

RECENTLY PATENTED INVENTIONS.

Engineering.

**BOILER.**—Harry A. R. Dietrich, South Bethlehem, Pa. This is a boiler which may be used for making steam or for heating purposes. It is constructed of a series of sections capable of being connected and disconnected, each section complete in itself, the sections being hollowed to form water chambers, and having depressions in their side faces forming combustion chambers, communicating with the fire pot, located between inner ribs around the sides of the sections. The ribs are substantially hollow extensions of the hollow sections, and when the boiler sections are placed in upright position, a cement or packing is used between the abutting sections.

Electrical.

**ARMATURE FOR DYNAMOS AND MOTORS.**—George Hoare, Newark, N. J. This armature core is constructed in the usual manner, with the exception of driving pins inserted in the slots in the heads of the armature, extending over the face of the core, and held in place by the winding, the wire being carried around the armature in a continuous piece, while the number of commutator bars is reduced to a minimum by diminishing the number of sections of the winding. The various portions of the winding are arranged so as to produce a perfect electrical balance, avoiding sparking at the brushes, while the winding insures perfect mechanical balance and consequent smoothness in running.

**ELECTRIC RAILWAY.**—Michelangelo Cattori, Rome, Italy. This invention relates to improvements in that class of railways in which a conductor is divided into sections, and a series of circuit breakers are arranged to connect the several sections, and operated by moving contacts carried by a car. The system may be used overhead as well as in a conduit if desired, the improvement relating principally to the circuit breakers and the means of operating them, the operating contacts being made to work easily, be durable, and to operate without sparking.

**VEGETATION EXTERMINATOR.**—Albert A. Sharp, Memphis, Tenn. This is an apparatus, including a dynamo and engine, or batteries, to be placed on a car or other vehicle, to cause a strong current of electricity to be sent through all the adjacent vegetation when the car is moved along the track. It is designed in this way to kill the rank vegetation which grows along railroad beds and highways in tropical countries. The current is applied to the vegetation by means of a brush, the same principle being applicable to the weeds and grasses of a cultivated field.

Mechanical.

**STAVE TRIMMER AND JOINTER.**—William J. Wright, Cooperstown, Pa. This invention relates to machines in which the billet is first trimmed to a proper width and then automatically fed into the machine. The billet in its course through the machine automatically controls and sets the bevel-cutting and the bilge-forming devices, which are operated to cut the bevel and form the bilge in exact proportions relative to the different widths of the billet. The machine is of simple and durable construction, of great capacity, positive and effective in its operation, and easy to manipulate.

**BRICK OR TILE CUTTER.**—James Cornelius and Edmund R. Collins, Brooklyn, N. Y. This improvement covers more especially the arrangement and operation of the wires for cutting a block of clay into bricks or tiles, there being combined with the cutting table a series of cutters held to reciprocate in the direction of their length and arranged at an angle to the clay body, to be forced through and sever the clay. The cutting wires are generally held stationary and the clay is forced through them, but by having the wires move, the clay may be more smoothly cut, making a nicer quality of brick or tile.

**ROTARY STOCK CUTTER.**—Isaiah Hardee, Burke, Texas. A disk having a flange is formed on a hub adapted to be secured to a spindle, a set of cutters seated in the disk abutting against the flange, while a middle disk on the first one contains a set of alternately arranged cutters, and a third disk on the middle one also has sets of cutters. The several cutters are arranged in seats arranged in a circle, the cutters for one section or disk being readily interchanged to permit of using the cutters of one head on that of another head, the cutters being used for right or left hand heads, and being especially adapted for use as matcher heads, ship lap heads, and ogee bats.

**TIRE TIGHTENER.**—Michael J. Fitzgerald, Aravaipa, Arizona Ter. This tightener consists of angle plates in a recess between opposing felly ends, toggle bars bearing endwise on the plates and also on a central screw, with a nut for the screw, adapted to press on the bar ends and spread the plates and fellys, thereby tightening the fellys on the tire at any time when the tire becomes loose. The improvement obviates the necessity of heating the tire to affix it in place by subsequent cooling and contraction, and also permits a removal and replacement of the tire, or the substitution of a new one, without the employment of skilled labor.

**PUMP.**—Elijah R. Hill, New Albany, Miss. This is an improved double-acting pump, very simple in construction and effective in operation, and arranged to cause a steady flow of water while the pump is in use. Its main piston is made hollow, with a valve seat at its bottom and inlet openings at its upper reduced end, while a piston valve sliding in the hollow piston has a valve adapted to be seated on the seat in the main piston, the piston valve being also provided with a piston adapted to close the inlet openings in the reduced end of the main piston.

