

for discharging the load of the body at the side of the wagon, thus avoiding obstruction of the street or railway thereon, provision being also made for placing the body in inclined position, so as to elevate the place of discharge, and, furthermore, to elevate the body to a greater degree and permit inclination of the body at its highest point, so as to dump the load at different altitudes relatively to requirements due to different positions of the place designed to receive the load in a cellar or elsewhere.

TRUCK.—E. F. SHERRILL and B. R. SHERRILL, Moline, Ill. In this patent the invention is an improvement in trucks and especially in that class of trucks designed for use in handling baggage, bricks, and the like, wherein it is desired to raise the articles to a higher level in some instances and to lower them from a higher level in other instances.

Designs.

DESIGN FOR RUFFLING.—C. SEIDEL, New York, N. Y. The designer has invented a new, original and ornamental design for ruffling which represents a width of material made up of comparatively heavy and light double and single cross-lined strips. Single and double cross-waved patterns run through the cross-lined portions.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

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. 7512.—For makers of the instrument called the "Leak Finder," used for locating leaks in underground water mains.

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

Inquiry No. 7513.—For machines to make stapled and drawn push buttons.

For bridge erecting engines. J. S. Mundy, Newark, N. J.

Inquiry No. 7514.—For makers of rubber pillow ventilators.

Drying Machinery and Presses. Biles, Louisville, Ky.

Inquiry No. 7515.—For makers of typewriter parts, such as machine parts.

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

Inquiry No. 7516.—For makers of garment hangers made of wood.

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

Inquiry No. 7517.—Wanted, makers of an article for waterproofing silk without injuring the fabric or lessening the flexibility of same.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 7518.—Wanted, catalogue of latest machinery for making peat bricks for fuel.

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

Inquiry No. 7519.—For makers of bare and insulated copper magnet wire.

WANTED.—Young man experienced in drafting and designing textile machinery "New England." Machinery, Box 73, New York.

Inquiry No. 7520.—Wanted, machinery to make briquettes from sawdust.

WANTED.—Ideas regarding patentable device for water well paste or muckage bottle. Address Adhesive, P. O. Box 773, New York.

Inquiry No. 7521.—Wanted, makers of metal fountain syringes.

LATEST ADVERTISING NOVELTIES.—High-grade Illustrating, Designing and Printing. Catalogues a Specialty. Smith & Berkeley, Holland Bldg., St. Louis, Mo.

Inquiry No. 7522.—Wanted, a saw operated by electricity, gas or steam for sawing trees.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery tools and wood fibre products. Quadriga Manufacturing Company, 18 South Canal St., Chicago.

Inquiry No. 7523.—For importers or makers of colored glass bead fringe used in making lamp shades; also for makers of stamped brass beading and moulding used in this work.

Absolute privacy for inventors and experimenting. A well-equipped private laboratory can be rented on moderate terms from the Electrical Testing Laboratories, 548 East 80th St., New York. Write to-day.

Inquiry No. 7524.—For makers of high resistance wire of small size, suitable for hot wire electrical instruments.

INVENTIONS WANTED.—Undersigned will consider one or two good patented or patentable inventions to manufacture on royalty. Something in popular demand preferred. Honest treatment guaranteed. F. Ranville Company, Grand Rapids, Mich.

Inquiry No. 7525.—For makers of post office cases.

WANTED.—Competent man who has knowledge of Mechanical Engineering, to take a position as traveling salesman for the selling of construction material used in Insulating Refrigerating Plants. Apply by mail to the Bruening Cork Company, Oakdale, Alfy Co., Pa.

Inquiry No. 7526.—For parties to manufacture motor cars for street car service, gasoline system.

Inquiry No. 7527.—For manufacturers of wire-forming machinery.

Inquiry No. 7528.—For makers of tape measures in metal boxes, having springs inside for winding.

Inquiry No. 7529.—For a machine for cutting right-angle, circular and oval beveled openings in mat board.

Inquiry No. 7530.—For manufacturers of ventilators.



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.

(9844) C. E. D. writes: In your answer to J. S., No. 5703, September 23, 1905, you say a person is no heavier while going up an elevator than going down, and explain the effect of inertia on the matter. It seems to me this does not cover it. Either the attraction of gravitation must be considered as a fixed something which exerts its pull without moving (an inconceivable thought to me) or else it must have a speed at which it pulls, just as light or electricity has a speed at which it travels. If it is admitted to have a speed, then this speed must be between 0 and infinity, and therefore measurable. If it had an infinite speed of action, any mass multiplied by this speed of action would be infinitely heavy, and therefore impossible to weigh. It would seem, therefore, that gravitation must have an appreciable measurable speed, and that if we could find an elevator with a constant speed, one would weigh as much less when coming down as the speed of the elevator takes from the speed of gravitation, while in going up the conditions would be reversed, and one's weight would be increased in the proportion that the speed of the elevator adds to the speed of gravitation. Is not this correct? A. The theory of the intrinsic nature of gravitation is not by any means settled among scientists. Indeed, there can hardly be said to be such a theory. There would seem, however, to be a substantial agreement that gravitation acts instantaneously through space. That gravitation has a velocity would hardly be considered a suitable expression of this fact. Nor do we see how the velocity of gravitation can have anything to do with the weight of bodies. This is determined by the relative amount of matter in the earth or major body and the body to be weighed, as we call it, and the distance between the centers of gravity of these two. It is not involved in the question of the speed of action of gravitation. Even if it were, the speed of action of gravitation is so enormous that any change of velocity in a moving body cannot affect the actual weight of that body, and all weightings at the same distance from the center of the earth are affected by it to the same extent, so that, like every other constant, it is omitted in considering the changes of value of the variables in an expression.

(9845) D. E. F. writes: I note the inquiry of L. A. H. (9779) in a recent issue of the SCIENTIFIC AMERICAN which I here quote: "Is there such a thing in the realm of science as flame or combustion without emitting light?" I take it that he means rapid combustion. That even in this sense the answer is "yes" you can really demonstrate in the following manner by means of the inclosed cards of this, transparent celluloid. Soak the celluloid over night in water. Take them out of water and wipe dry and let dry an hour or two. In a moderately warm room free from strong drafts, hold the card of celluloid vertically in the left hand and light the upper end with a match. When it burns down about half an inch blow it out. Thereafter there will be no light or incandescence even in the darkest room, but the charring of the celluloid will continue to run downward and disappear, leaving only a trace of ashes. The samples which I inclose herewith do not work as well as some which I have heretofore tried, which continued to disappear until the whole card was consumed, but these suffice to completely demonstrate this remarkable phenomenon. I think this celluloid is a little too thin to work well. I also inclose several white celluloid washers, which seem to be more efficient in demonstrating the phenomenon than is the transparent celluloid. Let about one-third of the disk burn before blowing it out. Soak these in water as indicated, then at once dry by pinching between blotters and burn. A. We have been interested in burning the pieces of celluloid you send us, as well as other pieces. They smoulder after the flame is extinguished, as do other combustible materials, until the substance is cooled below the temperature at which combustion ceases. We are not able to make the thin transparent celluloid burn any after the flame is extinguished. The white, thick disks contain some paint-like material, used for filling, which carries on the combustion longer. We are just as successful without soaking in water as when the pieces

are soaked. This is just as we should expect, since celluloid does not contain any ingredient which is soluble in water and it is impervious to water.

NEW BOOKS, ETC.

MACHINE SHOP TOOLS AND METHODS. By W. S. Leonard. New York: John Wiley & Sons, 1905. 8vo.; pp. 554; 689 figures. Price, \$4.

This is a very complete textbook of machine-shop tools and methods, which was written for use in connection with lectures on this subject given in the Mechanical Department of the Michigan Agricultural College. The book describes in detail all the various tools, both large and small, used in the modern machine shop. While necessarily somewhat elemental in character, it nevertheless contains a deal of information valuable to the ordinary machinist. It is very thoroughly illustrated with diagrams and half-tone plates. The present is the third edition, which has been thoroughly revised and enlarged.

ENGINEERING CHEMISTRY. By Thomas B. Stillman, M.Sc., Ph.D. Easton, Pa.: Chemical Publishing Company, 1905. 8vo.; pp. 597. Price, \$4.50.

In this, the third edition of a well-known manual on quantitative analysis, the author has taken note of the rapid changes during the past few years in methods of testing the various products of chemical technology and materials of construction, and he has completely revised that portion of his work that has to do with these subjects. Much additional matter has been included, especially information pertaining to asphalt, lubricating oils, Portland cement, and the technology of the products of the blast furnace. The book is fully illustrated, and is quite up to the standard of the previous editions, and will be found valuable to all students, chemists, and engineers.

COMMERCIAL ECONOMY IN STEAM AND OTHER THERMAL POWER-PLANTS. By Robert H. Smith. With numerous diagrams by H. Malcolm Hodson. Philadelphia: J. B. Lippincott Company, 1905. 8vo.; pp. 291. Price, \$7.

The main idea of the author in writing this work was to persuade the mechanical engineer to advance from the primitive view that engineering science can guide him only in the physical construction and dynamics of his machinery to the more complete idea that scientific method must also be applied to his reckonings of cost and value produced. The ultimate triumph of practical science must, the author believes, be evidenced in its demonstration of the means to attain maximum economy. An exact measure of economy is the first essential in any section of technico-commercial science. The author, therefore, discusses an "Economy-Coefficient" applicable to all kinds of productive industry, and also probably to the industry of distribution and exchange. By a simple combination of the three factors of Cost, Value, and Speed of Production, this coefficient aims at giving due value to all essential elements of commercial economy. The author also deduces other coefficients which are of value in the discussion. The book goes into commercial steam-power economy in a very thorough manner, and has numerous charts relating to this and kindred subjects. It is very complete and will be found to contain many useful ideas regarding economy in the operation of power plants.

PRACTICAL KITES AND AEROPLANES. By Frederick Walker, C.E. London: Guilbert Pitman, 1903. 16mo.; pp. 78. Price, 60 cents.

The kite, from the toy of a schoolboy, has, by the ordinary laws of mechanical evolution, developed into the aeroplane, capable of carrying loads vertically, and sustaining them at a certain altitude by the ordinary wind currents, but so far the airship of the future as a problem admits of no solution by the aeroplane or aero-curve surface alone; unless it may happen to a future inventor to cause a flat disk, of gas or air, which by its inherent high pressure shall impinge upon the inner surface of an aero-curve and by diversion overcome gravity, and thus cause a vertical ascension. This may occur in the future; but according to our present lights a captive aeroplane may be only used for raising a single passenger to the height permitted by the tension rope or cord and the pressure of the air current prevailing in the atmosphere. The author desires to create interest in the subject by a timely little book.

THE INDUSTRIAL AND ARTISTIC TECHNOLOGY OF PAINT AND VARNISH. By Alvah Horton Sabin, M.S. New York: John Wiley & Sons, 1905. 8vo.; pp. 372. Price, \$3.

This is a very complete technical work on the subjects of paints and varnishes. A brief account of their modern use, and of the principles involved in their fabrication and application, will be found within its pages. Among the subjects treated are Varnish and Its Manufacture; Linseed Oil; Tung Oil; Rosin; Japans and Driers; Varnish or Enamel Paints; Chinese and Japanese Lacquers; and Spirit and Pyroxylin Varnishes. A chapter on the protection of metals against corrosion is one of the most useful in the book. Other chapters deal with Water Pipe Coating; the Painting of Ships' Bottoms, and Ship and Boat Painting

as well; Carriage Painting; House Painting; and Furniture Varnishing. The book is illustrated with a number of half-tones, and will be found interesting reading by all who have to do with this industry.

