

to the trolley, the plus or the minus. If, however, the current flows from the trolley wire to the ground on its way back to the station, it will not act by electrolysis so much upon the metal which it traverses, as if it flowed in the opposite direction. Iron and lead are positive, and tend to attach themselves to the negative pole of the circuit. If then the rails, and water and gas pipes are in the direction of the flow of the circuit, they are not reduced by electrolysis as they should be if the current were flowing the other way, from the rail to the trolley wire.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued

for the Week Ending

June 5, 1906.

AND EACH BEARING THAT DATE

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

Advertising calendar, W. S. Thorp	822,406
Advertising carton, W. F. Hill	822,841
Advertising device, L. Greenberg	822,734
Air brake, E. A. Graves	822,520
Air brake, G. B. March	822,747
Air compressor, E. Ohear of pyrocatichin	822,689
Alkylacetate compound of pyrocatichin	822,339
Anchor, W. L. Adams	822,420
Andiron, P. E. Leveritt	822,743
Angle sawing mechanism, Millet & Powell	822,291
Animal trap, S. G. Ewen, Jr.	822,835
Antilubricant throwing device, E. A. Barnes	822,238
Arbor, friction, P. P. Nungesser	822,467
Automobile, J. Spyker	822,784
Automobile extension canopy frame, L. C. Shipley	822,634
Automobile steering check, Geisenhauer & Miller	822,268
Automobile wheel, J. C. Higdon	822,665
Axle, S. H. & A. V. Nickerson	822,298
Baby chair, A. P. Perkins	822,472
Baling press, C. E. Wehrenberg	822,411
Barrel roller machine, T. J. Merrell	822,288
Bath-tub cabinet, A. M. Elegar	822,355
Bayonet, T. S. Forbes	822,441
Bearing, E. J. Newton	822,297
Bearing, ball, R. Conard	822,723
Bearing for measuring instruments, W. M. Bradshaw	822,425
Bearing for spring hinges, ball, E. Bommer	822,443
Bed bottom, I. Grossman	822,243
Bed, folding, J. J. Braznell	822,328
Bed, folding, A. W. Welch	822,682
Bed rail joint, J. Murphy	822,414
Bedstead, J. W. Whitlow	822,369
Bedstead, folding, J. H. Henson	822,340
Bed rack, R. F. Gilchrist	822,715
Bed box, S. A. Beyland	822,710
Belt, J. Askew	822,891
Belt coupling, J. M. Greist	822,503
Belts of machinery, means for cleaning the driving, G. H. Boynton	822,444
Beryllium hydroxide, making, F. Haber, et al	822,660
Bicycle saddle and spring therefor, C. W. Erick	822,403
Bicycle seat spring, Sweeney & Mayes	822,688
Bicycles to form a quadricycle, means for uniting a pair of, C. H. Nicholas	822,654
Binder, loose leaf, J. C. Dawson	822,427
Binders, leaf or sheet for temporary or loose leaf, H. F. Bushong	822,273
Blind fitting, window, E. C. Harris	822,565
Board, See Distributing board	822,728
Boat, submarine, T. H. Wheelless	822,575
Boatkin, L. F. Earl	822,813
Boiler cleaner, J. G. Broman	822,597
Boiler due cleaning apparatus, E. A. Baker	822,843
Boiler furnace, steam, Monville & Roberts	822,584
Boiler stand and coupling, combined, S. E. Hopper	822,793
Bookkeeping machine, M. M. Cohn	822,567
Bottle, artist's, R. Weber	822,755
Bottle cap fastener, G. A. Williams	822,725
Bottle cap finishing die, C. E. McManus	822,542
Bottle holder, int, E. L. Drinkwater	822,739
Bottle, nonrefillable, J. F. Mullarkey	822,400
Bottle, protective, J. C. Henderson	822,363
Bottle stopper, R. Stock	822,895
Bottles, device for preventing the deceptive refilling of, L. F. Hammer	822,287
Bottles, jars, etc., closure for, S. C. Kindig	822,301
Bottles non-refillable, means for rendering, H. O. Mascall	822,352
Box making machine, F. J. Reinhold	822,699
Brake shoe, steel back, N. H. Davis	822,600
Branner feeding device, L. C. Steele	822,581
Brick compound, fire, T. P. Gourley	822,504
Bridge, A. F. Campbell	822,619
Brick bit curber or controller, A. Buermann	822,667
Brooder, cool, N. A. Lybeck	822,507
Broom, C. E. Huxley	822,708
Broom shield, H. B. Clark	822,377
Brush, M. W. Wright	822,571
Brush, M. W. Wright	822,757
Brush, flat, J. F. Bowditch	822,836
Brush, rotary, H. Nielson	822,738
Brush with grooved block, sectional, C. A. Fetter	822,320
Buckle, cross link, F. S. Smith	822,295
Buggy spring, W. M. Heeter	822,421
Building block and wall constructed therefrom, A. O. Thomas	822,729
Building, frame, A. Muller	822,539
Burglar alarm, G. Balint	822,770
Button and pin fastener, combined, R. Ellis	822,568
Button fastener, J. C. Morrison	822,690
Cableway, O. C. Reeding	822,397
Cake forming machine, E. B. Anderson	822,342
Calendar, J. N. Parker	822,624
Calipers and dividers, G. C. Smith	822,635
Can cover lining machine, J. Brenzinger	822,474
Can spout cap, oil, N. Nelson	822,344
Canopy support, W. J. Slyder	822,483
Car brake, O. M. Jones	822,526
Car construction, A. Porter	822,778
Car coupling, L. C. Cary	822,458
Car coupling, C. Schlarke	822,630
Car coupling, M. R. Kneeder	822,477
Car, dump, J. Shelton	822,671
Car grain door, T. Lennox	822,820
Car grain door, E. Fosson	822,639
Car grain door, freight, J. Roberg	822,669
Car guard, open railway, E. W. Wheelock	822,643
Car, mine, Keefer & Ward	822,681
Car or wagon, dumping, E. S. Boyd	822,631
Car, railway, H. F. Vogel	822,265
Car replacer, Johnson & Miller	822,460
Car seat, H. Witte	822,824
Car wheel, lubricating, Thompson & Swank	822,883
Carburetor for gasoline engines, R. A. Middleton	822,395
Carbet sweeper, H. W. Ru Ton	822,597
Carrier, See Reel carrier	822,523
Cart, dust, H. Freise	822,488
Case hardening apparatus, A. W. Machlet	822,704
Cash register, J. P. Cleal	822,383
Cellulose, J. S. Cochran	
Chain, dredge, Smith & Sherrard	
Channeling machine, A. H. Gibson	
Check holding and cutting device, conductor's, A. D. Joslin	
Check power indicator, Steinmann & Schieller	
Chenille machine, C. Wieble	
Child's chair, W. F. Oliver	
Churn and butter worker, combined, La Bare & Howe	

"Star" Lathe
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 LATHE CO., 120 Culvert St., Cincinnati, O.

Foot and Power and Turret Lathes, Planers, Shapers, and Drill Presses.
SHEPARD LATHE CO., 138 W. 24 St. Cincinnati, O.

WORK SHOPS
of Wood and Metal Workers, without steam power, equipped with **BARNES' FOOT POWER MACHINERY**—allow lower bids on jobs, and give greater profit on the work. Machines sent on trial if desired. Catalogue Free.
W. F. & JOHN BARNES CO.
Established 1872.
1999 RUBY ST. ROCKFORD, ILL.

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.

HUMAN FLIGHT
MESSRS. SPON & CHAMBERLAIN,
123 Liberty Street, New York,
have recently published:
1. Resistance of Air and the Question of Flying (1905).
2. Flight-Velocity (1906).
By ARNOLD SAMUELSON, Engineer.
Price, 50 Cents Each.
The first of these two pamphlets contains the veritable natural laws of flying, the second explains in what way human flight is to be effected.

Asbestos and Magnesia Products
STEAM PIPE AND BOILER COVERINGS.
ASBESTOS PACKING (For all purposes).
ASBESTOS FIRE-RESISTING CEMENTS.
ASBESTOS BUILDING MATERIALS.
H. W. JOHNS-MANVILLE CO.
New York, Milwaukee, Chicago, Boston, Philadelphia, St. Louis, Pittsburg, Cleveland, New Orleans, Kansas City, Minneapolis, Little Rock, San Francisco, Los Angeles, Seattle, London.

RELIABLE MARINE ENGINES
Reliability under all conditions is the characteristic of the "Lamb" Engines. Sizes from 1/4 to 100 H. P. in stock. Write for catalogue.
TERRY & CO.
Managers Eastern and Foreign Branch
92 Chambers St., New York
Every thing for Boat & Engine

JAGER Marine 4-Cycle Engines
Skillfully designed and well built. Single lever control, combining automatic carburetor with spark advance. Develops wide speed range and reliability under most trying conditions. Sizes 3 to 60 h. p. Send for catalogue.
CHAS. J. JAGER CO.
281 Franklin, cor. Batterymarch St., Boston, Mass.

A. W. Faber.
Manufacture Established 1761.
Lead-Colored & Slate Pencils, Rubber Bands, Erasers, Ink, Penholders, Rulers, Water Colors, Improved Calculating Rules.
Send for descriptive Circular S.
44-60 East 23d Street, New York, N. Y.
Grand Prize, Highest Award, St. Louis, 1904.

New Odell Typewriter Improved On Credit
No. 5
Shipped upon receipt of \$2.25 cash and \$1 per month for six months.
Practical as a \$100 Typewriter. Just the thing for small merchants, druggists, professional men, or for personal correspondence. Machine complete \$8.25 on installments. \$1.50 for cash.
Express Prepaid. Cases \$1.75. Foreign Postage Extra.
AMERICA CO. (Mfrs.)
574 North St., Monmouth, Ill.

How To Increase Your Business
READ carefully, every week, the Business and Personal Wants column in the Scientific American
This week it will be found on page 501.
Some week you will be likely to find an inquiry for something that you manufacture or deal in. A prompt reply may bring an order.
Watch it Carefully

WEAK BATTERIES
Covered by the patent of Apple Battery Charger. Automatically recharges & keeps the battery always full and in a healthy condition. Not sparks, does not overcharge, does not overheat and does not waste power. Write for full information today. The Dayton, Ohio. Mfg. Co., 8 St. Clair St., Dayton, Ohio.

WARREN'S WALRUS ROOFING
Rods, masts, etc., which, frost and sun are so destructive to. On a ship, a factory or a dwelling it will give perfect results for years after other roofs are ruined. Write for free sample sheet of rods. Write for full information today. The Dayton, Ohio. Mfg. Co., 8 St. Clair St., Dayton, Ohio.

For Either Hand or Power
This machine is the regular hand machine supplied with a power base, pinion, countershaft, etc., and can be worked as an ordinary power machine or taken from its base for use as a hand machine. Length of pipe handled easily in small room. Illustrated catalogue—price list free on application.
THE CURTIS & CURTIS CO.
6 Garden St., Bridgeport, Conn.

French Motors for Lighting Plants
The "ASTER" is the best French motor on the market for lighting houses, hotels, etc. Small, compact, simple and safe to operate. Motive power alcohol, oil or gas. 2 and 4 cylinders. Great power for small engines. Easy running. Write for illustrated Price List.
ASTER ENGINE COMPANY
1591 Broadway NEW YORK CITY

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

Automatic Water Supply
Most economical, reliable and efficient. If you have running water the Niagara engines will elevate 35 feet for each foot-fall obtainable from spring, brook, or river, delivered to any distance. Write for catalogue.
Niagara Hydraulic Engine Co.
140 Nassau St., N. Y.

Manufacturers should investigate the **B. F. BARNES MACHINE TOOLS** before placing orders. The Tool here illustrated is our 20-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.

Baldwin Recoil Check
For Automobiles Makes "All Roads Ride Alike"
Saves your car and tires and permits of comfortable riding on bumpy roads. Helps your springs on smooth roads. Easily attached to any car. Free Booklet.
BALDWIN CHAIN & MFG. CO.
200 Chandler St., Worcester, Mass.

Presses for Sub-Press Work.
Five sizes. Sub-Presses and Tools to order.
Send for Catalogue.
BLAKE & JOHNSON,
P. O. Box 1054, WATERBURY, CONN.

Regal Marine Engines
Four Cycle Automobile Type with Jump Spark Ignition. Single Cylinders, 1 1/2, 2, 3 and 5 h. p. Double Cylinders, 3 and 5 h. p. Four Cylinders, 80 h. p. Also a superior line of Stationary Engines. It pays Engine buyers to read our new catalogue No. 12.
Regal Gasoline Engine Co.
COLDWATER, MICH.

