

RECENTLY PATENTED INVENTIONS.

Engineering.

**STEAM BOILER FURNACE.**—Michael E. Herbert, St. Joseph, Mo. This invention provides a fire box divided into two compartments by a water leg, water legs also forming the sides of the fire box, a feeding grate being adapted to carry the fuel from one compartment to another, and passages surrounding the fire box for conducting the smoke and gases to be consumed. The furnace is designed to afford great heat capacity and economy in the consumption of fuel, while being adapted for use with an ordinary tubular or other type of boiler, being also easy of operation and substantial in construction.

**VALVE GEAR.**—Albert M. Sykes, Philadelphia, Pa. This is new and simple form of valve gear to take the place of the ordinary link motion in locomotives and stationary engines for the purpose of reversing the stroke. It consists of a cross head carrying an actuating plate, a pair of reversely arranged cam arms pivoted at one end and maintained alternately in position to be acted upon by the plate; with means for transmitting the motion of the cam arms to the valve.

**SAFE STEAMBOATS.**—Joseph B. Bro-laski, St. Louis, Mo. Several patents have been granted this inventor covering the construction in steamboats of light weight compartment doors and bulkheads in the hull and light weight corrugated metal cabins and deck houses. Also a simple steam steering apparatus without auxiliary engines and one for short chiu eys with long natural draught. This inventor has also secured from other patentees four several valuable improvements for water craft. The compartment bulk-heads are designed as a most efficient protection against sinking. The combination of these devices is to secure a boat that will not sink, will not burn up, will steer quickly and hold steadily, use less fuel, and give more speed with less strain and lighter draught, and will be a good boat. She should also insure for a very low rate and be a safe, serviceable and economical steamboat for an average lifetime. The special safeguards stated are simple, of little cost apparently, and are said to be applicable to the present style of boats to make them safer and enhance their value.

Railway Appliances.

**CAR COUPLING.**—Hamlin G. Russell, Lincoln, Ill. This invention provides a means whereby the drawheads may be united by a yielding adjustable connection, and also provides springs in connection with the drawbars capable of performing the double functions of draw and buffer springs. The construction is simple and durable, while the coupler is capable of automatic coupling action, and of being conveniently and expeditiously uncoupled from the top or the sides of the car.

Electrical.

**APPARATUS FOR TREATING DEAF-NESS.**—George F. Webb, Jefferson, Ohio. This apparatus comprises a battery, a belt, an electrode supported on the belt and shaped to rest upon the ear, and having an opening in one side to receive the ear, and connections between the electrodes and the battery. The invention provides a simple and efficient device for constant use to remove the source of deafness, one which may be easily applied, and is designed, while serving as a remedy, to enable the patient to hear distinctly.

Mechanical Appliances.

**ROOFING SEAMER.**—Orren P. Talley, Richmond, N. C. This is a device for forming the seams in joining metal roofing, and is designed to quickly and positively join the ends of the sheets and form a complete crimp at each operation of the machine. Its construction is such as to avoid the danger of breaking or cracking the ends of the tin as it is crimped, while it is also adapted for turning a double seam, being at the same time a practical and easily manipulated device which can be manufactured at a small cost and is not liable to get out of order.

**BRUSH FOR LITHOGRAPHERS.**—Gustav Arnold, Brooklyn, N. Y. This is a brush for stipple work, in which the body is swiveled to the handle, the body being of a yielding or elastic material, as of rubber or its equivalent, and tapered in the direction of one end, while having its exterior surface or technic provided with a series of teats. It is so designed that with this brush an artist may readily produce a stipple surface of a strong, light, or intermediate tint, quickly and in an artistic manner, the brush being capable of manipulation in a like manner to one employed in painting.

Agricultural.

**PLANTER.**—John A. Handeland, Jackson County, Minn. (Lake Park P. O., Dickinson County, Iowa.) This is an implement designed especially for garden use, and so constructed that it may be utilized for planting seed or for cultivating young plants, and when the planting mechanism is removed the implement may be employed as a wheelbarrow. The implement is light and of durable construction, and capable of convenient manipulation, the invention embodying various novel features and combinations of parts.

