

hicle is prevented. Should an attempt be made to open the lock without releasing the proper latches, an alarm will be sounded.

SPEED-RECORDER AND REGISTER FOR VEHICLES.—CARL FRANCKE and HEINRICH SCHWABACHER, Dessauerstrasse 6, Berlin, Germany. The apparatus will indicate the time at which a tram car left a station, the speed at which the car covered its journey, the time at which it completed the journey, and the various stopping places. The apparatus can also be made to indicate the total of the various separate journeys made within a certain given period.

BRAKE.—GASTON H. DE BERLY and EUGÈNE G. RASSINIER Rue Damrémont 4, Paris, France. The invention is chiefly characterized by the combination of a sleeve carried and fixed to the hub of spokes of a motor vehicle wheel, which sleeve is acted upon with braking effect by two rollers carried upon a lever. The lever is pivoted to the axle; and by its operation a progressive grip is obtained upon the inside or outside of the sleeve or upon both sides.

PAWL AND RATCHET BRAKE.—E. CANAPLE and F. THIÉBAUX, Germigny-l'Évêque, Seine et Marne, France. With this invention the driver of a vehicle may use both hands, if desired, to operate the brake lever, as the pawl and ratchet act automatically. By the shifting of a weight on the pawl the latter may be made either to engage the ratchet teeth or to swing free from them.

VEHICLE BRAKE.—J. W. PACKARD and W. A. HATCHER, Warren Ohio. The brake comprises a shoe mounted on a lever hung from the vehicle spring and actuated by a connecting-rod and foot lever. The shoe coacts with the inner periphery of an annular brake-rim fastened directly to the inner periphery of a wheel at one side of the spokes.

ELASTIC TIRE.—W. F. WILLIAMS, 17 and 18 Great Putney Street, Golden Square, London. The invention consists in embedding into the rubber an open-meshed fabric, of the nature of a fishing-net, formed of cords knotted together at their points of intersection. The meshes are large and open so that the rubber will fill and completely envelop them. The knots insure that the cords will mutually support each other, and they so strengthen the rubber as to prevent tearing.

Miscellaneous Inventions.

ARCH.—LOUIS LANE, Toledo, Ohio. Mr. Lane has devised an improved construction of small arched bridges, culverts, and the like. Arch plates spring from abutments, which plates are corrugated in the direction of their curve. A key-bar is arranged between the upper ends of the plates. To the bar plates are secured engaging the upper and under surfaces of the arched plates. By properly proportioning and employing metal arch-plates, the trouble and expense of temporary centering which has rendered the use of such arches impracticable in many places, owing to the great diversity of sizes, are saved.

CURRYCOMB.—JOSEPH E. GILBERT, Danville, Mich. The scraper-blades are held together in pairs. Through slots in some of the scraper-blades, guide-bars loosely pass, which are held at their ends in the outer toothed bars. The scraper-blades can be moved endwise. Hence, it is possible to remove the adhering scurf from the comb, simply by moving the scraper-blades, and not by striking the curry-comb against the floor or wall to its great injury.

CURTAIN-FIXTURE.—WILLIAM E. MATHEWS, Ferndale, Cal. The curtain-fixture is easily applied and readily adjusted. The same screw or clamp will operate to secure the curtain-bracket in any desired adjustment, and will, at the same time, bind the bars that form the bracket in clamping engagement with the window casing.

PAPER-FASTENER.—ROBERT MCMAHON, Manhattan, New York city. The paper-fastener consists of two members, of which one is provided with pins to be passed through the papers and to engage the other member. Registering apertures in the members permit the passage of a seal-ribbon. Flaps on the second member conceal and lock the pins without covering the registering aperture. The device fastens any desired number of superposed sheets securely together.

SHIPPING-BOX.—ASA E. PIPER, Buffalo, N. Y. The box is intended to hold and ship produce, such as butter, the construction being such that the box can be knocked down, so that several boxes can be made to occupy a very small space. The cost of manufacture is small.

CHATELAINE-BAG HOOK.—MARCUS T. GOLDSMITH, Manhattan, New York city. The inventor has devised a hook that is arranged to be held securely in position on the waist-belt, so that it cannot be accidentally detached. Only the wearer can remove the hook.