**MACHINE FOR CLEANING CURRANTS, etc.**—William Vickers, Jersey City, N. J. Combined with a revolving screen cylinder and a reversely revolving interior spiral agitator or brush, is a shaking preparatory cleaning sieve at the feed end of the cylinder, and a finishing, shaking, and cleaning sieve at its rear or delivery end. The machine is also adapted for cleaning other small fruits in a dried state, or, should the fruit be

extra gummy, a perforated hot water or steam pipe may be arranged to pass water into the currants in the cylinder.

**WASHER CUTTER AND CARRIAGE TOOL.**—Thomas Thompson, New London, Wis. This is an implement which may be conveniently carried in a carriage and readily adjusted to hold the shafts in a raised position when the carriage is not in use, which is provided with a handy form of wrench to apply to the axle nuts, and which has also a washer cutter at one end, for cutting washers for the axles and other uses. The tool is of a simple and inexpensive character.

**CABLE SUPPORT.**—Gustave P. Wern, Brooklyn, N. Y. This is a support for cables used for propelling cars of carrying devices for moving coal to furnaces or gas houses, etc., the support being arranged to swing out of position when struck by a car going in either direction, returning automatically to its normal cable-supporting position as soon as the car has passed. The arm supporting the cable swings on a fixed pivot, and has a hub with inclined surfaces adapted to travel on like surfaces on a sleeve turning with the arm in one direction, but held in a fixed position when the arm moves, in an opposite direction by a collar secured on the pivot.

Agricultural.

**HARROW.**—Wilber W. Hinkle, Hood's Mills, and Ira H. Gaither, Cockeysville, Md. This harrow consists of a metal plate having slots through which protrude curved teeth attached to rock shafts adapted to raise and lower the teeth. The implement is capable of a variety of accurate adjustments, the teeth being self-cleaning by such adjustment, and the harrow is designed to serve the purposes of both a cultivator and clod crusher.

Miscellaneous.

**PHOTOGRAPHIC REGISTERING DEVICE.**—Paul Tournachon, Paris, France. The rotatable cylinder over which the film passes is arranged in a suitable casing in connection with the other parts of the apparatus, by means of which a ratchet wheel is turned the distance of one tooth every time the registering device is actuated, the click of the pawl as it passes the tooth giving notice that an impression has been made, while the pawl also serves to prevent the registering device from turning back. An alarm is sounded every time an impression is made, and the number of impressions made can at any time be determined by looking through a window in the casing.

**BRIDLE BIT.**—James E. Driscoll, St. Paul, Minn. The cross bar of this bit has threaded openings in its ends, and the cheek pieces have sleeves sliding toward and from each other on the ends of the bar, on which they are held against rotation. By means of its adjustable parts the bit may be made to fit the mouth of any horse or mule, and these parts are covered in such a way that they cannot injure the mouth of the animal or fill up and clog with dirt.

**LAMP LIGHTER.**—Richard H. Jolly, Bucyrus, O. [This invention relates especially to an improved lighter for locomotive head lights, providing a simple device that shall light the lamp without raising the chimney, one that can be operated while the locomotive is moving rapidly, and one which can be operated from the cab when desired. In a tube is held a spring-pressed plunger having a socket to receive the stick of a match, there being a friction ring in the forward end of the tube over which the match head rubs when the plunger is withdrawn and then released, the tube being so arranged that the lighted match will be projected close to the wick.

**CRYPTOGRAPHIC INSTRUMENT.**—Richard Harte, Croydon, England. This is an instrument for translating communications into and out of cipher in accordance with an adopted key. It is constructed of parallel strips fixed to a base plate, intermediate sliding strips working in grooves alternating with the fixed strips, normal and key alphabets being carried on the fixed strips, and a double index on each alternate sliding strip, with a double cipher alphabet on the remaining sliding strips, and an index on each of the cipher alphabet strips.

**CLOTHES LINE DEVICE.**—James J. Kinman, Petersburg, Ind. This invention provides devices to facilitate hanging out and taking in clothes from a fixed standpoint which may be under cover, the clothes line itself being afterward reeled up or taken in from the same standpoint. Pulleys are mounted on terminal posts, and the inner or operating pulley has an attached or connected drum with a hook or fastening to engage the line when it is to be wound on the drum.

**WATER PROOF SUIT.**—Ottee Van Oostrum, Portland, Oregon. This is a close-fitting suit made of mackintosh or other suitable water proof material, the coat having fastening flaps around the neck, the sleeves having elastic bands at the wrists, while the boots are hermetically attached to the trousers.

**VEHICLE AXLE.**—John D. Wilson, Belle Plaine, Iowa. The wooden body of this axle has a central longitudinal bore in which is held a metal tube through which extends a rod, whereby the wooden axle is strengthened against strain brought upon it in any direction. The rod has threaded ends on which are nuts bearing against the outer ends of the spokes on the spindle portion of each axle end, and the improvement is designed to be a great advance over wooden axles strengthened by metal braces.