**CATTLE RACK.**—James H. Howard, Baldwin, Kansas. Combined with a series of posts arranged in rows and rails detachably attached to the posts, are separate independent panels containing feed openings and adjustably attached to the rails, with other novel features, forming a means whereby cattle may be fed from stacks of hay or other food in the field without wasting the food, and without danger of the stack falling upon the cattle.

**FRUIT GATHERER.**—Andrew B. Anderson, Savannah, Ga. Combined with a receptacle and fruit cutting off device having operating arms, pivoted

to a pole, is a chute by which the fruit may be conducted down in a convenient and expeditious manner, its fall being so checked or broken by means of draw strings that the fruit will not be injured. The mouth may be so formed that any one of a cluster of fruit, as apples, oranges, etc., may be removed from a branch without injury to or detaching the remaining fruit.

Miscellaneous.

**DOOR CHECK.**—David Rankin, Rosamond, Cal. A pivoted arm provided with a beveled catch is furnished with a chamber in its free end for receiving an elastic buffer, and a socket is fitted to the door for receiving the end of the pivoted arm, there being a plate for closing the socket when it is desired to use the device merely as a buffer. The device affords a simple means for arresting the motion of a door when thrown open, and for holding the door open.

**SCHOOL FURNITURE.**—Wilberforce A. Ramsey, Johnson City, Tenn. This invention provides an improved form of school seats, by means of which each chair can be adjusted to suit an adult or the smallest scholar. The back of the seat is held firmly in position, but the seat portion can be readily turned up out of the way, for sweeping, dusting, etc., there being a spring-actuated device for securing the seat in any desired position.

**DRESS CHART.**—John W. Stevenson, Ravenna, Ohio. This invention provides an improved garment chart by means of which patterns may be draughted directly upon the cloth or other material. Instead of consisting of a number of parts, to be adjusted according to the measurements of the garment, as heretofore, this chart consists of a single piece, dispensing with adjustments requiring time and labor. With this chart, and following the rules provided therewith, it is designed that any pattern may be draughted after measurements of the body, and a correct garment obtained.

**CLOCK MECHANISM.**—Grant W. Shuman, Lake Station, Ind. Combined with the clock work and a striking mechanism, is a series of bells mounted to travel and actuated from the clock work to come successively in the path of the striker. The arrangement is such that the striker strikes another bell at each stroke, so that the sound continues its full length without being interrupted and deadened by a second striking of the striker, as is the case usually, when only one bell is used.

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.

SCIENTIFIC AMERICAN BUILDING EDITION.

JUNE NUMBER.—(No. 68.)

TABLE OF CONTENTS.

1. Plate in colors of a handsome residence on Riverside Park, New York City. Floor plans and elevations. Architect Mr. Frank Freeman.
2. Colored plate illustrating a row of brick dwellings at Newark, N. J., costing about \$3,000 each. Perspective elevation, floor plans, etc. E. S. Amerman, Newark, N. J., architect.
3. Engravings and floor plans of a double residence on Washington Heights, New York City. Cost \$20,000 each. A very picturesque design.
4. A dwelling at New Haven, Conn. Cost \$8,000 complete. Perspective view, floor plans, etc.
5. A colonial cottage erected for Mr. C. W. Macfarlane at Elm Station, Pa. Cost \$5,300 complete. Floor plans and perspective view.
6. Design of a modern interior. A comfortable hall and staircase.
7. A picturesque cottage erected for George W. Childs, Esq., in his Villa Park at Wayne, Pa. Cost \$7,200 complete. F. H. & W. L. Price, Philadelphia, architects. Plans and perspective.
8. A tower house recently erected at Elm Station, Pa. Cost \$4,600 complete. Floor plans, perspective elevation, etc.
9. A row of low cost colonial houses erected at Roseville, N. J. Cost complete \$2,000 a house. Plans and perspective view.
10. An English cottage erected at Elm Station, Pa. Cost about \$4,000. Perspective and floor plans.
11. Sketch of a farm house recently built in Steuben County, New York, at a cost of \$695.
12. Miscellaneous contents: Simplicity in furnishing and decoration.—Weight as a test of strength in timber.—Architect of the Woman's Building of the Columbian Exposition, Chicago.—Redwood for interiors.—The Richmond heater, illustrated.—Some new designs in radiators, illustrated.—Improved plumbing appliances, illustrated.—Bent glass.—Improved woodworking machinery, illustrated.—Astronaut light lawn fence, illustrated.—The "Heatcook" range, illustrated.—The H. W. Johns liquid paints.—A new roofing metal, illustrated.

