## RECENTLY PATENTED INVENTIONS.

### Electrical Devices.

VIBRATOR.—E. B. JACOBSON, Pittsfield, Mass. The vibrator is for use in induction-coils, Ruhmkorff coils, spark-coils, gas-engine ignition-coils, and like coils, and devices employed in high-tension electrical work, the vibrator being arranged to prevent sticking of the contact-points, to allow minute adjustment and secure locking of the parts after the adjustment is made, to insure quick response and to avoid waste of platinum and of electric current.

### Of Interest to Farmers.

MOWING-MACHINE.—G. ROBINSON and G. CUTSFORTH, Riddles, Ore. In this instance the invention is an improvement in mowing-machines, and relates particularly to a track-clearing attachment whereby heavy vines and grasses may be cut at the outer end of the sickle-bar to avoid clogging of the bar and to aid the divider in separating the cut from the uncut grass.

### Of General Interest.

SURGEON'S NEEDLE-HOLDER. — H. H. CLARK, Santa Cruz, Cal. The invention has reference to surgical instruments; and the object of the inventor is the production of a device of simple construction which will facilitate the holding and manipulation of a surgeon's needle. It has substantially the form of a pair of forceps, presenting handles, pivotally connected and having extensions adapted to clamp together, so as to form jaws, adapted to receive the needle.

MUSICAL WIND INSTRUMENT.—J. S. BARLOW, Johnson City, Tenn. The object of the inventor is to provide an instrument having a range of approximately two octaves and permitting a beginner to readily learn to play the instrument and allowing the production of powerful yet soft tones without requiring undue physical exertion on the part of the performer.

RULE.—J. BENDER, Marion, Kan. In this case the invention pertains to rules, and it is intended especially to be used by artisans and others for measuring the distance between points where it is not feasible for the ends of the rule to project beyond the points between which the measurement is taken.

LIQUID-MEASURING DEVICE.—A. YOUDELMAN, New York, N. Y. The object of this invention is to provide a liquid-measuring device under the control of an operator and arranged for delivering liquids in accurately-measured quantities and without any waste or danger of wrong manipulation of the device by the operator.

AUTOMATIC LATCH FOR SLIDING DOORS.—J. R. HUGHES, Chama, Ter. N. M. The invention has reference more especially to sliding doors (gates and the like) for cars, barns, warehouses, etc. One of the principal objects is to provide a device automatic in operation. A further object is to provide an automatically-engaging latch for car-doors and the like which is entirely protected from accumulations about the same as dust and dirt or ice and snow and which is easy working and comparatively noiseless.

PUMP-ROD COUPLING.—LE ROY PITCHER, Oilcenter, Cal. The invention relates to oil-well and other pumps; and its object is to provide a pump-rod coupling arranged to permit the convenient disconnection of pump-rods from the pump to allow the withdrawal of the pump-rods without danger of disconnecting the pump-rod sections in case the pump-plunger is sanded up.

BOTTLE.—S. G. WISE, Gas City, Ind. The purpose of this invention is the provision of a simple, durable, and economic construction of bottle whereby the bottle will be difficult to refill and if refilled the bottle cannot for a second time be presented as an original package without evidence that it has been tampered with.

APPARATUS FOR THE AUTOMATIC DELIVERY, ON SALE OR HIRE, OF BOOKS, ETC.—H. POTTIN, 100 Rue St. Lazare, Paris, France. The apparatus comprises a number of compartments, each containing a book or other article, the compartments being normally closed by respective shutters. Each of the latter corresponds to an unlocking device which can be operated by hand through the medium of a shaft or other common member and of a coin previously inserted in the unlocking device. A summing up device registers the number of coins inserted in the apparatus.

STREET-CROSSING INDICATOR.—G. E. PALMER and M. H. COHEN, Butte, Mont. One purpose of the invention is to provide an indicator which will carry two sign-boards at angles to each other and which can be quickly and conveniently set up and applied to a corner of a building, no matter whether the corner is a right-angle one or one in which the corner is flattened or rounded off at the meeting of its members.

POSTAL CARD.—EDITH M. MINER, Rathdrum, Idaho. In this patent the invention is an improvement in postal cards designed more especially as a souvenir and advertising card. The object of the invention is the provision of a device of this character affording considerable space for writing, print, or pictures, and for obscuring the same from view while in transit.

SAFETY ENVELOP AND BOX.—W. H. DOBSON, Harrison, and W. GALLAGHER, Elizabeth, N. J. The invention is embodied in the improved construction whereby an envelop or box may be closed by engagement of the flaps or opposite folding portions thereof, the engagement being such that the envelop or box cannot be opened without breaking it or rupturing a portion of the same.

