

Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line.

Safety Boilers. See Harrison Boiler Works adv., p. 252. Gould & Eberhardt's Machinists' Tools. See adv., p. 252.

Wanted—Patents and Specialties to sell. Special advantages offered. S. M. Thompson, Providence, R. I.

Ladies who would combine beauty and comfort in dressing the feet, should use the German Corn Remover.

Fine Taps and Dies in Cases for Jewelers, Dentists, Amateurs. The Pratt & Whitney Co., Hartford, Conn.

Inventors sending a three cent stamp to Inventors' Institute, Cooper Union, New York city, will receive a copy of the Industrial News free.

There is no Cider Press now in use that produces such satisfactory results as Messrs. Boomer & Beschert's. It is built on scientific principles, and is indorsed by every one who has examined them.

Capital wanted to manufacture a high speed, first-class Automatic Cut-off Engine. Patented, and indorsed by the highest mechanical authority.

Situation wanted in a manufacturing or business house by a young man of 22; good address and some business experience.

Avoid the expense and evils attending the use of compounds in your boiler. Remove the sediment contained in feed water at small cost by Hotchkiss' Mechanical Boiler Cleaner.

Good Machinists and Vice Hands wanted. Address Watertown Steam Engine Company, Watertown, N. Y.

Sufferers from corns will find sure relief in German Corn Remover. Sold by all druggists. 25 cts.

Rock Drill, with Hose and Portable Boiler. Machinery Exchange, 261 N. 3d St., Philadelphia, Pa.

Engines and Boilers: 16 x 48, 15 x 30, 13 x 30 inch Horizontal; 16 x 28 Upright Engines; 30, 40, and 80 H. P. Locomotive Boilers; 20 to 45 H. P. Horizontal Tubular Boilers. Second-hand, but guaranteed in good order.

The Eureka Mower cuts a six foot swath easier than a side cut mower cuts four feet, and leaves the cut grass standing light and loose, curing in half the time.

Eclipse Fan Blower and Exhauster. See adv., p. 250.

The Newell Universal Mill Co., Office 7 Cortlandt St., New York, are manufacturers of the Newell Universal Grinder for crushing ores and grinding phosphates, bone, plaster, dye woods, and all gummy and sticky substances.

Blake "Lion and Eagle" Imp'd Crusher. See p. 221.

Ten Double-acting Presses, 8 single-acting Presses, 127 Foot Presses, for sale by The George Place Machinery Agency, 121 Chambers St., N. Y.

L. Martin & Co., manufacturers of Lampblack and Pulp Mortar-black, 236 Walnut St., Philadelphia, Pa.

Send to John D. Leveridge, 3 Cortlandt St., New York, for illustrated catalogue, mailed free, of all kinds of Scroll Saws and Supplies, Electric Lighters, Tyson's Steam Engines, Telephones, Novelties, etc.

Pure Oak Leather Belting. C. W. Army & Son, Manufacturers, Philadelphia. Correspondence solicited.

Jenkins' Patent Valves and Packing "The Standard." Jenkins Bros., Proprietors, 11 Dey St., New York.

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

Wood-Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O.

The "1880" Lace Cutter by mail for 50 cts.; discount to the trade. Sterling Elliott, 362 Dover St., Boston, Mass.

Exports in Patent Causes and Mechanical Counsel. Park Benjamin & Bro., 50 Astor House, New York.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Vocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

Wren's Patent Grate Bar. See adv. page 237.

Power, Foot, and Hand Presses for Metal Workers. Lowest prices. Peerless Punch & Shear Co., 52 Dey St., N. Y.

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsburg, Pa.

Best Oak Tanned Leather Belting Wm. E. Forrepaugh, Jr. & Bros., 381 Jefferson St., Philadelphia, Pa.

For Light Machinists' Tools, etc., see Reed's adv., p. 221.

Stave, Barrel, Keg, and Hoghead Machinery a specialty, by E. & B. Holmes, Buffalo, N. Y.

4 to 40 H. P. Steam Engines. See adv. p. 221.

Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

Rollstone Mac. Co.'s Wood Working Machinery adv. p. 337.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, importers Viennalime, crocus, etc. Condit, Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 237.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 205.

Peck's Patent Drop Press. See adv., page 236.

Clark Rubber Wheels adv. See page 236.

