make a jump spark coil of it? If so, kind: give directions and state the way it should be coupled up. A. A simple spark coil may be made with a core of iron wire (No. 16) 10 inches long and one inch in diameter. Fasten heads for the spool on this, and cover the core with a few turns of brown paper. Wind No. 14 single cotton-covered magnet wire on this to a depth of about % inch, insulating also. The coil is used in series with a battery, spark will be given.

must find a glass of a tint the exact complementary of the color of the wall. This will be both by the absorption of the wall and of the glass. would be left.

(10171) G. W. H. asks: How can I product of the manufacturer. connect the wires on the carbon element of an DWARF FRUIT TREES. By F. A. Waugh. open circuit, home-made battery which I have? I use sal ammoniac. They work fine for about two weeks, when I have to renew connections on the carbon. It seems the fluid rises within the carbon and corrodes the wire. Have tried paraffine and also rubber on the outside, but to no avail. The carbons are arc-light penof the clean and dry carbons into melted paraffine till they are saturated with the paraffine as far as the surface of the liquid, so | The author of this book will doubtless sucammoniac cells usually there is a thick head as a commercial enterprise, though the latter of composition on the upper end of the car- is by no means precluded.

(10172) A. K. M. asks: 1. Can you let me know the cheapest and most simple way of producing oxygen? A. Oxygen is generated by heating a mixture of manganese dioxide and potassium chlorate in a metal flask. Care is of the apparatus. The materials also should be let in from top of tank car containing a mix- lacking in the earlier edition. ture of turpentine and naphtha, the discharge pipe from pump leading to large storage tank. JAHRBUCH DER NATURWISSENSCHAFTEN of several thousand barrels of the same mixture? Also being connected with large storage tanks of gasoline and carbon oil. The suction pipe being of iron, every attempt made to connect would cause heavy sparking, so that temperature being about 15 deg. Fahr., having had cold weather for some time; whereafter the men got a suction pipe of galvanized iron, let it down into the tank car, and in connecting there was no more sparking. A. The charge of electricity was due probably to the very cold tank, it could not have been after they had brought the ends into connection with each These oils are not conductors of electricity.

(10173) J. F. C. asks: 1. What advantages has the double pole receiver over the single pole (as they are called) electrically? Why would not one coil, the same resistance of the two, placed on one pole of a permanent horseshoe magnet (traversed by an alternating current) affect the magnet flux as much as the two coils of half the resistance, one placed on each pole? A. A horseshoe magnet is always stronger than a bar magnet of the same number of turns of wire upon its poles. and so a double pole magnet in a telephone will act more powerfully than a single pole ical development and chief characteristics. An of a straight magnet. 2. Is pure soft iron account is given of the experience of the European countries are accounted by the countries of the countries o free from resistance to magnetic flux? What is the resistance of the air to magnetic flux as compared to pure Norway iron? A. The number of lines of force which will pass through iron as compared with air under the tables of equivalents have been carefully same degree of magnetization varies with the form, and therefore as a work of reference on as 5,000 times as many, and it may be only a few times as many when saturation is scholarly and useful. nearly reached. See the table of permeability ITALIAN VARNISHES. in electrical works such as Foster's "Pocket Book," price \$5 by mail. 3. Which is correct to say, that a magnet attracts a piece of soft iron because it lowers the resistance of the magnetic flux, or that an opposite magnet is induced in its mass by induction? A. When a piece of iron approaches a magnet it both becomes a magnet and furnishes an easier path for the lines of force than the air. 4. Is the greatest force of attraction exerted in a mag- ject of the treatise, and he shows, to his own net in attracting opposite poles of itself? A. satisfaction at any rate, that the old violin We do not know whether a magnet works most makers used as the constituents of their varin attracting its own poles or not. 5. What nishes the natural products of coniferous electrical disturbance is made by the action of the wind on telephone wires that a receiver takes it un? A. The noise to which you refer and that therefore the varnish was a simple in a telephone is produced by vibrations caused one composed of resin and turpentine, or both by induction of adjacent wires and not by the of these with linseed oil. The work is infriction of the wind. The wind produces no teresting from the standpoint of the chemist form in a single volume. The text has been electrical disturbances.

NEW BOOKS, ETC.