SHOE-POLISHING STAND.—W. O. BECK, Chicago, Ill. In the present patent the invention has reference to improvements in foot rests or stands for convenience in polishing shoes, the object being to provide a device of this character so constructed as to be readily attached to a closet-bowl so that the dirt removed from the shoes will fall into the bowl.

GRIP.—J. R. CRABILL, Carthage, Ill. Generally stated, the invention consists in constructing a cabinet or any carrying-case with a cell of such size as to amply admit a man's arm to substantially the depth of the elbow, leading into it preferably at one end, and a handle to be grasped by the hand at the bottom of the cell near the center of gravity of the loaded case, thus affording a bracing means entirely surrounding the forearm.

### Hardware.

REAMER.—W. TURNEY, Hyde Park, Mass. This invention has reference to improvements in tools for reaming metal, the object being to provide an expanding-reamer having a plurality of cutting-corners and so constructed that there will be no vibration, thus resulting in an even and smoothly-finished cut.

JEWEL REMOVER AND SEATER.—H. STRAW, Anacortes, Wash. The invention relates to watch-maker's tools; and its object is to provide a jewel remover and seater arranged to permit convenient removal or insertion of close-fitting jewels to bring the same into proper position without danger of marring or otherwise injuring the jewels or losing the same.

### Machines and Mechanical Devices.

LIQUID-WEIGHING APPARATUS.—W. W. GEORGE, Winchester, Ky. The invention pertains to improvements in apparatus for weighing liquid as it discharges from a keg or other receptacle, the object being to provide a device for this purpose of simple construction that will accurately discharge the quantity of liquid desired and then automatically close.

GRINDING-MILL.—P. P. BELT, Fredonia, and E. UTZ, Newton, Kan. The intention in this case is to produce a mill which can be adjusted so as to grind readily to different degrees of fineness, and which may be readily repaired if the grinding-teeth become broken. The invention relates to grinding-mills, such as used for grinding corn, coffee, spices, wheat, meat, etc.

BUTTON-CLEANING MACHINE. — C. G. HELLER, Newark, N. J. One purpose of the invention is to provide a machine for cleaning and polishing buttons, especially collar-buttons, made of composition material and to so construct the machine that the fins which are formed on the buttons in the mold and which remain thereon when the buttons are removed from the mold will be completely removed from the rims and posts or shanks of the buttons and such surfaces be rendered smooth.

BELT-GUIDE.—M. E. DE GREE and D. C. MCALISTER, Flaxton, N. D. The principal objects of the invention are to so construct a belt-guide as to prevent all wabbling and vibration on the part of the belt and guide itself; also to simplify the construction and provide a convenient device which will take up little room and be capable of construction at a small cost and readily repaired when injured in any manner.

COIN-FREED APPARATUS.—W. ABEL, 59 and 60 Friedrichstrasse, Berlin, Germany. This invention has reference to automatic apparatus for vending stamps, labels, or the like which are inserted in the machine in strips or hands. It belongs to those systems wherein the power requisite for the cutting off of an individual stamp or the like and for the forward movement of the band is obtained from one single source of power.

PUMP.—H. NAGEL and J. E. NAGEL, Brunswick, Neb. This improvement relates to pumps of that kind in which a vacuum-chamber below the piston and a compressed-air chamber above the piston serve to prolong both the inflow of water into the suction-tube of the pump and the outflow from the pump-barrel. It consists in the construction and arrangement of the pump-casing with its pressure and vacuum chamber and the piston and valves.

### Prime Movers and Their Accessories.

ENGINE-STARTER.—F. L. ORR, Thurman, Iowa. Mr. Orr's invention refers to starters for engines, more particularly of the internal-combustion type, and has for its object novel and improved means adapted for use with any type of similar engine, whereby with power stored into a suitable receiver the engine may be effectively started from any point of rest of its crank-shaft.

ROTARY ENGINE.—S. S. SADORUS, Sarilda, Idaho. The patentee arranges within a suitable casing a rotary piston having side flanges at its periphery to form an annular steam chamber. The casing has fixed abutments at diametrically opposite points adjacent to the steam inlets, and the piston carries pivoted blades which when they pass the abutments, are forced upward by springs in position to be acted upon by the steam for turning the piston.

GASOLENE-ENGINE.—J. WALSH and E. SWANSON, Galesburg, Ill. In this invention the crank-case is used for compressing air for scavenging or clearing the cylinder of exploded gases by a prolonged blast through the agency of an automatic pressure-valve, the compression of the explosive charge being effected in an intermediate annular chamber between the cylinder and crank-case, in which an annular piston works, which piston is formed on the main piston and moves with it to alternately draw in and compress the charge for explosion.

