

may be a lawn mower, a wheelbarrow, a garden cultivator, a rake, etc.

WOODEN STOPPLES.—Randolph F. Radebaugh, Tacoma, Washington. This invention provides a simple, practical and inexpensive process of and apparatus for treating bottle stopples and bungs in a large way, to remove their resinous and gummy matters by means of a strong alkaline solution, they being then subjected to steam or hot water to remove the alkali, and treated with glycerine to soften and maintain their moist and flexible condition, being finally filled with paraffine or wax to render them impervious to liquids.

BURIAL CASKET HANDLE.—Lyman E. Woodard, Owosso, Mich. Novel hinge joints are provided by this inventor for connection with wooden caskets and wooden escutcheons that are ornamental bases for the arms of drop handles. The joints are adapted to receive the weight strain and transfer it to the clamped connections of the hinges with the walls of the casket, thus avoiding undue pressure on the escutcheons and affording strong and direct connections for the handles with the casket.

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.

The 1895 edition of the annual directory volume published by the Shoe and Leather Reporter has been issued. Great pains are taken to make this one of the most complete of any of the trade directories published, and it covers a very large field, including manufacturers and dealers in boots and shoes, leather, findings, harness, hides, wool, furs, machinery, and about all the commodities pertaining to the shoe and leather industry in the United States and Canada, besides names of leading houses in the trade in other parts of the world. The volume has over 700 pages, and the first fifty pages are allotted to facts and statistics of special importance from a trade point of view.

SCIENTIFIC AMERICAN BUILDING EDITION.

MARCH, 1895.—(No. 113.)

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- 1. Elegant plate in colors showing a cottage at Mount Vernon, N. Y., three perspective elevations and floor plans. Mr. H. R. Rapelye, architect, Mount Vernon, N. Y. An attractive design.
2. "The Gables," a half timbered cottage recently completed at Glen Ridge, N. J. Perspective elevation and floor plan. Mr. Charles E. Miller, architect, New York City.
3. A cottage at Great Diamond Island, Me., recently erected for H. M. Bailey, Esq., two perspective elevations and floor plans. A unique design for an island cottage. Mr. Jno. C. Stevens, architect, Portland, Me.
4. A dwelling at Armour Villa Park, N. Y., recently erected for J. E. Kent, Esq., at a cost of \$5,200 complete, two perspective elevations and floor plans. A very picturesque design.
5. A colonial cottage at New Rochelle, N. Y., recently erected for C. W. Howland, Esq., two perspective elevations and floor plans. Mr. G. K. Thompson, architect, New York City. A unique example of a modern dwelling.
6. The residence of Charles N. Marvin, Esq., at Montclair, N. J. A design successfully treated in the Flemish style. Two perspective elevations and floor plans. Mr. A. V. Porter, architect, Brooklyn, N. Y.
7. A fine Colonial house at Elizabeth, N. J., recently completed for Henry A. Haines, Esq. Perspective elevation and floor plans. Architects, Messrs. Child & De Goll, New York City.
8. A residence at Flatbush, L. I., recently erected for C. H. Wheeler, Esq., at a cost of \$11,000 complete. Two perspective elevations and floor plans. Architect, Mr. J. G. Richardson, Flatbush, L. I. An attractive design.
9. A cottage at Plainfield, N. J., erected for Chas. H. Lyman, Esq., at a cost of \$5,000 complete. Two perspective elevations and floor plans. Architect, Mr. W. H. Clum, Plainfield, N. J. A picturesque design.
10. An elegant house at Scranton, Pa., erected at a cost of \$15,000 complete. Two perspective elevations and floor plans. Architect, Mr. E. G. W. Dietrich, New York City.
11. Engraving showing the new building of "The Bank for Savings," recently erected on 22d Street, New York City. Mr. C. L. W. Eidlitz, architect, New York City.
12. Foundation piers of the American Surety Company's building, New York City. Four illustrations, showing the most advanced methods of caisson construction for city buildings.
13. Miscellaneous contents.—An automatic gas saving governor, illustrated.—Heating a residence with open grates, illustrated.—Arranging effective interior, illustrated.

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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.