Elevators, Freight and Passenger Shafting, Pulleys and Hangers. L. S. Graves & Son, Rochester, N. Y.

Long & Allstatter Co.'s Power Punch See adv., p. 220.

Saw Mill Machinery. Stearns Mfg. Co. See p. 237.

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Biss, Brooklyn, N. Y.

Saunders' Pipe Cutting Threading Mach. See p. 237.

For Machinists' Tools, see Whitcomb's adv., p. 237.

Wiley & Russell M'fg Co. See adv., p. 204. The American Electric Co., Prop'rts Mfrs of Thompson Houston System of Electric Lighting the Arc Type. See Bentel, Mergendant & Co.'s adv., page 253.

Clark & Heald Machine Co. See adv., p. 206. For the Cheapest Process of Manufacturing Bricks, see Chambers Bros. & Co.'s adv., page 254.

Cope & Maxwell M'fg Co.'s Pump adv., page 252. Diamond Engineer, J. Dickinson, 64 Nassau St., N. Y.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

50,000 Sawyers wanted. Your full address for Emerson's Hand Book of Saws (free). Over 100 illustrations and pages of valuable information.

Peerless Colors—For coloring mortar. French, Richards & Co., 410 Callowhill St., Philadelphia, Pa.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's adv. p. 252. See Special Bolt Forging Machine Notice, page 268.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 253.

For the manufacture of metallic shells, cups, ferrules, blanks, and any and all kinds of small press and stamped work in copper, brass, zinc, iron, or tin, address C. J. Godfrey & Son, Union City, Conn.

Akron Rubber Works, Akron, O., Manufacturers of Mechanical Rubber Goods.

Gear Wheels for Models (list free); Models, Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Philadelphia, Pa.

For Heavy Punches, etc., see illustrated advertisement of Little & Jones, on page 253.

Comb'd Punch & Shears; Universal Lathe Chucks. Lambertville Iron Works, Lambertville, N. J. See ad. p. 253.

Reed's Sectional Covering for steam surfaces; any one can apply it; can be removed and replaced without injury. J. A. Locke, & Son, 40 Cortlandt St., N. Y.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co., Box 423, Pottsville, Pa. See p. 252.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blin't Machinery, Send for catalogue to Rowley & Hernance, Williamsport, Pa.

Rowland's Vertical Engine. Wearing parts of steel, Broad bearings. F. C. & A. E. Rowland, New Haven, Conn.

The only economical and practical Gas Engine in the market is the new "Otto" Silent, built by Schleicher, Schumm & Co., Philadelphia, Pa. Send for circular.

Tyson Vase Engine, small motor, 1-33 H. P.; efficient and non-explosive; price \$50. See illus. adv., page 252.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 252. Totten & Co., Pittsburg.

Use Vacuum Oil Co.'s Lubricating Oil, Rochester, N. Y. For Thrashing Machines, Engines, and Horse Powers, see illus. adv. of G. Westinghouse & Co., page 253.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) G. C. asks how to restore to its original brilliancy glass or crystal ware that has been stained by sea water. A. There are two ways to accomplish this: one is to slowly heat the glassware to low redness in a muffle or seggar furnace, and then let it cool down very slowly. It requires nice manipulation, and is expensive.

(2) S. Bros. ask: 1. What quantity of lime is taken to proportion of stearine (ordinary article) to produce stearate of lime? 2. What quantity of sulphuric acid to stearate of lime to produce stearic acid (the good quality of stearine harder than the ordinary and more glossy oil)?

(3) E. N. T. asks: 1. How many cubic feet per minute of steam at 60 lb. pressure will flow from a nozzle, 1/4 inch bore and 3/4 inch long, to where it widens out to 1/2 inch diameter? 2. How many pounds of coal per hour will be required to generate the steam used? 3. Twenty-six to twenty-eight pounds.

(13) C. A. P. writes: I have some graduated paper circles cemented to iron disks. With what shall I varnish them that they may stand the weather, without making them transparent or difficult to read?

(3) J. H. asks: 1. What will keep glue in a liquid state continually without injuring its adhesiveness? 2. Heat the pure glue solution for about 12 hours in a Papin's digester at 300° Fah. The glue will remain liquid on cooling.

(4) E. E. P. asks: How do you cut, or how do you prepare isinglass to be used as a varnish? 2. Icinglass—fish glue—dissolves in hot water or in hot dilute wine spirit. Mica—sometimes improperly called isinglass—cannot be dissolved so as to be used as a varnish.