THE CHEMISTRY OF PAINTS AND PAINT VEHICLES. By Clare H. Hall, B.S. New York: D. Van Nostrand Com-pany, 1906. 12mo.; pp. 134. Price,

In the great mass of analytical chemistry it is often difficult to discover particular methods each layer from the next by a layer of paper. applying chiefly to any one subject, or, rather, It is better to give each layer a coat of shellac to find those methods concisely collected between the covers of a single volume. The and the spark is obtained when the circuit is author has attempted to sift out those methods broken. With six or eight strong cells a thick which apply particularly to the analysis of paints, while at the same time dwelling with subject. paints, while at the same time dwelling with a certain degree of completeness upon the most important physical characteristics of the raw material; for it will be understood that the chemist can be proficient in the analysis (10170) F. H. R. writes: I have a most important physical characteristics of the stereopticon lantern, and have been experi- raw material; for it will be understood that menting some with it. For a screen I have no chemist can be proficient in the analysis a blank wall tinted an orange red. Can you of paints without a thorough knowledge of all tell me what colored glass I can use with my the materials with which he comes in contact. lens in order to throw a white light upon the Of course, the limits of the book make it imred surface? A. To obtain the best effect you possible to give more than the general facts regarding these raw materials. While the information has been written from the standbluish green. Of course much light is lost point of the chemist, the author tries to bridge the space between the laboratory and the fac-We should suppose that very little tory, and to show that the less this space is in their respective fields of research have been

> New York: Orange Judd Company, 16mo.; pp. 125. Price, 50 1906.

American agricultural and horticultural cona scale, especially in a commercial sense as well as in a physical one, that these subjects cils, well up out of the fluid. A. Dip the tops have hardly been introduced as avocations and pastimes, and the growing of trees largely for pleasure has been hitherto extremely limited. that the sal ammoniac cannot climb through ceed in his undertaking of arousing interest the carbon, nor over the outside of it. In sal in dwarf fruit trees more as a pastime than

> Markham. New York: Collard Company, 1906. 16mo.; pp. 339. Price, \$2.50.

Mr. Markham's book, which has reached its second edition, is based on the experience of necessary in doing this not to disengage the nearly a quarter of a century in the selection, gas too rapidly and thus produce an explosion annealing, working, hardening, and tempering of the various sorts and grades of steel. The tested in advance to see that they will give up new edition contains an interesting section on the oxygen quietly and not too rapidly high-speed steel, which includes the latest in-2. Can you explain what caused electric spark formation on the subject, thereby bringing the ing at point of connecting 3-inch suction pipe text to a condition of completeness which was

1905-1906. By Dr. Max Wildermann. Freiburg im Breisgau: Herderfsche Verlagshandlung, 1906. 8vo.; pp. 501. Price, \$2.

The interesting volume edited by Dr. Wilderthe men dared not connect for fear of fire, the | mann, with the collaboration of eminent experts, is a comprehensive survey of the ad-|labor-saving, and will be found useful by busivances that have been made in the natural ness men. sciences during 1905-6. The latest develop- School Teaching and School Reform ments in physics, chemistry, astronomy, mineralogy, zoology, botany, geology, and many other fields of science are discussed, often in detail, and frequently with excellent illustraair and friction of the pipe and pump. If the detail, and frequently with excellent illustratiquid was not set on fire by the sparks which tions. This book will be found valuable for passed while the men held the pipe near the the general reader, who desires to keep in touch with the general advances of our age in science and natural history.

> AND MEASURES AND THE METRIC SYS-TEM. By William Hallock, Ph.D., and Herbert T. Wade. New York: The and teachers in training at Birmingham. Macmillan Company, 1906. 8vo.; pp. Gas Engines and Launches. By F. K. 304. Price, \$2.25.

The authors declare themselves flatly in favor of the metric system, both on the ground of its intrinsic superiority and because of the manifest advantage of having a universal system of weights and measures for all industries throughout the world. A complete and fair history of the metric system is given in the various chapters of the volume, with its logical development and chief characteristics. An pean nations which have tried and adopted the system. The citation of the authorities is voluminous, and the references to the bibliothe subject the book will doubtless be found ature of the cement industry is this book scholarly and useful.

By George F.L.S., F.C.S. London: Stevens &

Sons, Ltd., 1904. 16mo.; pp. 170. Little attention has apparently been given to the subject of the varnishes used on the old Italian musical instruments, and the theory has been accepted that these are oil varnishes. or rather an oil varnish colored to suit individual tastes. The author gives an account of the interesting research which forms the subvicinity, both abundant and easily procurable, as well as from that of the general reader.

