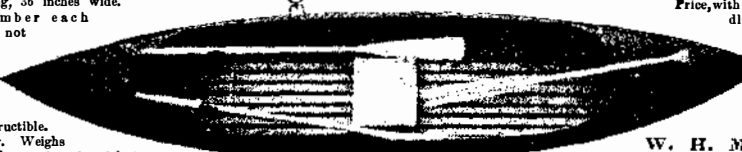


A SPORTSMAN'S BOAT. Mullins' "Get There" Steel Duck Boat.

14 feet long, 36 inches wide. Air chamber each end. Can not leak. Can not sink. Practically indestructible. No caulking. Weighs 85 lbs. Write for booklet.



Price, with seat, oars, paddle and slat bottom, complete and crated. **\$20.00**

W. H. MULLINS, 384 Depot St., SALEM, OHIO.

The Highest Efficiency

is guaranteed in every one of the smooth running **Brennan Gasoline Motors** made on the latest approved pattern, safe, sure and quick to start, economical in fuel, and of great durability. Full protected patents allowed.

BRENNAN MFG. CO. SYRACUSE, N. Y., U. S. A.



PALMER MARINE and STATIONARY MOTORS

2 and 4 CYCLE

are no experiment, as they are in successful operation in all parts of the world. Launches in stock. Send for Catalogue.

PALMER BROS., Cos. Conn. New York Office, 136 Liberty St.




The Apple Automatic Igniter

For Jump Spark or Touch Spark. For any gas engine, stationary, automobile or marine. Does away with batteries and belts.

Water & Dust Proof. Write for circular.


THE DAYTON ELECTRICAL MFG. CO. No. 80 South St. Clair St., Dayton, Ohio, U. S. A.



Every Mechanic Should Own It.

Montgomery & Co.'s Tool Catalogue which is thoroughly up-to-date. 704 pages and discount sheet. Sent by mail for 25 cents.

MONTGOMERY & CO., 105 Fulton St., New York City.



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.



AMERICAN COVERED SPARKING-PLUG

is so constructed as to prevent oil or moisture bridging insulation on outside of plug. Especially adapted to marine work. Perfectly water-tight. Fitted with Patent Double Insulated Micron Core and fully guaranteed. Price, \$5.00. Price, special sizes, on application.

AMERICAN COIL CO., 28 Newburn St., West Somerville, Mass.



Manufacturers' Agent Wanted

In all large cities. Good Staple as Flour. Sales now \$20,000,000 year in this line. We have them all beat. Exclusive Agency given. Life contract. Must carry stock \$1,000 to \$5,000.

Address **CONSOLIDATED UNION HORSE SHOE CO.** 64 Sherman St., Chicago, Ill.




ENTRANCING. The EDISON PHONOGRAPH

Don't judge the Phonograph by what you have heard—the imitations or the old styles—but call at the nearest dealer's and hear the Phonograph with Mr. Edison's recent improvements.

5000 DEALERS SELL PHONOGRAPHS

NATIONAL PHONOGRAPH CO., Orange, N. J.

NEW YORK CHICAGO SAN FRANCISCO EUROPE, ANTWERP, BRUSSELS, LONDON, PARIS, AMSTERDAM, ROTTERDAM, BRISBANE, SYDNEY, MELBOURNE, ADELPHI, PERTH, AUSTRALIA, HONG KONG, SHANGHAI, PEKING, TIENTSIN, MANCHESTER, LONDON, ENGLAND.



A SKIN GAME IS GRE-SOLVENT

The Game is to get the Grease and Grime off without removing the skin. Play the Game. It only takes a few seconds. Costs five games for one cent. 75 Games in one tin box. Let's see, that's 15c. Right! 25c. box even cheaper.

GET INTO THE GAME

Stick to GRE-SOLVENT, and nothing but the Skin will stick to you. Samples sent free. "MILES AHEAD OF SOAP"

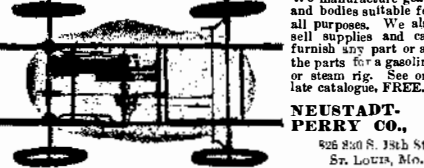
THE UTILITY COMPANY 227 Greenwich St., New York City



CONTROL OF FIRE.—VALUABLE PAPER on fire extinguishment. SCIENTIFIC AMERICAN SUPPLEMENT 1134. Price 10 cents. For sale by Munn & Co. and all newsdealers.