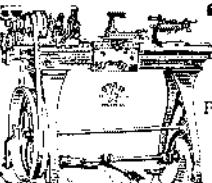
INDEX OF INVENTIONS

For which Letters Patent United States were Issued for the Week Ending November 14, 1905 AND EACH BEARING THAT DATE

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

Table listing various inventions and their patent numbers, including items like Abrasive apparatus, Acetylene tetrachlorid, Acids, Advertising novelty, Agricultural implements, etc.

**"Star" Lathes**  
 Foot and Power Screw Cutting  
 Automatic Cross Feed  
 FOR FINE, ACCURATE WORK  
 Send for Catalogue B.  
 SENECA FALLS MFG. CO.  
 695 Water Street,  
 Seneca Falls, N. Y., U. S. A.



**Engine and Foot Lathes**  
 MACHINE SHOP OUTFITS, TOOLS AND SUPPLIES. BEST MATERIALS. BEST WORKMANSHIP. CATALOGUE FREE  
 SEBASTIAN LATHING CO., 120 Culvert St., Cincinnati, O.

**THE STERLING AIR HEATING RADIATOR**  
 Attached to any Stove, Range or Furnace. Doubles Heating Capacity or Saves Half Fuel Expense. Insures continuous circulation, warm floors, comfort and health. Write for full description and terms. Agents wanted. Satisfaction always guaranteed.  
 STERLING AIR RADIATOR CO.  
 No. 58 Wabash Ave., Chicago




**Crescent Machinery**  
 Quality and Price, both right  
 BAND SAWS, JOINTERS, SAW TABLES, BAND SAW BLADES  
 Catalogue tells the rest  
 THE CRESCENT MACHINE CO.  
 280 Main Street, Leontia, O., U. S. A.



**The Best Dry Battery for AUTOMOBILE SPARKING**

**Becko Spark Cell**  
 4 Cells \$1.25  
 J. H. BUNNELL & CO.  
 Electrical Manufacturers 20 Park Place, NEW YORK

**"Econo" Emery Wheel Dresser**  
 SIZE 12 in. Made of an abrasive nearly as hard as a Black Diamond. Will true or shape any wheels except very hard and water grinders. It costs you nothing to satisfy yourself. Sent to responsible parties on 10 days' approval to compare or test with the Black Diamonds. This shows OUR confidence and we want yours.  
 International Specialty Co.  
 360 Helden Ave., Detroit, Mich.



**FOR GUNSMITHS, TOOL MAKERS, EXPERIMENTAL & REPAIR WORK, ETC.**  
 From 9-in. to 13-in. swing. Arranged for Steam or Foot Power, Velocipede or Stand-up Treadle.  
 Send for Lathe Catalogue.  
 W. F. & JNO. BARNES CO.  
 Established 1872.  
 1999 Ruby St., Rockford, Ill.



Manufacturers should investigate the **B. F. BARNES MACHINE TOOLS** before placing orders. The Tool here illustrated is our 24-inch Drill, and we have many other sizes to make a very complete line, including Multiple Spindle Drills. If interested in the latest Tools for reducing costs of production, let us tell you what we have. Ask for Catalogue S.  
 B. F. BARNES CO. Rockford, Ill.  
 European Branch  
 149 Queen Victoria St., London, E. C.



**METAL POLISHES.—FORMULAS FOR**  
 Putz Pomades, Pastes, Liquids, Powders and Soaps for polishing metals, are contained in SCIENTIFIC AMERICAN SUPPLEMENT Nos. 1283, 1288 and 1289. Price 10 cents each from this office and all newsdealers

**Tools! Tools! Tools!**  
 and all you want to know about them. Our Tool Catalogue No. 22 is a cloth-bound book of 350 pages. If you want to "know it all" about Tools you should send for this book at once. Sent post-paid on receipt of \$1.00 which will be refunded from your first purchase from us of \$10.00 or over.  
 MONTGOMERY & CO.  
 105 Fulton Street, N. Y. City



**Silver's Band Saws**  
 20-in. Foot or Belt Power  
 26-in. Belt Power  
 32-in. Belt Power  
 36-in. Belt Power  
 ALSO  
 Hub Boxing and Spoke Tenon Machines, Forges, Drills and "Ohio" Feed and Ensilage Cutters  
 Manufactured by  
 THE SILVER MFG. CO.  
 SALEM, OHIO



**LE PAGE'S MUCILAGE**  
 No gumming to clog neck of bottle—No sediment—Will not spoil or discolor the finest papers. Full 2 oz. bottle retails at 5c., or sent by mail for 10c.; also half-pints, pints and quarts.  
 LE PAGE'S Photo Paste,  
 2 oz. size retails 5c.; by mail, 10c.  
 LE PAGE'S GLUE  
 1 oz. bottle or tube, 10c.; by mail, 12c.  
 RUSSIA CEMENT CO., 139 Essex Ave., Gloucester, Mass.



|  |            |
|--|------------|
| Crimping machine, A. G. Legge.....   | 804,482    |
| Cultivator, J. R. Jones.....   | 804,324    |
| Cultivator attachment, W. J. Luttrell.....                                 | 804,419    |
| Cultivator weed cutter, Long & Stephens.....                               | 804,418    |
| Current motor, automatic, J. Koch.....                                     | 804,676    |
| Curtain bracket, adjustable, H. R. Phelps.....                             | 804,816    |
| Curtain clasp, window, C. A. Kulinski.....                                 | 804,235    |
| Curtain fixture, R. C. Taylor.....   | 804,275    |
| Curtain fixture, G. H. Forsyth.....  | 804,308    |
| Curtain fixture, C. L. Hopkins.....  | 804,317    |
| Curtain fixture, H. L. Saucier.....  | 804,552    |
| Curtain holding device, P. A. Houghtaling.....                             | 804,319    |
| Curtain holding means, C. L. Hopkins.....                                  | 804,473    |
| Curtain poles and tops, adjustable holder for, H. A. Schmitz.....          | 804,559    |
| Cutting implement, W. U. Colthar.....                                      | 804,520    |
| Cycle brake, W. H. Cocks.....  | 804,216    |
| Delivering device, Chase & McCreary.....                                   | 804,582    |
| Dental switchboard, M. N. Callender.....                                   | 804,211    |
| Dish drainer, G. H. Lawrence.....  | 804,481    |
| Dividers, H. Amenat.....   | 804,571    |
| Door hanger and means for moving the door, sliding, H. C. Percy.....       | 804,815    |
| Door lock, J. C. Hardenbergh.....  | 804,399    |
| Door lock and signal, adjustable, W. R. Love.....                          | 804,241    |
| Door or gate opening and closing device, E. T. Morris.....                 | 804,251    |
| Door, sliding, J. S. Schlosser.....  | 804,270    |
| Door stop, H. T. Dupue.....  | 804,585    |
| Draw gear, J. F. Courson.....  | 804,521    |
| Drier, G. Boschke.....   | 804,518    |
| Drum, W. J. F. Schultz.....  | 804,347    |
| Drum heating, F. J. Kobusch.....   | 804,735    |
| Ear muffler, C. J. Keller.....   | 804,731    |
| Elastic wheel, W. Borchers.....  | 804,202    |
| Electric circuit closer, A. Dow.....                                       | 804,389    |
| Electric machine, dynamo, C. P. Steinmetz.....                             | 804,440    |
| Electric machinery, dynamo, W. L. Waters.....                              | 804,355    |
| Electric snap-switch, G. Thomas.....                                       | 804,636    |
| Electric wiring, branch block for, Hoyt & Martin.....                      | 804,603    |
| Electrical controller, N. K. Garhart.....                                  | 804,595    |
| Electrical generator, M. Schwartz.....                                     | 804,6..... |
| Electrical heater, J. A. Noble.....  | 804,759    |
| Electromagnetic wheel, H. Behan.....                                       | 804,371    |
| Elevator. See Inclined elevator.   |            |
| Elevator, C. D. Seeberger.....   | 804,500    |
| Elevator stopping mechanism, L. W. Southgate.....                          | 804,634    |
| Embroidering machines, driving mechanism for hand operated, J. Knecht..... | 804,540    |
| Engine, C. Heibel.....   | 804,472    |
| Engines, circuit controller for explosive, R. Varley.....                  | 804,783    |
| Envelop, A. H. Mackenzie.....  | 804,747    |
| Excavating, hoisting, and conveying bucket, Kaltenbach & Griess.....       | 804,235    |
| Eye-glass stud, C. Goodwin.....  | 804,717    |
| Eye-glasses, H. Fennell.....   | 804,527    |
| Eye-glasses, nose guard for, G. Bausch.....                                | 804,366    |
| Fan, W. A. Harrison.....   | 804,223    |
| Fan, motor, G. E. Jacobson.....  | 804,606    |
| Faucet, self-closing, L. J. Rice.....                                      | 804,673    |
| Fence machine, wire, E. C. Wood.....                                       | 804,603    |
| Fence post, Elder & Means.....   | 804,711    |
| Fifth wheel, L. A. Keene.....  | 804,236    |
| Filter, G. Anderson.....   | 804,572    |
| Filter outlet controller, P. Hansen.....                                   | 804,532    |
| Finger shield, D. Hungad.....  | 804,406    |
| Fire alarm, W. D. Watkins.....   | 804,356    |
| Fire alarm, portable, W. D. Watkins.....                                   | 804,357    |
| Fire escape, J. Hearne.....  | 804,494    |
| Fire extinguisher, B. Kellogg.....   | 804,411    |
| Fire extinguisher, W. H. Gore.....   | 804,807    |
| Fire extinguisher, chemical, C. A. Miller.....                             | 804,755    |
| Fire sprinker for extinguishing, J. Fiddes.....                            | 804,265    |
| Fire-train, J. E. McAlister.....   | 804,255    |
| Firearm, automatic, W. J. Whiting.....                                     | 804,694    |
| Firearm with drop-down barrel, K. F. P. Stendebach.....                    | 804,349    |
| Firearms, face shield for side ejection shoulder, T. C. Johnson.....       | 804,661    |
| Firearms, flexible rear sight for, G. H. Garrison.....                     | 804,804    |
| Firearms, semiflexible rear sight for, G. H. Garrison.....                 | 804,805    |
| Fireproof window curtain, M. Berwanger.....                                | 804,299    |
| Fish assorting, cutting, and cleaning machine, W. J. Kenny.....            | 804,733    |
| Flooring, H. Salomon.....  | 804,345    |
| Fly trap, J. G. Gibson.....  | 804,654    |
| Fly wheel, R. Gerlach.....   | 804,806    |
| Flying machine, A. H. Friedel.....   | 804,593    |
| Folding machine cutting mechanism, H. K. King.....                         | 804,476    |
| Folding machines and the like, delivery apparatus for, A. B. Dick.....     | 804,388    |
| Forceps and the like, T. C. Hutchinson.....                                | 804,229    |
| Forging press, H. V. Loss.....   | 804,542    |
| Freezing apparatus, portable, Kruger & Hansch.....                         | 804,478    |
| Fruit shipping rack, folding, Mills & Izer.....                            | 804,492    |
| Fur skins, chamoising, R. Gottwald.....                                    | 804,718    |
| Furnace, J. E. Hayden.....   | 804,315    |
| Furnace door arch protector, G. A. Fisher.....                             | 804,801    |
| Furnaces, ash conveyor for, H. G. Cox.....                                 | 804,457    |
| Fuse plug, P. Q. Lawrence.....   | 804,741    |
| Game apparatus, W. J. Hamilton.....  | 804,597    |
| Game apparatus, baseball, J. F. Woodberry.....                             | 804,697    |
| Garden implement, D. A. Schutt.....  | 804,773    |
| Garment supporter, J. W. Schlosser.....                                    | 804,556    |
| Garment supporter, J. E. Molloy.....                                       | 804,756    |
| Gas apparatus for the manufacture of generator, P. Stiens.....             | 804,441    |
| Gas burner attachment, automatic, S. H. Ury.....                           | 804,509    |
| Gas burner, incandescent, M. Kay.....                                      | 804,409    |
| Gas burner, portable, J. F. Barker.....                                    | 804,517    |
| Gas engine, C. J. & V. E. Moody.....                                       | 804,332    |
| Gas, generating, E. Krenz.....   | 804,737    |
| Gas generator, A. J. Ferguson.....   | 804,591    |
| Gas generator, acetylene, G. H. Cliff.....                                 | 804,215    |
| Gas generator, acetylene, S. A. Menzler.....                               | 804,544    |
| Gas meter, E. H. Krenz.....  | 804,465    |
| Gas producer, E. Krenz.....  | 804,814    |
| Gas purifier, A. Sahlin.....   | 804,677    |
| Gas reversing valve, H. E. Schild.....                                     | 804,505    |
| Gasolene, device for removing the sediment from, Waterhouse & Green.....   | 804,284    |
| Gate opener, E. T. Morris.....   | 804,252    |
| Gear, yieldable, G. W. Smith.....  | 804,778    |
| Gearing, change speed, W. R. Cary.....                                     | 804,212    |
| Gearing, differential, J. G. Kelly.....                                    | 804,495    |
| Gearing, variable speed, A. Peteler.....                                   | 804,263    |
| Gearing, variable speed, C. K. Lassiter.....                               | 804,740    |
| Generator, See Electrical generator.                                       |            |
| Girder, E. Hancock.....  | 804,598    |
| Glass apparatus for the preparation of panes of opal, G. Poncelet.....     | 804,500    |
| Glass drawing machine, G. H. Harvey.....                                   | 804,533    |
| Glass furnace, H. G. Slingluff.....  | 804,775    |
| Glass plates, dust-proof joint for, A. Jaeger.....                         | 804,660    |
| Gold separator, F. M. Johnson.....   | 804,408    |
| Graphophones, etc., membrane of, A. C. Piccinini.....                      | 804,264    |
| Grate bar, W. McClave.....   | 804,366    |
| Grinding machine, cutlery, C. L. Joy.....                                  | 804,234    |
| Gun barrel, rifle, L. Lincoln.....   | 804,483    |
| Gun firing attachment, Meigs & Jakobsson.....                              | 804.....   |
| Gun rammer, Meigs & Stout.....   | 804,243    |
| Gun trigger, double-barreled, A. Raus.....                                 | 804,343    |
| Guns, toggle link lock for recoil loading, A. W. Schwarzlose.....          | 804,506    |
| Gymnastic apparatus, R. Fiedler.....                                       | 804,218    |
| Hair, device for applying dyes, etc., to the roots of, G. Delory.....      | 804,522    |
| Hame clip, detachable, J. S. Cusson.....                                   | 804,715    |
| Harness bit, J. Bald.....  | 804,447    |
| Harness machine guide, M. Lauterbach.....                                  | 804,415    |
| Harness pad, A. F. Ransom.....   | 804,631    |
| Harrow, L. Blinde.....   | 804,300    |
| Harrow, J. M. Ush.....   | 804,781    |
| Harvesters, counting mechanism for grain, I. Trolley, Jr.....              | 804,277    |
| Harvesters, lifting mechanism for corn, A. N. Hadley.....                  | 804,811    |
| Hay rake, B. B. Phillips.....  | 804,498    |
| Head and ear protector, J. M. Shourt.....                                  | 804,348    |
| Hinge, J. Soss.....  | 804,633    |
| Hinge and block, blind, R. W. Perry.....                                   | 804,765    |
| Hoodwink, E. & U. S. De Mounin.....  | 804,710    |
| Hop sprayer, C. Roberts.....   | 804,226    |
| Horseshoe, H. Hennen.....  | 804,226    |
| Horseshoe, J. Wolf.....  | 804,361    |
| Horseshoe, F. J. Bacon, reissue.....                                       | 12,407     |
| Hose cleaning apparatus, automatic, F. Pink.....                           | 804,592    |
| Hot air furnace, D. J. Archer.....   | 804,197    |
| Hot air furnace, revertible draft, C. F. A. Roell.....                     | 804,818    |
| Hub attaching device, W. D. Walker.....                                    | 804,353    |

