

## ONE RESPONSIBILITY ENGINE AND DYNAMO BOTH BUILT IN ONE FACTORY

10 K.W. TO 500 K.W. DIRECT CURRENT  
15 TO 1500 H.P.

Ask for Bulletin 19

RIDGWAY DYNAMO & ENGINE COMPANY  
Ridgway, Pa.

## WEBER GAS POWER PLANTS

ECONOMICALLY USE

Bituminous, Anthracite, Lignite, Peat Charcoal or Coke.  
40 to 700 H. P. units, for Mill, Mine or Electric Plants.

Satisfactory plants in all parts of North America. Catalog No. 22 gives facts; ask for it. Horizontal Gasoline Engines; sizes, 3 to 30 H. P. Built right; run right. Buy from the builders direct and save money. 25 years of success in every Engine.

Weber Gas Engine Company,  
Box 423 KANSAS CITY, MO.

**SENSITIVE LABORATORY BALANCE**  
By N. Monroe Hopkins. This "built-up" laboratory balance will weigh up to one pound and will turn with a quarter of a postage stamp. The balance can be made by any amateur skilled in the use of tools, and it will work as well as a \$125 balance. The article is accompanied by detailed working drawings showing various stages of the work. This article is contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1184. Price 10 cents. For sale by MUNN & Co., 361 Broadway, New York City, or any bookseller or newsdealer.

## First and Original Motor Buggy \$250 "SUCCESS" AUTOMOBILE

Practical, durable, economical and absolutely safe. A light, strong, steel-tired Auto-Buggy. Suitable for city or country use. Speed from 4 to 40 miles an hour. Our 1908 Model has an extra powerful engine, patent ball-bearing wheels; price, \$275. Also 10 h. p., \$400. Rubber Tires, \$25.00 extra. Write for descriptive literature. Address SUCCESS AUTO-BUGGY MFG. CO., Inc., St. Louis, Mo.

**EVERY RIDER & PROSPECTIVE BUYER**  
Should have CONSTRUCTION MANAGEMENT AND CARE  
**KELLER'S BOOK** OF **MOTORCYCLES**  
ADVISE TO BUYERS, RIDDERS, HELPERS OF BEGINNERS  
25¢ STAMPS  
FULL PAGE DRAWINGS OF CYCLES, TRIPS, CYCLOPS, MOTORCYCLES  
KESSLER'S REQUESTS ST. PAUL, MINN.

**HOW TO MAKE AN ELECTRICAL**  
Furnace for Amateur's Use.—The utilization of 110 volt electric circuits for small furnace work. By N. Monroe Hopkins. This valuable article is accompanied by detailed working drawings on a large scale, and the furnace can be made by any amateur who is versed in the use of tools. This article is contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1184. Price 10 cents. For sale by MUNN & Co., 361 Broadway, New York City or by any bookseller or newsdealer.



## Convert Your Bicycle Into a Motor-Cycle

with one of our Attachable Outfits. A full line of Finished Motors: also rough casting for Bicycle, Auto, Marine or Stationary. Send stamp for catalog.

STEFFEY MFG. CO., 2941 West Girard Ave., Philadelphia, Pa.

**FOX MOTORS**  
HIGH SPEED-HEAVY DUTY  
We sell on the bore and stroke of our cylinders and their capacity in cubic inches. To realize the importance of this matter, send for our catalog.  
THE FOX REVERSIBLE GASOLINE ENGINE CO.  
213 Front St., South Cincinnati, Newport, Ky.

## A Home Made Alternating Current Motor

**READ SUPPLEMENT 1688** for a good, clear article by F. E. WARD, E.E., on the making of a ½ horse power alternating current motor. The motor can be constructed by anyone of ordinary skill in the use of tools, who has access to a screw-cutting lathe with a swing of 9 inches or more. The motor is designed to run on the 100 to 120 volt 60-cycle, single-phase alternating current circuit, now in widespread use for the lighting of dwellings. The motor will drive a 16-inch brass fan, a small lathe, or a 50-watt dynamo for generating direct current for charging storage batteries, and in fact will do almost any kind of work that can be done by one-man power. Order from your newsdealer or from

MUNN & CO., 361 Broadway, New York

far as possible the information which should be obtained in order to afford a definite basis for forming a decision as to the merits of any proposed undertaking.

**THE AUTOMOBILE ROUTE BOOK.** Compiled by D. H. Lewis. Automobile Route Book Company, 1907. 12mo.; pp. 192. Price, \$1.50.

The present volume deals with routes which start from Buffalo, N. Y., and is therefore particularly valuable for automobile enthusiasts that live in the western part of the State of New York. The maps are excellent. There is also a list of automobile owners in Buffalo and nearby places.

**CYANIDE PROCESSES.** By E. B. Wilson, E.M. New York: John Wiley & Sons, 1908. 12mo.; pp. 249. Price, \$1.50.

Owing to the recent improvements in cyanide practice, especially in the treatment of slime, the author adds a chapter giving the latest treatment, thus bringing the fourth edition up to date. Since the first edition, the volume of literature on the subject of cyaniding has increased twelve-fold (one-fold for each year), and while many theories have been proved and disapproved, there remains much to learn, although the process is an established metallurgical one. With the main facts, as outlined in this book, thoroughly digested, the metallurgist need not work haphazard, or the reader be mystified, and any investor must see an element of success in this as in any other undertaking. The details of plant construction are purposely omitted, since they vary at each mill and must be worked out by the engineer and performed by masons, carpenters, and millwrights. The detailed construction of machinery and apparatus is likewise omitted, as they are purchased from mill supply houses ready made and from designs that have been tested. By dealing with the subject in this manner a large mass of generalities is eliminated from the text, to the advantage of those seeking facts about the process rather than mechanical details.

**HOUSE PAINTING, GLAZING, PAPER HANGING, AND WHITEWASHING.** By Alvah Horton Sabin, M.S. New York: John Wiley & Sons, 1908. 12mo.; pp. 121. Price, \$1.

For every man, woman, and child in this country more than a gallon of paint is used every year; and the relative amount is increasing. Paint is a necessity; it is an economy; it is a means of sanitation; it helps us to keep clean; it keeps us warm in winter and dry in summer; it brings light into dark corners; it beautifies our homes; it increases our credit; it raises our assessments; the most ignorant enjoy its benefits; and the most highly developed minds, whose culture is so profound that they have forgotten all they ever learned at college, retain its appreciation. A subject so various in its uses, so universal in its appreciation, deserves attention—indeed, merits intelligent study. The book tells simply and plainly the use of preservative coatings of one sort and another for the protection and ornament of common houses, as they are known, or should be, to every one of the author's fellow-countrymen. An experience of many years in the manufacture and use of paints and varnishes is the foundation of the author's knowledge, and while on many points even experts disagree, the intention is to set forth fairly sound and safe practice.

**CONSUMPTION.** By N. S. Davis, A.M., M.D. Philadelphia: F. A. Davis Company, 1908. 12mo.; pp. 172. Price, \$1.

Although this book has been reprinted many times since it was first issued, it has not been revised until the present time. When it was written the education of the public in regard to the nature of pulmonary tuberculosis, its prevention and management was just begun. To-day everyone knows much of these subjects. However, the need of an explanation of the ways of preventing it, and of guiding those who have it to recovery, is as great as ever. Every chapter has been rewritten, and an additional one has been incorporated upon the advantages and character of treatment in sanatoria and other institutions.

**ELECTRICAL CONTRACTING.** By Louis J. Auerbacher. New York: The McGraw Publishing Company, 1908. 12mo.; pp. 155. Price, \$2.

This volume was written for the wireman and contractor with a view to giving him not only some practical hints on the latest construction methods, but also to suggest to him means for increasing his income. Many special devices are described which will prove of great interest, such as a safety stop for a motor, picture reflectors, etc.

**WIRELESS TELEGRAPHY AND TELEPHONY POPULARLY EXPLAINED.** By Walter W. Massie and Charles R. Underhill. New York: D. Van Nostrand Company, 1908. 12mo.; pp. 76. Price, \$1.

An objection to the majority of books on wireless telegraphy, even though prepared for the layman or the younger students of wireless telegraphy, is that they begin with a history of the situation, including in the subject various forms of induction methods of communicating through space, which are apt to confuse the reader. This form of introduction is avoided in the present work. The subject is dealt with very simply, and the principle of wireless tele-

## Home-Made Experimental Apparatus

In addition to the following articles, the Scientific American Supplement has published innumerable papers of immense practical value, of which over 17,000 are listed in a carefully prepared catalogue, which will be sent free of charge to any address. Copies of the Scientific American Supplement cost 10 cents each.

If there is any scientific, mechanical, or engineering subject on which special information is desired, some papers will be found in this catalogue, in which it is fully discussed by competent authority.

A few of the many valuable articles on the making of experimental apparatus at home are given in the following list:

**ELECTRIC LIGHTING FOR AMATEURS.** The article tells how a small and simple experimental installation can be set up at home. Scientific American Supplement 1551.

**AN ELECTRIC CHIME AND HOW IT MAY BE CONSTRUCTED AT HOME.** is described in Scientific American Supplement 1566.

**THE CONSTRUCTION OF AN ELECTRIC THERMOSTAT** is explained in Scientific American Supplement 1566.

**HOW TO MAKE A 100-MILE WIRELESS TELEGRAPH OUTFIT** is told by A. Frederick Collins in Scientific American Supplement 1605.

**A SIMPLE TRANSFORMER FOR AMATEUR'S USE** is so plainly described in Scientific American Supplement 1572 that anyone can make it.

**A ½-H.P. ALTERNATING CURRENT DYNAMO.** Scientific American Supplement 1558.

**THE CONSTRUCTION OF A SIMPLE PHOTOGRAPHIC AND MICRO-PHOTOGRAPHIC APPARATUS** is simply explained in Scientific American Supplement 1574.