**CHILD'S CARRIAGE.**—George B. Best, Englewood, N. J. This is a device which may be readily attached to the running gear of any child's carriage, the forward axle being pivotally connected with the side bars, a lever pivotally connected with the handle bar and normally pressed upon by a spring, while chains or cables connect the ends of the lever with the forward axle. The device facilitates the easy steering of the carriage, and when the device is released, it automatically returns the wheels to normal position.

**THREAD CASE.**—Samuel H. Boone, Douglas, Canada. This is a simple and inexpensive case

which will hold a great many spools of thread, holding it so that the thread cannot slide in any way, and that the spools may be very easily removed when wanted. The thread may be easily arranged in assorted sizes and colors that it may be displayed to great advantage. The case is revolvable, and thus is easily turned to bring any desired number or color into the right position.

**FAN.**—James H. Irving, Jersey City, N. J. This is a hand fan in which a shaft is journaled in the outer end of the handle, in connection with swinging cross arms, a spring, and other features, whereby, upon pulling a cord, at the end of which is a ring, the fan may be rotated back and forth around the handle end, the ring being pulled by one of the fingers of the hand carrying the handle.

**LOADING ATTACHMENT FOR CARTS.**—Gustav Ch. Haag, New York City. This loader consists of a wheeled frame supporting an elevator and conveyor there being a driving connection between one of the supporting wheels of the frame and the elevator, while there is a spring-controlled brush capable of limited vertical movement near the bottom of the elevator. The attachment may be readily applied to any cart, being operated entirely independent of the cart, from which it may be quickly removed when not in use.

**DISINFECTING DEVICE.**—John Pickering, New York City. This is a cheap and simple device in which disinfecting material may be placed, to locate in a tank used for flushing purposes, a sufficient quantity of the disinfecting solution being ejected at each discharge of the tank to thoroughly disinfect the parts when the water is applied.

Designs.

**MEDAL.**—Joseph A. Yount, Laclede, Mo. This medal is thirteen-sided, corresponding to the number of original States of the United States, and has on the front a head of Columbus and on the reverse one of the Chicago Exposition buildings.

**SPOON.**—Charles Osborne, New York City. The edges of the shank and of the flattened portion of the handle of this spoon are formed into raised rib-like figures, broken by leaf-like figures, and at the top of the handle is a flower-like figure in the shape of an open fan.

**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.

**GEOLOGICAL SURVEY OF MISSOURI.** Arthur Winslow, State Geologist. Vol. II. A report on the iron ores of Missouri, from field work prosecuted during the years 1891 and 1892, with 62 illustrations and one map. By Frank L. Nason, assistant geologist. Published by the Geological Survey, Jefferson City. 1892. Pp. xxvi, 366. Vol. III. A report on the mineral waters of Missouri. By Paul Schweitzer, assistant geologist. Embodying also the notes and results of analyses of A. E. Woodward, assistant geologist, from field and laboratory work conducted during the years 1890 to 1892. With 45 illustrations and one map. Published by the Geological Survey, Jefferson City. 1892. Pp. xxiv, 256.

We note the receipt of the second and third volumes of Professor Winslow's report on the geology of Missouri. The third volume is devoted to the mineral waters, and with its numerous illustrations and analyses may be considered one of special value. The author, Dr. Schweitzer, well remembered by the old graduates of the School of Mines of Columbia College, speaks of the work as having been largely a labor of love. Those who knew him of old will cheerfully give full belief to this. The photographs of the different springs are exceedingly picturesque, and the whole subject is linked together by exceedingly clear and concise chapters on the origin of mineral waters, their analysis and composition, their classification and the therapeutics of the subject.

**DISCUSSION OF THE PRECISION OF MEASUREMENTS.** By Silas W. Holman, S. B. New York: John Wiley & Sons. 1892. Pp. vii, 176. Price \$2.

Electricity has been defined as a science of measurement. This definition may now be extended to all physics. Just as chemistry is a science of weighing, so physics has now become a science in which the exact determination of dimensions is all-important. In the present work, we find the measurements treated scientifically. The personal equation, the law of deviations, direct and indirect measurements, and all the important features of modern practice are fully developed. It will be seen that the work covers a field of importance increasing daily, and the book should be in the hands of all physical workers.

**DRAWING AND ENGRAVING: A BRIEF EXPOSITION OF TECHNICAL PRINCIPLES AND PRACTICE.** By Philip Gilbert Hamerton. London and Edinburgh: Adam and Charles Black. New York: Macmillan & Co. 1892. Pp. xvii, 172. Price \$7.