49. Price, 80 cents.

The object in gathering the material in Field to Dairy" was to give in as concise a form as possible the essential points pertaining to the management of fields and cattle. and the production of milk, cream, butter, The little volume will be found a handy book

R. Crane. Chicago: International Harvester Company of America 1906. 32mo.; pp. 128.

This excellent little book has been compiled by a number of eminent specialists for the particular purpose of assisting American agriculturists in the work of farm management. Organ fuer die Fortschritte des Eisenbahn-With this end in view, the highest authorities wesens" of Austria. The translator first per-With this end in view, the highest authorities in evidence, the better will be the resulting called upon to prepare a number of special articles covering the results of extended ex- tain so much excellent data of practical value periments involving the most important operations on the farm, and the subjects treated deal substantially with every branch and phase of modern agriculture and cover a wide range of thought. It is generally conceded that the ditions are usually on so large and extended this country is due mainly to the intelligence of the American farmer, notwithstanding that considerable credit must be given our unlimited agricultural resources, and to the material assistance rendered the farmer by the work of inventors who, recognizing the necessity of | ican roads introducing or contemplating the improved methods, have supplied both machines and implements to lighten or entirely obviate manual labor. A careful perusal of "Farm Science" will undoubtedly suggest methods of improving the quality or yield of THE AMERICAN STEEL WORKER. By E. R. the crops, of making the dairy more profitable, The Derry- and of securing larger results with less labor.

ROPP'S COMMERCIAL CALCULATOR SHORT-CUT ARITHMETIC. By C. Ropp. Chicago: C. Ropp & Sons, 1906. 8vo.; pp. 160. Price, \$1.

In this convenient volume the author gives new, complete, and quite comprehensive system of tables intended to save time and labor in the various phases of commercial calculation. The text includes condensed and simplified explanations, rules, and reviews of the essence of arithmetic and mensuration. It is designed for the use of farmers, mechanics, business and professional men, bankers, and storekeepers. The explanations of the principles of arithmetic, mechanics, and mensura tion are well prepared, and the book will doubtless make the study and use of figures easy, if not interesting, for the user. Altogether, the work is convenient, practical, and

By Sir Oliver Lodge. London: Williams & Norgate, 1905. 16mo.; pp. 171. Price, \$1.20.

This book by the well-known English educationalist, Sir Oliver Lodge, should be of inter est and value to teachers in Great Britain and INDEX OF INVENTIONS this country. The text comprises a series of four lectures on curricula and methods, and The danger would then have been over. Outlines of the Evolution of Weights they were intended for the information of teachers in general, notwithstanding that they were delivered before the secondary teachers

Grain. New York: Forest and Stream Publishing Company, 1905. 16mo.; pp. 123. Price, \$1.25.

This little manual is a collection of a series of papers published in Forest and Stream on internal-combustion engines and launches. The subject is placed before the reader in terms which are easily understood even by the inexpert, and technicalities have been avoided wherever possible. The illustrations are clear and sufficient in number advantageously to supplement the text.

PORTLAND CEMENT. By Richard K. Meade, B.S. Easton, Pa.: The Chemical Publishing Company, 1906. pp. 385. Price, \$3.50.

One of the latest contributions to the literwhich is really a second and enlarged edition of a small handbook by the same writer pub-Fry, of a small nanuboux by the course, the adons & lished some years ago. Of course, the adons to the rewritvance of the industry necessitated the rewriting of large sections of the earlier work, and the addition of much information and data collected since then. The analytical methods given have been found satisfactory in the writer's laboratory. The section on the analyses of cement is exceptionally good.

THE ELECTRICAL NATURE OF MATTER AND RADIOACTIVITY. By Harry C. Jones. New York: D. Van Nostrand Company, 1906. 8vo.; pp. 212. Price, \$2.

Prof. Jones's book is a collection of a series trees and the flax growing in their immediate of articles which he wrote for the Electrical Review, and the correlation of the subjects under consideration, as well as the general interest of which they are worthy, thereafter led the discussion to be placed in compact carefully revised with the assistance of Dr.