To Book Buyers
We have just issued a new 48-page catalogue of recently published Scientific and Mechanical Books, which we will mail free to any address on application.
MUNN & COMPANY
Publishers of SCIENTIFIC AMERICAN
361 Broadway, New York

Clamp, W. Schnurr	822,775
Clock, E. M. Goldsmith	822,598
Clothes drier, Black & Brewer	822,341
Clothes drier, A. T. Hagan	822,604
Clothes drier and bat and coat holder combined, folding, W. S. Pugsley	822,552
Clothes line, pinless, R. K. Peters	822,473
Clutch, friction, H. D. Hubbard	822,454
Clutch, friction, E. H. Waugh	822,496
Clutch, friction, J. F. Duryea	822,726, 822,727, 822,833
Coating one metal with another and the resulting product, S. H. Thurston	822,873
Cock, gas, J. Schmitt	822,484
Collar attachment, horse, S. Boyer	822,242
Coloring machine, C. L. Burdick	822,578
Combining machine, E. H. Rooney	822,479
Combining machine, cotton, Owen & Rooney	822,549
Compound rotary engine, E. Waldron	822,410
Concrete building block machine, I. E. Yarnell	822,333
Concrete column, metal reinforced, R. A. Cummings	822,587
Concrete mold, I. L. Landis	822,284
Concrete structure, J. F. Ancona	822,499
Condenser, R. C. Winder	822,807
Connecting rod, J. A. Giles	822,361
Contact device, K. Tornberg	822,325
Continuous kiln, W. A. Butler	822,580
Conveyer, portable distributing, Wenzelmann & Overholt	822,412
Cooking apparatus, D. Appleton	822,569
Copper, hardening, C. R. Plumer	822,299
Copping machine, B. M. Schauman	822,390
Core fastener, metallic, Methfessel & Hartson, reissue	12,492
Corset, D. H. Warner	822,792
Cotton chopping machine, O. L. Carmical	822,823
Cotton, separating, W. A. Patterson	822,903
Cotton separator, W. A. Patterson	822,864
Coupling, G. Lloyd	822,744
Coupling member guide, Felt & Kimbark	822,514
Course finder, J. F. Smith	822,783
Cracker case, J. N. Phenix	822,627
Crate, folding shipping, D. B. Rodkey	822,389
Cuff and wristband, W. M. Shewry	822,695
Cultivator, A. C. Wickham	822,795
Cultivator, harrow, and planter, combined, A. B. Johnson	822,609
Culvert machine, J. M. Fluke	822,838
Current motor, alternating, C. P. Steinmetz	822,311
Current motors, controlling alternating, F. E. Case	822,345
Cushioning device for freely gyrating mechanisms, J. F. Harrison	822,893
Cut-out for electric circuits, thermal, J. C. Arner	822,336
Dancing figure, automatic, H. Wolke	822,707
Derrick, P. F. Fitzgibbons	822,837
Dialkylmalonyl ureas, making, G. Keil	822,672
Die, J. S. Alston	822,233
Directory holder, E. B. & F. A. Taylor	822,490
Dispensing can, R. F. Morse	822,622
Display rack, W. D. Wilbur	822,415
Distillation apparatus, J. J. Brennan	822,574
Distributing board, F. J. Dommerque	822,590
Dozer, comb motion, O. L. Owen	822,550
Door check, Young & Harvey	822,334
Door check, La Mynon & Gee	822,742
Door, convertible screen and storm, H. Barber	822,422
Draft equalizer, W. S. Emert	822,659
Drapery, ball, E. M. Crawford	822,431
Drawers and the like, guiding means for, G. C. Gardner	822,359
Dredge, suction, C. N. Newcomb	822,863
Drier, See Clothes drier	
Drier, J. W. Biles, reissue	12,491
Dyeing machine, J. Hussong	822,844
Earth transporting mechanism, W. Zimmerman	822,419
Eaves trough hanger, A. B. Leonard	822,459
Electric cableway system, M. W. Day	822,250
Electric machine, dynamo, R. H. Rogers	822,304
Electric machine, dynamo, W. Stanley	822,687
Electric switch, C. S. Barkeley	822,237
Electric system of transmission, C. G. & E. J. Burke	822,579
Electrical energy, system of applying alternating current, B. G. Lamme	822,376
Elevator catch, J. Morgan	822,538
Elevator safety brake or lock, F. Williams	822,803
Elevator tumbler, bucket, J. H. Gray	822,601
Engine, Thomson & Ball	822,322
Engine, J. N. Cummings	822,586
Engine construction, G. B. Petsche	822,387
Engine lubricating pump, locomotive, J. F. McCanna	822,684
Engine metering device, E. L. Tucker	822,637
Engine spark and valve controlling device, explosion, R. M. Keating	822,525
Envelop closing machine, C. O. Liljeros	822,616
Excavating dipper, J. H. W. Libbe	822,529
Excavator, G. W. Nicholson	822,547
Excavator, T. P. Payne	822,865
Explosive fluids, safety reservoir for, C. J. Coleman	822,826
Extension table, T. M. McKee	822,901
Fastening device, S. Stevens	822,313
Feed regulator, boiler, O. O. White	822,794
Feeder, stock, H. B. Gamblin	822,442
Feeding and watering trough, stock, J. Paulus	822,763
Fence lock, wire, E. G. Overholt	822,758
Fence tie, wire, G. R. Mills	822,292
Fiber cleaning machine, A. G. Pons	822,767
Film holder, magazine, O. Becker	822,501
Filter, suction, P. Argall	822,812
Fire extinguishing apparatus, J. Holm	822,842
Fireboard, S. F. Williamson	822,497
Fish plates, apparatus for manufacturing, P. J. Dalton	822,509
Fishing reel, B. K. Donaldson	822,436
Flagstaff column, R. W. Teese	822,405
Flash light apparatus, Fiedler & Hrdlicka-Csiszar	822,263
Flue cleaner, W. P. Wilson	822,706
Flue ferrule, J. H. Price	822,475
Flue stopper, F. M. Needham	822,756
Fluid generator, elastic, J. C. Tonkin	822,491
Fluids, grating for facilitating the flow of, Grouvelle & Argembourg	822,736
Flushing device, J. N. Sanger	822,306
Fly catcher, J. Gribbin	822,735
Fly screen, R. J. Meyer	822,534
Follower, B. J. Lynch	822,849
Forge hood, Meier & Gipson	822,533
Forging machine, O. Brice	822,878
Furnace charging mechanism, cupola, C. E. Bowron	822,502
Fuse, projectile, H. P. Merriam	822,289
Game apparatus, A. L. Smith	822,558
Game apparatus, J. G. Twiss	822,789
Game, parlor, J. A. S. Chevolleau	822,721
Garment supporter, G. H. Perrine	822,866
Gas burner, W. S. McLewee	822,465
Gas check pad, E. A. Yarnell	822,644
Gas fixture, incandescent, W. T. Donnelly	822,353
Gas furnace, regenerative, F. Siemens	822,486
Gas generating kiln, revolving, S. E. Steurin	822,394
Gas generator, acetylene, R. A. Carl	822,249
Gas heating device, V. Kost	822,374
Gas light or for heating purposes, burner for incandescent, I. Shoob	822,871
Gas, manufacturing, L. P. Lowe	822,531
Gas mixer, O. Robbel	822,771
Gas producer charging door, H. F. Smith	822,781
Gas producing apparatus, J. Bueb	822,246
Gases, purifying burner, R. Knitsch	822,373
Gate, See Mine gate	
Gate, E. M. Hoagland	822,368
Gate, C. C. Du Bois	822,513
Gear, clutch and transmission, J. W. Walters	822,702
Gear, transmission, W. H. Hoppolater	822,453
Geering, A. Hagan	822,449
Giraffe, B. A. Lackey	822,283
Glass blowing machine speed controlling device, H. F. Hitner	822,452
Glass cylinders, drawing, J. H. Lubbers	822,678
Glass, machine for the manufacture of sheet, J. T. Hamilton	822,446
Glass machine, wire, N. Franzen	822,357
Glass tube coupling, L. P. Lowe	822,530
Glassware manufacturing apparatus, T. J. McElherron	822,623
Governing mechanism for prime movers, K. Keller	822,673
Governor, A. C. Van Houweling	822,495
Grain distributor, Smith & Heckman	822,872
Grain tank and shelter top, combined, S. English	822,263

Reduced Rates for Telephone Service

CONTRACTS NOW BEING TAKEN

Call nearest Contract Office for full information.

NEW YORK TELEPHONE COMPANY

CONTRACT OFFICES: TELEPHONE NO.:
15 Dey Street 9010 Cortlandt
115 West 38th Street 9040-38th
220 West 124th Street 9000 Morningside
616 East 150th Street 9020 Melrose



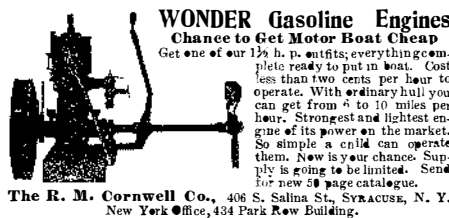
Universal SCRAPER
75 cents buys the best scraper ever made. Try it on floors or meat blocks.
Send for free catalog No. 17 B.
THE L. S. STARRETT CO.
Athol, Mass.

"Econo" Emery Wheel Dresser

Size 12 in. Made of the best emery and steel. Dresser for grinding and dressing of emery wheels. Contains a combination of dresser and grinder. Will true or shape any wheel except the very hard and carbide. The "Econo" is the roughing tool placed in the handle end of "Econo." Send for circular. Dresser sent on 15 days' trial.
INTERNATIONAL SPECIALTY CO., 360 Holden Ave., Detroit, Mich.

THE EUREKA CLIP

The most useful article ever invented for the purpose. Indispensable to Lawyers, Editors, Students, Bankers, Insurance Companies and business men generally. Book marker and paper clip. Does not mutilate the paper. Can be used repeatedly. In boxes of 100 for 25c. To be had of all booksellers, stationers and notion dealers, or by mail on receipt of price. Sample card, by mail, free. Manufactured by Consolidated Safety Pin Co., Box 121, Bloomfield, N. J.



WONDER Gasoline Engines
Chance to Get Motor Boat Cheap
Get one of our 1 1/2 h. p. outfits, everything complete ready to put in boat. Cost less than two cents per hour to operate. With ordinary hull you can get from 4 to 10 miles per hour. Strongest and lightest engine of its power on the market. So simple a child can operate them. Now is your chance. Supply is going to be limited. Send for new 50 page catalogue.
The R. M. Cornwell Co., 406 S. Salina St., Syracuse, N. Y.
New York Office, 434 Park Row Building.

Concrete, Reinforced Concrete AND Concrete Building Blocks

Scientific American Supplement 1543 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