WINDOW BOX FOR PROTECTING FOOD.—ALEXANDER BOLLER, Manhattan, New York city. This folding box for windows can be closed up flat, so as to occupy a minimum amount of room in storage. Self-adjusting fastening devices permit the attachment of the box to a window-frame of almost any size. The upper lid can be raised or lowered to permit cleaning of the window-panes. The lower member can be adjusted to enable the window-

sill and the bottom of the box to be thoroughly cleaned. The sides can be adjusted without disturbing the bottom. However slanting the sill may be, the bottom can always be maintained level.

BOTTLE CLOSURE.—JOHN SCHIES, Anderson, Ind. The neck of the bottle is grooved to receive a sealing strip, so formed as to be engaged by the threaded cap. The seal swells in the groove, while the cap is held to the seal by the screw-threads. The threading of the cap into the ring, as well as the moisture of the contents of the bottle, will operate to aid the natural resilience of the seal in forcing the seal into the groove of the bottle-neck.

SLIDE LOOP-CLIP.—ISAAC GOURES, 403 East Seventy-seventh Street, Manhattan, New York city. The invention is an improved device for holding a supporting strap or loop as adjusted on a belt of elastic webbing or the like. Mr. Goures' device is of simple construction, and, when in position, prevents the loop or strap from sliding along the web. The clip is so arranged that it will neither cut into nor soil the web during its movement.

PROJECTILE AND FUSE.—LEOPOLD JULIG, 348 Seventh Street, San Francisco, Cal. The invention is a new projectile and fuse, whereby greater effectiveness is obtained. It is an improvement upon that form of projectile in which the fuse or primer is ignited by the primary combustion of potassium, which, when brought into contact with water ignites and burns spontaneously.

CALCULATOR.—ARMAND T. BEAUREGARD, Stamford, Conn. This improved calculator is more especially designed for use in testing the accuracy of electric recording watt meters and finding by mere inspection the percentage error whether the meter be fast or slow.

CHATELAINE HOOK.—LOUIS B. PRAHAR, Brooklyn, New York city. Mr. Prahar has devised a simple, light and durable form of chatelaine hook, so constructed that it can be quickly applied to a belt or band, and as readily removed. The chatelaine hook is held to a support in such a manner that it can work no injury.

BAR MIXING-GLASS.—HENRY MORGAN, Cripple Creek, Colo. The invention provides a mixing-vessel having an internal hinge, and a strainer loosely pivoted on the hinge. The liquid passes through the strainer and into a serving-glass. The device is readily detachable.

CARBID CARTRIDGE FOR ACETYLENE GAS GENERATORS.—BLMER F. MACKUSICK, Manhattan, New York city. The inventor has devised a new and improved charge for acetylene gas generators, which is arranged hermetically to inclose the calcium carbide and to prevent its disintegration by moisture while not in use. An intermittent generation of gas is caused and the charge is submerged in water, thus insuring a cool generation of gas.

NOZZLE.—CHARLES A. SNIDER, Jersey City, N. J. A carrier provided with a number of different articles is movably mounted upon a support in such a manner that by moving it any one of the articles can be brought into an operative position. The invention is particularly applicable to nozzles for fire-hose or fire-hydrants. The construction is simple and compact; and its parts easily accessible.

VALVE.—ANTON WAGNER, Manville, R. I. The purpose of this invention is to enable one having charge of a valve to tell exactly to what extent the valve has been moved, and thus accurately regulate the amount of fluid that may pass through it. This end is attained by providing a peculiarly constructed scale used with the valve, so that all movements are recorded on the scale.

BOX.—AUGUST FLASKAMP, Crefeld, Germany. The box is intended to contain and display scarfs, neckties, and similar articles, and to hold the things displayed either directly on posts or supporters or between partitions. The individual supports for the articles or the supports for the partitions are simply constructed and securely fastened in position in the bottom of the box.

Designs.

HOOF PAD.—JOHN CAMPBELL, Manhattan, New York city. The body of the pad has at its side edges forward of the heel at the quarter two shoe recesses, the inner walls of which are formed by the outer surfaces of the projection. In the body at the under-side there is a depression or pneumatic chamber which narrows toward the front of the pad and from which a channel leads through the heel to the back edge.

NECKTIE.—ABRAHAM W. COWEN, Manhattan, New York city. The design provides a combined four-in-hand and bow tie.

SUSPENDER YOKE.—BENJAMIN STEIN, Manhattan, New York city. The leading features consist of two connected side-wing sections curving upward and outward in opposite directions; and a downwardly-extending tab member, forming a portion of the central section of the yoke and continuous with the side-wing sections.

