

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. In every case it is necessary to give the number of the inquiry.

MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 1013.—For the manufacturers of the "Kitchen Ice Machine."

TURBINES.—Lefell & Co. Springfield, Ohio, U. S. A.

Inquiry No. 1014.—For manufacturers of tools for repairing pianos, harmoniums and other musical instruments.

"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 1015.—For a spring motor machine which can be operated by one man.

WATER WHEELS. Alcott & Co., Mt. Holly, N. J.

Inquiry No. 1016.—For deflated toy rubber gas balloons.

Yankee Notions. Waterbury Button Co., Waterbury, Ct.

Inquiry No. 1017.—For the manufacturer of the "Pennsylvania" high-wheel lawn mower.

Handle & Spoke Mch. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Inquiry No. 1018.—For manufacturers of chemical fire engines.

Sheet Metal Stamping: difficult forms a specialty. The Crosby Company, Buffalo, N. Y.

Inquiry No. 1019.—For manufacturers of specialties in pipe stems or mouthpieces.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 1020.—For manufacturers of wind powers for use on a farm for shelling corn, grinding feed, etc.

For Sheet Brass Stamping and small Castings, write Badger Brass Mfg. Co., Kenosha, Wis.

Inquiry No. 1021.—For manufacturers of electrical house goods, such as burglar alarms, bells, short line telephones, etc.

Rigs that Run. Hydrocarbon system. Write St. Louis Motor Carriage Co., St. Louis, Mo.

Inquiry No. 1022.—For manufacturers of acetylene gas generators.

Ten days' trial given on Daus' Tip Top Duplicator. Felix Daus Duplicator Co., 5 Hanover St., N. Y. city.

Inquiry No. 1023.—For manufacturers of wire netting machinery.

SAWMILLS.—With variable friction feed. Send for Catalogue B. Geo. S. Comstock, Mechanicsburg, Pa.

Inquiry No. 1024.—For manufacturers of gas engines in New York City.

We are equipped to manufacture all kinds of specialties. Send samples. Chicago Handle Bar Co., Chicago Ill.

Inquiry No. 1025.—For manufacturers of machines for making wooden pegs for shoes.

Kester Electric Mfg. Co's, Self-fluxing solder saves labor, strong non-corrosive joints, without acid, Chicago, Ill.

Inquiry No. 1026.—For manufacturers of pressed paper goods, such as pie plates, etc.

Manufacturers of Valves, Fittings, Brass and Iron Work. Spindler & Deringer, 18-22 Morris St., Jersey City, N. J.

Inquiry No. 1027.—For a gun to shoot a Winchester 44 shell, 1873 model, with one barrel, the other to be 14 gauge shot.

Special and Automatic Machines built to drawings on contract. The Garvin Machine Co., 149 Varick, cor. Spring Streets, N. Y.

Inquiry No. 1028.—For manufacturers of ice machines.

WANTED.—Party with means to make and test an apparatus in which liquid air can be made. Address H. A. Lasseter, Leander, Texas.

Inquiry No. 1029.—For manufacturers of electric dynamos.

See our Collective Exhibit—Section "S." Electricity Building, Pan-American Exposition. Standard Welding Company, Cleveland, Ohio.

Inquiry No. 1030.—For manufacturers of rag carpet fly shuttles with large wheels and pickers for the same.

FOR SALE.—New process for making oil with fish and fish offal is offered for sale or licenses in United States of America. Address Foreign, Box 773, New York.

Inquiry No. 1031.—For address of parties having Swedish anvils for sale.

The celebrated "Hornsbry-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

Inquiry No. 1032.—For dealers in second-hand turning lathes and drill presses in Chicago, if possible.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y.

Inquiry No. 1033.—For manufacturers of air pumps and compressors.

WANTED.—A thoroughly competent engineer to push in United States of America a new, efficient and economical process, for dealing with large benefit towns' sewage and refuse waters from industry. Address France, Box 773, New York.

Inquiry No. 1034.—For dealers in elevating machinery for elevating grain and feed, and machinery for cleaning oats.

Wanted.—Foreman Repair Department by textile manufacturers, having a first-class plant. Must be a thorough mechanic, good engineer, able to make electrical repairs, etc. Wages, \$4 per day and no time lost. Address giving age, experience and full particulars, to C. & Co., P. O. Box 1816, New York City.

Inquiry No. 1035.—For manufacturers of electrical heating apparatus.

For sheet metal stamping, metal spinning, nickel plating, punch and die work, Press work, and manufacture of all kinds of specialties write The Admiral Lamp Company, Marysville, Ohio.

Inquiry No. 1036.—For manufacturers of portable houses.

McGILL UNIVERSITY, MONTREAL.—Chair of Metallurgy. The Governors of McGill University, invite applications for the Professorship of Metallurgy. Candidates for the appointment are requested to send their testimonials, with a statement of age, qualifications, etc., to the Secretary of the University, before September 1. The duties of the post will commence on October 1. Full particulars of the work, salary, etc., may be obtained from the Secretary.

Inquiry No. 1037.—For manufacturers of models of locomotives, made of cardboard.

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

Inquiry No. 1038.—For manufacturers of a contrivance for burning petroleum in ordinary heating and cooking stoves.

Inquiry No. 1039.—For manufacturers of coffee roasters of about 150 pounds capacity and a cooler for same.

Inquiry No. 1040.—For manufacturers of small rubber balloons made of thin, white rubber.

Inquiry No. 1041.—For parties to make a metallic device for holding rubbers on when walking in mud.

Inquiry No. 1042.—For parties to manufacture a metallic device for checking and unchecking horses attached to vehicles without leaving the seat.

Inquiry No. 1043.—For parties to make a combined bicycle pump and seat post.

Inquiry No. 1044.—For the present address of the Farmers' Handy Wagon Co.

Inquiry No. 1045.—For manufacturers of aluminum springs 8 inches long, 3 inches wide and 1-32 or 1-8 inch thick.

Inquiry No. 1046.—For the manufacturers of a mechanical apparatus used for loading coal inside the pits, in the United States.

Inquiry No. 1047.—For manufacturers of machines for making tarred paper felts for roofing.

Inquiry No. 1048.—For builders of special machinery for weaving wire fences, etc.

Inquiry No. 1049.—For manufacturers of hot air engines with exhausts.

Inquiry No. 1050.—For manufacturers of cork-grinding machinery.

Inquiry No. 1051.—For manufacturers of stone-crushing machinery.

Inquiry No. 1052.—For manufacturers of small tin boxes with screw lid suitable for mailing samples of sand, three-quarters of an inch in depth and two inches in diameter.

Inquiry No. 1053.—For a machine to rivet 3-16 inch to 1-4 inch soft steel rivets 1-1/2 inch long, to secure 14 gauge plates to wood.

Inquiry No. 1054.—For manufacturers of strong metal cement.

Inquiry No. 1055.—Wanted, British agency for duplicating machines, office devices of all kinds, also hardware specialties.

Inquiry No. 1056.—For manufacturers of type-writer supplies.

Inquiry No. 1057.—For manufacturers of photographic goods.

Inquiry No. 1058.—For manufacturers of automobiles.

Inquiry No. 1059.—For manufacturers of bicycles and sundries.

Inquiry No. 1060.—For manufacturers of gramophones and gramophone dictation supplies.

Inquiry No. 1061.—For manufacturers of electrical novelties.

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.

(8269) W. B. H. writes: I was given a question in a recent examination that the examiner stated was proved in a copy of your magazine; but he could not state the date the example appeared nor prove it himself. The problem read: "Do the amperes or volts increase when the electricity passes through an ordinary spark coil for gas lighting?" I said volts, yet my examiner says the answer is amperes, which I doubt. A. The volts are raised in the action of the ordinary spark coil in gas lighting. This coil has but one winding, no secondary. It is not an induction coil in the usual sense. The spark is produced by the self-induction of the current in the turns of the primary upon itself. This produces a higher E. M. F., which causes a considerable spark. There can be no more amperes in the circuit than the generator can produce.

