

Thill couplings, antirattler for, J. W. Willard. 574,769, 574,840

Thread cutting implement, C. Eiterich. 574,721

Threshing machine band cutter and feeder, R. Johnson. 574,485

Ticket holder, W. S. Lodge. 574,560

Tie. See Bale tie.

Time detector, I. A. Hermann. 574,802

Tire for vehicle wheels, elastic, W. H. Holden. 574,652

Tire patching device, pneumatic, J. Savoie. 574,438

Tire, pneumatic, E. Lyon. 574,440

Tire, pneumatic, L. J. Miller. 574,440

Tire protector, vehicle, M. A. Andrews. 574,772

Tire tightener, G. J. Grandpre. 574,412

Tire, vehicle, G. N. Chase. 574,830

Tire, wheel, J. H. Norbrop. 574,446

Tires, device for mending, F. B. Jencks. 574,608

Tires, means for repairing pneumatic, J. H. Calkins. 574,709

Tobacco pipe, G. C. Rieky. 574,495

Toe stiffener, box, C. S. Pierce. 574,448

Tongue support, Thomas. 574,367

Tool, combination, C. A. Salzman. 574,764

Tool handle, F. H. Whitney. 574,589

Toy, mechanical, E. G. Moersch. 574,567

Toy piano, T. Giddings. 574,677

Train pipe coupling, W. F. White. 574,636

Trap. See Fly trap.

Treacle, C. J. Jones. 574,496

Trolley, W. L. Pepper. 574,819

Trolley, electric railway, E. M. Bentley. 574,377

Trolley wheel, self adjusting, Duryea & Thompson. 574,527

Truck for motor or cable cars, H. L. Gee. 574,532

Truck gearing, C. L. E. Watkins. 574,646

Truss, Ware & Willaman. 574,467

Tubing, machine for manufacturing, V. Royle. 574,577

Tumbler washer, C. Klausner (reissue). 11,581

Turkey caller and gobbler, H. C. Gibson. 574,554

Twine cutter, L. M. Gray. 574,520

Typewriter's chair, F. Chichener. 574,502

Typewriting cabinet, G. B. Kline. 574,543

Umbrella case, E. T. Lawrence. 574,436

Valve, C. H. Clark. 574,392

Valve, Halley & McCulley. 574,540

Valve, air, W. O. Barnes. 574,701

Valve gear, T. Delville. 574,400

Valve gear and adjustable cutoff, D. M. Swain. 574,847

Valve, steam engine, L. J. Larzelere. 574,808

Valve, stop, J. Walsh, Jr. 574,768

Vehicle body, W. H. Tomlinson. 574,502

Vehicle brake, B. Fairchild. 574,538

Vehicle running gear, A. D. Blodgett. 574,704

Vehicle wheel, J. S. Copeland. 574,712

Vehicle wheel, H. F. Hammon. 574,538

Vehicle wheel, H. J. Ney. 574,752

Vehicle, wheeled, E. J. Pennington. 574,818

Vehicles, electric propulsion of, W. A. Duryea. 574,368

Vehicles, transverse seat for, foot power, G. O. Draper. 574,673

Velocipede, J. Bonner. 574,706

Velocipede, W. A. Dryden, Sr. 574,674

Ventilator, A. J. F. Miller. 574,619

Veterinary mouth speculum, A. A. Walker. 574,531

Wagon brake, R. H. Layton. 574,808

Wagon brake, L. S. Wheeler. 574,694

Wall register, C. H. Foster. 574,675

Walls, etc., construction of supports for building, R. S. Gillespie. 574,729

Wash tub stand, M. Hoffman. 574,424

Washer, see Tumbler washer.

Washing machine, J. G. & R. R. Stevenson. 574,460

Water closet, T. Grace. 574,679

Water meter, L. H. Nash. 574,562

Waterer, antifreezing stock, J. A. Drake. 574,791

Weather check for doors, F. Rogers. 574,524

Weather strip, B. Byor & Mearns. 574,522

Weighing apparatus, automatic, W. E. Nickerson. 574,445

Well tool, oil, Blumenthal & Kintz. 574,705

Wheel. See Paddle wheel. Trolley wheel. Vehicle wheel.