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(6453) D. R. asks: 1. Can the field magnets of the motor described in "Experimental Science" be made of cast iron and wound with No. 16 wire, the same as if made of Russian iron? A. Yes. 2. I have the armature of the motor completed, but find that it will not rest in any position; how may I fix it? A. Possibly you can balance it by lead. It may not be sufficiently out of balance to do any harm. 3. If the motor were used as a dynamo, how many volts and amperes would it develop, and if run as a motor how many volts are required to run it, battery power? A. It is not adapted for use as a dynamo. It runs with about 7 volts and 5 to 10 amperes. 4. What acid or acids are used in a copper plating bath to give the bright effect, using blue vitriol? A. Various baths are used; the practice is often adopted of removing the partly plated articles and scratch-brushing, and then replacing in the bath. No bright copper bath is given in the manuals.

(6454) R. L. H. asks: 1. Will you please tell me which of the following conditions determine the number of volts and which the number of amperes generated in dynamo: a. The weight of iron in the field magnet. b. The number of turns of wire on field magnet. c. The number of turns of wire on armature. d. Size of wire used. e. The speed at which the dynamo is run. A. A definite division cannot be made. In general a and d are ampereage dimensions, and the others are voltage dimensions; but all are interconnected. 2. Will old iron that is slightly rusty do as well for the field magnet of a small dynamo as new? A. Yes, except that the rust unless shellacked or removed invites and produces further corrosion of parts. 3. How can I convert the dynamo in SUPPLEMENT, No. 161, into a machine generating a large quantity but of low E. M. F.? What is the quantity and E. M. F. thus obtained? A. Wind with wire of larger diameter. We advise you not to attempt it. We have no data on the subject. 4. What kind of cotton thread is suitable for insulating magnet wire? A. Any kind will answer. 5. Why is shellac used on the coils of electrical apparatus? A. To protect from moisture. 6. Supposing two bars of iron, each one foot long and wrapped with the same number of turns of wire, the first being 1 inch thick and the second 2 inches, which would be the stronger magnet? A. Other things being equal, the thick one will be far the stronger.

(6455) C. R. S. writes: I have six Leclanche cells of battery for ringing door bells and lighting gas; they don't work any more. I broke one open, found what appeared to be gray iron and carbon chip. What is the material, and can I wash it and use it over again, or will soaking a few days in hot water and then drying them again do any good? A. You cannot. By pouring a strong solution of potassium permanganate into the porous cup without emptying it you may effect an improvement. The best plan is to get new cups. They are charged with manganese binoxide and carbon or graphite.

(6456) J. N. M. asks: 1. If soft annealed steel wire will work as the core of the armature of the motor described in No. 641. A. It is almost impossible to get iron wire here, as steel has taken its place in the

manufacture of tube, plate, and wire work. 2. Will a laminated core of No. 16 sheet of the dimensions of the wire core answer as well as the wire? A. We answer both questions affirmatively—use the steel wire or the laminated sheet armature.

(6457) W. W. writes: I wish to put an eight or ten 16 candle power dynamo in a room 40 feet long; would it have any effect on watch movements in the same room, but at the opposite end, some 20 feet from dynamo? What size wire would it require for 100 light dynamo, 16 candle power each, to make a circuit of about five or six hundred yards? Also what horse power engine would it require to run the 100 light incandescent dynamo? A. Our best advice to you is not to put the dynamo in the same room with your watch movements. For one hundred 16 candle power 110 volt lamps use No. 5 wire for original leads, reducing in size as lamps are taken off it. Allow 10 horse power to run it.

(6458) B. F. asks: 1. In winding the secondary wire of an induction coil in sections how thick should the sections be? A. The thinner the better, half an inch is very good practice. 2. How thick should the rubber washers be to insulate the sections. The coil is to be 8 inches long, with 3/8 inch core. A. 1/8 to 1/4 inch. 3. Have you any publication of the SCIENTIFIC AMERICAN or SUPPLEMENT in which induction coils are described? I have SUPPLEMENT, Nos. 160 and 229. A. See our SUPPLEMENT, Nos. 74, 166, and SCIENTIFIC AMERICAN, Nos. 10 and 14, vol. 66. We have no special information as to the battery named.