(5) S. P. Co. write: We are desirous of obtaining the recipe for japanning castings a goods of our manufacture. We have used coal tar and also asphaltum, but it does not leave the gloss and finish which we notice on Eastern castings and malleables which come to this coast.

(6) F. A. R. writes: 1. In SCIENTIFIC AMERICAN SUPPLEMENT, No. 143, page 2276, an article written by Thomas Boias, Esq., F. C. S., upon "Printing Surfaces and Pictures by Photography," in the last line of second column he says: "Next I put some thick gum water on the stone," etc.

(7) P. N. asks: 1. How are rubber stamps or type made? 2. Why is it that melted lead will not take the form of letters taken in plaster of Paris? 3. The lead does not seem to reach the bottom of the cast. Why is it? 4. The metal chills too quickly. It is necessary to heat the mould. Try type metal instead of lead.

(8) A. H. M. asks: Is there a substitute for alcohol to be mixed with whiting to keep it from freezing instead of using clean water—something that will do to clean windows and glassware with? Alcohol is too costly and evaporates too quickly.

(9) W. G. asks for the process of removing the gloss from diagonal cloth, caused by wear. A. Brushing over with the following preparation will in some cases revive the appearance: Extract of logwood, 1 oz.; sulphate of iron, 3/8 oz.; hot water, 1 pint.

(10) J. J. H. asks: What kind of flexible paint is used in making table oilcloths? A. Size with hot soap and alum solutions, used alternately. Dry and enamel with colors ground fine in oil with plenty of driers and a little turpentine.

(11) F. J. W. writes: If you can give me any information concerning what follows you will much oblige me. I presume it is settled that the freezing point of water (or melting point of ice) is 32° under ordinary conditions. Since ice, however, after being formed may suffer a further loss of heat, like any other solid, it follows that ice is often cut and stored when at a much lower temperature than 32°, say, for instance, at 12°.

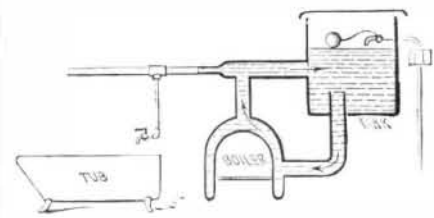
(12) E. N. T. asks: 1. How many cubic feet per minute of steam at 60 lb. pressure will flow from a nozzle, 1/4 inch bore and 3/4 inch long, to where it widens out to 1/2 inch diameter? 2. How many pounds of coal per hour will be required to generate the steam used? 3. Twenty-six to twenty-eight pounds.

(13) C. A. P. writes: I have some graduated paper circles cemented to iron disks. With what shall I varnish them that they may stand the weather, without making them transparent or difficult to read? A. Dissolve 1 oz. best isinglass in about a pint of water by simmering it over the fire and strain through muslin.

(14) W. H. M. asks how to supply hot water to a bath house. A. Probably the cheapest and best way to furnish hot water for a bath house, cost of plant and maintenance considered, is to set up a small cast iron boiler (saddle or any other good hot water apparatus boiler) and connect the same with an open tank, the latter to be at least large enough to contain four times the water that can be used at one time in all the tubs.

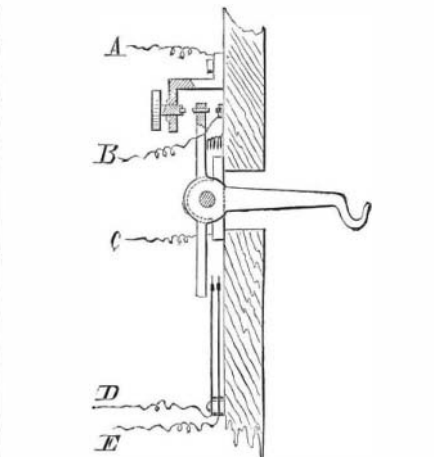
The size should flow freely. When all is dry give three coats of thin dammar varnish.

(15) J. H. S. writes: The sketch shows a commutator which can be applied to such a telephone as was recently described in the SCIENTIFIC AMERICAN.



A, to line through secondary and receiver. B, to line through bell magnet and signal key. C, to ground. D, to battery. E, to battery through primary of induction coil and transmitter.