**Hydrozone**  
 Cures  
**Sore Throat**  
 A Harmless Antiseptic.  
 Endorsed by the medical profession. Send ten cents to pay postage on **free trial bottle.** Sold by Leading Druggists. Not genuine unless label bears my signature:  
 Prof. Charles H. H. H. H.  
 Dept. U. 63 Prince St., N. Y.  
 Write for free booklet on Rational Treatment of Disease.

**H. & S. Sound Box**  
 For Disc Talking Machines  
 You cannot appreciate what is recorded on a Disc Record until you hear it reproduced with an H. & S. Sound Box.  
 Clear, Loud, Brilliant, Natural Tone  
**PRICE \$5.00**  
 Made in Three Styles:  
 No. 100 for Victor Tapering Arm Machines.  
 No. 200 for Talkaphones, Old Style Disc Graphophones, and all Straight Arm Machines.  
 No. 300 for Zonophone Tapering Arm Machines.  
 Apply to your dealer; if he does not keep them order direct.  
 Order by Number  
 HAWTHORNE & SHEBLE MFG. CO.  
 Dept. D, Philadelphia, Pa.



**You Can Earn From \$3,000 to \$10,000 a year in the Real Estate Business**  
 We teach you the Real Estate, General Brokerage and Insurance Business by mail, fitting you to successfully establish yourself without interfering with your present employment. We appoint you special representative of leading real estate and brokerage companies who will co-operate with you and assist you to a quick success. Do not spend the best days of your life working for a pittance. Real estate offers better opportunities than any other business to those without capital. Write for full particulars and free booklet. It will interest you. H. W. Cross & Co., 197 Tacoma Bldg., Chicago.

**WIRELESS TELEGRAPH**  
 The "Tribune" wireless telegraph apparatus. It is a simple, reliable, and easily operated apparatus. It is suitable for use in homes, schools, and business places. It is the only wireless telegraph apparatus that is guaranteed to work over a mile. Send for full particulars and free booklet. ELECTRO IMPORTING CO., 32 Park Place, New York  
**A MONEY MAKER**  
 Hollow Concrete Building Blocks, Best, Fastest, Simplest, Cheapest Machine. Fully guaranteed.  
 THE PETTYJOHN CO.  
 615 N. 6th Street, Terre Haute, Ind.



**THE Nalite Vapor Lamps**  
 For Home, Store and Street  
 We also manufacture Table Lamps, Wall Lamps, Chandeliers, Street Lamps, Etc. 100 Candle Power seven hours ONE CENT. No Wicks. No Smoke. No Odor. Absolutely safe. THEY SELL AT SIGHT. Exclusive territory to good agents. Write for catalogue and prices.  
 Chicago Solar Light Co., Dept. 6 Chicago

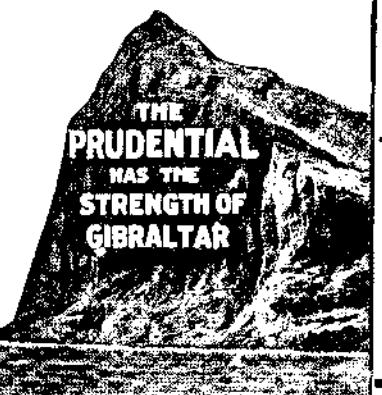


**NEW YORK SCHOOL OF AUTOMOBILE ENGINEERS**  
 (INCORPORATED)  
 146 West 56th Street, New York City  
 A HIGH GRADE SCHOOL OF INSTRUCTION FOR CHAUFFEURS AND AUTOMOBILE OWNERS  
 Day and evening classes. Non-rolling students. Write, call or phone for particulars. Tel. Columbus 4314

**Schwartz Furnace**  
 FOR MELTING GRAY IRON, STEEL, COPPER, BRASS AND BRONZE  
 Send for Catalogue  
 HAWLEY DOWN DRAFT FURNACE CO.  
 NEW YORK, N. Y. CHICAGO, ILL.



**She would have lost her home**  
 if she had been able to persuade her husband not to invest in life insurance. "I never wished my husband to become insured," wrote an Illinois wife and mother, "but he always said, 'If anything should happen to me, the money will be needed.'"  
 Something did happen to him. The money was needed, and his wife wrote that she had found she could keep her home, and educate her boy with the money which  
**THE PRUDENTIAL**  
 paid to her with appreciated promptness.  
 But mark this: the husband *did insure his life*. The story would be a very different one if he hadn't. What will be your family's experience when something happens to you? What it *can* be you may learn to advantage by using this blank.  
**The Prudential**  
 Insurance Company of America  
 Incorporated as a Stock Company by the State of New Jersey  
 JOHN F. DRYDEN Home Office: President NEWARK, N. J.  
 Without committing myself to any action, I shall be glad to receive, free, particulars and rates of Policies.  
 For \$..... Age.....  
 Name.....  
 Address.....  
 Occupation..... Dept. 121



**Before the cold weather sets in**

**Get a Residence Telephone**

It saves expense.  
It saves doctor's bills.  
It means convenience and economy.  
Rates are low.

**NEW YORK TELEPHONE CO.**  
15 Dey Street

**SAVE FIRE LOSS**

PROTECT YOUR HOMES AND PROPERTY.

Badger's Fire Extinguisher will put out any kind of a fire at the start. So simple a child can use it. Write for information.

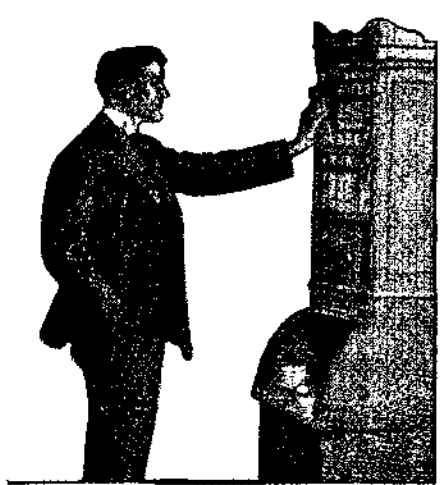
**BADGER FIRE EXTINGUISHER CO.**  
59 Portland St., Boston, Mass.

**49 POCKET ELECTRIC FLASH LIGHT**

For lamps only, regular \$1.50 kind, best made, lasts longest. Express prepaid, 10c extra. New batteries, each 20c; postage extra, 7c. Send for complete electrical Catalog and agent's discount. Dept. 202 THE VIM CO. 45 E. Lake St., Chicago.