**A SIMPLE CAMERA-SHUTTER MADE OUT OF A PASTEBOARD BOX, PINS, AND A RUBBER BAND** is the subject of an article in Scientific American Supplement 1578.

**HOW TO MAKE AN AEROPLANE OR GLIDING MACHINE** is explained in Scientific American Supplement 1582, with working drawings.

**EXPERIMENTS WITH A LAMP CHIMNEY.** In this article it is shown how a lamp chimney may serve to indicate the pressure in the interior of a liquid; to explain the meaning of capillary elevation and depression; to serve as a hydraulic tourniquet, an aspirator, and intermittent siphon; to demonstrate the ascent of liquids in exhaust tubes; to illustrate the phenomena of the bursting bladder and of the expansive force of gases. Scientific American Supplement 1583.

**HOW A TANGENT GALVANOMETER CAN BE USED FOR MAKING ELECTRICAL MEASUREMENTS** is described in Scientific American Supplement 1584.

**THE CONSTRUCTION OF AN INDEPENDENT INTERRUPTER.** Clear diagrams giving actual dimensions are published. Scientific American Supplement 1615.

**AN EASILY MADE HIGH FREQUENCY APPARATUS WHICH CAN BE USED TO OBTAIN EITHER D'ARSONVAL OR OUDIN CURRENTS** is described in Scientific American Supplement 1618. A plunge battery of six cells, a two-inch spark induction coil, a pair of one-pint Leyden jars, and an induction coil, and all the apparatus required, most of which can be made at home.

**SIMPLE WIRELESS TELEGRAPH SYSTEMS** are described in Scientific American Supplements 1363 and 1381.

**THE LOCATION AND ERECTION OF A 100-MILE WIRELESS TELEGRAPH STATION** is clearly explained, with the help of diagrams, in Scientific American Supplement 1622.

**THE INSTALLATION AND ADJUSTMENT OF A 100-MILE WIRELESS TELEGRAPH OUTFIT,** illustrated with diagrams, Scientific American Supplement 1623.

**THE MAKING AND THE USING OF A WIRELESS TELEGRAPH TUNING DEVICE,** illustrated with diagrams, Scientific American Supplement 1624.

**HOW TO MAKE A MAGIC LANTERN,** Scientific American Supplement 1546.

**THE CONSTRUCTION OF AN EDDY KITE.** Scientific American Supplement 1555.

**THE DEMAGNETIZATION OF A WATCH** is thoroughly described in Scientific American Supplement 1561.

**HOW A CALORIC OR HOT AIR ENGINE CAN BE MADE AT HOME** is well explained, with the help of illustrations, in Scientific American Supplement 1573.

**THE MAKING OF A RHEOSTAT** is outlined in Scientific American Supplement 1594.

Good articles on **SMALL WATER MOTORS** are contained in Scientific American Supplement 1494, 1049, and 1406.

**HOW AN ELECTRIC OVEN CAN BE MADE** is explained in Scientific American Supplement 1472.

**THE BUILDING OF A STORAGE BATTERY** is described in Scientific American Supplement 1433.

**A SEWING-MACHINE MOTOR OF SIMPLE DESIGN** is described in Scientific American Supplement 1210.

**A WHEATSTONE BRIDGE,** Scientific American Supplement 1595.

Good articles on **INDUCTION COILS** are contained in Scientific American Supplements 1514, 1522, and 1527. Full details are given so that the coils can readily be made by anyone.

**HOW TO MAKE A TELEPHONE** is described in Scientific American Supplement 966.

**A MODEL STEAM ENGINE** is thoroughly described in Scientific American Supplement 1527.

**HOW TO MAKE A THERMOSTAT** is explained in Scientific American Supplements 1561, 1563, and 1566.

**ANEROID BAROMETERS,** Scientific American Supplements 1500 and 1554.

**A WATER BATH,** Scientific American Supplement 1464.

**A CHEAP LATHE UPON WHICH MUCH VALUABLE WORK CAN BE DONE** forms the subject of an article contained in Scientific American Supplement 1562.

Each number of the Scientific American Supplement costs 10 cents by mail.

Order from your newsdealer or from

MUNN & CO., 361 Broadway, New York

raphy and telephony is made clear by showing its analogy to the action of waves in water. The commoner forms of apparatus are described in a practical way. The book closes with a special article by Nicola Tesla on the future of the wireless art, which might better have been left out.

**THE PLANE TABLE AND ITS USE IN SURVEYING.** By W. H. Lovell. New York: McGraw Publishing Company, 1908. 18mo.; pp. 49. Price, \$1.

The plane table, one of the oldest of surveying instruments, is in its simplest form merely a board for holding paper or other material upon which a map is drawn with the aid of a rule or straight edge. Although a useful and serviceable instrument for railroad and land surveyors, it has never come into general use in the United States. This may be explained, however, by lack of knowledge of the instrument, and its methods, as little has been written upon the subject. Of late years it has gradually become better known, and the present little treatise will tend to assist in the diffusion of knowledge relative to the plane table.

**THE RAILROAD SIGNAL DICTIONARY.** An Illustrated Vocabulary of Terms Which Designate American Railroad Signals, Their Parts, Attachments, and Details of Construction. With Descriptions of Methods of Operation and Some Illustrations of British Signals and Practice. First Edition. Compiled for the Railway Signal Association. By Braman B. Adams and Rodney Hitt, Associate Editors of the Railroad Gazette. Under the Supervision of the Following Committee: Mr. C. C. Anthony, Assistant Signal Engineer, Pennsylvania Railroad; Mr. Azel Ames, Jr., Signal Engineer, Electric Zone, New York Central and Hudson River Railroad; Mr. J. C. Mock, Electrical Engineer, Detroit River Tunnel Company. New York and Chicago: Railroad Age Gazette, 1908. Quarto; 3,127 illustrations; pp. 514.

The publishers of the present volume have previously issued a Car Builder's Dictionary and a Locomotive Dictionary of great value, and were therefore well equipped for undertaking the present work, which is the result of a discussion by the Railway Signal Association, the publication having been authorized by the Association. The present dictionary constitutes a complete encyclopedia of the signal systems, the apparatus and devices in use in the United States, and affords a very detailed explanation and covers the complete field in a most satisfactory manner. While primarily intended for signal engineers and other railroad men directly connected with signaling, the volume should be welcomed by patent experts and draftsmen and technical writers. The illustrations and descriptions cover manual block-signaling apparatus, automatic block signals with their various appurtenances, and electric and electro-pneumatic and electro-gas apparatus for semaphore signals. The different track circuits are very clearly explained with diagrams of the tracks and the wiring; block signals for electric trolleys are given, and the standard manual interlocking machines and power interlocking machines. The various signals employed are explained in connection with diagrams of tracks indicating the practice at yards, junctions, terminals, and other situations. Different ways of working the block system are shown by diagrams. One of the authors, Mr. Adams is especially well informed on all subjects relating to railway signaling from its beginning, while Mr. Hitt is an experienced technical lexicographer, so that the work not only elucidates the mechanical construction and actual operation of railway signaling, but affords an exceedingly desirable and authoritative terminology of the subject.

## INDEX OF INVENTIONS

For which Letters Patent of the

United States were Issued

for the Week Ending

September 22, 1908,

AND EACH BEARING THAT DATE

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

Acid and sodium sulfate, manufacture of sulfuric, U. F. Benker.....	898,284
Adding machine, G. N. Hinchman.....	899,388
Adding machine, M. C. Crawley.....	899,482
Advertising apparatus, J. Reix.....	899,321
Advertising apparatus, C. E. Petersen.....	899,467
Advertising purposes, means of using newspaper and like stands for, F. Stebbings.....	899,081
Agitator and decanting filter, combination, W. A. Hendryx.....	899,489
Air brake, McMunn & Howell.....	899,318
Air brake system, J. D. Nichol.....	899,427
Air compressor, rotary, G. F. Burton.....	899,027
Air purifying and humidifying apparatus, W. G. R. Brainer.....	899,289
Amusement apparatus, J. Z. Levy.....	899,172
Anchor, gun, H. M. Thomas.....	899,274
Animal breeder's bag, F. B. Graham.....	899,251
Animal trap, E. S. Lipp.....	899,114
Annealing and tempering metals, process and apparatus for, H. Krauschneider.....	899,452
Baby walker, M. S. Davis.....	899,030
Bag cleaning machine, G. M. Hasen.....	899,397
Baling machine, O. S. & C. F. Lee.....	899,309
Barb-forming machine, J. M. Murphy.....	899,317
Beating out machine, J. H. Reed.....	899,232
Bed canopy, tenting, J. N. Moody.....	899,257
Bed clothes retainer, Infant's, M. Riley.....	899,325
Bed protector, J. J. Wassam.....	899,361