We manufacture gears and bodies suitable for all purposes. We also sell supplies and can furnish any part or all the parts for a gasoline or steam rig. See our late catalogue, FREE.

NEUSTADT-PERRY CO., 826 3rd St. St. Louis, Mo. 31 Hudson St., New York, Export Agents.

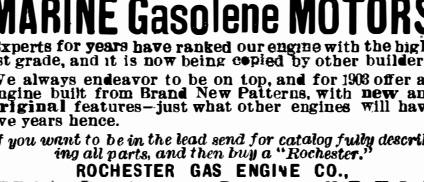


MARINE Gasoline MOTORS

Experts for years have ranked our engine with the highest grade, and it is now being copied by other builders. We always endeavor to be on top, and for 1903 offer an engine built from Brand New Patterns, with new and original features—just what other engines will have five years hence.

If you want to be in the lead send for catalog fully describing all parts, and then buy a "Rochester".

ROCHESTER GAS ENGINE CO., 838 Driving Park Ave., ROCHESTER, N. Y., U. S. A.

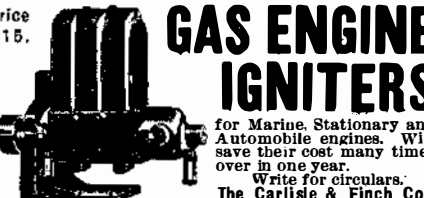


GAS ENGINE IGNITERS

for Marine, Stationary and Automobile engines. Will save their cost many times over in one year.

Write for circulars.

The Carls & Finch Co., 333 E. Chilton Ave., Cincinnati, O.



ARTESIAN

Wells, Oil and Gas Wells drilled by contract to any depth from 50 to 300 feet. We also manufacture and furnish everything required to drill and complete same. Portable Horse Power and Mounted Steam Drilling Machines for 100 to 120 feet. Write us stating exactly what is required and send for illustrated catalogue. Address:

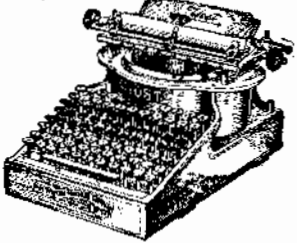
PIERCE WELL ENGINEERING AND SUPPLY CO. 136 LIBERTY STREET, NEW YORK, U. S. A.



The **Light Running YOST** is easy to operate. Its **Beautiful Work** is easy to read. Our **Unusual Catalogue** is easy to understand.

Why not send for the **UNUSUAL CATALOGUE** and learn of the **BEAUTIFUL WORK** done by the **LIGHT RUNNING YOST**? Sent free.

YOST WRITING MACHINE CO., 245 B'way, New York.



A. W. FABER

Manufactory Established 1761.


LEAD PENCILS, COLORED PENCILS, SLATE PENCILS, WRITING SLATES, INKS, STATIONERS RUBBER GOODS, RULERS, ARTISTS' COLORS.

78 Reade Street, New York, N. Y. GRAND PRIZE, Highest Award, PARIS, 1900.

"HERCULES FLOATS"

mean the best floats on earth. Not so cheap as some, but honest, well made goods. 40,000 in daily use.

HERCULES FLOAT WORKS, Box 372, Springfield, Mass.



COLD GALVANIZING

Save all the Spelter consumed in galvanizing by the hot process by using our Patent Cold Galvanizing Process, as the amount of spelter lost as dross in the hot process if used in our process will give sufficient protection to any kind of work to make it rust-proof even against salt.


Our licensees include U. S. Government. The Standard Oil Co., Armour Packing Co. Licenses granted on royalty basis. Sample and custom work done at our factory, 108-110 W. 11th St. Main Office, 348 Broadway, 1 to 9 Park Avenue, Brooklyn.