Grate, S. Neemes	822,296
Grinding drills, bores, and like tools, apparatus for, F. Schmaltz	822,291
Grinding mill, H. A. Higbee	822,840
Grinding or polishing machine, J. T. Duff	822,656
Ground roller, F. B. Moore	822,752
Gun, H. L. Woeltjen	822,808
Gun, air, W. K. Benjamin	822,645
Gun, automatic, A. Burgess	822,851
Gun stocks, lock for fore end of, E. H. Elder	822,886
Gutter for buildings, T. S. Woods	822,418
Hame fastener, J. H. Alexander	822,232
Harness, E. S. Dodge	822,831
Harrow and cultivator, combined, M. True	822,787
Hat fastener, J. C. Morrison	822,540
Hat guard and tag holder, B. A. Garlinghouse	822,266
Hat hanger, lady's, C. B. Hotchkiss	822,277
Hat machine, C. P. Willenberg	822,797
Hay press, C. E. Davis	822,511
Heater, A. P. Hopler	822,607
Heating system, C. E. Bowers	822,819
Hinge, J. R. Carter	822,648
Hinge, P. H. McGrath	822,686
Hinge for folding furniture, J. Holson	822,894
Hinge, refrigerator door, R. E. Jones	822,279
Hinge, spring box, E. L. Rogers	822,555
Hollow body, electrically heated, E. Haagn	822,270
Hook lock, F. Liliger	822,675
Horse tail protector, Tutill & Boyd	822,788
Horseshoe, R. O'Connell	822,468
Horseshoe, W. J. Harris	822,737
Horseshoe, C. E. Silvius	822,730
Horseshoe calk, J. C. H. Cranmer	822,827
Horseshoe calk, removable, M. D. & H. H. Mudge	822,541
Horseshoe, nailless, A. King	822,612
Hose coupling, R. Bates	822,423
Hosiery, seamless, G. H. Gilbert	822,663
Hot air engine, Morse & Hubbard	822,463
Hot air register, W. S. Tuttle	822,408
Hot water heater, P. H. Cosgrave	822,854
Household use, indicator for, Baker & Neavling	822,815
Hydraulic elevator and other hydraulic apparatus, E. M. Fraser	822,595
Ice creeper, C. Feister	822,662
Induction coil, M. M. Wood	822,332
Infants, device for caring for, K. I. Faust	822,889
Ingot heating furnace, continuous, Miller & Cole	822,380
Insect trap, H. Reid	822,388
Insulator, heat, E. Kunz	822,848
Insulator, wood strain, T. C. White	822,642
Jail bunk, W. Dowling	822,532
Jar holder, G. M. Corsey	822,652
Journal box and dust guard, concave, J. S. Patten	822,759
Journal box and dust guard, convex, J. S. Patten	822,760
Journal box brass, J. S. Patten	822,762
Journal box, car, J. S. Patten	822,761
Kiln, A. P. Broomell	822,245
Knife, L. U. Crawford	822,432
Knitting machine, circular independent needle, J. Wheeler	822,564
Knitting machine needle, E. H. Sturtevant	822,401
Lamp and boiler, combined alcohol, G. W. Huber	822,859
Lamp, arc, Blake & Davison	822,240
Lamp extinguisher, G. Kerr	822,457
Lamp heater, J. W. Summers	822,402
Lamps, applying terminals to the glowers of electric, M. W. Hanks	822,365
Lamps, etc., vaporizer and wickless burner for oil, J. P. Schnell	822,870
Lasts, nail clenching device for the heels of wooden, J. O. Stivers	822,489
Lathe, pulley crowning attachment for, H. McLeod	822,754
Leg, artificial, J. A. Peer	822,385
Lewis, A. G. Quist	822,769
Life preserver, S. Citron	822,882
Lifting hook, J. A. Lease	822,897
Lifting jack, E. Cook	822,350
Lightning arrester, T. J. Johnston	822,610
Linotype machine, C. T. Libby	822,286
Liquid measuring meter, H. Christman	822,428
Liquids in casks, apparatus for heating, O. T. Murphy	822,382
Lock, See Hook lock.	
Loom for weaving, A. Tcherniack, reissue	12,493
Loom stop motion, J. Corbushley et al.	822,585
Loom take-up mechanism, F. Benz, Sr.	822,818
Looms, lug strap connection for, J. Thompson	822,321
Lubricating apparatus, J. F. McCanna	822,685
Lubricating device, J. G. Woodward	822,837
Lubricator, J. F. McCanna	822,900
Lumber drying kiln, C. D. Ross	822,481
Machinery, means for removably connecting moving parts of, H. H. Urmston	822,494
Magnetic cut out apparatus, L. Andrews	822,234
Mail box and transmitter, H. Mueller	822,294
Mail delivery apparatus, rural, R. M. Bartholomew	822,816
Mail marking machine, self-feeding, H. E. Waite	822,791
Mail pouches, means for delivering and catching, E. W. Hamersmith	822,447
Manhole cover fastener, F. J. Tucker	822,562
Marking and canceling machine, automatic, E. R. Malmberg	822,898
Match box making machine, J. W. Denmead	822,251
Measurer and pattern, skirt, J. C. Tight	822,874
Measuring apparatus, grain, W. Whiteford	822,566
Measuring machine, S. O. Myers	822,683
Meat, preserving, P. H. O'Keefe	822,548
Merry-go-round, B. W. Davenport	822,435
Metal post, J. W. Baker	822,514
Metal sawing machine, C. A. Jungst	822,670
Metallic tie and rail fastener, H. B. Burke	822,720
Milk jar and the like cap, R. E. Pearce	822,471
Milking machine, T. M. Wade	822,640
Milling cutter, J. F. Dowling	822,591
Mine gate, N. K. Bowman	822,241
Mitten, undertaker's, Pribil & Uttersen	822,868
Moistener, envelop, B. M. Rogers	822,773
Molding device, G. M. Mills	822,536
Motor control system, G. H. Hill	822,275
Motor control system, S. Krohn	822,282
Mucilage bottles, moisture supply cap for, S. L. Bailey	822,235
Music roll, G. R. Kelly	822,280
Musical instrument, mechanical, W. H. Hoschke	822,666
Musical instruments, bench for use in playing, J. W. Sutton	822,701
Mutoscope, Eldredge & Doty	822,438
Nailing machine, A. F. Preston	822,867
Needle lever bearing, D. W. Corey	822,884
Non-refillable box, F. E. Phillips	822,766
Nozzle, distributing, H. F. Newman	822,546
Oil burner, C. C. Cleveland	822,650
Oil cleaner, A. McDougall	822,753
Ore separator, F. B. Finley	822,515
Ores and tailings, apparatus for treatment of, A. Soderling	822,398
Ores, melting primary baths for dissolving, Baggaley & Allen	822,712
Ores, utilizing as fuel the volatile portions of sulfide, R. Baggaley, et al.	822,713
Packing shaft, J. Wilkinson	822,802
Pail holder, milk, A. M. Graf	822,362
Paper and book holder, combined, E. Passley	822,691
Paper bag machine, Lorenz & Merritt	822,618
Paper bag machine, self-closing, O. Desrosiers	822,252
Paper from one roll to another, roll for the accurate winding of a sheet of, W. B. Fleming	822,517
Paper pasting and turning in machine, Root & Conn	822,480
Paper stock machine for reducing rags for, J. L. Perkins	822,765
Papers, compound for protecting commercial, S. Schwarzschild	822,556
Pencil sharpener, F. Lagerholm	822,375
Pharmaceutical compound, F. Hofmann	822,370
Phonograph and graphophone records, portable cabinet carrying case for, H. W. Topham	822,875
Phonograph record roll, Shigley & Paxton	822,485
Photographic developing apparatus, G. Eastman	822,437
Photographic plate for color photography, A. & L. Lumiere	822,532
Physical culture appliance, M. A. Wilcox	822,329
Piano action flange, F. C. Billings	822,716

Send for
Free
Book
on
Household
Health

SY-CLO

TRADE MARK

The first step toward a proper understanding of the sanitation of the home is to get the book on "Household Health." It is sent free on application. It explains the perfect principle of the wonderful SY-CLO Closet and shows why it is the safe closet. It tells how to detect the unsanitary closet—how to protect the health of the home.

The SY-CLO Closet has a double cleansing action. A copious flush of water from above starts an irresistible syphonic action from below. The downward rush of the water through the pipes creates a vacuum—a powerful pumplike pull which instantly empties the bowl of all its contents instead of merely diluting as does the ordinary closet.

Being formed of a single piece of solid white china, the SY-CLO Closet is without crack, joint or seam for the lodgement of impurity. Nothing can adhere or be absorbed.

By an unusually deep water seal between the closet bowl and the sewer connection making the escape of sewer gas into the home impossible, the SY-CLO Closet gives adequate health protection against the dangers from without.

SY-CLO Closets are heavily constructed and have unusual strength. With ordinary care, they will outlast the building—a perpetual safeguard of health.

SY-CLO stamped on a closet, no matter what other mark is on it, signifies that it is constructed of the best material, with the aid of the best engineering skill, under the direction of the Potteries Selling Co., and that eighteen of the leading potteries of the United States have agreed to maintain its standard of excellence.

If your home contains a closet of imperfect construction, improper material, or one subject to rust, corrosion, or under surface discoloration such as porcelain enameled iron, you may be unknowingly exposed to a dangerous source of disease. If you have such a closet, self defense demands that you replace it with the closet bearing the trade mark name of SY-CLO, the seal of safety, the safeguard of health.

A book on "Household Health" mailed free if you mention the name of your plumber.

Lavatories of every size and design made of the same material as SY-CLO Closets.

POTTERIES SELLING CO., Trenton, N. J.



"The Stately Homes of England"

of which Mrs. Hemans sang so sweetly, undoubtedly had the advantages of antiquity and historic associations, but for positive comfort, beauty of design, practical arrangement and tasteful adornment they could not match the luxurious modern dwellings illustrated and described in

"American Homes and Gardens"

the new monthly magazine for all Americans appreciating the "home."

This unique publication, every issue of which is a veritable *edition de luxe*, introduces the reader to the interiors of the finest homes in America, shows how they are built, arranged and decorated, explains how furniture may be arranged to the best advantage, and gives authentic and expert hints upon the laying out of house gardens and the planting of proper flowers. It tells how bric-a-brac should be displayed and pictures hung so as to get the best effects.

Every issue of 72 pages has a handsome colored cover and contains an article upon some particular mansion, with various external and internal views, views of garden, etc., where possible.

All home lovers are delighted with the magazine, as are also architects, builders, contractors and prospective home builders, whether at a cost of a modest \$3,000 or the more magnificent "million-dollar dwelling." It is intended alike for the economical and the luxurious.

72 pages each issue. 25c. per copy. \$3.00 a year, in advance

MUNN & CO., PUBLISHERS, 361 Broadway, New York



I
have been
making
shoes for
54 years

DAVID CUMMINGS

and every week-day for the past half-century I have studied hard to manufacture the best-wearing and most comfortable shoes. I now make the

Worth Cushion Sole Shoe

and hundreds of men and women tell me it's by far the most comfortable shoe they ever wore. I make them in up-to-date styles for both men and women, and really believe that for style, comfort and durability they are unequalled by any other shoe.

If your dealer hasn't them, write for illustrated spring booklet, and I will find a way to supply you.

Send all orders and correspondence to
The Cummings Co., 406 F Washington St., BOSTON

BABBITT METALS.—SIX IMPORTANT FORMULAS. SCIENTIFIC AMERICAN SUPPLEMENT 1123. Price 1 cent. For sale by Munn & Co. and all news-dealers. Send for catalogue.



Save Batteries

by using the Edison Spark Coil with your gasoline engine. It is wound with short, heavy wire and gives a fat, hot spark without fail. **Save your money** by using the Edison Battery. It is the cheapest form of battery energy. Two ampere hours for one cent. Full voltage and constant action to end of guaranteed life. Renewal makes it good as new. Send for Book on Battery Sparks



EDISON MFG. CO.