PURSE TOP.—SIDNEY A. KELLER, Manhattan, New York city. The leading feature of this design is an arch surmounted on the faces and other margin by a complete floral pediment.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

Business and Personal Wants.

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. In every case it is necessary to give the number of the inquiry. MUNN & CO.

Marine Iron Works. Chicago. Catalogue free. Inquiry No. 2202.—For complete address of Mr. J. Wilson, of Perth Amboy, N. J., holder of patent No. 690,215.

Motor Vehicles. Duryea Power Co., Reading, Pa. Inquiry No. 2203.—For manufacturers of water-wheels.

"U. S." Metal Polish. Indianapolis. Samples free. Inquiry No. 2204.—For manufacturers of compressed brick machinery.

WATER WHEELS. Alcott & Co., Mt. Holly, N. J. Inquiry No. 2205.—For novelties and patent labor-saving devices.

Stencil Machines.—A. J. Bradley, 101 Beekman St. N. Y. Inquiry No. 2206.—For dealers in very fine wash and flour of emery.

Metal substitute. Crane Bros., Mfrs., Westfield, Mass. Inquiry No. 2207.—For dealers in photo-engraving supplies.

Handle & Spoke Mch. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O. Inquiry No. 2208.—For manufacturers of compressed air apparatus for cleaning carpets, furniture, etc.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt. Inquiry No. 2209.—For makers of machines for making clay knobs, bushing cleats, etc.

Rigs that Run. Hyarocarbon system. Write St. Louis Motor Carriage Co., St. Louis, Mo. Inquiry No. 2210.—For manufacturers of the Tesla electrical system for carrying ore and bags of grain.

For sheet metal stampings and novelties try Standard Stamping Co., Seventh and Hudson, Buffalo, N. Y. Inquiry No. 2211.—For manufacturers of steel tracks for wagon roads.

Are you looking for anything in bent woodwork? Write Tucker Bicycle Woodwork Co., Urbana, Ohio. Inquiry No. 2212.—For wholesale dealers in amber, horn and celluloid mouth pieces for pipes.

We make anything in sheet metal, any shape. Estimates free. Metal Stamping Co., Niagara Falls, N. Y. Inquiry No. 2213.—For makers of electric or steam motor and wheel combined, so as to be attachable to vehicles to be run as an automobile.

I will represent you in Europe. Hardware or novelty trades. Best references. "Europe," Box 773, New York. Inquiry No. 2214.—For makers of glazed, brown, stone backing bottles for liquid backing.

We develop inventions through their several stages, manufacturing for the market. Amstutz Osborn Co., Cleveland, O. Inquiry No. 2215.—For makers of non-absorbent round paper boxes of 2 1/2 x 3 and 3 1/2 inches deep, plain outside.

Special and Automatic Machines built to drawings on contract. The Garvin Machine Co., 149 Varick, cor. Spring Streets., N. Y. Inquiry No. 2216.—For makers of cheap 1 oz. ink bottles.

Manufacturers of patent articles, dies, stamping tools, light machinery. Quadriga Manufacturing Company, 18 South Canal Street, Chicago. Inquiry No. 2217.—Wanted to buy compressed air carpet-cleaning machines.

Patents developed and manufactured, dies, special tools, metal stamping and screw machine work. Metal Novelty Works Co., 43-47 S. Canal St., Chicago. Inquiry No. 2218.—For dealers in powdered lead prepared by blowing a jet of steam through the molten metal.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York. Inquiry No. 2219.—For manufacturers of portable houses and buildings.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y. Inquiry No. 2220.—For dealers in apparatus, cans, etc., for the condensed milk business.

WANTED.—Foundry chemist who can also superintend cupolas and produce iron at lowest cost. Young man preferred. Stover Manufacturing Company, Freeport, Md. Inquiry No. 2221.—For flat steel 5-16 x 3-32.

Wanted—Revolutionary Documents, Autograph Letters, Journals, Prints, Washington Portraits, Early American Illustrated Magazines. Correspondence Solicited. Address C. A. M. Box 773, New York. Inquiry No. 2222.—For cuts of Serrel or other automatic silk reel machinery; best loom for weaving organdie silk; best loom for weaving floss, for illustrating bulletin of a State Department of Agriculture.

