

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.)

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 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.

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

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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 ampere 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 dioxide 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: Accumulator plate, G. R. Blot (535,885); Acid process and apparatus for making sulphuric acid, E. J. Barber (535,882); Air brake, A. F. Massey (535,844); Air brake, J. S. Trotter (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 belt, Noble & Brankston (536,154); Awning, T. & W. H. Caldwell (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); Bathtub, 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 (536,842); Bicycle handle, G. K. Reiss (535,989); Bicycle saddle, W. B. Buckley (536,013); Bicycle shoe, C. L. Cushman (535,816); Bicycle support, J. R. Crankleton (536,153); Bicycle wheel, wood rimmed, Ledwith & Webb (536,069); Binders, endless conveyor device for automatic sell, C. Whitney (535,875); Binocular, H. A. Sawyer (536,862); Bit, See Check bit; Bit stock, extensible, Worthington & Wheeler (536,116); Blackboard, composition, G. S. Mayhew (535,916); Blind slot 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, Holm, W. Christensen (536,128); Boiler spring, N. L. Stearns (535,916); Bone cutting machine, J. Ponce or like, E. R. Peetier (535,904); 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. Whetton (536,044); Boxes, manufacture of same or like, E. R. Peetier (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 (535,988); Burial case, T. C. Native (535,955); Butter printing machine, H. Atwood (536,120); Button machines, etc., feeding device for, C. Radtke (536,076); Button shell feeding mechanism, Wooster & Stuart (535,972); Cam, A. S. Russell (535,923); Cam opener, C. E. Andrews (536,006); Car brake, railway, J. C. Doyere (536,049); Car brake, railway, C. L. Smith (535,867); Car, convertible, B. Loewenber (535,884); Car coupling, J. P. Armstrong (536,031); Car coupling, T. Gaskins (536,075); Car coupling, W. L. Gelston (536,139); Car coupling, J. A. Sisson (536,028); Car coupling, C. L. Smith (536,052); Car, open railway, D. K. McLeod (536,039); Car, railway, J. F. Stevenson (535,888); Cars, apparatus for automatically limiting speed of electric, L. S. Wright (536,055); Cars, fluid pressure brake mechanism for railway, E. F. Taylor (536,167); Cars, steam pipe coupling for heating railway, F. Kementz, Jr. (535,907); Carpet stretcher and jack, H. F. Jackson (536,148); Carriage, cradle, and sled, combined baby, F. H. DeTray (535,943); Cart, road, C. E. M. A. Gardner (535,966); 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, Giesler & Coher (535,989); Catamaran, C. W. Dautrich (535,890); 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. S. 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 (535,178); Clock, electric, F. 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. M. Ward (535,954); Compensator, wire, N. Hatchford (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 (535,890); Cooker, steam, H. A. Kuwityk (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, Sprcket 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 (536,052); Cuspider, W. J. Shilling, Jr. (536,825); Cut-off, automatic, N. Lombard (535,952); Cutter, rotary, Snyder & Pitske (536,103); Dental appliance, C. W. Barney (536,007); Dental regulating pliers, E. H. Angle (535,166); Device for assisting infirm persons, A. Eustis (536,825); Door and means for closings same, sliding, Doyer & Dieder (535,821); Door lock, sliding, Lubbe & Keating (535,915); Drain trap, J. A. Thomas (536,872); 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 (535,942); Dynamometer, B. F. Perkins (535,856); Egg beater, J. V. Ebel (536,136); Electric appliances, protective device for, J. H. O'Connell (536,005); Electric coupling, tip for flexible C. C. McEvoy (536,153); Electric lights, etc., cord adjuster for, M. B. Hood (536,031); Electromagnetic signal, T. Spencer (536,104); Elevator apparatus, W. J. Greenhouse (536,142); Elevator controller and door lock, T. P. Scott (536,583); Elevator gate, C. F. Sullivan (536,001); Elevator operating mechanism, E. M. Fraser (535,946); End gate, wag on, H. Steck (536,161); Engine, See Gas engine, Petroleum or oil engine, Rotary engine, Steam engine; Engine driving gear, road, H. H. Blake (535,937)

Engine indicators, reducing wheel for steam, J. S. Calkins..... 535,811

Envelope, safety coin, G. J. Edwards..... 536,138

Exhibitor, coin-controlled surface, V. P. De Kmit (G. J. Griffith)..... 11,478

Extractor. See Spoke extractor.