25 Lakeside Ave., Orange, N. J.
31 Union Square, New York
304 Wabash Ave., Chicago
25 Clerkenwell Road, London, E.C.

Piano playing mechanism, electrical, C. E. Brown	822,881	Ruling machine, paper, C. F. Taylor	822,401
Picture frame, A. G. Schrick	822,633	Safety pin, pocket, B. Almy	822,535
Pictures, apparatus for producing moving, H. A. Farrand	822,730	Sales slips, case for duplicate, C. C. Mumm, et al	822,899
Pile driver, F. P. Mayo	822,620	Salt shaker, G. J. Vester	822,638
Piles, sinking and building concrete, R. A. Cummings	822,588	Sand blast apparatus, H. Luckenbach	822,379
Piles, sinking concrete, R. A. Cummings	822,589	Sash and door lock, F. E. Busch	822,505
Pipe or conduit, C. H. Wilson	822,705	Sash balance, F. A. Bliekey	822,717
Pipe wrench, C. H. Thurston	822,407	Sash fastener, J. A. Winn	822,417
Pistol grip, G. C. Bourne	822,646	Sash fastener, F. Sieder	822,696
Planter, corn, S. G. Lohr	822,617	Sash lock and balance, W. A. Winter	822,498
Plow, expanding wheeled, N. Sanders	822,632	Saw set, J. F. Dorman	822,655
Plow, subsoil, E. Kraai	822,847	Saw table for curved work, B. Wilson	822,330
Pneumatic drill, A. P. Hanscom	822,367	Scaffolding, J. Emberson	822,658
Pocket fastener, E. S. Earhart	822,834	Scale, platform, G. Jones	822,455
Post, See Metal post		Scale, spring, G. Walker	822,641
Pot stirrer, F. M. Leaf	822,528	Scissors, W. E. Jones	822,456
Potential indicator, portable, J. M. Taylor	822,319	Scope and distance finder, T. H. Mitchell	822,751
Power generating apparatus, W. L. R. Emmet	822,259	Scraper, B. Henninger	822,605
Power generating apparatus, J. Flindall	822,264	Scraper and grader, road, J. H. Osten	822,902
Power system, W. L. R. Emmet	822,261	Screen, See Fly screen	
Power transmission, C. Phillips	822,629	Seal, box, E. J. Brooks	822,577
Presses and the like, feeding mechanism for, A. Eschenbach	822,661	Seal, coil wire, E. J. Brooks	822,576
Pressure indicator and recorder, W. H. Bristol	822,244	Sealing apparatus, envelop, E. J. Bras-seur	822,572
Pressure varying device, W. B. Mason	822,850	Search light projection, control system for, J. L. Hall	822,271
Printing machine for warp printing de-vices, F. Schmidt	822,308	Seat back support, A. C. Clark	822,506
Propelling ships, A. Gambin	822,732	Seat cleaning apparatus, cotton, P. T. Reed	822,478
Pruning implement, J. W. Payne	822,764	Seed separator, cotton, J. C. Winter	822,416
Pulp screening machine, E. W. Goodrick	822,599	Self-leveling table, F. F. Meyer	822,680
Pump governor, H. W. Geare	822,519	Sewing machine, button, C. A. Powell	822,551
Punching bag, coin controlled, R. H. Hart-ley	822,664	Sewing machine locating gage, H. C. Miller	822,535
Puzzle, F. W. Jacob	822,740	Sewing machine presser foot, A. Bivins	822,340
Puzzle, McGraw & Goodale	822,828	Sewing machine ruffler, J. M. Geist	822,892
Pyrometer, E. Bennett	822,338	Sewing machine thread controlling device, C. V. Bauer	822,337
Radiating, cooling, and condensing appa-ratus, tube for, Kitchen & Perkins	822,372	Shade and curtain bracket, Connell & Lowe	822,722
Radiator, J. Maris	822,748	Shawl strap bar, extensible, J. Connell	822,349
Radiator, sheet metal, W. R. Kinnear	822,613	Shoe, R. Moos	822,653
Rail joint, A. H. Knopf	822,896	Shoe machinery cutter guard, L. B. Legge	822,860
Rail joint, W. J. Sterling	822,399	Shoe polishing device, L. L. Clippinger	822,825
Rail track system, W. J. Sterling	822,399	Sign, illuminated, M. L. Felkin	822,593
Railway, M. R. Longacre	822,745	Signal receiving system, visual, E. A. Fuller	822,888
Railway crossing, R. W. Cress	822,828	Silica and shaping the mass while plastic, fusing, Bottomley & Paget	822,424
Railway joint, M. W. Bell	822,817	Silk ungumming apparatus, P. Schmid	822,774
Railway rail joint, F. L. Priest	822,768	Sinker, J. H. Shepherd	822,694
Railway signal apparatus, E. L. Nolting	822,625	Siphon, G. D. Foster	822,356
Railway signaling system, J. B. Struble	822,314	Siphon, flush tank, R. C. De La Hunt	822,512
Railway switch, automatic, A. M. Frish	822,358	Skating rink, merry, H. Loiseleur	822,677
Railway switch rod, W. S. Weston	822,413	Skid, T. H. & J. W. Monahan	822,621
Railway tie plate, G. W. Duke	822,832	Smoke arrester, heat saving, J. Wagner	822,409
Railway traffic controlling apparatus, C. J. Coleman	822,508	Sparkling device, current distributor for, J. M. Smith	822,782
Ratchet mechanism for tools, J. P. Bar-tholomew	822,714	Spectacles, T. A. Willson	822,806
Ratchet wrench and drill, combined, J. R. Neilson	822,687	Spinning fier, C. Wiebke	822,796
Reading and invalid table, combined, W. B. Young	822,809	Spool or reel, jack or dresser, E. B. Crocker	822,433
Reel carrier, W. G. Hatcher	822,450	Spooling machine, jack or dresser, M. Ingham	822,278
Reflector, E. L. Zalinski	822,810	Spring clips, forming, J. B. Hale	822,445
Regulator, A. Roesch	822,554	Spring wheel, A. G. Ramage	822,476
Reinforcing tube, W. H. Smith	822,487	Stapling machine, E. M. Cobb	822,348
Rheostat, G. E. Stevens	822,312	Stapling machine, L. Koppel	822,527
Rheostat, motor starting, H. Geisenhoner	822,269	Steam engine, J. F. Murphy	822,544
Rheostat, starting, D. Miller	822,290	Steam producer, I. H. Boyer	822,718
Rifle with hinged or tilting barrel, F. Jager	822,668	Steel containing titanium, production of, A. J. Rossi	822,305
Rock drill, A. H. Gibson	822,596	Stencil frame, J. S. Duncan	822,354
Rolling mill, O. Briete	822,879	Still, J. J. Brennan	822,573
Rolling mill for rolling seamless metal tubes, O. Briete	822,880	Still, spring, A. Hanson	822,448
Rotary cutter, A. J. Corley	822,351	Stirrup and hammock spring, S. P. Foster	822,731
Rotary engine, C. M. Cagle	822,343	Stock fountain, J. Falk	822,440
Rotary engine, G. P. Clark	822,347	Stone and other materials, machine for sizing and cutting, W. F. Currier	822,724
Rotary engine, A. S. Levake	822,378	Stone, means for making artificial building, O. B. Kaiser	822,524
Rotary engine, W. A. Brown	822,426	Straw binder tucker, Wanamaker & Miles	822,563
Rotary engine, W. O. Steele	822,700	Street or station indicator, electric con-trolled, A. J. Clark	822,429
Roundabout, Ware & Holmes	822,826	Stump puller, W. A. Mushatt	822,861
Rubber boot, C. M. Hannis	822,366	Stumps, facilitating the removal of roots of, M. A. Fry	822,899
Rubber boot, C. F. Schaffer	822,692	Swing, centrifugal, E. H. Casswell	822,852
Rubber sheeting, producing elastic and scented, W. F. A. Schneider	822,309	Switch, operating device, slip, L. Dunn	822,657
Rubbing and polishing machine, J. W. Madrox	822,461	Table leg, G. Klanke	822,281

"Maxwell"

What do the Owners Say?

That is the best question to ask, when selecting an automobile. Maxwell owners are the Maxwell's best advertisements. The contentment and satisfaction that stand out all over them is the most "catching" thing in the motor world. Just talk to one of them and get the "sunny side" of the automobile question.

Multiple Disc Clutch. Three-point Suspension of Motor and Transmission (Unit). Metal Bodies. No Noise. No Vibration.

There is a book called "Facts and Testimony" that gives the "owner's side" of the automobile question. You get it when you send for our catalogue. Write Department 22.

20 H. P. Touring Car \$1,450 10 H. P. Tourabout \$780

MAXWELL-BRISCOE MOTOR CO.
Members American Motor Car Manufacturers' Association

FACTORIES:

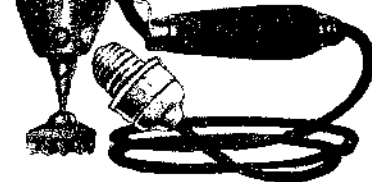
Main Plant: TARRYTOWN, N. Y.
CHICAGO, ILL. PAWTUCKET, R. I.

BRANCHES: Maxwell-Briscoe, Inc., New York, N. Y.; Maxwell-Briscoe-Chase Co., Chicago, Ill.; Fisher Automobile Co., Indianapolis, Ind.; Morrison-Tyler Motor Co., Boston, Mass.; Maxwell-Briscoe-Melroe Co., Detroit, Mich.; Maxwell Garage, Brooklyn, N. Y.; J. W. Wilcox & Son, Los Angeles, Cal.; Richard Irvin & Co., Foreign Representatives.

MASSAGE

is as old as the hills—its value as an alleviating, curative and fortifying agent is endorsed by all reputable physicians. With an American Vibrator you can get all the benefits of massage in your own home by using the instrument yourself. You merely attach it to any electric light socket and it is ready for instant use.

The daily use of the Vibrator will soon prove its worth in any home. It will increase deficient circulation—develop the muscles—remove wrinkles and facial blemishes, and beautify and preserve the complexion. Our free booklet No. 11 now



ready for distribution, will give you some idea of what you can expect the Vibrator to do for you. Write for it today.

GUARANTEED BY THE BANK

We will refund the purchase price, principal and allow you to keep it for any length of time. All we ask you to do is deposit the price of the Vibrator in the Washington National Bank of St. Louis, during the trial period, subject to your own order. If the Vibrator actually we think it is just what you need, we will return your deposit.

AMERICAN VIBRATOR COMPANY

St. Louis, New York, Los Angeles, San Francisco

Vacation Seekers

SHOULD HAVE THE SUMMER
BOOKS ISSUED BY THE

New Jersey Central

Seaside Resorts in
New Jersey

In the New Jersey
Foothills

Hotel List and
Map

The Model Road
For Summer Travel

Descriptive of the famous resorts on the New Jersey coast.
75 illustrations, 64 pages of interesting travel data.

Send 4 cents in stamps.

36 pages of information on reasonably priced inland resorts.
40 illustrations.

Send 4 cents in stamps.

Showing list of all hotels, boarding and farm houses at which
summer boarders are taken.

Sent free to any address.

C. M. BURT, G. P. A.
143 Liberty Street
NEW YORK CITY

30 Days Free Trial

of the Sanitary, Economical

Use it

YOU SEE IT (THE WATER).

Water Cooler

Coolers made in six sizes and to fit any bottle, finished in white enamel trimmed in gold and nickel. For office or home. Price \$6.00 to \$12.00.

Note Advantages:

Water cannot become contaminated even if impure ice is used. Water flows directly from bottle to faucet through coil of pure block tin and is cooled in transit.

NOTICE.—Our cooler is covered by broad basic patents and we are now prosecuting vigorously several infringements.

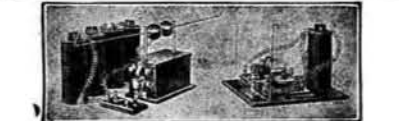
N. B.—J. Hungerford Smith Co., Rochester, N. Y., have adopted the "USE IT" Cooler with special features (Price \$12.00) for dispensing their famous Golden Orangeade at first-class soda fountains. Write them.

THE CONSUMERS CO., 3517 Butler St., Chicago
Coolers delivered f. o. b. Chicago and New York

MENNEN'S BORATED TALCUM TOILET POWDER After Shaving.

Insist that your barber use Mennen's Toilet Powder after he shaves you. It is antiseptic and will prevent any of the skin diseases often contracted. A positive relief for Prickly Heat, Chafing and Sunburn, and all affections of the skin. Removes all odor of perspiration. Get Mennen's—the original. Sold everywhere, or mailed for 25 cents. Sample free.

GERHARD MENNEN CO., Newark, N. J.



WIRELESS TELEGRAPH
"Telino No. 2," complete experimental outfit, comprising one inch spark coil, Bells, Key, 75 ohm Relay, Coherer with autom. Decoder, 5 cells Battery, Wiring, Connections, instructions, diagrams, etc. Will work up to a mile. Price \$13.50. Agents wanted. New Catalog of European and Amer. Elec. Novelties.

ELECTRO IMPORTING CO., 87 Warren St., New York

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 skids. With engines or horse powers. Strong, simple and durable. Any mechanic can operate them easily. Send for catalog.

WILLIAMS BROS., Ithaca, N. Y.

Principles of Home Decoration

BY JOY WHEELER DOW

A Series of Monthly Papers in American Homes and Gardens

MR. DOW is contributing to AMERICAN HOMES AND GARDENS a series of monthly papers on interior household decoration, under the comprehensive title of "Principles of Home Decoration."

The papers are richly illustrated and are written in the keenly critical spirit for which Mr. Dow is well known. They admirably summarize the whole subject of household decoration, and abound with admirable hints and suggestions. The photographs published with the articles are supposed to emphasize some principle of decoration, showing what is admirable and what is to be carefully avoided.

The July issue was a general introduction of the subject, together with examples of one or two typical English living rooms. The August issue treats of the subject of Halls. Subjects to follow will relate to the Dining Room, the Drawing Room, etc.

Every one who is interested in home decoration will be interested in and receive valuable suggestions from this series by Mr. Dow.