WANTED.—Draftsman of first-class skill wanted in manufacture of highest grade fine instruments. Unusually attractive position for right man, satisfactory compensation and association with experts. Address, stating age, experience and desired salary, Electrical, Massachusetts. Box 773, New York City. Inquiry No. 2223.—For a simple and inexpensive steel basket.

WANTED.—A first-class machinist to take charge of a water power plant, seven miles out from the city of Lancaster, Pa. Must be a sober, married man who has had some experience with turbine wheels; man who has had some experience with the Lombard water-wheel governor preferred. Salary, \$720, with house rent free. Residence is a large mansion house, located in a small village within 500 yards of the water power, large garden and stable for horse and cow. Address Lancaster Electric Light, Heat and Power Company, Lancaster, Pa. Inquiry No. 2224.—For a light and powerful motor suitable for an airship.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application. Inquiry No. 2225.—For dealers in Richard B. Locke's "Gyro Evaporators."

Inquiry No. 2226.—For manufacturers of rubber supporter buttons for hose supporters. Inquiry No. 2227.—For parties in New York making small horseshoe magnets.

Inquiry No. 2228.—For dealers in the slicer, blocker and taperer machines for manufacturing corks.

Inquiry No. 2229.—For dealers in machine shop outfits.

Inquiry No. 2230.—For makers of rock-drilling machinery and outfits.

Inquiry No. 2231.—For dealers in model air cylinders and valves.

Inquiry No. 2232.—For makers of camel's hair cloth for hydraulic press work.

Inquiry No. 2233.—For manufacturers of pipes.

Inquiry No. 2234.—For manufacturers of baskets or cans for removing debris of villages and city streets.

Inquiry No. 2235.—For manufacturers of parts for suspenders.

Inquiry No. 2236.—For makers of fire escapes.

Inquiry No. 2237.—For manufacturers of spring guns.

Inquiry No. 2238.—For manufacturers of cotton gins.

Inquiry No. 2239.—For dealers in yarn for blankets or robes.

Inquiry No. 2240.—For dealers in rims for cheese boxes.

Inquiry No. 2241.—For dealers in diamond dyes, fast colors.

Inquiry No. 2242.—For a machine for mixing sand and other ingredients for making glass.

Inquiry No. 2243.—For parties to make novelties of white metal, aluminum, etc., to order.

Inquiry No. 2244.—For machinery for making wooden dishes for butter and lard.

Inquiry No. 2245.—For parties to manufacture small articles from pressed steel.

Inquiry No. 2246.—For manufacturers of seed and coffee triers.

Inquiry No. 2247.—For makers of peanut-vending slot machines, which will deliver in sacks, with lamp for heating.

Inquiry No. 2248.—For makers of a slot machine, showing lady in a case delivering packages of gum when machine is operated.

INDEX OF INVENTIONS

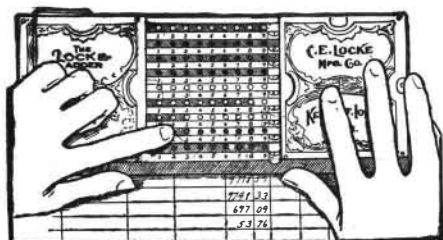
For which Letters Patent of the United States were Issued for the Week Ending

March 4, 1902, AND EACH BEARING THAT DATE.

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

Table listing various inventions and their patent numbers, including items like adhesive material, adjustable screen, adjustable stand, aging apparatus, air and gas mixing apparatus, air blast apparatus, air brake system, air compressor, air ship propeller blade, alarm, amusement or illusion apparatus, animal trap, ant trap, atomizer pump, axle skeln, badge or button, ball ears on sheet metal vessels, baking pan, bale band applying and tightening device, ballot box, barley and malt testing, bearing, antifricition, bearing, roller side, bearing, roller side, bearing, roller side, beer apparatus for converting wort into, beer, converting wort into, bell mounting, electric, belt, bicycle attachment, bicycle saddle, bicycle seat post, billiard cue, boat, submarine, bobbin holder, spinde, Bass & Chase, bolters, assembling frame for steam, bolt cutter and trimmer, bookbinding, book cover fastener, book holder, boring holes in rock, boring holes in rock, apparatus for, boring machine, double spindle, drawer pull, bottle cleaning machine, bottle washer and rinser, bottling table, box fastener, box for containing eggs, box staying machine, braiding carrier, brake, brake wheel, brick machine, bridge, bascule, broiler, revolving, buckle, J. H. Hart, buckle, back band, burglar alarm and door check, combined, burglar and fire alarm, burner, bushing, bung hole, button, cable, hanging book, calculator, calculating machine, calendar, call, electric, cam mechanism, variable, camera, camera, folding panorama, camera, folding roll holding, camera, folding roll holding, photographic, camera, folding support, camera, panoramic, camera, panoramic photographic, camera, photographic, camera, roll holding, camera, roll holding, cane loader, capping machine, car bolster, railway, car door and locking device, car, express, car fender, car metal, car roller bearing, car side bearing, railway, carriage motor, carriage, C. A. Bailey

