

RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

INCUBATOR.—MARY F. HAVENS, Enid, Oklahoma Territory. The purpose of the invention is to provide an incubator arranged to prevent undue crowding of the hatched chickens. The incubator requires no lamp, and for convenient shipment is made collapsible. The incubator comprises a box provided with guides on which a drawer slides, containing an egg-compartment, spaced on all sides from the box. Above the drawer, in the box, is a heating tank. The box is filled with sand on all sides of the drawer and heating-tank. A filling-cap is arranged in the box above the drawer and between the egg-compartment and the front of the box, so that when the drawer is withdrawn from the box, the sand will be prevented from dropping into the egg-compartment of the drawer.

POTATO-DIGGER.—ELLSWORTH PORTER, Clifton Springs, N. Y. The digger is so constructed that the blade, adapted to enter the ground, can be readily adjusted, and likewise the inclination of the elevator. Means are also provided for rotating the receiver. The receiver is composed of a sieve, the body portion consisting of a series of ribs supported in cylindrical form and arranged at an angle to the axis of the receiver, so that as the receiver is revolved, the earth is freed from the potatoes and discharged. The potatoes are carried partially up the sides of the receiver and then dropped downward in a central direction, escaping at the rear end of the receiver.

Electrical Apparatus.

TELEPHONE-TRANSMITTER.—JOSEPH M. MOORE, Chatham, Ill. This telephone-transmitter has a diaphragm, rearward of which are electrodes suspended by spring-arms. A tubular bridge connects the electrodes and contains carbon balls. A transmitter made in accordance with this invention can be used with two or more cells of a battery and will be found very sensitive, powerful, and uniform in operation.

Engineering-Improvements.

GAS-ENGINE.—FREDERICK W. TOEDT, Hamburg, Ia. This gas-engine comprises a power-cylinder provided with a piston, and a pump-cylinder having two cylinders one within the other. The inner cylinder has ports or by-passes designed to connect with opposite sides of the pump-piston; and the outer cylinder is connected with the power-cylinder. A spring-held auxiliary piston, slidable on the pump-piston rod, serves to prevent the escape of the surplus gaseous mixture. A rack is secured to the inner cylinder. A governor is provided, together with a gear connection from the governor to the rack, for shifting the inner cylinder.

PISTON-PACKING.—ALBERT A. MURRAY, 1509 W. Fayette Street, Baltimore, Md. The invention relates to packing-rings for rendering pistons and rods air or steam tight and provides a ring of this nature constructed in segmental sections arranged with abutting ends. A segmental plate is secured to the side face of each section at one end so as to overlap the adjacent end of the next section. Each plate is formed with an intumed lower end or flange extending over the under side of the section to which it is secured and the under side of the adjacent end of the next section.

MEANS FOR INDICATING MOVEMENT OF FLUID.—ORVILLE CARPENTER, Pawtucket, R. I. This device, designed to indicate the movement of a fluid contained in a pipe or boiler, is made to sound an alarm whenever the fluid is flowing. The apparatus comprises an electromagnetic indicating device and a body normally at rest in a fluid and in the field of the magnet of the indicating device. The body is heavier than the fluid, and is adapted to be moved by the fluid out of the field of the magnet, to cause a disturbance of the latter and operate the indicating device. A thermoelastic retarding device prevents the operation of the indicating device until the body has been held out of the magnetic field a predetermined length of time.

Mechanical Devices.

TOOL-HOLDER.—WILLIAM H. C. HARRISON, Woodville, South Australia. Some six months ago, Mr. Harrison received letters patent for a brace upon which a number of bits were secured by means of a rotatable sleeve to which the tools were hinged at their tang ends, so that when required, each tool could be turned on its hinge and quickly affixed in place, and could be returned to idle position without the necessity of detaching it. The present invention provides various improvements which increase the efficiency of this ingenious device, the improvements providing better means for hinging the bits to the sleeve and for protecting the points by means of a cap.

ELEVATOR.—DANIEL CORCORAN, Yonkers, N. Y. The elevator comprises a rack in the well, the teeth of which rack are engaged by rollers mounted on the pivots of a driven, endless chain. The chain passes over sheaves, a pair of sheaves serving to engage a number of rollers with a corresponding number of teeth on the rack. A driven, worm-shaft has a worm in mesh with rollers between the other pair of sheaves. As soon as the worm-shaft ceases to rotate, the chain ceases to travel, being held from movement by the worms. Hence there is no danger of the cage's descending automatically unless the driving gear be set in motion.

TYPEWRITER.—MANUEL S. CARMONA, Mexico, Mexico. The invention is a typewriter of that class in which the writing-surface is stationary, while the type is located upon a carriage which travels over the writing-surface. In such machines the carriage generally supports the keyboard, which the operator must, therefore, follow in the movement of the carriage. The main object in the present invention is to separate the keyboard from the carriage, making the keyboard stationary and securing an increased speed of operation, since the writer need not change the position of his hand. The carriage is lightened and moves more readily, which added ease of motion also tends to increase the speed.

