


## The Pendulum of Business



is regulated by the  
**Smith Premier Typewriter**

Send for booklet  
The Smith Premier  
Typewriter Co.  
Syracuse, N. Y.  
Branches in all large  
cities

## THE SUN TYPEWRITER



**\$40.**

A high-grade typewriter, the equal of any \$100 machine; the superior of many—its distinctive features are:

Visible Writing, Typebar Action, Easy Running, and Great Speed. Heavy Manifold.

Every machine absolutely guaranteed.

Write for free illustrated booklet.

**SUN TYPEWRITER CO.,**  
239 Broadway, New York

## 15 Days' Trial on This MARINE ENGINE



No Cash Payment required. We pay freight distance 1000 miles. Spark plugs \$1.50, guaranteed 90 days; also Second-hand Engines.

**M'DONALD & ERICKSON**  
34 W. Randolph St., Chicago.


## THE ELECTRICAL AGE

25 Cents a Copy

**The Best Electrical Paper Published**

THE ELECTRICAL AGE  
3 West 29th Street, New York

## WEEBER Gas and Gasoline Engines



For Marine and all power purposes. Workmanship the highest, price per H. P. the lowest. The kind that will run smooth and keep running. Not an experiment but tested out by four years' continuous running. Guaranteed for one year and to give absolute satisfaction. Agents wanted.

**C. R. WEEBER MFG. WORKS**  
Albany, N. Y., U. S. A.

## 50 Years' Experience PATENTS

Trade Marks, Designs, Copyrights, Etc.

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.

Tobacco leaf sizing machine, A. R. Tiffany.	788,077
Toilet case, E. J. Milligan.	788,418
Tool, electric reciprocating, P. Centner.	788,450
Tool, extracting, J. B. Flady.	788,388
Tool, pneumatically actuated, R. Temple.	787,955 to 787,963
Tool post, C. W. Grant.	788,206
Top, J. M. Fultz.	788,041
Towing machine, E. Dalgleish.	788,190
Toy, E. P. Lehmann.	788,110
Traction engine, B. B. Stauffer.	788,285
Traction wheel, W. A. Bangs.	788,014
Trap, non-siphonable self-scouring, G. Cody.	788,454
Tread, safety, T. P. Farmer.	788,458
Trestle, W. J. Muttart.	788,368
Trimmer, See Celery trimmer.	
Truck, H. S. Merrell.	788,414
Tube expanding and compressing machine, hydraulic, A. T. Pope.	788,119
Tug, hame, J. S. Cussen.	788,455
Turbine, compound marine, J. Wilkinson.	788,006
Turbine controller mechanism, J. Wilkinson.	788,005
Turbine controller mechanism, marine, J. Wilkinson.	788,004
Turbine engine, E. S. Farwell.	787,907, 787,980
Turbine engine, A. Wahle.	788,000
Turbine engine, E. Einfield.	788,335
Turbine, fluid pressure, R. N. Ehrhart.	788,057
Twisting and doubling machine, yarn, J. S. Verlenden.	788,282
Type bar and support, J. Winsor.	787,968
Typewriter, N. L. Anderson.	788,012
Typewriter word registering device, R. Allen.	788,011
Valve, E. B. Slick.	788,337
Valve, automatic, H. S. Pinkerton.	788,426
Valve, plug, H. Kieren.	788,476
Valve, pressure reducing, E. M. Beurnen-ville.	788,240
Valves, operating device for internal combustion engine inlet and ignition, J. W. Seal.	788,496
Vapor burner, L. Rhodes.	788,067
Vaporizer, G. Beaumont.	788,345
Vehicle running gear, G. H. Jones.	788,108
Vehicle speed controlling apparatus, motor-driven, J. H. E. Goetze.	788,204
Vehicle steering gear, F. A. Law.	788,053
Vehicle steering head, A. F. Madden.	788,271
Vehicle wheel, W. R. Fasey.	788,034
Vehicle, wheeled, D. Sharman.	787,889
Veil pin, F. A. Curry.	787,889
Vending machine, L. J. Burdick.	788,187
Ventilating device, Taylor & Creamer.	787,997
Vertical boiler, T. Suzuki.	788,174
Viscosimeter, F. A. Courtois.	788,251
Vise, parallel bench, G. B. Taylor.	788,340
Voting machine, J. B. Mahana.	788,486
Wagon box, W. A. Melrose.	788,487
Wagon brake, W. H. Weber.	787,965
Wagon brake, C. J. A. Machut.	788,214
Wagon, dumping, R. Morgan.	787,934
Wagon, dumping, D. S. Watson.	788,002
Wagon skeleton frame farm, A. L. & C. H. Dudley.	788,394
Walls, apparatus for the construction of plastic, D. W. Bovee.	788,391
Warp clamp, R. Mauchline.	788,364
Washboard, H. M. Haas.	788,465
Washing machine mechanical movement, W. Sweet.	788,227
Washer cutter, W. H. Mohr.	788,217
Watch balance, J. A. Freund.	788,399
Watch hand remover, A. Ellis.	788,031
Water gate, C. R. Elliott.	788,030
Water heater and tank system, domestic, J. J. Blackmore.	788,089
Water meter, L. D. Fenger.	787,979
Water meter, I. B. De Bora.	788,028
Well bottom packing, oil, W. H. Downing.	788,353
Well drilling machinery, W. Ackerman.	788,343
Well strainer, oil or water, F. I. Getty.	787,912, 787,913
Wheel, C. M. Green.	788,504
Wheel clamp, G. F. Fields.	788,460
Whip handle, A. Boeselt.	787,972
Winding or unwinding goods, device for, Harrison & Simpson.	788,133
Windmill regulator, automatic, C. F. Knothe.	787,924
Window screen, O. A. McFadden.	788,165
Window screen, D. T. Peters.	788,372
Window screen, H. E. Southworth.	788,439
Woodworking machine attachment, D. W. Shellenbeger.	788,434
Wool, treating sheep's, A. Kann.	787,923
Wrench, H. J. Pawling.	788,141
Wrench, P. C. Thayer.	788,383
Writing machine pedestal, F. W. Hutchings.	787,985
X-ray meter, T. P. Hall.	788,151