(Continued on page 194)



The Locke Adder

Fastest, simplest, handiest, most practical and durable low-priced calculating machine. No business complete without it. Adds, Subtracts, Multiplies, Divides. Easily learned, lasts a lifetime. Saves time, labor, money, and

QUICKLY PAYS FOR ITSELF

Ensures accuracy, releases from mental strain. Adds all columns simultaneously. Capacity 999,999,999.

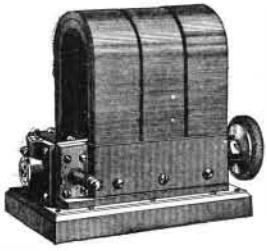
An Unsolicited Letter: EXECUTIVE DEPARTMENT, AUSTIN, TEXAS. C. E. LOCKE MFG. CO., August 12, 1901. Kensett, Iowa.

GENTLEMEN—When one cannot afford to pay several hundred dollars for an adding machine, the LOCKE ADDER is a most satisfactory substitute. It is a valuable aid to the busy accountant, and as this useful machine can be had for only \$5.00, one should be in every business office.

Very respectfully, JOE LEE JAMESON, (State Revenue Agent).

Price \$5.00. Charges Prepaid. Descriptive booklet FREE. Agents wanted.

C. E. Locke Mfg. Co. 25 Walnut St., Kensett, Iowa



The New Henricks Igniter

Is superior to all others. Especially adapted to Marine and Automobile engines. Successfully works jump spark coil. Booklet free.

Henricks Novelty Co. 617-619 S. Illinois St. Indianapolis, Ind.

CREST

3, 5, 7 H. P. MOTORS.

Sparkign Pugs and Coils.

CREST MFG. CO., Cambridge, Mass.



Fay & Bowen Motors

(OPERATED BY GASOLINE VAPOR)

For Launches and Yachts

are revelations to those who have used motors of other makes. They are safe, durable, economical, and easy to operate. Above all they start when started. We use no crank or handle. The Igniter is Absolutely Unique, and is the only perfect and satisfactory one in use, acting always positively and instantly. We build handsome launches complete, or furnish motors separate, ready for installation. Motors as Auxiliaries for sailing craft a specialty. Send for Catalogue.

FAY & BOWEN, 35 MILL STREET, AUBURN, N. Y.

Gas Engine IGNITER

Complete with spark coil, \$12.00. The Best Thing on the market. Latest and most improved model.

Send for Circular.

Carlisle & Finch Co., 233 E. Clifton Av., Cincinnati, O.

WOLVERINE Gas and Gasoline Engines STATIONARY and MARINE. The "Wolverine" is the only reversible Marine Gas Engine on the market. It is the lightest engine for its power. Requires no licensed engineer. Absolutely safe. Mfd. by WOLVERINE MOTOR WORKS, 12 Huron Street, Grand Rapids, Mich.

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

New Microscope for Nature Study and for use in the Examination of Ores, Metals, Woods, Fibre, etc. Queen Acme No. 6 with 1 Ocular and 12 prepared slides of insect parts and other interesting specimens, all in case, \$16.00. Ask your nearest Optician for it. QUEEN & CO., INC. Optical and Scientific Instrument Works. 1010 Chestnut St., Phila., Pa. 59 Fifth Ave., New York.

A MAGAZINE FOR THE HOME MAKER NOW READY.

The Scientific American Building Monthly

VOL. 32.

Beautifully illustrated with many views and plans of country houses, seaside cottages, bungalows and other buildings, including some of the more important examples of large city dwellings. The leading architects of the country are now contributing to this magazine a series of "Talks" on important and popular architectural subjects. The contributors to this new and original feature in architectural journalism in the current volume are all men high in their profession.