American Homes and Gardens

PUBLISHED BY MUNN & COMPANY
361 Broadway, New York
25 cents per Copy. \$3 per Year

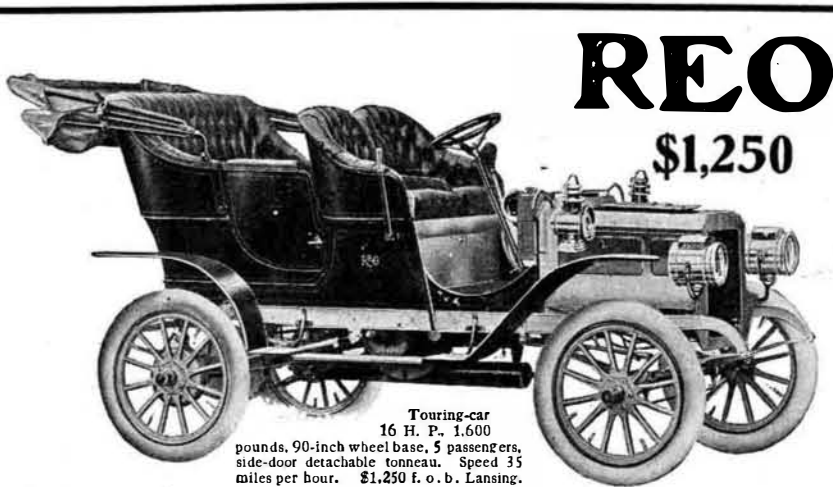
Tablet holder, W. N. Gunderson.....	822,603
Tag, A. E. Ellis.....	822,255
Tapping device, H. Hottinger.....	822,608
Target trap, C. M. Ketcham.....	822,741
Tea packing machine, W. H. Scott.....	822,310
Teeth and forming the same, attachment for natural, J. P. Carmichael.....	822,582
Telephone booth, M. C. Turner.....	822,493
Telephone call meter, C. T. Bradshaw.....	822,719
Telephone exchanges, multiple switchboard for, M. G. Kellogg.....	822,611
Telephone lines, bridging connector for, M. C. Turner.....	822,492
Telephone lines, signaling system for party, J. L. McQuarrie.....	822,466
Telephone sets, inclosing case for, F. R. McBerty.....	822,464
Telephone transmitter or audiphone receiver, H. G. Pape.....	822,470
Tellurian, E. J. Seever.....	822,693
Terminal connector, J. Opitz.....	822,469
Thermostatic control, E. Thomson.....	822,323
Thread cutter for spools, H. H. Butler.....	822,821
Ticket delivering machine, H. H. Cummings.....	822,829
Ticket stamping and delivering machine, H. H. Cummings.....	822,830, 822,855
Tilting gate, C. H. Lovering.....	822,746
Tin plate catcher, L. C. Steele.....	822,698
Tire armor, J. Coan.....	822,651
Tire construction, Ellis & Davis.....	822,439
Tire, elastic wheel, W. Struck.....	822,786
Tire protector, pneumatic, Scarborough & Schultz.....	822,307
Tire, vehicle, J. Christy.....	822,583
Tires, apparatus for manufacturing wheel, P. D. Thropp.....	822,561
Tobacco package, J. W. Surling.....	822,318
Tobacco, treatment of, A. C. & G. Q. Bedortha.....	822,239
Tongue support, J. E. Cronkrite.....	822,434
Tool, combination, E. Reizenstein.....	822,553
Top for games, double, G. Philippart.....	822,628
Torpedo expulsion valve, J. Barraja-Frauenfelder.....	822,500
Towel rack, roller, J. C. Christen, et al.....	822,346
Towel wringing device, hot, J. Girard.....	822,733
Trains, device for transporting passengers to and from moving, F. S. See.....	822,777
Tramway line and railway line at level crossings, W. J. Hollick.....	822,606
Transformer, W. S. Moody.....	822,293
Trap, See Animal trap.....	
Trap, C. A. Murphy.....	822,543
Trolley stand, J. Zielinski.....	822,709
Trolley wheel, G. W. Jobe.....	822,845
Truck, cast steel car, A. Lipschutz.....	822,676
Truck, piano, C. E. Hawk.....	822,274
Trunk, wardrobe, F. H. Parkhurst.....	822,334
Truss, G. C. Abraham.....	822,822
Truss, J. H. Campbell.....	822,285
Tubular articles, making, G. W. Lee.....	822,285
Turbine, D. C. Garraway.....	822,267
Turbine, J. Stumpf.....	822,315
Turbine and controller mechanism therefor, J. Wilkinson.....	822,798
Turbine bucket wheel, J. Wilkinson.....	822,801
Turbine, elastic fluid, Callan & Hamilton.....	822,247
Turbine, elastic fluid, W. L. R. Emmet.....	822,257
Turbine, elastic fluid, J. Wilkinson.....	822,799
Turbine governing mechanism, W. L. R. Emmet.....	822,256
Turbine shaft packing, J. Wilkinson.....	822,800
Turbine, steam, J. Stumpf.....	822,316, 822,317
Turbines, governing mechanism for elastic fluid, E. Thomson.....	822,324
Turbines, governing mechanism for elastic fluid, W. L. R. Emmet.....	822,887
Turbines, operating, J. G. Dornbierer.....	822,253
Turbines, stop mechanism for elastic fluid, J. G. Callan.....	822,248
Typewriter attachment, C. F. Washburn.....	822,327
Typewriting machine type bar, G. Riebe.....	822,303
Typewriting machine type bar, F. A. Peterson.....	822,386
Universal coupling, H. C. Chase.....	822,853
Universal indicator, H. M. Willis.....	822,805
Valve, C. W. A. Koelkebeck.....	822,846
Valve, pressure regulated supply, B. D. Hodson.....	822,276
Valve, supply, E. A. Marsh.....	822,749
Vehicle, amusement, R. F. Rice.....	822,749
Vehicle brake, A. A. Ball, Jr.....	822,336
Vehicle brake, H. E. Martin.....	822,750
Vehicle braking and starting device, combined, J. de Mazaraki.....	822,679
Vehicle wheel, L. G. Langstaff.....	822,615
Vending machine, coin operated, J. A. Rule.....	822,869
Veneer cutting machine, W. R. Bright.....	822,647
Wagons, etc., loading apparatus for, L. Kniffen.....	822,614
Wall, J. A. Ferguson.....	822,594
Wall construction, J. C. Davidson.....	822,510
Walls, partitions, and the like, method of and means for constructing, J. G. Stader.....	822,559
Washing apparatus, O. C. Prasse.....	822,300
Washing machine, G. H. Wisner.....	822,331
Washing machine, J. G. Kincaid.....	822,371
Washing, wringing, mangling, and other similar machines, roller for, G. W. Robinson.....	822,772
Watch, A. Schweizer-Schatzmann.....	822,776
Watch cover and holder, A. L. Shonfield.....	822,393
Water beater, J. K. McLaughlin.....	822,545
Water jacket, F. H. Tryon.....	822,326
Water trap, Martineau & Prevost.....	822,462
Water tube boiler, H. Del Mar.....	822,857
Waterproofing buildings, etc., Gross & Horn.....	822,451
Weigher, automatic, J. S. Herron.....	822,451
Weighing instrument, H. M. Willis.....	822,804
Well drilling apparatus, S. N. Hall.....	822,272
Well jack, oil, G. B. Sessions.....	822,392
Well, terra-cotta tile, J. Elliott.....	822,254
Wheel, See Automatic wheel.....	
Wheel, A. Freschl.....	822,518
Wheel rim and tire fastening, Acheson & Walsh.....	822,711
Whiffletree hook, H. C. Scott.....	822,557
Whip socket, J. D. Shimer.....	822,779
Winding machine, ball, A. T. & G. H. Saunders.....	822,482
Window, Flaschberger & Gebhart.....	822,516
Window and window screen fastener, storm, F. O. Hermance.....	822,521
Window frame and sash, H. Staib.....	822,785
Woodworking machines, combined presser foot and guard for, H. H. Steer.....	822,636
Wrench, J. T. Urbach.....	822,790
Writing machine, E. B. Hess.....	822,858

DESIGNS.

Badge, S. D. Parker.....	38,048
Casket, coffin, or similar article, C. F. Wetmore.....	38,059
Crib, Christmas, F. Willenbrink.....	38,050
Fabric, embossed, L. M. Musliner.....	38,066
Fabric, textile, S. L. Crownfield.....	38,061
Fruit bowl, B. W. Jacobs.....	38,055
Jug or similar article, C. J. Noke.....	38,053
Jug or similar article, J. Slater.....	38,054
Lamp shade, W. A. Hogan.....	38,056
Pen holding receptacle, fountain, F. A. Weeks.....	38,049
Show case, J. T. Robt.....	38,058
Suspender box, A. Coleman.....	38,057

TRADE MARKS

Abrading and polishing strips, S. S. White Dental Mfg. Co.....	53,565
Abrading disks, wheels, and points, S. S. White Dental Mfg. Co.....	53,566
Adhesive tape, Okonite Co.....	53,523
Ale, ginger, Hagan & Dodd Co.....	53,598
Animal traps, W. A. Redick.....	53,641
Asphalt, Warren Chemical & Manufacturing Co.....	53,652
Axle grease, Hill Top Oil Co.....	53,481
Baking powder, E. Ottenhelm & Sons.....	53,466
Bearings, ball, Hess-Bright Manufacturing Co.....	53,631
Beer, Springfield Breweries Co.....	53,499
Beer, lager, Hartmann Brewing Co.....	53,421
Beer, lager, Peter Schoenhofen Brewing Co., 53,428 to.....	53,433
Beer, lager, A. Finck & Son.....	53,595
Bitters, S. Hochstatter.....	53,551



REO \$1,250

Touring-car
16 H. P., 1,600
pounds, 90-inch wheel base, 5 passengers,
side-door detachable tonneau. Speed 35
miles per hour. \$1,250 f. o. b. Lansing.

Your Money's Worth

Every dollar you put into a REO car buys some big, substantial, definite value on which you can put your hand and say "Here is my money's worth!"

The big, roomy, handsome stylish body, the real 16 horse-power, double-opposed motor with its long invincible driving stroke; the jar-proof, freeze-proof sectional radiator; the positive never-failing force-feed oiler; the strong, simple, practical, enduring construction—all designed by the most experienced and successful automobile builder in the world—these are palpable qualities plain to every eye. The sweeping record of REO victories, East and West—in hill-climbing, racing, endurance and economy trials; under all conditions of roads and weather and against cars of double its rating and price—these are unequalled performances convincing to every mind.

You pay for no mistakes, experiments nor imaginary virtues. You pay only once, and only for real qualities. And you get them.

REO is the money's-worth car
Write for the book that tells why

We want to hear from reliable parties to represent us, and will send catalogue on request.

REO Motor Car Co. Sales Department, Lansing, Mich.

R. E. Olds, Pres't. R. M. Owen, Sales Mgr.

Agencies throughout the United States.



For Vacation Days

The Scientific American Boy

By

A. RUSSELL BOND

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



THIS 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 instructive 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

Inexpensive Classified Advertisements

Advertising in this column is 50 cents a line. No less than four words more than ten lines. Count seven words to the line. All orders must be accompanied by a remittance. Further information sent on request.

SALE AND EXCHANGE.

GLOBE INCUBATORS. Hatch chickens. No experience necessary. Our large new Illustrated Catalogue of Incubators and Brooders and Poultry Information mailed free. Write to-day. Address C. C. Shoemaker, Box 660, Freeport, Ill.

TO MANUFACTURERS. We have the cheapest, simplest, most efficient, accurate, safe heating soldering iron. Also a soldering. Perfect combustion and no flame exposure. Fully protected by patents. Willing to demonstrate. Stevenson & Stewart, 60 Wall Street.

MOTION PICTURE MACHINES. Film Views, Magic Lanterns, Slides and similar Wonders For Sale. Catalogue Free. We also buy Magic Machines, Films, Slides, etc. T. S. Harbach, 805 Filbert St., Philadelphia, Pa.

NEW ENGLAND FARMS. summer homes, hunting camps and country real estate of every description. Circular free upon receipt of address. Dept. 17, P. F. Leland, 113 Devonshire St., Boston, Mass.

THE CEMENT WORKER'S HANDBOOK. Tells you all about cement work. How to build walls, floors, walks, tanks, cisterns, fence posts, etc., etc.; bound in cloth; second edition. Send 50c. to C. C. DePuy, Syracuse, N. Y.

VALUABLE INFORMATION for those who build, buy or rent a home. Send postal for descriptive booklet. House Hints Publishing Co., Department 28, Philadelphia.

FACTORY FOR SALE OR RENT. At Hackensack, N. J. Substantial brick building, 75 x 35, three stories. With large sheds, etc. Lot 75 x 110. Suitable for any kind of manufacturing. Opposite the depot of the New York, Susquehanna and Western Railroad. For terms apply to George J. Ackerman, 255 Union St., Hackensack, N. J.

SECOND HAND AUTOMOBILES.

AUTOMOBILE FOR SALE. An 8 h.p. Single-Cylinder Gasoline Touring Car, fitted with a new 3-speed sliding gear transmission and many new parts throughout. Machine has just been overhauled and put in first-class condition. For particulars and price, address S. B. P. O. Box 34, Stratford, Ct.

BUSINESS OPPORTUNITIES.

THE CONTROLLING INTEREST in Rivet Forge used by the largest Bridge and Structural Companies. A running business that can be increased by right party. Write for particulars. Boston Crude Oil Burner Co., 131 State St., Boston, Mass.

SIGNAL ALARM. pat. Dec., 1905. The simplest device for refrigerators. Repeats every 5 minutes until the pan is empty. Need no battery. No winding. Cost little to manufacture. Rights for sale. For particulars address Theophile Paquette, 108 Lake St., Webster, Mass.