**ICE BOATS!**

If you want to know how to make an Ice Boat, buy SCIENTIFIC AMERICAN SUPPLEMENT 1536. Complete working drawings and a thorough description are published. Order from your newsdealer or from Munn & Co., 361 Broadway, New York



**The Way To Be a Thinker**

is to get in touch with thinkers. All the world's prizes are captured by those who have seasoned their energy with the spice of originality—and originality means the habit of clear and fresh thinking. Even the best of us have a tendency to fall into mental ruts, to go plodding on year after year, in the same track, to do things without knowing precisely why. The way to keep alive, the way to be original, the way to be a success, is to talk with brainy people and to read books that make you think. That's the reason

**The New Science Library**

is a cure for mental paralysis. It contains the best work of Darwin, Huxley, Spencer, Tyndall, and great leaders of modern thought. It will tell you what the famous Darwinian theory is: how the planets are weighed and their motions charted; what radium is: how liquid air is made and used—and ten thousand other interesting things. It is a work to be read and enjoyed, for it is written in a clear and interesting style—not a trite or technical. The work consists of sixteen superb volumes, handsomely printed and bound.

**84-PAGE BOOK FREE**

If you mail us the coupon below at once, we will send full information of the New Science Library and how you may get it at half price and on the Individual Payment Plan, by means of which you can arrange the payments to suit yourself. At the same time we will send you a copy of our handsome 84-page book, "Some Wonders of Science." This book, containing articles by Huxley, Tylor, Proctor, and Ray Stannard Baker, is so bright and interesting that you will read it from cover to cover, and when you have read it you will wonder how you ever could have thought science dry and uninteresting. Each copy is beautifully illustrated and printed. As long as the edition lasts, we will exchange a copy of it for the coupon printed at the bottom of this advertisement.

**PUBLIC OPINION**  
44-60 E. 23d Street New York

Sci. Am. 11-23 EXCHANGE COUPON

Good for one complimentary copy of "Some Wonders of Science," if mailed at once to Public Opinion, 44-60 East 23d Street, New York.

NAME .....

STREET.....

CITY AND STATE .....

We will send, at the same time, full particulars of our New Science Library and our Introductory Half-Price Offer.

|  |         |
|--|---------|
| Hub holding and indexing device, J. A. Kaplan  | 804,325 |
| Illuminated bar, O. T. Burtness  | 804,209 |
| Inclined elevator, J. W. Reno  | 804,266 |
| Induction coils, apparatus for the manufacture of, L. B. Miller                                    | 804,250 |
| Instep support, L. T. J. Lubin   | 804,242 |
| Iron oxid for use in blast furnaces, preparing, U. Wedge   | 804,692 |
| Iron pyrites charge for desulfurizing furnaces and preparing same, U. Wedge                        | 804,691 |
| Iron pyrites for desulfurization, preparing, U. Wedge  | 804,690 |
| Iron pyrites for desulfurization, treating, U. Wedge   | 804,785 |
| Ironing board, D. Messer   | 804,244 |
| Jar, bottle, and other vessel, A. E. Pike  | 804,338 |
| Jar closure, T. Beatty   | 804,574 |
| Joist hanger, A. Carlson   | 804,451 |
| Journal box, self-oiling, H. W. Hill   | 804,601 |
| Kernel feeding machine, G. B. Ellingwood   | 804,459 |
| Knitting machine, E. A. Pigeon   | 804,549 |
| Lamp bulbs, locking device for incandescent, R. E. Davis   | 804,387 |
| Lamp, miner's, D. E. Herron  | 804,659 |
| Land leveler, D. A. Savage   | 804,625 |
| Lathe, cutting, L. Boicard   | 804,575 |
| Lathe gage device, Chard & Lodge   | 804,793 |
| Laundry blue distributor, P. Diamond   | 804,798 |
| Ledger, loose leaf individual or general bank, Exline & Bourke                                     | 804,713 |
| Leg, artificial, J. Bunderle   | 804,207 |
| Level, adjustable spirit, A. C. Brundage   | 804,792 |
| Life preserver, W. N. Morrison   | 804,757 |
| Lifting jack, C. M. Sawyer   | 804,771 |
| Link, releasable, R. C. Smith  | 804,273 |
| Liquid distributor, J. Raidl   | 804,761 |
| Loader, W. H. Ericsson   | 804,525 |
| Locomotive boiler, J. A. Welton  | 804,286 |
| Loom for weaving pile fabrics, H. A. Foster  | 804,309 |
| Lubricating compound, Comstock   | 804,377 |
| Lubricating device, Campbell & Coates  | 804,203 |
| Lubricator, G. W. Brown  | 804,454 |
| Lubricator, C. Comstock  | 804,612 |
| Lubricator, Lytle & Cawley   | 804,578 |
| Mangles, apron guide for, P. E. Bradley  | 804,383 |
| Match-making machine, L. Cobbaert  | 804,354 |
| Mattress, sanitary wool bed, N. J. Walls   | 804,579 |
| Metal cutting shears, J. C. Burgess  | 804,512 |
| Metal sheet corrugating machine, G. C. Witt  | 804,732 |
| Metal tubes, rods, and the like, apparatus for bending, W. Kennedy                                 | 804,396 |
| Milk heater, H. J. Grell   | 804,707 |
| Milling machine, continuous, L. Coe  | 804,738 |
| Millstone, A. Kreps  | 804,562 |
| Mining machine, J. Stein   | 804,206 |
| Minnow or trolling hook, artificial, G. Bruton   | 804,643 |
| Molding machine, H. A. Walter  | 804,302 |
| Music leaf turner, E. Bryon  | 804,553 |
| Musical instrument attachment, J. Sauer  | 804,786 |
| Nail cutting die, wire, J. Wikschrom   | 804,536 |
| Nail driver, magazine, M. Hinmarch   | 804,296 |
| Necktie fastener, J. Nutry   | 804,517 |
| Nitroglycerin, making, C. L. Reese   | 804,587 |
| Nut lock, C. W. Burnham  | 804,803 |
| Nut lock, T. O. Garrett  | 804,655 |
| Oil cup, L. Gleason  | 804,400 |
| Oil from water, apparatus for extracting, D. H. Haywood  | 804,750 |
| Operating pad or receptacle, Meinecke & Hogan  | 804,780 |
| Ore crusher and pulverizer machine, A. Tetrault  | 804,249 |
| Oven floor, J. C. Millar   | 804,615 |
| Oven screen, B. Morgenstein  | 804,291 |
| Ozone, electrical apparatus for producing, A. C. Wood  | 804,283 |
| Painting and coloring linocuta, etc., process of and apparatus for, F. Walton                      | 804,808 |
| Paper characterized by its impervious nature and strength, C. I. Goessmann                         | 804,428 |
| Paper cup, C. G. Perkins   | 804,312 |
| Paper elevator, J. C. Hammer   | 804,307 |
| Paper, magazine and delivery mechanism for, C. P. Fonda  | 804,586 |
| Paper refining engine, I. P. Dillon  | 804,288 |
| Paper weight, J. B. Williamson   | 804,687 |
| Pasteurizing apparatus, C. Tyson   | 804,239 |
| Pasteurizing liquids, E. Tyson   | 804,513 |
| Peat carbonizing apparatus, T. Ledermuller   | 804,233 |
| Pencil sharpening machine, G. W. Wright  | 804,485 |
| Perforating machine, R. A. Jonas   | 804,714 |
| Perforating machine, R. H. Little  | 804,604 |
| Phonograph repeating device, E. Fletcher   | 804,555 |
| Phonographic instrument, J. Isakson  | 804,442 |
| Phosphorus, making red, Schenck & Marquart   | 804,282 |
| Photographic plate developing apparatus, M. H. Struwell  | 804,491 |
| Picture frame, R. Walker   | 804,539 |
| Pictures and the like device for hanging, F. E. Miller   | 804,456 |
| Pie rack case or holder, B. H. Kannenberg  | 804,647 |
| Pillow support, J. C. Condo  | 804,304 |
| Pipe covering, R. Zeiler   | 804,289 |
| Pipe joint, flexible, J. Coppersmith   | 804,382 |
| Pivot pin supporting device, J. Willison   | 804,391 |
| Planter and cultivating implement, combined, J. W. Clifton   | 804,537 |
| Planter, automatic check row corn, W. C. & C. B. Gibson  | 804,328 |
| Planter, seed, N. B. Hodge   | 804,554 |
| Plastic masses, machine for molding, A. Lutz   | 804,431 |
| Plow, C. Schardt   | 804,405 |
| Plow, beet, E. G. Smart  | 804,543 |
| Plow heel, G. J. Huggins   | 804,5   |
| Plow steam, G. S. Lowell   | 804,630 |
| Pneumatic hoist, H. H. Vaughan   | 804,259 |
| Pole cross arms, support for, E. C. Short  | 804,303 |
| Powders, apparatus for holding and delivering, F. W. Norris  | 804,640 |
| Printing and numbering machine, D. Carlaw  | 804,293 |
| Printing machine, cloth, W. H. Waldron   | 804,380 |
| Printing press covering mechanism, H. A. W. Wood   | 804,682 |
| Projectile, explosive, C. Chronic  | 804,426 |
| Photocathodic aldehyde, making, R. J. M. Sommer  | 804,722 |
| Pruning implement, L. H. Mullen  | 804,432 |
| Puller, See Coke puller  | 804,398 |
| Pulley lubricator, loose, L. C. Hobart   | 804,774 |
| Pulp, compacting liquid-borne fibrous, J. H. Rivers  | 804,384 |
| Pulver, D. Gonsberger  | 804,657 |
| Pump, C. A. Arnsberger   | 804,314 |
| Pump, centrifugal, J. L. Shepard   | 804,618 |
| Pump, lubricating, G. W. Cole  | 804,471 |
| Pump, rotary, H. Handoll   | 804,535 |
| Puzzle, C. E. Harris   | 804,724 |
| Rail fastener, T. S. Newton  | 804,789 |
| Rail joint, W. R. Holland  | 804,632 |
| Rail joint, M. Hester  | 804,340 |
| Rail joint, C. K. Humphreys  | 804,813 |
| Rail joint, E. Roberts   | 804,298 |
| Rail splice, J. L. Smith et al.  | 804,745 |
| Rail tie, W. L. Schrum   | 804,685 |
| Railway and like vehicle, automatic coupling for, W. R. Jenkinson                                  | 804,217 |
| Railway automatic safety crossing system, W. J. Bell   | 804,297 |
| Railway brake, electrically controlled fluid pressure, J. S. Lockwood                              | 804,255 |
| Railway bumping post, G. L. Chatfield  | 804,452 |
| Railway bumping post, W. E. Symons   | 804,685 |
| Railway rail, D. Jones   | 804,729 |
| Railway rail joint, Powell & Logan   | 804,550 |
| Railway rails to chairs, key for keying, Collyer   | 804,217 |
| Railway safety crossing system, W. J. Bell   | 804,297 |
| Railway signal, J. Irwin   | 804,255 |
| Railway signal and switch appliances from freezing or clogging, device for preventing, F. L. Young | 804,787 |
| Railway switch, J. G. Gilreath   | 804,393 |
| Railway switch signal apparatus, Pieszak & Poole   | 804,337 |
| Railway switches, detector bar for, W. Baum  | 804,296 |
| Railway track construction, J. Owen  | 804,336 |
| Railway vehicle brake, J. Egetz  | 804,588 |
| Range, knockdown, C. L. Gohmann  | 804,596 |
| Receptacle, M. A. Howard   | 804,320 |
| Reel carrier, H. Hedlund   | 804,225 |
| Reflector for artificial lights, prismatic glass, O. A. Mygatt                                     | 804,334 |
| Reflector shade for artificial lights, O. A. Mygatt  | 804,253 |
| Reflector shade, prismatic glass, O. A. Mygatt   | 804,254 |

**THE Reason for the supremacy of the REMINGTON TYPEWRITER is its persistent superiority, emphasized again and again in every new model since the invention of the writing machine.**

**New Models Now Ready**

We will be glad to have you call at any of our salesrooms and see the new models or send for Illustrated booklet describing the new features.

