

RECENTLY PATENTED INVENTIONS.
Engineering.

REVERSING GEAR FOR ENGINES.—Daniel H. Grant and Henry Miller, Raymore, Mo. A collar having a lug is keyed on the main driving shaft, and a sleeve adapted to be shifted axially and circumferentially is arranged concentric on the shaft, the sleeve having a spiral cam groove and a straight slot. The spiral groove is engaged to the lug on the collar, and an eccentric is formed in the bore of its disk with a lug engaging the straight slot in the sleeve, the latter being shifted at any time by the operator to move the eccentric and valves in any desired position.

POP SAFETY VALVE AND MUFFLER.—Erastus B. Kunkle, Fort Wayne, Ind. This is an improvement on a former patented invention of the same inventor, the device affording a powerful discharge of steam and the immediate relief of the boiler of overpressure. The valve body carries a cup forming a steam space between it and the valve body, and a cup-shaped valve extends into the valve body cup and forms a steam space between it and the valve body cup, the valve being provided with an exterior seat flange adapted to be seated on the valve body and its cup.

RAISING SUNKEN VESSELS.—Oscar A. Bulette, Charleston, Washington. A wreck indicator and raising device, patented by this inventor, provides a lifting chain or cable to be automatically attached to the sunken vessel from above without the employment of a diver, the chains to be then connected with any approved hoisting mechanism. A float supports the drum carrying the cable, the spool having a peculiar brake mechanism, and on the vessel is a bill hook from which a cable leads to the float, while the lifting chain or cable has a large terminal link or ring adapted to slide down on the float cable and automatically engage the bill hook.—[Mr. Bulette may be addressed at the SCIENTIFIC AMERICAN office, New York City.]

Railway Appliances.

FENDER FOR TRAM CARS.—William Dryden, Brooklyn, N. Y. This device has body section to be supported by the forward portion of the car, provided with a cushioned chamber in which are cushioned spring-controlled doors, while a cushioned fender extends forwardly and downwardly from the threshold of the chamber. It is designed that a person struck shall be forced to fall upon padded surfaces and prevented from rolling or dropping from the fender, thus receiving no injury. The device is of simple and strong construction, and may be conveniently applied to the dashboard of any car.

Electrical.

SASH BALANCE.—William C. Hodgkins, Washington, D. C. According to this invention two or more hollow coils of insulated wire are arranged in alignment, a magnetic core or plunger being arranged to move through them, while a set of corresponding electric circuits and switches are connected with the coils, there being means for connecting the core with the sash. By means of the apparatus, the opening and closing of doors and windows, and locking or unlocking them, may be effected on operating a suitably arranged push button.

Mechanical.

PERFORATING SHEET METAL.—David Henderson, Central City, Col. This inventor has devised a metal-punching machine in which the punch block is made in sections having in their opposing faces longitudinal grooves adapted to receive the punches, clamps extending inwardly into the grooves at each end to engage with the end punches. The machine is capable of rapidly perforating sheet metal screens with slits or openings surrounded by a burr on one side of the sheet. One set of punches may be removed and another inserted with great facility, and the machine is of simple construction and inexpensive.

CEMENT MILL.—John A. Albertson, of Lansford, and James H. Fisher, of Siegfried's Bridge, Pa. This is a crushing mill in which, within an enveloping case, a rotary cylindrical pulverizer shell is secured upon and driven by a central rotatable shaft, outwardly projecting pockets on the side of the shell radiating from central circular open-ended feeding chambers, there being screens over the radial edges of the pockets and a loose roller rotatable by its gravity within the shell below the shaft. The mill is adapted to pulverize any hard rocky material, separating the powder from the coarser particles and expelling the completely pulverized portion as the operation progresses.

SAW FILING MACHINE.—William B. Allen, Allentown, La. This machine is adapted to file the sides of saw teeth, performing the work rapidly and uniformly, and it can be instantly applied and readily adjusted to saws of various patterns, as circular, gang and band saws, etc. Its frame has parallel side bars, to be supported from the edge of a saw, while a file holder composed of two crossheads is fitted and adapted to slide on the bars, a rigid handle connecting the crossheads, there being a lengthwise slot in one of its extended ends through which passes a clamp screw securing the handle adjustably to the crosshead.

NUT LOCK.—Jesse A. Wells, Guyandotte, West Virginia. According to this improvement, the screw-threaded bolt has a longitudinal channel and the nut has recesses on its inner face, a key lying in the channel having a head adapted to enter one of the recesses, while a washer with an internal diameter equal to the combined thickness equal to that of the bolt and the head of the key, and a thickness equal to the length of the head, is adapted to move bodily at right angles to the bolt and hang suspended behind the head of the key.

