The Search for Work

The man who can do something better than anyone else doesn't search for work. Employers search for him. We teach the theory of engineering and the trades to men already at work. Thousands of our students have secured a

Salary-Raising Education

in Mechanical, Electrical, Steam, Civil or Mining Engineering, Chemistry; Architecture; Plumbing; English Branches.

When writing state subject in which interested.

International Correspondence Schools, Box 942, Scranton, Pa.

ELECTRICAL ENGINEERING TAUGHT BY MAIL.

Write for our Free Illustrated Book. "CAN I BECOME AN ELECTRICAL ENGINEER?"

We teach Electrical Engineering, Electric Lighting, Electric Railways, Mechanical Engineering, Steam Engineering, Mechanical Drawing, at your home by mail. Institute indorsed by Thos. A. Edison and others.

ELECTRICAL ENGINEER INSTITUTE, Dept. A, 240-242 W. 23d St., New York.

The Worcester Polytechnic Institute,

WORCESTER, MASS.

T. C. MENDENHALL, Ph.D., LL.D., Pres't. Courses of study in Mechanical, Civil and Electrical Engineering, Chemistry and General Science. New and extensive laboratories in Engineering, Electricity, Physics, and General and Industrial Chemistry. Special facilities in Hydraulics. 200-page catalogue, *showing appointments secured by graduates, mailed free.*

Address J. K. MARSHALL, Registrar.

CREST MFG. CO.

CAMBRIDGEPORT, MASS.

3 to 5 H. P. MOTORS

CREST Sparking Plug

Coils Batteries Carburetors

HOO-HOO BABBITT METAL

Is the very best for high speed journals and heavy bearings. Made only by

MORE-JONES BRASS & METAL CO., ST. LOUIS, MO.

KEEP POSTED ON AUTOMOBILES

THE HUB will post you. THE HUB is the leading carriage and automobile journal, and gives authentic information on automobiles.

AUTOMOBILES

Don't buy an automobile until you have read and studied THE HUB. At News-stands or by mail, 25 cents. Six months' subscription, $1.00. TRADE NEWS PUBLISHING CO., Room 6, 24 Murray Street, NEW YORK.

KRŌMSKŌP

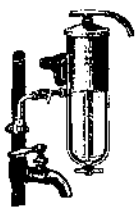
Color Photography

Nature's Reflex! "It seems almost a miracle!"

"To the already long list of marvelous devices which will come into common every-day use must be added this last and most pleasing gift of science."

Kromskop's Kromograms and Kromskop's Cameras, now ready. *Send stamp for booklet.*

IVES KROMSKOP COMPANY, Incorporated, 1324 Chestnut Street, Philadelphia.



IMPERIAL FILTER

STYLE, DOMESTIC.

One good feature is its filtering surfaces, 90 square inches. Another good feature is its design and workmanship, backed by ten years of "know how." Last, but not least, is its retail price from which we quote liberal discounts to live agents. Write for catalogue.

IMPERIAL FILTER CO., 1221 Washington Ave., St. Louis, Mo.

ELECTRIC AUTOMOBILE. — DIRECTIONS, with many illustrations, for making a complete machine from two bicycles are given in SUPPLEMENT No. 1195. The motor and battery are also treated of in detail. Price 10 cents. For sale by Munn & Co. and all newsdealers.

Asbesto-Metallic Packings

SHEETING, GASKETS, TAPE and PISTON PACKINGS. Will stand the highest pressure for either steam or hydraulic work. *Write for samples and price list.* C. W. TRAINER MFG. CO., (Est. 1874), 88 Pearl St., Boston, U. S. A.

Water closet flushing apparatus, A. La Bonte 672,431
Water cooler, J. W. Baker 672,254
Water, device for the purification of, J. M. A. Lacomme 672,231
Water or other hygienic purposes, apparatus for the purification of, J. M. A. Lacomme 672,229
Water wheel, impact, W. A. Doble 672,315
Wave motor, P. B. Tingley 672,085
Weighing machine, automatic, Christiansen & Dewing 672,145
Well boring apparatus, F. A. Eastman 672,097
Well, tool for removing broken sucker rows from, C. O. Taylor 672,154
Wheel retainer, J. N. Clouse 672,031
Winch, H. H. Boggs 672,222
Wire stretcher, M. W. Gunn 671,955
Wrapping and labeling packages, machine for, Peters & Hungerford 672,286
Wrench, P. Grelson 672,037
Wringer, C. P. Searles 672,423
Writing machine, J. H. Sheckler 672,043
Yarns and fabrics from silk waste, manufacturing, D. E. Coe 672,055

DESIGNS.