U. S. ELECTRO-GALVANIZING CO.

Rabbit mechanism, W. C. Davis.....	734,492
Raft, J. G. Elserkh.....	734,450
Railway locking joint, P. McCool.....	734,130
Railway appliance, G. Sweat.....	734,248
Railway frog, E. Novinger.....	734,132
Railway rail joint, J. W. Gay.....	734,056
Railway steam and air pipe coupling or the like, automatic, G. D. Pettigell.....	733,993
Railway switch operating mechanism, E. Reynolds.....	734,367
Railway track connection, W. F. Miller.....	734,345
Railways or other rolling machinery, device for decreasing the noise upon, G. W. Stevens.....	734,200
Rake and hoe, combined, A. C. Miller.....	734,078
Refrigerator or cold storage room, E. J. Wirths.....	734,248
Registers, means for holding and centering the rolls of paper contained in autographic, E. J. Barker.....	733,934
Revolving body balancing device, J. H. Hubbell.....	734,417
Rheostat operated by compressed air, liquid, K. de Kando.....	733,971
Ring tray, jeweler's, M. Porteck.....	734,091
Roadway and vehicle for traveling thereon, J. B. Hansler.....	734,061
Rock drill, P. Reinhardt.....	734,364
Rope clamp, A. A. Newell.....	734,469
Rotary engine, M. Fleming.....	734,229
Rotary engine, C. E. & W. E. Reynolds.....	734,430
Rule, foldable, J. A. & F. L. Traut.....	734,013
Ruler, A. Wildeman.....	734,149
Saddle attachment, riding, T. Sena.....	734,100
Saddle, cart and harness, P. R. Pulman.....	734,471
Saddle, harness, J. B. Tener.....	734,478
Safety device, E. S. Smith.....	734,142
Sand discharging spout, A. M. Howery.....	734,331
Sash balance, J. Foster.....	733,953
Sash, window, J. E. Scott.....	734,436
Scale, D. J. Whelan.....	734,383
Scale, computing, H. F. Kinser.....	734,464
Scale rack, J. N. Richey.....	734,094
Screw driver gage, W. H. Voss.....	734,204
Sealing device, bottle, G. H. Gillette.....	734,459
Sealing machine, bottle, Abbott & Marks.....	734,031
Seam dampener, W. H. Richey.....	734,000
Seed drill, P. W. Ekstrand.....	734,049
Self locking pin, L. Pierce.....	733,994
Self measuring can, R. Barrett.....	733,937
Semaphore, Lorce & Patenall.....	733,981
Sewing machine presser foot holder, P. Diehl.....	734,257
Sewing machine table, folding, A. Morley.....	734,190
Shade and curtain pole holder, C. McDonner.....	734,131
Shade hanging, adjustable, A. A. Watts.....	734,025
Shade, window, M. E. Reilly.....	733,996
Shaft support, F. Reynolds.....	734,368
Shearing machine, C. M. Palmer, reissue.....	12,131
Sheet feeding machine, pneumatic, G. F. Leiger.....	734,466
Shoe, ventilated, J. E. Kennedy.....	734,338
Sign, metal, Ayers & Coffee.....	734,212
Signaling system, wireless, C. D. Ehret.....	734,048
Siphon filler, H. Carmichael.....	734,302
Sled, knockdown, B. F. Rix.....	734,431
Sleeve head, L. N. Stein.....	734,198
Snap hook, R. R. Wadwell.....	734,380
Snow melting apparatus, A. E. Riedel.....	734,195
Snow plow, W. F. Wheeler.....	734,028
Sound reproducing machine, J. Wellner.....	734,206
Spring buffer, F. F. Keeler.....	734,337
Sprinkler head, V. Lapham.....	734,184
Square, J. D. Witcher.....	734,290
Squeegee, J. C. W. Rofe.....	734,370
Stacker, pneumatic, L. Holland-Letz.....	734,067
Stacker, straw, J. K. White.....	734,027
Staging, adjustable, J. A. Hagan.....	734,321
Staking machine, C. F. Stackpole.....	734,143
Stamp mill, R. J. Baker.....	733,933
Starching machine, G. H. Bishop.....	734,035
State machine, E. & H. F. Waite.....	734,450
Steam engine, S. Sheriff.....	734,475
Steam engine, compound, W. T. Bennett.....	734,037
Steam generator, G. R. Hingelberg.....	734,328
Stencil and making same, H. C. J. Deeks.....	734,120
Stenciling or printing machine, C. M. Hamilton.....	734,172
Stethoscope instrument, E. C. M. Bowles.....	734,159
Still, water, T. P. Wilson.....	734,486