Miscellaneous.

FOLDING BED.—Samuel Hawver, University, Cal. This inventor has devised a ventilated folding bed, to be warmed with the least possible outlay, and designed to be placed in the wall and built in with the house, becoming a permanent fixture. It is ar-

ranged to fold into and out of a recess, with which are communicating flues admitting fresh outside air or air from a furnace or other heater, and when raised out of the room it forms a neat paneled or mirrored section at one side.

GARMENT SUPPORTER AND UNDER-WEAIST.—Charles F. Richmond, Mattoon, Ill. This inventor has designed a skeleton underwaist to which is secured a stocking supporter and a waistband, to which skirts and other like apparel may be fastened, the whole being supported from the shoulders of the wearer, to carry all the weight of the garments in a healthful and hygienic manner.

RECEIPT PROTECTOR.—Alfred Steiner, New York City. This protector is designed to conveniently cover up portions of a leaf in a receipt or other book to prevent the reading of executed receipts by other parties. The invention consists principally of a series of movable cover or shield plates independent of each other and adapted to each cover or portion of a leaf.

JUG.—George W. Spring and George W. Printz, Crooksville, Ohio. As a new article of manufacture, these inventors have devised a jug which may be burned in a kiln without necessitating the addition of other pieces of crockery to maintain the columns of jugs in position for proper burning, enabling the kiln to be entirely filled with jugs. The jug has a spout which forms its mouth and is adapted to be closed by a stopper.

FOLDING CHICKEN COOP.—Luther Matthews, Paris, Tenn. In this coop the end sections are hinged to fold inward flat on the bottom, and the side sections fold flat on the end sections, there being a pair of screw bolts of unequal length pivotally secured centrally to the bottom, and a removable top having a central aperture and a lock nut adapted to be fitted on either of the bolts. The coop may be easily spread or folded and held locked in either position.

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.

AUGUST, 1894.—(No. 106.)

TABLE OF CONTENTS.

1. An elegant plate in colors showing a residence at Plainfield, N. J., recently erected for George H. Babcock, Esq. Perspective views and floor plans. A picturesque design. Mr. E. L. Hyde, architect, New York City.
2. A residence at Edgewater, Ill., recently erected for Mrs. Eva L. Prescott. Perspective elevations and plate in colors, together with floor plans. An excellent design. M. J. L. Silsbee, architect, Chicago, Ill.
3. A residence recently completed for J. P. Clarendon, Esq., at Hackensack, N. J. Two perspective elevations and floor plans. Mr. J. E. Turhune, architect, Hackensack, N. J. An attractive design.
4. A dwelling at Erie, Pa., erected for William J. Sell, Esq., at a cost of \$4,500 complete. Two perspective elevations and floor plans. Mr. C. F. Dean, architect, Erie, Pa.
5. A beautiful residence recently erected at Belle Haven, Conn. Three perspective elevations, one interior view, together with floor and ground plans. Mr. C. P. H. Gilbert, architect, New York City. A model design.
6. The beautiful residence of E. Einstin, Esq., at Pompton, N. J. Perspective elevation and floor plans. Cost complete about \$20,000. Architect, Mr. Manly N. Cutter, New York City.
7. A conveniently and economically arranged suburban cottage recently erected for George W. Payne, Esq., at Carthage, Ill. An attractive and picturesque design. Perspective elevation and floor plans. Cost \$3,000 complete. Architects, Messrs. G. W. Payne & Son, Carthage, Ill.
8. Perspective elevation and floor plans of a well arranged dwelling, recently erected for A. N. O'Hara, Esq., at Carthage, Ill. A pleasing design. Cost complete, \$5,500. Architects, Messrs. G. W. Payne & Son, Carthage, Ill.
9. A stable at Belle Haven, Conn. Perspective view and ground plan. A unique design. Mr. C. P. H. Gilbert, architect, New York City.
10. The Club House of the Knickerbocker Field Club, recently erected at Flatbush, L. I., N. Y. Engravings and floor plans. Messrs. Parsett Bros., architects, Brooklyn, N. Y. A neat design in the Colonial style.
11. An elegant residence of A. B. Bigelow, Esq., at Cranford, N. J. Perspective elevation and floor plans. Estimated cost, \$6,000. Mr. Manly N. Cutter, architect, New York City.
12. Miscellaneous Contents: The Hayes metallic lathing, illustrated.—Nonsuch Palace.—The Joseph Dixon Crucible Co.—The slate business.—New and old styles of eaves troughs, illustrated.—The Weathered hot water heaters.—Design for mantel and fireplace, illustrated.—The "P. & B." sheathing and insulating papers.—An improved vise, illustrated.—What becomes of all the lumber.—Globe ventilator, illustrated.—An improved sadiron, illustrated.