Bedstead and mattress, combination, J. F. Stephenson	899,351
Bedstead fastening, L. B. Snyder	899,345
Bedstead, sheet metal, Linden & Lund	899,173
Bilge water ejector, L. Ebbe	899,248
Bit. See Bridge bit.	
Bit extension, F. E. Carlson	899,203
Blanket holding attachment, M. Rockstroh	899,326
Block molding machine, J. Jaeger	899,168
Block signal apparatus, A. Bevan	899,153
Block signaling system, alternating current, J. B. Struble	899,353
Blowpipe, A. G. Le Chatelier	899,451
Boat releasing device, W. G. Randle	899,072
Bobbin driving means for rotatable spindles, P. E. McCullough	899,179
Boiler, W. S. Hawley	899,299
Boiler, C. R. Jeres	899,314
Boiler attachment, C. J. Sheahan	899,192
Boiler cleaner, C. H. Prescott	899,261
Boilers, etc., automatic electric safety device for, C. Kaussen	899,220
Book, letter, R. A. Dunn	899,035
Books, journals, paper, music, etc., binder for, W. Pein	899,066
Bookcase, E. J. Honor	899,049
Boots, shoes, leggings, etc., stretcher or filler for, J. N. Cocbrane	899,444
Bottle, J. A. Gafney	899,214
Bottle, J. McGill	899,493
Bottle-cap pad, C. Noyes	899,429
Bottle rack, R. B. Colter	899,384
Bottle soaking machine, G. J. Arnold	899,017
Bowling alley, parlor, C. A. Longwell	899,115
Box blank, W. Fiske	899,212
Box fastener, Tholts & Gronberg	899,084
Brace, C. C. Day	899,445
Brake mechanism, Planta & Adam	899,069
Brake shoe, Lockwood & Whyte	899,454
Brakes, automatic sanding apparatus for fluid pressure, E. G. Desoe	899,246
Brick machine, rotary, J. Walker	899,087
Brick machines, brick handling device for, J. Walker	899,086
Bridge bit, J. W. Greenwood	899,298
Bridles, overdraw check loop for, M. E. Zeller	899,281
Brooder, H. J. Mulder	899,177
Brush, fountain, H. Kadushin	899,305
Buckle, C. Meinhardt	899,121
Buckle, M. Barabas, reissue	12,855
Buckle, cross line, R. B. Benford	899,375
Buckle, harness, L. L. Rounds	899,327
Buckle, rein, M. E. Zeller	899,282
Buckle shield, J. Graf	899,335
Built-up post, C. F. Steiber	899,119
Butter packing machine, J. Mason	899,119
Button making and like purposes, press for, J. G. Breitenstein	899,098
Cabinet, Wegener & Hanson	899,147
Cabinet, kitchen supply, C. A. Hornig	899,399
Cabinet, store, T. B. Weston	899,195
Car coupling, H. M. Rosenberg	899,438
Car door, W. J. Cooke	899,385
Car door, J. M. Etiman	899,389
Car draft gear, railway, C. T. Westlake	899,080
Car, dump, K. H. Hansen	899,108
Car for observation wheels, A. F. Blavati	899,228
Car safety apparatus, T. A. Mayer	899,228
Car safety gate, railway, T. F. Talbot, Jr.	899,494
Car seat cushion, J. J. Downey	899,034
Car stake, N. E. Gagnon	899,394
Car stop, automatic, W. E. Dawkins	899,245
Car wheel, T. M. Crepar	899,483
Carburetor, F. H. Heitger	899,109
Carpet fastener, C. E. Billings	899,377
Carrier's draft rigging, E. Ring	899,435
Cement or concrete mixer, J. A. Randall	899,071
Cheese cover and show case, S. Ditson	899,103
Churn, L. C. Vankirk	899,085
Chute, ore, J. Ross	899,076
Cigar tip, J. O. Therien	899,355
Cigarette machine, O. Bergstraesser	899,376
Clamp and buckle for joining webbing, E. H. Erickson	899,105
Clinometer, R. M. Staley	899,269
Clothes line bolder, J. Huth	899,166
Clutch mechanism, reversing, F. E. Harthan	899,396
Coffee maker, R. A. Buckner	899,099
Collar, S. L. Isaba	899,167
Comb. See Hair drying comb.	
Concentrator, R. H. Manley	899,312
Concrete mixer, P. A. Koehring	899,414
Concrete mixing drum, P. A. Koehring	899,415
Concrete work, socket for use in, E. A. Purdy	899,185
Condenser, counter current, O. H. Mueller	899,063
Cooker, combination, L. L. Chase	899,244
Cooling box, F. A. Nopenz	899,231
Core making apparatus, green sand, J. W. Gibney	899,250
Cork extractor, S. E. Braddock	899,380
Corset, T. G. Bowers	899,100
Corset, C. B. Howd	899,113
Corset, E. G. Hintz	899,165
Couch attachment, J. A. Perry	899,431
Coupling, E. P. Kinne	899,413
Crane, charging, C. L. Taylor	899,083
Crayons and blowpipes, stand, gage, and holder for, Byrd & Anderson	899,202
Crushing mill, M. Mueller	899,176
Cultivator, W. W. Stauffer	899,270
Curtain pole, V. Brady	899,288
Dental casting machine, H. G. Maize	899,255
Desulfurizing furnace, R. Hubner	899,403
Dilator and applicator, W. E. Williams	899,477
Dispensing apparatus, W. R. Mittendorf	899,124
Display rack, O. L. Smith	899,342
Door fastener, F. E. Richardson	899,323
Door hanger, rolling, M. E. Hunt	899,051
Door, metal covered, W. W. Morey	899,422
Door, metallic, L. I. Heintz	899,164
Drain board bracket, A. Sheret	899,337
Drilling machines, drill stem clamp for rotary, H. R. Decker	899,208
Drinking fountain, stock and poultry, E. E. Norquist	899,128
Drum cylinder motor, J. E. Smith	899,341
Drum, musical, T. Hemberger	899,488
Drums or other musical instruments, snare for, T. Hemberger	899,450
Dye, azo, W. F. King	899,171
Dyes, making red vat, W. Bauer	899,152
Dynamo governor, C. L. Weichelt	899,088
Egg preserving apparatus, M. Briggs	899,382
Electric conductors, means for protecting high tension overhead, L. Neu	899,127
Electric machine, dynamo, A. B. Field	899,447
Electric machine of the inclosed type, dynamo, A. H. Wouters	899,370
Electric separator, H. A. Wentworth	899,364
Electric switch, C. A. Clark	899,245
Electrical distribution system, W. A. Turbayne	899,145
Electroplating apparatus, G. A. Lutz	899,226
Engine, J. Erickson	899,297
Engine gear, H. I. Drake	899,247
Engine speed regulator, gas, J. B. Schmidt	899,265
Exhaust regulator, O. K. Raub	899,471
Extension pan, E. L. Carter	899,292
Eyeglasses, O. Kampfe	899,409
Faller bar, A. Young	899,280
Faucet, beer, G. E. Graybrook	899,201
Feed mechanism, roller, W. A. Leonard	899,492
Feeding trough rack, W. A. McCollough	899,125
Fence, P. Howard	899,419
Fence machine, C. E. Merchen	899,112
Fence post multiple mold, C. Kubach	899,416
Fertilizer, L. R. Coates	899,155
Fertilizer distributor, E. L. Hahn	899,449
Fiber cleaning machine, A. Pons	899,070
Filter, F. Tiemann	899,194
Fire escapes, support for flexible, L. Arjengo	899,371
Fire nozzle attachment for valves, J. D. Schlerloh	899,330
Fire resisting curtain, E. H. McCloud	899,460
Fireproof metal window frame, F. Lyster	899,227
Fish during long periods of transport or in store, preserving live, F. Kleinschmidt	899,057
Fish trap, T. Morgan	899,457
Flat iron, F. A. Bonroe	899,200
Fleshing machine, L. Rumb	899,233
Flower stake, W. Henshaw	899,046
Fly, book and leader box, trout, T. O'Leary	899,466
Flying machine, dirigible, E. E. Steinhaus	899,350
Foot arch, F. J. Winchell	899,373
Force feed lubricator, Bird & Akins	899,222
Forceps, obstetrical, H. E. Koeh	899,329
Frame, L. Shorrigl	899,053
Furnace, A. Jay	899,102
Furnaces, air regulator for, A. Cotton	899,053
Furnaces, gas burning attachment for, G. G. Weinman	899,275

## The Official Seal of FURNACE approval.

MUNICIPAL experts battling against the smoke nuisance all over this country of ours have set the seal of approval upon the **Underfeed** method of stoking. Such action is in effect a widespread OFFICIAL indorsement of the system which has made the Underfeed Furnace the greatest furnace factor for health and cleanliness ever dedicated to the cause of hygiene and economy. Thousands have solved the smoke-problem in their own homes and places of business, and at the same time learned by **profit-sharing** experience that the

## Peck-Williamson UNDERFEED Furnace

### Saves 1/2 to 2/3 of Coal Bills

Illustration shows furnace without casing, cut away to show how coal is forced up under fire, which burns on top.



The Underfeed is the **only** furnace which acts as smoke consumer, as well as hot-air heater. **Cheapest** slack yields as much **clean, even** heat as the **highest priced** anthracite. Fed from below, **all the fire is on top** and smoke and gases **must** pass thru the flames and are thus consumed and turned into heat units. Ashes are few and are removed by shaking the grate bar as in ordinary furnaces.

Dr. E. L. Moodie, of Chatham, O., in declaring that the Underfeed is a step toward better health and hygiene, writes: "The Underfeed is the **ideal** furnace; the **only** furnace that should be allowed to use coal for a heating substance where the smoke may be a nuisance or menace to health. If this point were properly presented to Boards of Health, I see no reason why on that score alone it should not **replace all other furnaces**, not to mention its heating capacity, economy and superior durability."

Let us send you a lot of letter-telling of money saved—fac-simile testimonials in our Illustrated Underfeed Booklet.

Heating plans and services of our Engineering Department are yours—**ALL FREE**. Write to-day, giving name of local dealer with whom you prefer to deal.

**THE PECK-WILLIAMSON CO.**  
351 West Fifth Street, CINCINNATI, O.  
Dealers Should Write for Our Fall Proposition.

## The Latest and Best A. W. FABER

### "CASTELL"

Made of the purest graphite in 16 degrees of hardness, **6B to 5H**, of the utmost delicacy of tone, permanency, durability and intensity of color.

They take the finest point obtainable of any lead pencil, are **easy to wear**, therefore more lasting than any others. Sold by all stationers and dealers in artists' materials. Sample sent to all parties interested on receipt of 10 cents in postage stamps.  
**A. W. FABER, 49 Dickerson Street, Newark, New Jersey**

## DRAWING PENCILS

## ROTHWEILER

The Wrench with a Grip



THE ROTHWEILER WRENCH is different.

