

ENGINEERING INVENTIONS.

A feed water regulator has been patented by Mr. Alexander J. Aderhold, of Birmingham, Ala. It is a balance valve regulator in which the entire valve, stem and all, is inclosed within the stem and water chamber within which it acts, and which requires no stuffing box for its stem, the construction being simple and such as to avoid friction of parts and liability to stick.

A car coupling has been patented by Mr. William H. Moore, of Elsie, Mich. The coupling hook is pivoted to swing vertically, its prong being at the front end of the drawhead, a spring pressing the hook downward, and a shaft journaled transversely in the drawhead extending to the sides of the car to operate a cam by which the action of the coupling hook can be controlled.

A rotary engine has been patented by Mr. George W. Bond, of Fort Wayne, Ind. Combined with a wheel having peripheral buckets with their front edges concaved, is a segmental steam box having rotary bearings upon the edges of the buckets, the exhaust pipe taking the exhaust from the lower end of the steam box, the engine being simple in construction, and intended to utilize the steam to the greatest advantage.

A hydraulic engine has been patented by Mr. Charles R. Whittier, of Yonkers, N. Y. It is of that class in which the piston is stationary and the cylinder is caused to reciprocate by the inflow and discharge of water, the construction being such that only small counterbalancing weights are required, and the cylinder may be made comparatively short, no equalizing pipe to equalize the pressure of water in the cylinder being required.

A smoke preventing furnace has been patented by Mr. William Latham, of South Cleveland, O. It is designed to prevent the formation of smoke by securing a perfect combustion, employing therefor an injector operated by steam to carry in a blast of air to a hollow trunk in the bridge wall, where it issues in jets and mingles with the products of combustion, the invention covering a novel combination and arrangement of parts.

MECHANICAL INVENTIONS.

A convertible drill press or slotting machine has been patented by Mr. Laurence H. Pierson, of San Francisco, Cal. It has a traveling head carrying a contrivance for converting the up and down motion into a rotary one, a frame on which the head is adjustable, a standard supporting the frame and directly attachable to the work to be slotted or drilled, with feeding devices and other novel details.

AGRICULTURAL INVENTIONS.

A mowing machine has been patented by Messrs. Walter B. Cox and John McDonough, of New York city. It has a horizontally revolving cutter arranged to act in conjunction with relatively stationary fingers, the cutter blades being at an angle of forty-five degrees to the inclined forward edges of tangential arms, the opposite edges of the blades being beveled, so when a blade is dulled it may be reversed and its sharp edge be used.

MISCELLANEOUS INVENTIONS.

A ruling machine has been patented by Mr. Thomas W. Wharmby, of Cleveland, O. This patent relates to the laying mechanism and drop boxes of paper ruling machines, the ruled sheets passing over concave rollers as they are discharged, to prevent the corners from turning down.

A flower pin has been patented by Mr. Howard L. Kranz, of Providence, R. I. Combined with a brooch having a slot is a clasp extending through the slot, and acted on by a spring, whereby a bouquet or bunch of loose flowers may be conveniently attached to any part of the dress.

A penholder has been patented by Mr. Samuel S. Rogers, of Assotin City, Washington Ter. It is adapted to attach the holder to the hand at one angle, and for holding and guiding it, in connection with a fountain and a mechanism for regulating the supply of ink to the pen.

A shaft tug has been patented by Mr. George M. Sicklesteel, of North Branch, Mich. It is a novel device, intended to prevent the shaft or thills from dropping, even if the brace or whiffletree breaks, and also to prevent the vehicle from running on the horse in case of the breaking of the shaft or tree.

A rotary shuttle for sewing machines has been patented by Mr. Carl Junker, of Karlsruhe, Germany. It is a uniformly vertically rotating shuttle of semicircular shape held by the driver, the axes of the spool and shuttle being coincident, the invention being an improvement on a former patented invention of the same inventor.

A roller skate has been patented by Mr. Burt E. Filden, of Youngstown, O. This invention provides an improved brake for roller skates, a brake shoe of leather, rubber, or other suitable material, with its rubbing surface outwardly convex, being so held at the rear of the skate that it can be conveniently adjusted to any desired height.