WIRE-CRIMPING MACHINE.—CHARLES M. MCBRIDE and FREDERICK J. HEYBACH, Savannah, Ga. Wires for fastening and supporting coiled springs in mattresses are usually formed by hand, a process which

requires much time and hence incurs considerable expense. The present invention provides a machine, by means of which the wires can be rapidly and accurately formed and cut off in proper lengths ready to be attached to the springs and the frame, thus reducing the amount of labor and the cost of manufacture. The machine is adapted not only for crimping spring-holding wires, but for forming almost any kind of wire.

CARPET-STRETCHER AND TACKER.—CHARLES P. KNAPP, Deposit, N. Y. When the handle-rod of this device is operated, foremost prongs are made to take hold of the carpet. Upon depressing the handle-rod, the forward end of the stretcher is raised, wheels being provided to act as a fulcrum until every prong engages the carpet; and the device is then pushed forwardly with the edge of the carpet out of contact with the floor, thereby doing away with friction. The handle-rod is again raised, while a tack is placed in a chute, to drop into proper position between jaws. A hand-lever is then operated to cause a hammer to drive the tack.

Railway-Contrivances.

PORTABLE TICKET-MACHINE.—CLYDE LANDERS, Tacoma, Wash. This printing-machine is adapted to be conveniently carried in the hand or pocket and is designed particularly for the use of street-railway employes in printing transfer-tickets. The machine comprises a casing in which a type-carrying cylinder is mounted to rotate. A roller in the casing serves both as a feeding and impression roller. Drums are mounted to rotate on a core in the cylinder; and type-carrying bands, supported on the drums, are independently movable over a bridge-piece formed in a wall of the cylinder.

ELECTRIC-RAILROAD SWITCH.—THOMAS A. RHODES, Sr., Government Printing-Office, Washington, D. C. The switch is so devised that an electric car approaching a turnout-switch takes current from the main supply-conductors and by a shunt-circuit actuates an electrically-operated motor mechanism, which turns the switch-tongues of the track ahead of it to switch off the car and after reaching a certain point sends a shunt-current back to restore the rail-tongues to their former position to open the track for straight travel. The invention is particularly applicable to underground electric systems.

Miscellaneous Inventions.

STEAM-COOKING APPARATUS.—THOMAS DOUGLAS, 29 Farrington Road, London, E. C., England. In cooking hams and other kinds of food in large quantities, this apparatus prevents great loss of heat and waste of time. It provides means for drying, and avoids condensation of the steam in the cooking-chamber. In the device, the cooking-chamber has a removable door, capable of being locked in a steam-tight manner, a perforated steam-inlet pipe, an imperforated coil or pipe disposed near the chamber's inner walls, the latter coil having the inlet and outlet ends at the exterior of the chamber, which is further provided with a safety-valve and exhaust pipe, and a carriage within the chamber with means to support the material to be cooked.

LOAD-BINDER.—JOHN MORTENSON, Neihart, Montana. Mr. Mortenson's binder is constructed of chains and levers connected and adapted to be so operated that the chain proper can be drawn tightly around the load of logs, lumber, and other material, and secured when under due tension. The apparatus has a lever with jaws which are curved and furnished with shanks, between which a slot extends inward. A pivot crosses the slot between the jaw-shanks; and a hinging-chain is attached to the pivot and between the jaws. Stay and locking-chains are connected with the binding-chain and lever. On account of the lever-jaws' being very wide in their outer sides, thus giving strength and rigidity, chains having very short links can be used.

HEATER.—JOHN G. MCNAUGHTON, Salisbury, N. C. The object of this invention is to furnish a heater so constructed as to facilitate the relining of a stove without any injury to the stove-top, to permit the ready control of the draft and the convenient withdrawal of the ashes. The body of the heater has a draft-opening in its front side, and a stove-pipe connection at or near its upper rear side, provided with a cover formed of the rear section secured to the body. A front section is hinged to the one in the rear and has a depending flange fitting within the open end of the body, the hinged section being arranged at its swinging edge to work above the draft-opening.

VEHICLE-AXLE AND BOX.—JOHN G. ANDERSON, Rock Hill, S. C. Completely dust and sand-proof, this combined vehicle-axle and box is arranged to run a long time without re-oiling, and to prevent leakage and waste of oil from the oil-chamber. The vehicle-axle has a spindle with a longitudinal oil-groove at the top, the groove terminating between the ends of the spindle, and a longitudinal bottom oil-groove at the outer end of the spindle. A box fits the spindle and is cored near its outer end to form with the spindle an oil-chamber, the outer end of the bottom oil-groove opening into the chamber. Oil cannot work out at the inner end of the spindle, so that a lubricant, once supplied to the device, will remain therein until it is entirely used up.