It is lighter, more powerful, has fewer parts and will last longer than any other pipe wrench on the market.

Made of the best selected tool steel.

Upper jaw, shank and handle forged in one piece.

Has a firm, sure grip and a quick release.

A wrench that you can depend upon absolutely under any and all conditions.

Ask your dealer for the Rothweiler wrench and insist upon getting it.

Household size by prepaid express \$2.00.

Illustrated Booklet mailed Free upon request

**Crescent Forgings Company**  
1203 Railroad St., Oakmont, Pa.

## THE "BEST" LIGHT

SUPERIOR TO ELECTRICITY TWO CENTS A WEEK

When you are tired of smoke, and odor, of your ordinary lights, get the light that is brighter than electricity or acetylene, and makes and burns its own gas. There is only one. It's the "BEST." It's much cheaper than kerosene. It's made in over 100 beautiful styles. It's an ornament to any home, and every lamp is warranted. Just drop us a postal today and get our catalog and prices. Agents wanted Everywhere. Big money in it for you to either use or sell our lamps.

**THE BEST LIGHT CO.,**  
87 E. 5th St., Canton, O.  
Owners of Original Patents.

## STUDY LAW

Leading Law School in Correspondence Instruction. Established 1892. Prepares for the bar. Three Courses: College, Post-Graduate and Business Law. Method of instruction combines theory and practice. Approved by the bench and bar. Classes begin each month. Send for catalog giving rules for admission to the bar of these several States.  
**Chicago Correspondence School of Law**  
506 Reaper Block, Chicago



## The Oil You Can Feel at The Crank

The slightest "feel" of the crank proves the perfection of MOBILOIL. There is no possibility of anything but perfect lubrication in any gasoline engine, regardless of type. For different machines there are different grades of

## VACUUM MOBILOIL

Our booklet tells you which is the proper grade for your automobile—and why. A copy will be sent free on request. It contains much of interest to motorists.

MOBILOIL in barrels, and in cans with patent pouring spout, is sold by all dealers. Manufactured by

**VACUUM OIL COMPANY,**  
Rochester, N. Y.

## KEROSENE MARINE MOTORS

This motor uses kerosene, vaporizing it by an entirely new method from heat of exhaust pipe, and does not draw charge into base of engine. Uses 20 per cent. Less Fuel than on Gasoline, and gives 10 per cent. More Power.

Uses regular jump spark ignition. Write for catalog. A motor that will save you money. Specially adapted to work boats. Unusual opening for agents. Ten sizes, 1, 2 and 3 cylinders, 2 1/2 to 27 H. P.

**DUBRIE MOTOR CO.**  
421 Guoin Street, Detroit, Mich.

Don't Throw it Away Does Your Granite Dish or Hot Water Bag Leak? USE "MENDETS" A PATENT PATCH that mends all leaks in all utensils—tin, brass, copper, graniteware, hot water bags, etc. No solder, cement or rivet. Any one can use them; fit any surface; two million in use. Send for sample pkg. 10c. Complete pkg. assorted sizes, 25c. post-paid. Agents wanted. Collette Mfg. Co., Box A-32 Amsterdam, N. Y.

Garment creaser, G. L. Edgerton	899,036
Garment supporter, C. C. Morris	899,316
Gas cut-off, automatic, H. Niemann	899,184
Gas lighter, electric, J. D. McIntyre	899,181
Gas machines, air pump for, F. M. Campbell	899,481
Gas producer, W. B. Hughes	899,050
Gases in air, apparatus for detecting inflammable, Philip & Steele	899,008
Gate. See Car safety gate.	
Gear for motor vehicles, transmission, E. A. Nelson	899,258
Gearing, C. Wiebe	899,277
Glass fire polishing process and apparatus, S. O. Richardson, Jr.	899,473
Glass holder, J. W. Bricker	899,290
Gold saving apparatus, R. G. Steele	899,271
Graphophone sound box, H. Nies	899,364
Grapple fork, M. Kidney	899,308
Grate, J. Barker	899,372
Grate, fire, J. Williamson	899,442
Grinding machine, C. Mills	899,421
Gun sight, Bassell & Blenkner	899,020
Gun sighting apparatus, Dawson & Buckham	899,207
Guns, brake mechanism for recoiling, Dawson & Buckham	899,206
Hair drying comb, T. H. Furman	899,038
Hair retaining comb, W. B. Fisk	899,162
Harvester, tilting sidehill, Preble & Payne	899,432
Hasp lock, C. T. Sleeper	899,138
Hat block, C. E. Stevens	899,141
Hat or cap, I. Seitzman	899,334
Hay and cattle rack, A. J. Miller	899,315
Heating furnace, W. N. Best	899,285
Heating system, H. Salmon	899,078
Hog grapple and conveyor, W. D. Farrell	899,391
Holder, E. L. Lloyd	899,311
Hook and eye, W. Wolf	899,369
Horse detacher, W. J. La Brake	899,223
Horseshoe, C. W. Laird	899,417
Hose and garment supporter, E. S. Dorman	899,484
Hose rack, C. Nubring	899,465
Hose, woven, C. Alvord	899,092
Hub attaching device, C. H. Soper	899,346
Hulling and cleaning device, combined, G. A. Huber	899,301
Hydraulic elevator, T. Larsson	899,224
Ice walker, W. S. Paulson	899,065
Implement, combination, O. Kampfe	899,408
Implement, pocket, O. Kampfe	899,407
Incubator heater, M. J. Spicer	899,347
Insulator for armature conductors, A. R. Locke	899,059
Internal combustion engine, C. E. Shadall	899,136
Internal combustion engine, W. Rabsilber	899,186
Internal combustion engine, T. W. Hendry	899,216
Iron and steel therefrom, treating feruginous ore for the manufacture of, Moore, E. H. Skett, reissue	12,856
Ironing board, Wonsmos & Schonboe	899,091
Jar and cover holder, I. N. Davis	899,031
Keg form and table, rotary setting up, F. C. Schulte	899,191
Kitchen utensil, A. B. Westrup	899,365
Knitted web, ribbed, R. W. Scott	899,439
Knob for pot covers, cold, H. C. Parkinson	899,260
Lacing book setting machine, J. E. Perrault	899,067
Lacing hook setting machine, Simpson & Bray	899,137
Lifting jack, F. E. Farnham	899,161
Listing machine, J. F. Mays	899,229
Loading and unloading apparatus, F. E. Barrett	899,095
Lock, S. H. Shank	899,266
Log loading machine, J. R. McGiffert	899,180
Loom, hand school, B. E. Lindberg	899,310
Loom let-off mechanism, J. Nazarian	899,183
Lubricating cup, C. Stewart	899,352
Lunch heater, C. C. Buren	899,026
Mail bag deliverer and catcher, W. H. Rogers	899,156
Mail chute, J. W. Cutler	899,158
Mail sack catcher, R. H. Millen	899,456
Mail sack exchange mechanism for railways, R. Kersey	899,170
Malt drying apparatus, green, Elsner & Guttwein	899,037
Massaging instrument, J. R. Wantz	899,234
Measuring apparatus, automatic electrical, D. J. Shine	899,193
Metal part, structural, E. L. Dadds	899,033
Metal patterns from corrosion, treating and preserving, C. K. Milne	899,062
Metals from their ores, extraction of, J. Turton	899,146
Metals from their ores, separating, J. D. Wolf	899,478
Metals from their ores, separation of, J. D. Wolf	899,149
Minerals, suitable apparatus for concentrating and washing, A. Taylor	899,441
Molding machine, J. A. Rhoul	899,073
Mop head, E. A. Rivers	899,437
Mower, F. C. Horak	899,490
Music sheet, H. Pierce	899,470
Music strip punching apparatus, J. C. Bunge	899,238
Music turner, sheet, J. C. Myers	899,459
Musical instrument or player, automatic, H. R. Edgecomb	899,295
Musical instrument, action for keyboard stringed, I. Bissing	899,096
Nut, J. R. & E. C. Winter	899,368
Nut lock, C. W. Stark	899,080
Nut lock, axle, R. G. Roberts	899,188
Oar blade shaping machine, W. W. Trevor	899,356
Obstetrical appliance, A. M. Reed	899,434
Ore separator, magnetic, C. E. Stebbins	899,348
Ore, treating, J. T. Jones	899,405
Ores containing zinc and other volatilizable metals for the production of oxides, treating complex, G. M. Rice	899,322
Ores, desulfurizing, K. A. Johansson	899,219
Oscillation detector, C. E. Russell	899,264
Packing case, Boylan & Bennett	899,097
Packing, metallic piston, Humphrey & Martin	899,303
Pad. See Bottle cap pad.	
Pail, dinner, H. R. Waltrip	899,360
Paper clip, R. Corbin	899,386
Paper pulp screen box, J. Jamson	899,169
Paper roll holder, J. McNeil	899,461
Paring machine, L. G. Simpson	899,340
Party line indicating key, C. C. Bradbury	899,024
Peanut sheller, E. M. Raby	899,433
Perambulator, W. H. Smith	899,343
Photoprinting machines, automatic fluid controlled variable time exposure valve mechanism for, Ware & Rundle	899,235
Piano flange, W. W. McCall	899,0



## Classified Advertisements

Advertising in this column is 75 cents a line. No less than four nor more than ten lines accepted. Count seven words to the line. All orders must be accompanied by a remittance. Further information sent on request.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. There is no charge for this service. In every case it is necessary to give the number of the inquiry. Where manufacturers do not respond promptly the inquiry may be repeated.

MUNN & CO.

### BUSINESS OPPORTUNITIES.

A CORPORATION of highest standing having large well equipped factory and selling organization, and ample capital desires to manufacture and market mechanical inventions of unquestioned merit. Correspondence solicited. Address K. A., Box 773, N. Y. City.