LET US BE YOUR FACTORY. Hardware specialties manufactured under contract, models developed. We are specialists in patent articles. Prompt service, first-class workmanship, reasonable prices. America Company, Mommence, Ill.

WANTED. Names of parties making leather board. Also of manufacturers of cloth made from plantain tree pulp. F. Ranville Leather Belting Co., Grand Rapids, Mich.

MACHINERY FOR SALE.

FOR SALE. At Taunton, Mass., patterns, patents, drawings; 4 to 25 horse-power gas or oil engines. Ten years test. Catalogue sample. Hadwen Swain Mfg. Co., 505 Sacramento St., San Francisco, Cal.

FINE LITHOGRAPHED LETTER HEADS. Bill Heads, Envelopes and Checks, gives standing. Write to-day for prices, mentioning this paper. Stilwell, 709 Pine St., St. Louis.

PATENTS FOR SALE.

I HAVE FOR SALE the U. S. and all foreign rights of new patent improvements in Water Tube Types of Boilers. Great economizer. J. M. Coleman, Everett, Wash.

FOR SALE. Patent rights for United States on three illustrated post card novelties. If interested send 50c. for samples. W. Barker, Jeffersonville, N. Y.

PATENTS.—European Rights. I want sole agency for Europe for good-selling patents, or might buy rights. James R. Moodie, 73 Inverleith Row, Edinburgh, Scotland.

PARTNERS WANTED.

WANTED, A PARTNER. I have a complete plan for making an apparatus to be driven by gravity. Wanted a capitalist to develop the invention. D. Gingold, 297 Cherry St., New York City.

SITUATIONS AND PROFESSIONAL OPENINGS.

A \$5,000 POSITION is open for the right man to manage a factory in the South. Must possess successful experience. Be under 45 and prove his qualifications to an absolute certainty. Address R. C. Box 773, New York.

WANTED.—Experienced and Responsible Patent Rights Salesman, to sell territory for a new gasoline saw-iron, the only perfect iron and fully guaranteed. A strictly business proposition. America Company, Mommence, Ill.

WANTED.—Commission salesman to handle belting in the Southern States. Write to the F. Ranville Co., Leather Belt Manufacturers, Grand Rapids, Mich. Mention this paper.

ENGINEERING WANTS.

WELL-KNOWN EUROPEAN FIRM wants agency for Universal Grinder, like Landis or similar pattern, first-class makers, being able to turn out accurate machines of favorable design. Address Hemphill, Box 773, New York.

WANTED.—Articles to manufacture in either wood or iron, by well-equipped foundry and machine shop. Ypsilanti Machine Works, Ypsilanti, Mich.

SOLE AGENTS FOR RIEFLER'S INSTRUMENTS. Optic's Pantographs, Drawing and Blue Print Paper, Drawing Boards, Tables, Squares, Triangles, etc. Engineers' and Builders' Transits, and Levels of Best Makes. Send for illustrated catalogue, Vol. III. F. Weber & Co., Engineers' and Draftsmen's Supplies, 1125 Chestnut St., Philadelphia, Pa. Branch Houses: St. Louis and Baltimore.

HOTELS AND RESORTS.

JAMESTOWN, OPPOSITE NEWPORT. Thorn-dyke Hotel and 8 new cottages, furnished. Charming location on shores of Narragansett Bay; 15 minutes to Newport by ferry. F. H. Horgan, Newport, R. I.

PROFESSIONAL CARDS.

LANDSCAPE ARCHITECTS. J. H. Shepard & Son, 302 Euclid Ave., Syracuse, N. Y. Twenty-five years' experience.

LANDSCAPE ARCHITECT. Wm. Webster, 560 North St., Rochester, N. Y. Established 1853.

BUILD AT COST. Town or Country. W. H. A. Horsfall, Architect, 18 and 20 East 42d St., New York, N. Y. Tel. 2068-38th.

Bluing, P. Pfrohm	53,167
Bluing, A. Pfrohm	53,468
Boilers, Utica Heater Co.	53,650
Boots and shoes, leather, Lynchburg Shoe Co.	53,380
Boots and shoes, leather, Geo. D. Witt Shoe Co.	53,419
Braid, mercerized cotton, D. Goff & Sons	53,542
Bread, wheat, E. A. Williams Incorporated	53,417
Brooches, scarf, and cuff pins, Krementz & Co.	53,386
Brooms, Lee Broom & Duster Co.	53,375
Brushes, lather, Rubber & Celluloid Harness Trimming Co.	53,648
Brushes, tooth, Florence Manufacturing Co.	53,373, 53,374
Candies, Rochester Candy Works	53,607
Candy, Manufacturing Company of America	53,555
Candy, Reymer & Brothers	53,564
Candy, P. Wunderle	53,653
Candy and rock candy syrups, rock, Knickerbocker Chocolate Co.	53,463
Canned oysters, Booth Packing Co.	53,415
Canned pineapples, Paul Taylor Brown Co.	53,443
Car castings, railway, National Malleable Castings Co.	53,558, 53,559
Cards, playing, New York Consolidated Card Co.	53,406, 53,426, 53, 27
Cards, playing, United States Playing Card Co.	53,435
Cards, playing, A. Gabarro y Castello	53,437
Cards, playing, New York Consolidated Card Co.	53,442
Carpet sweepers, American Wringer Co.	53,413
Cartons for lamp chimneys and globes, Macbeth-Evans Glass Co.	53,518
Cheese cutters, computing, Anderson Computing Scale Co.	53,537
Chemical solution, P. Kerrin	53,635
Cigars, Cifuentes, Fernandez y Ca.	53,480
Cigars and stogies, S. S. Smith	53,498
Cigars, Havana, Havana Commercial Co.	53,485
Clocks, alarm, Western Clock Mfg. Co.	53,379
Clothes wringers, American Wringer Co.	53,452
Clothes wringers and parts thereof, American Wringer Co.	53,476, 53,477
Clothes wringers and the parts composing the same, American Wringer Co.	53,449
Coal, Equitable Coal & Coke Co.	53,481
Cocktails and punch, W. H. Jones and Co.	53,423
Cocoa nut, prepared, Dunham Manufacturing Co.	53,460
Coffee, cereal substitute for, Decatur Cereal Coffee Works	53,459
Colors and inks, certain named, Jaenecke Printing Ink Co.	53,488
Colors, artists' blue, Toch Brothers	53,501
Colors, artists' white, Toch Brothers	53,502
Cordial, Sidney Fairchild Co.	53,410
Corks, J. Alberti	53,586
Corsets, A. Ottenheimer	53,561
Cotton duck, Mount Vernon-Woodberry Cotton Duck Co.	53,622
Cotton piece goods, C. C. Adams & Sons	53,538
Cotton piece goods, F. W. Poe Mfg. Co.	53,545
Cotton piece goods, Ninety Six Cotton Mill	53,560
Cotton piece goods, Massachusetts Cotton Mills	53,637
Cough drops, Robert F. Mackenzie Co.	53,646
Crayons, checking, school, and marking, J. M. Hoyt	53,422
Dumb waiters, J. G. Spidel	53,609
Eyes, anilin, Cassella Color Co.	53,621
Eggs, G. W. Martin & Bro.	53,441
Eggs, Eyer Brothers Commission	53,458
Electric and gas light reflectors, I. P. Frits	53,517
Explosives, electrical, Masurite Explosive Co.	53,521
Fabric, sheet translucent, Translucent Fabric Co.	53,576
Fabrics, printed and dyed textile, Edystone Manufacturing Co.	53,625
Fertilizers, Virginia-Carolina Chemical Co.	53,614
Fire and acid proof composition, Ransom & Randolph	53,640
Fish, cured, G. H. Perkins	53,444
Fish books, artificial flies and baits, Henry Milward & Sons	53,549
Flour, wheat, Lawrenceburg Roller Mills Co.	53,439
Flour, wheat, Marsh & Riley	53,440
Flour, wheat, J. H. Heisel	53,630
Food, albumen preparations for, Althen & Mende	53,475
Food for animals, aromatic, H. M. Griffin	53,484
Fruit and vegetables in tins or glass, Wm. Nunn & Sons	53,412
Fruits, certain named, Southern Cross Fruit Co.	53,470, 53,471
Fuses, blasting, Goodall, Perkins & Co.	53,597
Gin, J. J. Douglass Co.	53,403
Gloves, F. Schmidt	53,649
Grinding mills, C. S. Bell Co.	53,514
Grinding mills, New Winona Mfg. Co.	53,639
Guava pulp and sugar, mixture of, Tropic Fruit Co.	53,434
Gum, chewing, American Chicle Co.	53,531
Gum, chewing, Best Gum Co.	53,618
Hair invigorators and color restorers, J. W. Walker	53,616
Hair restoratives, S. R. Van Duzer	53,585
Hats and caps for men and boys, Keith Brothers & Co.	53,602, 53,634
Hoes, Union Hoe Co.	53,578
Horse and mule shoes, American Horse Shoe Co.	53,535
Hosiery, Columbia Knitting Co.	53,541
Lamps, of glass, decorated vase, Phoenix Glass Co.	53,562
Lard, N. K. Fairbank Co.	53,464, 53,465
Leather sheets, pasted, Western Leather Co.	53,392 to 53,395
Ledgers, binders, files, and leaves thereof, loose leaf, Tengel Company	53,391
Liniments, Cracker Jack Liniment Co.	53,623
Lotions, toilet and medicinal, E. A. Olds	53,525
Macaroni, spaghetti, vermicelli, and noodles, Crescent Macaroni & Cracker Co.	53,438
Magazines, Outing Publishing Co.	53,496
Magnet wire for trolley use, Magnet Wire Co.	53,636
Malt extracts, M. K. Goetz Brewing Co.	53,405
Mattresses, Southern Spring Bed Co.	53,573
Medical compound, Brandreth Co.	53,581
Medicated wine, Frederick Stearns & Co.	53,596
Medicine for fevers, Malarine Medical Co.	53,554
Medicine for Graves disease, Vereinigte Chemische Werke Aktiengesellschaft	53,527
Medicine for stomach diseases, L. J. Schabinger	53,507
Medicine, liquid, Goodrich Drug Co.	53,582
Metal, babbit, Peerless Smelting & Refining Co.	53,584
Metals or alloys, antirustion, Magnolia Metal Co.	53,519, 53,520
Milk and cream, H. Yates	53,511
Mills, certain named, Cleveland Twist Drill Co.	53,540
Mince meat, fresh, F. Saunders	53,469
Musical instruments, certain named, Lyon & Healy	53,390
Nail clippers, Smith & Hemenway Co.	53,571
Nail sets, Cleveland Twist Drill Co.	53,539
Noodles, Excelsior Noodle Co.	53,544
Noodles and vermicelli, John Behm Co.	53,462
Oil, olive, W. A. Castle Co.	53,447
Oils, cooking and baking, Independent Cotton Oil Co.	53,487
Oils manufactured from petroleum, illuminating, Standard Oil Co. of New York	53,445
Oils used in the manufacture of perfume, Heine & Co.	53,599
Oven turnbuckles and wrought iron pipe strap, Berge Bros. Co.	53,617
Packing, Greene Tweed & Co.	53,420
Packing materials for steam and water joints, E. Cooper	53,372
Paint, mixed, Marine Paint Corporation	53,490
Paper and paper bags and paper sacks, wrapping, Hollingsworth & Whitney Co.	53,384, 53,385
Paper bags, Union Bag & Paper Co.	53,577
Paper, toilet, Scott Paper Co.	53,377
Pens, metallic, Spencerian Pen Co.	53,378
Perfuming extracts, F. A. Richter	53,643
Pianos, Emerson Piano Co.	53,383
Pianos, upright and grand, Lester Piano Co.	53,387
Pickles, Spurge Dingle Co.	53,500
Pills, Carter Medicine Co.	53,591
Pomade, J. D. Bell	53,513
Popcorn, A. A. Berry Seed Co.	53,380, 53,381



The Calculagraph Does the "Brain Work"

It keeps the workman's time better than a clerk can keep it. It doesn't merely record the time of commencing and the finishing time, leaving the "brain work" for the clerk to do, but it does the subtracting, which a clerk would ordinarily have to do, printing on a card the exact number of hours and minutes each man works.

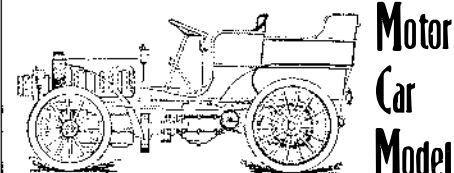
IF YOU DESIRE TO KNOW THE EXACT COST OF PRODUCTION

put a Calculagraph in the shop and get the exact labor cost without any liability of error. One machine will keep the records of all the men in any one department. It makes no errors, saves clerical labor and helps to put your business on a modern basis.

