



Rambler Tonneau Touring Car

The strongest and most powerful car of its weight; nothing equal to it, either in power or appearance, sold for less than \$2,500.00.

1904 Model "K" Rambler, sixteen actual horse power, carrying five persons, complete with brass headlight; brass oil side lights and brass horn.

\$1,200 AT THE FACTORY

Model "L" exactly like model "K" but fitted complete with canopy top, curtains, plate glass swinging front, lamps, horn and side baskets.

\$1,350 AT THE FACTORY

All Rambler Cars are controlled by one lever: have full elliptic springs; two powerful brakes, one on transmission, the other on each rear wheel. Models "J," "K" and "L" have thirty-inch wheels and large tires; eighty-four-inch wheel base; two-cylinder opposed engine; all models have positive wheel steering device; French style bonnet; pressed steel hood.

Send us your complete illustrated catalogue explaining each special point of Rambler superiority!

THOMAS B. JEFFERY & COMPANY
Kenosha, Wisconsin
Chicago Branch, 304 Wabash Avenue
Boston Branch, 145 Columbus Avenue

If you want

simple, reliable power at a reasonable price, write us stating your requirements. We build twenty sizes of stationary engines, 2 to 100 horse power. Highest award wherever shown for simplicity and economy. When writing, please mention SCIENTIFIC AMERICAN.

LAZIER GAS ENGINE CO.
Buffalo, N. Y., U. S. A.

University Shoe

(Trade-Mark)

Heaviest oily grain leather—tan colored. Water-tight construction. Comfortable and nearly indestructible. Send for pamphlet.

J. P. TWADDELL
1210-1212 Market Street
Philadelphia

Keep Your House Warm

this winter and save coal by fitting your doors and windows with

FORD'S AIR-TIGHT WEATHER STRIP

A perfect protection from cold, draught and dust. It is inexpensive, made entirely of wood, and absolute by the best strip on the market.

Send for illustrated booklet (Free). We want agents in each locality and offer very liberal terms to good men.

CHARLES J. FORD, 225 Senior Bldg., Holyoke, Mass.

What Is Daus' Tip-Top?

TO PROVE that Daus' "Tip-Top" is the best and simplest device for making 100 copies from gas-etching and 50 copies from typewritten original, we will ship complete duplicator, cap size, without deposit, on ten (10) days' trial.

Price \$7.50 less trade discount of \$2.00 per cent, or \$5.50 NET

THE FELIX F. DAUS DUPLICATOR CO.
Daus Building, 118 John Street, New York City

Your Telephone

DOESN'T RING LOUD ENOUGH?

THE G-D DROP is placed on front of phone rings a battery bell of any size, located any place you choose, until phone is answered. No more nets. Pamphlet "G-D" free on request.

Send postpaid for **ONE DOLLAR.**

GATTON-DANIELS CO.
KEOKUK, IA.

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 Cob, Conn.
New York Office, 136 Liberty St.

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 newdealers.

MUNN & CO., 361 Broadway, New York
Branch Office 625 F St. Washington, D. C.

