

soften celluloid so that it will not break when hammered. Dipping it in water warmed to 40 deg. C. will suffice for this. Any factory will furnish soft celluloid if ordered in sufficiently large quantities to pay.

NEW BOOKS, ETC.

RUMFORD FIREPLACES, AND HOW THEY ARE MADE. By G. Curtis Gillespie, M.E., architect. New York: William T. Comstock. One 12mo. vol.; cloth. Price, \$2.

This work, based on the original Rumford essays, which are given in full with the original drawings, is an elaborately illustrated essay on fireplaces, ancient and modern, and their fixtures. The author has given much study to this subject, not as a mere dilettante, but as a practical worker. As an architect of experience in the construction of residences he has found a great demand for fireplaces on the part of owners, but a lack of ability on the part of mechanics to construct them on lines that were at once artistic and efficient. In this respect the book follows carefully in its drawings and descriptions the technical treatment necessary to secure the best results. He claims that Rumford discovered the form and proportions best suited to insure good heating, and that no later designer has been able to compete with him. This portion of the book will be read with much interest by the architect, the mason, and the heating engineer. While elaborately illustrated and containing many designs for mantels, fireplaces, and their accessories, which will render it valuable to the decorative designer, the book is thoroughly practical and the diagrams and drawings which will not only adorn but heat the rooms they are in without blinding the eyes of their occupants with smoke.

CONCRETE STEEL BUILDINGS. Being a Companion Volume to the Treatise on Concrete Steel. By W. N. Twelvetrees. London and New York: The Macmillan Company. With 331 illustrations. 12mo.; cloth; 408 pages. Price, \$3.25.

A presentation of detailed particulars of buildings in concrete designed for different uses in Great Britain, on the Continent, and in America. The works chosen are variously noteworthy, some for their size, some for their strength, and others for the manner in which difficult problems have been solved. All of the buildings show the adaptability of concrete to structural requirements of every description.

PRACTICAL METAL TURNING. A Handbook for Machinists, Technical Students, and Amateurs. By Joseph G. Horner. Illustrated with 488 engravings. New York: The Norman W. Henley Publishing Company. 8vo.; cloth; 404 pages. Price, \$3.50.

In this work little is said of the lathe itself, preference being given to the practice of turning rather than to lathe design, a wide subject, undergoing rapid changes. Although it would be a hopeless task to attempt to treat the subject exhaustively in one small volume, few matters of importance seem to have been omitted. The principles and practice in the different branches are considered, and well illustrated. All the different kinds of chucks of usual form as well as some less usual ones, are shown. The important section devoted to modern turret practice is a feature of the book; boring is another subject which is fully treated; and the chapter on tool holders illustrates a large number of types. Screw-cutting is discussed at reasonable length. The last chapter contains a generous body of information relating to high-speed steels and their work.

NOTES ON CONSTRUCTION IN MILD STEEL. By Henry Fidler. With illustrations from working drawings, diagrams, and tables. London and New York: Longmans, Green & Co. 8vo.; cloth; 448 pages. Price, \$5.

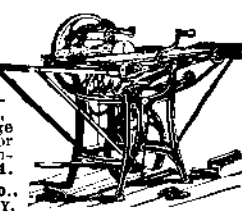
The object of this work is to bridge the gap that often occurs between the carefully calculated stress-sheet or correctly drawn graphic diagram and the completion of a working drawing which will successfully pass the ordeal of criticism in the girder maker's or bridge or roof builder's yard. No attempt has been made to treat the subject from the point of applied mechanics as ordinarily understood, nor are the theories of construction or the calculations of building or engineering structures referred to, except as may be required incidentally in connection with the legitimate subject matter. The great range of the topics of which the notes treat, however, and the severe limitations which are necessarily imposed, form an excuse for the apparent insufficiency of discussion.

WATER WORKS MANAGEMENT AND MAINTENANCE. By Winfred D. Hubbard and Wynkoop Kreisted. New York: John Wiley & Sons. 8vo.; cloth; 429 pages. Price, \$4.

The maintenance and operation of a system of water works is often believed to be a purely business proposition, requiring generally a business management. Regarded in a broad and comprehensive sense, this view may be correct, but a far-seeing business manager will not overlook the purely technical or scientific considerations which are of necessity involved in the management of a modern water works system. The selection of a water supply drawn

Wood-working Machinery

For ripping, cross-cutting, mitering, grooving, boring, scroll-sawing, edges moulding, mortising; for working wood in any manner. Send for catalogue. The Seneca Falls M'g Co., 126 Water St., Seneca Falls, N. Y.



Engine and Foot Lathes

MACHINE SHOP OUTFITS, TOOLS AND SUPPLIES. BEST MATERIALS. BEST WORKMANSHIP. CATALOGUE FREE SEBASTIAN LATHE CO., 120 Calvert St., Cincinnati, O.

WET PROCESS CONCRETE IS BEST

Unrivaled Concrete Block Machine makes blocks face down, wet process, damp cured. Triple Tier Rack-in System cures and bleaches to perfection. Tandem. Invaluable makes two blocks at once. New catalog free. The Pettyjohn Co., 615 N. 6th St., Terre Haute, Ind.

CURRENT WHEN YOU WANT IT

You can have ignition current for your automobile or motor boat at any time for starting, running or reserve by installing an Apple Battery Charger. Turned by the fly wheel of your engine, it generates enough current to keep storage batteries at ways charged and to maintain electric lights. Specify this outfit on your automobile, motor boat or stationary engine. The Dayton Electrical Mfg. Co., 98 St. Clair St., Dayton, Ohio. "Flashup the Battery on the Line."

FOR GUNSMITHS, TOOL MAKERS, EXPERIMENTAL & REPAIR WORK, ETC.

From 9-in. to 18-in. swing. Arranged for Steam or Foot Power, Velocipede or Stand-up Treadle. Send for Lathe Catalog. W. F. & JNO. BARNES CO. Established 1872. 1999 Ruby St., Rockford, Ill.

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.

ROTARY PUMPS AND ENGINES

Their Origin and Development.—An important series of papers giving a historical resume of the rotary pump and engine from 1588 and illustrated with clear drawings showing the construction of various forms of pumps and engines. 38 illustrations. Contained in SUPPLEMENTS 1149, 1150, 1151. Price 10 cents each. For sale by Munn & Co. and all newsdealers.

AVOID UNSEEN DANGER. The 20th Century Disinfect and Germ Exterminator insures a healthy home, stable, hen house, dog kennel, pig pen or out house. Is Non-poisonous. Used everywhere with perfect safety. Send for facts. NATIONAL CHEMICAL CO. 328 E. 13th St., Anderson, Ind.

Concrete, Reinforced Concrete AND Concrete Building Blocks

Scientific American Supplement 1548 contains an article on Concrete, by Brysson Cunningham. The article clearly describes the proper composition and mixture of concrete and gives results of elaborate tests. Scientific American Supplement 1538 gives the proportion of gravel and sand to be used in concrete. Scientific American Supplements 1567, 1568, 1569, 1570, and 1571 contain an elaborate discussion by Lieut. Henry J. Jones of the various systems of reinforcing concrete, concrete construction, and their applications. These articles constitute a splendid text book on the subject of reinforced concrete. Nothing better has been published. Scientific American Supplement 997 contains an article by Spencer Newberry in which practical notes on the proper preparation of concrete are given. Scientific American Supplements 1568 and 1569 present a helpful account of the making of concrete blocks by Spencer Newberry. Scientific American Supplement 1534 gives a critical review of the engineering value of reinforced concrete. Scientific American Supplements 1547 and 1548 give a resume in which the various systems of reinforced concrete construction are discussed and illustrated. Scientific American Supplement 1564 contains an article by Lewis A. Hicks, in which the merits and defects of reinforced concrete are analyzed. Scientific American Supplement 1551 contains the principles of reinforced concrete with some practical illustrations by Walter Loring Webb. Scientific American Supplement 1573 contains an article by Louis H. Gibson on the principles of success in concrete block manufacture, illustrated. Scientific American Supplement 1574 discusses steel for reinforced concrete. Scientific American Supplements 1575, 1576, and 1577 contain a paper by Philip L. Wormley, Jr., on cement mortar and concrete, their preparation and use for farm purposes. The paper exhaustively discusses the making of mortar and concrete, depositing of concrete, facing concrete, wood forms, concrete sidewalks, details of construction of reinforced concrete posts. Each number of the Supplement costs 10 cents. A set of papers containing all the articles above mentioned will be mailed for \$1.80. Order from your newsdealer or from MUNN & CO. 361 Broadway, New York City

from an unpolluted source is highly desirable, and inspires the confidence of the public in the management of water works. This confidence, however, may be also secured in a water drawn from polluted sources, provided the water be properly purified for use. It is the object of this work to present all the problems of water works management, both of systems where the water is drawn from polluted and from unpolluted sources. Its scope is broad, even dealing with the legal aspects of the case, and with the financial management of the properties.