### DESIGNS.

Badge, base ball register, A. A. Hendrickson.	37,415
Belt, lady's, M. Martin.	37,421
Book cover, W. M. Rhoads.	37,416
Cork extractor case, R. B. Gilchrist.	37,417
Lamp shade, incandescent electric, H. Forger.	37,418
Mantel, F. A. Broadbent.	37,419
Pillow sham, N. Naja.	37,420

### LABELS.

"Acorn Cereal Coffee," for cereal coffee, F. H. Benold.	12,082
"Boyd's Luncheon Cream Mints," for mint candy, G. Boyd & Sons.	12,091
"Campbell's Baking Powder," for baking powder, Kenton Baking Powder Co.	12,087
"Dr. Dick's Malted Stock Food," for stock food, Dr. Dick Malted Stock Food Co.	12,095
"Dr. Sharps R 1300," for medicine, W. E. Snellings.	12,093
"Forget-me-nots," for medicine, J. B. Simas.	12,092
"Human Life Magazine of Today," for publication, Human Life Publishing Co.	12,098
"Liqueur Superfine," for liqueurs, Charles Jacquinet Cie.	12,081
"Mobo," for cleaning compound, J. T. Stanley.	12,097
"National Malt Coffee," for coffee substitute, C. L. Medlinger.	12,083
"Peacock Baking Powder," for baking powder, Kenton Baking Powder Co.	12,085
"Pompeii," for confectionery, S. Zanene.	12,090
"Radium Corn Cure," for corn cure, J. Zuckerman.	12,094
"Shileh Baking Powder," for baking powder, Kenton Baking Powder Co.	12,084
"Snow King Baking Powder," for baking powder, Kenton Baking Powder Co.	12,086
"Square Pickles," for pickles, Squire Dingee Co.	12,089
"Target Rye," for whisky, F. W. Packer.	12,080
"Yorkshire," for lard, Kentucky Packing & Provision Co.	12,088

### PRINTS.

"A Yard of Razors," for safety razors, Reichard & Scheuber Mfg. Co.	1,274
"Conover," for pianos, F. E. Hall.	1,276
"Creme Elcaya," for face creams, J. C. Crane.	1,271
"Dunlop Superlative Patent Flour," for flour, Dunlop Mills.	1,272
"How Shall We Paint," for paint, Lowe Brothers Co.	1,275
"Men's Apparel," for men's apparel, W. C. Both.	1,173

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.

