

## ENGINEERING INVENTIONS.

An oscillating engine has been patented by Mr. Douia C. Putnam, of Wayne Center, N. Y. The steam inlet and exhaust ports in the cylinder and the exhaust ports in the valve may be lengthened to any desired extent to permit quicker work in engines designed for any special duty, but the travel of the valve is in any case comparatively short, on account of the rocking movement of the cylinder.

A traction engine has been patented by Mr. Benjamin S. Benson, of Baltimore, Md. It has two obliquely arranged cylindrical boilers, with their higher ends in the middle and next to each other, the space beneath the cylinders forming the firebox, with hollow legs, which communicate with the water and steam space of the boilers, and the apparatus having an endless track chain with feet passing beneath, around, and over the boiler, with guide and truck wheels for the chain, to support the body of the engine and the track upon which it runs, with various novel features for reducing friction and facilitating the guiding of the engine.

## AGRICULTURAL INVENTIONS.

A grain separator has been patented by Messrs. Francis Wadsworth and Henry N. Prentice, of Venice, O. It is intended to separate the straw and chaff from the grain at the same time, and then remove the unthreshed and partly threshed heads and heavy impurities that may have passed through the thrasher and separator with the grain.

A seed planter has been patented by Mr. Louis S. Flatau, of Pittsburg, Texas. Its construction is such that as the planter is drawn forward the hopper and a stirrer wheel are revolved, the latter forcing seed out through discharge slots into a tube, through which and the tubular plow they fall into the bottom of the furrow opened by the plow, where soil is thrown upon it by covering plows.

## MISCELLANEOUS INVENTIONS.

A lemon squeezer has been patented by Mr. Sheridan S. Badger, of Chicago, Ill. It has a fixed or stationary jaw, a hinged swinging jaw, and a handle or lever, so combined that the power from the commencement of the operation continues to be increased until the operation is completed.

A fire escape has been patented by Annie M. Jeffers, of Chicago, Ill. It is a spiral structure ranged along the windows of a building, and containing a ladder, being stretched or opened opposite the windows, and having safety chains at such openings, and also an alarm bell.

A pipe tongs has been patented by Mr. James J. Palmer, of Fall Brook, Pa. The invention consists essentially of tongs in which the binding contact surface is composed of a number of sections, and by removing or adding links or sections the tongs may be adjusted to fit almost any sized pipe.

A nail plate furnace has been patented by Mr. Simeon Bunn, of Belleville, Ill. It has double bottoms or decks, with openings, and outer walls with openings, so arranged that the products of combustion will be carried by a long, indirect passage, and the heat will be utilized to the greatest possible extent.

A reflector has been patented by Mr. James E. McLaughlin, of Portland, Oregon. It is for gas, lamp, or other artificial lights, and is so made that four concave reflectors, spun up from rectangular sheets of metal and polished, can be conveniently kept in the desired position behind a burner.

A tag making machine has been patented by Mr. Harner Denney, of Brooklyn, N. Y. This machine takes the paper from a roll, and by a series of automatic operations the tags are printed, cut, eyeleted, cut off, and their corners beveled, the machine being readily adjusted to make tags of different widths.

A motor has been patented by Mr. Jackson B. Miles, of Lincoln, Ga. It is a spring motor intended for use in connection with churns to operate the dasher staff, and when wound up the mechanism works from fifteen to forty-five minutes, according to the speed at which it is allowed to run.

A tongue support has been patented by Mr. Milo M. Russell, of Hayward, Wis. The running gear of a wagon and its tongue is combined with a spring of peculiar construction, with lever and detachable connections for holding the tongue, whereby provision is made for adjusting the tension of the spring, and the whole is equalized.

A necktie fastener has been patented by Mr. Daniel T. Freese, of North Amherst, O. It consists of a plate slotted twice to receive the tie, and with a forked arm bent over parallel with the slotted portion to receive the collar button, the arms of the fork being at right angles with the slots of the body of the plate.

A two wheeled vehicle has been patented by Messrs. William E. Davies and William C. Gayley, of Deringer, Pa. This invention consists in making the thills in two parts hinged together, with a spring attachment, to neutralize or overcome "horse motion," and relieve the horse to some extent of the weight upon his back.

A belt punch has been patented by Messrs. Henry Bouchy and J. Henry Bamberger, of Newark, N. J. It has pivoted lever jaws, with a sliding tool in each handle end, and a revolving head carrying cutting devices on one of the jaws, with a rotary disk provided with punches, making a strong, cheap, and convenient tool.