ARMATURE CONSTRUCTION. By H. M. Hobart and A. G. Ellis. With 420 illustrations, including numerous colored diagrams. London and New York: The Macmillan Company. 8vo.; cloth; 348 pages. Price, \$4.50.

The design and manufacture of dynamo-electric machinery is so extensive a subject, that it cannot be handled in a single treatise with sufficient comprehensiveness. The present work deals with the subject from a constructional and practical standpoint rather than from a designing and calculating standpoint. The theoretical and designing elements have not been allowed to predominate, and are only inserted in so far as they facilitate an intelligent appreciation of the various methods and points encountered in the construction. A novelty which makes the figures much more readily followed is the introduction of colored diagrams in the study of polyphase windings and multiplex continuous current windings. Although to a mind which is continually dealing with such windings these colored diagrams are not so necessary, in the present case, however—where the desire is to reach those more or less unfamiliar with the subject—this innovation is a great assistance.

RAILROAD MEN'S CATECHISM. By Angus Sinclair. New York: Angus Sinclair Company. 16mo.; cloth; 216 pages. Price, \$1.

This is a book which gives information that will be useful and acceptable to all classes of railroad men from the president to the newest brakeman. The questions are intended to impart information covering the entire practice of train operating, and to explain all details of mechanism. The questions and answers are the outcome of Sinclair's Locomotive Engine Running and Management, and are an enlarged code that grew up through many small forms, the best known having been the Questions and Answers prepared by the Traveling Engineers' Association.

SOUTHERN SHIPPER'S GUIDE DIRECTORY. A List of the Shippers of Food-stuffs in the Southern States. Houston, Texas: Thomas-Willson Publishing Company. 8vo.; cloth; 300 pages.

ANNALS OF THE ASTRONOMICAL OBSERVATORY OF HARVARD COLLEGE. Edward C. Pickering, Director. Vol. LII. Part I. Eclipses of Jupiter's Satellites, 1878-1903. Cambridge, Mass.: Published by the Observatory.

HIGH ELECTROMOTIVE FORCE. Its Application to the Study of Powerful Electrical Discharges and to Spectrum Analysis. By John Trowbridge. Cambridge: John Wilson & Son, 1907. 185-215 pages; 3 plates.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending September 3, 1907.

AND EACH BEARING THAT DATE

(See note at end of list about copies of these patents.)

- Account or ledger card in bookkeeping, H. W. Templeton. 864,872
Adding machine, C. P. & T. G. Moore. 865,200
Advertising purposes, mechanical device for, S. & J. Chandler. 865,237
Agglomerated body, W. Schumacher. 864,804
Agitator or mixing apparatus, R. Smith. 865,128
Air-brake apparatus, W. T. Robinson, et al. 865,210
Air brake appliance, emergency, H. W. Meigs. 865,198
Alkali metals, electrolytic production of earth, Seward & von Kugelgen. 864,928
Ambulance stretcher and hospital chair, combined, Bensinger & Thomas. 865,006
Atomizer, F. C. Dormant. 865,021, 865,022
Auger for enlarging the lower ends of holes, G. H. Miller. 865,051
Automobile spare tire holder for, L. P. McKinley. 864,983
Awning, M. Chalupsky. 864,885
Axle box, combined spindle and vehicle wheel, C. N. Waterhouse. 865,139
Axle, vehicle, York & Darr. 865,223
Bale-forming apparatus, E. Reagan. 865,316
Baling fibrous material and bale, method or, C. J. Luce. 864,975
Baling press, J. King. 865,186
Basement pipe, C. W. O'Neill. 864,910
Basket handle, J. Sturm. 865,065
Bath apparatus, shower, N. L. Waller. 865,137
Battery, Clymer & Woodhouse. 865,330
Bearing, ball, W. M. Power. 864,859
Bee knife, I. F. Sawyer. 865,062
Beet dumping and screening apparatus, L. T. Carson. 865,235
Bell, musical, J. C. Deagan. 864,771
Bell, water tight electric, W. C. Hill. 865,038
Bell holder, R. Braun. 865,075
Billiard cue tip, detachable, V. Ajello. 864,943
Binding post, E. H. Rollinson. 865,211
Blusfite liquor, tower for, J. Bishop. 864,881
Block press, J. C. Fowler. 864,839
Blue print drying machine, C. F. Pease. 865,057
Board, See Slicing board.
Board, J. T. Ferris. 864,775
Body heater, P. Stein. 865,131
Boiler cleaner, J. W. Rietzke. 865,270