## THE HARRINGTON & KING PERFORATING CO.

### PERFORATED METAL

OF EVERY DESCRIPTION, FOR ALL USES.

225 NO. UNION ST. CHICAGO, ILL.

## Make Rubber Stamps!

Large Profits—Light Work

A few dollars will purchase a complete manufacturing outfit with full instructions. Ambitious young men should investigate at once. Write for Catalogue.

**BARTON MFG. CO.**  
341 Broadway New York

## SPECIAL MANUFACTURING.

### DIES AND STAMPINGS TO ORDER.

SPECIAL MACHINERY—MODELS—EXPERIMENTAL WORK—DROP FORGING—DIES AND DROP FORGINGS—HARDWARE SPECIALTIES—STAMPING TO ORDER—SEND SAMPLES OR DRAWINGS FOR ESTIMATES. WRITE FOR OUR BOOKLET.

**THE GLOBE MACHINE & STAMPING CO.**  
970 HAMILTON ST., CLEVELAND, OHIO.

## ICE MACHINES.

Corliss Engines, Brewers' and Butchers' Machinery. THE VILSTER MFG. CO., 639 Clinton St., Milwaukee, Wis.

## MODELS & EXPERIMENTAL WORK.

Inventions developed. Special Machinery. E. V. BILLARD, Fox Bldg., Franklin Square, New York.

## Dies, Tools, Models and Special Machinery.

HOEFT & MOORE, Chicago, U. S. A. OFFICE: 510 FIFTH AVENUE. WORKS: INDIANAPOLIS, INDIANA.

## BALLOONS

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

## Experimental Work. Designs for Automatic Machinery.

G. M. MATYER, M.E., 1131 Monadnock Bldg., Chicago, Ill.

## RUBBER

Expert Manufacturers Fine Jobbing Work

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

## ORNAMENTS

mounted, soldered and finished, in all metals. Souvenir and special work solicited. Gold and silver plating.

**J. H. ARTHUR CO.,** 45 Eddy St., Providence, R. I.

## Manufacturers HARDWARE SPECIALTIES

Contract Manufacturers and will market articles of merit. **LARIMER MFG. CO.,** 155 S. Jefferson St., Chicago

## Experimental & Model Work

Or. & advice free. **Wm. Garlam & Son,** 45-51 Rose St., N.Y.

## INVENTORS.

Our specialty is practically developing inventions. Design and build special, plain and automatic machinery, presses, dies, models, patterns and jigs. Send for Booklet No. 5.

**A. NACKE & SON,** 238-42 S. 9th St., Philadelphia, Pa.

## NOVELTIES & PATENTED ARTICLES

MANUFACTURED BY CONTRACT. PUNCHING DIES, SPECIAL MACHINERY.

**E. KONIGSLOW STAMPING & TOOL WORKS,** CLEVELAND, O.

## 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.

## "Researches IN MODERN Spiritualism"

By the Greatest Living Chemist, Sir Wm. Crookes

New Amer. Edit. illusts., 50c. (Eng. Edit. \$1.50.) "Reason," 48 pp. mthly. (New Tho't & Psych. Research), 50c. a year. Both \$1.00 prepaid.

**AUSTIN PUBL. CO.,** Rochester, N. Y.

## PLUMBING SCHOOLS

WANTED.—Men and boys to earn while learn plumbing trade. **COYNE BROS. Co.,** Schools of Practical Plumbing. Actual work; no correspondence. Address 4773-75 Easton Ave., St. Louis, Mo. 1679 W. 3rd St., Cincinnati, Ohio. Send for catalogue.

## Phonograph Speed Regulator

for use upon all Edison Phonographs. Easily attached; Accuracy guaranteed; Amusement added; Phonograph controlled. Free circular tells all. Price, Domestic postage prepaid, \$1. Foreign, \$1.25. Sold everywhere, and by D. HILTON, 80 Broadway, New York.

## AUTO STORAGE BATTERIES

### ALL KINDS

**THE WILLARD STORAGE BATTERY CO.,** CLEVELAND, O.

## BUBIER'S POPULAR ELECTRICIAN

Fifty Cents per year. Electrical Books for beginners, 10c., 25c., 50c. Sample copy and catalogue FREE.

