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 of 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.)

TABLE OF CONTENTS.

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 persective 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.

The Scientific American Building 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.

The Fullness, Richness, Cheapness, and Convenience of this work have won for it the LARGEST CIRCULATION of any Architectural Publication in the world. Sold by all newsdealers. MUNN & CO., PUBLISHERS, 361 Broadway, New York.

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.

Try us for manufacturing your wire or sheet metal specialties. The Enterprise Mfg. Co., Akron, Ohio.

For mining engines. J. S. Mundy, Newark, N. J.

"U. S." metal polish. Indianapolis. Samples free.

Presses & Dies. Ferracute Mach. Co., Bridgeton. N. J.

Handle & Spoke Mchy. Ober Lathe Co., Chagrin Falls. O.

Wood pulp machinery. Trevor Mfg. Co., Lockport, N. Y.

J. T. Crowe, Truro, N. S., wants circulars of pump boring machinery.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York.

Centrifugal Pumps. Capacity, 100 to 40,000 gals. per minute. All sizes in stock. Irvin Van Wie, Syracuse, N. Y.

Emerson, Smith & Co., Ltd., Beaver Falls, Pa., will send Sawyer's Hand Book on Circulars and Band Saws free to any address.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, $4; Munn & Co., publishers, 36 Broadway, N. Y.

For the original Bogardus Universal Eccentric Mill Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 36 Rodney St., Brooklyn, N. Y.

Competent persons who desire agencies for a new popular book, of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office, 361 Broadway, New York.

☞ Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

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.
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.

(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 ⅞ inch core. A. 1/16 to ⅛ 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) Bristletail or Silver Fish.—Mr. H. M. Webster, of Providence, R. I., inquires about a little creature called in that neighborhood the "slick," about ½ 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 bristletails 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 antennæ, 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, d scribe 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.

TO INVENTORS.

An experience of nearly fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for terms, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

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.]