**Remington Typewriter Co.**  
325-327 Broadway, New York

Branches Everywhere

**Just Published**

**The Scientific American Boy**

By **A. RUSSELL BOND**

12mo. 320 Pages. 340 Illustrations. Price \$2.00 Postpaid

**T**HIS is a story of outdoor boy life, suggesting a large number of diversions which, aside from affording entertainment, will stimulate in boys the creative spirit. In each instance complete practical instructions are given for building the various articles.

☐ The needs of the boy camper are supplied by the directions for making tramping outfits, sleeping bags and tents; also such other shelters as tree houses, straw huts, log cabins and caves.

☐ The winter diversions include instructions for making six kinds of skate sails and eight kinds of snow shoes and skis, besides ice boats, scooters, sledges, toboggans and a peculiar Swedish contrivance called a "rennwolf."

☐ Among the more inst utive subjects covered are surveying, wigwagging, heliographing and bridge building, in which six different kinds of bridges, including a simple cantilever bridge, are described.

☐ In addition to these, the book contains a large number of miscellaneous devices, such as scows, canoes, land yachts, windmills, water wheels and the like. A complete table of contents sent on request.

**MUNN & COMPANY**  
361 Broadway "SCIENTIFIC AMERICAN" New York City

**Jaeger WEAR**  
UNDER

The fame of this Underwear has made it a household word in the land. Nothing like it for health and comfort both.

**All Weights for All Wants**

Catalogue explains everything. Free, with samples.

Dr. Jaeger's S. W. S. Co.'s Own Stores  
New York: 308 Fifth Ave., 127 B'way, Brooklyn: 504 Fulton St., Boston: 228 Boylston St., Philadelphia: 1510 Chestnut St. Chicago: State St.  
Agents in all Principal Cities.

Respirator, W. Schwarz ..... 804,272  
Rifles and other arms, telescopic sight for, W. Youlten ..... 804,363  
Roasting furnace, A. W. Chase ..... 804,379  
Roasting furnace, A. R. Meyer ..... 804,751  
Roasting or desulfurizing furnace, mechanical, H. Howard ..... 804,227  
Rock crusher, H. H. Blake ..... 804,201  
Roof, self-supporting conical, I. S. McNamee et al ..... 804,427  
Rotary engine, H. M. Lofton ..... 804,746  
Rotary meter, G. Fajen ..... 804,466  
Rough rounding and channeling machine, G. F. Wolfe ..... 804,526  
Ruling machine, Peckham & Hyde ..... 804,645  
Sad iron, J. H. Rogers ..... 804,547  
Saddle, harness, C. F. Wissemeyer ..... 804,770  
Saddle, harness, G. McMullin ..... 804,446  
Salv., radio-active, H. Lieber ..... 804,758  
Sand drier, W. King ..... 804,610  
Sash balance and lock, window, T. Pachall, Sr. .... 804,620  
Sash holder, window, E. G. Abell, reissue... 12,405  
Sash lift, W. E. Norris ..... 804,669  
Saw-filing machine, C. M. Henderson ..... 804,534  
Sawmills, machine for transferring and turning logs in, J. R. Snell ..... 804,507  
Saw tooth, adjustable, W. Lewis ..... 804,416  
Screw cutting die, J. Smart ..... 804,777  
Screw driver, E. Searle ..... 804,679  
Seat and table, combined, W. G. Hastings... 804,658  
Sectional boiler, J. J. M. Lange ..... 804,609  
Sewing and trimming machine, Zimmerman & Hughes ..... 804,364  
Sewing machine, buttonhole, J. C. Umpleby ..... 804,639  
Sewing machine feeding mechanism, C. F. Gray ..... 804,220  
Sewing machine ruffling attachment, P. G. Davis ..... 804,709  
Sewing machine shuttle mechanism, Borton & Brush ..... 804,301  
Sewing machine tension mechanism, J. H. & J. B. Ursbruck ..... 804,782  
Sewing machine thread controlling mechanism, J. H. & J. B. Ursbruck ..... 804,508  
Sewing machines, stocking holding band for darning purposes for, A. G. Maynard... 804,490  
Shade guide, P. G. Emery ..... 804,800  
Shade roller bracket, detachable, Ploof & Mongeon ..... 804,339  
Shafts of instruments, support for the, F. R. Beckert ..... 804,370  
Sheep, etc., machine for dipping, H. M. Jordan ..... 804,730  
Sheet iron boxes, dressing tinned, H. Goldschmidt ..... 804,530  
Sheet metal humider, H. Macarthy ..... 804,487  
Sheet metal perforating apparatus, T. A. Edison ..... 804,799  
Sheeter and bar press, J. W. Ruger ..... 804,623  
Sheeting and manufacturing same, protective, S. Cabot ..... 804,376  
Ships and boats, construction of the hulls of, H. E. Ross ..... 804,269  
Shoe form, H. A. Weeks ..... 804,359  
Shoe repairing stand, T. Rendle ..... 804,503  
Shoe tread, W. A. Robbins ..... 804,674  
Shutter worker, W. Texdorf ..... 804,350  
Signal. See Railway signal.  
Small arm having automatic breech action, F. von Mannlicher ..... 804,748  
Smelting and refining furnace, combined, C. C. Medbery ..... 804,330  
Smoke tubes, tightening device for, W. Schmidt ..... 804,558  
Smoking pipe, J. Kraus ..... 804,608  
Snatch block, F. H. Strohminger ..... 804,635  
Soap holder, liquid, Helmsold & Schmidt... 804,465  
Soldering paste, M. Leisel ..... 804,664  
Spraying device, J. F. Cass ..... 804,378  
Spring hanger, T. W. Plumb ..... 804,341  
Stacker, G. W. Soule ..... 804,265, 804,340, 804,341, 804,779  
Stage illusions, apparatus for producing, Thorn & Downs ..... 804,637  
Stamp holder, W. H. Keeler ..... 804,326  
Stanchion, O. H. Robertson ..... 804,621  
Stanchion latch, C. Rodenack ..... 804,769  
Stand pipe, D. L. Winters ..... 804,511  
Stays and for connecting struts, apparatus for forming, F. W. Winterhoff ..... 804,696  
Steam boiler, F. Stadler ..... 804,274  
Stereotype plate and base connection, Butterfield & Schmitt ..... 804,210  
Still, F. B. Cole ..... 804,708  
Stock supporter, M. B. Foster ..... 804,529  
Stone saw, C. L. Miel ..... 804,245, 804,247, 804,248  
Stone saw blade, C. L. Miel ..... 804,246  
Stone, sawing, J. A. Hall ..... 804,398  
Stone sawing machine, Hall & Chandler... 804,812  
Stove, gas, J. J. Strain ..... 804,683  
Stovepipe thimble and flue cap, A. T. Hurch ..... 804,208  
Strap holder, J. D. Randall ..... 804,342  
Submerged heater, C. H. Grub ..... 804,656  
Sunshade, I. Wine ..... 804,290  
Superheater, W. Schmidt ..... 804,557  
Surgical table, E. L. & E. B. von Eschen... 804,784  
Swing, A. W. Kirkpatrick ..... 804,663  
Switch, J. C. Scargle ..... 804,626  
Switch contact mechanism, snap, Clark & La Har ..... 804,381  
Switching apparatus, electrical, W. J. Richards ..... 804,344  
Syringe, A. B. Jamison ..... 804,407  
Syringe, C. J. Davol ..... 804,584  
Tablet, writing, P. T. Lemaster ..... 804,743  
Tag, Blanchard & Price ..... 804,373  
Talking machine attachment, G. Konigstein... 804,477  
Tanning, J. Campbell ..... 804,450  
Target, self-registering, M. S. Ellis ..... 804,712  
Teeth, apparatus for the correction of irregular, V. E. Barnes ..... 804,200  
Telegraph line wires, device for preventing contact in, W. L. G. Appleby ..... 804,365  
Telephone instrument, E. A. Reynolds ..... 804,431  
Telephone push button switch mechanism, B. L. Lawton ..... 804,742  
Telephone switchboard signal, F. R. McBERTY ..... 804,256  
Telescope cross hairs, illuminating means for, G. N. Sægmuller ..... 804,624  
Templet and punch for marking centers in metal work, J. D. Cummings ..... 804,795  
Terpenes and other products from wood, obtaining, E. B. Weed ..... 804,358  
Therapeutic apparatus, C. O. Lindstrom... 804,484  
Thermometer device, D. M. Small ..... 804,776  
Thill and tongue support, J. H. Benson ..... 804,716  
Thill coupling, B. F. Haldeman ..... 804,719  
Thill loop, C. A. Jacky ..... 804,476  
Tile and other articles of pottery ware, glass, etc., automatic machinery for apparatus for decorating and glazing, F. Mountford ..... 804,425  
Tile molding machine, H. Meyer ..... 804,755  
Tile, roofing, H. Meyer ..... 804,754  
Time alarm, W. A. Garris ..... 804,653  
Time recorder, watchman's, J. Summers... 804,444  
Tire, pneumatic, O. M. Rigger ..... 804,701  
Tire, resilient, W. F. Beasley ..... 804,369  
Tire, vehicle, F. A. Magowan ..... 804,613  
Tire, vehicle, F. G. Saylor ..... 804,772  
Tobacco pipe cleaning attachment, W. J. Mecredy ..... 804,729  
Tool, C. S. Schultz ..... 804,436  
Tool, hand, E. M. Zacharias ..... 804,295  
Tool, pneumatic, E. B. Boyer ..... 804,449  
Torpedo net, Bullvaat & Selby ..... 804,704  
Toy bank, F. Plattner ..... 804,430  
Track gage, C. Nelson ..... 804,258  
Transmission mechanism, C. G. Simonds... 804,438  
Transmitter, A. Van Wageningen ..... 804,279, 804,280  
Trap. See Fly trap.  
Trolley, M. Baker ..... 804,367  
Trunk, C. C. Wigington ..... 804,648  
Tunneling system, J. W. See ..... 804,360  
Turbine engine, H. Lentz ..... 804,437  
Turbine, steam, C. G. Y. King ..... 804,541  
Turbines, bucket wheel for elastic fluid, H. Keller ..... 804,410  
Tweezers, E. C. Ellsworth ..... 804,652  
Type casting machine, F. E. Peacock ..... 804,704  
Umbrella holder, J. E. Duffy ..... 804,390  
Unloading device, C. E. Otterman ..... 804,762  
Urinal, L. D. Lawrin ..... 804,479  
Valve gear, W. T. Merzenich ..... 804,667  
Vehicle dust guard, P. K. Hollingsworth... 804,401  
Vehicle perch connection, L. E. Hickok ..... 804,469  
Vehicle wheel, J. M. Boulanger ..... 804,577  
Vehicle wheel, G. G. Jackson ..... 804,605

**"A-C" Superb HOLIDAY GIFTS for Gentlemen "A-C"**  
ANTI-CANCER. The first Pipe ever known to win the unqualified endorsement of Physicians and the Scientific world ANTI-CANCER.