Designs.

OVEN.—GEORGE H. HOLDEN, Burlington, Vt. The patent was granted for a new form of oven especially designed for baking bread, and involves a special arrangement of doors or panels controlling access to the shelves upon which the bread to be baked is supported. Below such panels or doors is a special form of stove-front. The stove extends below the shelves to furnish the necessary heat. The patent also shows, alongside the doors or panels, forwardly projecting plates furnishing hinge connections for the doors and presenting a serrated appearance.

STOVE.—GEORGE H. HOLDEN, Burlington, Vt. The stove covered in this patent has a main or body portion containing the fire-pot and a top portion which communicates at one end with the body portion and extends rearwardly therefrom. This top portion has a top plate, which also extends over the body portion and is corrugated transversely and arched slightly from side to side, thus increasing the strength and radiating surface of the

stove. In use, this stove is intended to be fitted in an oven which is especially designed for baking bread.

GARMENT-HANGER.—ROSANNA ROONEY, Manhattan, New York city. The hanger is so constructed that it preserves the shape, not only of the shoulders of a coat, waist, or the like, but of the collar as well.

NOTE.—Copies of any of these patents can be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

NEW BOOKS, ETC.

THE MANAGEMENT OF DYNAMOS. A Handy Book of Theory and Practice. By G. W. Lummis-Paterson, E. E. London: Crosby Lockwood & Son. New York: The Macmillan Company. 1900. 12mo. Pp. 262. Price \$1.50.

The author has kept in view the requirements of mechanics, engineers students and others who have or may have, the charge of dynamos. The subject is treated in a thoroughly practical manner, and the book should appeal to all those who wish the subject treated in a clear manner without mathematics.

BULLETIN OF THE AMERICAN MUSEUM OF NATURAL HISTORY. Vol. XII. New York. 1900. 8vo. Pp. 3421. Price \$4

This Bulletin contains a number of important monographs relating to geology, palaeontology, mammalogy, ornithology, anthropology, etc. It is illustrated with high-class engravings and plates. The admirable work which the museum is doing is supplemented by highly interesting scientific papers which are published in the Bulletin and other books and pamphlets issued by the Museum.

THE TRACKMAN'S HELPER. Revised Twentieth Century Edition. A Book of Instruction for Track Foremen. By J. Kindelan. Revised by Messrs. Smith, Coates and Sullivan. 16mo. Pp. 334. Price \$1.00.

No more valuable book on track has been written than the present one, and the author is a veteran trackman and pioneer author in America of writings upon track. It has been thoroughly revised and brought up to date and is accompanied wherever necessary by illustrations and tables.

SULLIVAN'S NEW HYDRAULICS. Consisting of New Hydraulic Formulas and the Rational Law of Variation of Coefficients. By Marvin E. Sullivan, B.Ph., LL.B. Denver: Mining Reporter Press. 1900. Pp. 301.

The author has prepared a book which is sure to be of value to all hydraulic engineers. It is filled with tables and formulas. The writer offers what he conceives to be the rational solution of the difficulties which confront the student of hydraulics when he compares the theories of the flow and variations of the coefficient as set forth in the old formulas. The author has two pages of errata, but this is not surprising considering the difficult nature of the work. He could also have looked with advantage to the improper abbreviations of his titles.

THE GOLD TRACER. A Practical Guide for Prospectors and Miners. By J. Marion Clark. Portland, Oregon: John Talbot. 1899. 18mo. Pp. 104. Price \$2.50.

The author has spent most of his life among mineral-bearing mountains and says that he has discovered and tested a new method of prospecting, and that by following the instructions in his book anyone can hunt gold successfully in gold-producing regions.

MACHINIST'S AND DRAFTSMAN'S HAND BOOK. Containing Tables, Rules and Formulas. By Peder Lobben, M. E. New York: D. Van Nostrand Company. 1900. 12mo. Pp. 438. Price \$2.50.

The author, in simple language, explains mathematics including logarithms, mensuration, trigonometry, geometry, drawings, strength of materials, mechanics, belts, pulleys, etc. Numerous examples are used to explain the principles and rules, and the problems can all be readily solved. The tables are printed in good type.

THE TECHNIC OF MECHANICAL DRAFTING. A Practical Guide to Neat, Correct and Legible Drawing. By Charles W. Reinhardt. New York: The Engineering News Publishing Company. 1900.

The author is the chief draftsman of The Engineering News and is, therefore, especially qualified to know what is required in good mechanical drafting. While depicting any needlessly elaborate finish, the writer advises the use of just sufficient shading and finishing touches to render a drawing thoroughly comprehensible and to preclude any possible ambiguity. It is not exactly a manual for beginners, but it serves its purpose when used by the draftsman who is familiar with the mathematical principles of mechanical drawing. The book is handsomely printed and gives excellent examples of high-class draftsmanship.

