

places by a single line wire, as shown in your sketch. There is one on the market at present which ring in this way. One wire must be carried entirely around the circuit, and a wire must also go from each push to the annunciator.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending August 8, 1905 AND EACH BEARING THAT DATE

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

Table listing inventions with patent numbers, including items like 'Adding machine ribbon feeding mechanism', 'Adjustable pipe', 'Advertising device', etc.

'Star' Foot and Power Screw Cutting Lathes. FOR FINE, ACCURATE WORK. SENeca FALLS MFG. CO. 695 Water Street, Seneca Falls, N.Y., U.S.A.

ENGINE & FOOT MACHINE SHOP OUTFITS. LATHES TOOLS & SUPPLIES. SEBASTIAN LATHES CO. CINCINNATI, O.

GIANT STEAM SHOVELS. Toledo 125 Ohio, U.S.A. Vulcan Place. The Vulcan Iron Works Co.

Lowest Round Trip Rates to Pacific Coast Points via the Nickel Plate Road. \$69.50 Buffalo to Portland, Seattle or Tacoma and return, daily until September 29.

Veeder Counters. to register reciprocating movements or revolutions. Cut full size. Booklet Free. VEEDER Mfg. Co. Hartford, Conn.

THE MIDGET DYNAMO OR MOTOR. Price as shown \$7.50 Without Hand Power \$4.50. ELBRIDGE ELECTRICAL MFG. CO. Water St., ELBRIDGE, N. Y., U. S. A.

PATENTS. Our Hand Book on Patents, Trade-Marks, etc., sent free. MUNN & CO., 361 Broadway, N. Y.

THE 'LEADER' 1 1/2 H.P. Gasoline Auto-Marine Engine. Built like a watch. Beautifully finished. Accurately constructed. Light, strong, reliable and noiseless in operation.

Do You Use Chucks? If so our catalogue will interest you. Sent free. New styles. New sizes. Liberal discounts.

THE CUSHMAN CHUCK WORKS. Chucks Exclusively. Hartford, Conn.

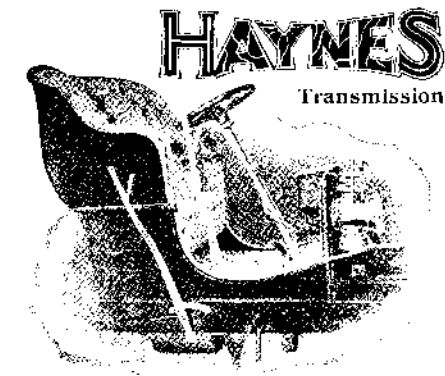
The Wonder Gasoline Motors. Something New and Up-to-date. More power for less money than any other machine on the market.

THE HARRINGTON & KING PERFORATING CO. PERFORATED METALS OF EVERY DESCRIPTION FOR ALL USES. SCREENS OF ALL KINDS. 225 NORTH UNION ST. CHICAGO, ILL.

THE B. F. BARNES 14-INCH DRILL. is adapted for work from 1-16 inch to 3/4 inch. A strong, substantial well built drill. Plain lever or power feed as desired.

15 Days' Trial on This MARINE ENGINE. No Cash Payment required. We pay freight distance 100 miles. SPARK PLUGS \$1.50, guaranteed 365 days; also second-hand engines. M'DONALD & ERICKSON 34 W. Randolph St., Chicago.

Table listing various mechanical parts and their prices, including 'Door and window screen', 'Door closer', 'Door securing means', etc.



The transmission gear of the 'Haynes' is sure, silent, and above all—simple. When the friction clutch that controls the master gears is released, and the clutch that locks the engine shaft engaged, the power is conveyed directly to the rear axle and all other gears in the transmission stand idle.

THE HAYNES-Apperson CO. Kokomo, Ind. Member A. L. A. M.

HOW TO MAKE AN ELECTRICAL Furnace for Amateurs Use.—The utilization of 110 volt electric circuits for small furnace work. By N. Monroe Hopkins.

THE Nulite Vapor Lamps. For Home, Store and Street. We also manufacture Table Lamps, Wall Lamps, Chandeliers, Street Lamps, Etc.

BALL BEARINGS 'KNIPE' PATENTS. THE COMBINATION: A BALL bearing and Cone Combined. Lowest price and best bearing made.

SPRINGFIELD ABRASIVE POLISHING WHEELS AND BLOCKS. Used for polishing machinery, cutlery, and edge tools of all kinds.

WOLVERINE SELF STARTING AND REVERSING Gasoline Marine Engines. 3 to 15 horse power. Launches 15 to 75 ft. Write for catalogue.

ELECTRO MOTOR. SIMPLE HOW TO make.—By G. M. Hopkins. Description of a small electric motor devised and constructed with a view to assisting amateurs to make a motor which might be driven with advantage by a current derived from a battery, and which would have sufficient power to operate a foot lathe or any machine requiring not over one man power.

OSGOOD'S STANDARD SCALES. For Mines, Coal Yards, Gen'l. Weighing. OSGOOD SCALE CO. Binghamton, N. Y.

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 146.

SOLID TIRE WEAR
With Pneumatic Resilience
your tire troubles will be ended if you use
Swinehart Cushion Tires
on your car. They ride easiest, require less power, do not skid, climb steeper hills, run in car tracks, eliminate breakdowns from punctures and blowouts.
Ask for free booklet No. 3
Swinehart Clincher Tire & Rubber Co.
Akron, Ohio

The Only System
That MOISTENS DRIES COOLS WARMS AIR
Removes Dust and Ventilates.
Its versatility is proof of its correctness.
100 per cent. of our installations are successful.
Regenerated Cold Air Co.
88 Broad Street. BOSTON. MASS.

Washburne's Patent
"O. K." Paper Fasteners
The "O. K." Paper Fastener is the only paper fastener which, when attached, stays attached, yet is detachable without injury to the paper or the fastener, and is easy to apply and easy to remove.
They are always ready for use and require no machine for putting them on or taking them off, and they always work.
Put up in brass boxes of 100 Fasteners each, ten boxes to a carton.
Price 40 cents a box; \$1.50 per 1000.
Made in 3 sizes. At all stations or from the Manufacturer, postage or express prepaid.
Sample box, assorted, 10c. Illustrated Booklet Free.
JAMES V. WASHBURNE, Mfr., 210 E. Genesee St., Syracuse, N. Y.

Head and Shoulders Above 'Em All
This polishing head is fitted with a three-jawed chuck, holding up to 3/4 inch. This added idea is a feature all users will appreciate.
List Price, \$4.00
Our catalogue ought to be before you now. Send address.
GOODELL-PRATT COMPANY Greenfield, Mass.

"ANATOMY OF THE AUTOMOBILE"
By DR. DYKE
Contains full descriptions, detailed mechanical drawings and full operating instructions for all standard American automobiles and several foreign cars. DIAGRAMS OF ELECTRICAL CONNECTIONS. Full descriptions and drawings of successful repairs. Three books in one. Over 700 pages and 300 illustrations. Invaluable to the auto owner, agent, repairman and intending purchaser. Price, postpaid, \$2.50. Samples sent on request. Get our catalogue of auto supplies.
A. L. Dyke Auto Supply Co., Olive and Walton Sts., St. Louis
ROBT. F. BARRON, Pres. and Mgr. ROY F. BARRON, Sec. and Treas.

A GOOD INVESTMENT
For \$1.75 we will send by express (not prepaid), complete N. D. outfit with full instructions for learning
TELEGRAPH OPERATING.
A fascinating study that will enable you to earn good wages. Send for our catalogue.
Established 1879.
J. H. BUNNELL & CO., Inc. 20 Park Place New York

The Photoscope
Takes pictures as fast as a person can pose in front of it. Delivers a perfect Photograph, neatly framed and finished, in less than one minute, and will operate regardless of the weather, making as perfect a likeness under the electric light as on a bright sunny day. The only slot machine that produces a perfect photo.
M. S. KLINE
45 N. Division Street, Buffalo, N. Y.