- Boiler tube or flue cleaner or scraper, steam, C. S. Dean. 864,772
Bolt cutting machine, H. L. Fisher. 864,964
Bolting machine, flour, T. W. Graham. 865,346
Book mark, K. Erickson. 865,992
Bookcase, D. Mapes. 865,114
Boot bodies, apparatus for making felted, H. C. Richardson. 864,916
Bottle, non-refillable, F. J. Davis. 864,834
Bottle, non-refillable, O. Johnson. 865,251
Bottle or jar closure, milk and cream, E. Braunfeldt. 865,076
Bottle washing machine, B. E. Linfoot. 865,132
Bottle washing machine, H. W. Van Leir. 865,217
Box, W. Straub. 865,280
Box blank machine, E. Craig. 864,955
Bracket, Kahn & Christ. 864,847
Brick carrying vehicle, J. J. Glehill. 865,299
Broom, G. Brustle. 865,293
Broom binder, N. Dionne. 865,085
Brush, buffing and polishing, E. N. Gaudron. 865,098
Brush holder, Febler & McLaughlin. 865,023
Brush wire, J. Sattler. 865,132
Bucket or conveyor, W. F. Jones. 865,045
Buffer, A. P. Olson. 864,985
Buffer, friction, J. Nichols. 865,054
Builder's bracket, A. H. Danforth. 865,017
Building blocks and artificial stone from plastic material, apparatus for forming, A. A. Pauly. 865,266
Building construction, R. E. Candee. 865,080
Building mold, J. D. Bickford. 864,767
Building structure, H. S. Jarden. 865,336
Burner, A. G. Kaufman. 865,183
Butter, determining the percentage of water in, G. E. Patrick. 864,913
Buttonhole stitching machine, E. B. Allen. 865,324
Camera focusing device, J. A. Dimock. 864,773
Canning apparatus, L. L. Lawrence. 865,190
Canopy bracket, H. H. Bowland. 865,230
Car dumping cage, mme, G. Trotter. 864,813
Car fender, C. Meyer. 864,934
Car fender, H. M. Lambert. 865,258
Car mover, J. R. Doty. 865,087
Car roof, D. C. Ress. 864,993
Car safety appliance, railway, J. T. Andrew. 865,287
Car seat, auxiliary, N. Joergensen. 865,104
Car step, pivoted, R. M. Lamb. 864,848
Cars, automatic electric gang riving device for street, Falck & Wolfe. 864,961
Cars, etc., interlocking apparatus for cooling, C. F. Edson. 865,172
Carbon brushes, means for attaching pig-tails to, M. W. Robertson. 865,059
Carburetor, A. F. Rockwell. 865,090
Caraf folder, magazine, C. C. McPhee. 864,984
Carding machine feeder, J. Stewart. 864,933
Carpet sweeper, Deitch & Biddle. 865,084
Casein and producing s me, molding, L. H. Barme. 865,005
Cattle guard, V. A. Kelley. 865,343
Chair and crib, combined, A. B. Nielsen. 864,855
Charcoal kiln, C. D. Train. 865,067
Charging mechanism, vertical, C. L. Taylor. 864,936
Check-marking apparatus, Marston & Cummings. 865,050
Chimney top, E. P. Doty. 865,023
Chimney top or ventilator, C. Saunders. 864,866
Choppers. See Meat chopper.
Churn, J. L. Forbes. 865,030
Cigarettes having tobacco wrappers, manufacture of, G. P. Butler. 864,949
Cigars and all-tobacco cigarettes, manufacturing, G. P. Butler. 864,948
Cigars, manufacture of, W. H. Butler. 865,012
Circuit closer, automatic, H. G. Pape. 864,858
Classifier, S. L. Hague. 865,301
Closet, C. E. Routh. 864,994
Closure for containing vessels, J. Brenzinger. 865,008
Clothes line fastener, C. L. Thompson. 864,937
Clutch, F. H. & J. D. Bachman. 865,154
Clutch for pencil holders, etc., A. A. Bowers. 864,825
Clutch mechanism, B. M. W. Hanson. 865,302
Coffee roaster, automatic, Mustonen & Nissinen. 865,203
Coin winding tool, J. L. Moore. 865,135
Coin cup, E. F. Tinsley. 864,938
Collar fastening device, adjustable, F. H. Richards. 864,989
Combustion apparatus, W. H. Ricker. 865,209
Composition or concrete post, H. G. & J. W. Hays. 865,179
Compressor, N. A. Christensen. 865,015
Computing machine, J. E. Carroll. 864,770
Concrete construction, A. A. Pauly. 865,265
Concrete construction, reinforced, S. B. Zimmer. 865,145
Concrete structure, reinforced, Boyie & Upton. 865,231
Condensation preventer, E. O. Capen. 865,081
Condenser, R. Schneider. 864,925
Condenser and centrifugal vacuum pump, jet, B. Thoens. 864,811
Conveyer stripper, S. Moe. 865,263
Core, collapsible, W. C. State. 865,064
Cork cutting machine, H. F. Busch. 865,345
Corn grader, C. Hunnicutt. 864,894
Corset, G. Berggren. 865,156
Coupling, G. Bach. 865,153
Crane for carrying ladders, C. L. Taylor. 864,935
Crate, knockdown, Minehart & Hunter. 864,852
Crucible tapping arrangement, L. Heynemann. 865,037
Culvert and bank-retainer, road, Isham & Miller. 865,044
Current transformer, O. & Paris. 865,093
Cutting machine, H. De Smith. 865,020
Dashboard pocket, C. E. Glynn. 865,031
Die stock, adjustable, B. Borlen. 865,157
Dish washing machine, A. Insigner. 865,181
Disinfecting apparatus, W. H. Rose. 865,061
Display cover, G. E. H. Richter. 865,208
Display rack for metal besteads, H. L. Powell. 865,268
Dividing head, L. Thiel. 864,873
Door, combined storm and screen, S. J. Spicer. 864,931
Door hanger, D. Doyen. 865,089
Door operating mechanism, double sliding, C. Metterhausen. 864,977
Doors, means for hinging laterally movable, J. L. Kall. 865,046
Draft equalizer, H. Hardman. 865,034
Drill socket or chuck, C. C. Roberts. 864,992
Drilling machine, E. Alsleben. 865,148
Drilling machine multiple drill attachment, H. J. Jaquith. 865,249
Driving mechanism, H. L. Johnston. 864,786
Dye, azo, Kahn & Kothe. 865,252
Dynamometer, F. Sellers. 864,923
Egg desiccating apparatus, J. M. Hussey. 865,342
Electric furnace, V. G. Clark. 865,016
Electric generator, Weman & Larsson. 865,068
Electric motors, connecting system for direct current, R. Brun. 865,011
Electric wire clamp, E. W. Buntington. 864,947
Electrical and other devices, receptacle for, R. Siegfried. 864,930
Electrolysis, multiple needle holder for, E. W. Johnson. 864,968
Elevated carrier, W. Louden. 865,113
Elevating and conveying mechanism, A. R. Holmer. 865,041
Elevator, C. R. Fratt. 865,205
Elevator gate operating mechanism, J. E. W. Fogal. 865,335
Elevator signaling apparatus, C. A. Reiners. 864,915
Engine, G. Gray. 865,099
Engine, J. Schaeffers. 865,213
Engine lubricating means, internal combustion, C. O. Heilmstrom. 865,101
Engine starter, explosive, J. B. Bartholomew. 864,766
Engines, air supply means for explosive, A. Wagener. 865,218
Engines, thermostatic regulator for explosive, H. Charles. 864,831
Engineer's wrench, M. Schwenner. 864,805
Etching, E. Spitzer. 865,276
Explosive engine, A. E. Wolcott. 864,818
Explosive engine, H. Charles. 864,830
Explosive engine, E. J. Woolf. 864,877
Eyeglass nose guard, C. L. Howes. 865,042
Eyeglasses, D. Woolf. 865,284
Fabric, See Knitted fabric.
Fan motor, rotary, W. C. Stevens. 865,133
Fastenings, machine for inserting, L. A. Casgrain. 864,951
Faucet, A. Koerber, et al. 865,111
Faucet, A. Ullmann. 865,216