Fastening device, covered, C. E. Van Norman..... 536,164

Feedwater heater, internal, D. A. Quiggin..... 536,177

Felly expander, A. B. Arnold..... 536,182

Fence stay, wire, B. Hillmer..... 535,985

Fence, wire, E. J. Griffin..... 536,061

Fence wire twisting machine, W. S. Barker..... 536,060

Fences, metallic stay for wire, M. H. Baer..... 536,098

File case and desk, combined, W. H. Roberts..... 536,049

File, letter and bill, E. Seybold..... 536,517

Filter, water, R. R. & C. B. Darling..... 536,088

Fire escape, J. E. Thon..... 535,958

Fireproof ceiling and floor, G. Sandblom..... 535,823

Fireproof furring and partition or wall, B. E. J. Ellis..... 535,857

Fireproof partition or wall, N. Poulson..... 535,848

Flood gate, W. Moon..... 535,888

Floor construction, P. M. Bruner..... 536,150

Flushing tank, F. C. Keller..... 535,802

Folder machine, A. F. Davis..... 536,037

Folder and puncher, F. C. Mehnert..... 535,845

Folding knife, F. C. Melchior..... 536,085

Form, dispenser, W. H. Knapp..... 535,934

Fuel, G. J. A. Ham..... 535,849

Fumigator, O. P. McDonald..... 535,973

Furnace grate, J. D. Wright..... 536,097

Furnaces, means for removing dust, ashes, or heat from, R. C. Reading..... 536,151

Furnaces, valve gear for regenerative, Kernan & Yule..... 535,801

Gage. See Cutter gage.

Game counter, E. Tobin..... 535,815

Garment hook, J. C. Cramp..... 536,078

Gas, apparatus for manufacture of, G. W. Harris..... 536,108

Gas controller, J. T. Thon..... 535,815

Gas engine, Crouch & Pierce..... 536,029

Gas engine, E. R. Gill..... 535,964

Gas engine, H. Swain..... 535,988

Gas, manufacture of, G. H. Harvey..... 535,944

Gas, process of and apparatus for producing and liquefying acetylene, Dickerson & Suckert..... 536,058

Gate. See Bridge gate. Elevator gate. End gate. Flood gate. Lever opening gate.

Gear, compensating, G. A. Anderson..... 535,866

Generator with instantaneous vaporization, L. Serpillet..... 535,866

Governor, steam engine, J. V. Ebel..... 535,837

Governor, stop motion, R. H. Rice..... 535,156

Grain unloading apparatus, A. & R. Cowan..... 535,979

Grate, H. J. Schneider..... 535,158

Grate, agitator, J. H. Goodfellow..... 535,984

Grease trap, Henderson..... 535,901

Grinding machine, H. A. Hayward..... 535,949

Grinding machine, apple or other fruit, H. Schnack..... 536,047

Grubber, sage brush, D. Anderson, Jr..... 535,808

Gun carriages, pneumatic recoil check for, H. A. Spiller..... 535,928

Harness trimming, C. A. White..... 536,113

Harvester, bear, Crossman & Fowler..... 536,132

Hat, crush, O. R. Langhammer..... 535,912

Hauling apparatus, J. H. Bellamy..... 535,884

Heater. See Feedwater heater.

Heel nailing jack, J. H. Hume..... 536,143

Heel nailing machine, J. F. Hines..... 536,079

Heel trimming machine, C. Shaud..... 535,959

Hinge, J. V. Brown..... 536,125

Hoist, worm, J. C. Kreps..... 536,087

Hoisting and conveying apparatus, P. M. Barrett..... 536,122

Hook. See Garment hook.

Hooks for supporting goods in show windows, chain of, W. T. Burns..... 535,989

Horse power, G. W. Ricker..... 535,860

Hose coupling, G. A. Anderson..... 535,880

Hose coupling, H. G. Deane..... 535,931

Hydrant, J. C. Kupferle..... 535,910

Index, A. E. Dewiler..... 535,818

Induction coil, A. F. W. Meyer..... 535,917

Ink well, J. Black..... 536,066

King..... 535,971

Insulated trough section and crossover, Wood & King..... 536,082

Iron into malleable iron or steel, converting cast, Hufty & Caldwell..... 536,083

Iron into steel, converting cast, Hufty & Caldwell..... 536,083

Jack. See Heel nailing jack. Lifting jack.

Journal shaft, W. Scholfield..... 536,048

Keyed wind instrument, W. Anthony..... 535,807

Kitchen cabinet, J. B. Cline..... 535,977

Knife. See Folding knife.