It Guards The Straits
of Gibraltar—that colossal towering rock, the emblem of strength and stability, a sentinel of the nations keeping its sleepless vigil.
Another sentinel stands ready to guard against the straits with which most men or their families have something to do, at one time or another—especially their families.
The Prudential
is that guardian—easily yours, for you and your family, against the day when you or they are in the straitened ways of adversity. It will be to your advantage to learn how The Prudential can do this. Fill out coupon and send it in to-day.
Without committing myself to any action, I shall be glad to receive free particulars and rates of Policies
For \$
Name Age
Address
Occupation Dept. 121
The Prudential Insurance Co. of America
Incorporated as a stock company by the State of New Jersey
JOHN F. DRYDEN, President
Home Office: NEWARK, N. J.

Linotype machine, D. Petri-Palmedo 796,559
Linotype machine space bar, Street & Karsten 796,770
Liquids, apparatus for automatically controlling the flow of, A. Priestman 796,672
Logotype machine, P. T. Dodge 796,526
Loom warp stop motion, G. E. Chandler 796,563
Loom warp stop motion, W. H. Baker, 796,602 to 796,604
Loom, weft replenishing, A. E. Walker et al 796,950
Loom weft replenishing mechanism, A. E. Walker et al 796,582
Looms for weaving, flange of warp beams used in, W. Blackburn 796,400
Lubricator, Henry & Sneed 796,511
Lubricator, J. W. Lester 796,536
Lubricator, O. G. Kipp 796,659
Lumber edge dresser, J. E. Finnegan 796,572
Magazine charger, T. C. Johnson 796,974
Match box, A. E. Smith 796,875
Mechanical movement, F. L. Eager 796,416
Mechanical movement, W. C. Winfield 796,486
Metal cutting and stamping apparatus, attachment for, G. Gardner 796,906
Metal, extruded, W. Hoopes 796,970
Meter, J. Walsh 796,533
Milk and making same, peptonized, J. H. Campbell 796,496
Mining apparatus, placer, J. L. Weaver 796,750
Mining coal, C. R. Claghorn 796,498
Mold, J. A. Stransky 796,551
Molding device, F. J. Hall 796,635
Molding device, J. P. Hall 796,641
Molding machine, J. B. Ramp 796,603
Molding machine, E. B. Misner 796,621
Molding machine or apparatus, J. P. Hall 796,640
Monkey wrench, A. Stenech 796,943
Mop holder, W. B. Lacy 796,662
Motor, J. W. Smith 796,941
Motor control system and switch therefor, L. A. Tirrill 796,474
Mower and sweeper, motor lawn, W. H. & H. T. Caldwell 796,511
Mowing machine shoe, Simpson & Nicht 796,610
Musical instrument, D. C. Spurgeon 796,878
Musical instruments, pneumatic motor for controlling sheets of, M. Clark 796,706
Nest box, W. H. Rice 796,568
Nut lock, E. W. Stevens 796,539
Nut lock, J. W. Fuqua 796,574
Nut lock, F. C. Anderson 796,691
Nut lock, L. A. Cull 796,900
Oil heater, H. W. Wagener 796,949
Oil to piston rods and engine cylinders, device for conducting, C. B. Wenner 796,618
Optician's strap former and gage pliers, F. P. Higginson 796,647
Ore jig, M. P. Baugh 796,553
Ore reduction apparatus for treating slimes in, G. A. Duncan 796,503
Ore treating machine, J. R. Parks 796,753
Ores, apparatus for treating refractory, J. Leede 796,585
Ores containing antimony, treatment of, J. S. MacArthur 796,849
Ores, treating, J. R. Parks 796,754
Oven, baker's, G. F. Smith 796,705
Oven, portable, G. E. Melan 796,593
Package fastener, J. C. Conde 796,564
Package filling machine, H. Smith 796,611
Packing for reciprocating parts, L. Katzenstein 796,658
Packs on pack animals, means for fastening, C. H. Baker 796,555
Painting machine, wheel, E. L. Moran 796,442
Paper binder strip holder, roll, E. C. Elder 796,505
Paper making machine, J. Ferrigot 796,901
Peat and artificial fuel machine, Green & Martin 796,508
Penholder, W. A. Boyce 796,626
Phonic apparatus, T. H. Macdonald 796,743
Photographic plate carrying and changing apparatus, W. A. Peters 796,447
Picture hanger, W. T. Shute 796,609
Pile driver, sheet, A. B. Clark 796,703
Pipe joint calking appliance, P. Mueller 796,594
Piper, A. L. Hurst 796,781
Planter, C. N. Chouteau 796,411
Plate bending machine, E. W. Summers 796,945
Plew, E. Yarbrough 796,951
Pole piece, A. Churchward 796,702
Power transmitting mechanism, W. Marshall 796,748
Printing and other machines, web feeding mechanism for, A. A. Du Bois 796,502
Printing press, W. M. Clark 796,707
Propeller shaft mounting and bearing, W. Clarkson 796,510
Propulsion wheel, A. O. Fletcher 796,836
Protractor, A. E. Enberg 796,417
Pulley frame, sash, W. C. Fischer 796,573
Pulley weight, F. R. Parker 796,929
Pulp boards, machine for making, F. E. Keyes 796,584
Pulp felting machine, F. E. Keyes 796,583
Pulverizing and stone separating machine, clay, J. E. Hall 796,639
Pump, S. S. Whitcomb 796,782
Pump, E. A. Harrison 796,909
Pump, centrifugal, P. Albertine 796,489
Pump, vacuum, J. C. Dean 796,415
Pumping apparatus, P. C. Hewitt 796,724
Punching machine, Yeatman & Messinger 796,455
Punching machine, H. G. Morse 796,523
Puzzle, E. C. Howland 796,426 to 796,428
Race track machine, C. W. Collyer 796,513
Raft or other craft, C. A. de Lambert 796,846
Rail head, E. B. Huser 796,912
Rail brace, J. H. Longworth 796,438
Rail fastener, Busch & Regden 796,806
Rail joint, S. Aubry 796,551
Rail joint, B. Wolhaupter 796,689
Railway conductor rail holder, electric, G. L. Courtenay 796,501
Railway rail coupling, F. N. Marston 796,919
Railway rolling stock replacer, D. D. Holmes 796,515
Railway signaling device, J. Irwin 796,728
Railway sign, G. E. Lemmen 796,436
Railway tie, R. B. Lamb 796,736
Railway tie and rail brace, sheet steel, F. McCune 796,525
Railway track rail gage holder and brace therefor, J. H. Crowley 796,518
Railway vehicle brake rigging, C. N. Achari et al 796,621
Recording instrument, Rypinski & Robinson 796,675
Reel, See Yarn reel 796,969
Refrigerating apparatus, W. C. Heister 796,625
Resilient wheel, R. Bernat 796,440
Ribbon roll retainer, T. J. Lynch 796,591
Rock drill, J. T. Blackett 796,890
Roll turning apparatus, Ford & Allen 796,633
Roller mill, W. D. Gray 796,507
Rollers together, mechanism for locking the sections of traction, W. H. Caldwell 796,895
Rotary cutter, I. L. Conkling 796,708
Rotary engine, J. Clark 796,704
Rotary engine, P. O. Grundberg 796,718
Retating screen, W. W. Winale 796,485
Rubber tread, P. W. Pratt 796,930
Sash fastener, window, Dodds & Clark 796,710
Sash holder or lock, portable window, E. E. Barber 796,793
Saw, H. Boel 796,901
Sawmill set works, H. McDermott 796,925
Scaffolding support, M. Cavanagh 796,807
Screw gage, E. Spalding 796,612
Sealing machine, envelope, D. G. Saunders, Jr. 796,936
Secondary battery, J. Langelaan 796,435
Sewing machine, shoe, J. A. Rheult 796,866
Sewing machine treadle stand, E. B. Allen 796,622
Shaft coupling, W. H. Nicholson 796,854
Shaft coupling, flexible, A. U. Patchen 796,527
Sheaf carrier attachment, D. W. Smith 796,463
Shearing guide, C. W. Stimpson 796,769
Shears or scissors, W. M. Viser 796,543
Sheathing, metallic, L. Steinetz 796,768
Sheet metal clip, H. A. Streiner 796,468
Sheet metal, manufacturing planished, A. Ridd 796,452
Shirt, shooting, C. J. Ferguson 796,711
Shoulder brace, J. H. Bailey 796,623
Show case, S. Jessop 796,579
Show jar, transparent, K. Panay 796,752
Snuffer works and latch, window, H. G. Richardson 796,673
Sifter, gyratory, J. Warrington 796,478