Accumulator plate, G. R. Blot 535,885
Acid, process of and apparatus for making sulphuric, E. J. Barbier 535,882
Air brake, A. P. Massey 535,844
Air brak, car, J. S. Trott 536,002
Air brake coupling, L. Sennett 536,000
Air ships, means for propelling, guiding, and controlling, D. C. Funcheon 536,174
Alarm. See Vehicle alarm.
Ammunition hoist, Noble & Brankston 536,154
Awning, T. & W. H. Coldwell 536,131
Awning operating device, G. T. Thompson 536,873
Axle lubricator, vehicle, H. B. Eareckson 536,072
Baling press, S. M. Neely 536,093
Band tightener, D. L. Croft 536,814
Bath tub, A. G. Ward 536,110
Beds, base for reversible folding, G. Brand 535,886
Beds, detachable foot rest and table for, C. Donald 535,945
Bedstead brace, W. S. Payne 535,854
Belt tightener, A. E. Price 536,042
Bicycle handle bar, G. K. Kelsea 535,989
Bicycle saddle, W. B. Buckley 536,013
Bicycle shoe, C. L. Cushman 535,816
Bicycle support, J. R. Crunkleton 536,133
Bicycle wheel, wood rimmed, Levedahl & Webb 536,089
Binders, endless conveyer device for automatic self, C. Whitney 535,875
Binocular, H. A. Sawyer 535,862
Bit. See Check bit.
Bit stock, extensible, Worthington & Wheeler 536,116
Blackboard, composition, G. S. Mayhew 535,916
Blind slat holding device, N. P. Taylor 535,871
Block. See Building block.
Boiler. See Steam boiler.
Boiler, G. A. Anderson 536,058
Boiler dome, steam, W. H. Page 536,041
Boiler safety device, steam, W. Christensen 536,128
Bolster spring, N. L. Holmes 536,904
Bone cutting machine, J. Poulson 535,994
Book holder and advertising device, C. L. Whipple 535,970
Box. See Paper box.
Box machine, M. Eschenbeck 536,021
Box machine safety attachment, A. A. Rheutan 536,044
Boxes, manufacture of sardine or like, E. R. Peltier 535,855
Brake. See Air brake. Car brake. Sleigh brake.
Bridge, draw, N. C. Jessup 535,831
Bridge gate, automatic, W. F. Clausen 536,129
Brooch pin, G. Key 536,833
Buckle, S. Z. Quint 536,043
Building block, S. E. Kierolf 535,908
Burial case, T. C. Natiel 535,955
Butter printing machine, H. Atwood 536,120
Button machines, etc., feeding device for, C. Radcliffe 535,996
Button shell feeding mechanism, Wooster & Stuart 535,972
Cam, A. S. Russell 535,923
Can opener, C. E. Andrews 536,005
Car brake, railway, J. C. Deyerle 536,819
Car brake, railway, I. M. Skillman 535,867
Car, convertible, B. Lowenberg 536,034
Car coupling, J. P. Armstrong 535,881
Car coupling, T. Gaskins 536,075, 536,139
Car coupling, W. L. Gelston 536,028
Car coupling, J. A. Sissom 536,051
Car coupling, C. H. Smith 536,052
Car, open railway, D. K. McLeod 536,039
Car, railway, J. F. Stevenson 535,868
Cars, apparatus for automatically limiting speed of electric, L. S. Wright 536,055
Cars, fluid pressure brake mechanism for railway, B. F. Teal 536,106, 536,107
Cars, steam pipe coupling for heating railway, F. Kementzy, Jr 535,907
Carpet stretcher and jack, H. F. Jackson 536,148
Carriage, cradle, and sled, combined baby, F. H. De Tray 535,943
Cart, road, C. S. & M. A. Gurney 535,986
Cartridge reloading tool, D. A. Ripley 536,045
Case. See Burial case. File case.
Cash register, indicator, recorder, and check printer, T. Carney 536,015
Casing cleaning machine, Kieker & Coger 536,089
Catamenial sack, P. W. Dautrich 535,980
Chain, machine for automatically making wire, C. F. Smith 535,961
Chair. See Reclining chair.
Chart, dress, W. J. Marshall 535,843
Check bit, overdraw, J. Carter 536,068
Chest, provision, C. L. Smith 535,926
Chopper. See Meat and vegetable chopper.
Chute, roller, E. W. Fuller 536,074
Cigarette machine, W. Hughes 536,146
Cleaver, butcher's, F. J. Lowndes 535,839
Clippers, C. Carleton 536,170
Clock, electric programme, F. Frick 535,948
Coal drilling machine, C. S. Sheppard 535,924
Coaster, P. Boyton 535,938
Cock, angle, Cooper & Ferris 535,813
Cock, angle, W. J. Waldron 536,053
Cock, ball, W. H. Rawe 535,922
Comb, E. J. Miller 535,954
Compensator, wire, N. Ratchford 535,921
Composing machines, manufacture of controllers for, F. A. Johnson 536,149
Cone adjustment, F. H. Richards 535,859
Confectionery cooling apparatus, A. Horn 535,830
Cooker, steam feed, H. A. Kuwitzky 535,911
Cooler. See Water cooler.
Cotton, apparatus for handling lint, D. M. Campbell 535,976
Cotton press, C. Howard 536,145
Coupling. See Air brake coupling. Car coupling. Hose coupling. Sprocket wheel coupling. Universal coupling. Whiffletree coupling.
Crumb remover, J. B. O. Shevill 536,050
Cultivator attachment, U. A. Cleveland 536,130
Cultivator disk, J. R. Newton 536,094
Current motor, alternating, Hutin & Leblanc 536,032
Cuspidor, W. J. Shilling, Jr 536,925
Cut-off, automatic, N. Lombard 535,952
Cutter gage, rotary, Snyder & Pitske 536,103
Dental appliance, C. W. Barney 536,007
Dental regulating pliers, E. H. Angle 536,166
Device for assisting infirm persons, A. Eustis 535,825
Door and means for closing same, sliding, Doyen & Didion 535,821
Door lock, sliding, Lubke & Keating 535,915
Drain trap, J. A. Thomas 535,872
Dredging or excavating apparatus, C. W. Hunt 535,951
Drier. See Lumber drier.
Drill. See Rock drill.
Drill for boring metal, Brearley & Overend 535,939
Dyeing apparatus, A. Hinze 535,902
Dynamometer, B. F. Perkins 535,856
Egg beater, J. V. Ebel 536,136
Electric appliances, protective device for, J. J. O'Connell 536,095
Electric conductors, tip for flexible, C. H. McEvoy 536,153
Electric lights, etc., cord adjuster for, M. B. Hood 536,031
Electromagnetic signal, T. Spencer 536,104
Elevator apparatus, W. J. Greenhough 536,142
Elevator controller and door lock, T. F. Scott 536,863
Elevator gate, C. F. Sullivan 536,001
Elevator operating mechanism, E. M. Fraser 535,946
End gate, wagon, H. Steeck 536,161
Engine. See Gas engine. Petroleum or oil engine. Rotary engine. Steam engine.
Engine driving gear, road, H. H. Blake 535,937

© 1895 SCIENTIFIC AMERICAN, INC.