A metallic bayonet scabbard has been patented by Mr. James McKenney, of New York city. It is made with an outwardly projecting flange upon the angular side of its upper end to overlap the edge of the throg, in such manner that the connection between the scabbards and the throgs will be firmer and more secure than with the ordinary construction.

A bellows has been patented by Mr. Jacob F. Weitzel, of Cincinnati, O. It is intended more especially for bee smoking, and comprises main plates of sheet metal bent at their edges, forming

grooves or pockets, while the bag or flexible portion has its edges inserted and held in these pockets, with various other novel features.

A broom holder has been patented by Mr. James F. Barringer, of Bennettsville, S. C. A U-shaped plate and rod are so combined with cross pieces and arms as to make a holder in which broom straw or rattan can be clamped, as well as bagging, cotton waste, or rope, to form a mop, and one can be easily removed and replaced by others.

A safety device for elevators has been patented by Mr. Peter Moran, of New Orleans, La. The object of this invention is to prevent the water in the tanks of hydraulic elevators from being worked so low as to empty the pipes and allow the car or cab to fall, and to this end a novel construction and combination of parts is provided.

A nutmeg grater has been patented by Mr. Albert L. Platt, of Bowling Green, Mo. It consists in a revolving barrel made of a spiral coil of steel wire having notched outer edges, combined with a block having a hole through it and a counter bore or hole at right angles, to form a case in which the spiral cylinder revolves.

A land channeling roller has been patented by Mr. Robert H. Banks, of Fort Lewis, Col. It is so made that as the machine is drawn forward plows open furrows in the ground and ribs pack or roll the bottom and sides of these furrows, while another roller rolls the surface, so as to form channels for irrigation purposes in rolled land.

A sawing machine has been patented by Mr. Daniel W. Smith, of Long Lake, Mich. The machine is attached to the log to be sawed, and then by moving hand levers up and down a reciprocating motion is imparted to the saw through a shaft and pitman, the motion of the saw being directed by a guide, while the log may be raised, lowered, or turned, as desired.

## NEW BOOKS AND PUBLICATIONS.

DYNAMO-ELECTRIC MACHINERY. By Silvanus P. Thompson. New York and London: E. & F. N. Spon.

This is a second and much enlarged edition of a volume published by the same author in 1884, which was itself based on the Cantor lectures of Professor Thompson before the Society of Arts, in 1882. The rapid multiplication of forms and perfecting of details in dynamo-electric machinery which has taken place in the last four years, is well illustrated in a comparison of the facts given in the lectures of 1882 with the accumulated material that is presented in the present volume of 500 pages. Almost every kind of dynamo which has attracted any considerable attention is here described with sufficiently full explanations of details to render an understanding of its construction and operation perfectly easy, even if one has never before made a special study of the subject. A good deal of attention is given to special forms of motors and their government, and to the testing of dynamos and motors. In the appendix is a short but very interesting chapter, covering statistics and comparisons of some recent dynamos, in which the author states that "the old pattern Brush machine gave only about 50 watts per pound of copper on the armature, while the new pattern Brush armature with the same field magnets gives about 90," and suggests that "if the field magnets were remodeled, and their cores made of soft wrought iron, the number of watts per pound of copper in the armature might be raised to 200 or more, and the old 40-light machine which, as now improved, supplies 60 arc lights, might then yield current for over 100 lights." The author also notes improvements in the Gramme machine from 87 watts per pound of copper in an old machine up to 306 watts in a late pattern, and asks correspondents for further statistical information of this character, "in view of the possibility of further editions of this work being called for at a future date."

THE DETERMINATION OF ROCK-FORMING MINERALS. By Eugene Hussak. New York: John Wiley & Sons.

The authorized translation of this German work has been made by Dr. Erastus G. Smith, of Beloit College, Wis., for use more especially by the students of colleges and universities. Part I. treats of the methods of investigation, including the preparation of microscopical sections and proper polarizing apparatus, giving optical and mechanical methods, and describing the mechanical separation of rock-forming minerals, while Part II. gives an elaborate series of tables for determining minerals, accompanied by a great number of figures.

METHODS OF RESEARCH IN MICROSCOPICAL ANATOMY AND EMBRYOLOGY. By Charles O. Whitman. Boston: S. E. Cassino & Co.

This volume is intended for everyday use in the zoological laboratory, to secure uniformity in practice according to the best methods of investigation, and the proper selection of the objects of study and obtaining the most complete information in regard to them. It gives preservative and macerating fluids, dyes, fixatives, mounting media, methods of embedding, etc., with descriptions of the different instruments used and comparisons of their respective advantages.

## Received.

THE SCIENCE OF MIND APPLIED TO TEACHING (According to Phenological Methods). By U. J. Hoffman. New York: Fowler & Wells Company.