Valuable Books!
REVISED and ENLARGED EDITION
The Scientific American
Cyclopedia Of Receipts, Notes and Queries.
15,000 Receipts. 734 Pages.
Price, \$5.00 in Cloth. \$6.00 in Sheep. \$6.50 in Half Morocco. Post Free.
This work has been revised and enlarged,
900 New Formulas.
The work is so arranged as to be of use not only to the specialist, but to the general reader. It should have a place in every home and workshop. A circular containing full Table of Contents will be sent on application. Those who already have the Cyclopedia may obtain the
1901 APPENDIX.
Price, bound in cloth, \$1.00 postpaid.

JUST PUBLISHED
Scientific American Reference Book
12mo. 516 Pages. Illustrated. 6 Colored Plates. Price \$1.50, postpaid.
The result of the queries of three generations of readers and correspondents is crystallized in this book, which has been in course of preparation for months. It is indispensable to every family and business man. It deals with matters of interest to everybody. The book contains 50,000 facts, and is much more complete and more exhaustive than anything of the kind which has ever been attempted. The "Scientific American Reference Book" has been compiled after gauging the known wants of thousands. It has been revised by eminent statisticians. Information has been drawn from over one ton of Government reports alone. It is a book of everyday reference—more useful than an encyclopedia because you will find what you want in an instant in a more condensed form. Sixty years of experience alone have made it possible for the publishers of the Scientific American to present to the purchasers of this book a remarkable aggregation of information.

American Tool Making and Interchangeable Manufacturing
By JOSEPH V. WOODWORTH
This is a complete practical treatise on the Art of American Tool Making and System of Interchangeable Manufacturing as carried on to-day in the United States. In it are described and illustrated all of the different types and classes of small Tools, Fixtures, Devices and Special Appliances which are, or should be, in general use in all machine manufacturing and metal working establishments where economy, capacity and interchangeability in the production of machine metal parts are imperative.
All of the tools, fixtures and devices illustrated and described have been, or are, used for the actual production of work, such as parts of Drill Presses, Lathes, Patent Machinery, Typewriters, Electrical Apparatus, Mechanical Appliances, Brass Goods, Composition Parts, Mould Products, Sheet Metal Articles, Drop Forging, Jewelry, Watches, Metals, Coins, etc.
The treatment of each tool described and illustrated is such as to enable any Practical Man to Design, Construct and use Special Tools, Dies and Fixtures, for the Rapid and Accurate Production of Metal Parts interchangeably.
To the Machinist, Tool Maker, Designer, Die Maker, Superintendent, Manager and Shop Foreman or this book shows the 20th Century Manufacturing Methods and Assists in Reducing the Expense and Increasing the Output and the Income. A book on the System of Interchangeable Manufacturing—The System that has Won for the United States the Industrial Supremacy of the World.

535 Pages Bound in Cloth 600 Illustrations
PRICE \$4.00
JUST OUT
Modern Gas-Engines and Producer-Gas Plants
By R. E. MATHOT, M.E.
314 Pages Bound in Cloth 152 Illustrations
Price \$2.50, Postpaid
A Practical Guide for the Gas-Engine Designer and User.
A book that tells how to construct, select, buy, install, operate, and maintain a gas engine.
No cumbersome mathematics: just plain words and clear drawings.
The only book that thoroughly discusses producer-gas, the coming fuel for gas-engines. Every important pressure and suction producer is described and illustrated. Practical suggestions are given to aid in the designing and installing of producer-gas plants.
Write for descriptive circular and table of contents.

MAGIC Stage Illusions and Scientific Diversions, including Trick Photography.
This work appeals to old and young alike, and it is one of the most attractive holiday books of the year. The illusions are performed by the highest class of engravers, and the exposes of the tricks are, in many cases, furnished by the prestidigitateurs themselves. Conjuring, large stage illusions, fire-eating, sword-swallowing, ventriloquism, mental magic, automata, curious toys, stage effects, photographic tricks, and the projection of moving photographs are all well described and illustrated, making a handsome volume. It is tastefully printed and bound. Acknowledged by the profession to be the standard work on Magic.
By A. A. HOPKINS. 568 pages. 420 illus. Price \$2.50.
MUNN & COMPANY
No. 361 Broadway, New York City

WILLIAMS' SHAVING SOAP

"The only Real Shaving Soap"

Williams' Shaving Sticks, Shaving Tablets, Toilet Waters, Talcum Powder, Jersey Cream Toilet Soap, etc., sold everywhere.

Write for booklet "How to Shave"

THE J. B. WILLIAMS CO.
Glastonbury, Conn.

Clean House With Air

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

FREE CATALOGUE

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

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

**ELECTRICAL TRAINS
TROLLEY CARS DYNAMOS
NOVELTIES**

THE CARLISLE & FINCH CO
233 E. CLIFTON AVE
CINCINNATI, O.

WRITE FOR CATALOGUE "B"

SAFETY IN CASE OF FIRE

COVERT FIRE ESCAPE

Each room and window is provided with a safe and permanent means of egress, obviating the rushing through smoky or burning halls and corridors and consequent dangers to life and limb. Any number of people can escape easily and quickly by the new method. Best and most economical fire escape system ever devised. For circulars and full particulars, address

COVERT FIRE ESCAPE CO., TROY, N. Y.

Road Freight Traction Engines

Over 200 in use on Pacific Coast alone. Siberia, Spain, India, Central America, Sandwich Islands have them.

Engines 110 Horse-power. Wood, Coal, or Oil burning. Hauls 50 tons, takes grades 5 to 25 per cent. Capacity each car 16 tons.

THE BEST MFG. COMPANY
San Leandro, California

Cable Address, DANBEST. Write for our New Catalogue No. 13.
Cables, Western, Union and McNeil.

THE IDEAL SIGHT RESTORER

Is Your Sight Failing?

All refractive errors, muscular trouble & chronic diseases of the Eye cured by scientific MASSAGE.

Illustrated treatise with affidavit testimonials free. Address

THE IDEAL COMPANY,
239 Broadway, New York.