The Scientific American Architects and Builders Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

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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 the following week's issue.

For Sale—New and second hand lathes, planers, drills, shapers, engines, and boilers, belting, pulleys, and shafting. List sent free. W. P. Davis, Rochester, N. Y.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Barrel, Keg and Hogshead Machinery. See adv., p. 410. For best hoisting engine. J. S. Mundy, Newark, N. J. Wanted—Tin cans and steel shafting. Box 146, Maquoketa, Iowa.

Best driers for grain, sand, clay, fertilizers, wet feed, green coffee, etc. S. E. Worrell, Hannibal, Mo.

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For Sale—Compensating watch regulator patent, No. 395,182, granted December 25, 1888. Address Wm. H. Shear, Delmar, N. Y.

For Sale Outright—Patent No. 450,489, improved trolley guide for retaining trolley on wire. Apply W. E. Jackson, Jr., P. O. box 635, Augusta, Ga.

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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.

(3119) N. W. N.—Brown's recipe for making transparent soap is as follows: 100 pounds dry bar soap to be heated and melted. Then pour in 25 pounds or more of melted sal soda. Agitate together at a low heat. Then add 100 to 125 pounds of glycerine, agitate, keeping up a moderate heat. Let settle. Draw off into moulds or soap frames. When cold cut into bars and cakes.

(3120) H. B. asks: What can I use to clear shellac stiffening from fabrics of a fur or shoddy nature without injury to the goods? A. Alcohol or borax solution.

(3121) T. M. P., England, asks: Will you kindly tell through the medium of your columns: The best mixtures of iron, and also the proportions of each kind, for making plow shares? The best method of chilling the same. A reviver for kid boots which will not crack or make the leather hard. A you require a moderately hard iron. American Nos. 2 and 3 equal parts, or No. 2 and scrap to make a moderately hard casting that will polish by use. Chilling is only used for the point, which is cast in an iron mould, or more usually, an iron chill plate for the bottom of the toe. When kid boots need reviving we buy new. For dressing use French fluid polish.

(3122) R. W. R. asks (1) what is the meaning of the term "ohms resistance"? A. The ohm is the standard of resistance. A copper wire No. 16, B and S gauge, 243/4 feet long, has a resistance of one ohm. 2. Why are letters patent so called? A. This means an open writing. A paper by which power is given to a person to do some act or enjoy some right. 3. I have a room 20 by 80 feet, in which I burn 15 natural gas jets day and night, and I have often noticed that when the temperature outside is apparently the same at day and night that the room is much warmer at night than during the day. Why is it? A. Possibly the doors of the room are opened with less frequency at night than during the day. Have you applied actual measurement with a thermometer?

(3123) W. H. S.—Electric motors are reversed by changing the direction of the current in either the field magnet or armature, but not in both.

(3124) A. H. F. writes: I should like to suggest to the readers of the SCIENTIFIC AMERICAN who have constructed the simple electro-motor therein described, that the efficiency of the motor may be greatly increased by filling up the interstices between coils of armature with soft iron wires, cut in lengths equal to

width of core, and bound in position by a thin wire or thread, around the circumference of entire armature.

(3125) F. H. F. writes: Please give me the weight of the heaviest locomotive engine now being used on any railroad in the world. A. About 70 tons for locomotive alone or over 100 tons for locomotive and tender loaded.

(3126) W. R. J.—The way to recover silver from a solution is to precipitate with hydrochloric acid, and add zinc and sulphuric acid, until all the precipitate of silver chloride is reduced to the metallic state. This will take some hours. Filter and wash with boiling water. The lead plates in Faure's storage battery are about one-sixteenth of an inch thick.