We'll gladly furnish the particulars; you write!

CALCULAGRAPH CO.
1433 Jewelers' Building
New York City, U. S. A.

IF YOU OWN or run an AUTOMOBILE



It consists of Colored Charts bound up with explanatory letter-press in strong cardboard binding, size 9 1/4 by 13 1/4 inches.

Price \$1.50. By Mail, \$1.57

T. Y. WHITTAKER, 2 and 3 Bible House
NEW YORK



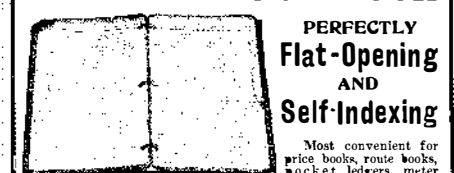
THOMAS AUTO-BIKE
Model No. 44. Price \$145
Three Horse Power. Simplest motorcycle on the market. Agents wanted everywhere. Catalog free.
THE THOMAS AUTO-BIKE CO., Buffalo, N. Y.
1450 Niagara Street

MUD FORGET IT AND USE
WEED'S TIRE GRIPS
Positively Stops Slipping or Skidding
They Make Bad Roads Good
Send for Booklet "S"

WEED CHAIN TIRE GRIP COMPANY
28 Moore St., New York City

A MONEY MAKER
Hollow Concrete building Blocks
Best, Fastest, Simplest, Cheapest
Machine. Fully guaranteed.
THE PETTYJOHN CO.
615 N. 6th Street, Terre Haute, Ind.

A Loose Leaf Book



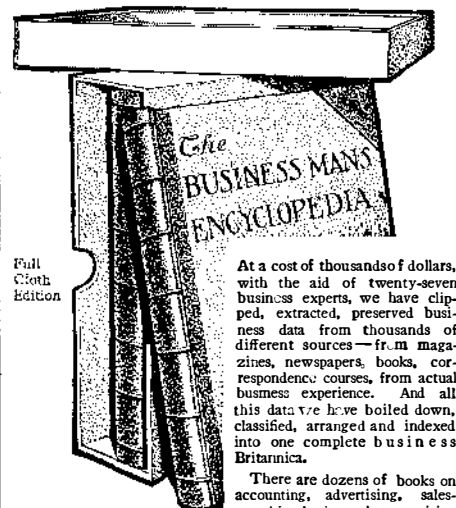
PERFECTLY Flat-Opening AND Self-Indexing
Most convenient for price books, route books, pocket ledgers, meter books, engagement books and all forms of records which should be kept in convenient, accessible form. Better than any card index. These "Unimatic" books are bound in full, genuine, flexible, black leather, are perfectly flat opening and sheets may be instantly inserted or removed from any part.

The following sizes sent postpaid on receipt of price:

USE	No.	INDEXED	Edges	Size of Sheet	Pages of Cove.	Complete
Ven. Pocket	292	2	2 1/2 x 4	1/2	50	\$0.85
"	4412	4 1/2	1 1/2 x 2 1/2	1/2	50	.95
Coat Pocket	612	6 1/2	8 1/2 x 5 1/2	1/2	50	1.20
"	532	6 1/2	5 1/2 x 8 1/2	1/2	125	1.70
"	632	7 1/2	5 1/2 x 8 1/2	1/2	125	1.75
"	722	7 1/2	7 1/2 x 4 1/2	1/2	125	2.10
Desk	1122	11	11 x 8 1/2	1/2	125	2.90

19 other sizes carried in stock
Stock ruling: Quadrille, Unruled, Dollars and Cents, Faint Lines, Double Entry Ledger and 4-Column Price-Book Ruling.
Send for sample sheets and complete catalogue of largest line of loose-leaf devices in the world.
Siebert & Trussell Mfg. Co., 4002 Laclede Ave., St. Louis

FREE FOR YOUR DESK



At a cost of thousands of dollars, with the aid of twenty-seven business experts, we have clipped, extracted, preserved business data from thousands of different sources—from magazines, newspapers, books, correspondence courses, from actual business experience. And all this data we have boiled down, classified, arranged and indexed into one complete business Britannia.

There are dozens of books on accounting, advertising, salesmanship, business letter-writing and other branches of business; but the Business Man's Encyclopedia is a condensation of them all. It deals not merely with one department of business, but with all departments—from the purchase of raw materials to the sale of the finished product—from advertising and selling to credits and collections.

One man under ordinary conditions could not gather in a lifetime one-tenth of the business information condensed in these THE MAGAZINE OF BUSINESS books. Where the average business man sees one article, reads one book, meets one business man these twenty-seven experts have seen a hundred. And the best of what they learned they condensed in these SYSTEM books. Employer or employee, you need these books in your office, on your desk, or in your library.

System, the magazine, is essential to business success. It tells every month all that is new in business to save time—all that is good in business to make money. 226 or more pages of indispensable information for business men. Through SYSTEM you can learn all that anyone can possibly tell you about system and business methods. It will give you each month dozens of clever advertising, selling and manufacturing plans that have built some of the greatest retail, wholesale and manufacturing concerns in America.

The price of SYSTEM is two dollars a year. It is worth a great deal more than that to any alert man with his eyes on the main chance.

W. P. Chase & Co.: "We would not have SYSTEM discontinued now though the price were raised to \$10 a year."

W. P. Lowmyer: "Secured one idea from SYSTEM that solved the hardest problem in my department."

Send \$2.00 to-day for a full year's subscription to SYSTEM. At once we will send you free a full cloth bound set of the Business Man's Encyclopedia—in two volumes—all transportation charges prepaid. Write your name on the margin of this advertisement—tear out—mail to us to-day with a two-dollar bill. Better still, include \$1.00 extra (\$3.00 in all), and we will bind the books for you in the finest flexible Morocco and gold the edges.

THE SYSTEM COMPANY
New York Desk 30, CHICAGO London

HOME MADE DYNAMOS.—SCIENTIFIC AMERICAN SUPPLEMENTS 161 and 400 contain excellent articles with full drawings. Price 10 cents each. By mail, Munn & Company, 361 Broadway, New York City, and all newsdealers.

THE SYSTEM COMPANY
New York Desk 30, CHICAGO London

HOME MADE DYNAMOS.—SCIENTIFIC AMERICAN SUPPLEMENTS 161 and 400 contain excellent articles with full drawings. Price 10 cents each. By mail, Munn & Company, 361 Broadway, New York City, and all newsdealers.

I Will Make You Prosperous

If you are honest and ambitious write me today. No matter where you live or what your occupation has been, I will teach you the Real Estate business by mail; appoint you Special Representative of my Company in your town; start you in a profitable business of your own, and help you make big money at once. Unusual opportunity for men without capital to become independent for life. Valuable book and full particulars free. Write to-day. Address nearest office.

EDWIN R. MARDEN, President
National Co-operative Realty Co.
1529 Athenaeum Building, Chicago
1624 Maryland Building, Washington, D. C.

PATENTS

Our Hand Book on Patents, Trade-Marks, etc., sent free. Patents procured through Munn & Co. receive free notice in the SCIENTIFIC AMERICAN
MUNN & CO., 361 Broadway, N. Y.
BRANCH OFFICE: 625 F St., Washington, D. C.

A MONEY MAKING MACHINE

that coins nickels for its owner, and gives satisfaction to the public is the wonderful
PHOTOSCOPE.
Takes one's photograph and produces it ready framed inside of a minute! It can make a profit of \$100 a day wherever there are crowds. Write for booklet and price list.
M. S. KLINE
45 N. Division St., BUFFALO, N. Y.

The PRICE PYROMETER

eliminates guesswork. Any temperature from zero to 3000 degrees Fahr. indicated with absolute accuracy. Used in all industries. We guarantee satisfaction. Write for particulars and price, giving your requirements.
ELECTRIC DENTAL SPECIALTY CO.,
2761 Euclid Ave., Cleveland, O.



EBONITE

PAINT-VARNISH

There is no better protective coating made than Ebonite, and none lower in price. The black color is due to its carbon base. It is elastic, heat-resisting and weather-proof. On all kinds of metal work, smoke stacks, boiler fronts, stand pipes, tanks, etc., Ebonite will give ideal protection.

Booklet and sample on request.

Buchanan-Foster Co
452 Chestnut St.
PHILADELPHIA, PA.



DO YOU USE GRINDSTONES?

If so we can supply you. All sizes mounted and unmounted, always kept in stock. Remember, we make a specialty of selecting stones for all special purposes. Send for catalogue "I".

The CLEVELAND STONE CO.
2d Floor, Wilshire, Cleveland, O.



PHONOGRAPHS

Latest Free Catalogue
Records No. 50

EUGENE CLINE & COMPANY
59 Dearborn St., Chicago, Ill.



Frictionless

Are your bearings running hot? Reduce friction "mentally" and mechanically by sending to us for full particulars about Frictionless. We have the remedy. No bearing can run hot with it.

Frictionless Metal Co., Chestnut St., Chattanooga, Tenn.



EYE BENDERS

Make your eyes by using our band power bending machines. Take stock up to 1 1/2 inch and bend up to 7 inches diameter. Write to-day for catalogue.

Wallace Supply Co., 921 Garden City Bldg., Chicago, Ill.

The Adirondack Mountains

Are now about the most central of all the great resorts. They have through Pullman sleeping cars from New York, Philadelphia, Boston, Buffalo and Niagara Falls via the



A night's ride takes you from any of these places to the center of the mountains in time for breakfast next morning.

For a copy of "The Adirondack Mountains and How to Reach Them," which is No. 20 of the New York Central Lines' "Four-Track Series," containing a fine map of the Adirondack Mountains and adjacent territory, with useful information in regard to hotels, camps, lakes, rivers, etc., send a two-cent stamp to George H. Daniels, Manager General Advertising Department, Room 26, Grand Central Station, New York.

C. F. DALY
Pass. Traffic Mgr.
NEW YORK

W. J. LYNCH
Pass. Traffic Mgr.
CHICAGO



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, \$3 a year; four months, \$1. Sold by all newsdealers.