(8270) F. B. asks: Please answer the following through your columns. I have a vessel containing 16 parts of pure whisky. If I take one part out and fill it with water, so the vessel is still full, and so continue until I have taken 16 parts out of it, how much whisky is there in the sixteenth or last part? How can this be calculated? A. You must excuse us from answering this very interesting question. Life is too short. We will, however, give you the method of finding the answer and you can employ your leisure time upon it. When the vessel is filled with water the first time the mixture is 15-16 whisky. One-sixteenth of this is drawn out and replaced with water. The mixture thus becomes 15-16 as strong as it was the time before, or 15-16 x 15-16 whisky. This is (15-16)², or 225-256 of the whole. The next time there will be (15-16)³ whisky left; and so on to the sixteenth filling, when there will be (15-16)¹⁶ of whisky, and the rest will be water. The last state of this is strong enough for health. Multiply the fraction 15-16 by itself fifteen times, and you will have the answer. Buy a lot of large-sized sheets of paper before you begin.

(8271) W. A. L. asks: Is there any other metal that can be used in a gravity battery besides zinc that will not dissolve? A. There is no way of obtaining electricity without using up some material. In the dynamo steam or water power is employed. In the battery we usually burn up zinc. It is just as impossible to produce electricity without a disappearance of some other form of energy as it is to heat a house and still have the coal, or cool a refrigerator and still have the ice.

(8272) J. K. asks: Please inform me why two telegraphic instruments will not work when set up in series. One of the instruments is a 4-ohm, and the other I think is larger. The larger one can be heard from another room, while the small one can barely be heard at all. A. The smaller of the two instruments does not get current enough to work the magnet. In order to work together, they should have nearly the same resistance.

(8273) E. B. asks: 1. Have you any SUPPLEMENTS containing articles relating to the care and maintenance of the sal ammoniac battery used in telephone work? A. Carhart's "Primary Batteries" gives considerable space to the sal ammoniac battery. Price \$1.50 by mail. 2. Can you recommend a book suitable for one who has to look after the repair of a telephone line? A. Hopkins' "Telephone Lines and Their Properties," price \$1.50 by mail.

(8274) J. S. T. writes: I have been fitted with glasses to correct astigmatism. Without glasses the rays of an ordinary street lamp appear extended perpendicularly; with the glasses they appear longer the opposite way. If glasses were properly ground, should not the rays radiating from light appear of uniform length? A. If your astigmatism were perfectly corrected by the glasses, objects would be seen in their correct outlines.

(8275) W. M. S. asks: 1. Whether a patent has ever been taken out in this country or abroad for a wireless telephone? If so, will you explain briefly the principle of its operation? A. The waves set up by the transmitter of a telephone can be transmitted into the space around the line and to a certain distance from the wire in the same way as is done in wireless telegraphy. No one knows to what extent this may be developed in the future. 2. Whether a patent has ever been granted for an optical transmitter of pictures by electricity? By that I mean an instrument which will transmit a scene before a camera-like sender and reproduce it on a screen, or otherwise impress the transmitted picture on the eye, either with or without their natural colors. If so, will you explain the bare principle? A. We do not know of any such process in a practical form, though it has often been the subject of speculation and somewhat of experiment. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 1178. 3. Is there any solid, reasonably good conductor of electricity which can be applied with a brush when liquid? A. Almost any bronze or aluminum powder may be applied by a brush so as to be a conductor.

(8276) W. A. P. asks: 1. Should an ammeter be placed in the positive or negative terminal of a direct-current 110-volt dynamo? A. The ammeter may be placed at any point whatever in an electric circuit, since the same current flows through every part of a circuit. This is just like the flow of water through a pipe. If you had a pipe 1,000 feet long from a reservoir to your house, the same water and just as much would flow through every foot of the pipe, and a meter might be put into the pipe at any point in its length and the quantity of water flowing through the meter to be measured. 2. How much more would it register in the former than in the latter? A. It would register the same in either side of the circuit. It makes no difference where the ammeter is placed.

(8277) B. A. T. asks: 1. How many pounds of wire are used to wind the armature of the electric motor described in the issues of the SCIENTIFIC AMERICAN for December 8 and 15, 1900? Also the field magnet? A. About a half-pound for the armature and the same for the field. 2. How many watts are necessary to run it at its utmost power? A. We do not know. Somewhere from 12 to 24. Four cells of 2-volt battery, put two on series, should run it. 3. Cannot other journal boxes than the brass balls mentioned be used, such as a block of iron smoothly bored? A. Yes, of course; any kind of bearings can be used.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

July 9, 1901,

AND EACH BEARING THAT DATE.

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

Acid, recovering sulfurous, N. C. Hodgkins. 678,179
Aerial vessel, E. M. Farr. 678,114
Alarm. See Fire alarm.
Albumen and making same, halogen, F. Blum. 678,330
Alkali silicates, manufacturing, F. P. Van Denburgh. 677,906
Alternator, compounding, C. P. Steinmetz. 678,289
Amalgamating apparatus, A. H. Jocelyn. 678,183
Animal lifting device, B. Koch. 678,117
Animal shears, B. P. Clark. 678,161
Annunciator, electrical, C. J. Kintner. 678,116
Anthraxpurpurin and making same, biacetate of, H. Vieth. 678,070
Atomizer, H. Goltzmann. 678,242