FIELD TO DAIRY. By William Shepper- H. S. Uhler. The object of the lectures was son, F.C.S. London: Simpkin, Marshall & Co., Ltd., 1906. 16mo.; pp. clusions in connection with the work on the subject, and this has been done in the interest of those who, while having a really scientific interest in the developments in physics and physical chemistry, nevertheless are ill equipped technically and mathematically to cheese, and various by-products in the dairy. | comprehend a purely scientific treatment of the subject. Thus, while the work has been of reference where time is lacking for the written in a semi-popular style, the subject study of a completer history of any particular has doubtless been covered with scientific ac-

> THE ANALYSIS AND SOFTENING OF BOILER FEED-WATER. By Edmund Wehrenfennig in collaboration with Fritz Wehrenfennig. Translated by D. W. Paterson, M.E. New York: John Wiley & Sons, 1906. 8vo.; pp. 290. Price, \$4.

> The present form of this book is the result of a number of changes from the original one, in which it appeared as an essay in "Das formed that part of the work for his own personal information, but it was found to conand general interest, that it was decided to place the book before the public. The chemistry of the subject is treated with great care, and includes simple methods of analyzing water intended for boiler feed. These methods are explained in such a manner that they can readily be understood even by the layman. Certain European railroads have been very successful in softening water intended for steam purposes, and the exposition of their methods should be of use and value to Amerutilization of water-softening plants.

> NEW EXTENSIVE A B C TABLES FOR AZI-MUTH. POSITION LINES. ERROR IN LONGITUDE DUE TO AN ERROR IN LATI-TUDE, ETC. By S. Mars. Groningen: P. Noordhoff, 1906. 12mo.; pp. 56.

> ILLOGICAL GEOLOGY. The Weakest Point in the Evolution Theory. By George McCready Price. Los Angeles: Modern Leretic Company, 1906. 8vo.; pp. 93. Price, 25 cents.

UNSOLVED PROBLEMS IN METALLURGY. Robert Abbott Hadfield, M.Inst., C.E. London: The Institution of Civil Engineers, 1906. 12mo.; pp. 36.

DIE ABHANGIGKEIT DER BRUCHLAST VOM VERBUNDE. By Dr. Ing. Fritz v. Emperger. Berlin: Wilhelm Ernst & Son, 1906. 8vo.; pp. 47.

AUTOMOBILI STRADALI E FERROVIARIE PER TRASPORTI INDUSTRIALI. By Ing. Ugo Baldini. Milan: Ulrico Hoepli, 1906. 8vo.; pp. 351.

RE. Vol. II. By Galileo Ferraris. Milan: Ulrico Hoepli, 1903. 8vo.;

pp. 473.

THE QUEST OF THE GERM. With Observations Thereanent. By Eugene H. Wood, A.M., M.D. Milwaukee: Pub-12mo.; lished by the Author, 1906. pp. 229. Price, 75 cents and \$1.50.

For which Letters Patent of the United States were Issued for the Week Ending September 11, 1906.

AND EACH BEARING THAT DATE

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

Account register, Staples & Potter	830,93
Agricultural implements, riding attachment	
for, L. E. Waterman	830,690
fying, R. P. Pictet	830,613
fying, R. P. Pictet	839,503
Air or oxygen, apparatus for producing	
highly ozonized, A. Dechaux	830,975
Amalgam carrier and plugger, H. W. Arthur Amusement apparatus, F. W. Thompson	000.05
Arthur	830,87
Amusement apparatus, F. W. Thompson	830,853 830,838
Amusement device, F. Ingersoll Amusement device, E. H. Lanier	831.012
Animal tran I. Wastegard	830,693
Animal trap, L. Westgaard Ankle brace and supporter, A. R. Garrod	830,89
Anode. J. Nelson	830,918
Anode, J. Nelson	,
H. Isler Atomizer, C. J. Davol	831,00
Atomizer, C. J. Davol	830,88
Axle spindle, T. Babbitt	830,95
Sag holder, J. J. Hatin	830,99
Bale bands, fastening, D. M. Campbell Ballot, pocket, M. Dunn	830,96
Barrel, knocket, M. Dunn	830,97
Bearing for the ends of shafts, roller, W.	830,670
T Floring of the enus of shares, roller, W.	830,98
T. Fleming Bed, folding, G. Henkel Belt coupling, J. N. Johnson	830,590
Belt coupling, J. N. Johnson	830,593
Selt fastener. E. Mindschenk	830,913
Belts, machine for attaching slats to conveyer, W. T. Gordon	,
veyer, W. T. Gordon	830,709
Berth, ship's, D. Tagliafico	831,019
Binder, H. E. Dade	830,57
Binder lock, loose leaf, A. D. Hulquist	830,835
Sinder, loose leaf, G. Labarre	831,011
Signification of making N Houth	990,016
Plast furnace M Mannahare	820 519
inder, loose leaf, G. Labarre inder, temporary, T. R. Eddy sisulite liquor, making, N. Heath last furnace, M. Mannaberg loat, sailing, T. Jensen	830,726
eiler. See Steam boiler.	000,12
Boiler cleaner, H. C. Daley	830,574
Boiler trap, C. Dennis	830,649
Book, sales, H. P. Brown	831,023
Boot and shoe ware and other goods, appli-	
ance for inserting beading in, E. Town-	
send	830,855
Sordering machine, W. R. Phillips	830,612
Bore holes, means for surveying, H. F. Marriott	090 790
Marriott Bottle and stopper, milk, C. M. Conley Bottle closure, H. A. Olsson	830,730