Axle end, C. T. McCue 34,379
Axle end, R. D. Woodford 34,380
Belt, L. Sanders 34,387
Bicycle frame, G. W. Manson 34,381
Billiard table, O. F. Bartel 34,382
Binding, skirt, J. Jasper 34,389
Bottle, E. H. Nelson 34,372
Box, J. A. Kiesele 34,373
Buckle, Gelabert & Nelson 34,368
Buckle back, Neuberger & Cleary 34,369
Button, M. B. Shantz 34,367
Cigar clipper case, G. Fuchs 34,366
Cigar cutter, E. A. Willard 34,365
Clock case base, Jennings & Mosman 34,363
Clothes wringer gear wheel boxing, H. P. Clark 34,377
Cream separator bottom blank, P. C. Smith 34,374
Drinking fountain body, P. J. Madden 34,375
Eyeglass strap, O. W. Meyrowitz 34,362
Finger ring band, M. L. Weiss 34,360
Fly trap, F. Zwick 34,376
Hat frame, lady's, T. J. Benson 34,388
Horseshoe pad, J. Ewing 34,378
Hub, thumb turn, H. G. Voight 34,371
Key ring, H. A. Weihman 34,370
Medal, silver souvenir, J. Lesher 34,359
Musical instrument case or cabinet, T. P. Brown 34,384
Puzzle box or case, E. B. Comerford 34,383
Regalia collar, C. H. Lindenberg 34,386
Spoons, forks, etc., handle for, J. Clulee 34,361
Syringe nozzle, P. Lundy 34,364
Type, font of, D. J. Seaman 34,385

TRADE MARKS.

Apparel, certain named, Brill Brothers 36,244
Beverage, certain named, Metto Company 36,251
Boots and shoes, certain named, Hamilton, Brown Shoe Co 36,245
Calculators, certain named, C. Kolshorn 36,272
Car fenders, W. T. Watson 36,281
Carbureters for petroleum motors, L. Lumiere 36,280
Coffee, prune, A + C Ham Co 36,252
Confectionery, jellies, extracts, and nuts, J. G. McDonald Candy Co 36,249
Cough cures, corn cures, and other curative preparations, W. L. Hackley 36,264
Cough drops, W. P. Logue 36,263
Dentifrices, tooth powders, tooth washes, and tooth paste, C. G. Pease 36,262
Fire extinguishers, chemical, J. B. Miller 36,279
Fruits, dried or evaporated, J. S. Twombly 36,250
Furniture polish, J. E. Cook & Co 36,259
Glass, certain named, Libbey Glass Co 36,271
Hat plus, ornamental, McRae & Keeler 36,242
Hats, certain named, Berg Bros 36,243
Medicines or remedies, proprietary, W. F. Grier 36,267
Metal and wood and wood cleansers and stains, preservatives for, Protectus Company 36,261
Metal ware, certain named, Gorham Manufacturing Co 36,277
Oil, essences, oils, vazalatum, and ammonia, tasteless castor, F. L. Beggs 36,265
Painting apparatus, certain named, Muralo Company 36,276
Paper cutting machines, Child Acme Cutter & Press Co 36,275
Polish, S. A. Everett 36,260
Product of the suprarenal glands, J. Takamine 36,269
Remedies, proprietary, H. Y. Bready 36,266
Salt, F. D. Moulton & Co 36,253
Salves and ointments, J. J. Merciol 36,270
Scouring and dyeing materials, certain named, Richman, Foley & Watkins 36,258
Seeds and seed grains, grass, clover, and field, Albert Dickinson Co ..... 36,254 to 36,257
Sewing machines and accessories, New Home Sewing Machine Company 36,274
Shoes, Charles Case Shoe Company 36,246
Stiffening material, certain named, Warren Featherbone Co 36,248
Stoves, ranges, and their parts, Pittsburg Stove & Range Co 36,278
Therapeutic preparations for digestive purposes, Chemische Fabrik Rhenania 36,268
Time detectors, watchmen's, R. Kopp 36,273
Whalebone dress bone, G. A. Dodge 36,247

LABELS.

"California Citrus Washing Powder," for washing powder, Citrus Soap Co 8,315
"Coleman's Guarantee," for a medicine, Coleman Remedy Co 8,302
"Garlock Packing," for packing, Garlock Packing Co 8,298
"Good as Gold," for a washing, scouring, and cleansing compound, M. C. Snider 8,316
"Lathru," for furniture polish and cleaning compound, W. A. Rich 8,314
"Madonna," for eau de cologne, J. M. Farina 8,306
"Magic Elixir," for a medicine, Thomas Medicine Co 8,301
"Natural Hair Restorer," for a hair restorer, S. Bronson 8,305
"Palatine," for table water, J. Strassner 8,309
"Pansy Brand," for confectionery, P. F. Beich 8,308
"Reliable Pile Cure," for a medicine, S. J. Field 8,303
"Sanitarium Dermal Lotion," for a lotion, Sanitarium Supply Co 8,304
"Saphorosa," for cigars, American Lithographic Company 8,312, 8,313
"St. Nic," for an insecticide, A. J. Hough 8,299
"Superb-Extras," for canned goods, L. Zeckendorf & Co 8,310
"Walker's Restorative Tonic," for a medicine, F. S. Walker 8,300
"Washington Rye Bread," for rye bread, J. Penner 8,311
"White Rose Rock Candy Drips," for rock-candy drip, Farrell & Co 8,307

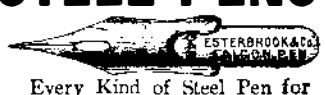
PRINTS.