Feeder, boiler, J. F. Senter..... 864,807
 Fertilizer distributor, D. M. Samuelson..... 864,863
 File, newspaper, B. McGinty..... 864,982
 Fire escape, S. P. Deeds..... 865,167
 Fire escape alarm, S. Ashford..... 864,878
 Firearm, breech-loading, W. H. Whittier..... 864,940
 Firearm safety lock, J. Tambour..... 865,281
 Fireproof heater for radiator systems, W. G. Conkle..... 865,238
 Fireproof stud for plastered partitions, sheet metal, C. H. Snapp..... 865,109
 Fireproofing cotton in bales, H. V. Haley..... 865,033
 Floor mat, J. W. Horner..... 865,180
 Floor scraper, L. P. Thompson..... 864,874
 Fluid actuating means, R. Conrader..... 865,296
 Flush tank, O. F. Gliddon..... 865,300
 Fluting machine, R. F. Kunze..... 865,188
 Foot warmer, C. H. Whitaker..... 865,220
 Fruit, apparatus for removing the skin from, A. Bee..... 864,944
 Fuel, artificial, L. Davis..... 865,018
 Furnace casing, C. Phelps..... 865,123
 Furnace charging apparatus, C. L. Taylor..... 864,934
 Furnaces, charging blast, A. G. McKee..... 864,795
 Fuse, time, H. Dahlke..... 865,298
 Gaff clapper, R. W. Wonson..... 865,003
 Garment presser, A. W. Ellason..... 865,091
 Gas engine, H. Pollard..... 865,267
 Gas or vapor by the direct application to it of a suitably expanded medium, method of and means for moving a Kenerson & Loepsinger..... 864,969
 Gassing yarns and other fibers, burner for, Rivett & Oldham..... 864,917
 Gear, propeller, W. Witt..... 864,942
 Gear, reversible transmission, Morton & Kouns..... 865,201
 Gear, transmission, A. J. Morse..... 864,906
 Gearing, transmission, A. T. Morse..... 864,904
 Gearing, variable speed, J. S. Barnes..... 864,823
 Gin saw cleaner, M. Bradford..... 865,232
 Glass, making prism, F. L. O. Wadsworth..... 865,136
 Gluten, obtaining dry, L. E. Morel..... 864,978
 Governor, R. F. Cassel..... 865,082
 Gramophone, multiple, A. F. Moore..... 865,344
 Grinding apparatus, crank shaft, G. Benicke..... 864,890
 Grinding machine, J. S. Lucock..... 864,791
 Gun cleaning tool, A. H. Durston..... 864,837
 Gun cocking mechanism, C. F. Lefever..... 865,310
 Gunnery correcting device, automatic, E. W. Hubbard..... 865,247
 Gutter inserter, D. A. Sapp..... 864,997
 Halter and bridle, combined, Knight & Adams..... 865,308
 Hammer power, J. D. Kinson..... 864,970
 Handle making machine, M. O. Thompson..... 865,001
 Harness pads, manufacture of, Lee & Grings Harrow riding attachment, S. B. Hazard, reissue..... 12,690
 Hinge, R. G. Winter, reissue..... 12,692
 Hinge, gate, J. V. Dunn..... 865,243
 Hinge, spring, A. F. Staples..... 864,932
 Hoist, portable, J. L. Hilling..... 864,798
 Hoisting device, H. J. Schmitt..... 864,998
 Hollow bodies, apparatus for narrowing the walls of, A. H. Kohl..... 865,257
 Horses of kicking, device for breaking, W. T. Neff..... 864,796
 Horseshoe attachment, C. E. Maud..... 864,901
 Horticultural implement, D. Craig..... 864,953
 Hose holder, fire, J. Kenion..... 865,184
 Hose nozzle, H. M. Abee..... 865,146
 Hose nozzle, adjustable, C. R. Ross..... 864,921
 Hub, wheel, W. J. Connolly..... 865,239
 Humidifier, A. B. Clarkson..... 865,295
 Humidifying apparatus, J. Taylor..... 864,810
 Hydraulic motor, T. F. Bullard..... 865,078
 Hydrocarbon engine, E. Hudson..... 864,844
 Ice manufacture, freezing machine for, D. L. Holden..... 865,040
 Indicator gage, H. A. Reynolds..... 864,861
 Ingot manipulator, J. Kennedy..... 865,047
 Ingot stripper and charger, combined, Cromwell & Lamb..... 865,240
 Internal combustion engine, C. Brizzolara..... 865,009
 Internal combustion engine, C. J. Mundhenk..... 865,202
 Internal combustion motor, B. L. Toquet..... 865,135
 Iron refining material and preparing the same, H. W. Lash..... 864,972
 Ironing machine, J. M. Lockhart..... 864,851
 Jar and drinking font in, combined, J. J. Drospey..... 865,024
 Jar closure clamp, J. Kunkel..... 865,187
 Joint. See Rail-joint.
 Journal bearing, F. E. Harden..... 865,245
 Journal box lid, A. Wisler..... 865,070
 Junction box cover rosette, F. J. Russell..... 864,995
 Kinetoscope, B. H. Keller..... 865,106
 Knife and other cutting blade, G. Thuillier..... 864,812
 Knitted fabric, B. E. Steyer..... 865,279
 Labeling machine, W. Ruprich..... 864,920
 Ladder, folding step, F. B. Koues..... 864,898
 Lamp, long burning arc, Rosemeyer & Dive..... 865,271
 Lamp, street, J. Doyle..... 864,958
 Lantern burner, signal, F. A. Schuetz..... 864,803
 Last block sawing device, H. J. Jaquith..... 865,250
 Latch, car door, W. E. Lamp..... 865,191
 Lath mill, C. W. Willett..... 865,142
 Laundry device, A. R. Wilson..... 865,069
 Leveling mechanism, W. E. Martin..... 865,196
 Lightning arrester, W. J. Bell..... 865,291
 Linotype machine, P. T. Dodge..... 865,086
 Liquids in receptacles, apparatus for determining heights of, G. M. Boone..... 865,229
 Lock, W. H. F. Young..... 864,819
 Loom, M. Perreault..... 865,122
 Loom, cane, W. Wattle..... 865,283
 Loom for weaving pile fabrics, A. G. Cowell..... 865,332
 Loom harness evener mechanism, B. E. McGulness..... 865,264
 Loom shuttle check, P. Macpherson..... 864,900
 Loom, swivel, E. H. Ryan..... 865,272
 Loom, web replenishing, J. T. Cyr..... 864,956
 Lubricant feeding and distributing mechanism, W. E. Parr..... 865,315
 Lubricating and dust proof gland, J. Robertson..... 865,058
 Lubricating apparatus, steam, W. Michalik..... 865,262
 Lubricating device, H. C. Jamage..... 864,778
 Lubricating mechanism, N. A. Christensen..... 865,083
 Lubricator, H. A. Wetman..... 864,876
 Lubricator, F. D. Winkley..... 865,221
 Lubricator, W. Jamieson..... 865,248
 Lubricator, J. Sherrv..... 865,319
 Lung testing device therapeutic, F. W. Nebelthun..... 864,908
 Magnetic composition and making the same, R. A. Hadfield, reissue..... 12,691
 Magnets of alternate current generators, end connection for conduction or yield, M. Walker..... 865,219
 Mail crane, J. Bour..... 865,292
 Manure spreader, A. Johnston..... 865,182
 Matrices, font of, J. B. Bell..... 865,073
 Mattress making machine, J. T. Harris..... 865,100
 Measurements on fabric, piece goods, and the like, apparatus for marking, E. Kessler..... 864,788
 Meat chopper, G. L. Forrest..... 865,095
 Memorandum sheet, dictation, N. C. Durand Merchandise holder, D. F. Greenawalt..... 865,032
 Metal, apparatus for electrically removing and severing, R. E. Frickey..... 864,840
 Milking machine and connections, F. Raven Mine haul, F. W. Harris..... 865,303
 Miner's pan, P. A. Hardwick..... 865,178
 Mineral separator, R. J. McKee..... 865,053
 Minerals from ore, apparatus for extracting, O. A. Ellis..... 865,027
 Moistener, Abel, H. G. Campbell..... 865,159
 Molding machine, W. H. Wood..... 865,071
 Money, instrument representing the transfer of, M. H. Fox..... 865,176
 Mortar mixer or hoe, N. Anderson..... 865,150
 Motor. See Fan-motor.
 Mower, lawn, E. Franke..... 865,097
 Mower, lawn, W. I. Colwell..... 865,161
 Mowers and the like, sickle drive for, C. A. Darrah..... 865,244
 Mowing machine attachment, H. M. Tarant..... 865,066
 Nailing machine work gage, L. A. Casgrain..... 865,329
 Nautical indicating device, J. D. Stannard..... 865,278
 Numbering or marking machine, G. H. Lang Nut wrench, W. H. Brawley..... 864,882
 Oil can, J. G. Woodward..... 865,222
 Oil cup, emergency, R. T. Rickards..... 864,991
 Oiler, automatic, A. P. Olson..... 864,857

Great Strength!

Continual use does not affect the simple yet strong mechanism of

NEW YORK STANDARD "CHRONOGRAPHS" Or STOP-WATCHES

Many marvel at how they can be sold at the price, yet they are the only ones made anywhere in the world that are Fully Guaranteed.

Ask to See Them at Your Jeweler's

New York Standard Watch Co., 401 Communipaw Ave., Jersey City, N. J.



3/4 ACTUAL SIZE
WRITE FOR FREE BOOKLET
52 STYLES
\$7.50
In Silver and Gold Case

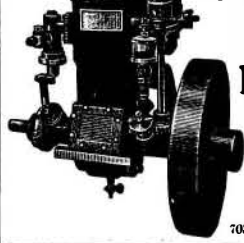
One Hoxie Bullet Kills



The Hoxie Bullet is the most remarkable invention in modern armament... It is a bullet that kills and instantly fatal wound. Gives far greater killing power to small caliber rifles than large caliber rifles now have, thus saving ammunition, heavy recoil and rifle weight and giving greater range, velocity and accuracy. But above all it gets the game sure if you hit it. We do not sell Hoxie Bullets separately but supply U. M. C. Winchester, or any standard cartridge with Hoxielized Bullets and without disturbing original load. If your dealer doesn't keep standard cartridges with Hoxielized Bullets order from us and give us his name. Book of full information for your name on a post card. Send for it to-day.

HOXIE AMMUNITION CO., 340A Marquette Bldg., Chicago, Ills.

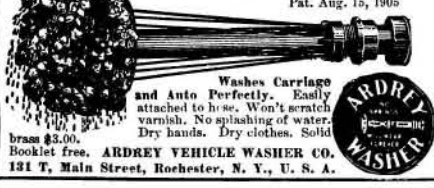
Would You "Make the Round Trip" Without Uncertainty?



Investigate the Hildreth Marine Motors. We are ready to "SHOW YOU". Send for valuable facts about Marine Motors. THE HILDRETH MFG. CO., 703 Sheridan, Lansing, Mich., U.S.A.

WIRELESS TELEGRAPHY—ITS PROGRESS and Present Condition are well discussed in SCIENTIFIC AMERICAN SUPPLEMENTS 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434. Price 10 cents each, by mail. Munn & Co., 361 Broadway, New York City and all newsdealers.

The ARDREY Vehicle Washer



Pat. Aug. 15, 1905. Washes Carriage and Auto Perfectly. Easily attached to hose. Won't scratch varnish. No splashing of water. Dry hands. Dry clothes. Solid. Booklet free. ARDREY VEHICLE WASHER CO., 131 T. Main Street, Rochester, N. Y., U. S. A.

First and Original Motor Buggy

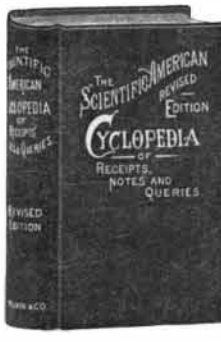
\$250 "SUCCESS" AUTOMOBILE. Practical, durable, economical and absolutely safe. A light, strong, steel-tired Auto-Buggy. Suitable for city or country use. Speed from 4 to 40 miles an hour. Our 1908 Model has an extra powerful engine, patent ball-bearing wheels; price, \$275. Also 10 h. p., \$400. Rubber Tires, \$25.00 extra. Write for descriptive literature. Address SUCCESS AUTO-BUGGY MFG. CO., Inc., St. Louis, Mo.

The Scientific American Cyclopedia of Receipts, Notes and Queries

REVISED EDITION

15,000 Receipts 734 Pages Price \$5.00 MAILED TO ANY PART OF THE WORLD

THE SCIENTIFIC AMERICAN CYCLOPEDIA OF RECEIPTS, NOTES AND QUERIES has had an unprecedented sale. It has been used by chemists, technologists, and those unfamiliar with the arts, with equal success, and has demonstrated that it is a book which is useful in the laboratory, factory or home. It consists of a careful compilation of the most useful receipts, and information which have appeared in the SCIENTIFIC AMERICAN for more than half a century. Over 15,000 selected formulæ are here collected, nearly every branch of the useful arts being represented. Many of the principal substances and raw materials used in the arts are described, and almost every inquiry relating to formulæ will be found answered. It is more than a receipt book, as in most cases it gives all the standard and special formulæ, thus enabling the reader to find a receipt which fits his peculiar need. An alphabetical arrangement with abundant cross references makes it an easy work to consult. Those who are engaged in any branch of industry will find this book of the greatest practical value, and we especially commend it to those who are in search of an independent business, as they will find many formulæ for the manufacture of salable articles which will be worth many times the cost of the book. The Appendix contains the very latest formulæ as well as 41 tables of weights and measures, and a Dictionary of Chemical Synonyms.