Sight and force feed lubricator, Iver & Ward	796,973
Sign, electric, C. T. Bradshaw	796,559
Sign, illuminated, G. E. Turner	796,475
Sign, illuminated, D. F. Duck	796,628
Skate, E. Hunsell	796,913
Sled runner, M. E. Good	796,575
Seat catcher, J. Klein	796,434
Sound record shaving machine, J. F. Ott	796,557
Sounding device, S. Earle	796,504
Spark arrester, T. Nimmo	796,751
Spear, R. W. Butler	796,413
Speed limit controller, F. Lundsten	796,666
Spinning, doubling, and twisting yarns or threads, machine for, W. Gaskell	796,716
Square, detortion timber, J. Herche	796,645
Stability to unstable bodies, means for imparting, L. Brennan	796,893
Stacker, swinging, C. A. Beeche	796,624
Stalk cutter, J. R. Weatherly	796,884
Stanchion, cattle, C. W. Mayer	796,522
Standards, simultaneously adjusted, twin, F. W. Coy	796,815
Station and program indicator, A. H. Wood	796,787
Steam engine, J. H. Hoyer	796,654
Steam generator, D. Crowther	796,565
Steam generator fire box, D. Crowther	796,566
Steam separator, C. E. Huxley	796,429
Steam trap, H. H. Humphrey	796,516
Sterilizers, centrifugal, device for applying, O. H. Savage	796,607
Strainer, M. C. Hernan	796,910
Suspenderettes, I. N. P. Stokes	796,879
Suspenders, H. E. S. Chayes	796,414
Swingtree connection, C. A. Ross	796,454
Switch throwing device, E. Jones	796,581
Switchboard for meter tests, R. A. Dangler	796,821
Synchronizing system, P. Ribbe	796,867
Tank lug, E. J. Harmon	796,855
Telegraphic receiver, A. Muirhead	796,597
Telegraphic transmitter, A. Muirhead	796,596
Telegraphy, electric, A. Muirhead	796,596
Telegraphy, receiver for use in wireless, E. Branly	796,800
Telephone call mechanism, T. R. Campbell	796,562
Telephone system, K. B. Miller	796,441
Telephone system, W. W. Dean	796,568
Theatres, etc., signaling apparatus for, T. E. Miller	796,920
Thill iron, C. Heilrath	796,967
Threads, device for the manufacture of artificial silk, R. Linkmeyer	796,740
Threshing machine, Davis & Lehenbauer	796,567
Threshing machine bagging attachment, R. V. Wallace	796,477
Ticket cabinet, W. Camph	796,700
Ticket, transfer, W. C. Pope	796,979
Tiles, brick, and the like, manufacture of, J. H. Marlow	796,915
Time recording device, A. B. Ray	796,532
Tire, A. De Laski	796,664
Tire and rim, J. Butler	796,894
Tire setter, G. W. Tinkey	796,473
Tire setter, B. Ballenger	796,580
Tobacco box, plug, F. E. Bowman	796,558
Tobacco pipe, N. B. Stone	796,613
Tongs lifting, J. P. Hall	796,642
Tool, C. S. Schultz	796,356
Torpedo, railway signal, Dutcher	796,571
Tower, rotary pleasure, W. R. Snyder	796,570
reissue	12,377
Toy, F. Herlich	796,725
Track sanding device, W. H. Kilbourn	796,976
Tree guard, M. B. Lloyd	796,741
Trolley, W. P. Wisemann	796,482
Trolley appliance, F. P. Criner	796,817
Trolley catcher, S. J. Buckland	796,687
Trolley wheel, J. G. A. Riecke	796,830
Trowsers presser, H. A. Pezent	796,471
Truck, W. H. Armstrong	796,792
Truck bolster, car, J. Schaffer	796,457
Truck, car, W. F. Kiesel, Jr.	796,733
Truck for moving heavy loads, G. Benisch	796,795
Tubing for shafts and tunnels, construction of joints in, R. Hoffmann	796,423
Tubing, making lapweld, Schuhmann & Matheson	796,535
Tuning pin protective cap, I. B. Rosenbrantz	796,677
Turbine, fluid, J. H. K. McCallum	796,444
Turbine governing mechanism, O. Junggren	796,518
Turbine governing mechanism, elastic fluid, R. H. Rice	796,451
Turbine, reversing, L. Hellmann	796,721
Turbines, nozzle for elastic fluid, O. Junggren	796,432
Tweezers, F. L. Hann	796,510
Type, R. Withers	796,487
Typewriter cover, J. L. Ramsay	796,804
Typewriting machine, G. W. Sherin	796,679
Typographic machine, H. A. Agricola, Jr.	796,790
Umbrella handle, detachable, B. Rothschild	796,455
Union, J. T. & G. W. Hayden	796,644
Urea, making, Foersterling & Philipp	796,713
Utensil handle, C. B. Stephen	796,465
Valve and checker for operating hydraulic presses, automatic change, A. W. French	796,635
Valve, gate, C. Jaeger	796,430
Valve, hydraulic, W. G. Chryst	796,896
Valve repairing machine, Kardatzke & Radovich	796,731
Vehicle brake apparatus, E. H. Johnson	796,657
Vehicle evener, A. L. McGregor	796,598
Vehicle spring, L. L. Sheehan	796,874
Vehicle wheel, F. A. Seifering	796,873
Ventilator, W. H. Jardine	796,914
Vessels, apparatus for taking up the slack in the steering ropes of, J. F. Hanscom	796,720
Veterinary mouth speculum, M. McNalley	796,852
Wagon, dumping, A. Schmitt	796,761
Wagon spindle, detachable, J. H. Tynes	796,542
Wagon standard, J. H. Cook	796,814
Wall, J. A. Ferguson	796,830
Wall coating composition, E. F. Reed	796,604
Warping machine electrical stop motion, R. C. Herten	796,491
Water can, M. E. Gray	796,717
Water closet, D. S. Schureman	796,605
Water closet, J. F. Leanhart	796,545
Water closet flushing valve operating mechanism, J. E. Fitzgerald	796,835
Water elevator, windlass, L. Y. Randall	796,932
Water heater, A. Winter	796,548
Water heater, J. McCartney	796,924
Water tube boiler, J. Kennedy	796,975
Weather strip, A. Lehigh	796,732
Web fork mechanism, W. H. Reading	796,761
Weight for reciprocating devices, variable return, H. J. Leschen	796,739
Weight supporting device, A. Maloney	796,589
Well cleaning out device, Osborn & Young	796,446
Whalebone substitute, E. M. Bessuett	796,798
Wind power mill, J. Maiz	796,588
Winding machine, bobbin or quill, Wilde & Cosgrove	796,885
Wire drawing dies, machine for forming, J. A. Herten	796,726
Wire fabric machine, C. M. Lamb	796,663
Wires, clamp for attaching ground, G. R. Blackburn	796,797
Woodworking machine, J. Warren	796,779
Woodworking tool, H. Simpson	796,537
Wool, separating extractive and adhesive matter from, A. P. Quackenbos	796,530
Wrench, B. C. Davis	796,822
Yarn reel, L. F. Earl	796,962

DESIGNS.

Chair frame, G. Stickley	37,508
Chair frame, dining, G. Stickley	37,507
Fabric, pile, F. E. Kip	37,509
Inkstand, F. M. Ashley	37,504 to 37,506
Locket, G. Mason	37,503

TRADE MARKS.

Alternative solution for the treatment of mucous membrane, Kress & Owen Co.	45,169
Aluminum and aluminum alloys, Pittsburg Reduction Co.	45,084
Axles, wagon and carriage, Concord Axle Co.	45,297
Baking powder, J. C. Grant Chemical Co.	45,144
Baking powder, Sherman Brothers & Co.	45,165

AFTER 300 YEARS SCIENCE ELIMINATES THE POSSIBILITY OF A BURNT TONGUE

Price \$2.00 Postpaid

Pipe weighs one ounce only

Large capacity bowl

Inventor and Patentee Direct to Smoker

French Briar Sterling Silver Vulcanite

Rarefaction—A, B, C
Diffusion—1, 2, 3
Condensation—B
Drainage—A, B
Ventilation—4

\$1,000 Guarantee With Each Pipe. Endorsed by Physicians

No trade intervention. Correspondence earnestly asked. Please send for booklet

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

SAVE FIRE LOSS

Seconds count. Be ready at the start with Badger's Fire Extinguisher and you can put out any kind of a fire. A request will bring you the information you wish, FREE.

BADGER FIRE EXTINGUISHER CO.
80 Portland St., Boston, Mass.

THE EAGLE BRAND ONION SKIN FINISH CARBON PAPER

is distinctly a New Invention. It's just as clean to handle as a sheet of white paper. Manifolds like print. Lasts twice as long as ordinary carbon paper. It is made on scientific lines by new and superior machinery. Write for free samples and state whether you use Pen, Pencil or Typewriter Carbon.

AMERICAN RIBBON AND CARBON COMPANY
206 Mill St., Rochester, N. Y., U. S. A.

You Have a Telephone In Your Office, Of Course

Have you one in your home? It will save many steps and much time and annoyance. It will pay for itself in car fare saved. Call No. 9010 Cortlandt, Contract Dept., for full information

New York Telephone Co. 15 Dey Street

THE MIETZ & WEISS OIL ENGINES

Operated by Kerosene Oil, Fuel Oil, Distillate. Safest, Simplest, Most Economical and Most Reliable Power on the market.