I have used it more than a year in my house and it works very satisfactorily. It will be noticed that it is automatic to open as well as to close the telephone and bell circuits, and also operates the local battery circuit.



The weight of the receiving telephone when suspended from the hook makes contact with the anvil and closes circuit from line through bell to ground, and the instrument is in a position to receive a call.

(16) O. L. C. asks: 1. Would two Daniell's batteries be sufficient to ring a bell on a circuit of 250 yards, the bell being that distance from the batteries? 2. If by using the city water pipes as another return wire, would the bell ring equally as well so as to enable me to ring from either end, and leave the batteries at one end of the line? 3. In making a telephone does it make any difference which pole of the bar magnet the spool is on, or what direction it is wound on the spool? A. No.

(17) W. P. M. asks: Can you tell me how to prepare a cheap colorless varnish for iron pans, such as bread pans? A. Wine spirit, 1 qt.; pale shellac, 2 1/2 oz.; digest and agitate until dissolved and strain through a fine cloth.

(18) P. J. writes: I wish to establish telegraphic communication between two points separated by a body of water of 200 feet in width. Only signals, produced on electric bells at each end of the line are to be used. What I wish to know is this: 1. Will the wire used to connect stations have to be insulated? 2. If insulation is necessary, what is the best wire to use? 3. Would like it as small in diameter as possible.

(19) J. A. W. writes: I wish to construct a small sectional boiler for an engine 3x6; please inform me whether common gas pipe is suitable for the

purpose. A. Common gas pipe not suitable; you should use sap-welded tubes. 2. At what speed of said engine can I attain the greatest power? A. With the same pressure, the higher the speed the greater the power.

(20) W. S. K. asks: With a given cylinder, say 12 inches diameter, why will one engine cut off at 1/4 stroke and another at 1/2 or 3/4 stroke; that is, what different conditions must exist? Will not the one which cuts off at 1/4 stroke use less steam and thus result in a saving of fuel? Understand that both engines are same horse power. A. The one with the short cut off will be most economical, but will not give out so much power as the other with a given pressure of steam.

(21) J. H. C. W. writes: About two months since I moved into a new house, and although, of course, we are constantly using hot water, the water is sometimes very thick and muddy with iron rust, always darkly tinted; it is worse when the range fire has been fiercer than usual, ironing days, etc. Can you tell me any way of stopping the trouble? A. We know of no better method than heating up the water in the tank and then running it off as rapidly as possible, repeating the operation till the pipes and water back are cleaned out.

(22) C. L. J. asks for a receipt for coloring white soap a light yellow. I am making an excellent soap, but find it difficult to sell it because it is not yellow. I have added rosin, but that makes it too dark. A. Color with solutions of annatto and turmeric.

(23) P. J. B. asks how to tin light wire work, and wants a metal that will run freely and smoothly and not leave any drops, as there is no opportunity to brush or rub off any superfluous metal. I have used all ordinary alloys used in tinning, to wit: pure tin, tin and lead; tin, lead and bismuth; tin, lead, antimony, and bismuth; and have cleaned my work (before dipping) in dilute sulphuric acid, then thoroughly rinsed in pure cold water, then dipped in muriate of zinc, then into my bath of metal, which is covered with tallow to the depth of one-eighth of an inch. I have frequently found wires with a scale that I cannot remove with the sulphuric acid. In dipping a piece of straight work, the wires being about ten inches long, if I draw it out lengthwise of the wire the metal will remain on too thickly, and if I attempt to shake it, it will cool and set in ridges. Do you know of any method for doing away with these difficulties? A. Pure tin, or tin with a little bismuth, will answer about as well as anything. Try dipping the tinned article in very hot grease until the coating is equalized. In such work the wire is usually tinned in the coil and finished in the grease pot or by passing through a loose draw-plate on cooling. If the wire is much oxidized use a stronger pickle, or give a longer exposure in a dilute hot pickle. If oily, dip in hot potash solution and rinse in plenty of water first.

(24) J. T. W. writes: 1. I propose laying a two inch wrought iron pipe, 5,000 feet in bed of a stream which falls in that distance 20 feet. How much water would said pipe deliver by natural flow? A. 16 cubic feet per minute. 2. How high would it rise vertically from lower end? A. As a jet, not over about 12 feet, but in a steady pipe the height of the head. 3. With a stream pump attached how much could be drawn through it? A. 266 cubic feet per minute.