Send for Full Table of Contents Mailed Free on Request

MUNN & COMPANY, Publishers 363 BROADWAY, NEW YORK

Ophthalmometer, E. P. Brewer..... 864,769
 Ore concentrating apparatus, A. S. Elmore..... 865,334
 Ore concentrating jig, H. Foust..... 864,776
 Ores and separating by-products therefrom, apparatus for roasting, A. D. Lee..... 865,309
 Ores, separating the metallic and rocky constituents of, D. H. Norris..... 864,856
 Outlet or junction box, universal, J. L. Gleason..... 864,781
 Packing, J. L. Sackett..... 864,996
 Padlock, seal, J. B. Orblson, et al..... 865,313
 Paper making and like machines, electric drive for, J. R. Happer..... 864,842
 Penwiper, D. Seip..... 865,273
 Penholder attachment, A. L. Hatfield..... 865,036
 Pencil attachment, lead, O. Mussinan, 865,119 to 865,121
 Pencil holder, J. T. Haskins..... 864,893
 Photograph printing machines, time switch for, J. C. Calhoun..... 864,883
 Pickling vat or barrel, F. Brockhoff..... 865,010
 Pin cushion stuffing machine, E. S. Kidwell..... 865,107
 Pipe hanger, J. E. Jones..... 864,897
 Pipe turning machine, G. E. Foster..... 865,096
 Pipes, shaft, etc., repair clip for, W. S. Palmer..... 865,056
 Planing machine, device for automatically stopping a, T. B. Rice, Jr..... 865,124
 Planters, seed dropping mechanism for corn, E. A. Johnston..... 865,307
 Plow, H. Wiard..... 865,141
 Plow, wheel, I. A. Weaver..... 865,140
 Plowing machine, G. M. Clark..... 865,294
 Pole base, M. H. Murray..... 864,854
 Porcelain and other vitreous substances, producing threads and undercuts on, H. P. Osborn..... 865,314
 Power transmission device, C. D. Junney..... 864,846
 Power transmission device, E. P. Warner..... 865,138
 Power yielding and receiving means, F. W. Harris..... 865,338
 Preservative, Rucker & Pickee, reissue..... 12,693
 Press, M. S. Clark..... 864,832
 Printing press, Halfpenny & Hopkins..... 865,177
 Projectile, explosive, K. Voller..... 865,282
 Propeller for ships and boats, reversible, G. F. Villiger..... 864,875
 Pulp and paper, manufacture of, J. M. Dohan..... 865,168
 Pump, A. Dellanna..... 865,019
 Pump, automatic air, E. J. Rohrbacher..... 864,918
 Pump curb, A. Schimmel..... 864,924
 Pump, force, W. K. Andrew..... 865,151
 Punch, center, L. W. Sherwood..... 865,063
 Puzzle, O. M. Reed..... 865,207
 Radiator, R. O. Stutsman..... 864,871
 Radiator, G. Menes, et al..... 865,199
 Rail brace, L. W. Sprague..... 865,320
 Rail joint, C. C. Jantzen..... 864,895
 Rail joint, J. F. Bastel..... 865,227
 Railway, H. L. Stillman..... 864,870
 Railway ballast handling and cleaning apparatus, D. R. Mehaefey..... 865,261
 Railway block signal system, W. M. Chapman..... 865,013
 Railway block system and locomotive equipment for operating the same, H. Longauer..... 864,974
 Railway crossing, J. E. Reese..... 865,317
 Railway or like points, mechanism for moving and locking, L. D. G. Ferreira..... 864,963
 Railway rail, compound, A. E. Smith..... 864,867
 Railway rail tie, Roberts & Bliss..... 865,125
 Railway switch, J. A. Coppock..... 865,163
 Railway train system, E. D. Small..... 864,808
 Raisin seeders, impaling roll for, E. L. Chaddock..... 865,236
 Ratchet wheel clip spring, E. H. Horn..... 864,785
 Receptacle, expanded, C. F. Eichberg..... 865,173
 Ripping tool, gage, M. A. S. Rosing..... 865,126
 Riveting machine, M. Sternberg..... 865,132
 Roaster. See Coffee-roaster.
 Roaster, G. F. Knapp..... 865,110
 Rock drill, R. A. Fowden..... 864,838
 Rock drill, E. W. Evans..... 865,175
 Rolling sheet metal, E. Norton..... 865,055
 Roof, adjustable, T. Wilson..... 864,941
 Rotary engine, A. G. Edwards..... 864,889
 Rotary engine, J. A. Moser..... 864,979
 Rotary engine, E. Mu..... 865,117
 Rotary explosive engine, J. V. Ranck..... 865,206
 Rotary kiln, W. R. Warren..... 864,816
 Router head, J. A. Pearson..... 864,986
 Routing machine fixture, H. A. Reynolds..... 864,862
 Rug fastener, E. H. Hines..... 865,102
 Running gear, H. B. Studebaker..... 864,809
 Sad iron handle, W. G. Boughton..... 865,328
 Saddles, manufacturing harness, C. H. Grings..... 864,892
 Safety hanger, R. Anteau..... 864,765
 Sash fastener, J. E. Gibbs..... 864,780
 Sash fastener and tightener, N. S. Hillyard..... 865,339
 Sash lock, L. K. Eddy..... 865,090
 Saw, chain, E. C. Murr..... 865,158
 Saw filing and setting machine, S. E. Arney..... 865,225
 Saw jointer, J. G. Murback..... 864,907
 Saw machine, back, E. Renkenberger..... 865,269
 Saw set, T. W. Cross..... 865,165
 Saw setting machine, S. E. Arney..... 865,325
 Scissors, J. Feinberg..... 864,962
 Scouring wheel or the like, C. A. L. Saunders..... 864,923
 Scraper, L. C. Haase..... 864,900
 Screen sizing and separating machinery, J. M. Callow..... 864,827 to 824,829
 Seal, G. H. Huising..... 865,043
 Sealing device, bottle, W. Bailey..... 865,004
 Search light, portable, J. Dickens..... 864,957
 Seat, H. G. Barrett..... 865,327
 Separating solid particles from each other, apparatus for, A. P. S. Macquisten, 865,195, 865,200
 Separating solids, A. P. S. Macquisten..... 865,194
 Sewing machine, W. M. Ammerman..... 865,149
 Sewing machine attachment, G. J. Stevens..... 865,321
 Sewing machine thread take-up, W. Buscher..... 865,234
 Sewing machines, seam trimmer throat plate for, H. L. Phelps..... 864,797
 Shade and curtain adjusting device, R. A. Brettenfeld..... 865,007
 Shade and curtain rod supporting bracket, combined, E. L. Brown..... 865,077
 Sheet metal handle, J. B. Wise..... 864,817
 Ship salvage system, A. B. Macklin..... 865,193
 Shirt waist and skirt adjuster, L. Barnett..... 865,226
 Shoe fastening, F. P. Dumke..... 864,774
 Shoe polishing stand, D. W. Craig..... 864,954
 Shoes, manufacture of, F. G. Delbon..... 864,835
 Shuttle, automatic or self-threading, R. L. Cannon..... 865,166
 Side delivery rake, E. C. Smith..... 864,888
 Sign character, W. V. D. Kelley..... 865,255
 Signal, C. R. Dowler..... 865,169
 Signaling device, electric, A. Larsson..... 864,971
 Single trigger mechanism, W. H. Brown..... 864,826
 Skirt gage, dressmaker's, J. Trauner..... 864,939
 Skirt gage, dressmaker's, O. Kenney..... 865,256
 Slate jig, S. J. Kerrigan..... 865,185
 Sled, self-propelled, E. F. Bartlett..... 865,289
 Slicing board, E. J. Creque..... 864,883
 Smelting apparatus, electric, J. C. Young..... 865,285
 Smelting ore and converting matte, A. M. Day..... 865,333
 Soap, method and apparatus for placing inserts in cakes of, W. Berry..... 865,074
 Sound producing device, J. P. Northey..... 864,909
 Spark arrestor, R. Laub..... 865,189
 Spark plug, G. W. Saxe..... 865,212
 Speed transmission mechanism, variable, C. A. Janson..... 864,845
 Spike, L. Dube..... 865,170
 Spindles to shafts, device for securing, H. C. Gamage..... 864,779
 Spinning and ring twisting frames, ring traveler for ring, T. Demoulin..... 865,242
 Spinning machine, ring, A. Klein..... 865,048
 Spinning machine, ring, T. Yates..... 865,144
 Spraying fluid upon the surfaces of paper, textile fabrics, or the like, C. A. Hantsch..... 864,784
 Spring equalizer, J. & A. Raab..... 864,914
 Square, T. Sparks..... 865,129
 Stair rail joint, W. W. Burns..... 865,233
 Stamping die, J. R. Main..... 864,976
 Stand. See Shoe-polishing stand.
 Steam generator, C. D. Mosher..... 864,853
 Steam trap, A. Sorge, Jr..... 864,869
 Step switch, C. Kramer..... 864,832
 Stereotype plate and base, B. C. Schmitt..... 864,802
 Stoker for furnaces, E. Bretney..... 864,946
 Stop motion, G. H. Lang..... 864,849
 Storage plant, E. Meier..... 865,197