A piano wagon has been patented by Mr. John D. Lindsley, of Hiawatha, Kansas. It is provided with windlasses and ropes, skids and various attachments for holding and managing the piano, to promote the safety of the instrument during loading or while in transit, and to lessen the labor of piano moving.

A grab hook has been patented by Mr. Sylvester Byrne, of Philadelphia, Pa. Grabbing levers are pivoted on a rod, with springs acting on the levers, and arms for locking levers in place, making an improved implement for automatically grabbing persons in the water and holding them, and one which can also be used by firemen.

A horseshoe has been patented by Mr. Daniel Cruice, of New York city. It is formed with a thickened portion at the toe and thin portion at the heel, in combination with heel and frog supports, the shoe being offset at its upper surface, and with thin pockets or depressions in the lower surface which will tend to prevent the horse slipping.

A truss pad has been patented by Mr. Alonzo D. Smith, of New Woodstock, N. Y. It is a centrally apertured pad combined with a smaller pad closely fitted to the aperture, the smaller pad being arranged opposite the hernial opening, while the larger pad supports the abdominal walls around, a spring connecting the smaller and larger pads.

A carpet stretcher has been patented by Mr. Osman C. Du Souchet, of Warsaw, Ill. A rack bar is passed through a box, and there is a clamp with its pivoted jaws on opposite sides of the end of the rack bar, with means for operating the rack bar, and other novel features, making a carpet stretcher which will be strong and durable and easy to operate.

A shirt has been patented by Mr. Jacob Lederer, of New York city. It has front and rear reinforcing pieces reaching along the edges of the yoke to the arm hole, thence around the arm hole and joined beneath it, in order to render the shirt strong where the most wear and strain comes, without making it heavy and uncomfortable.

A stamp canceler has been patented by Messrs. Edward A. Luzenberg and Edward Sachs, of San Antonio, Texas. It is made to force metal teeth through a rubber part of the canceler which has been inked, and thus perforate the stamp and ink it at the same time, but so as not to mutilate the letter or other contents of the envelope.

An artificial fly has been patented by Mr. Wakeman Holberton, of Hackensack, N. J. The wings are so attached to the body of the insect that they will collapse or close when casting the fly, thus reducing the air resistance, rendering the fly less liable to become detached, and causing the parts to expand and have a life-like motion in the water.

A turning machine has been patented by Mr. Abraham Stoner, of Stony Point, La. It is more particularly intended for forming vessels or tubs from blocks of the tupelo gum tree, the wood of which when dried is very white, light, and difficult to split by mechanical means, the machine operating automatically, and designed for making vessels of various sizes and shapes.

A street washer has been patented by Mr. Frederick Chapman, of Brooklyn, N. Y. It is a box set immediately over and in connection with the water main, closed by a removable cover, and with suitable easily operated valve fittings, whereby the apparatus will be wholly protected from becoming clogged by the entrance of dirt to the movable parts.

A mosquito canopy for bedsteads has been patented by Mr. Nicolai Petersen, of Charleston, S. C. The construction is such that the canopy is sustained by cords, the supporting arms and their joints being removed from the range of entanglement with the netting when folded, the invention being an improvement on a former patented invention of the same inventor.

A fire escape has been patented by Mr. David H. Dillman, of Fredericksburg, Pa. It consists of an endless ladder adapted for attachment to the cornice or side of a building, contiguous to a window or other place of exit, and to operate automatically when a person steps upon the ladder, so as to convey one to the ground in safety.

A thill coupling has been patented by Mr. Benjamin Liggett, of Tucson, Arizona Ter. The object of this invention is to do away with the ordinary form of bolt and nut, the bolt being held in place by the action of a spring, and the bolt being only slotted at its head, so the band will constantly press the inner face of the head against one jaw of the clips, and prevent rattling or accidental displacement.

An automatic cut-off for gas burners has been patented by Messrs. Thomas J. L. Smiley and Charles H. Stombs, of San Francisco, Cal. This invention includes a gravitating valve and thermostatic fingers or springs, and is applicable both to double and single tip burners, constituting a life-saving gas burner, which will do away with possibility of accident from the escape of gas from burners to which it is attached.