**BUBIER PUB. CO.,** S. C. - Lynn, Mass.

## THE SCHWEDTLE STAMP CO.

STEEL STAMPS, LETTERS & FIGURES. BRIDGEPORT CONN.

## 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.

## Telegraphy

Circular free. Wonderful automatic teacher. 5 styles \$2 up. **OMNIGRAPH CO.,** Dept. 52, 89 Courtlandt St., New York.

## Magical Apparatus.

Grand Book Catalogue. Over 700 engravings 25c. Parlor Tricks Catalogue, free.

**MARTINKA & CO.,** Mfrs., 493 Sixth Ave., New York.

## TYPEWRITERS ALL MAKES

All the standard machines SOLD or RENTED ANYWHERE at HALF MANUFACTURERS' PRICES. Shipped with privilege of examination. Send for Cat.

**Typewriter Emporium,** 203 LaSalle St., Chicago

## SETS OF CASTINGS OF MODEL ENGINES

SEND 10¢ FOR 125 PAGE ILL. CATALOGUE.

**ALSO TOOLS, GEAR WHEELS & PARTS OF MODELS**

**GOODNOW & NIGHTMAN** BOSTON

Removed to 183 Milk Street.

# Important Announcement



READERS OF THE SCIENTIFIC AMERICAN will be gratified to learn that the great work upon which we have been so long engaged is at last completed. After years of patient labor and research and with the co-operation of America's foremost scholars and experts

## THE NEW AMERICANA

stands as an achievement which has already met with the enthusiastic approval of the American people.

The AMERICANA is the work which the condition of affairs in the Encyclopedia world made necessary. Before ever a line was written for this great work the ideal was set: *A National Work—Universal in its information—American in its production.*

The AMERICANA is distinctly a National Work. It is made by Americans. Every section of America has been called upon to contribute, and for the first time in encyclopedia making North, South, East and West, Canada and South America have had full and true representation.

The AMERICANA is NEW FROM COVER TO COVER—new and beautiful type, new maps, new engravings and plates in color, new text illustrations, and, best of all, NEW AND ORIGINAL TREATMENT THROUGHOUT by more than

### One Thousand American Scholars and Special Writers

The AMERICANA is the only encyclopedia made in this country by a thoroughly organized body of skilled experts and litterateurs each selected for his special fitness and intimate acquaintance with the subject assigned to him. These trained and progressive workers have struck out into new paths; they have proceeded upon an entirely new plan and that plan embodies the idea which has made our country the wonder of the nations—the idea of reaching the core of things by the shortest method. This is the American Plan. You'll catch the spirit of it as you turn the pages of the work and note its conciseness yet comprehensiveness, while the names of the eminent writers of the signed articles are an ample assurance of accuracy and authoritativeness. The AMERICANA has commanded the services of so many American educators, scholars and experts as to fully justify its title of the one great

## National Reference Library

"I am truly delighted with the tone and arrangement of this strictly American publication."

—B. J. CIGRAND, Director Chicago Public Library.

"I consider it in every respect the best encyclopedia published."

—P. N. JOHNSTON, Reference Librarian, New York Public Library.

## FREE

No mere advertisement can convey an adequate idea of the vast interest and immense utility of the AMERICANA, or of its exceptional value and sumptuous appearance. We have therefore prepared for distribution among those really interested, a handsome 140 page book containing specimen pages, maps, full-page plates, duo tones, color plates, and text illustrations, with 42 portraits of celebrities, full-page photographic plates, showing the fastest train in the world, the largest steamship ever built in America, the famous Flat-iron Building, New York, the stage mechanism for the Opera of Parsifal, etc., etc.

We send you this beautiful and expensive book FREE on return of INFORMATION BLANK here printed.

### INFORMATION BLANK

**THE SCIENTIFIC AMERICAN CLUB,**  
258 Fifth Ave., New York City.

Without obligating myself to purchase I would like to receive FREE, your 140-page Book of Specimen Pages, Maps, Duo-tones, Color Plates, Portraits, etc., of the AMERICANA, with particulars of your special advertising proposition.

Name.....

Occupation.....

Street.....

Town and State.....

CUT OUT AND MAIL TO-DAY