(25) A. W. D. writes: We have a backlash in the bevelgearing on crank shaft and upright shaft in a flouring mill. Some say that it is caused by the governors on engine, and some say it is caused by mill machinery; and to test the governors I weighted down the stem so as to use boiler pressure, and regulated speed by the throttle valve, and it backlashed just the same as it did when running with the governors. Increase of speed increases the trouble alike in both cases. Was that a sufficient test for governors? We have an irregular feed on one of the burrs. Do you think that would cause a backlash? A. Your fly wheel is too small. Increase its diameter at least two feet.

(26) A. S. F. asks: 1. Can you tell me how many pounds (troy) of metallic sodium and water are required to produce ten cubic feet of hydrogen gas (at 60° Fah.)? A. 1 lb 6 oz. sodium and 1 lb. 2 oz. water. 2. What are the relative weights of ten cubic feet of hydrogen and a like volume of atmospheric air (at 60° Fah.). A. Ten cubic feet of hydrogen weigh about 0.77 oz.; the same volume of air under like conditions about 11.16 oz. 3. What measure and weight of oxygen gas will this quantity of hydrogen require to form water? A. 5 cubic feet, equivalent to about 6.16 oz. 4. How much oxygen does atmospheric air contain on an average? A. About 20 per cent. 5. How much oxygen can be obtained from chlorate of potash. A. 16 oz. will yield about 5 cubic feet of the gas.

NEW BOOKS AND PUBLICATIONS. ILLUSTRATED CATALOGUE OF THE PLUMBING AND SANITARY DEPARTMENT OF THE J. L. MOTT IRON WORKS. 1881.

Contains upwards of six hundred engraved illustrations of as many styles of plumbing and sanitary appliances, lamp pillars, and stable fixtures. The high character of the products of this establishment, both with regard to artistic design and the quality of the iron and enamel, is known everywhere. The scientific construction of the various sanitary devices here illustrated will commend them to prudent house owners and architects. The stable fittings in cast and wrought iron show some remarkably artistic designs.

BRIGHT FEATHERS. By Frank R. Rathbun. Auburn, N. Y.: the Author. Part I. Quarto, paper, pp. 24. \$1.

Mr. Rathbun has chosen the purple Finch for the initial number of this series of ten or more illustrations of the most attractive of the birds of our northeastern States. Each number will carry a plate figuring the male and female of the species described. The figures are carefully drawn from nature and colored by hand.

MODERN ARCHITECTURAL DESIGNS AND DETAILS. New York: Bicknell & Comstock. Parts IV. and VI. \$1.

Part IV. comprises plates 25 to 32; store fronts and details; plans and elevations of a country house by Cabot & Chandler, Boston, with many details of porches,

windows, gables, etc.; cornices and belt courses. Part VI, plates 45 to 48, contains perspective views, plans, and elevations of two country houses, with many exterior and interior details. Part V. was noticed some weeks since.

[OFFICIAL.]

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending March 22, 1881, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for one dollar. In ordering please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