A seal press has been patented by Mr. Emory Q. Darr, of Shelbyville, Ind. It has a handle-carrying die, a spring hammer carrying a corresponding die, and an actuating mechanism of a dog engaging a trigger, the device being conveniently made in the form of a small pocket pistol, or in such form that it can be readily carried in the pocket, to be easily available by notaries and others.

An electrical cut-out has been patented by Mr. John M. Fairchild, of Portland, Ore. This device provides for the ready cutting out of an electrical current by any one from a building in case of fire, etc., but has a rotary adjustable switch bar and contacts, a separable key, and other details, whereby the locking or turning on can only be done by a specially authorized person.

A whiffletree coupling has been patented by Mr. Hiram C. Brown, of Winsted, Conn. It consists of a bolt with a curved arm formed on its head and a plate with an apertured lug for the reception of the end of the curved arm, with other details, whereby the whiffletree will be held from tilting forward when subjected to a draught, and so it will always work freely upon its bolt.

A road cart has been patented by Mr. Samuel Coles, of Vallhalla, N. Y. A cross bar with convex upper surface is secured upon the shafts, and the body is independently balanced upon the cross bar, with other features, whereby the cart will not be affected by the horse motion, and the horse can be driven with a loose girth, the girth having nothing to do with the motion of the cart.

A process of making explosive compounds has been patented by Mr. Milton F. Lindley, of

North Bergen, N. J. A mechanical mixture of wood fiber, charcoal, bituminous coal, and starch is powdered, made into grains, treated with acids, and then with carbonate of potash and saltpeter, making an explosive agent mainly of nitro-cellulose, but adapted for use in all kinds of firearms.

A device for regulating and enriching illuminating gas has been patented by Messrs. Lewis B. White, Daniel Jackson, and Martin Van Buren, of New York city. It has an annular funnel-shaped vessel for receiving hydrocarbon, in connection with a specially contrived governor, whereby the gas may be regulated automatically according to the pressure, or may be made to circulate among the heated hydrocarbons of the apartments of the gas-enriching attachment.

A spirit level for boring bits forms the subject of two patents which have been issued to Mr. Wm. E. Gwyer, of New York city. Its construction is such that when the bit is vertical an air bubble will be exactly in the center of the spirit bottle, and the least variation of the bit from a vertical position will cause the air bubble to move away from the center, so the operator can always know when he is boring a vertical hole; another device of suspension hooks, stem, and balancing weights enables the operator to bore holes exactly horizontal.

NEW BOOKS AND PUBLICATIONS.

GEOLOGICAL SURVEY OF NEW JERSEY. ANNUAL REPORT OF THE STATE GEOLOGIST FOR 1885. Trenton: State Printer.

Under the direction of Professor George H. Cook, the Geological Survey of New Jersey has become one of the most creditable of the many undertaken by the different State governments. While New Jersey offers but a limited field for geological study as compared with some of the other States, the topographical work of the survey is scarcely inferior to even the magnificent maps prepared by the national corps under either the Coast or Geological Surveys. Eleven years have now been spent upon the topography of the State, and it is calculated that about two more years will be required to complete the work. But perhaps the best feature of the Survey is its practical value to the people of the State. This is, after all, the highest purpose of such a work. A particular effort has been made to include in these investigations the questions which have a direct bearing on industrial matters, and, as a result, to furnish information which will be personally useful to the citizens who have contributed toward its maintenance.

THE MICROSCOPICAL BULLETIN. James W. Queen & Co., Philadelphia.

This little bimonthly publication contains matter which is of interest to microscopists, and the price (25 cents a year) is so small that every one interested in microscopical subjects can afford to have it.

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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Wanted—To correspond with a practical door, sash, and blind maker; one who would be fully competent to take full charge of a factory and could give correct estimate of machinery needed, cost of manufacture, probable demand and margin. One that could take an interest would be preferred. Address Mr. H. H. Durkee, 48 Broad St., New York.