**Inquiry No. 8611.**—Wanted to buy springs for light power purposes.

### PATENTS FOR SALE.

FOR SALE.—Coop and crate, U. S. Patent No. 894,638. Is an improvement for shipment of poultry and live stock by carload. Collapsible. Made any capacity desired. Gottlob Helm, 230 25th St., Newport News, Va.

**Inquiry No. 8650.**—Wanted to buy file cutting machinery.

PATENT No. 876,458.—Automatic disinfectant for sheep and hogs, something every breeder is in need of. Will sell outright or on royalty. Address Henderson Holwell, Harrison, Ohio.

**Inquiry No. 8667.**—Wanted to buy needle, pin and pen machinery.

ELECTRIC WATT METER PREPAYMENT ATTACHMENT. U. S. Patent 873,356. Registers deposits; entirely automatic; simple and durable. For prices, etc., apply E. L. Chadwick, 75 St. Mark St., Montreal, Canada.

**Inquiry No. 8685.**—Wanted to buy 1½ to 2-inch No. 13 to 18 tempered spring steel.

FOR SALE.—Patent No. 895,572. Artists' workholder. New, adjustable for all artist's appliances and materials. Make offer. J. C. Dana, Big Timber, Mont.

**Inquiry No. 8687.**—Wanted to buy motor plows.

FOR SALE. Safest, best and easiest draft manure spreader. Works without an apron. Address A. A. Fokken, Raymond, South Dakota.

**Inquiry No. 8699.**—Wanted to buy two-stranded soldered wire for heddles.

U. S. PATENT, 887,354 and Canadian Patent, 112,050 for Automatic Sash Fastener. Have model ready to manufacture. Address S. E. Sterrett, Paterson, N. J.

### HELP WANTED.

WANTED.—Man, must be willing to learn and capable of acting as our local representative. No canvassing or soliciting. For particulars address National Co-operative Realty Co., Dept. J. B. Z. Washington, D. C.

**Inquiry No. 8701.**—Wanted to buy solar engines.

### TYPEWRITERS.

JUST A FEW LEFT.—Last chance to secure a typewriter at agents' prices. Remington, Denmore, Hickes, Underwood, \$12.50; Postal, Hammond, \$10. Best bargains, lowest prices. Standard Typewriter Ex., 23 Park Row, N. Y.

**Inquiry No. 8721.**—Wanted unwelded tubing that is used for structural work.

### REAL ESTATE.

EXCELLENT LAND for factory sites for sale freehold or on lease at Stamford, Lincolnshire, England. Good railway facilities on Great Northern Railway sidings, water drainage and electric power available. Apply Burghley Estate Office, Stamford, England.

**Inquiry No. 8735.**—For parties making a still for the purpose of extracting alcohol from sawdust.

### PHOTOGRAPHY.

AMERICAN PHOTOGRAPHY.—A monthly magazine containing up-to-date information about photographic processes, formulas and new apparatus. Each number is filled with numerous illustrations of recent pictorial photographs. Valuable to the professional and beginner. 15 cents monthly, \$1.50 per year. Three specimen copies for 25 cents. Am. Photographic Publishing Co., No. 6 Beacon Street, Boston, Mass.

**Inquiry No. 8736.**—For manufacturers of machinery for making matches, also machinery for making purses and hand bags.

### MOTION PICTURES.

THE MOVING PICTURE WORLD, weekly, 10 cents per copy; yearly subscription, \$2. The only paper devoted to the moving picture, illustrated songs and lantern lecture field. Moving Picture World, Box 453, N. Y.

**Inquiry No. 8737.**—For manufacturers of machinery for making tooth-brushes, shaving brushes, galvanized water buckets, locks, nibs and holders.

### LISTS OF MANUFACTURERS.

COMPLETE LISTS of manufacturers in all lines supplied at short notice at moderate rates. Small and special lists compiled to order at various prices. Estimates should be obtained in advance. Address Munn & Co., List Department, Box 773, New York.

**Inquiry No. 8742.**—For manufacturers of water still, also of thermometer tubing.

A LIST OF 1,500 mining and consulting engineers on cards. A very valuable list for circularizing, etc. Price \$15.00. Address Munn & Co., List Department, Box 773, New York.

**Inquiry No. 8746.**—For dealers in paper and cardboard making machines.

**Inquiry No. 8748.**—Wanted to buy polished or lacquered brass in sheets 29 gauge, quarter hard in temper.

**Inquiry No. 8749.**—For makers of very large springs, used for running machinery.

**Inquiry No. 8769.**—For manufacturers of an appliance to attach to the old style razor blade to make same a safety razor.

**Inquiry No. 8770.**—For parties who make short link twist chains, links from ½ inch up.

**Inquiry No. 8771.**—Wanted to buy tune sheets for Criterion music boxes.

**Inquiry No. 8774.**—For machinery for making bags from sisal hemp.

**Inquiry No. 8775.**—Wanted to buy stock novelty or jewelry catalogues.

**Inquiry No. 8778.**—For manufacturers of reapers, binders and mowers.

**Inquiry No. 8779.**—For parties manufacturing gas, gasoline, steam engines and boilers; also packing and mineral wool, steam supplies, iron and lead pipe, power transmission machinery and steam fitters' tools.

**Inquiry No. 8780.**—For parties who make gasoline stoves.

**Inquiry No. 8783.**—For manufacturers of small drummer's traps as whistles, rattles, rooster crows, etc.

**Inquiry No. 8784.**—For manufacturers of alcohol burners for lights and stoves.

**Inquiry No. 8786.**—For parties to manufacture glass balls blown about ½ inch in diameter with a ¼ inch hole through the center, should hold about 200 pounds to the square inch of steam pressure.

**Inquiry No. 8787.**—For parties who manufacture cat-gut.

**Inquiry No. 8790.**—For the manufacturer of "Brooks improved hand pump."

**Inquiry No. 8792.**—For a firm that manufactures glass holders made of glass.

**Inquiry No. 8794.**—For manufacturers of the "Ideal Dust Pan."

**Inquiry No. 8795.**—For a mechanical device for catching or destroying flies, mosquitos, etc.; also traps for catching snakes.

**Inquiry No. 8796.**—For concerns manufacturing stills adapted to the manufacture of denatured alcohol.

**Inquiry No. 8797.**—For manufacturers of fiber.

**Inquiry No. 8798.**—For manufacturers of micro lenses used in small articles such as pencils, charms, etc.

**Inquiry No. 8799.**—Wanted to buy new or second-hand box nailing machine for small packing cases.

**Inquiry No. 8800.**—Wanted complete data in regard to pegamoid.

**Inquiry No. 8802.**—Wanted to buy machinery for cutting and polishing oilstones, whetstones or grindstones.

**Inquiry No. 8803.**—For manufacturers of files, screws, druggists' supplies, hardware in general, and agricultural machinery.

**Inquiry No. 8804.**—For parties dealing in windmills, wood split pulleys, wheelbarrows, cutlery and picks.

**Inquiry No. 8805.**—Wanted to buy outfits and supplies for brazing.

**Inquiry No. 8806.**—For manufacturers of drawing materials.

**Inquiry No. 8807.**—For dealers in second-hand cotton machinery.

**Inquiry No. 8808.**—For manufacturers of machinery for making buns for barrels.

**Inquiry No. 8810.**—For makers or importers of porous water bottles or jars to cool drinking water by evaporation.

**Inquiry No. 8811.**—Wanted to buy electric tattooing needles, inks and stencils.

**Inquiry No. 8812.**—Wanted to buy outfits for manufacturing fuel briquettes from sawdust.

**Inquiry No. 8813.**—For manufacturer of the "Steele" mixer for mixing food products, etc.

**Inquiry No. 8814.**—Wanted to buy hand lever air pumps, 100 lbs. pressure.

**Inquiry No. 8815.**—Wanted to buy carriage and wagon hardware, coal, iron and steel.

**Inquiry No. 8817.**—For a firm that forms small articles of wire, also a firm to make wooden rings about 3 or 4 inches in diameter.