Automatic lubricator, Farley & Meehan. 678,234
Automatic register or recorder, S. H. Pock. 678,350
Axle dust cap and oil guard, vehicle, W. F. Hayden. 678,253
Bag fastening, K. G. Herring. 678,176
Bale for fibrous material, C. E. Parker. 678,134
Bale tie loops, machine for making wire, K. J. Darnell. 677,956
Baling press, M. E. Lessenberry. 678,120
Barrel cover hanger, E. B. Norris. 678,024
Barrel, knockdown, R. H. Kerr. 678,257
Bearing and lubricator, roller, F. H. Young. 678,089
Bearing, vehicle wheel, C. S. Smith. 678,048
Beating engine, E. Conley. 678,226
Bed and wardrobe couch, combination sofa, Palmer & Harlin. 678,026
Bed awning or mosquito bar, L. Price. 678,184
Bed roll, E. Conley. 678,227
Bedstead, metallic, E. C. Baynes. 678,092
Belt tightener, W. H. Johnson. 678,342
Beveling machine, V. Royle. 678,037
Bicycle lock, T. P. Vandeleur. 678,907
Blind fastener, C. E. Tefft. 678,322
Blotter, R. J. Gillham. 678,313
Boilers, alarm apparatus for indicating low level of water in, P. N. Gammelgaard. 678,131
Boilers, apparatus for returning exhaust steam to steam, W. T. Harris. 677,866
Bottle, Searles & Minton. 678,203
Bottle stopper, A. Stern. 677,900
Bottle, non-refillable, M. G. Allen. 677,913
Bottle, non-refillable, A. D. Avedisyan. 677,919
Bottle, non-refillable, H. Cremer. 678,102
Bracket, W. C. Callander. 678,112
Brake mechanism, J. D. Kelley. 678,298
Brake shoe, composite, F. R. Spear. 678,139
Brick machine, King & Chambers. 678,259
Bridge, truss, T. G. Gillman. 678,239
Briquet material, manufacture of, R. C. Hills. 678,296
Broiler, J. Ferracoli. 678,235
Broom holder, D. H. Mowen. 678,270
Brush for paste tubes, T. C. Booth. 677,851
Brush, scrubbing, J. B. Schweiger. 678,051
Building, L. T. Slye. 678,052
Bullet proof substance, H. Theis. 678,064
Burial case protector, H. D. Clark. 678,224
Burial casket, C. E. Nicholson. 678,348
Burner. See Hydrocarbon burner.
Cage chair, safety, M. W. Jelinek (reissue). 11,922
Candlestick, Lippincott & Meredith. 678,264
Car, H. Anderson. 677,916
Car door, freight, W. E. Hoyt. 678,181
Car end bracing, box, G. I. King. 678,268
Car fender, street, C. Nicholson. 678,023
Car haul, F. V. Hetzel. 678,254
Car holding device, automatic, W. A. Wilson. 678,309
Car, railway, G. W. Douglas. 677,961
Car roof construction, L. C. Marshall. 678,189
Car seat, F. G. Koehler. 678,299
Car track brake, railway, G. W. Douglas. 677,962
Carburetor, Brown & Connelly. 677,852
Carburetor, C. K. Pickles. 678,194
Card punching machine, Jacquard, V. Royle. 678,040
Carpenters' plows, etc., fence support for, J. A. Traut. 678,309
Carpet or door strip, S. W. Will. 678,080
Carriage steering mechanism, R. W. Thompson. 678,144
Cart, grave digger's dump, A. T. Barnes. 677,921
Cash carrier, M. C. Swezey. 677,903
Cash register, Giles & Fleming. 677,864
Cash register, Smith & Jarvis. 677,890
Cash register, Smith & Giles. 677,896
Cash register, H. Giles. 677,976
Cashier, mechanical, C. F. Bassett. 677,928
Centrifugal machine, J. J. Berrigan. 677,926
Chart, educational, R. B. Anderson. 677,915
Chest or box, folding, A. Silbiger. 678,204
Chimney casing and sign, combined, A. M. Witte. 678,083
Cigarette making device, H. H. Spelman. 678,110
Cloth cutting and folding machine, C. N. Colpitts. 678,099
Clothing cutting machine, electric, R. E. Levy. 678,263
Cloth drying machine, C. W. Russell. 678,136
Cloth guiding device, automatic, W. I. Lewis. 678,121
Clutch, B. H. Locke. 677,872
Cocks, handle for stop and waste, F. E. Johnson. 678,132
Coil for electromagnets and insulating material therefor, E. F. Dwyer. 677,862
Coil forming apparatus, J. Riddell. 678,280
Coin freed mechanism for goods delivery machines, A. M. Argles. 678,153
Coin operated machine, R. T. Durham. 677,963
Collar blanks, etc., folding machine for, E. H. Brown. 678,094
Collar fastener, C. A. Brothers. 678,331
Collar trimming machine, H. C. Miller. 678,002
Commutator, electric machine, H. Geisenhoner. 678,171
Compasses, etc., locking device for, L. Myers. 678,003
Conveyer, electric, J. G. Gilmer. 678,312
Conveyers, switch valve for pneumatic, T. Lee. 678,119
Cooling apparatus, rotary, J. W. Kittrell. 677,870
Coop, chicken, G. W. Funderburgh. 678,238
Cope pattern, J. G. Johnston. 678,256
Coupling, F. A. Wegner. 677,908
Coupling, J. Timms. 678,145
Crane, hoisting, J. Macbeth. 677,877
Crane, collapsible shipping, Steinberg & Van Handorf. 678,057
Crate for globes, shipping, J. N. Hahn. 677,979
Cultivator, F. E. Davis. 678,103
Cultivator, double, S. D. Poole. 678,032
Current apparatus, starting device for constant, C. H. Van Slyck. 678,069
Current indicator, maximum, C. D. Haskins. 678,080
Current machines, synchronizing alternating, E. M. Hewlett. 678,178
Cutters, apparatus for the manufacture of, O. Schaefer. 677,887
Dam, J. F. Gladden. 678,105
Dental apparatus, J. M. Gilbert. 677,975
Dental floss holder, J. W. Cowan. 677,947
Dental floss package, J. W. Cowan. 678,101
Die, F. P. Cady. 678,158
Dolls face, Grass & Bruckner. 678,244
Door check and closer, Hills & Southard. 678,339
Door indicator, J. Z. Newman. 677,884
Doors, plating wood, W. A. Warner. 678,148
Draft regulator, J. Q. Everson. 678,113
Drain board, W. C. McKinney. 678,008
Drawer slide, antifriction, B. F. Allen. 678,211
Drier, E. P. & E. M. Lawrence. 678,072
Drill. See Grain drill.
Driving roller, J. Haslam. 678,175
Dust pan, C. W. Cutter. 677,950
Dye and making same, orange disazo, U. rich & Heidenreich. 678,323
Dynamo, alternating current, D. M. Moore. 678,191
Ear coverer, W. J. Gardner. 678,170
Educational appliance, W. H. Cartwright. 677,952
Egg desiccating apparatus, W. O. Stoddard, Jr. 677,902
Electric control system, Potter & Case. 678,186
Electric light switch, H. Horn. 678,188
Electric machine, dynamo, B. Barnason. 678,157
Electric meter, A. G. Davis. 677,957
Electric motor controlling means, Davis & Potter. 678,167
Electric motors, construction of, J. J. Wood. 677,909
Electric signal, J. J. Rudlick. 678,135
Electric switch, N. C. Bassett. 677,923
Electric switch, ratchet operated, W. Kingsland. 678,260
Electrical conductor, E. D. Priest. 678,030
Electrode for secondary or storage batteries, J. Myers. 678,133
Electrodes, making accumulator, H. F. Hobel. 677,986
Electrodes, regenerating accumulator, J. Hofmann. 678,255
Elevator brake, A. B. See. 678,352
Elevator controlling apparatus, E. R. Carlschoff. 677,891
Elevator gate lock, W. C. Smith. 678,050
Embroidering machine attachment, E. & R. Cornely. 677,953
Emery steel, G. F. Lucas. 678,301
Emery wheel, R. H. Churchill. 678,292
End gate, F. L. Collis. 677,945
Engine connecting rod, L. G. Neely et al. 678,021
Engines, fuel supply controller for hydrocarbon, G. E. Webb. 678,077
Eyeglasses, J. Alexander. 678,112
Eyeglasses, G. Schneider. 677,996
Fabrics, decorating, plaited, Crepet & Dumoulin. 678,104

(Continued on page 46)

