire the cartridge by forcing air into the rear end of the cylinder through a pipe extending to the outside of the stock, the operator being able to blow into the pipe with sufficient force to propel the piston forward and thus discharge the firearm.

CALENDAR.—George W. Shirk, Van Orin, Ill. This is a perpetual calendar for indicating the year, month and day of the month for a number of years, and automatically adjusts the day indicator when the month-indicating dial is moved. It is designed to be made at a low cost, to be entirely reliable in operation, and is of such shape and dimensions as to permit its face to be utilized to display business cards and other advertisements.

LINE REEL.—Charles A. Koerner, Evansville, Ind. A reel convenient for holding chalk lines is formed of wire bent at the corners to produce end flanges and to form eyes between the corners at the end portions of the body, a spindle extending through the eyes forming an axle, and there being a handle in alignment with the axle. The device is very cheap and efficient.

FUNNEL.—Edward N. Gaudron, Brooklyn, N. Y. For conveniently filling lamp founts, bottles, etc., this inventor has devised an air-controlled cut-off valve mechanism comprising a valve and a piston, the valve controlling the inlet of the liquid from the funnel body to the nozzle, and the piston controlling the valve to close it, the piston being operated by air from a compressed air chamber.

CLOTHES DRIER.—John Drum, Spokane, Washington. This is a device adapted for attachment to a stove pipe to utilize its heat for drying articles placed on the drier. Bands clamped on the pipe sustain outwardly extending arms on which the clothes are hung, the arms being preferably formed of twisted wire, and their outer ends being connected by bars also adapted to carry clothes. The arms of the drier may be folded down parallel with the pipe and out of the way.

TEA CHEST.—Tylar B. Thompson and Charles T. Hull, Missoula, Montana, and John H. Willman, San Francisco, Cal. This chest has an opening in one side at the bottom adapted to be closed by a temporary plate or cover, a shelf on the inside of the chest, and a drawer below the shelf, the drawer having a curved front and sliding door. The improvement is designed to displace the ordinary wooden lead-lined chest, holding its contents so they will not deteriorate or be wasted, and being well adapted for use by the retailer in dispensing the tea in lots.

METAL FRAME AND STOCK.—Albert Wanner, Jr., Hoboken, N. J. This invention provides a frame for stands, mirrors, plateaux, etc., having a back member to which is secured a face member to form an inner and an outer flange, legs being secured to the back member at the outside, while the outer flange overhangs the legs and the inner flange forms a stop for the article framed. The stock may be readily bent to the shape desired without being distorted or having a tendency to bend or flex irregularly.

VEHICLE SEAT LOCK.—Thomas L. Pfleegor, Burlingame, Pa. This lock may be attached to any form of shifting seat, automatically locking and preventing the body of the vehicle from spreading when the seat is in position. Opposite projecting angle arms are attached to the forward and rear portions of the seat riser, and a face plate on the vehicle has openings to receive the arms, while a spring on the face plate has its free end extending partially across one of the openings, and engages one of the arms when the seat is placed in position.

SPRING HORSE SHOE.—Albert J. Walker, Jacksonville, Fla. This shoe permits the animal's hoof to freely expand and contract, so that the animal may fully develop his gait without danger of soreness. An elastic bridge piece connects the forward ends of the side portions of the shoe, the bridge piece being bent up rearwardly at an angle to the side portions and having its lower edge above them. The bridge piece is made flat to fit snugly on the surface of the hoof.

WATER CLOSET SEAT.—Patrick J. Cahill, Utica, N. Y. This is a seat which may be fastened directly to the earthen bowl, constituting an integral portion of the framing of the seat, and the latter not requiring support from a wall or partition.

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.

SELECT ORGANIZATIONS IN THE UNITED STATES. William Van Rensselaer Miller, editor. New York: The Knickerbocker Publishing Company. 1896. Pp. 347. Small 4to, illustrated with views and portraits.

The present work is intended to supply a long felt need which the common club directories failed to satisfy. A club in a metropolis is a necessity to the social and business man as common ground on which to meet one's friends. The wide scope of the present volume has made it possible to include such organizations as Daughters of the Revolution, the American Library Association, the Loyal Legion, the American Whist League, the Knights of Pythias, the National Academy of Sciences and others. The work also embraces social, political, sporting, athletic, amateur dramatic, literary, musical, historical and patriotic, bicycle, kennel, and yacht clubs. The contributors include some of the best known club men in the United States, the portraits of many of whom are given in the present volume. The half tone portraits, the printing and binding are of the very best.

BIOLOGICAL LECTURES DELIVERED AT THE MARINE BIOLOGICAL LABORATORY OF WOOD'S HOLL IN THE SUMMER SESSION OF 1894. Boston: Ginn & Company. 1895. Pp. vii, 287. 8vo, illustrated. Price $2.65.