Labeling bottles, apparatus for automatically, G. Lehmann et al..... 535,997

Laces with wire tips, machine for providing, S. Pratt..... 535,957

Lacing book setting machine, I. E. Chandler..... 536,101

Ladle, F. A. Rundle..... 535,840

Lamp, electric arc, G. R. MacIntire..... 535,840

Lamp, incandescent electric, W. S. Lowe..... 535,838

Leather, machine for, W. Johnson..... 535,906

Lens for optical purposes, Goetz & Von Hoegh..... 535,897

Lever opening gate, W. Smith..... 535,962

Lifter. See Pan lifter.

Lifting jack, M. P. Holmes..... 535,803

Lock. See E. Denier.

Loom harness operating mechanism, J. T. Bolton..... 536,010

Loom shuttle box mount, W. Watie..... 535,989

Lubricator. See A xle lubricator.

Lubricator, L. F. Longmore..... 535,836

Lubricator, J. Medway..... 535,853

Lumber drier, V. L. Emerson..... 535,981

Mail marking machine, E. H. Waite..... 535,983

Manhole cover, J. Stuart..... 535,929

Match, H. P. Feister..... 535,893

Meat or vegetable chopper, J. C. Bullock..... 536,014

Milk purifying apparatus, W. A. Clark..... 535,890

Mill. See Pulverizing mill. Windmill.

Window train, D. Tufts..... 535,906

Moulding device, C. J. Lewis..... 535,835

Motion, device for equalizing reciprocating, C. P. H. Gzoon..... 535,827

Motor. See Current motor. Wave motor.

Mowers, reel adjusting for lawn, R. Brown..... 536,126

Musical instruments, dynamometer for mechanical, M. Lochmann..... 536,091

Necktie frame, G. W. Ritz..... 536,157

Nippers, police, L. Brown..... 536,087

Nut and screw tightening machine, F. P. Bruner..... 536,012

Nut lock, M. Albert..... 536,118

Nut lock, H. B. Bareksson..... 536,073

Nut lock, H. Hagon..... 535,828

Nut lock, H. E. Lantz..... 535,913

Nut lock, L. I. Schenker..... 536,102

Oblongating nerves, method of and apparatus for, H. Horton, Jr. & Jones..... 535,905

Oil, purifying, F. N. Turney..... 535,847

Pail, dinner, L. A. Mertz..... 536,003

Pan lifter, A. Volkenrath..... 536,004

Paper box, F. P. Birley..... 536,065

Paper box, folding, A. S. Stiefel..... 536,065

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Petroleum or oil engine, List & Kosakoff..... 536,030

Pheneticin, substitution products of, J. F. Von Mering..... 535,846

Photographic curtain shutter, W. Oehmke..... 535,850

Pianos, stringing, C. S. Weber..... 536,111

Picture mats with square or rectangular holes, apparatus for providing, M. E. Childs..... 536,016

Pill or tablet, P. J. Noyes..... 536,155

Pin. See Brooch pin.

Pipe and lining same, W. T. Ruete..... 536,998

Plaster, corn, J. Coffey..... 535,941

Plastic material, making applique work from, A. H. Freiberg..... 536,152

Plating aluminum, W. H. Legate..... 535,824

Pneumatic signal, W. P. Elliott..... 535,824

Power. See Horse power.

Press. See Baling press. Cotton press. Seal press.

Pulverizing mill, C. R. Western..... 536,112

Pump, force and lift, E. Brookway..... 536,12

Pump, measuring, Gee & Wilkinson..... 535,826

Punching machine, B. F. Hall..... 535,888

Puzzle, E. E. Denier..... 536,018

Rail fastener, guard, G. L. Cummins..... 536,134

Railway, closed conduit electric, J. F. McLaughlin..... 535,933

Railway conductors, collapsible conduit for electric, H. C. Grant..... 536,076

Railway, conduit electric, Bergh & Tarbox..... 536,076

Railway signal, J. R. Jones..... 536,033

Railway switch, J. B. Matter..... 535,992

Railway tie plate, J. T. Stewart..... 535,963

Reaping or mowing machine, G. Beekman..... 535,883

Reclining chair, G. F. Sargent..... 535,959

Recorder. See Sales recorder.

Reel for reeling metallic strips, T. V. Allis..... 535,974

Register. See Cash register.

Rein holder, harness, E. Yates..... 535,875

Rock drill, W. H. Dixon..... 536,172

Rotary engine, C. H. Beeler, Jr..... 536,008

Rotary engine, C. B. Brown..... 536,101

Rudder, vessel, M. V. T. Dubreuil..... 536,070

Sack tie, J. E. Weuser..... 536,024

Saddles, tilt or strap clamp for, C. A. White..... 536,114

Safe protector, G. C. Smith..... 536,175

Sales recorder and cash till, manual, C. T. Hard..... 536,940

Sash blades, C. B. Brown..... 536,140

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Screen. See Window screen.