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The Carter Pressure Water Filter and Purifier for hotels, factories, etc. See illustrated adv., page 47. Field Force Pump Co., Lockport, N. Y.

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.

Patent Electric Vise. What is claimed, is time saving. No turning of handle to bring jaws to the work, simply one sliding movement. Capital Mach. Tool Co., Auburn, N. Y.

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Notes & Queries

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(6190) Rain Gauge.—G. F. J. M. P., S. E. S. & T. J. St. L. write criticising answer to G. F. The answer was erroneous. The angle of the rainfall does not affect the accuracy of the rain gauge record to an appreciable extent.

(6191) E. J. S. asks: 1. In making the tangent galvanometer and resistance coils described in "Experimental Science," will German silver resistance wire answer the same purpose as copper wire? If not, why? A. German silver will answer for the resistance coil, but is not suitable for a galvanometer. In a galvanometer the object is to secure the greatest number of turns with the smallest resistance where great sensitivity is required. German silver having 13 times the resistance of copper, would necessitate an enormous total resistance.

2. Cannot any small battery motor be adapted to the Crowfoot gravity battery, by winding motor with finer wire to make its resistance proportional to the battery resistance? A. Yes. 3. I have an induction coil with a secondary winding of No. 36 wire. Could I not get the same secondary current if I had used No. 25 or any size up to 36 by making the same number of turns of wire? A. By using small wire the winding is brought near the primary and core. If larger wire is used, it takes up more room and the outer coils are farther removed from the inductor.

(6192) R. W. asks whether it requires a greater expenditure of energy or not to raise a weight of say 8 tons on a car up a hoist or elevator (the balance weight of which is made to counteract the additional weight of the car) than to draw it by a locomotive or other force up an inclined track to the same height. The friction to be minimum in both cases. A. The energy required for lifting a given load, whether on an incline or vertically, is the same. The energy lost in the mechanical appliances for lifting is not the same in all cases. A vertical lift is the most economical in energy, as it saves weight and friction in the car. Locomotive train haulage is the least economical in energy, by the amount of energy required to move the locomotive and train. Rope haulage is nearly as economical in energy as the vertical lift, but each has its particular advantages in the conditions of the horizontal distance that material must be transported. The different systems cannot be exchanged without regard to the horizontal element in the problem.

(6193) J. S. P. says: Please give me a receipt telling how to make elderberry wine. A. Gather the berries when quite ripe, on a dry day; pick them off the stems, and bruise them with your hands. Strain the juice; let the liquor rest in glazed earthenware pans for twelve hours to settle. Allow to every pint of juice 1½ pints of water, and to every gallon of the mixed water and juice 3 pounds of sugar. Put it over the fire in a large saucepan, and when it is ready to boil, clarify it with the

whites of four eggs. Let it boil for an hour, and, when nearly cold, put in some yeast to work it; pour it into the cask, reserving some of the liquor to fill up the cask with, as it sinks with working. If you have about ten gallons or so, it should be fit to bottle off in two months' time after it has been closed down. Keep at least a year in bottle.

(6194) W. S. D. asks: 1. How much wire would be required to wind the spool of the telephone described a few weeks ago, to be used on a quarter mile line? A. 188 feet, or about 2 ounces. 2. Could ordinary ungalvanized wire with ground circuit be used for a quarter mile line? A. Yes. 3. What would be the number of Leclanche cells required to work call bell on line of gravity cells? A. 2 or 3 on each end. 4. Which is preferred? A. Leclanche. 5. How many cells would be needed on a metallic circuit of same length? A. Three would probably do.

(6195) B. J. writes: Please give me through the columns of the SCIENTIFIC AMERICAN a simple and accurate rule for figuring the horse power of steam boilers. A. The horse power of boilers as usually rated in trade is based on the amount of heating surface in flues or tubes and shell. The number of square feet of heating surface for a horse power varies largely with different kinds of boilers and with different makers; 10 to 12 square feet for water tube boilers, 12 to 16 square feet for tubular and locomotive forms, and from 8 to 12 square feet for flue boilers are about the range of nominal horse power. The actual output of horse power which may be realized depends upon the steam pressure and the economy of the engine; so that the actual work of a boiler may be two or three times nominal horse power, as the steam pressure may range from 50 to 150 pounds and the engine consume from 30 to 15 pounds of steam per horse power per hour.

Communications Received.

"Life Guards." By J. J. B.

TO INVENTORS.

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August 14, 1894,

AND EACH HEARING THAT DATE.

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