Wheel for bicycles or other vehicles, L. B. Snyser. 574,499

Winding machine, E. Dummer. 574,478

Windmill, T. B. Gassett. 574,411

Windmill, B. M. Totdahl. 574,836

Windmill regulator, E. J. Marsh. 574,813

Window cleaning platform, H. G. Ulmerling. 574,688

Woven multiple fabric, J. Buckler. 574,387

Wrench. See Nut wrench.

Wrench, J. A. Barker. 574,513

Wrench, M. K. Flye. 574,724

Wrench, H. J. Kapka. 574,487

Wrench, J. M. Finner. 574,624

Wringer. See Mop wringer.

Wringer, I. F. Brown. 574,386

Writing fluid and making same, Lewis & Bellman. 574,437

DESIGNS.

Bicycle cover, H. O. Nelson. 26,487

Bicycle toe clip, W. N. Beardley. 26,488

Bottle, H. Lemmermann. 26,482

Brush or bat, G. R. Beck. 26,497

Car brake band, W. P. Bettendorf. 26,489

Check face, C. Gombier. 26,486

Clothes driers, standard for, J. Eden. 26,496

Display holder, A. E. Kilner. 26,498

Game board, D. F. Heverly. 26,500

Game counter, J. Wielar. 26,499

Grate, C. Howard. 26,495

Grate, A. B. Hudson. 26,494

Ice machine frame, T. Shipley. 26,490

Incandescent light bracket, E. C. Howe. 26,492

Music box cover, G. A. Brachhausen. 26,485

Mustache guard, C. Weller. 26,483

Phonograph motor frame, F. L. Capps. 26,491

Stamp band, F. Hudson. 26,484

Type, font of printing, J. F. Cumming. 26,501

Woven fabric, R. Lewis. 26,502

TRADE MARKS.

Agricultural machines and implements and their several parts, D. M. Osborne & Company. 29,429

Bale ties, cotton, W. W. Bierce. 29,433

Cereals, preserves and jellies, preparations of, Towle Sirup Company. 29,409

Complexion cream, E. H. Hildridge. 29,404

Confectionery and chocolate, H. Mailard. 29,419

Cotton piece goods, Naumkeag Steam Cotton Company. 29,399

Extract of thyroid glands for use in obesity and cutaneous affections, Farbenfabriken, vormals Fr. Bayer & Company. 29,406

Eyeglasses and eye-ear guards, J. King. 29,417

Flour, wheat, R. M. dos Santos. 29,416

Food preparation in dry form for infants and invalids, Smith, Kline & French Company. 29,406

Gum, chewing, Lauer & Suter. 29,415

Harmonicas, mouth, Strauss, Sachs & Company. 29,402

Inks, marking and stenciling, Binney & Smith. 29,410

Iron, wrought, Phillips, Nimick & Company. 29,425

Leather, dressing, Restoff & Bettmann. 29,413

Nails, horse, Northwestern Horse Nail Manufacturing Company. 29,422

Oats and oatmeal, rolled, Muscatine Oatmeal Company. 29,418

Paint, oil, varnishes, stains and finishes, article for removing, Harrison Brothers and Company. 29,411

Porter and lager beer, Duluth Brewing and Malting Company. 29,421

Remedies for piles, J. Williams. 29,407

Salves, cordials, pills, syrups and other medicines, essences and perfumes, Raymond Medicine Company. 29,405

Shears and scissors, R. H. Seymour. 29,432

Sheet metal ware enamelled, stamped and peeced, American Stamping Company. 29,428

Shovels and scoops, E. H. Linley. 29,431

Soap, S. B. Thorp. 29,414

Steel bar, steel plate, and articles made therefrom, Crescent Steel Company. 29,427

Tapes, stiffening, Warren Peabody Company. 29,400

Tooth powders and liquid dentifrice, W. V. Lawton. 29,403

Wagons, Weber Wagon Company. 29,430

Whisky, rye, D. Malone. 29,420

PRINTS.