(6459) F. A. R. asks: By what preparation or means may I electrically insulate the surface of copper by a thin coating of some kind, like a varnish or oxide, so as to resist the passage of a current of about 15 amperes, and that will stand a heat of about 1000° C. without melting or being dissociated, or lessening its insulating quality materially? A. You must have the copper enameled. This will effect the object if the enamel is of high enough melting point. There will be trouble in getting such.

(6460) A. L. H. asks the reason for having and the action of the permanent magnet in alternating current bells, polarized bells. A. If the armature were not polarized, both ends would be equally attracted, whatever the direction of the current might be. By polarizing the armature so that both ends are of one polarity and the center is of opposite polarity each end is attracted by a pole respectively or is repelled thereby according to the direction of the current. This gives the rocking motion with an alternating current, which causes the ringing. See Poole's "Telephone Handbook," \$1 by mail.

(6461) Bristle-tail or Silver Fish.—Mr. H. M. Webster, of Providence, R. I., inquires about a little creature called in that neighborhood the "slic," about 1/2 inch in length, which runs like "a streak." He finds them in different parts of his house, especially in the bath tub. He also inquires whether they originated from some hickory or white oak which has been stored in the cellar for some three years. He mentions also that his house is always warm and dry. The animal is undoubtedly one of the bristle-tails or silver fish, and, in all probability, Lepisma saccharina, which is very commonly found on book bindings and in clothing, though it also sometimes injures silks and other fabrics. This particular species is almost uniformly silvery gray in color. Lepisma domestica is a white, hairy species, spotted with black, and is more often found in dry places, and this may be the species your correspondent alludes to. Both these agile creatures have long setiform antennae, six legs near the anterior portion of the body, and three long anal stylets. The use of pyrethrum powder, if fresh, will be the most effective means of repelling these insects. They have no particular connection with the wood stored in the cellar, and do no harm beyond that already mentioned.—Answered by Professor C. V. Riley.

(6462) C. S. asks: 1. Is rain water filtered through 4 inch brick wall (as in ordinary cistern construction) quite fit for drinking purposes? Is it as good as "hard" driven well water? Also, describe simple tests for hardness of water. A. Such rain water should be perfectly good, and probably safer than well water. Test for hardness with soap, seeing how much of a standard solution of soap in rain water has to be added to the sample to produce a lather. 2. Does typhoid fever always result from germs in drinking water, and can germs be filtered out or destroyed by distillation? A. Not necessarily; distillation would make the water safe. 3. Does electricity cure rheumatism, and if so, is it by dissolving crystallized uric acid, which accumulates at the seat of pain, and in this case what becomes of the acid? Will it not appear again elsewhere, and perhaps cause other more serious trouble? A. Any cure effected we would attribute to action on the nervous system. You take too much for granted in your statement of cause. 4. Is ordinary arc lamp carbon at all good for telephone purposes? A. Yes. 5. Could I carbonize hard coal (anthracite) by bringing it to a white heat in a closed vessel, and must it be packed in charcoal during process? A. It would have little effect on it. It should be protected from the air during the process. The charcoal is not necessary if this is done. 6. What determines the ampere hour capacity of storage batteries? A. Trial and experiment. 7. Have you SUPPLEMENTS on "Zinc Plating by the Dipping Process, on a Commercial Scale"? If not, can you furnish book on the subject, and what price? Also have you SUPPLEMENTS or book on "Simple Yet Efficient Alternating Motor Construction"? A. For articles on galvanizing, see SUPPLEMENT, Nos. 265, 833, 851, 911, 912, and 994. Articles on alternating current, motors, 601, 692, 717, 763 and 944.

(6463) T. F. C. asks: 1. Why does not a gravity battery polarize? A. Because the negative plate has no hydrogen set free on its surface. Copper is deposited there, and this is its own material. 2. What is the chemistry of bread making? A. The sugar of the mixture undergoes vinous fermentation, and the carbon dioxide set free makes the bread light. 3. What reactions take place in the explosion of gunpowder? A. They are very complicated. In general the carbon is oxidized to carbon dioxide and the sulphur to sulphur oxides at the expense of the oxygen of the potassium nitrate. 4. How is the weight of a lever eliminated? A. By making both sides of equal moment.

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INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

March 19, 1895,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing various inventions and their patent numbers, including items like Accumulator plate, Air brake, Bicycle, and various mechanical devices.