**Inquiry No. 8818.**—Wanted to buy specialties in large quantities.

**Inquiry No. 8819.**—For manufacturers of Excelsior Welding Compound.

**Inquiry No. 8820.**—Wanted to buy pressed fiber boards 1 foot wide and from 1-16 to ¼ inch thick.

**Inquiry No. 8821.**—Wanted to buy machinery for making a rough composition board, something like a straw board.

**Inquiry No. 8822.**—For manufacturers of dredging machinery to be operated by gas engine.

**Inquiry No. 8823.**—For manufacturers of crepe paper and paper novelties.

**Inquiry No. 8824.**—For a firm to design and build an automatic machine for making finger shields.

**Inquiry No. 8825.**—For manufacturers of a new device to split wood.

**Inquiry No. 8826.**—Wanted to buy small fuel compression machines both manual and engine power.

**Inquiry No. 8827.**—For manufacturers of annealed glass.

**Inquiry No. 8828.**—Wanted to buy thin, highly tempered steel for safety razors.

**Inquiry No. 8829.**—Wanted to buy machinery for making pins, hair pins, hooks and eyes.

**Inquiry No. 8830.**—Wanted to buy machinery for making brushes and baskets.

**Inquiry No. 8831.**—Wanted to buy knitting machines.

**Inquiry No. 8832.**—Wanted addresses of high-grade label weavers, preferably in New York.

**Inquiry No. 8833.**—Wanted to buy a peanut snelling machine.

**Inquiry No. 8834.**—Wanted to buy a 2-horsepower gasoline engine for spray wagon working on hilly ground.

**Inquiry No. 8835.**—Wanted to buy toothpick machinery.

**Inquiry No. 8836.**—Wanted to buy decorticating machines for sisal.

**Inquiry No. 8837.**—Wanted to buy folding umbrellas.

**Inquiry No. 8838.**—Wanted to buy metallic targets similar to clay birds used in shot-gun shooting.

**Inquiry No. 8839.**—Wanted to buy cheap automobiles.

**Inquiry No. 8840.**—Wanted to buy portable hydrocarbon pressure lamps.

**Inquiry No. 8841.**—Wanted to buy lunch counter and restaurant fixtures.

**Inquiry No. 8842.**—Wanted to buy annealed glass.

**Inquiry No. 8843.**—Wanted to buy cigarette making machine.

**Inquiry No. 8844.**—Wanted to buy inkstands.

**Inquiry No. 8845.**—Wanted to buy mail order novelties, books, etc.

**Inquiry No. 8846.**—Wanted to buy an electric butcher band saw.

**Inquiry No. 8847.**—Wanted laundry tubs.

**Inquiry No. 8848.**—Wanted to buy rust proof metal for parts of wash tubs.

**Inquiry No. 8849.**—Wanted addresses of Canadian makers of rifle sights.

**Inquiry No. 8850.**—Wanted to buy machinery for making canvas gloves or mitts.

**Inquiry No. 8851.**—Wanted to buy machine for weaving wooden lath and wire together.

**Inquiry No. 8852.**—Wanted to have made a concave brass or copper reflector with focus of four or five feet.

**Inquiry No. 8853.**—Wanted to buy wafer safety razor blades.

**Inquiry No. 8854.**—Wanted to buy air compressor pressure up to 1,500 lbs., the capacity ranging 500 to 3,000 cubic feet.

**Inquiry No. 8855.**—Wanted machine to punch holes, feed and set automatically solid copper rivets and washers and rivet together harness done with one stroke.

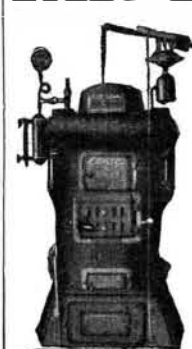
**Inquiry No. 8856.**—Wanted a machine or grinder for reducing soft wood refuse to a fine dust.

**Inquiry No. 8857.**—Wanted addresses of shoe string manufacturers.

**Inquiry No. 8858.**—Wanted to buy comb cleaning machine.

Rail bond, C. A. Mead ..... 899,120  
Rail brace, W. H. Huffman ..... 899,302  
Rail chair, G. W. Sutherland ..... 899,354  
Rail fastening, H. K. Myers ..... 899,220  
Rail joint, H. C. Sandusky ..... 899,100  
Rail tie and fastener, J. M. Parra ..... 899,390  
Rails, device for preventing spreading of, C. L. McVoy ..... 899,426  
Railway cross tie lift, E. L. Barton ..... 899,373  
Railway electric signaling system, A. P. Rickmire ..... 899,134  
Railway rails, means for connecting parallel, V. A. White ..... 899,366  
Railway sleepers, bed plate for iron, A. Haarman ..... 899,107  
Railway switches or other devices, alternating mechanism for operating, M. A. Dees ..... 899,032  
Railway tie, R. L. Bower ..... 899,023  
Railway tie, W. A. Lockard ..... 899,174  
Railway tie, J. C. Reed ..... 899,262  
Railway ties, metallic core for, W. B. Westbrook ..... 899,089  
Railway track construction, O. B. Grant ..... 899,041  
Railways and power plants, electromotor controlling operating system for electric, J. Sahulka ..... 899,189  
Railways, sound deadening construction for elevated, Conover & Murphy ..... 899,293  
Range, cooking, K. Luger-Hefel ..... 899,254  
Receptacle, G. Shields ..... 899,338  
Recording instrument, J. Harris ..... 899,043  
Resilient wheel, J. E. McQuilkin ..... 899,425  
Respiration apparatus, P. Lord ..... 899,225  
Rolling metal rings, machine for, I. B. Ritter ..... 899,436  
Rope, J. C. Benson ..... 899,022  
Roofing tool, A. Allen ..... 899,016  
Rotary engine, J. Gill ..... 899,040  
Rotary engine, A. L. Westrich ..... 899,148  
Rotary engine, E. Fournier ..... 899,485  
Running gear, F. W. Bleckley ..... 899,199  
Safety elevator, H. Watson ..... 899,362  
Safety pin, Gage & Hazard ..... 899,106  
Sanitary protector, A. M. Aiken ..... 899,196  
Sash and screen fastener, W. O. Hays ..... 899,045  
Sash attachment, window, H. J. Jume ..... 899,406  
Sash support, window, S. B. Storms ..... 899,273  
Saw guard, J. Holmwood ..... 899,300  
Saw handle, detachable, T. P. J. Coleman ..... 899,028  
Sawmill set works, A. A. De Leach ..... 899,159  
Seed, metabolism of, J. von der Kammer ..... 899,306  
Sewing machine for sewing straw plait, G. Fischer ..... 899,392  
Sewing machine needle, A. G. Bradley ..... 899,381  
Sewing machines, device for controlling the needle loop on oversewing, R. G. Woodward ..... 899,479  
Sewing machines, thread and sewing silk regulator for, M. Knapp ..... 899,451  
Shackle, padlock, F. Seley ..... 899,268  
Shade bracket, window, R. C. Loughner ..... 899,116  
Shaft, universally extensible tool, J. L. Steingasse ..... 899,082  
Sharpener, scissors, J. Fitzgerald ..... 899,213  
Sharpener, shears, E. H. Shafford ..... 899,140  
Sheet feeding mechanism, J. Ranz ..... 899,133  
Sheet metal frame construction, E. Ohnstrand ..... 899,259  
Sheller, See Peanut sheller.  
Shirt, L. F. Bowen, Jr. .... 899,154  
Shoe rack, Gardner & Higgins ..... 899,249  
Shoes, arch supporter for, J. P. Naughton ..... 899,182  
Show case for displaying pickles and the like, D. W. Imus ..... 899,052  
Signaling system, S. Cabot ..... 899,239  
Slimes separator, H. G. Nichols ..... 899,428  
Spacing machine, G. H. Dyett ..... 899,294  
Spectrum, W. Meyer ..... 899,175  
Speedometer, J. W. Jones ..... 899,055  
Spittoon, O. A. Ottosson ..... 899,130  
Spoke, metal wheel, J. R. Welch ..... 899,476  
Spring repairer, W. R. Petze ..... 899,468  
Sprinkler head, J. A. Cass ..... 899,204  
Staple making and driving machine, O. Ashton ..... 899,093  
Step, extension, F. X. Yung ..... 899,151  
Stereotype plate casting apparatus, H. F. Bechman ..... 899,374  
Stitching and spur combined, Smith & Elder ..... 899,344  
Stop motions, knock off guard for, Hacking & Wilkinson ..... 899,163  
Stove, L. Miller ..... 899,122  
Stove base, J. Sharon ..... 899,335  
Stovepipe, L. C. Scott ..... 899,135  
Stretcher, Wilson & MacFarland ..... 899,279  
Sugar bowl, spoon holding, W. Utgard ..... 899,357  
Superheater, J. H. Meissner ..... 899,060  
Superphosphate masses, apparatus for cutting, U. F. Grise ..... 899,042  
Swinging gate, J. B. Ray ..... 899,472  
Swingtree hook, C. C. Enders ..... 899,104  
Table, R. M. Sheehan ..... 899,267  
Table, L. E. Canniff ..... 899,383  
Talking machine, H. Klenk ..... 899,491  
Talking machine sound box, E. H. Mobley ..... 899,256  
Target pigeon, F. B. Mills ..... 899,123  
Telegraph signals, apparatus for determining the direction of space, J. S. Stone ..... 899,272  
Telegraph sounder, L. Kiblinger ..... 899,307  
Telegraphy, automatic, P. B. Delany ..... 899,208  
Telephone space, S. Cabot ..... 899,243  
Telephone switchboard, C. E. Wilson ..... 899,278  
Thermometer case, F. R. Hart ..... 899,044  
Thermometers to tanks, vats, or the like, device for attaching, H. W. Maurer ..... 899,313  
Ticket or coin holder, J. Hetherington ..... 899,217  
Tiling, E. M. Kilbride ..... 899,410  
Tilling fields, means for, B. J. Godley ..... 899,215  
Tire, cushion, J. G. Smith ..... 899,139  
Tire holder, spare, L. P. McKinney ..... 899,126  
Tire, vehicle, R. M. Meriman ..... 899,061  
Tobacco pipe cleaner, D. Lossius ..... 899,418  
Tool, combination, O. Blakeley ..... 899,287  
Torpedoes, immersion regulator particularly adapted for, A. E. Jones ..... 899,304  
Towel and curtain pole holder, T. Deselms ..... 899,387  
Toy, S. Grobl ..... 899,448  
Toy or puzzle, R. D. Howell ..... 899,402  
Track or roadway, L. S. Hackney ..... 899,252  
Traction wheel, G. Holsenamp ..... 899,047  
Trap door operating mechanism, L. J. Berg ..... 899,443  
Trolley wheel, J. W. Soibert ..... 899,474  
Truck, car, Howard & Pfleger ..... 899,401  
Turbine, Parsons & Stoney ..... 899,319  
Union suit, J. E. Richards ..... 899,187  
Valve, H. D. Snell ..... 899,079  
Valve, W. H. Kline, reissue ..... 12,857  
Valve, automatic air, G. D. Hoffman ..... 899,111  
Valve for flush tanks, supply, O. F. Glidden ..... 899,486  
Valve for hydraulic jacks, air, Nelson & Mathers ..... 899,462  
Valve handle, W. P. Marble ..... 899,117  
Valve position controlling and indicator device, F. N. Connet ..... 899,029  
Valve, relief, J. V. Rowe ..... 899,077  
Valve system and tracker board, H. Pierce ..... 899,469  
Vehicle bodies, means for raising, A. J. Pack ..... 899,430  
Vehicle guiding means, L. S. Hackney ..... 899,253  
Vehicle running gear, M. W. Heynema ..... 899,218  
Vehicle spring wheel, W. H. Scrymgeour ..... 899,332  
Vehicle wheel, W. H. Scrymgeour ..... 899,331  
Vehicle wheel, L. C. Scudder ..... 899,333  
Velocipede, ice, O. Fehrman ..... 899,132  
Vending machine, coin controlled, J. E. Allison ..... 899,198  
Vent pipe attachment, J. H. Brown ..... 899,291  
Wagon standard, W. W. Mullen ..... 899,178  
Washing machines, mechanical movement for, Brewster & Gibson ..... 899,025  
Washing sheet material, machine for, C. E. Water cooler, S. Holub ..... 899,424  
Water current meter, A. A. Porter ..... 899,320  
Water heater, Divekey & Gentner ..... 899,388  
Water motor, L. C. Lewis ..... 899,058  
Watering troughs, guard and cleaning attachment for stock, E. E. Norquist ..... 899,129  
Weather strip, F. A. Yeager ..... 899,150  
Weed burner, A. Iten ..... 899,404  
Well strainer, E. E. Johnson ..... 899,054  
Wheel, See Car wheel.  
Wheels of vehicles, non-skidding device for, H. H. Kenschle ..... 899,056  
Winding machine, Morrow & Foster ..... 899,423  
Wood boring machine guard, E. R. Kink ..... 899,412  
Wood, preserving, W. Buehler ..... 899,237  
Wood, preserving, C. Howard ..... 899,400  
Wood, preserving, W. Buehler ..... 899,480  
Wood splitting machine, H. G. Saecker ..... 899,328  
Woodworking machinery, feeding device for, Thomas & Meyers ..... 899,143