Feed apparatus, boiler, W. E. Gibbs	677,863
Feed water pump, Scott & Wain	678,260
Feeder, steam boiler, A. G. Wainhouse	678,324
Fence, J. G. Hunt	678,071
Fence, barbed baud, C. C. Benson	677,925
Fence machine, wire, W. M. Chew	678,160
Fence stay wire, S. W. Yarlet	678,087
Fender, C. F. Ekman	678,232
Fiber separating machine, S. B. Allison	677,914
Filter, J. A. Maignen	677,893
Fire alarm, automatic, Cortland & Hume	677,954
Fire alarm system, automatic, Cortland & Hume	677,946
Firearm, revolving, G. A. Owen	678,274
Fire escape, D. Firth	678,169
Fire extinguisher, G. C. Hutchings	678,249
Fire kindlers, composition of matter for, C. W. & A. Mettler	678,346
Fireproof floor construction, Freeman & Dobbin	678,335
Fish powder, making, J. Schaefer	678,283
Flax cleaner, F. L. Leary	677,990
Flower stand, F. L. Peach	678,031
Fluid meter, prepayment, W. E. Gibbs	677,974
Food material to form and distributing same, machine for reducing, H. D. Perky	678,127
Forging press, E. P. Alexander	678,291
Fountain comb, S. L. Myers	678,004
Fruit washing and scalding apparatus, J. E. Bancroft	678,328
Fumigating apparatus, G. E. Alphin	678,212
Furniture, G. A. Bowen	678,219
Galvanic battery, L. G. Cunningham	677,955
Game apparatus for trading purposes, W. Tribble	677,905
Game board, E. F. Carson	677,938
Garment hanger, F. M. Osgeed	678,073
Garment support, G. E. Adams	678,155
Gas analysis apparatus, M. Arndt	678,154
Gas generator, acetylene, E. A. Javal	677,915
Gas generators, carbide cartridge for acetylene, L. S. Buttington	677,935
Gas generators, expandable carbide cartridge for acetylene, L. S. Buttington	677,936
Gas washer, O. N. Guldin	677,865
Gate, See End gate	
Gear planer, W. & J. E. Gleason	678,337
Gearing, geared, A. M. Searle	678,296
Generators in transmission plants protecting, T. J. Johnston	678,185
Glass mold operating machine, F. A. Shunk	678,287
Governor, engine, E. M. Carr	677,855
Grain binder, C. Colahan	677,943
Grain drill, disk, W. F. Hoyt	678,248
Grapple, J. E. Hagerman	678,173
Grinding mill, D. L. Adelsperger	678,111
Hammer, machine, E. S. Tarbell	677,962
Harvester, corn, D. Binn	677,927
Harvester or mower cutter bar, L. N. Graham et al	677,977
Harvesters, adjustable carriage for grain, C. W. Sheldon	678,046
Hat body treating machine, J. H. Neave	677,882
Head cutting machine, W. E. Nichols	678,022
Heating attachment for culverts, etc., H. O. Kruschke	678,118
Heating device, J. W. Foster	678,267
Hinge, J. G. Herbst	677,984
Hook and eye, W. A. Maxwell	678,267
Hook, T. J. Browning	678,096
Hoop, A. Maltby	678,011
Horses, attachment for the cure of balking and kicking, C. A. Barclay	678,217
Horse's hoof protecting plate, G. Israel	677,990
House reel, J. Jones	677,893
Hydrocarbon burner, J. C. Sprys	677,899
Ice cutter, J. Schweikart	678,285
Ice shaping mold, MacClyment & Sims	678,017
Incubator, A. A. Skinner	678,053
Inductance coil, H. Sheemaker	678,353
Induction coil, H. Sheemaker	678,047
Induction motor, H. G. Reist	678,034
Ink distributor, J. S. McKinley	678,019
Ink fountain, E. G. Holden	678,315
Insulating machine, W. Reyle	678,038
Insulator, rack, H. R. Sargent	678,042
Insulator, third-rail, W. B. Potter	678,195
Internal combustion engine, O. Snell	677,898
Journal protecting automatic device, J. C. Dougherty	677,960
Lace fastener, shoe, J. B. Hooper	678,107
Lacing hook setting machines, rocking separator and step for, J. Pierce	678,028
Lamp, acetylene gas generating, L. S. Buttington	677,934
Lamp and ventilator, gas, W. S. Wandell	677,873
Lamp, electric arc, P. Lühr	677,873
Lamp, electric arc, D. Higham	677,985
Lamp, electric arc, C. P. Steinmetz	678,058
Lamp, electric arc, E. Thomsen	678,066
Lamp, electric arc, W. E. Symons	678,142
Lamp, incandescent, C. H. Way	678,280
Lamp, incandescent electric, A. H. Miller	678,320
Lamps, gas, for incandescent, P. Lühr	678,344
Lamps, operating electric arc, P. Lühr	678,344
Lantern carrier, S. Holmes	677,987
Lantern pinion, P. L. Clark	677,856
Last, J. H. Pope	678,129
Last, H. F. Scott	678,137
Laundering iron heater, H. Crueger	678,165
Lens, compound, G. N. Saegmuller	678,306
Lever, hand, P. F. Handley	678,252
Life raft, J. V. Vanu	677,920
Lifting jack, J. M. Babbitt	677,920
Lighting arrester, W. D. Gharky	677,973
Linotype machine, J. R. Rogers	678,036
Linotype machine, O. Merenthaler	678,268
Linotype machine, F. A. Vinton	678,310
Lock, See Bicycle lock	
Lock, M. Switzer	678,060
Lock, T. Richards	678,305
Logging railway appliance, N. Young	678,090
Loom, Draper & Reper	678,296
Loom, J. Hehl	678,106
Loom, G. R. Race	678,279
Loom picker mechanism, T. Gilson	678,241
Loom shuttle checking means, C. F. Reper	678,321
Lug strap and holder, D. O. Connors	678,311
Magnet coil, H. P. T. Erben	678,168
Mail bag catcher, E. Potter	678,278
Mail bag transferring machine, E. T. Granbery	677,978
Mail box, rural, W. E. Fenstermacher	677,967
Measure for paper bags, W. J. Jinnette	677,982
Measure, variable, T. E. White	678,325
Measuring instrument, electric, W. C. Fish	678,236
Measuring device, leg, L. P. Cowart	677,948
Mechanical energy, storage of, C. Steiner	678,141
Mechine chest, J. Schaefer	678,284
Metal sheets, machine for folding or edging, Bright & De Priest	677,933
Metal washers, making, F. A. Neider	677,883
Metal worker's protractor pattern, J. M. McFarland	678,018
Metallic leaf, package roll for holding and applying, W. H. Cae	678,162
Milking apparatus, pneumatic or hydraulic, C. von Bechtelsheim	678,231
Milling machine attachment, V. Holmberg	678,341
Mining coal, E. C. Marzan	677,880
Mining dredge, W. T. Urie	678,147
Mining machine, W. Seltner	678,045
Mitt, baseball, C. H. Dean	677,958
Mold facing, M. B. Owen	678,124
Moist trap, D. G. Chandler	678,222
Mooring device, E. R. Newell	678,273
Mop head and wringer, combined, W. R. Gillette	678,240
Mortising machine, gagging and face marking attachment, E. Leitch	677,998
Motion converting mechanism, C. Wittke	678,326
Motor control system, W. B. Potter	678,029
Motor controlling means, E. P. Masen	678,013
Moving machine, J. F. Steward	678,059
Multicylinder motor, Z. Wirt	678,081
Musical holder and turner, sheet, J. A. Asbby	678,327
Musical instrument, automatically operated stringed, D. K. Marsball	678,318
Musical instrument, electrically operated, H. S. Brown	678,095
Necktie fastener, B. L. Bummert	678,098
Necktie holder, P. M. Cady	677,951
Non-inductive windings, arrangements of, E. Arnold et al	677,917
Nut lock, S. Cae	678,163
Nut lock, C. S. Clark	678,293
Ores, etc., apparatus for desulfurizing, J. P. Wetzel	678,078
Ores, treating complex, J. W. Worsey	678,210
Organ, reed, R. J. Bennett	678,329
Oven, broiling, E. E. Tobin	678,308
Overalls, R. J. Smith	678,049

WOOD or METAL Workers

Without Steam Power should use our Foot and Hand Power Machinery. Send for Catalogues

A—Woodworking Machinery, B—Lathes, etc.

SENECA FALLS MFG. CO.
695 Water St., Seneca Falls, N.Y.

Foot and Power Turret Lathes, Planers, Shapers, and Drill Presses.

SHEPARD LATHE CO., 153 W. 2d St., Cincinnati, O.

ENGINE & FOOT TOOLS AND SUPPLIES

LATHES. SEBASTIAN LATHE CO., CINCINNATI, O.

ELECTRIC LAUNCH MOTOR.—THE design in this paper is for a motor of unusual simplicity of construction, which can easily be built by an amateur at small cost. It is intended for a boat of about 24 feet over all and 4 feet 6 inches beam drawing 18 inches, and is capable of propelling such craft at a speed of 7 miles per hour. Illustrated with 21 cuts. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 1202. Price 10 cents by mail, from this office and from all newsdealers.

TOOLS FOR MECHANICS.

Send for Free Catalogue No. 16 B.

The L. S. Starrett Co., Athol, Mass., U. S. A.

FOR LIGHT AND MEDIUM WORK

this new 14 inch

B. F. BARNES

Upright Drill is several laps ahead of any other drill on the track. It will drill from 1/16 of an inch up to 3/4 of an inch and is a strong, well built, durable tool. It doesn't cost a whole lot either. Details are yours for the asking.

J. F. BARNES COMPANY, Rockford, Ill.

Gas Engine IGNITER

Complete with spark coil, \$12.00. The Best Thing on the market. Latest and most improved model.

Send for Circular.

Carlisle & Finch Co., 233 E. Clifton Av., Cincinnati, O.