Highest award for Direct Coupled Oil Engines and Generator, Paris Exposition, 1900. Gold Medal, Pan American Exposition, 1901. Charleson Exposition, 1902. Gold Medal and Special Diploma, Louisiana Purchase Exposition, St. Louis, Mo., 1904.

AUGUST MIETZ
128-128 Mott St., New York, U.S.A.
Catalogue Dept. 24.

ROTARY PUMPS AND ENGINES.

Their Origin and Development.—An important series of papers giving a historical resume of the rotary pump and engine from 1588 and illustrated with clear drawings showing the construction of various forms of pumps and engines. 38 illustrations. Contained in SUPPLEMENTS 1109, 1110, 1111. Price 10 cents each. For sale by Munn & Co. and all newsdealers.

PAN-TOG A GENTLEMAN'S DRESSING CHAIR

which presses and creases your trousers while you sleep. Provides an improved hanger for coat and vest, a handy place for slippers or shoes. This chair will positively prevent baggy knees by 500 lbs. pressure instantly applied. Your clothing will appear as fresh every morning as if just from the tailor's. Saves its cost in 6 months and will last a lifetime. Indispensable in a gentleman's apartment. Price within reach of all. Write to day for illustrated descriptive folder and price.

CENTRAL MANTEL CO. 1212 Olive St., St. Louis, Mo.

THE HANNA MFG. CO.

Engineering Instruments

382 River Street, Troy, N. Y.

Illustrated Catalogue on Application

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

From 9-in. to 13-in. swing. Arranged for Steam or Foot Power, Velocipede or Stand-up Treadle.

Send for Lathe Catalog.

W. F. & JNO. BARNES CO.
Established 1872.
1999 Ruby St., Rockford, Ill.

"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.

Subscribe Now, and Include the Beautiful July and August Numbers, which will soon be Entirely Out of Print

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



Build Your Own Boat

BY THE Brooks System

If you can drive a nail and cut out a piece of material from a full-sized pattern - you can build a canoe-row-boat-sail-boat-or launch - in your leisure time - at home, and the building will be a source of profit and pleasure.

All you need is the patterns, costing from \$2.50 up, and materials, from \$5.00 up. The tools are common in every household. Patterns of over 40 styles and sizes - all lengths from 12 to 55 feet.

The Brooks System consists of exact-size printed paper patterns of every part of the boat - with detailed instructions and working illustrations showing each step of the work - an itemized bill of material required and how to secure it.

Over 6,000 amateurs successfully built boats by the Brooks System last year. Fifty per cent. of them have built their second boat. Many have established themselves in the boat-manufacturing business.

Catalogue and particulars free. For 25 cents 100-page catalogue containing valuable information for the amateur yachtsman, showing several working illustrations of each boat, and a full set for one boat. Full line in knock-down and completed boats. When so ordered, patterns are expressed, charges prepaid, C.O.D., to allow examination.

Brooks Boat Mfg. Co.
Originators of the Pattern System of Boat Building
408 Ship Street
Bay City, Mich., U.S.A.



SINGLE BARREL SHOT GUN

"The high-grade single gun."

Simplest "take-down" gun made. Top snap; center hammer; rebounding lock. 12, 16 and 20 gauges; automatic and non-ejector styles. Your dealer can supply or we will sell to you direct.

Illustrated Catalogue tells about our complete line - FREE.

HARRINGTON & RICHARDSON ARMS CO.
Dept. S Worcester, Mass.
Makers of H & R Revolvers.

BABBITT METALS. - SIX IMPORTANT formulas. SCIENTIFIC AMERICAN SUPPLEMENT 1123. Price 10 cents. For sale by Munn & Co. and all newsdealers. Send for catalogue.

The Gibson Monograph



Two Strikes and the Bases Full worth of \$6 Gibson Proofs \$2 mounted and all ready for framing

Upon receipt of \$2 (stamps, draft or money order) we will send by mail, prepaid, The Gibson Monograph - "Charles Dana Gibson, A Study of the Man, with Some Recent Examples of His Best Work." This is a beautifully printed volume measuring 15 x 10 inches. In addition to the thirteen choice illustrations printed in the text there are six full-page drawings in his very best manner that are separately mounted on heavy matboard, ready for framing. The results are particularly dainty and pleasing. We have never sold these proofs for framing at less than \$1 each - the demand for them is constant. The price of these six alone without the text or accompanying illustrations would be \$6. This is the only book on the foremost American artist. For a two-cent stamp we will send a catalogue showing small facsimiles of the six pictures and the cover.