Table listing inventions such as Alumina, manufacture of sulphate of, J. H. Eastwick; Announcer, electrical, C. Heisler; Armor plate, J. D. Ellis; Axle box, car, S. A. Bemis; Axle box, car, C. A. Haskins; Axle sketn, W. P. Brown; Bale tie, W. M. Freeman; Baling clamp, A. Kiger; Baling press, W. P. Groom; Barrel bodies, windlass for setting up, E. & B. Holmes; Bean cutter, A. Flohr; Bean pod stringer, J. L. Scharff; Bed bottom frame, Thompson & Wells; Beehive, J. E. Frazer; Belt fastener, I. M. Dunckleberg; Belt tightener, H. D. Hicks; Belting, mechanism for the transmission of power by metallic, J. Reese; Berth, self-leveling, W. T. Milligan; Berth, self-leveling, Millikan & Mainland; Billiard and pool table ball pocket, G. H. Stone; Bobbin winder, C. Raymond; Bodkin and tweezers, combined, W. R. Whitmore; Bolters, inserting tubes in, A. Berney; Bolster plates, manufacture of, J. C. Herman; Bolster spring, J. F. Bohler; Book holder, L. W. Noyes; Boot and shoe, H. White; Boot and shoe crimping machine, J. W. D. Fifield; Boot and shoe heel, C. Nell; Boot and shoe shank laster, W. R. Barton; Bottle and stopper, H. Barrett; Bottle stopper, J. D. McDade; Box, H. A. Schadowsky; Box fastener, G. G. Neidomanski; Bracelet, E. P. Beach; Brick and tile moulding machine, hollow, W. L. Drake; Brick kiln, McCue & Davis; Broom handle tip, E. Wagner; Burr or grinding ring, metallic, E. Totman; Butter, lard, etc., package for, C. Claussen; Button hole cutter, Snyder & Ivins; Callipers, spring, F. J. Thomas; Can and sifter, combined, S. Whitnum; Can sealer, J. L. Camp; Canning and sealing machine, vacuum, E. R. Powell; Candle shade holder, A. W. Crockett; Cap, S. Corn; Cap, I. Neuman; Cap, band, W. Finster; Capstan, D. N. B. Coffin; Car brake and starter, T. B. Webster; Car coupling, J. Deline; Car coupling, M. Downey; Car door, freight, Hewitt & Susemihl; Car draw bar, railway, A. B. Pultman; Car heater, street, G. B. Kerper; Car ventilator, C. F. Norris; Car wheel, G. S. Sheffield; Car wheels, constructing, C. Kingsland; Carbon filaments, forming enlarged ends on, T. A. Edison; Card for playing games, W. Stranders; Carriage top prop, R. Brayton; Cartridge loading implement, D. Brown, Jr.; Chair brace, F. Heavener; Chandler, J. J. Nichols; Check rower, rotary, W. E. Lowrie; Cheese, machinery for manufacturing, A. H. Brintnell; Cheese safe, I. S. Fornbrook; Chuck, A. F. Hyde; Churn power, T. W. Hogsett; Cider mill press, J. King; Cigar mould, C. Du Brul; Circle iron support, F. Mutimer; Coast defense, T. R. Timby; Cock for gaseous and liquid fluids, C. R. Bergreen; Cockle machine, W. Richardson; Coffee roasting apparatus, P. Pearson; Corn, device for cribbing and conveying, H. Keiser; Cornet, E. Dupont; Corset, M. K. Bortree; Corset, woven, M. W. Henius; Cot'on gin, J. A. Scarborough; Cotton gin rib, S. Z. Hall; Crane, D. H. Williams; Crate, W. S. Braman; Cultivator and cotton chopper, combined, S. M. Love; Cultivator coupling, J. B. Paradis; Cultivator, rotary, J. W. Bodley; Cutlery, pocket, N. B. Slayton; Doors and shutters, spring catch for, W. M. Chance; Drying moist or varnished sheets, machine for, J. E. Hinds; Egg and cake beater, J. W. Condon; Electric call and signal, L. S. White; Electric lightning system, T. A. Edison; Electric machine, dynamo, L. G. Woolley; Eyelet setting machine, A. R. Edmonds; Fan, fly, L. Woodrum; Fence, portable and sectional, S. L. Bailey; Fence, wire, T. Wright;