"Don't Monkey" (for molasses candy), H. L. Hildreth. 29,428

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. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York. Special rates will be given where a large number of copies are desired at one time.

Canadian patents may now be obtained by the inventors themselves in the United States. The foregoing list, provided they are simple, at a cost of \$40 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.

Advertisements.

ORDINARY RATES.

Inside Page, each insertion -- 75 cents a line
Back Page, each insertion --- \$1.00 a line

For some classes of Advertisements, Special and Higher rates are required.

The above are charges per agate line--about eight words per line. This notice shows the width of the line, and is set in agate type. Engravings may be had advertisements at the same rate per agate line, by measurement, as the letter press. Advertisements must be received at Publication Office as early as Thursday morning to appear in the following week's issue.

Star Footpower Screw...
...cutting Lathes Automatic Cross feed
9 and 11-inch Swing.
New and Original Features
Send for Catalogue B.
Seneca Falls Mfg. Company,
606 Water St., Seneca Falls, N.Y.




AMERICAN PATENTS.—AN INTERESTING and valuable table showing the number of patents granted for the various subjects upon which petitions have been filed from the beginning down to December 31, 1894. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1001. Price 10 cents. To be had at this office and from all newsdealers.

POWER & FOOT LATHES SHAPERS, PLANERS, DRILLS, MACHINE, 5 HOP OFF CUTS, TOOLS AND SUPPLIES. CATALOGUE FREE. SEBASTIAN LATHES CO. 170 CULBERT ST. CINCINNATI, O.

MARVELOUS RESULTS have been attained by prospectors and capitalists from the use of our perfected **STEAM STAMP** FOR CRUSHING CORES. NO EXPERIMENT. Capacity guaranteed by **CATES IRON WORKS, CHICAGO.**



LATHES and General Line of Machine Shop Tools.
Hill, Clarke & Co.
160 Oliver Street,
BOSTON.
16 So. Canal Street,
CHICAGO.



PATENTS!

Messrs. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN, continue to examine improvements, and to act as Solicitors of Patents for inventors.

In this line of business they have had nearly fifty years' experience, and now have unequalled facilities for the preparation of Patent Drawings, Specifications, and the prosecution of Applications for Patents in the United States, Canada, and Foreign Countries. Messrs. Munn & Co. also attend to the preparation of Caveats, Copyrights for Books, Trademarks, Reissues, Assignments, and Reports on Infringements of Patents. All business entrusted to them is done with special care and promptness, on very reasonable terms.

A pamphlet sent free of charge on application, containing full information about Patents and how to procure them; directions concerning Trademarks, Copyrights, Designs, Patents, Appeals, Reissues, Infringements, Assignments, Rejected Cases, Hints on the sale of Patents, etc.


We also send, free of charge, a Synopsis of Foreign Patent Laws, showing the cost and method of securing Patents in all the principal countries of the world.

MUNN & CO., SOLICITORS OF PATENTS.
361 BROADWAY, NEW YORK.
BRANCH OFFICES:—No. 622 and 624 F Street, Pacific Building, near 7th Street, WASHINGTON, D. C.

BARNES' UPRIGHT DRILLS


Complete line, ranging from Light Friction Disk Drill to 42" Back Geared Self-feed. Send for New Catalogue.

W. F. & JOHN BARNES CO.
1999 Ruby Street, ROCKFORD, ILL.



Stoves and Furnaces for Hot Water and Hot Air. Suitable for houses, stores, single rooms, barber shops, baptistries, etc.

The National Pipe Bending Co.
152 River St., New Haven, Conn.



ROCK DRILLS AIR COMPRESSORS SIMPLEST, MOST EFFICIENT and DURABLE.

RAND DRILL CO.
Send for Catalogue. 100 Broadway, New York.



I PRINT MY OWN Cards, circulars, with \$5 Press and save money.

Make money printing for others. Our \$18 Press prints a newspaper. Type setting easy, printed rules. Send stamp for catalogue, press and supplies, to the factory, **KELSEY & CO., Meriden, Conn.**



Experimental & Model Work Circulars & advice free. Gardam & Son, 98 John St., N.Y.