**"A-C" 1904 Model**

Improved 1906 model now on the market. No advance in price till after holidays.

**Saliva Cannot Possibly Enter Stem**  
**NOT A COMPETITOR WITH CHEAP PIPES**  
Illustrated book full of matter important to smokers free on application  
Do not send stamps for postage

**\$1000**  
Guarantee Against Burnt Tongue

**THE "A-C" PIPE CO., 807 Times Bldg., Broadway & 42d St., New York**

**Just What Young Electricians Want**

**Armature Discs and Commutators for Your Experimental Dynamos.**

Also a full line of miniature electrical railways, trolley car, water motors and dynamos. Send for Catalogue B.

**THE CARLISLE & FINCH COMPANY**  
233 E. Clifton Ave. Cincinnati, O.

Used by forty of the leading Automobile and motor boat manufacturers. Suitable for any gas or gasoline engine using make and break or jump spark ignition.

**EVERY BATTERY GUARANTEED** to give satisfaction or purchase money refunded.

**WITHERBEE IGNITER CO.**  
27-31 Thames St. - NEW YORK

**GAS ENGINE DETAILS.—A VALUABLE** and fully illustrated article on this subject is contained in SUPPLEMENT No. 1292. Price 10 cents. For sale by Munn & Co. and all newsdealers.

**Our COMBINATION BLUE PRINT FILE AND DRAUGHTING TABLE**

The top can be adjusted to various heights and tilted to any angle. We carry a full line of all styles of Draughting Tables, Blue Print Frames, Electrotype Cabinets, etc. Send for Catalogue

**FRITZ & GOELDEL MFG. CO.**  
97 Alabama St., Grand Rapids, Mich.

Send the Name of Your Car or engine, and we will send full information about the **Apple Automatic Spark-er**. The best storage battery charger for automobile, launch or gas engine. Address,  
**The Dayton Electrical Mfg. Co.**  
98 Beaver Bldg. Dayton, Ohio.

**ELECTRIC NECKTIE PIN**

A scientific novelty that will please and astonish your friends. To all appearance it is a handsome necktie pin, horseshoe shape studded with seven beautiful colored stones. A perfect imitation of high priced gems. It has a delicate bulb in the center. At the back of this pin are two threads of insulated copper wire which pass under the vest and connect with a small Dry Cell Battery in your pocket. Attached to opposite end of wire are two finger plates. To produce an electric flash of light from breastpin you have only to press the finger plates together and suddenly release them. To produce a continuous light strong enough to read by, simply hold the plates together. Imagine the surprise of your friends to see your breastpin suddenly aglow with fire, and as suddenly extinguished. We send printed instructions for adjusting wire to battery, etc., so as to insure success in every instance. Each Breastpin with Dry Battery and insulated wire, packed in a strong wooden box. Price complete \$1.00. If sent by mail 10 cents extra to cover postage.

**GEBERT IMPORTING CO., Dept. 12 140 Nassau St., N. Y.**

You need this knife on your automobile, in the shop and in your home.

**A Veritable Pocket Tool Chest**

**9 TOOLS IN 1**  
The Wonder of the Age

Build as substantially as a locomotive. Weighs no more than an ordinary three blade pocket knife. Stag horn handle. In addition to the blade, which is made from 85 carbon cutler's steel, contains the following tools:

1, Leather Punch  
2, Swedging Awl  
3, Wire Cutter  
4, Wire Filers  
5, Alligator Wrench  
6, Hook Hook  
7, Screw Driver  
8, Screw Bit

Cuts barbed fence wire as easily as an ordinary 8 inch plier. Hook is of great value as a packing hook around the engine. The tools are needed almost every day, and in tinkering around your home the knife will be an invaluable pocket companion.

**AGENTS WANTED**  
Remit \$1.25 per sample to-day. Your money back if not satisfied. This Knife for an Inventor or in a Model Shop is a Genuine Luxury

**DEVINE SPECIALTY CO.**  
88 Baldwin Building INDIANAPOLIS, IND.  
REFERENCE: Columbia National Bank.

**"The Whole Thing in a Nutshell"**

**200 EGGS A YEAR PER HEN**  
How to Get Them

The fifth edition of the book "200 Eggs a Year Per Hen," is now ready. Revised, enlarged, and in part re-written. 96 pages. Contains among other things the method of feeding by which Mr. S. D. Fox, of Wolfboro, N. H., won the prize of \$100 in gold offered by the manufacturers of a well-known condition powder for the best egg record during the winter months. Simple as a, b, c—and yet we guarantee it to start hens to laying earlier and to induce them to lay more eggs than any other method under the sun. The book also contains recipe for egg food and tonic used by Mr. Fox, which brought him in one winter day 63 eggs from 12 hens; and for five days in succession from the same flock 64 eggs a day. Mr. E. F. Chamberlain, of Wolfboro, N. H., says: "By following the methods outlined in your book I obtained 148 eggs from 91 R. I. Reds in the month of January, 1902." From 14 pullets picked at random out of a farmer's flock the author got 2,999 eggs in one year—an average of over 214 eggs apiece. It has been my ambition in writing "200 Eggs a Year Per Hen" to make it the standard book on egg production and profits in poultry. Tells all there is to know, and tells it in a plain, common-sense way. Price, 60 cents, or with a year's subscription, 60 cents; or given as a premium for four yearly subscriptions to the American Poultry Advocate at 25 cents each.

Our Paper is handsomely illustrated, 40 to 80 pages, 25 cents per year, 4 months' trial, 10 cents. **SAMPLE FREE. CATALOGUE** of poultry books free.

**AMERICAN POULTRY ADVOCATE**  
35 Hogan Block, Syracuse, N. Y.

**We are the Largest Breeders in America**

of Pheasants, Quail, Poultry, Geese, Swans, Peacocks, Wild and Fancy Ducks and Geese, Cranes, Pelicans, Belgian Homers for Squab Raising, Guinea, Angora Cats and Pet Stock. Send four cents in stamps for circulars.

**Cape Cod Squab Poultry and Game Farm**  
Box P, Wellfleet, Mass.

**PONY and COMPLETE OUTFIT FREE**

ANY BOY or GIRL, 12 years old or less, can learn how they can have my private pet **PONY "Bob"** with his elegant rubber-tired **PONY CART** and finely custom-made **HARNESS** delivered at their door without a cent of cost. I will pay all transportation charges myself. I do not want a single cent of your money. **"BOB"** with his **PONY CART and HARNESS**, just as I shall deliver him, is easily worth \$300.00. I will send you full particulars showing you that there are absolutely no blanks. If you wish the **PONY** and complete **OUTFIT** delivered to you, all charges prepaid, address a postal, asking for full particulars how to secure him, to **CHARLES E. ELLIS, Pony Dept., 24 North William St., New York City, N. Y.**

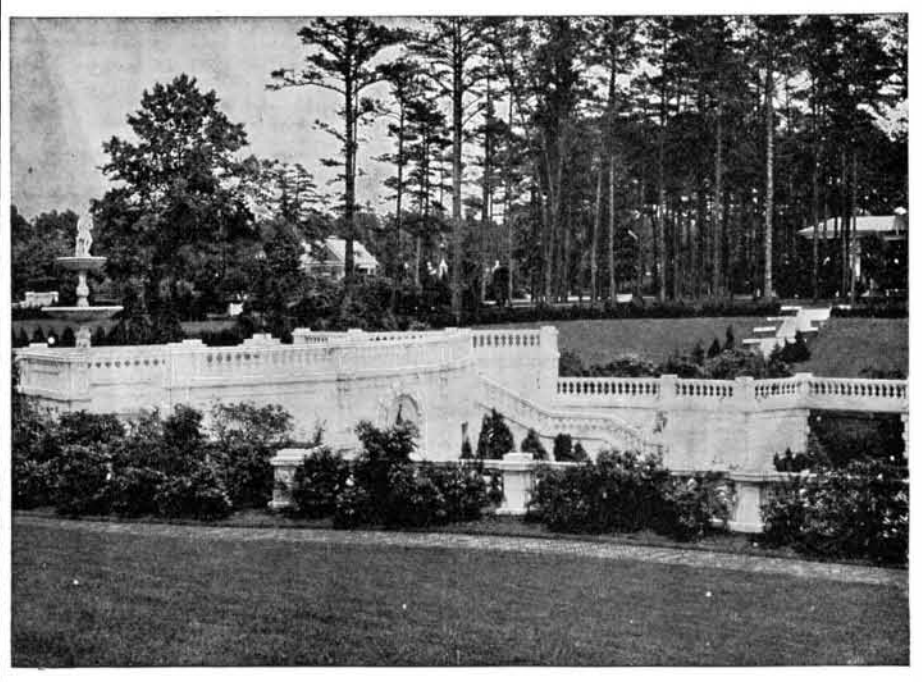
**FOR THE HOLIDAYS**

**American Estates and Gardens**

4to. 11x13 1/2 inches. Illuminated Cover and 275 Illustrations. 340 Pages. Price, \$10.00

By **BARR FERREE**

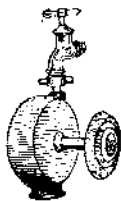
Editor of American Homes and Gardens, Corresponding Member of the American Institute of Architects and of the Royal Institute of British Architects



**A SUMPTUOUS** book dealing with some of the most stately houses and charming gardens in America. The illustrations are in nearly all cases made from original photographs, and are beautifully printed on double coated paper. Attractively bound. This book will prove one of the most interesting books of the season, and will fill the wants of those who desire to purchase a luxurious book on our American homes. An illustrated prospectus mailed free on request.

**MUNN & COMPANY**  
Publishers of "Scientific American"  
361 Broadway, New York

\$5.00 Water Motor \$3.50



Our \$5.00 Morton Faucet Water Motor sold for a limited time for \$3.50. Guaranteed. Attaches to any faucet. For polishing and sharpening. For running all kinds of light machines. Largest and most powerful faucet motor. Outfit includes emery wheel, huffing wheel, pulley and polishing material. Money refunded if not satisfactory. Booklet free. Motor delivered anywhere in time for Christmas. Order now—before price advances.

MORTON MFG. COMPANY, Dept. C. 130 Fulton Street, New York.

INVESTORS' BOOK FREE

Those who have \$100 or more in a bank can get our Cloth Bound book—Money Making—absolutely Free. This volume is artistically printed—beautifully illustrated. Contains no advertising. Tells how to invest with safety and profit. Write for it to-day—mentioning bank.

BARNARD & CLARK, Suite 11, 25 Broad St., New York City.

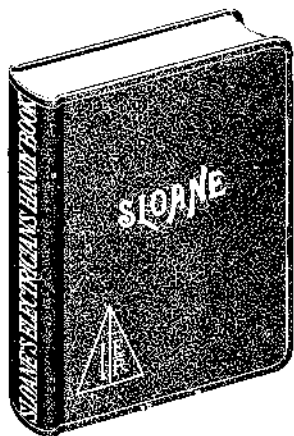
Valuable Volumes

Electricians' Handy Book.

By Prof. T. O'CONNOR SLOANE.

