

## RECENTLY PATENTED INVENTIONS.

## Electrical.

**RAILROAD SIGNAL.**—Edward M. Burt, Paris, Ill. Signal rails are arranged on each side of the track and connections therefrom are designed to operate through the wheels with an apparatus in the cab of the locomotive while the train is in motion, to notify the engineer directly of a misplaced switch, a bridge that is open, or of an approaching locomotive, etc.

**WATCH DEMAGNETIZER.**—Charles F. Berlin, of Berlin & Scott, 106 and 108 Liberty Street, New York City. A demagnetizing chamber, composed of or surrounded by a coil of insulated wire, is combined with a rheotrope acting in connection with plates or brushes, to reverse, in rapid succession, a current of electricity from any source, causing it to alternately pass in opposite directions through the coil while the watch is slowly passed through the chamber.

**VALVE CONTROLLER.**—Henry W. Deeds, Indianapolis, Ind. This is an electrically operated valve to be controlled by the pressure of the fluid, or its temperature, or the temperature of the air, an electro-magnet acting directly to open the valve of a combined valve and armature, while a permanent magnet connected with the core of the electro-magnet holds the valve until a reversal of the current, in combination with a battery, electrical connections, and a circuit closer.

**LIGHTNING ARRESTER.**—George D. Hoop, Jackson, Ohio. This is an attachment more especially for use in connection with electric lighting circuits, an insulated serrated disk having a fusible line wire connection and a contact point being combined with an insulated plate having an aperture receiving the disk and a contact point, a switch having a ground connection being adapted to swing from one of the contact points to the other.

## Mechanical.

**SUBMARINE MINING MACHINE.**—John A. Mathews and Hiram T. Scurry, Vancouver, British Columbia, Canada. This invention covers an apparatus embracing a vertically adjustable dredging mechanism worked by steam power in connection with an ore washer and separator, for operation from floats in the beds of rivers having deposits of the precious metals.

**EXCELSIOR MACHINE.**—Ambrose L. and George D. Moore, New Orleans, La. This is a machine for cutting a series of shavings of a regulated thickness from blocks of wood, the machine cutting on both the forward and backward strokes of the knife head, and being simple and durable in construction.

## Agricultural.

**SEED DROPPER.**—James S. Hickman, Hickman, Ill. As the machine is drawn the dropping devices are operated by a rope or wire stretched across the field, having knots which cause the seed to drop at measured intervals, this planter being adapted to plant two, three, four, or more rows at one crossing of the field, thus saving time and labor.

**HARVESTER ATTACHMENT.**—Ross B. Walmer, Millbank, South Dakota. This is a device adapted for application to any header or harvester, and by the use of which the driver can sit down and guide or steer the machine perfectly with his feet.

**PLANTER.**—Elisha P. Ferriss, Stevens Point, Wis. This invention provides an implement capable of use as a planter and drill, to which a marker attachment may be applied, and also a hoe, scraper, and cultivator attachment, when desired, the construction being simple and durable.

**PLOW.**—Ernst J. Swiedom, Giddings, Texas. The plow beam has a downwardly extending projection at its rear end, in front of which a plow standard is pivoted to the beam, a vertically sliding plate connecting the standard and extension, with an adjusting screw for operating the plate, whereby the plow may be easily and quickly adjusted while running to increase or diminish the cut, according to the nature of the ground.

## Miscellaneous.

**SHUTTER FASTENER.**—Richard Conner and Robert Wallbillich, New Orleans, La. This invention covers an arrangement for so connecting the various shutters of a house that all of them may be simultaneously locked or unlocked, if desired, or either shutter may be opened singly.

**FIRE ESCAPE.**—Charles G. Wheeland, Brush Creek, Iowa. A structure adapted to be erected either within or without a dwelling or other edifice is provided by this invention, and so arranged that any number of persons may be carried down from any floor or the roof, the escape being always in readiness for service, and having an automatic brake whereby the rapidity of descent may be regulated.

**BRACE.**—William H. Henderson and Louis H. Porter, Rockdale, Texas. This brace is composed of a number of plates forming a plurality of segmental sections, and is designed especially for hollow structures in which lightness of material is necessary with capacity for resisting inward pressure, such as metallic cisterns, well curbing, underground cylinders, piers, etc.

**GATE.**—Joseph Albers, Corvallis, Oregon. This invention relates to swinging gates, and particularly to a formerly patented invention of the same inventor, and provides improvements whereby the operator can open and close the gates from the same side.

**MECHANICAL PUZZLE.**—John F. Deeves and Richard U. J. Gauthreaux, New Orleans, La. This is designed to be a neat, compact, and attractive advertising puzzle of the permutation type, having parts connected with a case and aligning collars all marked with letters promiscuously placed to con-

ceal the key word or sentence opening the connected parts of the puzzle, such word or sentence indicating the business advertised.