TECHNICAL VOCABULARY, ENGLISH AND GERMAN. By F. J. Wershoven and A. Van Kaven. Leipzig: F. A. Brockhaus.

THE PANAMA CANAL: ITS HISTORY, POLITICAL ASPECTS, AND FINANCIAL DIFFICULTIES. By J. C. Rodriguez. New York: Charles Scribner's Sons.

NEW YORK AGRICULTURAL EXPERIMENT STATION: Third Annual Report of the Board of Control, for 1884. Albany, N. Y.: Weed, Parsons & Co.

IOWA STATE BOARD OF HEALTH: Third Biennial Report, for fiscal period ending June 30, 1885. Des Moines: George E. Roberts.

CONSPIRACY: A Cuban Romance. By Adam Badeau. New York: R. Worthington.

A FARMER'S VIEW OF A PROTECTIVE TARIFF. By Isaac W. Griscom. Published by the author, Woodbury, N. J.

## 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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To Manufacturers.—The owner of 260 acres of ground at Pittsburg, on the Allegheny River and Pennsylvania system of railroads, in order to improve the property, offers to donate a number of excellent manufacturing sites. See adv. of Whitney & Stephenson, this issue.

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Grimehaw.—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 Grimehaw. 18mo, cloth, \$1.00. For sale by Munn & Co., 361 Broadway, N. Y.

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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 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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Wood Working Machinery. Full line. Williamsport Machine Co., "Limited," 110 W. 3d St., Williamsport, Pa.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 46. Hercules Lacing and Superior Leather Belting made by Page Belting Co., Concord, N. H. See adv. page 46.

Planing and Matching Machines. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

Iron and Steel Wire, Wire Rope, Wire Rope Tramways. Trenton Iron Company, Trenton, N. J.

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

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv., p. 62.

English tanned Walrus Leather, Sea Lion, Oak, and Bull Neck Leather for Polishing. Greene, Tweed & Co., New York.

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Iron Manufacturers wishing to purchase large deposit of high grade magnetic ore, see adv. on page 78.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn.

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Ast. onomical Telescopes, from 6" to largest size. Observatory Domes, all sizes. Warner & Swasey, Cleveland, O.

## 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. Minerals sent for examination should be distinctly marked or labeled.

(1) P. H. desires a stain to imitate cherry. A. Rain water 3 quarts, annatto 4 ounces; boil in a copper kettle till the annatto is dissolved, then put in a piece of potash the size of a walnut; keep it on the fire about half an hour longer, and it is ready to bottle for use.

(2) W. C. writes: In making a red or yellow stain with dragon's blood or turmeric, I want to tone these colors with a black, soluble in alcohol. A. You can probably purchase an aniline black that is soluble in alcohol, or else use logwood.

(3) F. F. K.—Old zinc battery plates can be melted in an iron pot and cast into plates in moulding sand, or may be cast in an iron mould. Zinc melts just below a red heat. If the zincs have been amalgamated, you should avoid inhaling the fumes rising from the heated metal.

(4) J. W. B. desires a recipe for some fire-extinguishing liquid. A. One of the best solutions for the extinction of incipient fires consists of crude calcium chloride 20 parts, salt 5 parts, dissolved in water 75 parts. Keep at hand, and apply with a hand pump.

(5) E. E. G. asks how to make a leaf bluing. A. Use unsized paper and any of the following solutions: 1. Dissolve indigo sulphate in water and filter. 2. Dissolve good cotton blue in cold water. 3. Dissolve Prussian blue with one-eighth part of oxalic acid in water. 4. Dissolve Tieman's soluble blue in water with 2 per cent oxalic acid.

(6) A subscriber asks how to make spirit varnish suitable for varnishing carved wood. A. Take 1 ounce copal and ½ ounce shellac; powder them well, and put them into a bottle or jar containing 1 quart alcohol. Place the mixture in a warm place and shake it occasionally until the gums are completely dissolved; and when strained the varnish will be ready for use.

(7) C. J. C. asks: What is cut glass, such as is sold by dealers? A dealer here has two berry dishes that look alike, prices \$1.00 and \$20.00. One he calls cut glass and the other an imitation, with rough surface. A. Any glassware that has been ground in facets and repolished is cut glass. The kind that you sketch is very expensive when cut.

(8) W. A. E. asks how India ink (liquid), such as is sold in the art supply stores, is made. A. Dissolve shellac in a hot aqueous solution of borax and rub up in this solution a fine quality of India ink. Or rub down genuine India ink with good black ink until it will flow easily from the pen. See ink erasers, in article on inks, in SCIENTIFIC AMERICAN SUPPLEMENT, No. 157.