SPECIAL DEPARTMENTS:

- Monthly Comment on Timely Topics. Reviews of the Newest Books. Correspondence, Notes and Queries. Household Notes. Legal Notes. New Building Patents (Classified)

Price, bound in stiff covers, \$2.00. 300 Illustrations, 120 Pages.

MUNN & CO.,

Publishers, 361 Broadway, New York.

Table listing various mechanical designs and their authors, such as Valve for engines and motors, steam actuated, W. A. Woodson, 694,709.

DESIGNS.

Table listing designs such as Belt, apparel, O. A. Leberman, 35,792 to 35,794; Candlestick, E. Goetze, 35,786.

TRADE MARKS.

Table listing trade marks such as Atomizers and orthopaedic apparatus, I. Lundquist, 37,889; Beer, Wm. J. Leup Brewing Co., 37,901.

LABELS

Table listing labels such as "Acheson Graphite," for graphite, International Acheson Graphite Co., 9,004.

PRINTS.

Table listing prints such as "Sen Sen," for Sen-Sen products, T. R. Dunn Co. 471.

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.

NEW BOOKS, ETC.

A GUIDE TO THE TREES. By Alice Lounsberry. Illustrated by Mrs. Ellis Rowan. New York: F. A. Stokes Company. 1900. 12mo. Pp. 313. Price \$2.60.

A valuable contribution to the popular literature of forestry. It is illustrated by 64 colored and 164 black-and-white plates and 55 diagrams. The book contains a description of (Continued on page 196)

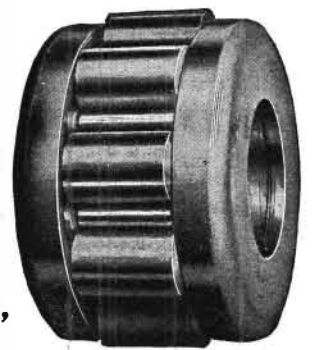
No More Bearing Troubles!

The hardened steel separator which keeps the bearing rollers in alignment is the key to the situation. For detailed information, see the article appearing in the SCIENTIFIC AMERICAN of March 1st, 1902.

Descriptive booklet on application.

AMERICAN ROLLER BEARING CO., 32-40 BINFORD STREET, BOSTON.

Western Department, K. FRANKLIN PETERSON, 165 Lake St., Chicago, Ill.



EDUCATIONAL NOTICE.

A subscriber of ours, a prominent business man of Boston, writes that he will be very glad to hear from any ambitious reader of SCIENTIFIC AMERICAN, who desires to study Mechanical, Electrical, Steam or Textile Engineering and has not the opportunity to attend school. This gentleman, whose name is withheld at his request, has at his disposal a few scholarships in a well known educational institution for home study, the only expense being the actual cost of instruction papers and postage.

Write to W. L. B., Box 3737, Boston, Mass., for particulars if you are ambitious and in earnest.

BENEDICT-NICKEL. A dense, tough, inert tubing. White metal clear through. Write for booklet. Benedict & Burnham Mfg. Co. Mills and Main Office, - WATERBURY, CONN. New York, 253 B'way - Boston, 112 High St. IS HIGHLY NON-CORROSIVE

THE FRANKLIN DYNAMO. 50 Watts, 10 Volts, 5 Amperes. 3,000 to 4,000 revolutions. Sets of materials, finished parts, complete machines. For amateur construction—very efficient. Will drive a dental engine, sewing machine or small lathe; run as a generator, will furnish current for six 6-candle lamps. Parts, \$3.50, \$6.00, \$8.50. Complete, \$12.50. Write for circular 9. Parsell & Weed, 129-131 W. 31st St., N. Y.

ACETYLENE GAS LIGHTING. Reduced to the Most Efficient, Safest, Simple and Economical Use. We guarantee our machines perfectly automatic in action, to extract all the gas from the carbide, and absolutely no overproduction or loss of gas. Approved by the various Boards of Fire Underwriters. Standard sizes 10 to 150 lights. Exclusive territory given to responsible agents. Correspond with Niagara Falls Acetylene Gas Machine Co., Niagara Falls, N. Y. & Can.