**GAME.**—David McCloskey, Wilmington, Del. This invention provides a game board representing the banks of a river and spaces for the battle field of opposing armies, to represent an imitation of a skirmish or engagement between military forces, the board being marked to represent the theater of action.

**GAME APPARATUS.**—Reinhold F. De Grain, Washington, D. C. An improved controlling wheel for such apparatus is provided by this invention, having a rim plate suitably supported and perforated to form seats for the weight ball by which the position of the wheel is controlled, the invention relating particularly to an improved raffle box.

**FOLDING TYPE CASE STAND.**—Daniel B. Bush, Jr., Pittsfield, Ill. This stand is formed of hinged side bars and cross bars combined with a skeleton frame adapted to be detachably held upon the cross bars and flexed laterally, to produce a simple and light folding stand which may be readily opened and compactly closed, and when in use will hold the type cases in convenient position for a standing or sitting compositor.

**RESERVOIR GATE AND WATER WAY.**—Thomas B. Craycroft, Panoche, Cal. This invention covers a novel construction of water way, with gate controlling it, in combination with a reservoir, with valve movable with the gate and arranged to be released by the rise of water above a certain height, for supplying clear water to the reservoir and separating the mud and sand from the water.

**RIVET CATCHER FOR PUMPS.**—Joseph Darling, Baldwin, Pa. This is a device for use in pumps employed in the oil regions, and is made to fit around the pump rod and rest down against the check valve cage, or in or on the top of the working barrel, in the manner of the ordinary rivet catcher, but this device is made flexible or yielding, and with such elasticity or spring that it will, when it strikes the upper tube, spring down and glance therein.

**FLUID PRESSURE REGULATOR.**—Ira J. Griffin, Sing Sing, N. Y. This is a device for regulating the flow of fluids through pipes, to always maintain a uniform pressure in the receiving pipe, and to reduce the pressure therein to any desired degree, the invention covering a novel construction and combination of parts.

**REEFING ATTACHMENT FOR SAILS.**—Joel N. Furman, Blue Point, N. Y. By this invention the sail is provided on each side with metal eyes attached to its seams, and a lace line is used in connection therewith in such manner that the sail may be quickly and easily reefed, so it will not chafe, while the reef may be instantly shaken out and released.

**INSULATING PACKING.**—Josiah C. Firth, Auckland, New Zealand. This invention covers a non-conductor of heat and protector against wet and damp, and an insulator also adapted for fire-proofing purposes, consisting in a packing composed of pieces of pumice stone reduced to lumps of regulated sizes packed together and held in fixed relation with a filling of granular pumice stone.

**WATER HEATER.**—Alfred P. Monnier, Greenfield, Mich. This invention consists of a water inlet pipe with a spring-pressed regulating valve, a diaphragm controlled by the water in the pipe and a nozzle, a steam pipe leading to the nozzle and having a valve controlled by the diaphragm, the apparatus being specially designed for use in greenhouses to heat water to 75° or 80° F. for sprinkling flowers in the winter time.

**A ROPE OR TWINE HOOK.**—James K. Miller, Emporia, Kansas. This is essentially a combination of two hooks, with an eye in the end of a single shank, and hooks arranged at right angles with each other at different heights upon the shank, by means of which ropes in use with pulley blocks or carrying weights may be quickly fastened or released, etc.

**VEHICLE HUB.**—John A. Lee and William H. Barrows, Brooklyn, N. Y. This invention is designed to provide a hub of simple construction that will be strong and light running, having a large bearing surface that may be easily oiled, dust being thoroughly excluded therefrom, while the axle has means for oiling without removing the hub.

**VEHICLE GEAR.**—George W. A. Robertson, Charlottesville, Prince Edward Island, Canada. This invention consists in a mechanism for imparting to the body of a two-wheeled vehicle a swinging or rocking motion, to so hang the body as to impart to it great delicacy of balance without inconveniencing the driver, the springs being so made and located as to overcome "horse motion."

**BUCKLE.**—Anthony Biesen, Hull, Iowa. This is a buckle for use in connection with any kind of brush that is held by a hand strap, but is especially intended for application to horse brushes and the like, to enable the adjustment of the strap of such brushes to fit large or small hands.

**EXTENSION TABLE.**—Lewis G. Smith, Dallas, Texas. This is an improvement in center tables, a construction being provided which can be easily extended or contracted, by which the objectionable center leg can be dispensed with, while the main or center portion will be firmly supported at all times.

**EASEL ALBUM.**—Thomas Kelly, New York City. This album projects upwardly from a base, to which the back is secured, and has two exposed covers, the rear one being fixed and the front one hinged, the front cover and leaves being swung down at right angles to the fixed back, while a secret drawer is provided for storing pictures and other articles.