Scrubber, B. H. Johnson..... 535,832

Seal press, H. H. Johnson..... 535,932

Sewing machine antifriction needle guide, W. H. McLeod..... 535,918

Shade holding device, spring-actuated, E. T. Burrows..... 536,168

Shaper or metal planer, M. Flather..... 536,885

Sheet metal folding machine, T. Smith..... 536,105

Shutter, field-of-view-divider, E. Stowell..... 536,105

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Sign for electric lights, street, Wright & Bradford..... 536,933

Signal. See Electromagnetic signal. Pneumatic signal. Railway signal.

Sink attachment, J. N. Barger..... 536,006

Siphon, steam, Styninger & Schmalz..... 535,894

Slate picker, J. Fern..... 536,096

Sleigh knee, A. Conn..... 536,951

Screw drivers, G. E. Wilson, for applying coloring liquids to sides of shoe, C. J. Dorticus..... 535,820

Spinning machine, S. Thompson..... 535,874

Split wheel, L. S. Bache..... 536,121

Spoke extractor, E. S. Anderson..... 535,835

Spraying apparatus, W. M. Mers..... 536,092

Spring. See Bolster spring. Upholstery spring.

Sprocket wheel coupling, J. E. Worrell..... 536,115

Staircases for dwellings, arrangement of, W. H. Lamson..... 535,834

Stamp canceler, F. B. Hall..... 535,859

Stamp holder and stamp, J. H. Byrnes..... 535,822

State jointing machine, J. Winterbotham..... 535,833

Steam boiler and furnace, O. D. Orvis..... 535,852

Steam distribution system, F. Sargent..... 535,861

Steam engine, double-acting, W. Schmidt..... 535,864

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Straw stacker, G. E. Wilson..... 536,015

Stringed instrument, W. H. Howe..... 536,081

Switch. See Railway switch.

Switch operating device, O. Beaudry..... 536,008

Tag, C. Winkler..... 535,876

Tank. See Flushing tank.

Tanning, process of and apparatus for, S. & G. Durio..... 536,019

Tanning vats, rocking frame for, J. House..... 536,144

Telegraph instruments, spring winding means for printing, J. Barry..... 536,810

Telephones, automatic toll box for, H. C. Root..... 535,999

Telescope's dome, N. M. Lowe..... 535,839

Tennis marker, lawn, T. Lyons..... 536,035

Thrasing machine dust conveyor, W. C. Berkeley..... 535,975

Tie. See Sack tie.

Tie in place, device for holding, B. C. Blanche..... 535,808

Tire, pneumatic, G. H. E. Cooke..... 535,978

Tongue support, wagon, J. F. Dehm..... 536,068

Tool, combination, W. Thompson..... 535,931

Toy, M. B. Fritsche..... 536,886

Trap. See Drain trap. Grease trap. Munnow trap.

Tree holder, C. B. Brown..... 535,887

Trough. See Watering trough.

Tub. See Bath tub.

Tug, thill, W. H. Kable..... 536,084

Typewriting machine, J. M. Fairfield..... 536,022

Typewriting machines, rod connecting device for, J. M. Fairfield..... 536,027

Universal coupling, G. A. Anderson..... 536,057

Upholstery spring, A. E. Beall..... 536,123

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Vehicle running gear, R. Harris..... 535,977

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Vehicle wheel, R. A. Shay..... 535,960

Vessels, construction of, M. V. T. Dubreuil..... 536,071

Wagon, coal, G. B. Marx..... 535,835

Wall paper, manufacture of, P. Groeber..... 536,077

Wall paper trimming machine, J. M. Brady..... 536,011

Washing machine, J. H. Caldwell..... 536,127

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Water closet, A. White..... 535,867

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Water wheel, C. E. Holley..... 535,829

Watering trough, J. S. Woodward..... 536,169

Wave motor, C. L. Caldwell..... 536,169

Wheel. See Bicycle wheel. Split wheel. Vehicle wheel. Water wheel. Wine wheel.

Whiffletree coupling, W. A. Schleicher..... 536,046

Whist, apparatus for playing duplicate, C. M. Paine..... 535,820

Wick trimming device, lamp, Spencer & Lemitte..... 535,927

Wind wheel, D. H. Brown..... 536,080

Windmill, C. R. Norcross..... 535,966

Window screen, self-regulating, W. Thompson..... 535,930

Wool washing machine, H. W. Church..... 536,171

Wrench, C. E. Billings..... 536,093

Wrench, W. H. Carpenter..... 535,812

Wrench, J. C. McQuilkin..... 536,040

Wrench, A. L. Winge..... 536,185

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