(3127) F. A. R. writes: I have a twenty-five horse power boiler with a working pressure of 70 pounds of steam from which I have been trying to get steam enough to boil linseed oil in a kettle containing a coil of 1 inch pipe, using an open exhaust. I have been able to get 250° of heat but no more. Will you be kind enough to tell me what is wrong? People who pretend to know say that a pressure of 300 pounds or more with a return exhaust will be necessary. The kettle is three feet high by four feet wide, and is about forty feet from the boiler. A. Linseed oil boils at 597° Fah. To boil it by means of a steam coil as you propose would require a pressure of more than one thousand pounds pressure in the boiler per square inch. Direct fire under the kettle is the usual way. Steam at 300 pounds gauge pressure has a temperature of about 420° Fah. This may accomplish what you wish in evaporating the volatile properties of linseed oil, but will not boil it.

(3128) H. S. R. asks: Is color made by light or shown by light? Please explain in full as possible. Is white a color in any instances? In case of white ink, is it a color or is it colorless? Also, if you put colors in a row and take away the light, won't the colors remain? Does light simply show colors, or does it manufacture or make colors? A. Color is caused by light. Different surfaces possess different absorbing and reflecting powers and thus produce color by partial transmission or reflection. White is the reflection of all colors of the visible spectrum. There is no color in a dark room. White ink is theoretically of all colors mixed. Black is theoretically the absence of all colors. Colors are in one sense present in light.

(3129) A. T. asks: Please inform me the way to oxidize sheet brass. A. For oxidizing brass, dip in a solution of 5 drachms perchloride of iron to 1 pint of water.

NEW BOOKS AND PUBLICATIONS.

A SHORT COURSE OF EXPERIMENTS IN PHYSICAL MEASUREMENT. By Harold Whiting. In four parts. Part III. Principles and methods. Cambridge: John Wilson & Son. 1891.

The restricted scope of the present volume of this valuable series makes it less amenable to review than its predecessors. It derives special value from its tables, which include much data that is ordinarily very hard to be found. Such are the tables of the properties of solids and liquids. For these alone the book is worthy of recommendation, independent of its relation to and place in its series.

POPULAR LECTURES AND ADDRESSES. By Sir William Thomson. In three volumes. Vol. III. Navigational affairs. London and New York: Macmillan & Co. 1891. Pp. x, 511. Price \$2.

Navigation, the tides, terrestrial magnetism, and the mariner's compass, deep sea sounding, lighthouse characteristics, the laying and lifting of deep sea cables and ship waves are the topics of the present volume. It is needless to say that the subjects are admirably treated. Sir William Thomson has the art of giving a most graphic turn to his lectures, and engages the attention perfectly without resorting to the colloquialisms and extemporized words, whose use disfigures the text of the writings of so many of his contemporary scientists. Thomson rises above all these too prevalent traits, and in this volume of lectures, with addenda and supplements, presents a work of the greatest interest to every reader of scientific bias.

LA PLUME DES OISEAUX: HISTOIRE NATURELLE ET INDUSTRIELLE. Lacroix-Dauliard. Paris: J. B. Bailliere et Fils. 1891. Pp. 368. Illustrated.

This little work treats of birds useful or celebrated for their plumage. Numerous illustrations accompany the text. In addition to the natural history of the birds, the methods of using their feathers for fans, decoration, etc., is given in considerable detail.

EXAMEN QUIMICO Y BACTERIOLOGICO DE LAS AGUAS POTABLES. Par A. E. Salazar y C. Newman, y Dr. Rafael Blanchard. London: Burns & Oates. 1891. Pp. xix, 513.

This work, in quality of printing, paper, and numerous engravings, leaves nothing to be desired. The titular subject is fully treated and the bacteriology of water receives particular attention. A number of reproductions of microscopic slides are given to specially elucidate this part of the work.

METAL TRADES DIRECTORY FOR NEW ENGLAND AND NEW YORK STATE. Published by Price, Lee & Co. New Haven, Conn. Price \$4.

This is a classified list of hardware manufacturers and dealers, machinists, engine builders, boiler makers, iron and brass founders, plumbers, stove manufacturers, gas fitters, etc. This directory is divided by States, and each trade is put under a separate head. There is also a complete index with references to the various manufacturers in the different States. The classification is satisfactorily carried out and the lists seem to be complete and up to date. The volume contains about 1,200 pages. Each State contains an alphabetical list of names and also a classified directory of the trades.