PERFECT - PUMP - POWER.

is attained only in the TABER ROTARY PUMPS. They are mechanical, simple and durable. Will pump hot or cold fluid, thin or thick. Requires no skilled mechanic. Most power at least cost. All parts interchangeable. Made of iron, steel or bronze. Can be driven by belt, motor or engine attachment. Large Illustrated Catalogue Free.

TABER PUMP CO., 32 Wells St., Buffalo, N.Y., U. S. A.

HOLD THE WIRE

and take any number of kinks out of it, cut it in any required lengths—long or short, straightening it perfectly by using the

LONG-CUT AUTOMATIC WIRE-STRAIGHTENING AND CUTTING MACHINE.

Straightens and cuts from the coil at the rate of 120 feet per minute.

F. B. SHUSTER CO.,
Formerly John Ant & Sons,
New Haven, Conn., U. S. A.
Established 1868. Incorporated 1898.

FLY PAPERS.—FORMULAS FOR Sticky Fly Papers are contained in SCIENTIFIC AMERICAN SUPPLEMENT Nos. 1057 and 1324. Each issue contains several recipes. Price 10 cents each, from this office, and from all newsdealers.

"WOLVERINE" Gas and Gasoline Engines

STATIONARY and MARINE.

The "Wolverine" is the only reversible Marine Gas Engine on the market. It is the lightest engine for its power. Requires no license or engineer. *Absolutely safe.* Mfd. by

WOLVERINE MOTOR WORKS,
12 Huron Street,
Grand Rapids, Mich.

Cover Your REFRIGERATING PIPES with a durable, efficient and cheap sectional covering that is light and easily applied. If it is given proper care and attention

NONPAREIL CORK

will not deteriorate. When butted tight, make perfect joints, and as we cover them they are impervious to water, dampness or frost. No capillary attraction. Successful wherever tried.

THE NONPAREIL CORK MFG CO., Bridgeport, Conn.

PRATT & WHITNEY CO.

TAPS, REAMERS, MILLING CUTTERS, DIES, PUNCHES, RATCHET DRILLS.

Small Tool Department, HARTFORD, CONN.

If you want the best CHUCKS, buy Westcott's

Little Giant Double Grip Drill Chucks, Little Giant Drill Chucks, Improved, Oneida Drill Chucks, Cutting Chucks, Scroll Combination Lathe Chucks, Geared Combination Lathe Chucks, Plain Universal Lathe Chucks, Independent Lathe Chucks. Made by Westcott & Westcott, Oneida, N. Y., U. S. A. Ask for catalogue in English, French, Spanish or German.

FIRST PRIZE AT COLUMBIAN EXPOSITION, 1893.

Package for holding liquids, J. F. Ansen	677,918
Packing, metallic, E. Bader	677,931
Pen, J. H. Coleman	677,944
Pencil holder attachment for dividers, C. Klau	677,995
Phonograph, J. R. Hare	678,174
Piano attachment, J. H. Deutsch	677,860
Picture frame support, P. C. Carey	678,221
Pictures, producing relief, A. Lembacher	678,262
Pigeonhole table, C. Lufsky	678,000
Piston rod connection, multiple cylinder, F. L. White	678,150
Planter, check row, C. C. Leary	678,187
Planter, cotton seed, G. Winter	678,355
Planter, wireless check row corn, A. L. Van Houser	678,206
Plasterer's ground, F. L. Union	678,146
Plastering composition, H. C. McMillin	678,010
Plow, W. H. Rothmann	677,997
Pneumatic carriers, terminal for, H. Bitner	677,928
Polishing machine, W. A. Lindsey	678,109
Polishing wheel, H. Snyder	678,054
Portable clamp, J. A. Scott et al	678,043
Portfolio, music, A. C. Gardner	677,972
Powders, divider and bag filler for, L. Neumayer	678,272
Press, See Baling press	
Printing press, hand cylinder, L. B. Woodruff	677,910
Printing press inkling apparatus, R. Meisel	677,877
Printing surfaces, manufacture of, Thompson & Webb	678,065
Propeller, W. B. Pinkerton	678,275
Propeller governor, P. S. Cormier	678,228
Propelling mechanism, vessel, M. A. Petersen	678,193
Propelling mechanism, vessel, A. J. Taplin	678,290
Puddling furnace, J. P. Rees	678,282
Pulling machine, E. P. Rees	678,281
Pulp strainer, G. S. Witham	678,082
Pump, W. S. McLeod	678,009
Pump, centrifugal, J. Richards	678,198
Pump, centrifugal, R. W. Christain	678,223
Pump governor, steam, E. M. Carr	677,940
Quilt, A. A. Low	678,265
Radiator, T. S. Martin	677,876
Rail bond, H. C. Wade	678,076
Rail clutch, J. H. McFarland	678,020
Railway, amusement, E. A. Green	678,243
Railway, electric, F. M. Ashley	677,848
Railway, electric, J. M. Anck	678,213
Railway rail joint, R. J. McCarty	678,006
Railway, surface contact, P. Farnsworth	677,966
Railway switch mechanism, A. C. Wolfe	678,084
Railway switch, street, J. Simmerman	677,889
Railway system, electric, G. T. Woods	678,086
Ratchet drill, J. Petersen	678,111
Receptacle, Baren & Hakey	677,850
Record, J. W. Cutler	678,229
Rheostat, F. E. Case	677,941
Rope grip, H. Hansel	678,246
Rotary engine, J. S. Harger	678,338
Rotary explosive engine, W. B. Cuthbertson	677,949
Roundhouse, E. F. Brady	677,929
Rovlock, M. S. Berry	677,932
Rule, folding, W. M. Myers	678,005
Saddle harness, Scherp & Siglinger	678,202
Sash lift and lock, combined, C. H. Hawkins	677,981
Scaffold, window, R. Guenther	678,115
Scenic structure, H. G. Maratta	678,012
Screw machine, J. P. Lavigne	677,871
Screw manufacturing machine, L. Taber	678,205
Screw wedge, A. C. Wolfe	678,085
Seed blasting apparatus, A. J. Johnson	677,992
Seed hulling and reducing machine, cotton, C. V. C. V.	678,088
Sewing machine looper, H. P. Richards	677,886
Sewing machines, signature feeder for book, W. G. Trevette	678,068
Shade and lace curtain fixture, adjustable window, O. H. Cannon	678,150
Shears, buttonhole, and ruffling gage, E. L. N. Steen	678,288
Sheet delivery apparatus, W. Scott	678,044
Sheet metal can, M. Amis	678,091
Shelf support, L. Paulle	678,125
Ship's door, J. A. Kessler	677,868
Shirt or shirtwaist case, L. W. Peddicord	678,027
Shoe, swimming, T. J. A. Freeman	678,237
Shutter worker, J. Norton	677,894
Siding marker, J. B. Mess	678,269
Sieve, grain, H. K. Clement	677,857
Skin support, K. E. Ackersberg	678,151
Smoke consuming furnace and apparatus in connection therewith, A. Krippl	678,261
Snow ice, machine for removing, C. Peare	678,277
Spectacle case, M. A. Threhouse	677,904
Spinning or twisting machine thread guide support, L. T. Houghton	677,988
Spinning ring, F. M. Marcy	678,266
Spinning spindle plumbing device, H. Kelly	677,994
Stadia rod, G. L. Sanderson	678,041
Stamp machine, C. H. Krause	678,300
Stamper, apparatus, jury list, W. M. Thomas	678,307
Steam and gas generating apparatus, J. C. Merrill	677,878
Still fue, T. A. Williams	678,079
Still, water, G. W. Davis	678,230
Stone, manufacture of artificial, P. Cabrie	677,853
Stone attachment, W. P. McCobb	678,123
Straw, oil, J. Guimaraes	678,001
Straw valve combining, G. U. Merrill	678,245
Stroke mechanism, adjustable, B. W. Grist	678,172
Suspender, J. W. Hafer	678,251
Swing, J. B. Gagnon	678,336
Swing, lawn, O. R. Olsen	678,192
Swing, lawn or house, O. R. Olsen	678,349
Switch operating mechanism, H. E. Poole	678,276
Tag, laundry, W. J. Baker	678,156
Telephone circuit, W. E. Pemberton	678,304
Terra cotta and clay ware, machine for the manufacture of hollow, E. G. Durant	677,861
Thermostat for operating valves, J. W. Eberman	678,332
Thill coupling, J. E. Johnson	678,184
Ticket, etc., railway, L. G. Smith	678,354
Timber protecting compound, C. Schallberger	678,201
Tire, cushion, W. G. Kendall	678,317
Tire, cushion, J. Holland	678,340
Tire, pneumatic bicycle, E. Hemsted	677,985
Tire, vehicle, J. W. Hawkins	677,987
Tire, vehicle, G. W. Southwick	678,055
Tonsilometer, G. Ermoel	678,333
Tool, combination, F. H. Engstrom	677,964
Tool, combination, A. K. Harper	678,247
Tooth or dental clamp, J. W. Ivory	678,182
Tooth powder box, C. H. Stadlinger	678,056
Toy bank, keyless, H. A. Skinner	677,895
Toy, optical, Royle & Wynne	678,351
Track structures, casting clamp for, A. B. Davenport, Jr.	678,166
Track structures, casting clamp for, Anger & Cline	678,214
Traction motor, Maxham & Upham	678,122
Transformer, J. J. Frank	677,970
Transformer, flux screen for, A. R. Everest	678,233
Trap, W. A. Brunker	678,220
Traveling bag, A. H. Christie	677,942
Trays, machine for making box, C. B. Andrews	678,152
Trolley, T. L. McElroy	677,881
Trolley, F. R. Taisey	678,143
Trombone oiling attachment, F. Ennis	677,965
Trough or tank, stock, J. F. Glidden	678,104
Truck for moving buildings, J. Rademeier	678,035
Truss, hernial, W. A. Middaugh	677,879
Tub foot fastener, McKinney & Whitehead	678,007
Tub expander, C. V. Burton	677,930
Tufted fabric, A. F. Mock	678,347
Tying and bundling machine, C. Seybold	678,328
Typing machine, W. J. Barton	677,928
Umbrella handle, J. Kelsey	678,316
Universal joint, G. B. Kinsler	677,869
Universal joint, F. E. Becorselski	678,093
Unloading device, F. P. Johnson	678,108
Vacuum producing apparatus, Howell & Burrows	677,989
Vacuum tube lighting, D. M. Moore	678,302
Valve actuating mechanism, W. H. Collier	677,858
Valve, check, P. Mueller	678,271
Valve, piston, J. T. Heffernan	677,982
Valve seat, removable, E. H. Merrill	678,014
Valve, vacuum, W. H. Sbay	677,888
Valves, automatic lubricator for slide, J. W. Stewart	677,901
Vapor burner, L. Durr	678,295
Vehicle, J. H. Meninger	678,015
Vehicle brake, W. H. Adams	677,846