Cross Feed Lathes FOR FINE, ACCURATE WORK Send for Catalogue B. SENECA FALLS MFG. CO. 695 Water Street, Seneca Falls, N. Y., U. S. A.

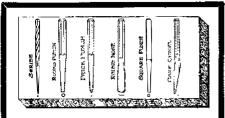
Engine and Foot Lathes

MACHINE SHOP OUTFITS, TOOLS AND SUPPLIES. BEST MATERIALS. BEST WORKMANSHIP. CATALOGUE FREE SEBASTIAN LATHE CO., 120 Culvert St., Cincinnati. 0.

Foot and Power and Turret Lathes, Plan-ers, Shapers, and brill Presses. SHEPARD LATHE CO. 53 W. 2d St. Cincinuati, O.

Manufactory Established 1761.
Lead-Colored & Slate Pencils, Rubber Bands, Ernsers, Inks, Penholders, Knlers, Water Culors, Improved Calculating Rules, Sendfor descriptive Circular S.
44-60 East 23d Street, New York, N. Y. Grand Prize, Highest Award, St. Louis, 1904.





THIS cut illustrates a set of tools every mechanic should have in his kit. They are free to every purchaser of Keepitite. Any engineer desiring a set of these tools should send his name and address to the Home Rubber Co., Trenton, N. J.



Regal Marine Engines

Four Cycle Autonobile Type with Jump Spark ignition. Single Cylinders, in 1-2, 3 and 5 ft, p. Double Cylinders, 30 h. p. Also a superior line of Stationary Engines. It pays Engine buyers to read our new catalogue No. 12.

Regal Gasoline Engine Co





1 9 0

THOMAS AUTO-BI

Model No. 44, Price \$145

Three Horse Power. Simplest motorcycle on the market. Agents wanted everywhere. Catalog free. THE THOMAS AUTO-RI CO.

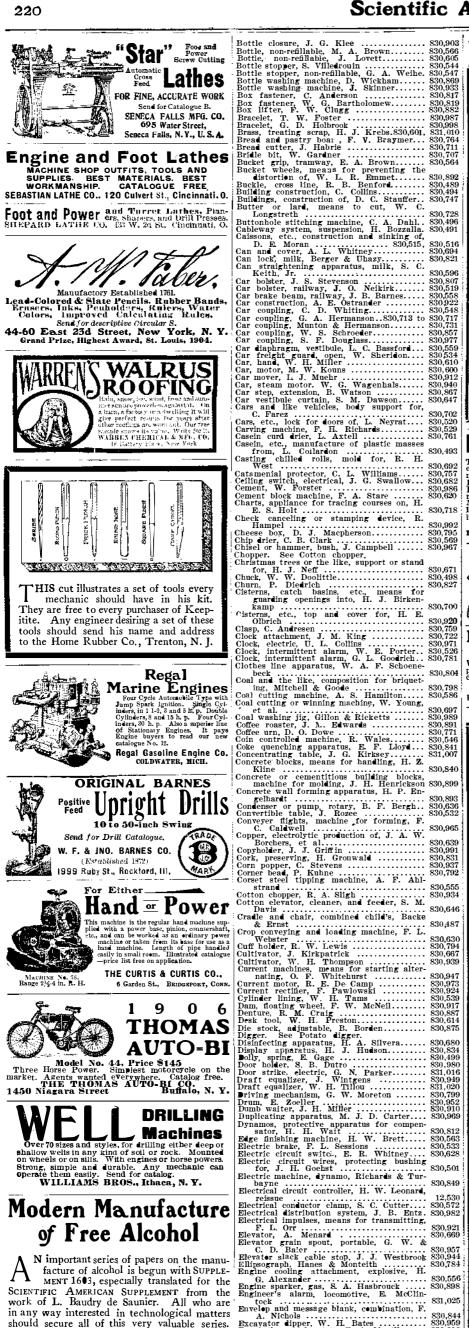
1450 Niagara Street Buffalo, N. Y.