**ENVELOPE OPENER.**—Martin Prosiniger, Canon City, Col. This is a blade or cutter secured in a groove in a metal holder, and thus protected from contact with other objects, while adapted for its special function of opening envelopes, cutting leaves of books, etc.

## Business and Personal.

*The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.*

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## Notes &amp; 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. **Special Written Information** on matters of personal rather than general interest cannot be expected without remuneration. **Scientific American Supplements** referred to may be had at the office. Price 10 cents each. **Books** referred to promptly supplied on receipt of price. **Minerals** sent for examination should be distinctly marked or labeled.

(2436) R. K. B. asks: Can you answer the following in your Notes and Queries column? 1. An explanation of the principle involved in the toy recently in the market, called "Uncle Sam, or the Mystery," consisting of a tube with flaring end, and a small sphere, such that blowing through the tube caused the ball to remain in the end of the tube. A. See our SUPPLEMENT, Nos. 37, 47, 51, and 76, for articles on this phenomenon. 2. Is the statement on page 12045 of the SUPPLEMENT, first column (in the article entitled "Sunheat and Sunlight"), that at an elevation of three miles the spectroscopic shows only one color—yellow—and none of Fraunhofer's lines, correct? and if so, how is it explained on any other theory than the one there given? A. We cannot vouch for any statements in the article in question. You might address the author. 3. Describe the process by which photogravures are made. A. See our SUPPLEMENT, No. 418 and others. 4. What chemical reaction takes place in the simplest form of *fixing* a negative and *toning* a print? A. *Fixing* is simply dissolving out the unaffected silver salt. *Toning* is precipitating gold or other metal on the reduced portions of the silver salts forming the picture. 5. What is the composition of the paper from which ordinary blue prints are made? A. See our SUPPLEMENT, Nos. 61, 95, 421, 585, 674, 741.

(2437) Magician asks for a receipt for making white soft rubber, such as is used in making artificial fingers as used by magicians. The name of such rubber, and the mode used in forming it into different shapes or articles. A. Hoffman says such fingers are made of cork covered with wax. You may for a soft finger use white glue dissolved in water with enough white sirup added to give proper consistence on cooling. There is no such rubber as you call for. You may try the following: Cover white glue with water, and until it softens to a jelly, heat in a water bath and add an equal volume of glycerine; continue heating until of proper consistence. More glue will make it harder, and more glycerine softer. Color with a very little cochineal solution.

(2438) T. R. asks: 1. What will make paint dry? The doors have been painted two years, but are sticky in damp weather? A. The best remedy is to wash it off with caustic soda, or to burn it off and repaint. 2. I have wire screens in my windows and doors, but the mosquitoes get in when the doors are open. Can you tell me how to destroy what get in my house? A. We cannot. Try pyrethrum or bahach. See our SUPPLEMENT, Nos. 247, 299. 3. Explain a simple rotary electric motor; how the rotary motion is brought about. A. See our SUPPLEMENT, Nos. 641 and 761.

(2439) E. M. asks: A mixture is made one half and one-half by weight of borax and flint (almost pure silica) and fused in a porcelain kiln; is the resulting glass soluble in water? Is this glass a chemical compound or a mechanical mixture? If a chemical compound, what is its name? What difference would it make if boracic acid was used in place of borax? A. The resulting glasses would be more than mechanical mixtures, but it would not be possible to assign them a definite chemical status. They would represent rather solutions than combinations, and might be put on the border line between chemical and physical combinations. In no case where a glass is produced could it be termed a "mechanical mixture."

## Replies to Enquiries.

The following replies relate to enquiries recently published in SCIENTIFIC AMERICAN, and to the numbers therein given:

**Croton Bugs.**—In reference to the answer to query No. 2402. At different times I have occupied four dwellings where the Croton water bugs appeared. I invariably caused their disappearance (and of small roaches as well) by sprinkling small quantities of perfectly fresh powdered borax on shelves and ledges. In one case where they were very numerous, I finely powdered the borax in a mortar and, by means of an insect powder gun, shot it into cracks, holes, and about water pipes, both horizontal and vertical.—I. HARMANUS FISHER.

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- A residence at Short Hills, N. J., erected at a cost of \$9,000 complete. Perspective and floor plans. Wilbur S. Knowles, architect, New York.
- A cottage at Short Hills, N. J., erected at a cost of \$7,000. Floor plans and perspective view.
- Cottage at Springfield, Mass. Cost \$3,200. Perspective view and floor plans.
- Engravings and floor plans of the residence of W. G. Russell, Esq., at Short Hills, N. J. Cost complete \$25,000. Lamb & Rich, New York, architects.
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