(Continued on page 47)

AUTOMOBILE PARTS.

IF YOU ARE BUILDING AN AUTOMOBILE, WE CAN SUPPLY YOU WITH PARTS AND FITTINGS.

IN OUR SEVEN FACTORIES WE MAKE RUNNING GEARS, TOOL STEEL BALLS, STEEL RIMS, STEEL STAMPINGS, CHAINS, SHEET STEEL AND FORGINGS.

ALL FOR AUTOMOBILE CONSTRUCTION. QUOTATIONS ON APPLICATION.</

Learn to Earn

Write for our free book, "Learned Positions for Learners" for those who would be Architects, Civil, Mechanical or Electrical Engineers. The Schools are open all summer. Over 300,000 students taught by mail.

INTERNATIONAL CORRESPONDENCE SCHOOLS,
Box 942, Scranton, Pa.
Capital \$1,500,000.

EVERY MAN HIS OWN MECHANIC;

A COMPLETE ENCYCLOPEDIA OF HOUSEHOLD MECHANICS. Containing instructions in constructive work and the use of all appliances for wood-working, building, household furniture and fittings, excavating, drainage, building in brick, stone and concrete; also painting, glazing and paper-hanging, etc. 752 illustrations and diagrams, and nearly 1,000 pages. Bound handsomely in durable cloth. Mailed postpaid on receipt of \$2.00. Address, Dept. of Mechanics, ROHDE & HARKINS, 7 and 9 Cortlandt Street, New York.

SENSITIVE LABORATORY BALANCE.

By N. Monroe Hopkins. This "built-up" laboratory balance will weigh up to one pound and will turn with a quarter of a postage stamp. The balance can be made by any amateur skilled in the use of tools, and it will work as well as a \$125 balance. The article is accompanied by detailed working drawings showing various stages of the work. This article is contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1154. Price 10 cents. For sale by MUNN & Co., 361 Broadway, New York City, or any bookseller or newsdealer.

A GRADUATED Automatic REDUCING VALVE

Physicians, Surgeons, Jewelers, Dentists, Artists, Brewers, Bottlers, etc., in fact all users of power require the

AUTOMATIC REDUCING VALVE.
Graduated to regulate the pressure exactly and does it automatically. Absolutely air-tight. No packing. No leakage. Handles high or low pressures or temperatures. Only Valve known that retains a uniform low pressure independent of varying high pressure.

Automatic Reducing Valve Co., 125 La Salle St., Chicago

WORK SHOPS

of Wood and Metal Workers, without steam power, equipped with

BARNES' FOOT POWER MACHINERY
allow lower bids on jobs, and give greater profit on the work. Machines sent on trial if desired. Catalog Free.

W. F. & JOHN BARNES CO.
1999 RUBY ST., ROCKFORD, ILL.

METAL POLISHES.—FORMULAS FOR

Putz Pomades, Pastes, Liquids, Powders and Soaps, for polishing metals, are contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 1254, 1255 and 1256. Price 10 cents each, from this office and all newsdealers.

Prevention Better Than Cure.

The largest plants in the country are using the

"MONARCH" Engine-Stop System
with which it is impossible for an engine to run away. Invaluable in cases of accident or emergency, as the engine can be stopped from any portion of the plant by simply pressing an electric button. Safe, swift, sure. Superiority commands respect.

THE MONARCH MFG. CO.
Waterbury, Conn.

ROOF YOUR OWN BUILDINGS

at slight expense of time, labor or money with

Warren's Natural Asphalt Stone Surface Ready Roofing.
Surface is completed at factory and requires no painting. Durable and comparatively fire-proof. In rolls of 108 square feet, made of genuine Trinidad asphalt. Write for particulars to

Warren Chemical & Mfg. Co., 85 Fulton St., New York.

REVERSING STEAM TURBINE.—PARSON'S

recently perfected turbine for boats. Illustrations showing details, contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1158. Price 10 cents, by mail from this office, and from all newsdealers.

Every can of Patton's paint guaranteed for five years. It is pure paint in perfect proportion. 48 color tints and white.

PATTON'S Sun Proof PAINT

A book of paint knowledge sent free. Induce customers to dealers. PATTON PAINT CO., 227 Lake St., Milwaukee, Wis.

Asbestos-Metallic Packings

OLYMPIA

SHEETING, GASKETS, TAPE AND PISTON PACKINGS.
Will stand the highest pressure for either steam or hydraulic work. Write for samples and price list.

C. W. TRAINER MFG. CO., (Est. 1874), 88 Pearl St., Boston, U. S. A.

50 YEARS' EXPERIENCE

PATENTS

TRADE MARKS, DESIGNS, COPYRIGHTS & C.

Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. Handbooks on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge, in the

Scientific American.

A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, \$3 a year; four months, \$1. Sold by all newsdealers.

MUNN & Co., 361 Broadway, New York
Branch Office, 625 F St., Washington, D. C.