The first volume of these lectures was offered in 1890, and the reception which this and the succeeding volume was accorded warranted the issue of a third one. Nearly every lecture of the present volume deals with the problem of organic development. The lectures are by such well known scientists as Professor A. E. Dolbear, the late J. A. Ryder, C. O. Whitman and J. Loeb. J. M. Macfarlane's lecture "The Organization of Botanical Museums for Schools, Colleges, and Universities" is very timely, but is unfortunately very short. Other lectures are "On the Limits of Divisibility of Living Matter," "A Dynamical Hypothesis of Inheritance," "The Embryological Criterion of Homology," etc.

SCIENTIFIC AMERICAN BUILDING EDITION.

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Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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Minerals sent for examination should be distinctly marked or labeled.

(6582) F. E. W. asks: 1. With what velocity will water issue from a nozzle with a pressure of 125 lb. to square inch? If the nozzle is 1 16 mch in diameter, how many cubic feet will be discharged in an hour? A. The spouting velocity of water from a perfect nozzle, at 125 lb. pressure, is 8,100 feet per minute, with a discharge of 10 cubic feet per hour from a 1-16 inch nozzle. 2. What diameter should a jet or impact wheel (Pelton type) be to run at 2,800 revolutions per minute, on a jet of this pressure? A. A wheel should be 6 inches diameter for the speed and pressure stated. 3. Have you a SUPPLEMENT describing "Edison's pyromagnetic motor"? A. Articles on Edison's apparatus for the production of electricity direct from coal will be found in SCIENTIFIC AMERICAN, vol. lvii, No. 9, and SUPPLEMENT No. 826. A thermo-magnetic generator and motor is shown in SUPPLEMENT No. 633.

(6583) C. A. R. asks how to label bottles. A. The sand blast and other mechanical engraving methods are altogether out of the question for any but professional glass cutters. Nor can letters be cut very satisfactorily and legibly with a diamond. We have, then, nothing left but paper labels, and, as an adhesive preparation for such, experiment has shown the following formula to be about the best: Gum arabic, 1 oz.; gum tragacanth (pulverized), 1 oz.; acetic acid, 40 min.; glycerine, 1 oz.; water, 2 oz. Dissolve the gums in the water, hot; then add the acid and glycerine. The next difficulty as regards paper labels is the fugitive qualities of ordinary writing ink. A bottle labeled nitric acid, with a good bold black ink, may, in a few hours, bear nothing but a label with a few yellow stains upon it to denote its contents.

(6584) J. W. B. asks how to bleach beeswax. A. Pure white wax is obtained from the ordinary beeswax by exposure to the influence of the sun and weather. The wax is sliced into thin flakes and laid on sacking or coarse cloth, stretched on frames, resting on posts to raise them from the ground. The wax is turned over frequently, and occasionally sprinkled with soft water if there be not dew and rain sufficient to moisten it. The wax should be bleached in about four weeks. If on breaking the flakes the wax still appears yellow inside, it is necessary to melt it again, and flake and expose it a second time or even oftener, before it becomes thoroughly bleached, the time required being mainly dependent upon the weather. There is a preliminary process, by which, it is claimed, much time is saved in the subsequent bleaching; this consists in passing melted wax and steam through long pipes so as to expose the wax as much as possible to the action of the steam; thence into a pan heated by a steam bath, where it is stirred thoroughly with water and then allowed to settle. The whole operation is repeated a second and third time, and the wax is then in condition to be more readily bleached.

(6585) C. F. asks for a formula for granulated cold cream. A. Oil of almonds, ½ pt.; spermaceti (pure), 3 oz.; white wax (pure), 2½ oz.; melt by a gentle heat and add of otto of roses, 12 drops. Pour the liquid into a marble or Wedgewood ware mortar containing about 1½ pt. of luke warm water, and agitate the whole briskly with the pestle until the oleaginous portion is well divided. Then throw the whole suddenly into a broad vessel containing 1 or 2 gal. of cold water. Next, throw the "granulated cream" on a piece of muslin extended as a filter and shake and drain as much of the water out of it as possible. Lastly, put it into china or earthernware pots. It is used as ordinary cold cream.

(6586) H. N. M. asks for a formula for fireproof ink and paper. A. The pulp for the paper is composed of vegetable fiber, 1 part; asbestos, 2 parts; borax, ⅛ part; alum, ¼ part. The ink can be used in either writing or painting, and is made according to the following recipe: Graphite finely ground, 22 drm.; copal or other resinous gums, 12 grn.; sulphate of iron, 2 drm.; tincture of nutgalls, 2 drm.; sulphate of indigo, 8 drm. These substances are thoroughly mixed and boiled in water.