"Bleached Sponges," for bleached sponges, Falls City Duster Co 324
"I Like That," for a distilled beverage, American Lithographic Company 325
"The Original Mill End Sale," for mill ends, M. W. Dyer 323

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.

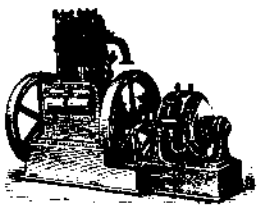
Canadian patents may now be obtained by the inventors for any of the inventions named in the foregoing list, provided they are simple, at a cost of $45 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.

ESTERBROOK'S STEEL PENS



150 Varieties. For Sale by all Stationers. Every Kind of Steel Pen for Every Kind of Hand.

Works, Camden, N. J. THE ESTERBROOK STEEL PEN CO. 26 John St., New York.



WALRATH GAS & GASOLINE ENGINES

From 4 to 200 H. P. Made in one, two, three and four cylinder type. The gas engine that holds a volt meter as close as an automatic steam engine. Adapted to all power purposes, stationary or portable, and especially well qualified for electric lighting. Guaranteed to produce a first-class commercial light without the aid of countershafts or massive fly-wheels. Neat in design, simple in construction, economical in operation, self-lubricating, all parts interchangeable and accessible. *Send for catalog "S."*

Marinette Iron Works Mfg. Co., Marinette, Wis., U. S. A.

G. F. WHEELER, General Sales Agent, Chicago office, 301 Fisher B'ld'g.

Improved Rheostat

U. S. A. Patent No. 649,927 especially adapted for cranes, lifts and general lifting apparatus and for electromotors frequently turned on and off under pressure. Supplied by

CARL FLOHR MACHINE WORKS, Berlin, N. Germany.

The utilization of the U. S. A. patent open to a leading American Electrical Concern.

A GRADUATED Automatic REDUCING VALVE

Physicians, Surgeons, Jewelers, Dentists, Artists, Brewers, Bottlers, etc., in fact all users of power require the

AUTOMATIC REDUCING VALVE.

Graduated to regulate the pressure exactly and does it automatically. Absolutely air-tight. No packing. No leakage. Handles high or low pressures or temperatures. Only Valve known that retains a uniform low pressure independent of varying high pressure.

Automatic Reducing Valve Co., 125 LaSalle St., Chicago

WELL DRILLING Machines

Over 70 sizes and styles, for drilling either deep or shallow wells in any kind of soil or rock. Mounted on wheels or on sills. With engines or horse powers. Strong, simple and durable. Any mechanic can operate them easily. Send for catalog.

WILLIAMS BROS., Ithaca, N. Y.

DO YOU USE GRINDSTONES?

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

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

Expert Model Making. Established 1867. Wm. Trautman, Proprietor Chicago Model Works, Chicago, Ill. 179 E. Madison St. Write for catalogue of Model Supplies.

50 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, 625 F St., Washington, D. C.

"Hawkins' New 1900 Catechism" OF THE STEAM ENGINE.

PRICE, $2.00.

Postpaid to any address. A practical book on engine running, valve setting, etc. Strictly up-to-date. Money refunded if not satisfactory.

THEO. AUDEL CO., 63 Fifth Ave., New York City.

Pat. June 26, '98.

ONLY WATER MOTOR to blow air in any direction. 500 revolutions a minute at 10 lbs., 1700 at 60 lbs. pressure. Motor, Fan and Guard $14.40 cash. Motor and Pulley $12.00 to run sewing machine, ceiling fan, etc. *Adjust and tighten belt by motor.*

A. ROSENBERG CO., Baltimore, Md., U.S.A.

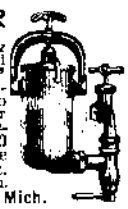
10 PER CENT. TO 50 PER CENT. SAVED on all makes of

CAMERAS

Headquarters for Buying, Selling and Exchanging Cameras or Lenses. PHOTOGRAPHIC SUPPLIES of every description. The bargains we offer will surprise you. Write for our 68-page illus. catalogue and bargain list—mailed free.