Vehicle driving mechanism, motor, L. B. Smyser	677,897
Vehicle, dumping, F. I. E. Akers	677,847
Vehicle gear, compensating, C. T. Fletcher	677,968
Vehicle, motor, Canda & Smyser	677,854
Vehicle, motor, R. Thayer	678,063
Vehicle wheel, G. V. Orton	678,025
Vehicle wheel, E. J. Watkins	678,067
Vehicle, engine protector for motor, G. A. Macker	677,875
Vending machine, automatic, E. A. Reeves	678,033
Ventilation of vehicles, buildings, etc., C. L. Pullman	678,130
Wagon dumping device, H. Fox	677,971
Wagon, mail carrier's, G. A. Town	678,074
Wagon standard, A. Page	678,303
Waistband fastener, E. M. Palmer	678,885
Washing machine, H. Hecvor	678,177
Watchmaker's tool, O. Lamacchia	678,186
Water heater and pipe cleaning apparatus, Cook & Streng	677,859
Water heater, electrical, H. M. Hill	678,314
Water tank, A. Deschambault	677,959
Wattmeters, preventing creeping in record, Ing, F. G. Vaughan	678,075
Wet lock, H. Batson	677,924
Weighting, lifting, and grip machine, G. G. S. Mery	678,345
Wick stop and flame extinguisher, combined, W. A. Penfield	678,126
Windmill regulator, H. K. Tabler	678,061
Window screen, W. J. Baker	678,216
Woodworking machine protector, J. M. & A. Mowatt	678,016
Wrench, W. H. Burr	677,937
Zithers, pick key for, J. C. St. John	678,140

DESIGNS.

Badge, W. B. Sherman	34,745
Beer cooler base, E. Gross	34,755
Belt, L. Saunders	34,769
Chair, H. A. Kinney	34,756
Cheese mold cloth holder, N. Simon	34,758
Clothes pin, E. L. Dryden	34,757
Coffee mill shell, A. E. Bronson, Jr.	34,759
Coin controlled mechanism case, N. M. Watson	34,754
Pyroglass bridge, W. H. Ely	34,751
Lamp, vehicle, W. Gray	34,753
Locomotive tender body or similar article, C. Vanderbilt	34,765
Penrack, J. Adair	34,750
Pipe, A. Q. Walsh	34,749
Potato hook, M. A. Hall	34,762
Puzzle board, R. C. McCaleb	34,767
Railway tie, R. C. Lukens	34,764
Razor case, H. M. Tower	34,748
Saddle, riding, A. F. Croom	34,766
Sharpeners or glass cutters, frame for knife, F. G. Reynolds	34,761
Spectacles or eyeglasses, nosepiece for, I. Fox	34,752
Spoon, C. H. Weisgerber	34,747
Spoons, forks, etc., handle for, C. A. Bennett	34,746
Static machine stationary plate, J. M. G. Beard	34,763
Stocking or similar article, T. West	34,770
Waist lengthener, E. K. Pilling	34,768

TRADE MARKS.

Apples, evaporated, Elbert & Gardner	36,722
Boots and shoes, V. K. & A. H. Jones Co.	36,695
Boots, shoes, and leather, Frank G. Jones	
Shoe Co.	36,696
Bracelets, Whiting & Davis	36,690
Brandy, wine, and gin, F. E. Frey	36,719
Brushes, Wiersch Bros. Co.	36,724
Catsup, Dodson-Braun Mfg. Co.	36,723
Combs, Gillum & Rudy	36,691
Cotton goods, Coventry Co.	36,700
Cotton goods, Tata & Co.	36,701
Doll heads, metal, A. Vischer & Co.	36,704
Fencing, wire, Union Fence Co.	36,727
Food, breakfast, Hygienic Food Co.	36,721
Food substances and ingredients and cereal beverages, certain named, R. Graham	36,720
Forgings, certain named, Midvale Steel Co.	36,728
Games, household and indoor, E. E. Graves	36,705
Glass lamp chimneys, glass reflectors, and glass lantern globes, Gill Brothers & Co.	36,725
Hardware, certain named, Turner Hardware Co.	36,726
Insecticides, H. W. Boughton	36,709
Medical compound, certain named, B. From	36,715
Medicine, certain named, R. H. N. Johnson	36,713
Medicine for certain named diseases, R. Ambrogi	36,718
Medicines, certain named, Moon's Magnetic Medicine Co.	36,714
Neckties, Louis Auerbach	36,692
Paper, certain named, Fort Orange Paper Co.	36,703
Pulp, articles manufactured from wood, C. W. Zarembo	36,702
Remedies, certain named internal and external, W. Brown	36,716
Remedies in tablet form, internal headache, Neuralgine Co.	36,717
Remedy for certain named diseases, F. Hoffman-La Roche & Co.	36,729
Salts, granular effervescent, W. Ohl	36,711
Shoes, F. E. Mistrot	36,693
Shoes, boots and slippers, National Shoe Co.	36,694
Soap, perfumes, toilet water, cosmetics, and face powder, toilet, Muhlen & Kro	36,707
Soap, toilet and shaving, J. A. Moninger	36,706
Suspensories, J. Ellwood Lee Co.	36,710
Tablets, digestive, Laxakola Co.	36,712
Waterproof coats, B. Kuppenheimer & Co.	36,699

LABELS.

"Antelope State Sugar Corn," for canned goods, Martin & Nurte	8,520
"Bonanza Japan Tea," for tea, H. H. Mehlhop	8,518
"Corson's Red Cross Capsules," for capsules, G. C. Taggart	8,525
"Dr. Boston's Magic Tablets" for Headache, for a medicine, L. B. A. Bonion	8,530
"Dr. Kane's Forest Root Cough Remedy," for a medicine, G. Phipps	8,527
"Duquesne Beer," for lager beer, Duquesne Brewing Co.	8,515
"Duquesne Export Beer," for lager beer, Duquesne Brewing Co.	8,516
"First President," for cigars, J. Dunham	8,513
"Forest Root Extract," for a medicine, G. Phipps	8,529
"Knapp-Cure," for a medicine, G. Phipps	8,528
"Missouri River Brand Sugar Corn," for canned goods, Martin & Nurte	8,521
"President's Restorative Tablets," for a medicine, President's Co.	8,526
"Sashbelt Trousers," for trousers, E. Goodman	8,531
"Swiss Milk Cocoa," for cocoa, Croft & Allen	8,519
"The Earl Gulick Antiseptic Tooth Powder," for toothpowder, J. G. Gulick	8,522
"Thymozone Dandruff Cure and Hair Food," for a dandruff cure and hair food, Drake Hawley Co.	8,523
"What Ails Your Eyes," for eye water, Howard Bros.	8,524
"Xe Ancient Order of Whynot," for cigars, H. L. Kirstein & Co.	8,514

PRINTS.

"Sweet-Whitney Music Method," for musical merchandise, Sweet & Whitney	369
"The Paris Skirt Co.," for dress skirts, Paris Skirt Co.	370

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 10 cents. In ordering please state the name and number of the patent desired and remit to Munn & Co., 361 Broadway, New York.

Canadian patents may now be obtained by the inventors for any of the inventions named in the foregoing list. For terms and further particulars address Munn & Co., 361 Broadway, New York.

THE EASIEST WRITING STEEL PENS MADE ANYWHERE

FOR SALE BY ALL STATIONERS

WELL DRILLING Machines

Over 70 sizes and styles, for drilling either deep or shallow wells in any kind of soil or rock. Mounted on wheels or on sills. With engines or horse powers. Strong, simple and durable. Any mechanic can operate them easily. Send for catalog.

—WILLIAMS BROS., Ithaca, N. Y.

ELECTRO MOTOR. SIMPLE, HOW TO MAKE.—By G. M. Hopkins. Description of a small electric motor devised and constructed with a view to assisting amateurs to make a motor which might be driven with advantage by a current derived from a battery, and which would have sufficient power to operate a foot lathe or any machine requiring not over one man power. With 11 figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 641. Price 10 cents. To be had at this office and from all newsdealers.