Wanted—Patented articles of merit to manufacture on royalty. Electric Mfg. Co., 811 River St., Troy, N. Y. Curtis Pressure Regulator and Steam Trap. See p. 142.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. \$100 "Little Wonder." A perfect Electro Plating Machine. Sole manufacturers of the new Dip Lacquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

Grimshaw.—Steam Engine Catechism.—A series of thoroughly Practical Questions and Answers arranged so as to give to a Young Engineer just the information required to fit him for properly running an engine. By Robert Grimshaw. 18mo, cloth, \$1.00. For sale by Munn & Co., 361 Broadway, N. Y.

Send for catalogue of Scientific Books for sale by Munn & Co., 361 Broadway, N. Y. Free on application.

The Knowles Steam Pump Works, 44 Washington St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

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If the above quotation is true, then Dr. R. V. Pierce ought to feel highly flattered on account of the many imitators of his popular remedy, the "Pleasant Purgative Pellets," for they have scores of imitators, but never an equal, for the cure of sick and bilious headache, constipation, impure blood, kidney pains, internal fever, and all bowel complaints. With a bottle of the sugared granules in the house, you can dispense with the family doctor and his often nauseous medicines.

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If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN patent agency, 361 Broadway, New York.

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Nystrom's Mechanics.—A pocket book of mechanics and engineering, containing a memorandum of facts and connection of practice and theory, by J. W. Nystrom, C. E. 13th edition, revised and greatly enlarged, plates, 12mo, roan tuck. Price, \$3.50. For sale by Munn & Co., 361 Broadway, New York city.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 43.

Hercules Lacing and Superior Leather Belting made by Page Belting Co., Concord, N. H. See adv. page 233.

Cutting-off Saw and Gaining Machine, and Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

Supplement Catalogue.—Persons in pursuit of information of any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

Billings' Patent Adjustable Four and Six Inch Pocket Wrenches. Billings & Spencer Co., Hartford, Conn.

New Portable & Stationary Centering Chucks for rapid centering. Price list free. Cushman Chuck Co., Hartford, Conn.

The Crescent Boiler Compound has no equal. Crescent Mfg. Co., Cleveland, O.

Wm. Frech, Sensitive Drill Presses, Turret and Speed Lathes combined, Power Punching Presses, 68 W. Monroe Street, Chicago.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Hoisting Engines. D. Frisbie & Co., Philadelphia, Pa.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv., p. 158.

Astronomical Telescopes, from 6" to largest size. Observatory Donies, all sizes. Warner & Swasey, Cleveland, O.

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. 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.

(1) W. T. S. asks: How many feet board measure, allowing 1/4 of an inch for the kerf of the saw, in a stick of timber 48 feet long, 10 inches by 10 inches square? A. If you sell the stick of timber at board measure, no allowance should be made for resawing, and it should tally 400 feet board measure. If allowance is agreed to for resawing, the stick will cut seven 1 inch boards and one 1 1/4 inch board or plank, and should then tally for the whole stick 330 feet board measure.

(2) W. S. L.—It will take 6 horse power for machines you mention. We could not in Notes give large examples and details.

(3) G. J. S.—Sheet copper is somewhat variable in its tensile strength; hard rolled copper 36,000 pounds, soft copper 24,000 pounds, is the utmost strength per square inch. Thus a 1/2 inch sheet will tear asunder at from 750 to 1,100 pounds per inch width. Allow 1/4 of this as a safe load. To make sure, say 900 pounds, which divide by the pressure you wish to carry. Gas pipe will stand 500 to 1,000 pounds pressure.

(4) S. F. L.—Your 1 horse power engine will run a light 18 foot boat with a good form of 3 blade propeller, 16 inches in diameter. Would not recommend a paddle wheel for so small a boat. We advise you to inspect the numerous small steam yachts in your vicinity.

(5) W. F. R. asks: 1. What material is the best to paint a tin roof? A. Prince's metallic paint and boiled linseed oil. 2. How can I make human manure into a fertilizer? A. By mixing with dry soil. 3. What is the best plan to build a private icehouse—above or below ground? Give me the best plan for both. A. Below ground, all but roof. See SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 59, 55, 99. 4. I have two large skylight glasses that are cracked across. What can I use to stop them from leaking? A. Putty a strip over the cracks, or put in a new light. 5. What is the best soldering fluid to use on an old tin roof, that has been painted with tar? A. Tinner's acid, zinc dissolved in hydrochloric acid, and add a