ADDRESS THE BUSINESS OFFICE, COLLIER'S
412 W. 13th St., New York City

Beer, Chr. Brewing Co.	45,063
Beer, McAvoy Brewing Co.	45,137
Beer, lager, Chattanooga Brewing Co.	45,061
Beer, lager, J. Gahn & Son.	45,114
Beer, lager, Grand Rapids Brewing Co.	45,106
Boots and shoes, dressing for the uppers of, C. L. Hawthay & Sons	45,271
Boots and shoes, leather, Bay State Shoe & Leather Co. of N. Y.	45,273
Boots and shoes, leather, Whorf & Marshall	45,274
Boots and shoes, leather, H. C. Jenney	45,291
Boots and shoes, leather, Roberts & Hoge	45,294
Boots and shoes, leather, Stephen Putney Shoe Co.	45,295
Boots, shoes, and slippers, leather and leather and cloth, G. F. Daniels & Co.	45,155
Brand, John Ellwanger Co.	45,187
Bread, cakes, biscuits, and crackers, Wagner Baking Co.	45,203
Buggies, phaetons, surreys, driving and spring wagons, etc., L. B. Tebbetts & Sons Carriage Company	45,156
Buggies, phaetons, surreys, driving wagons, spring wagons, and like vehicles, Commonwealth Carriage Company	45,206
Buttons, cloth covered and pearl, H. A. Austin & Co.	45,103
Calculating machines, key operated, Felt & Tarrant Mfg. Co.	45,076
Calicoes, American Printing Company	45,088 to 45,090
Canned fruits and vegetables, Bloomington Canning Co.	45,162
Canned vegetables and canned fruits, H. C. Baxter & Bro.	45,161
Canned vegetables and fruits and canned tomato paste, P. Roncoroni	45,164
Carpets and rugs, pile, Ivins, Dietz & Metzger Co.	45,100
Cars, railway, Goodwin Car Company	45,298
Cartridges, loading, Creams, Winchester Repeating Arms Co.	45,249
Castings, railway car, National Malleable Casting Company	45,069
Castings, steel, Aultman & Taylor Machinery Company	45,067
Cement, glue, and paste, adhesive, Wright & Cummings	45,270
Cement, leather, E. Arnstein	45,230
Cement, Portland, Virginia Portland Cement Co.	45,232
Champagne and still wines, Western County Wine Co.	45,066
Chocolate Creams, Procter & White	45,280
Cigarettes, Stephens Brothers	45,203
Cigars, G. W. Nichols	45,202
Cigars, Y. Pendas & Alvarez	45,284
Cigars, Frank H. Flier & Company	45,225
Cigars, C. E. Miller	45,226
Cigars, C. Soby	45,229
Clothes and fasteners for personal wear, American Ring Co.	45,109
Cleaning preparation for external use and for shampooing, C. Ammen	45,146
Cocks, valves, and fittings, William T. Bonner Co.	45,255
Coffee, J. W. Hamblet	45,118
Coffee, Levering Coffee Co.	45,121 to 45,125
Coffee, Park & Tilford	45,127
Cologne water and other perfumery, F. Hoyt & Company	45,147
Cord lines, twines, and ropes, Silver Lake Company	45,301
Cotton dress goods, H. W. A. Page	45,096
Cotton piece goods, Naumking Steam Cotton Co.	45,094
Cure for headaches, colds, and indigestion, Capidine Chemical Company	45,204
Cure for piles, Pineule Medicine Co.	45,170
Cures and remedies, pile, J. W. Davis & Sons	45,139
Debitaries, B. Fuchser	45,207
Die forgings, Billings & Spencer Company	45,068
Digestive preparation, Fairchild Bros. & Foster	45,282
Digestive preparation, artificial, Fairchild Bros. & Foster	45,206
Disinfectants, West Disinfecting Company	45,143
Dyes, Monroe Drug Co.	45,142
Electric generators, parts and attachments therefor, Molsinger Device Manufacturing Company	45,236
Electric plugs and receptacles, Marshall Electric Mfg. Co.	45,235
Emollient and medicinal preparation for external and internal use, Chesebrough Mfg. Co.	45,138
Envelops, Outlook Envelope Company	45,302
Fabrics for coat and sleeve linings, H. W. Smith	45,201
Filing cases, transfer and binding cases, letter, C. C. Dilts Co.	45,215
Finger rings, Ostby & Barton Co.	45,277
Flavoring extracts and fruit syrups and juices, McCormick & Company	45,155
Flour, wheat, H. B. Fallis & Co.	45,178
Flour, wheat, Pillsbury-Washburn Flour Mills Company	45,182
Flour, wheat, W. J. Jennison Company	45,183
Food or peptone preparation, artificially digested, Fairchild Bros. & Foster	45,278
Fruits, dried and evaporated, J. S. Twombly	45,291
Gas heater, which is applied to a gas jet on a chandelier, wall bracket, or table stand, C. R. Bannhir	45,250
Gin, Dreyfuss, Weil & Co.	45,186
Gin, J. W. Kelly & Co.	45,189
Gin, C. Sandheger	45,240
Gloves, Journeay & Burnham	45,104, 45,105
Glue, McCormick & Company	45,231
Guano, F. S. Royster Guano Co.	45,145
Gum, chewing, Kela Chemical Co.	45,279
Gun washes, J. J. Ottinger	45,150
Guns and parts thereof, Hunter Arms Co.	45,243 to 45,248
Hair curlers, Magic Curler Company	45,148
Hair curling preparations, J. A. Patlis Co.	45,151
Hair pins, De Long Hook & Eye Company	45,306
Ham, smoked beef, and bacon, L. Meyer	45,160
Hams, bacons, and tongues, H. Koster	45,159
Handles for axes, hatchets, etc., I. F. Foyce Handle Co.	45,157
Harmonicas, mouth, Firm of M. Hahner	45,131 to 45,135
Hats, Moore Smith Co.	45,107
Hats, F. W. Seybel Co.	45,108
Heaters, water or steam, Kewanee Boiler Company	45,253
Heating systems, boilers for steam and water, Kewanee Boiler Company	45,254
Incuators and brooders, G. H. Stahl	45,083
Knives, butchers' knives and cleavers, table and carving, Landers, Frary & Clark	45,077
Laxatives, E. Fuchser	45,283
Leather of all kinds, kid, F. Blumenthal & Co.	45,176
Lenses and disks for railway semaphore and other signal lights, J. C. Baird	45,217
Macaroni and spaghetti, E. P. Shell & Co.	45,200
Malt extracts, Valentin Blatz Brewing Co.	45,085
Mattresses, Crescent Mattress Co.	45,285
Medical tonics, Maas & Waldstein Co.	45,206
Medicated adhesive plasters, G. Mortimer	45,270
Medicinal compounds for the cure of catarrhal diseases of the head, Ely Brothers	45,140
Medicinal preparation in the form of a mixture used as an antiseptic, germicide, and healing agent, Henry Neil Chemical Co.	45,265
Medicine for purifying the blood and the cure of syphilis, gleet, etc., Feerg Remedy Company	45,168
Medicines for the cure of diseases of the respiratory organs and for use in cases of fever and appendicitis, Pneumo-Phthysine Chemical Mfg. Co.	45,267
Metal partaking of the nature of aluminium, J. M. Murphy	45,086
Mineral water, natural, Stafford Mineral Springs & Hotel Co.	45,199
Music note sheets, perforated, Harry H. Juelig Company	45,136
Nails, tacks, and thumb tacks, Berbecker & Rowland Mfg. Co.	45,074
Needles and vermicelli, W. Boehm	45,307
Ointment, H. D. Nables	45,210
Packing, asbestos, Bestesking Packing & Supply Co.	45,209
Padlocks, W. Bingham Company	45,075
Paints and enamels, Phoenix Paint & Varnish Co.	45,214

Jiu-Jitsu Instruction by President Roosevelt's Teacher

JIU-JITSU INSTRUCTION 6c.

NATURE'S WEAPON THAT NEVER FAILS MAKES SMALL MEN STRONG GIANTS

Japan succeeds because of the physical fitness of her soldiers. They practice Jiu-Jitsu, a system of physical culture which makes them giants of strength and endurance.

P. S. - Send six cents in stamps for FREE instructions

THE AMERICAN COLLEGE OF PHYSICAL CULTURE & JIU-JITSU
378 Boylston Street, Boston, Mass.

Do You Know

that the appearance of your product is one-half of the selling point? If you use enamel, why not the best? That means

BRAZILLO

The pigments selected for Brazillo Enamels are of the finest, and after being bolted through silk of about 10,000 meshes to the square inch are ground in Hard Finish Brazillo, which makes an enamel especially adapted for ONE COAT WORK on wood and metals of all kinds. This process of manufacture is protected by us. Brazillo enamels dry from the bottom up, producing a hard, smooth finish which will not chip or peel.

ALL COLORS. WRITE FOR COLOR CARD.

THAYER BROS. CO., WARREN, O.
Manufacturers of the celebrated "GOLD LEAF LACQUER"

U. S. A. LIQUID PISTOL

Will stop the most vicious dog (or man) without permanent injury. Perfectly safe to carry without danger of leakage. Fires and recharges by pulling the trigger. Loads from any liquid. No cartridges required. Over 10 shots in one loading. All dealers, or by mail, 50c. Rubber-covered holster 50c. extra.

PARKER, STEARNS & SUTTON, 226 South St., New York

BEST FOR YOUR BOILER

A great saver of trouble, annoyance and money, of labor and anxiety is the

STANDARD STEAM TRAP.

It is a new invention that is simple and exceedingly durable. Working parts all on outside. Valves two-piece simple check operating automatically. No waste of steam or water. If you have a boiler investigate this trap.

E. HIPPARD, Manufacturer, YOUNGSTOWN, OHIO

FLY PAPERS. - FORMULAS FOR

Sticky Fly Papers are contained in SCIENTIFIC AMERICAN SUPPLEMENT Nos. 1037 and 1324. Each issue contains several recipes. Price 10 cents each, from this office, and from all newsdealers.

Don't Burn Money Any Longer

You're doing so unless you periodically clean your boilers with

The Dean Boiler Tube Cleaner

To prove the value of this device we'll loan you a cleaner for trial in one boiler. Our book "Boiler Room Economy" tells all about scale and this trial offer. Write for the book to-day.

THE WM. B. PIERCE CO.
319 Washington Street, Buffalo, N. Y.

Portable Buildings

have a peculiar value because there is no real estate attached to them. They can be sold and transferred elsewhere with the greatest ease. We manufacture all kinds of portable buildings, such as Automobile Houses, Camping Houses, Complete Cottages, Temporary Offices, etc., with furniture and equipment for all; Poultry Houses, fitted up with nests, roasts, etc.; Workshops, with all necessary tools and implements.

THE LATHROP MFG. CO., Rochester, N. Y., U. S. A.

THE WORKS

TECHNICAL ACHIEVEMENTS & IDEAS ARE FOCUSED IN THE SCIENTIFIC AMERICAN SUPPLEMENT

WRITE FOR A SAMPLE COPY AND SPECIAL RATES WITH THE SCIENTIFIC AMERICAN
A CATALOGUE CONTAINING THOUSANDS OF CLASSIFIED SUPPLEMENT ARTICLES SENT FOR THE ASKING

MUNN & CO., 361, B'WAY, N.Y.