Classified Advertisements

Advertising in this column is 50 cents a line. No less than four nor more than ten lines accepted. Count seven words to the line. All orders must be accompanied by a remittance. Further information sent on request.

BUSINESS OPPORTUNITIES.

FOR SALE.—Strictly modern gray iron foundry completely equipped and in daily operation on profitable machinery work. Located in Michigan town with excellent shipping facilities. Best of reasons for selling, and will make liberal terms. Full information cheerfully furnished. Profitable, Box 773, New York.

I WISH to communicate with party who desires an exclusive right to manufacture and sell on royalty a new hose supporter for men. For particulars address Burr L. Harris, P. O. Box 581, Los Angeles, Cal.

INVENTORS, MANUFACTURERS!—Special machines designed, built, repaired, and experimental work executed in a well-equipped machine shop. J. G. C. Mantle, Mechanical Engineer, 1907 Park Ave., New York.

PATENTED ARTICLES in wire, brass and other metals made to order. Stamping, press work. Prices reasonable. Special low prices to established trade. The Fischer Mfg. Co., Paterson, N. J.

PATTERN LETTERS AND FIGURES (White Metal and Brass) for use on patterns for castings. Large variety, prompt shipments. Send for catalog. H. W. Knight & Son, Seneca Falls, N. Y.

PATENTS FOR SALE.

FOR SALE OR ON ROYALTY, Patent No. 796,255.—Samuelson's Improved Rail Joint. Simple and secure, positively non-pounding, no strain on bolts, profitable to manufacture. For particulars address C. J. Samuelson, 611 Penn Street, Kansas City, Mo.

FOR SALE.—Patent protecting new invention in the line of men's garters. Or will consider invention's manufacture under exclusive royalty. For particulars address Burr L. Harris, P. O. Box 581, Los Angeles, Cal.

WILL SELL.—Just patented, street car danger signal. Warns against opposite track. Any fair cash offer. For particulars address F. L. Wolford, 879 East Main Street, Columbus, Ohio.

U. S. PATENT No. 856,018 on Power Shovel. Will sell outright or on royalty, with privilege of all future improvements. For further information address Robert Heiden, Spanish Ranch, Plumas County, Cal.

PATENTS WANTED.

OFFICE HELPS OR APPLIANCES WANTED.—Convenient novelties for busy offices. Bright ideas purchased or manufactured and sold on royalty. Pax Company, 121 West 42d St., New York City.

AGENTS WANTED.

AGENTS for new pencil sharpener. Advertising novelty. Big commissions. Send 12 cents for pocket sample. For full particulars address O. S. Matthews, 202 Lucas Ave., St. Louis, Mo.

AGENTS WANTED.—Big profits; Gre-Solvent cleans hands instantly; removes grease, paint, ink, etc.; every mechanic highly get sample and terms. Utility Co., 648 West 44th Street, New York.

EXCLUSIVE AGENCIES GIVEN.—We want a good man in every town to sell first-class electrical specialties during spare hours to houses, stores and especially factories. Easy sellers and good big profit. Write for our Sole Agency. Hill-Wright Electric Company, 105 Reade Street, New York City.

HELP WANTED.

LEARN ADVERTISING WRITING and you can positively earn from \$25 to \$100 a week. Write to-day for illustrated prospectus. Sent free upon request. Tells everything. Page-Davis School, Dept. 89, Chicago.

WANTED, A MAN IN SHOP or Factory as sole representative in his locality to sell direct to his fellow workers. Anyone desiring to increase income, this is an excellent opportunity. Importer to consumer. Write to-day. New York, China and Japan Tea Co., Hudson and Canal Streets, New York City.

ROYALTY SALESMAN WANTED to travel and place manufacturers' goods on royalty of splendid household articles. Right man can clear \$10,000 in a few months. Address XX, Box 73, New York.

MOTION PICTURES.

THE MOVING PICTURE WORLD, weekly, 10 cents per copy; yearly subscription, \$2. The only paper devoted to the moving picture, illustrated song and lantern lecture field. Moving Picture World, Box 350, N. Y.

MODELS & EXPERIMENTAL WORK.

INVENTIONS PERFECTED.—Mechanical Drawings Tools, Dies, Special Automatic Machinery and Novelties manufactured. The Victor Model and Novelty Co., Phone 3359 Worth, Corner Pearl and Centre Sts. N. Y.

AUTOS.

ON ACCOUNT OF THE NUMEROUS INQUIRIES we have recently received for chauffeurs, we have decided to open a department that will enable you to become an experienced automobile driver and mechanic. Special course for those out of town. Write Automobile Exchange, 1416 Broadway, New York City.

TYPEWRITERS.

TYPEWRITER "Bargain List" free. Deal direct, save agents' commissions. Underwoods, Remingtons, Olivetti, \$38; others \$45, \$25, shipped on trial. Old Reliable, Consolidated Typewriter Ex., 243 Broadway, N. Y.

BOOKS AND MAGAZINES.

DEEP BREATHING.—How, When and Where. A 64-page illustrated book on this vital subject sent on receipt of 10 cents. For information address P. von Boeckmann, R.S., 750 Bristol Building, 500 Fifth Avenue, New York.

CORRESPONDENCE SCHOOLS.

PATENT LAW AND OFFICE PRACTICE BY MAIL. Free booklet and specimen pages of thoroughly practical course. Price reasonable. Correspondence School of Patent Law, Dept. A, 1853 Mintwood, Wash., D. C.

SCHOOLS AND COLLEGES.

PRACTICAL INSTRUCTION in the engineering use of Algebra, Geometry, Logarithms, Trigonometry, Slide-rule, Planimeter, Perspective and Scales. All by mail. Geert Blaauw, 25 Broad St., 20th floor, Room 112, N. Y. City.

AUTOMATIC MACHINERY.

MANUFACTURING.—Special dies, tools, jigs, etc. Inventions perfected, fine model making and experimental work, designing and draughting. Hull Bros., 54 Hudson St., Jersey City. Phone 1999L, J. C.

PHOTOGRAPHY.

PHOTOGRAPHERS, we want to get you in the habit of reading the American Photographer and Camera and Dark Room, the biggest and best photographic monthly. The yearly subscription price is \$1.50, 15 cents monthly at news dealers. We will send you four numbers as a trial subscription for 25 cents in stamps or coin. American Photographic Pub. Co., 361 Broadway, New York.

SEASICKNESS.

SEASICKNESS and Car Nausea prevented, Brush's Remedy (Elixir prophylactic). Guaranteed perfectly harmless. The only preparation that has never failed. Free booklet proving these statements sent by Brush Chemical Co., 229 Broadway, N. Y. All druggists \$1 per bottle.