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

Powders and creams, toilet, E. N. Lanigan.	53,583
Primers or caps, blasting, Metallic Cap Manu-	53,557
facturing Co.	53,516
Pulverizing machinery, G. H. Frazier.	53,603
Pumps, P. E. Myers & Bro.	53,570
Razors, Smith & Hemenway Co.	53,396
Refrigerators, O. M. Whitman & Co.	53,547
Remedy for certain named diseases, Gerstle	53,601
Medicine Co.	53,504
Remedy for certain named diseases, F. U.	53,593
Kahle	53,651
Remedy for croup, coughs, and bronchial	53,526
affections, C. V. Dorman	53,590
Rheumatism, cure, J. B. Cromley	53,612
Ribbons, Vischer & Co.	53,536
Rings, A. Tanzer	53,401
Roofing, felt and paper, C. T. Carruth	53,529
Rum, Jamaica, W. A. Taylor & Co.	53,569
Scales, counter, Anderson's Computing Scale	53,629
Co.	53,371
Seed meal and nut cake, cotton, Humphreys,	53,376
Godwin & Co.	53,550
Sewing machines, Wilcox & Gibbs Sewing	53,556
Machine Co.	53,647
Shears, Sheer Cut Shear Co.	53,633
Sheeting, cotton, A. W. G.	53,424
Shoes, ladies' men's, and children's leather,	53,478
A. J. Bates Co.	53,479
Shovels, spades, scoops, and spading forks,	53,491
Hibbard, Spencer, Bartlett & Company	53,497
Silk, crepe de chine, mouseline silk, etc.,	53,483
taffeta, Marcus Bros.	53,620
Silk dress goods in the piece, Rogers &	53,624
Tompson	53,543
Silk, spun, Industrie-Gesellschaft fur	53,388
Schappe	53,408
Skins, patent kid and patent colt, D. F.	53,610
Kennedy	53,482
Soap, Andrew Jergens Co.	53,493
Soap, Artesia Cream Co.	53,404
Soap, Lever Brothers Co.	53,592
Soap, N. K. Fairbank Co.	53,622
Soap, E. Palmer	53,382
Soap, laundry, E. P. Garrettsen & Co.	53,531
Soda water, Cantrell & Cochrane	53,552
Steel, Crucible Steel Company of America	53,512
Steel in various forms, Edgar Allen & Co.	53,587
Steelware household articles, enameled, Lisk	53,528
Manufacturing Co.	53,397
Stockings, Teft Weller Company	53,398
Stout, Robert Smith Ale Brewing Co.	53,399
Suits and overcoats for young men, Sykes	53,400
& Ab. Kirschbaum & Co.	53,409
Tea, F. P. Garrettsen & Co.	53,411
Teas, mixed, New Orleans Import Co.	53,418
Tin cooking utensils, Lisk Manufacturing	53,425
Co.	53,436
Tonic beverage, carbonated, C. C. Copeland	53,494
Tonic beverage, carbonated, J. Ries	53,495
Tonics, blood and nerve, J. M. Collins	53,548
Turquoises, American, Azure Mining Co.	53,574
Typewriting machine, Wyckoff, Seamans &	53,588
Benedict	53,589
Underwaists, E. H. Horwood	53,600
Vermifuge, J. F. Ballard	53,604
Water, carbonated, F. W. Becker	53,605
Water hardening compounds, M. Wallerstein	53,606
Whisky, L. J. Adler	53,608
Whisky, S. Altmyer	53,611
Whisky, Ben J. Goldman	53,613
Whisky, C. H. Graves & Son	53,619
Whisky, W. P. Ives & Co.	53,628
Whisky, S. Grabfelder & Co.	53,632
Whisky, R. Steel	53,642
Whisky, Brand Brothers Co.	53,414
Whisky, M. Fruhauf & Co.	53,548
Whisky, B. W. Le Compte	53,548
Whisky, Woodford Distilling Co.	53,563
Whisky, Old Kentucky Distillery	53,446
Whisky, Schenley Distilling Co.	53,553
Whisky, Swopes & Mangold	53,579
Whisky, M. Weiner	53,448
Whisky, A. Berkowitz	53,550
Whisky, H. Campe & Co.	53,558
Whisky, Hoffheimer Bros. Co.	53,559
Whisky, Old Kentucky Distillery	53,604
Whisky, Rhombert Bros. & Co.	53,606
Whisky, Sample & Co.	53,608
Whisky, W. A. Taylor Co.	53,611
Whisky, Ullman Einstein Co.	53,613
Whisky, Blumenthal & Bickart	53,619
Whisky, A. Forbes	53,628
Whisky, Freiberg & Workum	53,627
Whisky, Fritz Thies Mercantile Co.	53,628
Whisky, Hoffheimer Bros. Co.	53,632
Whisky, Rhombert Bros. & Co.	53,642
Whisky, rye, Butler & Co.	53,414
Whisky, Scotch, R. M. Haan	53,548
Windows and skylights, A. E. Rendle	53,563
Wines, W. A. Taylor & Co.	53,446
Wire rope, Macomber & Whyte Rope Co.	53,553
Wire-rope, W. W. Worthington Manufacturing Co.	53,579
Wringing machines, American Wringer Co.	53,448

LABELS.

"A Study in Cotton," for a school study box	12,928
for children, A. G. Helmer	
"Bastow's Coconut Biscuits," for coconut	12,914
biscuits, Stuart Bastow Co.	
"Diamond Liniment," for a liniment, H. A.	12,918
R. Horton	
"Eagle Island Brand," for canned clams,	12,916
Barclay Brown & Taylor	
"Edstrom's Blood Purifier," for a blood puri-	12,924
fier for blood and skin diseases, O. E.	
Edstrom	
"Elliott's Inhalant," for an inhalant for pul-	12,923
monary diseases, S. K. Elliott	
"Gatling Gun Remedy," for medicine, M.	12,922
Vincent	
"Golden Success," for medicine, H. G. Wil-	12,921
son	
"Gordon Suspenders," for suspenders, Gor-	12,926
don Manufacturing Co.	
"Half Century Coffee," for package coffee,	12,912
J. H. Roman & Co.	
"Label for Russell's Playing Cards," for	12,929
playing cards, W. W. Russell Card Co.	
"McAllister's Specific," for specific liniment,	12,919
J. J. McAllister	
"Ondawa," for flour, Kimball Flour Co.	12,913
"Otter Island Brand," for canned clams,	12,915
Barclay Brown & Taylor	
"Red Dragon Brand," for spices, Woolson	12,917
Spice Co.	
"Supreme," for German knitting worsted,	12,927
H. Mishkowsky	
"The Elizabeth Salve," for a medical pre-	12,925
paration for the cure of skin diseases,	
M. Herschman	
"Zynoxall," for medicine, A. L. McVay	12,920

PRINTS.

"Body Builders," for medicinal remedies,	1,690
Body Builders Medicine Co.	
"Carolina Brights Cigarettes," They Satisfy	1,688
the World," for cigarettes, Wells-White-	
head Tobacco Co.	
"Corn Fed," for provision, John P. Squire	1,691
& Company	
"Coulson Egg Food," for poultry foods,	1,692
Coulson Poultry & Stock Food Co.	
"Scriven's Elastic Seam Knit Shirts," for	1,685
shirts, J. A. Scriven Co.	
"Scriven's Elastic Seam Shirt Coat Style,	1,686
Sleeveless," for shirts, J. A. Scriven	
"Seek no further," for proprietary medi-	1,689
cal remedies, L. A. McKenney	
"The Scriven Improved Elastic Seam Shirts,	1,687
Short Sleeves," for shirts, J. A. Scriven	
"Timely Tips Right off the Reel," for wire	1,693
ropes, A. Leschen & Sons Rope Co.	
"Unit Street Car," for street cars, J. Post	1,694

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 inventors for any of the inventions named in the foregoing list. For terms and further particulars address Munn & Co., 361 Broadway, New York.

WINCHESTER



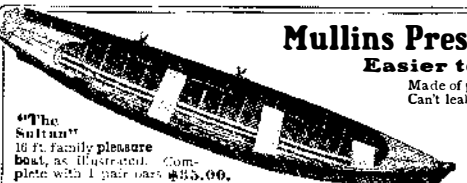
"BRUSH" SHELLS FOR BIRD SHOOTING.

Winchester "Brush" Shells help wonderfully to make big bags. They are so loaded as to give an open and even pattern at ranges from 25 to 30 yards when used in choke bore guns, without loss of velocity, penetration or uniformity. With these shells you can use your duck or trap gun for field shooting and make many kills which otherwise would be misses. They are loaded in "Leader" and "Repeater" grades and sold by reputable dealers everywhere. Ask for Winchester "Brush" Shells and accept no substitute.

Winchester Shells, Cartridges and Guns Are Sold Everywhere.

WINCHESTER REPEATING ARMS CO.

NEW HAVEN, CT.



Mullins Pressed Steel Boats Can't Sink

Easier to Row—Absolutely Safe

Made of pressed steel, with air chambers in each end like a life boat. Can't leak—crack—dry out or sink—last a lifetime. Every boat guaranteed. The ideal boat for families—summer resorts—parks—boat livery, etc. Strong—Safe—speedy. Write today for our large catalog of row boats, motor boats, hunting and fishing boats.

The W. H. Mullins Co., 118 Franklin St., Salem, O.

LEARN PLUMBING

and earn \$5.00 a day. A few months' study at our school under the supervision of expert plumbers will enable you to earn this salary. We have a special department to secure positions for students after graduating. Write to-day for FREE CATALOGUE.

ST. LOUIS TRADE SCHOOL, 3972 Olive Street, St. Louis, Mo.

ROYAL SIAMESE STATE RAILWAYS

Tenders are requested for the supply of 9 Passenger Locomotives and 7 Goods Locomotives with Spare parts. Drawings and conditions may be obtained against payment of \$1.50 per set at the Siamese Legation in Washington. Sealed tenders with the inscription "Tender for Locomotives" must be forwarded to the undersigned in whose office they will publicly be opened at 10 a. m. on the 12th of September, 1906. Bangkok, the 10th of March, 1906. The Director General, L. WEILLER.

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.

ICE MACHINES

Corliss Engines, Brewers and Bottlers Machinery. THE VILTER 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

Men and boys wanted to learn plumbing, plastering, bricklaying. Special offer life scholarship fifty dollars, easy payments. Position and upon card guaranteed. Free catalogue. Coyne Bros. Trade Schools, 239-241 Tenth Avenue, New York. Chicago. St. Louis.

MODELS and EXPERIMENTAL WORK.

Mechanical and Electrical Devices. Small Machinery. J. L. BENT, 210 Hudson Street, New York.

Special Machinery designed and built to order.

G. M. MAYER, M.E., 1131 Monahanock Bl., Chicago, Ill.

DRYING MACHINES.

S. E. WORRELL
Hannibal, Mo.

THE SCHWERTLE STAMP CO.

STEEL STAMPS, LETTERS & FIGURES.
BRIDGE-POST CONN.

Experimental & Model Work

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

NOVELTIES & PATENTED ARTICLES

MANUFACTURED BY CONTRACT. PUNCHING DIES, SPECIAL MACHINERY. E. KONGSLOW STAMPING & TOOL WORKS, CLEVELAND, O.

Capable German specialty house desires the general agency of a prominent factory for Modern High-speed Lathe and Milling Machines. Inquire of M. Z. 9519, Rudolf-Mosse, Hamburg.

Watch Making and Engraving School

We teach the trade thoroughly in three to six months. You can earn money while learning. Positions guaranteed to graduates. Terms most reasonable.

Kansas City Polytechnic Institute
1021 Grand Avenue, Kansas City, Missouri

LEARN WATCHMAKING

We teach it thoroughly in as many months as it formerly took years. Does away with tedious apprenticeship. Money earned while studying. Positions secured. Easy terms. Send for catalogue.

ST. LOUIS WATCHMAKING SCHOOL, St. Louis, Mo.

Your Vacation

may be spent in one of Nature's playgrounds, where buoyant, clear air, 1,200 closely linked lakes and streams, genial sunshine, virgin woods and high-lands, splendid trout-fishing, cooking that will make you fat, canoeing, loafing, and running across mighty nice people will re-create you in mind and body. Algonquin Park and surrounding district in Ontario, Canada, is the place, and the Grand Trunk Railway System is the way. Through car connections from Boston, New York, Buffalo and Chicago. Write for our resort booklets on Algonquin Park, Muskoka Lakes, Georgian Bay, and Temagami Region to

T. H. Hanley, N. E. Pass. Ag't GRAND TRUNK RAILWAY SYSTEM, 360 Washington St., Boston

PROPOSALS.

PROPOSALS will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until 10 o'clock A. M., June 26, 1906, and publicly opened immediately thereafter, to furnish for the naval station, Olongapo, P. I., a steel bridge, 60-foot span, 15-foot roadway. To be delivered on the water front at New York, N. Y., or San Francisco, Cal., at the option of the contractor. Copies of plans can be obtained upon application to the Bureau of Yards and Docks, Navy Department, Washington, D. C. Applications for proposals should refer to Schedule 580. Blank proposals will be furnished upon application to the navy pay offices, New York, N. Y., and San Francisco, Cal., or to the Bureau. H. T. B. HARRIS, Paymaster-General U. S. N. 5-23-06.

Start A Mail Order Business.

Acknowledged by shrewd business men as one of the most pleasant and profitable business in the world. Stop working for others—big profits—money comes with orders—our plan for starting beginners is a sure winner and offers you a chance to get in business for yourself. Full particulars for stamp.

A. FRANKLIN-HOWARD CO., Kansas City, Mo.

DO YOU

Want your PATENTS Developed?

Experimentals, Models and fine instrument work. Surveying instrument repairs a specialty. Richter & Poncet, 115 Court Street, Hoboken N. J. Two minutes from D. L. W. Depot

ELECTRIC BOOK FREE

Interesting and instructive. Shows the Newest High Grade Electric Supplies and Novelties at Lowest Prices in the world. E. Dewey Electric Co., Milwaukee, Wis.

STEEL TYPEWRITER TYPE

We make, or will furnish complete outfit for making, all styles. **NEW YORK STENCIL WORKS,** 100 Nassau Street, New York.

Magical Apparatus.

Grand Book Catalogue. Over 700 engravings 25c. Parlor Tricks Catalogue, free. MARTINKA & CO. Mfrs., 493 Sixth Ave., New York.

MASON'S NEW PAT. WHIP HOISTS

save expense and liability incident to Elevators. Adopted by principal storehouses in New York & Boston. Manfd. by **VOLNEY W. MASON & CO., Inc.** Providence, R. I., U. S. A.

A MINIATURE TELEPHONE BOOTH

AGENTS WANTED. Just out. Great success. Indispensable. Send 50c. for Samples and Terms. Engelman Mfg. Co., 74 Hudson St., Jersey City, N. J.

INVENTORS

We manufacture METAL SPECIALTIES of all kinds, to order; largest equipment; lowest prices. Send sample or model for low estimate and best expert advice FREE. **THE EAGLE TOOL CO.,** Dept. A, Cincinnati, O.