Stone, device for fastening metal, etc., to, T. P. Hicks.....	734,326
Stopper. See Bottle stopper.....	
Store, heating, O. Gilliland.....	734,460
Strap grip or buckle, J. H. Wallace.....	734,382
Sulfur burner, H. Blumenberg, Jr.....	734,397
Switch actuating mechanism, J. H. Fitch.....	734,259
Switch stand, A. B. Bulloch.....	734,042
Switch throwing device, Graham & Neely.....	734,260
Table lock, pedestal extension, E. Tyden.....	734,203
Telegraph relay, J. C. Barclay.....	734,452
Telegraph repeater, J. C. Barclay.....	734,451
Telegraph sounder, J. C. Barclay.....	734,453
Telephone exchange, W. W. Woodruff.....	734,386
Telephone switchboard, C. E. Scribner.....	734,099
Telpher, H. M. Harding.....	734,126
Tension device, J. Barrett.....	733,936
Thermostatic alarm, J. E. Fortin.....	734,053
Thread holder support, cone, Bates & Larum.....	734,293
Three high mill, J. Kennedy.....	734,070
Threshing machine, C. H. Bidwell.....	734,214
Threshing machine and grain separator, C. Ramsell.....	734,241
Tie and rail joint, combined, A. B. Snyder.....	734,102
Time recording lock, A. B. Hayden.....	734,174
Time, speed, and distance recorder, R. F. G. Baxendale.....	734,156
Tire, C. Burger.....	734,296
Tire, pneumatic, W. F. Schuch.....	734,434
Tire, plug pneumatic, C. O. Tingley.....	734,108
Tire setter and cooler, S. Smith.....	734,003
Tobacco pipe, H. M. Willis, reissue.....	12,132
Tool, pneumatic, Metcalf & Abbey.....	734,276
Toy gun, A. Delgrande.....	733,946
Toy savings bank, F. A. Lane.....	734,268
Traction wheel, A. Wenberg.....	734,481
Transmitter arm, W. Kaissling.....	733,970
Transmitting intelligence, H. Shoemaker.....	734,476
Trolley, H. Spurrier.....	734,442
Trousers former and coat hanger, A. Jacobs.....	734,232
Truing up work, indicator for, E. W. Kelley.....	734,182
Tube forming apparatus, W. Cairns.....	734,299
Tube forming apparatus, W. Cairns.....	734,300
Tube making machine, adjustable skid for, Page & Button.....	734,357
Tug, jointed hame, C. C. Schwaner.....	734,001
Tunnel construction, D. L. Hough.....	734,265
Type page binder frame, W. H. Francis.....	734,166
Typewriter ribbon guide holder, E. F. Kunath.....	733,975
Typewriting machine, J. L. Cantelo.....	734,044
Umbrella attachment, H. P. Ferroussat.....	734,311
Umbrella stand, G. D. Hinman.....	733,963
Universal joint or shaft coupling, W. O. Worth.....	734,490
Vacuum pan, N. Gerber.....	734,228
Valve, C. E. Mack.....	734,186
Valve, W. C. McKeown.....	734,351
Valve for hydraulic speed regulators, distributing, R. Thomann.....	734,285
Valve mechanism, steam trap, G. P. Stocker.....	734,144
Valve, steam actuated engine, S. Lundquist.....	733,985
Valve, water cooled, N. McConnell.....	734,081
Vapor burner, H. S. Thornton.....	734,201
Vehicle air pump mechanism, motor, E. H. White.....	734,028
Vehicle brake, H. O. Benedict.....	734,175
Vehicle Jack, A. O. Pence.....	733,992
Vehicle lantern holder, A. C. S. Rue.....	734,432
Vehicle, motor, D. M. Pfautz.....	734,283
Vehicle or movable structure guarding apparatus, Frank & Hutchinson.....	734,227
Vehicle seat supporting brace, G. W. Vinson.....	734,379
Vehicle spring, F. Bosch.....	733,940
Vehicle steering device, motor, F. J. Tromble.....	734,202
Vehicle wheel, J. F. Barnett, Jr.....	733,935
Velocipede, railway, F. Brady.....	734,491
Veneered molding or the like, manufacture of, O. Leipmann.....	734,423
Ventilator, E. J. Glackin.....	733,956
Vessel bottom, metallic, D. A. Lisk.....	733,979
Voltage regulator, C. E. Skinner.....	734,438
Vulcanizing apparatus, B. W. Wittenberg, et al.....	734,489
Wagon body, W. Leppert.....	734,422
Wall, W. N. Wight.....	734,289
Wash cabinet, portable, J. G. Muehl.....	734,348
Washer. See Can washer.....	
Washing machine, W. S. Barager.....	734,154