Table listing inventions such as Fence wires securing, Braby & Scarles; Fencing wire, J. Westgarth; Fifth wheel coupling for vehicles, D. D. Gitt; Fifth wheel, vehicle, Magner & Thomas; Filter, water, Kolthoff & Perkuhn; Fire alarm and gas lighting apparatus, combined, G. D. Bancroft; Firearms, extractor for revolving B. R. Franks; Fire extinguisher, automatic, J. W. Bishop; Fishing float, B. W. Ross; Flue cleaner, boiler, T. R. Wingrove; Forging apparatus, metal, W. B. Hayden; Fruit drier, J. Williams; Furnace, A. Berney; Furnaces, apparatus for charging blast, L. Bert; Gas by electricity, apparatus for lighting, S. Gardner, Jr.; Gas meter, T. Tansley, Jr.; Gate, A. F. Wright; Glass engraving machine, J. E. Miller; Glassware, machine for grinding, E. Hutter; Glazier's points, tool for driving, H. D. Musselman; Governor, steam engine, E. Huber; Grader, road, J. F. McGarry; Grain binder, S. Johnston; Grain binder, A. Stark; Grain separator, J. H. Creter; Grain separator, Roberts & Schafer; Grate bar, A. Berney; Guns, lock for breech-loading shot, J. Reeves; Hame fastener, H. Beagle; Handle and case, A. Roerber; Harness hook, safety, M. R. Thurber; Harrow, spring tooth, T. Gray; Harvesting, cotton, W. J. Powell; Harvesting machine, W. T. Wilde; Hat sweat linings, machine for flanging, K. Elckemeyer; Hay gathering and loading machine, E. Spencer; Hay tedder, H. Hitchcock; Heating apparatus for sanitary purposes, W. R. Macdonald; Heel shave, W. R. Barton; Heliotrope, F. C. Grugan; Hinge, coach, F. W. Tiesing; Hoist, J. Fensom; Horse detaching device, L. B. Furdal; Horse power, McCarty & Lindsay; Hot air register, W. Highton; Hub, vehicle, F. Culham; Hub, vehicle wheel, J. Nagele; Ice cream freezer, A. C. Albrecht; Ice cutting machine, J. Gregory; Incrustation preventive, W. J. Gillespie; Index cutting machine, J. Dodder; Inhaler, A. Rousseaux; Insulated electrical conductor, H. Spltdorf; Jar or bottle stopper, R. Gordon; Journal box, A. Worden; Knitting machine, circular, W. J. Ford; Knitting machine, circular, W. D. Huse; Lamp, W. B. Robins; Lamp, electric, T. A. Edison; Lamp, electric, C. Heisler; Lamp, house, J. Bassemir; Lamp, incandescing electric, T. A. Edison; Lamp lighter, W. H. D. Newth; Lamps, treating carbons for electric, T. A. Edison; Lantern, C. H. Fry, Jr.; Lap mat, A. Resdinski; Lifting motor, S. T. Wellman; Link welding machine, H. C. Szirk; Log turner, R. E. Gleason; Loom weft stop motion, G. Crompton; Mattress frames, corner iron for woven wire, Sherman & Bondell; Meat cutter, Streicher & Hoehl; Middlins purifier, J. M. Case; Middlins purifier, R. Kersey; Milk can, G. B. Ransom; Mouldings with cloth, machine for covering, J. D. Ripson; Monument, iron corner, T. Wagner; Muff, J. C. Brush; Music leaf turner, O. M. Robinson; Musical instrument, mechanical, O. H. Arno; Nut lock, J. W. Tombow; Oil can, F. H. Furniss; Oil reservoir, fireproof automatic, J. A. Shepard; Ore concentrator, J. J. Embrey; Ore treating apparatus, A. Ryder; Ore washing apparatus, J. H. Totman; Oven, hot blast, H. J. Brooke; Packing boxes, apparatus for, R. Nell; Packing, steam, H. W. Winans; Pantaloons, R. Gibbons; Pants protector, G. W. Watson; Paper machine, deckel for, J. M. Shew; Paper machines, manufacture of screen plates for, J. M. Shew; Paper pulp, process of and apparatus for reducing wood to, H. A. Frambach; Paper pulp, treating wood for conversion into, H. A. Frambach; Pen, fountain, J. Friedmann; Pen fountain attachment, J. W. Green; Pen holder, R. Wilson; Pen, stylographic fountain, Sutherland & Brown; Petroleum, plastics from, J. I. Livingston; Photographic plates, table for holding, D. M. Little; Piano action, L. Plass; Pier, iron, B. T. Hitchcock; Plating machine, F. R. Smith; Planing machines, feed mechanism for wood, A. W. Goodell; Planter, combined cotton seed and corn, Evans & Moore; Planter, corn, Campbell & Chambers; Planter, cotton, C. P. Kenyon; Plow, sulky, F. A. Hill; Plows, slip nose attachment for, Anderson & Oliver; Pocketbook, G. Lustig; Pocket for wearing apparel, R. Gibbons; Post socket, L. C. Baker; Pressure regulator for air compressing engines, G. H. Reynolds; Printing press, W. C. Evans; Propeller, screw, J. P. Holland; Railway rails, machine for sawing, T. Critchlow; Railway signals, circuit closer for electric, C. J. Means; Railway train arrester, automatic, J. Wood; Reamer, D. K. Overhiser; Roofing tile, Lane & Woodworth; Rubber goods, manufacture of, I. F. Williams; Rubber, etc., manufacture of vulcanized India, D. Gausson; Safe, M. Mosler; Salt manufacture and apparatus therefor, process of, J. H. W. Briggs;