BOILER-CLEANER.—C. H. PRESCOTT, East Liverpool, Ohio. One object of the invention is to provide a cleaner having a section slidably mounted in the rear wall of the boiler and having a nozzle which can be rotated to permit the steam to be forced through all the tubes of the boiler. Another is to provide a nozzle which may be withdrawn into a recess in the back wall of the boiler to protect the nozzle from direct contact with the heated gases of combustion.

ROTARY ENGINE.—C. MCQUOWN, Grove City, Ohio. The invention relates to an engine in which a stator incloses a piston, which is mounted on and eccentrically of the engine-shaft and arranged to be driven in the stator by pressure of steam, the movement and action of the steam being controlled by an abutment having a combined circular and oscillating movement within a housing, which itself is held to rock in an extension of the main stator. The engine may be constructed with any number of units, the piston-surfaces of which are set at 180 degrees apart, so as to secure regularity of motion.

### Railways and Their Accessories.

RAILWAY-SWITCH.—G. W. LONG, Lindsay, Ind. Ter. The switch may be operated by a man on the car without stopping the car. It can be thrown from either position by a car coming in either direction, and the track mechanism, except the trips which are struck by the shoe on the car, can all be located, if desired, under the ties to prevent interference by horses and vehicles.

### Pertaining to Recreation.

VELOCIPEDE.—Z. T. CARROLL, St. Louis, Mo. Mr. Carroll's invention is an improvement in velocipedes and particularly in combined rocking-horses and velocipedes. and the invention has for an object the provision of a novel construction whereby the figure of the horse may be caused to simulate a galloping action as the velocipede moves forward.

FISHING-REEL.—S. SYKES, Rhoades, Ariz. Ter. In the present patent, the invention is an improvement in fishing-reels and it has, among other objects, the provision of a reel that can be changed from a high to a low speed gearing controlled automatically by the pull of the fish.

PUZZLE.—JENNIE E. VAN ANTWERP, Dent, Minn. This puzzle consists of a round box having fixed therein partitions and a wedge-shaped apertured and grooved block, termed a "bridge," dividing the box into a plurality of compartments. In one of these are placed a plurality of spheres differing in size, the object being to so manipulate the box as to cause the marbles to pass from this compartment to the second and thence over the bridge to the third compartment.

### Pertaining to Vehicles.

SUSPENSION MEMBER FOR SIX-WHEEL VEHICLES. — C. H. LINDECKER, Briançon, Villa Yvette, Hautes-Alpes, France. The invention relates to a system of suspension for six-wheel vehicles; and the object is to so construct the system that all the wheels will be always on the ground, however uneven the surface of the road may be, and that the load will always be portioned out among the axles in the same manner.

VEHICLE-WHEEL.—E. P. DAMON, Phillipsburg, N. J. In this instance the invention has reference to vehicle-wheels; and the object of the inventor is the production of a wheel which will have highly-resilient qualities operating to reduce the shock which passes to the body of the vehicle when moving over irregularities in the road-bed.

CHAFE-IRON.—C. T. MCCLELLAND, Olympia, Wash. Mr. McClelland has devised an improved construction of a rub-iron or chafe-iron for protecting wagon sides or bodies from wear or defacement of forward wheels in making sharp turns. It is composed of two parts, one being adapted to be secured to the wagon-body and to hold the other, which is the wear-piece proper, in such manner that it may be removed when worn out and a new one substituted with convenience and dispatch.

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(10281) J. B. asks: 1. What gas has the most ascending power to the square inch? How much ascending power has it to the square inch? A. Hydrogen is the lightest gas known, and has therefore the greatest lifting power in a balloon; 1,000 cubic feet will lift seventy pounds. 2. Can this gas stand being slightly compressed? A. Hydrogen can be compressed to any extent. 3. Can you give a receipt for partially or wholly petrifying wood and leather? A. If wood be soaked in copperas or sulphate of copper and dried, and the process be repeated till the wood is thoroughly saturated with the chemical, its structure when burned will remain in the peroxide of iron left. Petrified wood in nature is another thing. This is probably formed by the slow action of silica. As a particle of wood decays a particle of silica takes its place, and finally all the vegetable matter is replaced by mineral matter. This process has not been imitated artificially.

(10282) J. D. C. writes: Please send me a receipt for keeping cider sweet. Please tell me also if it will stay sweet in vinegar barrels. A. To preserve cider without fermentation, it is necessary that it be made from good fruit, rejecting all decayed apples, and keeping all apparatus in a clean and sweet condition during the manufacture of the cider. The barrels or casks into which it is put must also be clean and sweet. Vinegar barrels cannot be used, since they already contain the germs of fermentation. SCIENTIFIC AMERICAN SUPPLEMENT No. 313, price ten cents, contains instructions for making and preserving cider. In addition to the preservatives, given in that article, you may use salicylic acid, one half ounce to a cask of fifty gallons. It is important to exclude the air as much as possible from the cask all the time, and to avoid stirring up the preservative from the bottom of the cask where it settles.