Lumber and preserving same, undressed, G. C. Cowles	746,678
Machine tools, device for intermittently rotating tables of, F. Komnick	746,849
Magneto generator, G. E. Wheeler	746,904
Malt kiln dumping floor, H. W. Colby	747,143
Malt, means for mixing cereal with, A. C. Bourdeau	746,664
Malted flakes, making, A. C. Bourdeau	746,663
Maltose, producing, C. B. Duryea	746,953
Mandrel press, J. A. Hess	747,174
Mattress, wire, M. R. Mangum	746,722
Measuring device, cloth, M. McKellar	746,984
Measuring instrument, last or foot, C. B. Hatfield	746,958
Measuring or other devices, producing appropriate phase relationship in alternating current, R. Arno	746,775
Meat tenderer, F. Seitz	747,240
Medicator, nasal, G. E. Seidel	746,749
Metal articles, finishing, C. R. Manning	746,724
Metal coiling machine, H. J. Mitchell	747,203
Metal compounds, converting, J. W. MacDonell	746,721
Metal refining apparatus, A. Schwartz	746,748
Metal shearing machine, C. E. Lingenfelter	746,716
Metal ware, die for making hollow, W. Jones	746,843
Metals from matte or ore, separating, P. Danckwardt	746,797
Metallic tie, P. Reeser	746,742
Micrometer gage, A. Rieffel	747,224
Mining dredge, placer, A. W. Robinson	747,086
Mining machine, S. N. Mighell	746,727
Mold, H. Heincke	746,960
Mold, L. Marchionni	746,971
Mold making apparatus, W. S. Wood	747,289
Monkey wrench, S. E. Landis	746,712
Motor wheel for bicycles, etc., Krauss & Berenberg	747,190
Motors, governing mechanism for fluid actuated, H. Holzwarth	746,836
Mowing machine, R. Dillingham	746,687
Music leaf turner, L. Poulin	746,991
Musical instrument, J. C. Deagan	747,340
Nail, spike, or other driven holdfast, C. Hass	747,171
Necktie fastener, C. Wood	747,028
Nut lock, A. Eisenrath	746,937
Nut lock, rail joint, C. B. Rush	747,233
Oil, etc., device for containing and ejecting, J. A. Dunn	747,153
Oil gage, G. C. Bartow	747,032
Ore concentrator, dry, H. M. Sutton, et al.	747,265
Ore separating and cleaning apparatus, F. E. Parker	747,214
Ores, apparatus for treatment of, O. Daube	746,928
Organ, Hagey & Arno	746,829
Oven feeding means, A. C. Bourdeau	746,665
Package filling means, A. C. Bourdeau	746,666
Packing fragile vessels, means for, J. N. Hahn	747,167
Packing, piston rod metallic, W. Foden	746,810
Padlock, E. T. Fraim	746,945
Painting apparatus, wheel, W. B. Long	746,717
Paper calendaring machine dampening device, W. G. Andrus	746,655
Paper, machine for making and cutting double-faced corrugated, J. T. Peares	746,807
Paper tubes, manufacturing, G. H. Sachsenroder	747,332
Peanut stemmer, C. W. Lasiter	746,714
Pen rack, R. H. Hazeltine	747,066
Pencil case, B. F. Stuart	746,897
Photographic film developing apparatus, J. F. Steward	746,756
Photographic washing machine, E. W. Schneider	747,241
Piano action, F. J. Granow	746,823
Pianoforte action, W. A. Earthy	747,318
Piano key bottom, P. Duffy	746,932
Pipe clearing apparatus, P. Schalt	747,089
Pipe core forming apparatus, Bell & Sweltzer	746,779
Pipe coupling and plug, combined universal joint, T. Draper	747,152
Pipe joint, J. P. Gilbert	747,061
Pipes, etc., joint for water, C. Guyer	746,828
Pipe wrench, A. W. Snyder	747,013
Pipe wrench or clamp, C. N. Hutchins	746,705
Pitman connection, D. W. Fagalde	747,054
Planter, corn, K. K. Lerol, Jr.	747,194
Plastic material, machine for shaping and pressing, G. Owen	747,328
Plastic shingle mold, Ackles & Koontz	746,771
Plow, N. A. Griffin	746,826
Plow, B. Allen, Jr.	747,112
Plow, J. Buchanan	747,129
Plow and drill, H. Ister, F. Otte	746,875
Pneumatic elevator, C. Bradford	747,124
Polishing compound, G. Shambeck	747,003
Portable elevator, J. G. Brown	747,044
Poster, L. Coulet, et al.	746,794
Potassium chlorid from fuel and algae, extracting, D. M. Balch	747,291
Poultry house, G. C. Scott	747,243
Power transmission mechanism, J. A. Schaefer	747,236
Pressure regulator, I. H. Spencer	746,755
Printing and duplicating apparatus, A. D. Klaber	747,074
Printing apparatus, lamp controller for electric blue, S. B. Whinery	747,338
Printing apparatus, stencil, D. Gestetner	747,950
Printing device, combined hand and automatic roll, C. P. King	747,325
Printing machine, Smith & Harn	747,009
Printing machine, automatic color, O. Halensleben	747,168
Printing machine, pattern, C. L. Burdick	746,786
Printing machine, stencil, A. B. Dick	746,930, 746,931
Printing roll, Smith & Harn	747,096
Printing yarns or threads for woven carpet fabrics, W. B. Keefer	747,306
Pruning implement, J. C. Kearns	746,964
Pulp machine suction device, J. L. Youngs	747,029
Pump attachment, deep well, G. C. Richards	747,223
Pump, duplex steam, F. Weise	747,024
Pumps, computing attachment for dispensing, A. A. Bowser	747,296
Radiator, J. J. Spear	747,254
Rail joint, R. C. Bott	747,037
Rail joint, W. Larkin	747,076
Rail joint, N. A. Alm	747,115
Rail joint, J. A. Bridge	747,125
Railway, J. Dew	747,342
Railway, electric, M. Hoopes	747,177
Railway rail fastener, C. G. Chamberlain	747,136
Railway signal, H. M. Cogan	747,142
Railway signal selector, L. A. de Bernard	746,661
Railway signaling system, electric, Mills & Piddington	746,977, 747,326
Railway switch, D. Miller	747,202
Railway system, electric, S. Udstad	747,277
Railway systems, current collecting device for electric, Shobe & Embley	746,751
Railway tie and antispreading device, F. D. Bline	746,918
Railway tie and rail brace, combined, G. M. Williams	746,905
Railway tie, metal, H. K. J. Manger	746,858
Railway ties, apparatus for handling, C. P. Olson, et al.	746,737
Razor guard safety, C. H. Hill, Jr.	747,069
Reamer, J. Ross	747,330
Receptacle for apparel, etc., W. Wittig-schlager	747,287
Refrigerating machines, air or gas pump for, F. N. Mackay	746,856
Refrigerating system, C. J. Coleman	746,792
Refrigerator, M. R. Perotti	746,739
Rein roll, W. J. Scott	747,000
Rendering tank, Edson & Silliman	747,303
Riveter supporting device, shell, J. W. Tierney	747,272
Rock drills, front cylinder head for, J. S. Spencer	747,015
Rolling mill feed table, E. E. Slick	746,886
Roofs and walls of buildings, construction of, J. W. Beaumont	747,120
Rotary cutter, C. T. Headley	746,959
Rotary engine, A. C. Willis	747,026
Rotary engine, H. C. Essington	747,319
Rotary explosive engine, A. McCaahan	746,870
Rubber, manufacturing a substance resembling India, D. H. Dupont-Franklin	746,689
Rubber, substance, resembling India, D. H. Dupont-Franklin	746,688