We have been favored by Carlos A. Butler, Esq., of 321 Greenwich Street, New York city, with some photographs of a model of the Temple of Jerusalem, made by Mr. Butler. The model is in two equal parts, for convenience, and when set up measures 40 inches square on a table. It can be packed neatly and securely in two cases for transportation. Like the original, the model represents this building in marble, except where bronze, gold and silver enter into its features. The objects are minute and every essential detail is correctly shown. The photographs of the model are 8x8 inches and are artistically mounted in book form 9x11 inches. A booklet containing copious notes and explanations accompanies the two photographs, which are mailed on receipt of \$1.

Business and Personal.

Marine Iron Works. Chicago. Catalogue free.

"U. S." Metal Polish. Indianapolis. Samples free.

Yankee Notions. Waterbury Button Co., Waterbury, Ct. Handle & Spoke Mch. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Most durable, convenient Metal Workers' Crayon is made by D. M. Stewart Mfg. Co., Chattanooga, Tenn.

Gear Cutting of every description accurately done. The Garvin Machine Co., Spring and Varick Sts., N. Y.

Ferracute Machine Co., Bridgeton, N. J., U. S. A. Full line of Presses, Dies, and other Sheet Metal Machinery.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y.

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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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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.

(7903) G. P. A. asks: What can be used to soften horn so as to turn out buttons easier, so that the knives will not dull very easy, and what to use to bleach the same to pure white—something that will not be expensive? A. The bony core of the horn is first removed; the next process is to cut off with a saw the tip of the horn, that is, the whole of its solid part, which is used by the cutlers for knife handles and sundry other purposes. The remainder of the horn is left entire, or is sawn across into lengths, according to the use to which it is destined. Next it is immersed in boiling water for half an hour, by which it is softened, and while hot is held in the flame of a coal or wood fire; taking care to bring the inside as well as the outside of the horn, if from an old animal, in contact with the blaze. It is kept there till it acquires the temperature of molten lead or thereabout, and in consequence becomes very soft. In this state it is slit lengthwise by a strong pointed knife like a pruning knife, and by means of two pairs of pincers, applied one to each edge of the slit, the cylinder is opened nearly flat. The degree of compression is regulated by the use to which the horn is afterward to be put. When it is intended for leaves of lanterns, the pressure is to be sufficiently strong (in the language of the workman) to break the grain, by which is meant separating in a slight degree the laminae of which it is composed, so as to allow the round-pointed knife to be introduced between them, in order to effect a complete separation. For combs the plates of horn should be pressed as little as possible, so that the teeth may not split at the points. They are shaped chiefly by means of rasps and scrapers of various forms, after having been roughed out by a hatchet or saw; the teeth are cut by a double saw fixed in a back, the two plates being set to different depths, so that the first cuts the teeth only half way down, and is followed by the other, which cuts the whole length; the teeth are then finished and pointed by triangular rasps. Horn for knife handles is sawn into blanks, slit, pared, and partially shaped; then heated in water and pressed between dies. It is afterward scraped, buffed, and polished. **Bleaching Horn.**—Besides hydrogen peroxide, horns can be bleached by immersing for a short time in water slightly mixed with sulphuric acid, chloride of lime, or chlorine, or they may be exposed in the moist state to the fumes of burning sulphur largely diluted with air.

(7904) L. V. writes: I wish to take five amperes of current from a constant potential circuit of 115 volts. What size and length German silver wire should I use for resistance coil? A. The total resistance of the circuit will be 23 ohms when 5 amperes flow through it. A rheostat of 23 ohms of any size of wire will do the work for you. No. 14 wire is however a good size. German silver wire of this size has about 30 feet per ohm. You will therefore require nearly 700 feet. 2. Can I make a resistance coil act as an electromagnet by using heat-proof insulation? A. An electromagnet should be wound of magnet wire, double covered with cotton insulation, if a heavy current is to be sent through it, and insulated further with shellac. It should also be built upon an iron core. Instructions can be found in Hopkins' "Experimental Science," price \$4 by mail. This valuable book should be in the hands of every student of electricity. 3. Is German silver best for resistance coil? A. Iron is as good or even better than German silver for a rheostat, since it has its melting point much higher than German silver. If you use iron, take twice as many feet.

Camera Club.—If you have a convenient supply of electricity, we suggest that you locate a sixteen-inch hurricane electric fan over the sink nearly opposite the entrance to the dark room and provide an indirect light proof outlet to the air outside of the room. The fan should be in the upper part of the room. The water evaporation from damp clothes hung a short distance from the ceiling would assist in cooling the current of air, and so reduce the temperature.