Table listing various inventions and their patent numbers, including items like Stove, gas, W. H. Calkins, Stove pipe thimble, C. T. McCarroll, Strainer, W. Jones, Straw binder, H. A. Hancock, Street cleaner, I. Ludlow, Surgical or medical bandage, P. F. W. Kappmeier, Swinging screen, J. H. Cornelison, Switch mechanism, automatic, Bell & Nykstra, Switchback apparatus, Hartley & Bishop, Talking machine sound box, E. K. Johnson, Talking machines, mounting for the stylus-bar of, L. F. Douglass, Tank alarm, G. P. Elliott, Telegraph transmitter, J. A. Carter, Jr., Telegraphy, printing, I. Kitsee, Telephone lines, supervisory system for, W. V. Bean, Thermostat, J. M. Harrison, Thermostatic controller, C. A. Dunham, Threshing machines, scif-feeder for, A. Zastrow, Tire casing or shoe, pneumatic, Baker & Hawley, Tire, cellular pneumatic, E. C. Schoonmaker, Tire setter, rubber, H. L. Stoup, Tire, vehicle, G. O. Fankboner, Tires to rims, means for securing soft tread, F. M., J. S. & W. W. Hilton, Tires, tread for pneumatic, Baker & Hawley, Tobacco preparation, masticable, C. Ellis, Tool, E. F. McCarthy, Tool, pneumatic, F. S. Graham, Tooth crowns, contouring gold, F. La Chapelle, Toy, J. Heltzel, Trace hook, H. Applegate, Traction and lawn rolling roller, W. H. Caldwell, Train stop, automatic, H. G. Sedgwick, Trolley, L. S. Wilder, Trolley head, J. D. Gibbs, Trolley pole, jointed, H. Parley, Trolley wire crossover, H. H. Book, Trouser stretcher, W. T. Shoemaker, Truck, lifting and carrying, T. C. Moore, Trunk, C. C. Wigginton, Tumbling barrel, H. J. Guttman, Turbine, J. H. Corthesy, Turbine, explosive, H. Zoelly, Turbine, steam, J. K. Clark, Turntable operating mechanism, J. L. Pilling, Typewriter, Aldrich, Typewriter attachment, J. I. Porter, Typewriter feed mechanism, F. Schuler, Typewriting machine, H. W. Merritt, Typewriting machine, C. Gabrielson, Typewriting machines spool and ribbon mechanism for front strike, W. R. Fox, Umbrella, Shipman & Clark, Umbrella, folding, T. F. Bigelow, Valve, W. H. Roberts, Valve for fluid compressors, discharge, N. A. Christensen, Vamp holder, J. U. Bergquist, Vehicle brake, B. Viola, Vehicle rim, L. B. & J. Gast, Jr., Vehicle seat lock, J. Arcoren, Vehicle spring, G. W. Loeffler, Vehicle storm front, O. A. Charles, Vehicle wheel, I. Abbott, Vehicle wheel, G. R. Williams, Vehicle wind shield, W. N. Beecher, Vending machine, H. A. Walters, Vending machine, Gillett & Martin, Vending machine, E. L. Sous, et al., Vent cap, J. Capaldi, Ventilator, See Window-ventilator, Vessel, marine, T. R. Barwis, Vessel raising apparatus, sunken, F. Staudy Ximenez, Vessels in case of collision, protector for, N. C. Yorgensen-Gundholm, Vibrator, R. G. Hill, Voting machine, R. McKenzie, Wagon brake, automatic, Vanness & O'Brian, Wagon, dumping, F. Bloomingdale, Wagon, dumping, A. C. Lemon, Wall and block for making the same, O. Richards, Wall block or section mold, portable, H. B. Copeland, Watch, A. Bannatyne, Water governor, Richards & Tolman, Water motor, R. O. Hammond, Water trap, waste, C. H. Moore, Well drilling apparatus, deep, Jackson & Boyer, Wheel, E. M. McKham, Wheel rim, vehicle, J. M. Padgett, Wheelbarrow wheel, Smith & Baker, Whip socket lock, B. H. Short, Whisky aging apparatus, W. H. Johnson, Windmill, W. J. Kieckhefer, Window, G. E. Humphries, Window, metallic, W. E. Zahner, Window, reversible, D. E. Hippolito, Window, ventilator, A. S. Meek, Windows, waterproof fitting for, W. Nicol, Wire feeding device, W. P. Randall, Wire locking device, cross, A. Helm, Wire stretcher, L. A. Butts, Wrench, M. Schwendner, Wrench, E. E. Scales, Writing apparatus, C. J. F. Lange, Writing machine, H. W. Enderis, Wurtzite or elaterite and producing fusible soluble products, treating, Doerflinger & Buck, Yoke attachment for taking up vibrations, neck, L. Fields.

DESIGNS.

Table listing designs and their numbers, including Car body, W. R. McKeen, Jr., Lightning arrester casing and support, F. W. Lord, Picture frame, H. L. Beach, Plate, Wilhelm & Benjamin, Spoon, C. Selkirk, Spoons, forks, or similar articles, handle for, H. Hillbom, Wall pocket or similar article, E. Flanagan.

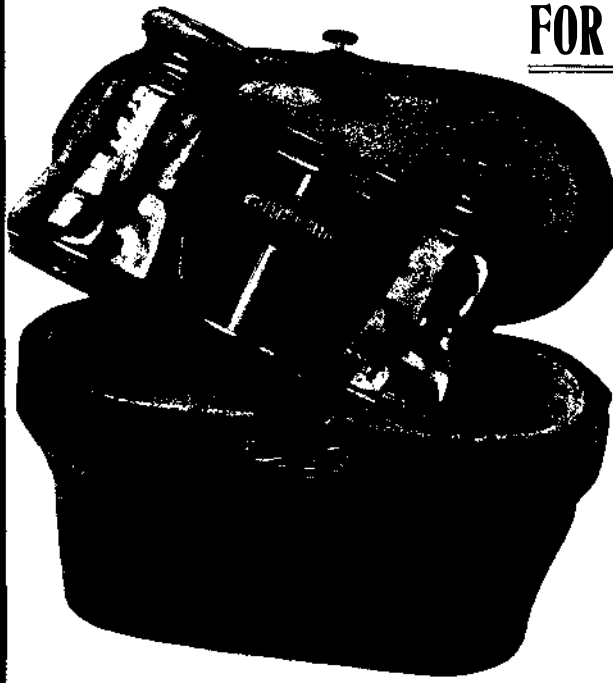
TRADE MARKS.

Table listing trade marks and their numbers, including Baking powder, C. A. Murdock Mfg. Co., Bed bottoms, spring, Atlanta Spring Bed Co., Belting, B. F. Goodrich Co., Belting and hose, B. F. Goodrich Co., Belting, leather, New York Leather Belting Co., Belting, leather and fabric, J. E. Rhoads & Sons, Beverages and preparations for making same, certain, Oliver-Finnie Co., Beverages, carbonated, Dixie Carbonating Co., Boiler cleaning compounds, Freeport Plumbing and Heating Co., Bolting cloth, silk, R. L. Latimer & Co., Boots and shoes, leather, Smith-Wallace Shoe Co., Boots, shoes, and slippers, leather, W. Bernstein, Brandies, Wm. Hoelscher & Co., Brooms, Lee Broom & Duster Co., Butter, E. G. Perez & Co., Buttonhole strips for garments, G. P. Ide & Co., Camera, camera stands and tripods, Blair Camera Co., Candles, crystallized and glace fruits, Oliver-Finnie Co., Candles, Merkle Wax and Candle Co., Canned, dried, and fresh fruits, Balfour, Guthrie & Co., Canned fruits and vegetables, H. F. Hemingway & Co., Canned peas, F. P. Row & Co., Canvas interlinings, S. Nachtigall, Cartridge shells, bullets, and wads, Union Metallic Cartridge Co.

The Varnish that lasts longest

Made by Murphy Varnish Company.

THESE \$8.00 OPERA GLASSES AND \$6.00 CASH ARE YOURS FOR THE TRYING



Every Subscription Means a Prize and a Cash Commission

The METROPOLITAN MAGAZINE wants Wide-Awake Representatives

Your Cash Commissions and the value of your Prizes are in proportion to the number of Subscriptions which you obtain

For 20 Subscriptions you can win these \$8.00 Opera Glasses and \$6.00 Cash

Pianos, Automobiles, Gasoline Launches, Boats, Cameras, Canoes, Kodaks, Typewriters, Jewelry, Silverware, Bicycles, Trip to Japan, Trip to Europe, Three Weeks' Vacation at the Greatest Pleasure Resort in the World. These are some of the prizes to be given away this season.

Not only is this one of the greatest Subscription Campaigns ever launched, but it also offers the richest harvest for Solicitors of Subscriptions, for the value of the prizes and the amount of the commissions are to be in keeping with the campaign we are waging.

THE METROPOLITAN MAGAZINE is launching the greatest Subscription Campaign ever inaugurated in the history of the publishing business. We are offering a wonderful series of valuable prizes and liberal commissions this season to representatives who secure subscriptions for the Metropolitan Magazine.

The Prizes Are Not Competitive

Address the METROPOLITAN MAGAZINE Dept. S. A. 3 WEST 29th STREET NEW YORK

CEMENT

Its Chemistry, Manufacture, and Use

Table listing Scientific American Supplements and their contents, including Scientific American Supplement 1372, 1396, 1325, 955 and 1042, 1510 and 1511, 1575, 1491, 1465 and 1466, 1519, 1561, 1533, 1587 and 1588, and 1575.