Dept. 2, N.Y. Camera Exchange, 114 Fulton St., New York

A GERM-PROOF FILTER



Most fatal diseases come from drinking impure water. Protect yourself and family by using "THE MONARCH" an absolutely reliable filter which quickly purifies water. Needs no plumbing to fix. Can be attached to any plain or threaded faucet. Simplest in construction. Easiest to clean. Price $5.00. Express prepaid. When ordering state whether for plain or threaded faucet. Descriptive catalogue on application.

Hygeia Filter Co., 54 First St., Detroit, Mich.

ICE MACHINES, Corliss Engines, Brewers' and Bottlers' Machinery. THE VILTER MFG. CO., 899 Clinton Street, Milwaukee, Wis.

NEW YORK SHOPPING by a responsible and experienced lady. Send for circular. MRS. LORD, 53 West 24th Street, New York City.

NOVELTIES & PATENTED ARTICLES

Manufactured by Contract. Punching Dies, Special Machinery. E. Konigslow & Bro., 181 Seneca St., Cleveland, O.

STEEL TYPEWRITER TYPE

TYPE WHEELS, MODELS & EXPERIMENTAL WORK, SMALL MACHINERY NOVELTIES & ETC. NEW YORK STENCIL WORKS 100 NASSAU ST N.Y.

Experimental & Model Work

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

INVENTIONS PERFECTED.

Accurate Model and Tool Work. Write for Circular. PARSELL & WEED, 129-131 West 31st St., New York.

Magical Apparatus.

Grand End of Century Catalogue, just out, over 700 engravings, 25c. Parlor Tricks Catalogue, free. MARTINKA & CO. Mfrs., 493 Sixth Ave., New York.

VOLNEY W. MASON & CO.,

Friction Pulleys, Clutches & Elevators

PROVIDENCE, R. I.

D'AMOUR & LITTLEDALE MACHINE CO. 130 WORTH ST., NEW YORK.

PATTERN AND MODEL MAKERS.

MODELS & EXPERIMENTAL WORK. Inventions developed. Special Machinery. E. V. BAILLARD, Fox Bldg., Franklin Square, New York.

YOUR BICYCLE

May need a new crank hanger or higher gear. We can furnish sprocket and cranks complete with cups, cones, balls and dust caps, to fit any wheel. Anybody can put it in the wheel. Write us for full information and price. The Avery & Jenness Co., 60 S. Canal St., Chicago, Ill.

D. L. HOLDEN

14 South Broad St. Philadelphia Pa.

SOLE MANUFACTURER

REGEALED ICE MACHINES

SEE FIRST PAGE SCIENTIFIC AMERICAN SEPT. 2, 1899.

THE PRINCIPAL CHARACTERISTICS

of the Nickel Plate Road which make it the popular line for the traveling public are competent train service, fine roadbed and courteous employés. The Nickel Plate Road is the Short Line between Buffalo and Chicago. The Great Pan-American Exposition this summer will present unusual attractions. The Nickel Plate Road will be in position to accommodate this travel with safety, speed and comfort. Write, wire, 'phone or call on F. J. Moore, General Agent, 291 Main St., Buffalo, N.Y.

PRESSED STEEL BALL RACES

LARGE SIZES A SPECIALTY.

OTTO KONIGSLOW, Cleveland, Ohio

Fine Experimental and Model Work

EDWARD KLEINSCHMIDT, 122 Fulton St., New York. I make a Specialty of Developing Electrical Inventions

FACTORY FOR SALE!

Large fully equipped factory with a capacity for 500 hands, suitable for the manufacture of Automobiles, Electric work, etc. This plant is in first-class condition and could be operated at once. Can be purchased at a bargain and on liberal terms.

Address S. B. PAGE, MIDDLETOWN, CONN.

Pat. applied for.

DYKE'S CARBURETTER for Automobiles, Boats, etc. Your engine with this device speeded like a steam engine. **Build Your Own Automobile.** I furnish all parts. Gasoline Engines from 1 to 10 H. P.

A. L. DYKE, Lemcke Bldg., St. Louis, Mo.

BICYCLES BELOW COST

5000 High Grade guaranteed 1901 Models $10 to $18 with best equipments, '99 & '00 MODELS, $7 to $12

Good Second Hand Wheels, $3 to $8 best makes in perfect riding order. *Must be closed out.*

We ship anywhere on 10 days trial without a cent in advance.

EARN A BICYCLE distributing catalogs for us. You can make money as our agent.

Write at once for our Bargain List and Special Offer.

MEAD CYCLE CO. Dept. 62 L Chicago.

PERFORATED METAL OF EVERY DESCRIPTION AND FOR ALL USES.

THE HARRINGTON & KING PERFORATING CO. 225 N. UNION ST., CHICAGO, ILL. U.S.A.

© 1901 SCIENTIFIC AMERICAN, INC.