Our Specialty: Knuck-Down Boats of any description.

AMERICAN BOAT & MACHINE CO.,
ROW, SAIL AND PLEASURE BOATS,
Marine Station, ST. LOUIS, MO.

MORAN FLEXIBLE JOINT
for Steam, Air or Liquids.
Made in all sizes to stand any desired pressure.

Moran Flexible Steam Joint Co., Inc'd,
145 East 34 St., LOUISVILLE, KY.

The Locke Adder.
Fastest, simplest, handiest, most practical and durable low-priced calculating machine. No business complete without it. Adds, Subtracts, Multiplies, Divides. Easily learned, lasts a lifetime. Saves time, labor, money, and

QUICKLY PAYS FOR ITSELF
Ensures accuracy, releases from mental strain. Adds all columns simultaneously. Capacity 999,999,999. Price \$5.00 prepaid. Descriptive booklet FREE. Agents wanted.

C. E. LOCKE MFG. CO. 25 Walnut Street, Kensett, Ia.

WALRATH GAS & GASOLINE ENGINES

From 4 to 200 H. P. Made in one, two, three and four cylinder type. The gas engine that holds a voltmeter as close as an automatic steam engine. Adapted to all power purposes, stationary or portable, and especially well qualified for electric lighting. Guaranteed to produce a first-class commercial light without the aid of countershafts or massive fly-wheels. Neat in design, simple in construction, economical in operation, self-lubricating, all parts interchangeable and accessible. Send for catalog "S."

Marinette Iron Works Mfg. Co., Marinette, Wis., U. S. A.
G. F. WHEELER, General Sales Agent, Chicago office, 301 Fish St. Bldg.

PATENTED ARTICLES AND NOVELTIES MADE TO ORDER
Established 1875. OTTO KONIGSLOW, Cleveland, Ohio.

MODEL AND EXPERIMENTAL WORK.
Electrical and Mechanical Instruments. Small Machinery.
EDWARD KLEINSCHMIDT, 122 Fulton St., New York.

INVENTIONS PERFECTED.
Accurate Model and Tool Work. Write for Circular.
PARSELL & WEEB, 129-131 West 31st St., New York.

SALE IN EUROPE, particularly in France, of patented American Machines and Industrial Apparatus, and of patented American inventions.
L. Simon, Civil & Mechanical Engineer, Troyes, France.

NOVELTIES & PATENTED ARTICLES
Manufactured by Contract. Punching Dies, Special Machinery. E. Konigsow & Bro., 181 Seneca St., Cleveland, O.

VOLNEY W. MASON & CO.,
Friction Pulleys, Clutches & Elevators
PROVIDENCE, R. I.

\$75 Month and Expenses; no experience needed; position permanent; self-seller.
PRASE MFG. CO., Stat'n 10, Cincinnati, O.

SMALL STEEL CASTINGS
That are Moulded True to Pattern.
That are of Tough and Uniform Metal.
That are Easily Machined (No hard spots).
That are Free from Blow or Sand Holes.
That will take a Fine Polish.
That will Harden like Tool Steel.

Send Sample for Prices Stating Quantity Required.
HOMER F. LIVERMORE, 80 Pearl St., Boston, Mass.

ELECTRIC FOUNTAINS

What Do You Want To Buy?

We can tell you where to buy anything you want.
Write us for the addresses of manufacturers in ANY line of business.
Novelties, Special Tools, Machinery, Equipments, New Patent LABOR SAVING DEVICES.

MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, 361 BROADWAY, NEW YORK.

ELECTRICAL ENGINEERING TAUGHT BY MAIL.

Write for our Free Illustrated Book. "CAN I BECOME AN ELECTRICAL ENGINEER?"

We teach Electrical Engineering, Electric Lighting, Electric Railways, Mechanical Engineering, Steam Engineering, Mechanical Drawing, at your home by mail. Institute directed by Thos. A. Edison and others.

ELECTRICAL ENGINEER INSTITUTE,
Dept. A, 240-242 W. 28th St., New York.

AGENTS \$200 to \$500
MAKE FROM a month handling the COMING LIGHT. Brighter than electricity, cheaper than kerosene. Thousands of testimonials from people using them over a year. Latest improvements. Permitted by Ins. Co's. Largest factory in U.S. 41 styles. Lowest prices. Retail \$4 up. Sample lamp half price. We want one agent, merchant or individual in every town. Illustrated catalogue free.

STANDARD GAS LAMP CO.
118-120 Michigan St., Chicago.

SALESMEN AND AGENTS WANTED
BIG WAGES—Our Famous Puritan Water Still, a wonderful invention—not a filter. 22,000 already sold. Demand enormous. Everybody buys. Over the kitchen stove it furnishes plenty of distilled, aerated drinking water, pure, delicious and safe. Only method. Distilled Water Cures Dyspepsia, Stomach, Bowel, Kidney, Bladder and Heart Troubles; prevents fevers and sickness.

Write for Booklet, New Plan, Terms, etc. FREE

Harrison Mfg. Co.,
297 Harrison Bldg., Cincinnati, O.

GASOLINE AUTOMOBILES.—VALU
able illustrated articles on the above subject containing many details of the motors and vehicles, are contained in SUPPLEMENT Nos. 1099, 1270, 1295 and 1311. Price 10 cents each. For sale by Munn & Co. and all newsdealers.

LET US START YOU! \$100.00 MONTHLY
Gold, Silver, Nickel and Metal Plating. At home or traveling, taking orders, using and selling Prof. Gray's Machines. Plates Watches, Jewelry, Tableware, Bicycles, all metal goods. No Experience. Heavy plate. New methods. We do plating, manufacture outfits, all sizes. Guaranteed. Only outfit complete, all tools, lathes, material, etc., ready for work. We teach you, furnish secrets, formulas free. Write today. Pamphlet, samples, etc. FREE.

P. GRAY & CO., Plating Works, CINCINNATI, O.

MODELS & CHICAGO MODEL WORKS
ESTABLISHED 1867. 179 E. MADISON ST. CHICAGO, ILL. WRITE FOR CATALOGUE OF MODEL SUPPLIES.

Cement Books. How to Use Portland Cement. 5c. Mortar Constructions. Cement & Steel, 5c.; Constitution of Hydraulic Cement, 25c. Cement and Engineering News, 16c. La Salle St., Chicago.

Experimental & Model Work

City and advice free. Wm. Gardam & Son, 45-51 Rose St., N.Y.

ICE MACHINES, Corliss Engines, Brewers' and Bottlers' Machinery. THE VILTER MFG. CO., 899 Clinton Street, Milwaukee, Wis.

STEEL TYPEWRITER TYPE
TYPE WHEELS, MODELS & EXPERIMENTAL WORK, SMALL MACHINERY NOVELTIES & ETC. NEW YORK STENCIL WORKS 105 NASSAU ST. N.Y.

MODELS & EXPERIMENTAL WORK.
Inventions developed. Special Machinery. E. V. BAILLARD, Fox Bldg., Franklin Square, New York.

AGENTS.—You can't find a better proposition. Home business, large profits, advancement. Write, give us a chance to convince you. Lewis & Company, 46 North Third Street, St. Louis, Mo.

AGENTS on salary or commission; \$12 daily or \$100 per month and expenses, selling our claim file to merchants and physicians. Sayers & Company, D 60, 408 Olive Street, St. Louis, Mo.

D'AMOUR & LITTELDAL MACHINE CO.
130 WORTH ST., NEW YORK.
PATTERN AND MODEL MAKERS.

STATLER'S Pan-American HOTEL
The Largest in the World. Send for map of city and Exposition grounds, also folder telling how to secure guaranteed accommodations.
F. C. STATLER, Prop., Statler's Hotel, at Exposition, Buffalo, N. Y. { Statler's Restaurant, Ellicott Sq.

DARLINGTON
ELECTRIC FOUNTAIN & SUPPLY CO.
1120 REAL ESTATE TRUST BLDG.,
PHILADELPHIA, PA.