768 Pages. Nearly 600 Illustrations.

Handsomely Bound in Red Leather, with Title and Edges in Gold. Price \$3.50



This thoroughly practical book of 768 pages covers the entire field of electricity. It contains no useless theory—everything is to the point, and readily understood by student or practical man. The advanced electrical engineer will also receive great benefit from its study. It is a work of the most modern practice. Written in a clear, comprehensive manner, it covers the field thoroughly, but so simply that any one can understand it fully. It teaches you just what you need to know about electricity.

A Practical Work for Practical Men.

Gas Engines and Producer-Gas Plants.

By R. E. MATHOT.

320 Pages. Fully Illustrated. Price \$2.50

A practical treatise setting forth the principles of Gas Engines and Producer Design, the Selection and Installation of an Engine, Conditions of Perfect Operation, Producer-Gas Engines and their Possibilities. The Care of Gas Engines and Producer-Gas Plants, with a Chapter on Volatile Hydrocarbon and Oil Engines. Thoroughly up-to-date in its treatment of the subject, the work discusses at considerable length the generation of producer-gas and its utilization in gas engines. No other book in English presents anything like as full a discussion of this most important phase of the gas engine. Indeed, no other book devotes even a chapter to producer-gas, despite the fact that it is the common fuel for gas engines of high power.

MECHANICAL MOVEMENTS

Powers, Devices & Appliances.

By GARDNER D. HISCOX, M. E.

Large Size. 402 Pages. 1649 Illustrations, with Descriptive Text. Price \$3.00.

Mechanical Appliances

Mechanical Movements and Novelties of Construction

By GARDNER D. HISCOX, M. E.

Being a Supplementary Volume to the Author's Work entitled MECHANICAL MOVEMENTS, POWERS AND DEVICES.

Contains 1000 Special Made Engravings. 400 Pages. Cloth Bound.

Price \$3.00

The above two volumes sold together for \$5.00 post-paid

Any of these books sent prepaid on receipt of price. A special circular of these books will be sent to any one on application.

MUNN & COMPANY Publishers of Scientific American, 361 Broadway, New York

Table listing various mechanical parts and their prices, such as Vehicle wheel, Vessels, Vices, Washers, etc.

DESIGNS.

Table listing designs for items like Automobile body, Basket, Carpet, Casket handle socket, etc.

TRADE MARKS.

Table listing trade marks for various products like Absorbent pads, Acid phosphate, Ale, Beer, Belting, Bitters, Books, Boots and shoes, etc.

Advertisement for 'PAN-TOG' for Christmas, featuring an illustration of a chair and text describing its features and price (\$12.50).

Advertisement for Bartell Machine Co. featuring an illustration of a machine and text: 'Will make for you \$100 A DAY'.

Advertisement for 'How to Remember' book, featuring an illustration of a globe and text: 'Stop Forgetting'.

Advertisement for Coates' Flexible Shaft, featuring an illustration of the shaft and text: 'Transmits from 1/2 H.P. up to 150 H.P.'.

Advertisement for I. H. C. Gasoline Engines, featuring an illustration of an engine and text: 'will be found the very best and the most economical for use in Blacksmith Shops, Repair Shops, Small Machine Shops, Private Work Shops, Experimental Plants, Manual Training and Industrial Schools, Private Water Supply, etc.'

Advertisement for 'HOW TO MAKE AN ELECTRICAL FURNACE FOR AMATEUR'S USE' with text: 'The utilization of 110 volt electric circuits for small furnace work.'

Advertisement for 'Whitewash Your Factory at Lowest Cost' with an illustration of a machine and text: 'With a Progress Universal Spraying Machine. One man can apply whitewash, calcimine or cold water paint to 1,000 square feet of factory wall in ten hours.'

Scientific American

Christmas Number

DECEMBER 16, 1905

36 Pages 50 Illustrations

Colored Cover

PRICE TEN CENTS



The Christmas Number of the SCIENTIFIC AMERICAN will be most attractive. The cover in three-color printing represents the Triumphs of Peace, and is appropriate to the season.

Among the interesting articles are:

- OIL IN THE SOUTHWEST. A Great Industry. SNOW STATUES. Plastic Art in a Frozen Medium. BURGLARS' TOOLS. Devices used by Criminal Mechanics. KORYAKS OF SIBERIA. An Article on an Unknown People.

- ROOSEVELT DAM. For Irrigation. DIAGRAM OF PARTS OF AUTOMOBILE. An illustration which Names Every Part of an Automobile. MARINE ANIMALS. Composite Animals. RADIUM CLOCK. Runs for Thousands of Years A NEW LIFE FLOAT.

Many other articles and items of interest will be published. Order of your Newsdealer or of the Publishers, MUNN & COMPANY, 361 Broadway, New York

**HENRY CAREY BAIRD & CO.**  
Industrial Publishers, Booksellers and Importers,  
810 Walnut St., Philadelphia, Pa., U. S. A.  
Our New and Revised Catalogue of Practical and Scientific Books, 94 pages, 8vo. (Oct. 1, 1905); Catalogue of Chemical Technology and General Chemistry, July, 1905 (New and Revised Edition); a Catalogue of Books on Metallurgy, Mining, Prospecting, Mineralogy, Geology, Assaying, Analysis, etc.; a Catalogue of Books on Steam and the Steam Engine, Machinery, etc.; a Catalogue of Books on Sanitary Science, Gas Fitting, Plumbing, etc.; and our other Catalogues and Circulars, the whole covering every branch of Science applied to the Arts, sent free and free of postage to any one in any part of the world who will furnish his address.

**Clean House With Air**



Over 55 Companies operating Thurman Patents in America, and as many more in Canada, England, and Europe.

FREE CATALOGUE

**General Compressed Air House Cleaning Co.**  
ST. LOUIS, U. S. A.

Manufacturers of the Celebrated Thurman direct-connected Gasoline Driven Air Compressors for Mines, Pneumatic Tools, Etc.



**SPRINGFIELD ABRASIVE POLISHING WHEELS AND BLOCKS.**

Used for polishing machinery, cutlery and edge tools of all kinds and for removing rust spots from highly polished metal. Makes a very smooth surface without marring. Containing rubber which gives it the resilient effect. Made with either Emery or Carborundum in different grades. Write for price list and special trade discounts.

The Springfield Tire and Rubber Co.,  
SPRINGFIELD, OHIO, U. S. A.

**Convert Your Bicycle Into a Motorcycle**



at a moderate cost by attaching the Meco-2 h. p. Motorcycle Unit which includes all accessories to make a complete motorcycle from your bicycle without alteration. Choice of transmissions. Complete Motorcycles and Cycle Motors. Parts sold separately. Write for catalogue.

Motorcycle Equipment Co., 896 Main St., Buffalo, N. Y.

**26 THROUGH TRAINS A DAY**



Twenty-six fast through trains every day—a train every hour in the twenty-four and even better—between the big cities—Chicago, Toledo, Cleveland, St. Louis, Cincinnati, Pittsburg, Buffalo, New York, Boston.

Such is the extent of the splendid service—the greatest in America—afforded by the

**Lake Shore & Michigan Southern Ry.**

in connection with the New York Central, Boston & Albany, Pittsburg & Lake Erie and Big Four Route.

The Lake Shore is widely recognized as the most comfortable fast service route in America.

Address undersigned about your travel matters.

A. J. SMITH, Gen. Pass. Agt., Cleveland, O.  
C. F. DALY, Passenger Traffic Manager, Chicago, Ill.

60 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. HANDBOOK 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, \$5 a year; 50 cents a month. Sold by all newsdealers. MUNN & Co. 361 Broadway, New York  
Branch Office, 625 F St., Washington, D. C.

|   |                |
|---|----------------|
| Leggings, leather, Chanavas & Slazenger ..  | 47,650         |
| Liniments, F. S. Luqueer ..   | 47,582         |
| Loom temples and parts thereof, Draper Co. ....   | 47,632         |
| Magazine, monthly, G. H. Patterson and E. C. Thurnau Publishers, Office Appliances Magazine or periodical, Rocky Mountain Consolidated Co. .... | 47,725         |
| Malt extracts, Theo. Hamm Brewing Co. ....  | 47,612         |
| Medical salts and tablets made therefrom, Medical Lake Salts Mfg. Co. ....  | 47,583         |
| Medicinal preparation, Centaur Company ..   | 47,588         |
| Newspaper, trade, David Williams Co. ....   | 47,713         |
| Oils, illuminating, Valvoline Oil Co. ....  | 47,668         |
| Paints, varnished, and japanned surfaces, Renovator for Superior Renovator Co. ....   | 47,662         |
| Paints adapted for iron and roofing, American Graphite Co. ....   | 47,641         |
| Paints and enamels, Chicago Varnish Co. ....  | 47,557         |
| Paper and envelopes, M. P. Exline Co. ....  | 47,733         |
| Paper boxes, folding, Whitney & Co. ....  | 47,667         |
| Papers, bond, linen, ledger, wedding, and index, Bristol, B. D. Rising Paper Co. ....   | 47,710         |
| Pens, stub, C. Howard Hunt Pen Co. ....   | 47,615         |
| Petrolatum, McKesson & Robbins ..   | 47,720         |
| Pianos and piano players, Aeolian Co. ....  | 47,686         |
| Pictures, plaques, and designs, printed or lithographed, B. D. Stroppe ..   | 47,731         |
| Pins, Plum & Atwood Mfg. Co. ....   | 47,643         |
| Porter, Anheuser-Busch Brewing Association Preparation for the prevention of venereal diseases, W. F. Bernart ..                                | 47,576         |
| Pumps, Flint and Walling Manufacturing Co. ....   | 47,633         |
| Remedies for ailments of animals, Lawrence-Williams Co. ....  | 47,590         |
| Remedies for internal and external use, F. Emerson ..   | 47,714         |
| Remedy for certain named diseases, Urisol Chemical Co. ....   | 47,591         |
| Remedy for constipation and intestinal indigestion, tonic, R. Pabery ..   | 47,618         |
| Remedy for coughs and colds, J. E. Muse ..  | 47,602         |
| Remedy for diseases of the kidneys, liver, stomach, and blood, Great Forest Remedy Co. ....   | 47,610         |
| Remedy for diseases of the stomach and bowels, J. Ricca ..  | 47,724         |
| Remedy for headache and neuralgia, R. P. Menard ..  | 47,601         |
| Ribbons, W. Openhym & Sons ..   | 47,660         |
| Ribbons, J. B. Whitney ..   | 47,666         |
| Rice, prepared, Chandler and Rued Co. ....  | 47,687         |
| Rivets and spots, Standard Rivet Co. ....   | 47,646         |
| Roofing sheets, galvanized, National Roofing Co. ....   | 47,734         |
| Saws, G. N. Clemson ..  | 47,670         |
| Seals, car, E. J. Brooks & Co. ....   | 47,674         |
| Seeders and grain drills, Dowagiac Manufacturing Co. ....   | 47,617         |
| Sewing machines, Siegel, Cooper & Co. ....  | 47,728         |
| Shoe channeling machines, knives and groovers for, L. L. Green ..   | 47,634         |
| Shoes, children's leather, Shepard Norwell Co. ....   | 47,727         |
| Shoes made of leather and canvas, Watson Shoe Co. ....  | 47,647         |
| Soaps, W. F. Comstock ..  | 47,629         |
| Spices, Crescent Manufacturing Co. ....   | 47,630         |
| Starch and dextrin, Arabol Mfg Co. ....   | 47,640         |
| Stays, Spirella Company ..  | 47,689         |
| Steel, Canton Steel Co. ....  | 47,626         |
| Steel, Park Steel Co. ....  | 47,638         |
| Tablets for certain named diseases, C. E. R. Smith ..   | 47,729         |
| Tools, certain named, Wiley & Russell Mfg. Co. ....   | 47,648         |
| Twine, binders', Ludlow Manfg. Associates, 47,653, 47,654   | 47,654         |
| Twine, hemp, Ludlow Manfg. Associates, 47,656, 47,657   | 47,657         |
| Upholsterers' webbing, Ludlow Manfg. Associates 47,662 to 47,664, 47,655  | 47,655         |
| Varnishes, American Varnish Co. ....  | 47,642         |
| Vehicles and parts thereof, motor, Packard Motor Car Co. ....   | 47,621         |
| Washing machines, E. H. Huensfeld ..  | 47,678         |
| Watches, watch cases, and watch movements, E. Howard Watch Co. ....   | 47,690         |
| Whisky, S. Block & Griff ..   | 47,555         |
| Whisky, Cavanagh & Co. ....   | 47,556         |
| Whisky, F. Colwenz & Co. ....   | 47,558         |
| Whisky, Hessberg Bottling Co. ....  | 47,559         |
| Whisky, H. L. Griesedieck Dist'g Co. ....   | 47,560         |
| Whisky, C. F. Lauber ..   | 47,561         |
| Whisky, R. M. Rose Co. ....   | 47,565         |
| Whisky, S. Westheimer & Son Wholesale Liquor Co. ....   | 47,569         |
| Whisky, White, Hentz & Co. ....   | 47,570         |
| Whisky, Wright & Taylor ..  | 47,571         |
| Whisky, E. Hyman & Son ..   | 47,577         |
| Whisky, J. W. Kelly & Co. ....  | 47,581         |
| Whisky, Meyer Marx Co. ....   | 47,584         |
| Whisky, J. J. Douglas Co. ....  | 47,589         |
| Whisky, F. H. Chase & Co. ....  | 47,596         |
| Whisky, Figg Doyle Co. ....   | 47,598         |
| Whisky, P. Friedman ..  | 47,599         |
| Whisky, Loebl, Bloom & Co. ....   | 47,600         |
| Whisky, H. G. Williams & Co. ....   | 47,603         |
| Whisky, J. E. Pepper & Co. ....   | 47,604         |
| Whisky, Loebl, Bloom & Co. ....   | 47,607         |
| Whisky, Nelson Distilling Co. ....  | 47,608         |
| Whisky, Bergin & Brady Co. ....   | 47,609         |
| Whisky, Trost Bros. ....  | 47,614         |
| Wines, still and sparkling, C. F. Lauber ..   | 47,606         |
| Wire cloth and netting, woven, Clinton Wire Cloth Co. ....  | 47,627, 47,628 |