Mullins Sheet Metal Statuary

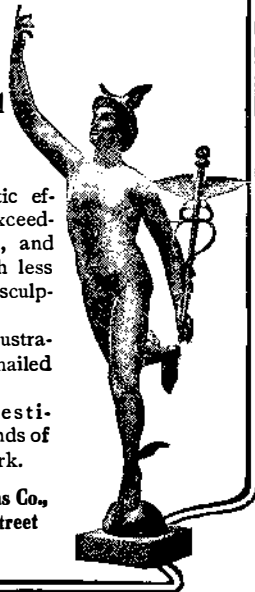
Unequaled for Architectural Adornment

Higny artistic effects that are exceedingly durable, and that cost much less than cast or sculptured work.

Complete illustrated catalogue mailed on request.

Write for estimates on all kinds of sheet metal work.

The W. H. Mullins Co., 203 Franklin Street Salem, O.



FIRST IN WAR. FIRST IN PEACE
First in the office of the Business man

UNDERWOOD TYPEWRITER

holds the "Right of line" at Washington because of

VISIBLE WRITING.

Perfect Construction and doing the best and quickest work with least effort.

UNDERWOOD TYPEWRITER CO.
241 Broadway, New York.

Adapted for use with the "Exit Book-keeping System."

"In all the land, range up, range down, Is there ever a place so pleasant and sweet?"

THE 1000 ISLANDS

There may be somewhere on the earth a more delightful region than that of the Thousand Islands, but if there is, it has not been discovered. It is as fine as the Bay of Naples, with no danger of being buried in hot ashes. There are 2000 picturesque islands scattered along the twenty-five miles of one of the most beautiful rivers in the world. You can find out a great deal regarding it in No. 10 of the "Four-Track Series," "The Thousand Islands," of the St. Lawrence River issued by the

NEW YORK CENTRAL

A copy will be mailed free on receipt of a two-cent stamp, by George H. Daniels, General Passenger Agent, Grand Central Station, New York

60 YEARS' EXPERIENCE

PATENTS

TRADE MARKS DESIGNS COPYRIGHTS & C.

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

Scientific American.

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

MUNN & Co., 361 Broadway, New York
Branch Office, 635 F St., Washington, D. C.

Paper in rolls and sheets, merchandise, Reversible Collar Company	45,309
Paper, toilet, Scott Paper Co.	45,303
Paper, wall, Standard Wall Paper Co.	45,304
Peanut butter, Bessman & Lehman Co.	45,258
Peanuts, Gwaltney-Bunkley Peanut Co.	45,259
Periodical in magazine form, Levy Bros. & Co.	45,197
Peroxide of hydrogen, Brevet Manufacturing Company	45,205
Pianos, A. L. Creed	45,129
Plows, plowshares, moldboards, plow points, etc., Oliver Chilled Plow Works, 45,079 to	45,082
Poker chips, G. H. Harris Company	45,305
Powder, headache, fever, and pain, J. Lee Cruce Co.	45,209
Preparations for the destruction and extermination of water or cretan bugs, roaches, etc., O. H. Jadwin	45,174
Rail bonds, H. P. Brown	45,237
Ranges, stoves, and heaters, Majestic Manufacturing Company	45,252
Rasps and files, Stokes Bros. Manufacturing Co.	45,087
Razors and razor blades, Kampfe Bros.	45,177
Refrigerators and water coolers, Metal Stamping Co.	45,286
Remedies for boils, carbuncles, and similar blood troubles, M. A. Shoemaker	45,269
Remedies for the bowels and liver, E. C. De Witt & Co.	45,281
Remedy for colic and cholera, internal, F. Traudt	45,141
Remedy for diseases of the stomach, liver, kidneys, malaria, and for eruptive skin diseases, A. G. Groblewski	45,308
Remedy for scalp diseases and tonic for the scalp, S. North	45,211
Remedy for the cure of all blood and skin diseases and for purifying the blood, Swift Specific Co.	45,172
Remedy, headache, P. Gasset	45,208
Remedy in tablet form for dyspepsia and all forms of indigestion, Sansap Chemical Company	45,268
Ribbons, satin-velvet, Helvetia Silk Mill	45,113
Rubber belting, Gibbons & Stream	45,154
Rubber heels for ladies' boots and shoes, A. E. Little & Company	45,300
Seed, grass, E. W. Conklin & Son	45,128
Seeders and planters, D. E. Speicher	45,078
Shade fabrics, window, Joseph Bancroft & Sons Co.	45,092
Shade rollers and fittings, spring, Stewart Hartshorn Co.	45,289
Shade rollers, spring, Stewart Hartshorn Co.	45,287
Sheetings, Pelzer Mfg. Co.	45,089
Sheetings and drills, Orr Cotton Mills	45,095
Sheetings and drills, Pelzer Mfg. Co.	45,099
Sheetings and shirtings, Monohansett Mfg. Co.	45,093
Sheetings, brown, Pelzer Mfg. Co.	45,100
Shoes, leather, Hathaway, Soule & Harrington	45,290
Shoes, men's leather and canvas, McRae & Bevil	45,293
Silk fabric, A. H. Sans	45,152
Silk fabrics, York Silk Mfg. Company	45,101
Soaps for toilet use and general household cleaning and scouring purposes, W. M. Hoagland	45,198
Specific for female complaints, liquid, G. Mortimer	45,284
Specific for rheumatism and the blood, L. A. Siebert	45,212
Stoves and gas stoves, oil, Grinberg Bros. Surfactors, stains, paints, and varnishes, Chicago Varnish Co.	45,234
Suspenders, C. Bloomberg & Co.	45,110
Suspenders, men's, Hewes & Potter	45,111
Tea, Martin Gillett & Co.	45,115
Tea, Levering Coffee Co.	45,119
Tea, herb, Weber Medical Tea Co.	45,173
Teas, J. M. Montgomery	45,126
Ticks, tags, and labels, pin, A. Kimball Co.	45,277
Tin plates,terne plates, tin tappers, black tappers, sheet steel, and sheet iron, E. L. Parker & Co.	45,073
Tobacco, plug, Monarch Tobacco Works, 45,227,	45,228
Tobacco, plug, cut plug, and smoking, J. G. Bill	45,241
Tonic, preparation to be used as an animal, Pratt Feed Co.	45,171
Tonics, I. W. Douglass	45,167
Towels, tablecloths, and covers, H. W. A. Page	45,097
Trees infested with scale insects, chemical compound for the treatment of fruit, Thomsen Chemical Company	45,175
Varnishes, shellacs, and enamels, E. Calman & Co.	45,233
Washing fluids for cleansing clothes, blankets, fine fabrics, painted surfaces, floors, and walls, DeCorme Washing Fluid Company	45,272
Watchcases, Duerber Watch Case Mfg. Co.	45,256
Watches and watch parts, Hampden Watch Co.	45,257
Whisky, Belmont Distillery Co.	45,184
Whisky, H. Clarke & Sons	45,185
Whisky, A. Graf Distilling Co.	45,188
Whisky, D. Netter & Company	45,190
Whisky, Rheinberg Bros. & Co.	45,191
Whisky, C. H. Ritter & Co.	45,192
Whisky, Reewekamp Bros.	45,193
Whisky, Sherwood Distilling Co.	45,194
Whisky, A. A. Wolf & Co.	45,195
Whisky, Handler Bros. Dis. Co.	45,200
Whisky, Bott & Cannon	45,218
Whisky, Chicago Table Supply Co.	45,219
Whisky, Green River Distilling Co.	45,220
Whisky, Kayser & Hegner Co.	45,222
Whisky, Reck-Spring Distg. Co.	45,224
Whisky, D. Sachs and Sons	45,238
Wood fillers, primers, and paints, Eridgeport Wood Finishing Company	45,213
Wool wadding, M. A. Evans	45,091

LABELS.