WONDER Acetylene Burners ARE THE BEST

Sold by good dealers or write **THE STATE LINE MFG. CO.** 5th & 17th Sts., Chattanooga, Tenn., U. S. A.



STIMULATION WITHOUT IRRITATION



WILL MAKE HAIR GROW

Evans Vacuum Cap

This appliance will massage the scalp and force a free and healthful circulation. It will stop hair from falling out and restore a normal growth where live follicles exist. It is used about ten minutes twice a day. Price of outfit, complete, is \$3.00. Money refunded in full if not satisfactory after 30 days' use.

A gentleman from Boston writes:

Gentlemen:—I purc one of your caps a few months ago and as I am certainly well pleased with the results I am getting I wish to recommend your method of treatment. My hair has been falling out over fifteen years, during which time I had tried practically every supposed remedy with absolutely no results (except injurious) but thanks to the "stimulation without irritation" method the fuzz on my head is developing into hair.

A fac-simile of above letter bearing name and address will be sent on application to any one interested.

EVANS VACUUM CAP CO., St. Louis Office, Fullerton Building, New York Office, Room 12, 180 Broadway.


BARKER MOTORS

1 to 8 H. P., \$80 to \$220

Have more good points, fewer parts and require less attention in operation than any other.

Launches, Valves, Specialties.

C. L. Barker, Norwalk, Ct.




For Either Hand or Power

This machine is the regular hand machine supplied with a power base, pinion, countershaft, etc., and can be worked as an ordinary power machine or taken from its base for use as a hand machine. Length of pipe handled easily in small room. Illustrated catalogue—price list free on application.

MACHINE No. 78. Range 2 1/2 to 4 in. R. H.

THE CURTIS & CURTIS CO., 6 Garden St., Bridgeport, Conn.



SIT, RIDE AND SLEEP ON AIR

"Perfection" AIR MATTRESSES CUSHIONS AND PILLOWS

For Lovers of Comfort and Cleanliness

Whether at home or abroad, in camp or on the water, the supremacy of "Perfection" Air Mattresses cannot be denied. Delightfully cool, absolutely damp-proof, odorless and hygienic. No crevices where dust or anything objectionable can conceal itself. A hard or soft bed as you desire.

CONFORM TO EVERY CURVE OF THE BODY.

Fully guaranteed. If not satisfactory money refunded. Write for free booklet D.


Mechanical Fabric Co., Providence, R. I. New York Office, 16 Warren Street.



The "Best" Light

is a portable 100 candle power light costing only 2 cts. per week. Makes and burns its own gas. Brighter than electricity or acetylene and cheaper than kerosene. No Dirt. No Grease. No Odor. Over 100 styles. Lighted instantly with a match. Every lamp warranted. Agents Wanted Everywhere.

THE "BEST" LIGHT CO. 87 E. 5th Street, CANTON, OHIO.




THE CLIPPER CLIP

Its triangular shape prevents entangling and gives three times the capacity of any other clip for attaching papers together.

Best & Cheapest. All Stationers.

CLIPPER MFG. CO., 401 West 124th St., New York, U. S. A.


BRASS OR STEEL. For free samples and information write to us.



8,000 individual sparks per minute

The vibrator cannot stick. Reliability and Economy. Multiple cylinder, high speed engines on a single coil. Intoxication by return gas.

C. P. L. NOXON. Syracuse, N. Y.



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.