Any of these beautiful, sparkling diamonds and fine pearls, in solid gold, hand-made mountings will be sent direct from our factory on receipt of price, or (O. D.) subject to inspection. Order by number. We send goods prepaid and guarantee safe delivery. Your money back without a question if you are not wholly pleased. Our diamonds are of superior quality and we sell only fine, high-grade goods and list every thing at wholesale prices. Our beautiful illustrated Catalogue shows thousands of photographs of the newest and finest goods. IT'S FREE—send for it to-day and save one-half on your Holiday shopping. We are the largest concern in the business and one of the oldest—Established 1840. We refer to the Commercial National Bank of Chicago. Capital, \$2,000,000.00.

S. T. ALTRUS & Co., Diamond Merchants, Gold & Silversmiths
Diamonds, Watches, Jewelry, Sterling Silver, Cut Glass, Novelties, etc.

156-A Stewart Bldg., Chicago, Ill., U. S. A.

MANUFACTURERS

Contemplating establishing plants in the West should take advantage of a location on

THE NORTH-WESTERN LINE

Chicago & North-Western Ry.
which reaches the famous

WATER POWERS, COAL FIELDS, IRON ORE RANGES, HARD AND SOFT LUMBER DISTRICTS

of the West and Northwest, and affords the best means of transportation to the markets of the world.

FOR FURTHER PARTICULARS APPLY TO

MARVIN HUGHITT, Jr., E. D. BRIGHAM,
Freight Traffic Mgr., Gen'l Freight Agent,
CHICAGO.

Volt Ammeters

Pocket size, but large enough for accuracy and practical use. Various ranges for testing batteries, electric light, telephone and other circuits, etc. Also, Voltmeters and Ammeters for general measurements.

Send for Circular.

L. M. PIGNOLET,
50 Cortlandt Street, - New York, N. Y.

The "Best"

The World's Best Light

Sold in every civilized country on earth. Costs less than kerosene, gives six times more light than electricity.

APure White Steady Light

Makes and burns its own gas. No wick, no odor, no smoke. Absolutely safe. For indoor and outdoor use.

Agents Wanted,
Exclusive territory, liberal commissions. Catalog free.

THE BEST LIGHT CO.
Owners of Original Patents.
87 E. 5th St. CANTON, OHIO.

Good Works

are the basis of a good watch, such as we make, and these must be protected by well-fitting and

Honest Cases

such as bear accompanying stamps

QUEBER Our Trade Mark in Solid Gold Watch Cases **14K**

Dueber-Hampden Watches

all bear copyrighted names engraved in the movements to distinguish them.

Send for our free booklet, "The Care of a Watch"

It will give you valuable information and you can learn how to ask for just the size and quality of movement that will suit you.

WE MAKE COMPLETE WATCHES and we are the only makers in the world of high-grade watches that do so.

Dueber-Hampden Watch Works,
56 South St., Canton, Ohio.

Remington Typewriters

look durable and are as durable as they look.

Remington Typewriter Co.
327 Broadway, New York.

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.

A CHRISTMAS SUGGESTION

75c. will bring you this **Press-Button Knife**

which a simple pressure of the button opens. It locks open, cannot close on the fingers. Saves the finger pain. Has two blades hand-forged from Wardlaw's best English steel and in every respect as good a knife as can be made. Ladies' and Gentlemen's sizes in Stag, Shell or Ivory handles, including moisture-proof Chamberlain case, securely mailed to any address. Ask for booklet J for description and price of other styles.

NOVELTY KNIFE CO.
426 E. 52d St., New York City

ENGINEERING TAUGHT BY MAIL

All branches of Civil, Electrical and Mechanical Engineering; Drafting, Architecture, Mining, Metallurgy, etc. Not only trade courses, but thorough preparation for all branches of engineering work, such as is given in the best technical schools. Instructors are all college graduates. Life scholarships on easy payments. Spare time study alone required. Established 1893. A university on the correspondence plan; usual collegiate degrees conferred. Write to-day for illustrated booklet containing extracts from letters of students and graduates. See below what they say.

DOUBLED HIS SALARY

From Arthur A. Aust, Johnstown, Pa.—"Your course is doing a great deal for me. The theory obtained from you, together with the practical experience gained, have enabled me to double my salary."

From E. G. Posa, Nashville, Tenn.—"I am at present employed as resident engineer. I must thank you for the thorough and efficient training you gave me."

From G. W. Herkart, East Orange, N. Y.—"I am so well pleased with your treatment and instruction that if I can find time I will take a course in higher mathematics also."

NATIONAL CORRESPONDENCE INSTITUTE
66-73 Second National Bank Building
Washington, D. C.