**LABELS.**

|   |                  |
|---|------------------|
| "Blackline," for shoe dressing, Albion Mfg. Co. ....  | 12,484           |
| "Bostonian Cap," for cloth caps, F. A. Honie ..   | 12,478           |
| "Broncho Breakers," for medicine, M. Schwarz ..   | 12,468           |
| "Colonial Ginger Ale," for ginger ale, S. Becker ..   | 12,477           |
| "Fine Cloth Caps," for cloth caps, F. A. Honie ..   | 12,479 to 12,482 |
| "Hayes' Beechwood Emulso-Hypo with Iron," for medicine, Shofter-Hayes Medicine Co. ....   | 12,466           |
| "J. E. C. Sanitary Make," The Daphne Shirt Waist Suit, for shirt waist suits, J. Erlich ..  | 12,483           |
| "Kulmbacher," for beer, K. Lampe & Co. ....   | 12,476           |
| "Leather Oil," for shoe polish, T. S. Adamson ..  | 12,485           |
| "Madam Mayme's Specific for the Eradication of Superfluous Hair," for a specific for the eradication of superfluous hair, M. Feder .. | 12,471           |
| "Mothers Magic Colic Cure," for medicine, M. B. B. Higgins ..   | 12,467           |
| "Osmoline," for antiseptic dressing, L. J. Grafton & J. C. Davis ..   | 12,469           |
| "Palmetto," for coffee, H. H. Palmer ..   | 12,474           |
| "Palmetto," for tea, H. H. Palmer ..  | 12,475           |
| "Peno Corno," for a confection, Wallis & Stinchcomb ..  | 12,472           |
| "Ray's Dandruff Cure and Hair Invigorator," for hair invigorator, Ray & Downey ..   | 12,470           |
| "Springfield Candy Company," for candy, Springfield Candy Co. ....  | 12,473           |

**PRINTS.**

|   |              |
|---|--------------|
| "Health and Home," for grape nuts and postum coffee, G. F. Jefferson .. | 1,484        |
| "Jap Lady," for perfume, Hana Zona Perfume Co. ....                     | 1,485        |
| "The John Eichler Br'g Co.," for ..                                     | 1,482, 1,483 |

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, provided the name and number of the patent desired and the date be given. Address Munn & Co., 361 Broadway, New York.

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

**The Palm Fringed Shores of the Caribbean**

SPECIAL Yachting and Circular Tours in the West Indies, 12 to 40 Days, \$85 to \$280 (including Hotel Accommodations), by Transatlantic Mail Steamers from New York and connecting Yachting and Inter-Colonial Steamers.

Illustrated Booklets and full details of all agents of

**The Royal Mail Steam Packet Company**  
SANDERSON & SON, General Agents, 22 State Street, New York

**RAILROADING** WANTED FIREMEN AND BRAKEMEN for all North American Railroads. Experience unnecessary. Firemen \$70, become Engineers and earn \$150. Brakemen \$65, become Conductors and earn \$140. Unequaled opportunity for strong, ambitious YOUNG MEN. Name position preferred. State age. Address RAILWAY ASSOCIATION, Room 188, 227 Monroe Street, B'oklyn, N. Y.

**Inspector General of Forests WESTERN AUSTRALIA**

Applications for above position addressed to Public Service Commissioner, Perth, W. A., will be received up to 1st March, 1906. Applicants must have a thorough knowledge of scientific and practical forestry in connection with both hard and soft woods, as well as the administrative ability and experience necessary to undertake the charge of the Forestry Branch of the Lands and Surveys Department.

Salary £750. Appointment to be for one year with an undertaking if services prove satisfactory to place the successful applicant permanently under the Public Service Act.

An allowance will be made toward cost of transit to Perth.

M. E. JULL,  
Public Service Commissioner.

**LET US BE YOUR FACTORY**  
WRITE FOR ESTIMATE ON ANY ARTICLE YOU WANT MANUFACTURED  
STAMPINGS, MODELS, EXPER. WORK  
WRITE FOR FREE BOOKLET  
THE GLOBE MACHINE & STAMPING CO.  
970 Hamilton St., Cleveland, O.

**PLUMBING SCHOOLS.**  
Men and boys wanted to earn \$5.00 a day, after two months' instruction. Position guaranteed. COYNE BROS. CO. PLUMBING SCHOOLS, 239 Tenth Avenue, New York. Cincinnati, O. St. Louis, Mo. Free catalog.

**ICE MACHINES** Corlies Engines, Brewers' and Bottlers Machinery. THE VILBER MFG. CO. 899 Clinton St., Milwaukee, Wis.

**MODELS & EXPERIMENTAL WORK.**  
Inventions developed. Special Machinery. E. V. BAILLARD, 24 Frankfort Street, New York.

**RUBBER** Expert Manufacturers Fine Jobbing Work  
PARKER, STEARNS & SUTTON, 228-229 South St., New York

Models & Exper. Work, Gears, Dies, Tools, Small Machy., Scient. Insts., M. P. Schell, 506 Mission St., San Francisco.

**LEARN ART OF ENGRAVING.** Situations guaranteed. Send for catalogue. JEWELERS' SCHOOL OF ENGRAVING, 42 Madison Street, Chicago.

**MODELS & GEARS** INVENTIONS PERFECTED UNION MODEL WORKS 193 So. CLARK ST. CHICAGO.

**MODEL AND EXPERIMENTAL WORK.**  
Electrical and Mechanical Instruments. Small Machy. EDWARD KLEINSCHMIDT, 82 W. Broadway, New York

**EXPERIMENTAL WORK** Scientifically and accurately executed. Models and small machinery perfected. STENDECK & VOLKMER, 61 Fulton Street, Telephone 57-55 John.

**MODELS & CHICAGO MODEL WORKS** ESTABLISHED 1867 179 E. MADISON ST. CHICAGO, ILL. WRITE FOR CATALOGUE OF MODELS, 50 CENTS.

**GINSENG** The money making crop. Easily grown. Room in your garden to grow hundreds of dollars worth annually. Roots for sale. Plant now. Literature free. Write today. BUCKINGHAM'S GINSENG GARDEN, Dept. 4, Zanesville, Ohio

**GOOD PAY** \$5.00 a day and upward made by selling FORD'S ALL WOOD Air-Tight Weather Strip. Anyone can apply it to doors and windows. Keeps down the coal bills. FREE samples and terms.

CHAS. J. FORD, 225 Senior Building, Holyoke, Mass.

**NEW ERA FUEL SAVER**

For the Furnace or Boiler

It will save more than its cost this Winter because it cuts one-third from your coal bills and thoroughly heats rooms your furnace now fails to heat without extra expense. Saves the heat which ordinarily goes out of the chimney. Requires no further attention when once installed, and every household who heats by furnace or boiler should ask their dealer about the NEW ERA, or write for full particulars to

**WILNOT CASTLE CO.**  
17A Elm St., Rochester, N. Y.  
We also make Fuel Saver for Stove Pipes, etc.

**NAME PLATES—STEEL STAMPS**  
"EMPLOYEE CHECKS, KEY TAGS & BADGE'S"  
J. ROBBINS MFG. CO. 58 KNEELAND ST.  
SEND FOR CATALOGUE BOSTON, MASS.

**CEMENT BOOKS.** How to Use Portland Cement, 50c; Cement Sidewalk Construction, 50c; Reinforced Concrete Construction, \$2.50; Monier Cement and Steel Construction, 50c; Hollow Concrete Block Building Construction, 50c. Postpaid on receipt of price. Address

**CEMENT AND ENGINEERING NEWS, Chicago, Ill.**

**AUTO STORAGE BATTERIES**  
ALL KINDS  
THE WILLARD STORAGE BATTERY CO. CLEVELAND, O.

**Electrical Engineering**  
and Experimental Work of Every Description  
We have every facility for producing first-class work promptly. Our factory is equipped with modern machinery throughout.  
C. F. SPLITDORF  
Engineering Dept. 17-27 Vandewater St., N. Y. City

**THE SHOREHAM**  
WASHINGTON, D. C.



JOHN T. DEVINE, PROP.

**Deafness Cured at Home**

Don't waste your time and money in experiments. My method cures deafness and all head noises to say cured. Absolute and positive proofs sent on application. No pain, no loss of time. The method is my own and cannot be obtained elsewhere. It has been tried and found true, it cures.

Write today for my book, "Deafness its Cause and Cure," FREE. Address

**GUY CLIFFORD POWELL, M. D.**  
65 Bank Bldg., Peoria, Ill.