## EVERY ROOM WARM



An even, healthful temperature in every room in your home, no matter how cold outside, nor which way the wind blows. A wholesome, summery atmosphere. A warm house; warm all over—not too warm in mild weather—when your home is heated by

**CAPITOL BOILERS AND RADIATORS**  
Hot Water or Low Pressure Steam  
Economical in fuel: so simple a child can operate, give long years of service, with complete heating efficiency. A book giving the experience of many people with different methods of heating mailed free. Send for it to avoid mistakes when you heat your home. Address Dept. L.  
**Capitol Boilers and Radiators** are equally valuable for Churches, Schools, Hotels and Office Buildings.  
**United States Heater Company.**  
DETROIT, MICH.  
Branch Offices and Agencies in all Principal Cities

**MILLS FOR ALL MATERIALS.**  
OUR BUSINESS IS TO MAKE MACHINERY FOR GRINDING GRAIN, CRUSHING ROCKS AND PULVERIZING ALL HARD SUBSTANCES. WE HANDLE ALL KINDS OF MATERIALS FROM COTTON-SEED TO ROOTS AND HERBS. BY AN UNEXCELLED PROCESS, IF YOU WANT ANY KIND OF A MILL OR GRINDING MACHINE, COME TO US AND YOU WILL GET THE BEST AND STILL SAVE MONEY.  
DEAL WITH US ONCE AND YOU WON'T CHANGE.  
ESTIMATES FREELY FURNISHED.  
**SPROUT, WALDRON & CO.**  
(SEND FOR CATALOG NO. 4.) MUNCY, PA.

**We Start You in the Jewelry Business**  
Write me today. Let me explain how you can become an expert watch repairer in three months—making \$25 to \$75 a week—and own your own jewelry business. Don't leave home or quit your work. Pay me nothing for my instruction or advice. Send me no money. Get ahead. Write right now.  
**CHARLES F. ELMORE, Principal**  
Correspondence College of Watch Making  
Rogers, Thurman & Co., Props., 38 Michigan Ave., Chicago

**The Underwood Standard Visible Typewriter**  
Write for Literature describing regular and special billing models.  
**UNDERWOOD TYPEWRITER CO.**  
241 Broadway New York  
"The machine you will eventually buy."

**TYPEWRITERS ALL MAKES**  
**Visible Writers** or otherwise **Olivers, Remingtons, Smiths, etc.**  
Shipped ANYWHERE for Free Trial, or RENTED, allowing RENT TO APPLY.  
**Prices \$15.00 Up**  
First class Machines fresh from the Manufacturers Write for Illustrated Catalog No. 30. Your opportunity.  
**TYPEWRITER EMPORIUM, (Est. 1892) 92 & 94 Lake St., Chicago**

**TYPEWRITERS**  
ALL MAKES REBUILT at ½ price. Manufacturers' prices. Rented anywhere or sold on 3 months approval. Write for our money back guarantee; also Catalogue and Special Price List.  
**ROCKWELL-BARNES CO., 316 Baldwin Bldg., Chicago, Ill.**





**AFTER A MEAL**

**Chiclets**

REALLY DELIGHTFUL

THAT DAINTY MINT COVERED  
CANDY COATED CHEWING GUM

AN OUNCE FOR A NICKEL AND IN 5¢ AND 10¢ PACKETS

FRANK H. FLEER & CO., INC., PHILADELPHIA AND TORONTO.

## SEALED PROPOSALS.

SEALED PROPOSALS will be received at the office of the Light-House Engineer, Tompkinsville, N. Y., until 1 o'clock P. M., Oct. 22, 1908, and then opened for furnishing one fourth-order lantern for Southwest Ledge Light-Station, New London Harbor, Conn., in accordance with specifications, copies of which, with blank proposals and other information, may be had upon application to the Light-House Engineer, Tompkinsville, N. Y.

**LET US BE YOUR FACTORY**  
STAMPINGS, MODELS, EXPERT WORK  
THE GLOBE MACHINE AND STAMPING CO.  
970 Hamilton St., Cleveland, O.

**ICE MACHINES** Corliss Engines, Brewers' and Butchers' Machinery. THE VILTELL MFG. CO., 839 Clinton St., Milwaukee, Wis.

**MODELS & EXPERIMENTAL WORK.** Inventions developed. Special Machinery. E. V. BAILLARD, 24 Frankfort Street, New York.

**RUBBER** Expert Manufacturers Fine Jobbing Work  
PARKER, STEARNS & CO., 228-229 South Street, New York

**ELECTRIC GOODS.**—Big Cat. 3 cts. Want Agents. Ohio Electric Works, Cleveland, O.

**HOEFT & COMPANY**  
Die Makers, Machinists and Machinery Builders  
120 Michigan St., Chicago, U. S. A.

**MOORE & CO.** Special Machinery, Dies, Tools, Models, Metal Specialties, Inventions perfected. Indiana and Franklin Streets, Chicago, U. S. A.

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

**Experimental & Model Work**  
Cir. & advice free. Wm. Gardam & Son, 221 Fulton St., N.Y.



**SETS OF CASTINGS OF MODEL ENGINES**  
SEND 10¢ FOR 126 PAGE ILL. CATALOGUE.  
ALSO TOOLS.  
GEAR WHEELS & PARTS OF MODELS  
**GOODNOW & WIGHTMAN**  
Removed to 182 Milk Street.

**DRYING MACHINES** For all kinds of granular materials. S. E. Worrell, Hannibal, Mo.

**BABBITT METALS.**—SIX IMPORTANT FORMULAS. SCIENTIFIC AMERICAN SUPPLEMENT 1123. Price 10 cents. For sale by Munn & Co. and all news-dealers. Send for catalogue.

**NOVELTIES & PATENTED ARTICLES**  
MANUFACTURED BY CONTRACT. PUNCHING DIES, SPECIAL MACHINERY.  
E. KONIGSLOW STAMPING & TOOL WORKS, CLEVELAND, O.

**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.

**Magical Apparatus.**  
Grand Book Catalogue. Over 700 engravings  
25c. Parlor Tricks Catalogue, free.  
MARTINKA & CO., Mfrs., 493 Sixth Ave., New York

**THE SCHWEDTLE STAMP CO.**  
STEEL STAMPS, LETTERS & FIGURES  
BRIDGEPORT, CONN.

**INVENTORS** We manufacture METAL SPECIALTIES of all kinds, to order; largest equipment; lowest prices. Send perfect sample for low estimate and best expert advice **FREE**  
**THE EAGLE TOOL CO., Dept. A, Cincinnati, O.**

**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 catalog.  
**ST. LOUIS WATCHMAKING SCHOOL, St. Louis, Mo.**

**Duryea's Buggyaut**  
The winter vehicle. Few parts, few troubles  
**CHAS. S. DURYEA, Reading, Pa.**

Wool, apparatus for extracting grease and potash salts from, F. & C. Shuman, 899,440  
Wool, extracting grease and potash salts from, F. & C. Shuman, 899,339  
Wrench, H. W. Allison, 899,197  
Wrench, A. L. Shaw, 899,336

## DESIGNS.

Automobile body, O. P. Frithele, 39,576  
Badge or similar article, L. W. Pennington, 39,552  
Barrette or hair fastener, G. R. Farrel, 39,554  
Belt, S. M. Riker, 39,582, 39,583  
Bracket, supporting, J. Kaiser, 39,572  
Clock case foot, R. A. Culver, 39,563  
Collar, lady's wire, M. V. Maag, 39,580, 39,581  
Cup, W. F. Rothermund, 39,556  
Game of five hundred, schedule card for the, W. B. Champlin, 39,578  
Gas burner, inverted, F. M. Brooks, 39,567  
Lamp, E. T. Eastop, 39,564  
Lamp, Wohl & Hertzberg, 39,563  
Lamp pedestal, F. S. Verbeck, 39,566  
Lead and crayon holder, automatic, C. W. Boman, 39,561  
Mail box, C. H. Baldwin, 39,569  
Pencil case, E. Pearl, 39,559  
Pencil propelling, H. Heymann, 39,560  
Pincushion, E. Dauber, 39,579  
Pipe holder, C. Elkin, 39,558  
Pipe trap, waste water, W. J. Frost, 39,573  
Printer's rule corner, W. C. F. Papke, 39,562  
Racks or drawers, front member for, D. B. Plunkett, 39,570  
Ring, W. E. Edwards, 39,553  
Shoe polishing machine casing, E. F. Stratton, 39,571  
Sign, druggists', R. A. Walter, 39,568  
Spoon, A. Atwood, 39,555  
Stove, vapor, Savage & Guterman, 39,574  
Tire, wheel, T. J. Mell, 39,575  
Tray, glass holding, O. Hebestreit, 39,557