Any one of these Supplements will be sent for 10 cents. The entire set costs \$1.60, and constitutes an invaluable text book on the subject. Order from your newsdealer or from MUNN & COMPANY, 361 Broadway, New York

Valuable Volumes
Electrician's Handy Book

BY Prof. T. O'Connor Sloane, A.M., E.M., Ph.D. Handsomely Bound in Red Leather, with Titles and Edges in Gold Pocketbook Style Price \$3.50

Gas, Gasoline and Oil Engines

Including Gas Producer Plants By GARDNER D. HISCOX, M. E. Price \$2.50

The only complete American book on the subject for Gas Engine Owners, Gas Engineers, and intending purchasers of gas engines, treating fully on the construction, installation, operation and maintenance of gas, gasoline, kerosene, and crude petroleum engines.

Mechanical Movements Powers, Devices, and Appliances

By Gardner D. Hiscox, M.E. Large 8vo. 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 1,000 Special Made Engravings. 400 pages. Cloth Bound. Price \$3.00

Modern Steam Engineering in Theory and Practice

By GARDNER D. HISCOX, M.E. Price \$3.00

This is a complete and practical work of 487 pages, dealing with the care and management of Boilers, Engines, Pumps, Superheated Steam, Refrigerating Machinery, Dynamos, Motors, Elevators, Air Compressors, and all other branches with which the modern Engineer must be familiar.

Nearly Two Hundred Questions with their Answers on Steam and Electrical Engineering likely to be asked by the Examining Board are included. These if studied by you will help you to procure a license.

A special circular describing these books sent on request. Any of these books sent prepaid on receipt of price. MUNN & CO., Publishers, 361 Broadway, New York

Table listing various goods and their prices, including Cartridges, Chains, Chocolates, Cigars, Cotton goods, Cream separators, Dyes, Electric testing apparatus, Flour, Foods, Game, Gin and cordials, Gums, Hair, Hair pins, Hose, Hydraulic jacks, Ice making machinery, Jumpers, Lard substitute, Lead, Leather handbags, Leggings, Liquid separating machine, Machinery, Magazines, Medicines, Oils, Paints, Paper, Pencils, Pen Co., Perfumeries, Pills, Razors, Remedies, Rings, Salt, Sewing machines, Shoes, Silk, Soap, Stringed instruments, Sweeping compound, Syrup, Tacks, Talking machines, Thread, Tobacco, Valves, Whisky, and Wood manufactures.

Table listing various goods and their prices under the heading 'LABELS', including Behrens' Glyco Thelon, Century Prints, Duceo Smoking and Chewing Tobacco, Elston the Original Paint and Varnish Remover, Jersey Queen, Lincoln Hair Pomade, Madama Elise's Toilettable Perfection Skin Food, Penn's High Grade Smoking and Chewing Tobacco, and Trocadero Parisian Cologne.

Table listing various goods and their prices under the heading 'PRINTS', including Empire State Refrigerating Machine, Headquarters for Souvenir Post Cards, Highest Grade, Meld Back 48, Men's and Boys' Apparel, Pneumatic Back, Schoenhut's Humpty Dumpty Circus, and Victor Typewriter.

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.

DIAMONDS ON CREDIT LOFTIS SYSTEM You Can Own a Diamond or Watch. We send one on approval. If you like it, pay 1-5 on delivery, balance 4 monthly payments. Catalog free. Write today LOFTIS BROS. & CO., Dept. 3180, 99 State St., Chicago, Ill.

The K-W Magneto For jump spark only. Just the thing for your Automobile and Motor Boat. Does away with all batteries. Will start the engine easily. Price, \$35.00. THE K-W IGNITION CO. 27 Power Ave., Cleveland, O.

LET US BE YOUR FACTORY We estimate on anything you want made to order. STAMPINGS, MODELS, EXPERT WORK We publish "The Silent Partner," a brainy little magazine, full of good thoughts. Sample free. Write us THE GLOBE MACHINE AND STAMPING CO. 970 Hamilton St., Cleveland, O.

MACHINES Corliss Engines, Brewers and Bottlers' Machinery, THE VITTEB 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 & CO., 228-229 South Street, New York

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

MODELS & EXPERIMENTAL MACHINERY. Gears, Dies, Tools, Novelties manufactured. Fine, Accurate Work a Specialty. M. P. Schell, 1759 Union Street, San Francisco.

INVENTIONS PRICES RIGHT PROMPT SERVICE. COMPARISON SOLICITED. RICHARD A. PERFECTED, SCHULTZ CO. 141-143 E. CHICAGO ST. CHICAGO.

CEMENT BOOKS. How to Use Portland Cement 50c.; Cement Sidewalk Construction, 50c.; Reinforced Concrete Construction, \$2.50; Hollow Concrete Block Building Construction, 50c. Sent postpaid. CEMENT AND ENGINEERING NEWS, Chicago, Ill.

We Have No Rent to add when making you Prices on Dies or Stamping. LARIMER MFG. CO., Eola, Ill. (near Chicago)

VENTRILOQUISM Learned by any Man or Boy at home. Small cost. Send to-day 2-cent stamp for particulars and proof. O. A. Smith, Room 454, 2040 Knoxville Ave., Peoria, Ill.



WINCHESTER Rifle, Revolver and Pistol Cartridges in all calibers are as near perfect as experience and brains coupled with modern and scientific methods of manufacture can make them. Always shoot Winchester make of cartridges and insure against the annoyances caused by unreliable ammunition. Winchester Rifles and Winchester Cartridges are made for each other. WINCHESTER REPEATING ARMS CO. NEW HAVEN, CONN.

Never Such Book News as This THE NEW AMERICANIZED ENCYCLOPEDIA BRITANNICA CONDEMNED TO BANISHMENT from our Market, BIDS FAREWELL to the American People in the MOST SENSATIONAL SALE OF OUR TIME. Publication must cease at once. Entire publishers' stock now on hand to be cleared with the utmost rapidity at less than ONE HALF the PRICES at which over 250,000 SETS HAVE SOLD. A SALE TO MARK AN EPOCH in BOOK HISTORY. AN EVENT WITHOUT EXAMPLE \$1.00 Secures Complete Set-Sent Free for Examination. 15 massive volumes, sumptuous binding, 10,000 double column pages, 100 superb maps, 37,000 biographical references, hundreds of illustrations, colored plates of the rarest beauty. Questions of international copyright have been decided against the American publishers. The greatest, most valuable and popular of all American book publications must end its marvelous and unparalleled career of success immediately. A temporary arrangement has been effected by which the publishers of the regular English edition, who have secured absolute control, permit the selling of all sets that are now bound and can be marketed at once. In this great crisis the American publishers turned to us as the one house in America whose gigantic resources could grapple with the situation. We purchased the entire stock at our own figures and now offer them at prices absolutely without precedent in this country. The sets in cloth binding we offer at \$37.00; in half morocco at \$46.00. When these are sold you CANNOT AGAIN BUY this popular Americanized edition AT ANY PRICE. The new English edition, now being prepared, will cost you \$150 and \$200. FOUR TIMES MORE than our clearance prices. BUY NOW WHEN YOU CAN SAVE SO MUCH -- THE CHANGE WILL NOT COME AGAIN THE GREATEST OF ALL ENCYCLOPEDIAS. This monumental work is in a class by itself. Its supremacy has never been questioned. What Napoleon is among soldiers, what Socrates is among philosophers, what Raphael is among artists, the New Americanized Britannica is among encyclopedias beyond all comparison or competition. The most profound and brilliant thinkers of the world have written its articles. Three hundred of the finest scholars of America have revised every word and line, added, condensed and improved, and brought all information up to the very latest date. It is a home university, a college education, a huge library. It covers the entire range of human discovery, experience, knowledge and achievement. SENT FREE FOR EXAMINATION. If you will sign and mail to us the accompanying coupon, we will send, while they last, a complete set of this superb work to any address in the United States or Canada for five days' free examination in your home. This does not involve one cent of cost or one particle of obligation. We pay all transportation charges. If you do not wish to retain the books, return them to us at our expense. ONE DOLLAR SECURES THE SET. Should you decide to purchase after examination, you can then send us \$1.00 as the first payment and the balance can be paid at the rate of \$2.00 per month for the cloth, and \$2.50 per month for the half morocco. DO NOT DELAY. Cut out and mail the coupon to-day, if you wish to secure the most wonderful book bargain of this generation. The sets will fairly melt away at these phenomenal prices, and in order to secure one you must act at once. You can never duplicate this opportunity. Do it now. SIEGEL COOPER COMPANY J. B. GREENHUT, Pres. 6th Ave., 18th and 19th Sts., NEW YORK