BURNISHINE. The most marvelous metal polish in the world. Contains no acids or anything injurious to the Metal or Hands. Produces a wonderful brilliant lustre on Brass, Copper, Tin, Zinc, Silver, Nickel and all Metals. A few rubs and the article is handsomely burnished. Will not soil the hands or leave deposits in corners or on face of the metal. Will restore burnt or rusty Nickel on Stoves to its original lustre. Put up in cans at prices as follows: 1/2 Pint, 25c. 1 Pint, 40c. 1 Gallon, \$1.25. If your dealer does not keep it write direct to C. PAUL & CO., 59 Dearborn St., Chicago.

STEEL ROLLS. for flattening wire for all purposes. Send for Catalogue. BLAKE & JOHNSON, P. O. Box 7, WATERBURY, CONN.

The Buffalo Universal Handy Bench Clamp. Indispensable for workshop. Is as essential to a kit of tools as hammer or saw. E. E. JOSEF MFG. CO. Buffalo, N. Y.

The MEDART SYSTEM. of supplying Boat Building Materials enables anyone ordinarily handy with tools, to build boats of the highest character at one half the boat factory's price. Freight low. Launches, Sailing Yachts and Row Boats. Send stamp for catalogue. FRED MEDART, 3545 DeKalb St., St. Louis, Mo.

HOPPE'S SEPARATORS give dry steam. HOPPE'S OIL ELIMINATORS remove all oil and grease from exhaust steam. Write for new catalogue of these and our Feed-Water Heater and Purifier. HOPPE'S MFG. CO., 25 Larch Street, Springfield, Ohio.

CARRY IN A BUGGY KING FOLDING CANVAS BOAT CO. KALAMAZOO, MICH. Last a Lifetime. Ribbed Longitudinally and Diagonally. FOUR FT. BOAT. Send 6c for Catalogue. 50 ENGRAVINGS.

BABBITT METALS.—SIX IMPORTANT formulas. SCIENTIFIC AMERICAN SUPPLEMENT 1123. Price 10 cents. For sale by Munn & Co. and all newsdealers. Send for catalogue.

FROM ST. MICHAEL TO MANILA, 11,974 MILES.

And the Stars and Stripes affording protection to American Commerce all the way. See the new "Round the World" folder of the New York Central Lines.

A copy will be sent free, post-paid, on receipt of three cents in stamps, by George H. Daniels, General Passenger Agent, Grand Central Station, New York.

FRICITION DISK DRILL FOR LIGHT WORK. Has These Great Advantages: The speed can be instantly changed from 0 to 1600 without stopping or shifting belts. Power applied can be graduated to drive, with equal safety, the smallest or largest drills within its range—a wonderful economy in time and great saving in drill breakage. W. F. & JNO. BARNES CO., Established 1872. 1999 Ruby Street, Rockford, Ill.

To MANUFACTURERS GENERALLY. All factories should be equipped with our exhaust system for conveying shavings, sawdust and dust from wood-working machinery, lint, dust, etc. from polishing wheels, chips and bark in paper mills, dust from tumbling barrels, smoke from forges, dust from shoe factories, to convenient receptacles. The Hartford patent Exhauster is adjustable, interchangeable and reversible. Particulars and prices on application. Catalogue No. 51-h on application. THE HARTFORD BLOWER CO., 72 Suffolk St., Hartford, Conn.

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.

DEAFNESS CURED. Deafness is incurable till the cause is removed. Therefore Ear Drums and other artificial aids never cure. 95 per cent. of all cases of Deafness is caused from Catarrh, and as Catarrh cannot exist under the use of "Actina," nobody need be deaf where the Actina Pocket Battery is obtainable. Are you seeking a cure? Then investigate "Actina." Write to-day for a VALUABLE BOOK—Prof. Wilson's Dictionary of Disease, Free. New York & London Electric Association, 929 Walnut St., Kansas City, Mo. Dept. 19 B.

ELECTRICAL SUPPLIES of every kind for Electricians, Bell Hangers and all experimental work. State your wants and get illustrated lists free. Liberty Electrical Supply Co., 136 Liberty Street, New York.

12-inch Pipe cut off and Threaded with ease by one man and a FORBES PATENT DIE STOCK. Smaller sizes proportionately easy. Send for Catalogue. THE CURTIS & CURTIS CO., MACHINE No. 30, Range 1/4-2 in. R. & L. 6 Garden St., Bridgeport, Conn.

What Do You Want To Buy? We can tell you where to buy anything you want. Write us for the addresses of manufacturers in ANY line of business. Novelties, Special Tools, Machinery, Equipments, New Patent LABOR SAVING DEVICES. MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, 361 BROADWAY, NEW YORK.