## TRADE MARKS.

Absorbent cotton and gauze, and silk and catgut ligatures, Lister Surgical Co., 70,693  
Asphalt for road making and roofing, Sicilian Asphalt Paving Co., 70,675  
Bread, Central Butter & Egg Co., 70,688  
Brushes, buffing and polishing, William Dixon Incorporated, 70,682  
Cakes and biscuits, R. van Hauen, 70,696  
Canned tomatoes, peaches, pears, etc., I. Levia, 70,692  
Castings, miscellaneous, Ohio Malleable Iron Co., 70,665  
Clocks, American Cuckoo Clock Co., 70,649  
Cocks, Ohio Brass and Iron Manufacturing Co., 70,664  
Collar supporters, Schloss-Speler Co., 70,674  
Cordial, lime juice, Evans Sons Lescher & Webb, 70,689  
Cornmeal, American Hominy Co., 70,685  
Cotton piece goods, Rice, Stix Dry Goods Co., 70,667  
Creams, pastes, and powders, Cassebeer Pharmacal Co., 70,636  
Cycles, motor, Hornbecker Motor Mfg. Co., 70,659  
Dyes, G. Palmer, 70,666  
Flour, wheat, Waterloo & Cedar Falls Union Mill Co., 70,697  
Food compound, certain, Genesee Pure Food Co., 70,690  
Furniture, certain, Ford & Johnson Co., 70,657  
Garment hangers, A. Schlang, 70,670, 70,673  
Gin cocktalls, G. Stiegler & Co., 70,695  
Gloves, kid, Steinberger & Kalisher, 70,676  
Insecticide, W. Peterman, 70,644  
Insulated electric wires and cables and insulating tape, W. R. Brixey, 70,652  
Lamps, incandescent electric, Sunbeam Incandescent Lamp Co., 70,679  
Lamps, miners', G. Anton, 70,650  
Lenses, spectacles, and eyeglasses, D. B. Rubin, 70,668  
Lime, M. J. Grove Lime Co., 70,660  
Magazine, Vulcan Steam Shovel Co., 70,681  
Magazine periodical, Business Magazine Co., 70,653  
Medicinal oil, H. Claus, 70,637  
Medicinal oil, National Remedy Co., 70,641  
Needles, toilet and safety pins, O. Mustad & Son, 70,642  
Oil, Italian olive, Parodi, Erminio & Co., 70,694  
Organs, Estey Organ Co., 70,655  
Oysters, J. & J. W. Elsworth Co., 70,691  
Pencils, automatic lead, E. Moster & Co., 70,661  
Pencils, lead, Styles & Cash, 70,677, 70,678  
Pianos, Estey Piano Co., 70,656  
Purgatives, Knoll & Co., 70,640  
Remedies for relief of pain, lameness, and soreness, J. A. Begy, 70,635  
Remedies for the ailments of live stock, Nebraska Live Stock Remedy Co., 70,643  
Remedy for intestinal indigestion, etc., Henry K. Wampole & Co., 70,639  
Rings, finger, A. Constantine, 70,654  
Salve, T. M. Sayman, 70,645  
Shoes, cloth, rubber, and leather, National Shoemakers, 70,663  
Shoes, leather, Ainsworth Shoe Co., 70,684  
Soaps, E. Wertheimer & Cie., 70,646  
Teeth, devices used in filling and treating, C. M. Beam, 70,651  
Tires, inner tubes of elastic, Goodyear Tire & Rubber Co., 70,658  
Tobacco, smoking, Rural Tobacco Co., 70,669  
Varnishes, Japans, lacquers, and enamels, Cleveland Varnish Co., 70,638  
Whiskies, blend of straight rye, A. M. Jordan Co., 70,683  
Wines, J. Calvet & Co., 70,687  
Wire, hat, B. Trosky, 70,680

## LABELS.

"All Nations' Brand," for coffee, Globe Coffee & Molasses Co., 14,364  
"Another Biscuit," for soda crackers, American Pastry & Mfg. Co., 14,370  
"Apple Jelly," for apple jelly, Atlas Preserving Co., 14,368  
"Buttercup Brand," for sterilized unsweetened condensed milk, Williamette Valley Condensed Milk Co., 14,366  
"Calendar," for tea, George Lewis & Co., Incorporated, 14,365  
"China-Lac," for a varnish stain, Phoenix Color Works, 14,372  
"Contriwo," for cigars, Alhambra Cigar Co., 14,359  
"Fir Balsam," Product of Maine, for fir balsam, F. S. Huntley, 14,371  
"Fruital," for carbonated apple juice, Klammer Bros., 14,367  
"Proxy," for a non-intoxicating beverage made from malt and hops, Schwarzenbach Brewing Co., 14,363  
"Sanitary Hairnet," for hair nets, J. Kalmach, Jr., 14,373  
"Tulip A," for cigars, American Lithographic Co., 14,360  
"Tulip B," for cigars, American Lithographic Co., 14,361  
"Universo," for cigars, Schmidt & Co., 14,362

## PRINTS.

"Babibood Clothes," for infants' apparel, Windsor-Knitting Mills, 2,349  
"Ideal Cover," for covers, F. C. Roberts, 2,348  
"The Clothes for Fall 1908," for men's fall apparel, David Adler & Sons Clothing Co., 2,350  
"The Dawson Taste," for straight Scotch whisky, Gunning System, 2,346  
"The Lucky Key," for bottled beer, F. J. Cooper, 2,347

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**

**REPEATING SHOTGUNS**

OVER four hundred and fifty thousand sportsmen use and endorse Winchester Repeating Shotguns. The U. S. Ordnance Board, after subjecting one of these guns to the severest of tests for strength, reliability, accuracy, penetration, endurance, excessive loads, defective shells, rust and dust, reported officially that the gun could not be improved upon. For field, fowl or trap shooting they are equally good. Then why not a Winchester? \* \* \*

FREE: Send address for catalogue of Winchester—the Red W Brand—Guns and Ammunition.

**WINCHESTER REPEATING ARMS CO.**  
NEW HAVEN, CONN.

## Engineering News

(ILLUSTRATED)

The Leading Engineering Paper of the World. For Civil, Mechanical, Mining and Electrical Engineers.  
100 to 125 pages, 9"x13", weekly. Send ten cents for sample copy.

**THE ENGINEERING NEWS PUBLISHING CO., 214 Broadway, New York**

## UNIVERSAL SCRAPER

Neatest, simplest and best on the market. Eight sharp cutting edges, each brought instantly into use by ball joint connection. Easily locked or released by turning handle.

PRICE \$1.00

Send for 232 page catalog No. 18-B.

THE L. S. STARRETT CO., Athol, Mass., U. S. A.

**Save Money by Machinery!**  
You can do this easily with the right machine in all furniture factories.

**DODDS' TILTING CIRCULAR SAW**  
uplifts to 45 degrees, simplifies the work and insures perfect accuracy in cutting. Removable throat in table. 19-inch rip or cross-cut saw with each machine. Write for free illustrated catalogue and price list.

ALEXANDER DODDS, Grand Rapids, Mich., U. S. A.

## "HOW TO REMEMBER"

Sent Free to Readers of this Publication

**Stop Forgetting**  
You are no greater intellectually than your memory. Easy, inexpensive. Increases income, gives ready memory for faces, names, business details, studies, conversation; develops will, public speaking, personality. Send today for Free Booklet. Address

**DICKSON MEMORY SCHOOL, 700 Auditorium Bldg., Chicago**

Your pen from your pocket will not slip if you fasten it with a

**Klymax**  
REG. U.S. PAT. OFF.

**All Sizes—No Riveting**  
German Silver, 10c.  
Rolled Gold, 25c.  
At your stationer's or by mail. Give size of pen.  
**CONSOLIDATED SAFETY PEN CO.**  
121 Farrand Street, Bloomfield, N. J.

Just Published

## The New Agriculture

By T. BYARD COLLINS

12mo. 374 pages, 106 illustrations, cloth, price \$2.00

THIS new and authoritative work deals with the subject in a scientific way and from a new viewpoint. Dr. Collins has devoted his lifetime to the study of changing economic agricultural conditions. "Back to the soil" was never a more attractive proposition and never so worthy of being heeded as during these opening years of the twentieth century. Farm life to-day offers more inducements than at any previous period in the world's history, and it is calling millions from the desk. The reason for this is not at first obvious, and for this reason Dr. Collins has prepared the present work, which demonstrates conclusively the debt which agriculture owes to modern science and the painstaking government and State officials. Much of the drudgery of the old farm life has been done away with by the use of improved methods, improved stock and varieties. All this tends to create wealth by increased value of the product and decreased cost of production. Irrigation, the new fertilization, the new transportation, the new creations, the new machinery, all come in for a share of attention. The illustrations are of special value, and are unique. All who are in any way interested in agriculture should obtain a copy of this most timely addition to the literature of agriculture. A full table of contents, as well as sample illustrations, will be sent on application.

**MUNN & CO.,** Publishers of "Scientific American," 361 Broadway, New York