(10283) M. P. C. asks: 1. Please give the formula of a solution for a carbon-zinc battery that is suitable for running a small motor. One in which the zincs may remain in when not in use. A. There is no cell using zinc and carbon in which the zinc ought to remain when not in action, excepting the sal-ammoniac cells, and these are not adapted for running motors. The best battery for the purpose is the plunging bichromate battery described in SUPPLEMENT No. 792, price ten cents by mail. 2. How many inches of zinc should there be to one of carbon? A. The best mode of arranging the zinc and carbon is to place two carbon plates with a zinc plate between them, all to be of the same size. Both surfaces of the zinc are then active. There is no rule to determine the number of inches of zinc to one of carbon. In the Leclanche cell a rod of zinc, ⅜ inch in diameter, is used for a large surface of carbon.

(10284) G. R. R. asks: 1. How to preserve eggs, so as to keep them good, a length of time. A. A good method of storing eggs is the following: Having selected perfectly fresh eggs, put them, a dozen or more at a time, into a small willow basket, and immerse this for five seconds in boiling water containing about 5 pounds of common brown sugar per gallon of water. Place the eggs immediately after on trays to dry. The scalding water causes the formation of a thin skin of hard albumen next the inner surface of the shell, the sugar effectually closing all the pores of the latter. The cool eggs are then packed, small end down, in an intimate mixture of one measure of good charcoal, finely powdered, and two measures of dry bran. Eggs thus stored have been found perfectly fresh and unaltered after six months. 2. Can you give a recipe for a cheap and modern stove polish? A. Stove Polish.—Mix 2 parts copperas, 1 part powdered bone black, and 1 part black lead with enough water to give proper consistency, like thick cream. Two applications are to be recommended.

(10285) L. C. R. asks: 1. What is the composition of the enamel used to insulate the wires in electric heating apparatus and rheostats and how can I prepare and apply it? A. Clean and brighten the iron before applying. The enamel consists of two coats—the body and the glaze. The body is made by fusing 100 pounds ground flint, 75 pounds borax

and grinding 40 pounds of this frit, with 5 pounds of potter's clay in water, until it is brought to the consistence of a pap. A coat of this being applied and dried, but not hard, the glaze powder is sifted over it. This consists of 100 pounds Cornish stone in fine powder, 117 pounds borax, 35 pounds soda ash, 35 pounds niter, 35 pounds sifted slaked lime, 13 pounds white sand, 50 pounds of pounded white glass. These are all fused together, the frit obtained is pulverized. Of this powder 45 pounds are mixed with 1 pound of soda ash in hot water, and the mixture dried in a stove is the glaze powder. After sifting this over the body coat the cast iron article is put into a stove, kept at a temperature of 212 deg. to dry it hard, after which it is set in a muffle kiln to fuse it into a glaze. The inside of pipes may be enameled (after being cleaned) by pouring the above body composition through them while the pipe is being turned around to insure an equal coating. After the body has become set the glaze pap is poured in in the same manner. The pipe is then fired in the kiln. 2. What kind of cells should I use when necessary to add an extra battery to a Queen Acme bridge and how should they be connected? A. We cannot tell. We advise you to consult the makers of the bridge.

(10286) J. H. asks: 1. Can you tell me if it is possible to get mica in solution, if so, how? A. Mica is not soluble. It may be ground to a powder and formed into a paste with shellac or some varnish. 2. Is there any form of silica soluble in water, or any other simple solvent? A. There are soluble silicas. Soluble glass, sodium silicate, or potassium silicate, is of this sort. These substances are often called water glass. 3. I once saw some small clay vessels made on the potter's wheel; after a vessel was finished, the exhibitor poured some transparent liquid upon it from a bottle, which glazed and hardened it at once. Can you give a formula for such a liquid? A. You will find a large number of formulas for glazes in the "Scientific American Cyclopædia of Receipts, Notes and Queries," price $5 by mail. We do not know to what glaze you refer in your inquiry.

(10287) T. V. C. asks: In an essay on the spectroscope an illustrative analogy was thus given: An observer near a railroad will notice that the whistle of a locomotive changes in pitch as the engine approaches or recedes. Is this true, and why? A. It certainly is true that the tone of a locomotive whistle rises very suddenly and sharply as the locomotive rushes up to one, while it is sounding the whistle. This is a matter of easy observation. The pitch falls again as the locomotive rushes away from one. The effect is due to the change in wave lengths of the sound. The velocity of the engine is added to that of the sound in approach and subtracted in recession. So the wave lengths are shorter as the engine approaches, and the pitch of the note rises. The principle is called Doppler's principle, and may be found in advanced textbooks of physics. Forty miles an hour will sharpen a note a half-tone.

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