Mr. Hamerton has made up this book from matter contributed to the 9th edition of the "Encyclopædia Britannica" on the subjects of drawing and engraving, preserving the style and treatment of the Encyclopædia. The author has revised it and added a little to it. The work is produced as a veritable *édition de luxe*. A number of plates, in the present edition on drawing paper, illustrating often examples from the early engravers, are given, and on the thin paper guard leaf opposite each plate is given the description of the subject matter, in red letters. The text, on very large and heavy paper, is an elegant example of the printer's art. The work treats not only of the art aspect of the subject, but also of the mechanical, telling how engravings of the different classes are

done, and giving samples of unfinished engravings to illustrate the processes. The characteristic binding in full canvas is in accord with the beautiful description of the work proper. We have said nothing about the text. Hamerton is well known as one of our most charming art writers, and any work of his requires no criticism in these columns. The introductory chapter is of peculiar interest, in which he touches upon primitive drawing, especially, using the ancient Egyptian and Japanese art for his examples. The two examples of Japanese figure drawing, one of angular type, the other in gentle curves, are of special interest, as exemplifying the analysis to which the author has subjected the subjects of his discussions.

**MINERAL SPRINGS AND HEALTH RESORTS OF CALIFORNIA.** With a complete chemical analysis of every important mineral water in the world. Illustrated. By Winslow Anderson. San Francisco: The Bancroft Company. 1892. Pp. xxx, 384.

A discussion of the mineral springs of California, and the comparison with those of other resorts, represents a prize essay to which the annual prize of the Society of California was awarded on April 20, 1889. The work contains very numerous analyses, is quite profusely illustrated, and of course takes the form of a panegyric of the great State. There are several indexes, as well as a table of contents and list of cuts, which add materially to its value.

**ATMOSPHERIC RESISTANCE AND ITS RELATION TO THE SPEED OF RAILWAY TRAINS.** By Frederick U. Adams. Chicago: Rand, McNally & Co. 1892. Pp. 89.

The author of this work is a great believer in the reduction of air friction in trains. His method of arriving at a result involves a system of ventilating trains and of shielding the moving parts, so as to offer a smooth surface to the air. His illustrations of the present system, with the draft created by the passage of the air all shown, is really a wonderfully graphic presentation of what cannot but be considered defects in the existing system of things. He believes that he can so reduce resistance as to greatly increase the speed of railroad trains, and he holds that atmospheric resistance, and nothing but atmospheric resistance, fixes the limit of speed. It is impossible to avoid being impressed by the author's views, and his presentation of them is quite graphic.

Any of the above books may be purchased through this office. Send for new book catalogue just published. MUNN & CO., 361 Broadway, New York.

SCIENTIFIC AMERICAN BUILDING EDITION.

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1. Elegant plate in colors, showing an attractive dwelling at Springfield, Mass. Floor plans and perspective elevations. Cost \$9,750 complete. E. L. Chesebro, architect, Springfield, Mass.
2. Plate in colors showing the residence of the Hon. John J. Phelan, at Bridgeport, Conn. Two perspective views and floor plans. Mr. A. H. Beers, architect, Bridgeport, Conn. An excellent design. Cost \$6,000 complete.
3. A dwelling at Springfield, Mass., erected at a cost of \$4,000 complete. Perspective views and floor plans. Messrs. Granger & Morse, architects, Springfield, Mass. A model design.
4. A cottage erected near Brighton, Mass., at a cost of \$2,800. Floor plans, perspective view, etc. A. W. Pease, architect.
5. Engravings and floor plans of a residence at Greenwich, Conn. A beautiful design in the Colonial style of architecture. Mr. W. S. Knowles, architect, New York.
6. A dwelling recently erected at Brookline Hills, Mass., at a cost of \$5,300 complete. A picturesque design. Perspective elevation and floor plans. Messrs. Shepley, Ruton & Cooidge, architects, Boston.
7. Sketch of a tasteful design for a three-family cottage, to cost about \$4,500.
8. Plans and elevations of an English cottage of quaint and pleasing design.
9. View of the Fifth Avenue Theater, New York. A splendid example of modern architecture in the style of the Italian Renaissance. Together with a portrait and biographical sketch of Francis H. Kimball, architect, New York City.
10. Miscellaneous contents: Paving estimates.—World's Fair items.—Painting the World's Fair buildings.—Drawing instruments for colleges, etc., illustrated.—A tasteful fireplace design, illustrated.—An improved steel spring hinge, illustrated.—Vegetable growth in water mains.—American machinery in London.—A foot radiator valve for hot water radiators, illustrated.—New tin plate plant.—An improved furnace, illustrated.—Cincinnati woodworking machinery.—An improved door hanger, illustrated.—A big heater company.

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