"America," for mantles, Liberty Inc. Light Co.	12,315
"Anti Grip Tablets," for medicine, C. M. Bedman & Co.	12,311
"Apex Brand," for renovated butter, B. Catlin	12,308
"Artesian Lithia Water," medicinal water, B. Lemaire & Sons	12,309
"Dr. Dick's Pecan Gall Cure," for medicine, Pecan Oil Manufacturing Co.	12,312
"Evans Wine of Olives," for wine of olives, Evans Pharmacal Co.	12,306
"James Fulton Before and After," for a hair grower, J. Fulton	12,313
"Ma-Pe-Le," for medicine, Ma-Pe-Le Medicine Co.	12,310
"Madonna A. 1851," for eau-de cologne, J. M. Ferina zur Madonna	12,314
"Neenah," for cigars, Kohn Bros. & Co.	12,304
"Red Band Pure Scotch Snuff," for snuff, Independence Snuff Co.	12,305
"S. B. Clark's Tourist Lunch Biscuit," for biscuits, H. E. Clark	12,307
"Veribest," for whisky, M. Essig	12,303

PRINTS.

"Bohemian Brew," for beer, Jackson Brewing Co.	1,395
"What the Doctor Says" for beer, George Wiedemann Brewing Company	1,394

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

SHOTGUNS AND SHELLS

Winchester Repeating Shotguns and Winchester Shotgun Shells are just as reliable and satisfactory for bird shooting as Winchester Rifles and Winchester Cartridges are for big game hunting, and sportsmen know this means as perfect an equipment as can be made. You can spend a great deal more money for a shotgun than a Winchester will cost you, but you cannot get a better shooting or betterwearing gun, no matter what you pay. Winchester "Brush" Shells are something new and desirable for bird shooting. They are so loaded that, without the sacrifice of velocity, penetration, or uniformity, they will make an open and even pattern at from 25 to 30 yards in choke bore guns. Winchester Guns and Winchester Shells are sold everywhere.

FREE: Our large Illustrated Catalogue.

WINCHESTER REPEATING ARMS CO., NEW HAVEN, CONN.

Civil Engineering and Surveyors' Instruments

DRAWING INSTRUMENTS, MATERIALS AND SUPPLIES

We are the largest house in the world. Try us on BLUE PRINT PAPER, TRACING CLOTH, DRAWING INKS, or SURVEYING and ENGINEERING INSTRUMENTS

A. S. ALOE CO., 515 Olive Street, St. Louis, Mo.

Write for Catalog. "Sent Free." Correspondence Solicited.

Agents Wanted

in every railway shop to solicit subscriptions for the

Railway Master Mechanic

ONE DOLLAR A YEAR

LIBERAL COMMISSION TO AGENTS

.... ADDRESS

Railway Master Mechanic

Security Building Vanderbil Building
CHICAGO NEW YORK

Men and boys wanted to learn plumbing trade great demand for graduates \$4.00 to \$5.00 day. Many complete course two months. Graduates admitted to Union and Master Plumbers Association. COYNE BROS. CO. PLUMBING SCHOOLS, New York, Cincinnati, St. Louis. For free catalogue, address 239 Tenth Avenue, New York.

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

Learn Telegraphy and R. R. Accounting

\$50 to \$100 per month salary assured our graduates under bond. You don't pay us until you have a position. Largest system of telegraph schools in America. Endorsed by all railway officials. Operators always in demand. Ladies also admitted. Write for catalogue.

MORSE SCHOOL OF TELEGRAPHY
Cincinnati, O., Buffalo, N. Y., Atlanta, Ga., La Crosse, Wis., Texarkana, Tex., San Francisco, Cal.

A MONEY MAKER

Hollow Concrete Building Blocks, Best, Fastest, Simplest, Cheapest Machine. Fully guaranteed.

THE PETTYJOHN CO.
615 N. 6th Street, Terre Haute, Ind.

AUTO STORAGE BATTERIES ALL KINDS

THE WILLARD STORAGE BATTERY CO., CLEVELAND, O.

GINSENG

\$25,000 made from one-half acre. Easily grown throughout the U. S. and Canada. Room in your garden to grow thousands of dollars' worth. Roots and seeds for sale. Send 4c. for postage and get our booklet D N telling all about it. McDowell Ginseng Garden, Joplin, Mo.

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.

LANGWIDGIZ

Artistic Job Printing, Catalogs, Booklets, in English or FOREIGN LANGUAGES. Half-tone and Color Presswork. LANGUAGES PRINTING COMPANY Languages Building, 15 West 18th St., New York

Crescent Machinery

Quality and Price, both right

BAND SAWS, JOINTERS, SAW TABLES, BAND SAW BLADES

Catalogue tells the rest

CRESCENT MACHINE CO.
280 Main Street, Leetonia, O., U. S. A.

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

LUXURY IN TRAVEL

"THEY NEVER DISAPPOINT"

GRAHAM SUPPLEMENTARY SPIRAL SPRINGS FOR HARD RIDING AUTOMOBILES

CAN BE ATTACHED TO ANY CAR. BOOKLET FREE. THE GRAHAM CO., 8 PARK PLACE, NEW YORK CITY, U.S.A.

LE PAGE'S GLUE

Does not set quickly like the ordinary glue, and has 200% more strength (Official test). 1 lb. sq. hard pine lumber, registered 1820 lbs. before putting. Used by the best mechanics and in the world over. Irvaluable in household use, for Furniture, China, Ivory, Books, Leather, and wherever a strong adhesive is desired. 1 oz. bottle or collapsible self-sealing tube (retails 10c.) mailed for 12c. if your dealer hasn't our line.

LE PAGE'S PHOTO PASTE, 2 oz. size retail 10c. by mail, 10c.

LE PAGE'S MUCILAGE, 2 oz. size retail 5c. by mail, 10c.

RUSSIA & MENT CO., 145 Essex Ave., Gloucester, Mass.

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 Butchers' Machinery. THE VILTER MFG. CO., 830 Clinton St., Milwaukee, Wis.

MODELS & EXPERIMENTAL WORK.

Inventions developed. Special Machinery.

E. V. BILLAARD, 24 Frankfort Street, New York.

Dies, Tools, Models and Special Machinery.

HOEFT & MOORE, CHICAGO, U. S. A.

BALLOONS

Aeronaut L. Stevens, Box 181 Madison Sq., N. Y.

MODELS & INVENTIONS PERFECTED

UNION MODEL WORKS & GEARS, 193 SO. CLARK ST., CHICAGO.

MODELS

dies, boxes, metal stampings, patent articles, novelties, manufactured and sold. Printing on aluminum. U. S. Novelty Co., Lily Dale, N. Y.

MODEL MACHINERY and Experimental Work.

W. H. CHAPMAN, 194 Broadway, New York City.

DRYING MACHINES.

S. E. WORRELL, Hannibal, Mo.

CALIFORNIA

Farm Bargains. Send for monthly catalogs. C. M. Wuester, St. Francisco.

MODELS

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

RUBBER

Expert Manufacturers Fine Jobbing Work

PARKER, STEARNS & SUTTON, 228-229 South St., New York

EXPERIMENTAL WORK Scientifically and accurately executed.

Models and small machinery perfected. STENDICKE & VOLKMER, 61 Fulton Street, Telephone 5655 John.

If You Have OLD ACCOUNTS, Claims or Notes to collect in any part of the world, address W. E. S. JARRETT, Specialist (Reference: Boston's Bank.) Laclede Bldg., ST. LOUIS

MODEL AND EXPERIMENTAL WORK.

Electrical and Mechanical Instruments. Small Mach'y

EDWARD KLEINSCHMIDT, 82 W. Broadway, New York

W. B. KNIGHT & CO.

Mfrs. of Special Machinery and Tools
2019 to 2025 Lucas Ave., ST. LOUIS

THE MISREAD RECORD

How Saturn-like Earth Rings of watery vapors fell on the "Ice Ages" and the Flood. Send stamp for statement. Book 180 pages. Paper 65c. Cloth \$1.00. Address I. N. VAIL, Pasadena, Cal.

MACHINISTS' TOOLS and SUPPLIES

ST. LOUIS MACHINISTS' SUPPLY CO.
1118 Pine Street St. Louis, Mo.
Send for our catalogue