DROP FORGINGS WYMAN & GORDON WORCESTER, MASS. 28 BRADLEY STREET




TO CIVIL ENGINEERS Surveyors, Draftsmen, Steam Engineers, Electrical Workers, Machinists, Carpenters, Plumbers, Steam Fitters, Miners. Free Circular. State Subject you wish to Study. H. 942, Scranton, Pa.

TAUGHT BY MAIL

..CIVIL.. ENGINEERING In all Branches; Mechanics; Architecture; Electricity; Mining; Plumbing; Mechanical and Architectural Drawing; Steam Engineering (Stat'y., Loco. and Marine). The International Correspondence Schools

AUTOMOBILE CARRIAGES: THE Paris-Bordeaux-Paris Race of.—Brief account of the performance of the vehicles that obtained the prizes in the competition instituted by the Petit Journal. With 9 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1025. Price 10 cents. To be had at this office and from all newsdealers.

"INSTRUMENTS OF PRECISION." Architects', Engineers', Surveyors' | F. Weber & Co. and Draughtsmen's Supplies. Sole Agents for Riefers Patent Drawing Instruments and A. OTT'S PANTOGRAPHERS and PLANIMETERS, Etc. Large assortment of Mathematical Instruments and Materials for Schools and Colleges. Send for catalogue, Vol. III, 1152 Chestnut St., Phila., Pa. Branch Houses: ST. LOUIS and BALTIMORE.



THE SCIENTIFIC AMERICAN

ESTABLISHED 1845. The Most Popular Scientific Paper in the World Only \$3.00 a Year, Including Postage. Weekly—52 Numbers a Year.

This widely circulated and splendidly illustrated paper is published weekly. Every number contains sixteen pages of useful information and a large number of original engravings of new inventions and discoveries, representing Engineering Works, Steam Machinery, New Inventions, Novelties in Mechanics, Manufactures, Chemistry, Electricity, Telegraphy, Photography, Architecture, Agriculture, Horticulture, Natural History, etc. Complete list of Patents each week.

Terms of Subscription.—One copy of the SCIENTIFIC AMERICAN will be sent for one year—52 numbers—postage prepaid, to any subscriber in the United States, Canada, or Mexico, on receipt of Three Dollars by the publishers; six months, \$1.50; three months, \$1.00. Clubs.—Special rates for several names, and to Postmasters. Write for particulars.

The safest way to remit is by Postal Order, Draft, or Express Money Order. Money carefully placed inside of envelopes, securely sealed, and correctly addressed, seldom goes astray, but is at the sender's risk. Address all letters and make all orders, drafts, etc., payable to **MUNN & CO., 361 Broadway, New York.**

Scientific American Supplement

This is a separate and distinct publication from THE SCIENTIFIC AMERICAN, but is uniform therewith in size, every number containing sixteen large pages full of engravings, many of which are taken from foreign papers and accompanied with translated descriptions. THE SCIENTIFIC AMERICAN SUPPLEMENT is published weekly, and includes a very wide range of contents. It presents the most recent papers by eminent writers in all the principal departments of Science and the Useful Arts, embracing Biology, Geology, Mineralogy, Natural History, Geography, Archaeology, Astronomy, Chemistry, Electricity, Light, Heat, Mechanical Engineering, Steam and Railway Engineering, Mining, Ship Building, Marine Engineering, Photography, Technology, Manufacturing Industries, Sanitary Engineering, Agriculture, Horticulture, Domestic Economy, Biography, Medicine, etc. A vast amount of fresh and valuable information obtainable in no other publication.

The most important Engineering Works, Mechanisms, and Manufactures at home and abroad are illustrated and described in the SUPPLEMENT.

Price for the SUPPLEMENT, for the United States, Canada, and Mexico, \$5.00 a year; or one copy of the SCIENTIFIC AMERICAN and one copy of the SUPPLEMENT, both mailed for one year to one address for \$7.00. Single copies, 10 cents. Address and remit by postal order, express money order, or check, **MUNN & CO., 361 Broadway, New York.**

Building Edition.