Table listing inventions such as Sash weight, W. C. Joslin; Saw, crosscut, J. E. Emerson; Saw filing machine, gin, J. Hoseney; Saw swage, G. F. Simonds; Saw tooth, E. J. Hill; Scoop, W. B. Romig; Sewing machine, E. Marshall; Sewing machine, J. H. Osborne; Sewing machine tuck marker, M. G. Price; Sewing machines, tension and thread controlling device for, J. W. Corey; Ship railway car and dry dock, J. B. Eads; Shoe, A. Nichols; Sickle holder, C. Lehman; Skate, W. A. Sutton; Snapping, T. K. Work; Snow shovel, H. E. Vosburgh; Spark arrester, A. Berney; Spark arrester and consumer, A. Berney; Spoon and fork, N. S. Boardman; Starch from grain, obtaining, T. A. & W. T. Jebb; Steam boilers, sediment collector for, B. Kane; Steam generator furnace, G. B. Brock; Steam muffler, A. Berney; Steel, composition for tempering, W. Fogleson; Stirrup, W. W. Brower; Stove, G. S. Blaney; Stove water back, A. & J. W. Geddes; Strainer, handled, W. J. Johnson; Sugar cane juice, etc., centrifugal extractor for, H. Burgess; Sulky, J. H. Blackmore; Swinging gate, G. D. Zimmerman; Swinging gate, vertically, Flinner & Hollinger; Switch board, T. D. Lockwood; Tablet, writing, J. B. Burwell; Telegraph relay, T. A. Edison; Telegraphic key or transmitter, W. E. Tinney; Telephone exchange, G. L. Anders; Telephone exchange system, Anders & Lockwood; Telephone systems, signaling apparatus for district, G. L. Anders; Telephones, coil for, R. M. & W. V. Lockwood; Therapeutic bath, McFarland & Martin; Thill coupling, W. E. Kinnear; Threshing machine feeder, J. S. Bayley; Threshing machines, spreading and distributing device for, B. Jackson; Tile mill attachment, R. W. Stewart; Tilt alarm, W. L. Cheney; Tool handle, W. R. Barton; Toy, C. L. Travis; Valve, balanced slide, T. Poore; Valve gear of steam engines differential, H. Davey; Vapor burner, C. S. Phillips; Vapor burner, F. H. Shepherd; Vehicle dash, J. Smith; Vehicle spring, S. A. Bailey; Vehicle torsion spring, T. J. Magner; Vehicle torsion spring, Magner & Thomas; Washers, disks, etc., of vulcanized rubber, manufacture of, J. Meera; Washing machine, C. A. Bentzen; Waste picker, F. G. Sargent; Watch regulator, C. M. Howard; Watchman's electric register, W. A. Wilson; Water closet, A. Edwards; Water pipe casing, W. Weisbarth; Weather strip, W. B. Jones; Whistle, steam, Miller & Smith; Wire stretcher, J. F. Landers; Wire twisting machine, I. A. & E. E. Kilmer; Wood, preserving, Dixon & Card;

DESIGNS.

Table listing designs such as Carpet, C. Chambellan; Carpet, W. J. Gadsby; Carpet, C. Magee; Carpet, W. McCallum; Saddle, R. E. Whitman; Type, font of printing, A. Little.

English Patents Issued to Americans.

Table listing patents issued to Americans such as Bale tie, C. B. Morse, Rhinebeck, N. Y.; Bicycles, C. H. Veeder, Plattsburg, N. Y.; Cop spindles, G. W. Stafford, Lawrence, Mass.; Desiccating eggs, L. J. Cadwell, Chicago, Ill.; Dynamo-electric machine, T. A. Edison, Menlo Park, N.J.; Feed water regulator, C. H. Kuhne, Butler, Pa.; Ingot, casting, E. Wheeler, Philadelphia, Pa.; Lamps, W. B. Robins, Cincinnati, Ohio; Pig iron, machine for breaking, T. A. Blake, New Haven, Conn.; Refrigerators, J. H. Forshay, New York city; Sewing machine, button hole, D. Mills, Philadelphia, Pa.; Sewing machine, J. Bond, Jr., et al., Philadelphia, Pa.; Shovel handles, W. H. Johnson, Industry, Me.; Steam boiler, O. D. Orvis, Chicago, Ill.; Telegraphy, O. Lugo, New York city.

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