THE SCIENTIFIC AMERICAN BUILDING EDITION is issued monthly. \$2.50 a year. Single copies, 25 cents. Thirty-two large quarto pages, forming a large and splendid Magazine of Architecture, richly adorned with elegant plates and other fine engravings; illustrating the most interesting examples of modern Architectural Construction and allied subjects.

A special feature is the presentation in each number of a variety of the latest and best plans for private residences, city and country, including those of very moderate cost as well as the more expensive. Drawings in perspective and in color are given, together with Floor Plans, Descriptions, Locations, Estimated Cost, etc.

The elegance and cheapness of this magnificent work have won for it the Largest Circulation of any Architectural publication in the world. Sold by all newsdealers. \$2.50 a year. Remit to **MUNN & CO., 361 Broadway, New York.**

Export Edition

of the SCIENTIFIC AMERICAN, with which is incorporated "LA AMERICA SCIENTIFICA E INDUSTRIAL" or Spanish edition of the SCIENTIFIC AMERICAN is published monthly, and is uniform in size and typography with the SCIENTIFIC AMERICAN. Every number contains about 50 pages, profusely illustrated. It is the finest scientific, industrial export paper published. It circulates throughout Cuba, the West Indies, Mexico, Central and South America, Spain and Spanish possessions—wherever the Spanish language is spoken. THE SCIENTIFIC AMERICAN EXPORT EDITION has a large guaranteed circulation in all commercial places throughout the world. \$3.00 a year, postpaid, to any part of the world. Single copies, 25 cents.

Manufacturers and others who desire to secure foreign trade may have large and handsomely displayed announcements published in this edition at a very moderate cost. Rates upon application.

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

HYPNOTISM Sixty ways, \$5; my method, \$2. 100 page book, 10c. Occult, Prof. Anders n, S. A. 17, Masonic Temple, Chicago

HUB Ball Bearings

For All Shaft Sizes. For High Speeds. No Heating. No Wear. They Save Power, Oil, Time. Used by Best Machine Builders.

Patented. **THE BALL BEARING CO.,** 12 Watson St., Boston, Mass.



IMPERIAL BALL BEARING AXLE A written guarantee with each set of axle, **97 PATTERN** \$,000 sets in use. Indorsed by the leading carriage builders. Reduces friction 75 per cent. One horse can do the work of two. Mechanically perfect. Can be put on old or new work.

Write for our Illustrated Catalogue and Testimonials, which we send free on application. **Imperial Ball Bearing Axle Dept., 184-190 Lake Street, Chicago, Ill.**



VELOCITY OF ICE BOATS. A Collection of interesting letters to the editor of the SCIENTIFIC AMERICAN on the question of the speed of ice boats, demonstrating how and why it is that these craft sail faster than the wind which propels them. Illustrated with 10 explanatory diagrams. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 214. Price 10 cents. To be had at this office and from all newsdealers.

PERFORATED METAL OF EVERY DESCRIPTION. **HARRINGTON & KING** PERFORATING CO. 225 NORTH UNION ST. AND 224 PEARL ST. NEW YORK



DEFIANCE MACHINE WORKS BUILDERS OF HUB, SPOKE, WHEEL, BENDING, WAGON, CARRIAGE AND HOOP MACHINERY. SEND FOR CATALOGUE



THE SUBMERGED PIPE LINE ACROSS the Willamette River at Portland, Oregon.—By F. and A. S. Riffe. Description of a line of 28-inch cast iron submerged pipes forming portion of the main line constructed during 1893 and 1894, to supply the city of Portland with pure water from Bull Run, a mountain stream thirty miles distant. With 18 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 1019 and 1020. Price 10 cents each. To be had at this office and from all newsdealers.

The Coburn Patent Trolley Track Store Ladders. A PAIR OF STAIRS ALL ALONG THE LINE OF SHELVES. Send for Book.

The Coburn Trolley Track Mfg. Co. HOLYOKE, MASS.



WIRE Machinery for making any articles from **WIRE**

Automatic wire forming machine department is in charge of R. C. Manville. Machinery for making sheet metal goods.

THE WATERBURY MACHINE CO., P. O. Box 1025, WATERBURY, CONN., U. S. A.