DRILLING **Machines**

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.

in any way interested in technological matters should secure all of this very valuable series. Copies of the SUPPLEMENT are mailed on receipt of 10 cents each, or they may be purchased through newsdealers. Address

MUNN & COMPANY, Publishers 361 Broadway, New York



Engineer's alarm, locomotive, E. McClintock

Envelop and message blank, cembination, F.

A. Nichols 830,844

Excavator dipper, W. H. Bates 830,959

Eye bath cup, fountain, F. A. Magill 830,658

Eyeglass spring, J. S. Galeski 830,658

Eyelet, lacing, H. B. Keller 830,902

Fare register handle, removable, W. G.

Kirchhoff 830,791

Fare register operating device, J. A. Stowe 830,734

Feed bag, D. D. McKernan 830,734

Feed cutter, D. L. Wolf 830,951

Feeding device, E. N. Trump 830,542

Maxwell"

Maxwells stand second in number of cars sold during the past year. No more could be sold because no more could be made.

Multiple Disc Clutch. Three-point Suspension of Motor and Transmission (Unit). Metal Bodies, No Noise. No Vibration, Equipped with Ajax Tires guaranteed for 5,000 miles ruling.

Send for our book, "Facts and Testimony," which contains letters from 32 owners who enjoy telling what they know of the "Maxweli." Free to those sending for our catalogue.

20 H. P. Touring Car \$1,450

10 H. P. Tourabout \$780

Write Department 22.

MAXWELL BRISCOE MOTOR CO.

Members American Motor Car Manufacturers' Asse

FACTORIES:

Main Plant: TARRYTOWN, N. Y. CHICAGO, ILL. AGENTS IN ALL LARGE CITIES

It's Easy to Keep Cool!

The simplest, smallest, safest, neatest and most successful Motor Fanmade is the Rawlings Patent
High-Speed Water Motor
Fan. Can be installed in a few
minutes. No operating expenses.
Made of high-grade brass. Price
li-in. Fan with complete couplings, \$10.00.

E. GINTZEL 150 Nassau St., New York City



980 USE GRINDSTONES?

If so we can supply you. All sizes mounted and unmounted, always keptin stock. Remember, we make a The CLEVELAND STONE CO.

2d Floor, Wilshire, Cleveland, O.

Electrical Engineering

and Experimental Work of Every Description We have every facility for producing first-class work promptly. Our factory is equipped with modern machinery throughout.

C. F. SPLITDORF of price. Sample card, by moil, free, Manufactured by Consolidated Safety Engineering Dept. 17-27 Vandewater St., N.Y. City Plu Ce., Box 121. Bloomfield, N. J.

MENNEN'S TOILET POWDER After Shaving.

of the skin diseasesoften contracted
Apositive relieffor Priekly Heaf
Sunburn, and all afflictions of the skin, Remove
perspiration. Get Mennen's—the original. Sole
or mailed for 25 cents. Sample free.

GERHARD MENNEN CO., Newark, N. J.



ESS FURNACES—EASY

to buy—direct from maker. Easy to pay for—no middlemen's profits. Easy to run and regulate. Book free. Hess Warming and Ventilating Co., 916 Tacoma Bidg., Chicago.

RELIABLE MARINE ENGINES



Reliability under all condi-tions is the characteristic of the "Lamb" Engines. Sizes from 1½ to 100 H. P. in stock, Write tor catalogue.

THE EUREKA CLIP

The most useful article ever invented for the purpose. Indispensable to Lawyers, Editors, Students. Bankers, Insurance Companies and business mengenerally. Book marker and paper clip. Does not mutilate the paper. Can be used repeatedly. In boxes of 100 for 25c. To be had of all booksellers, stationers and notion dealers, or by mail or receipt of price. Sample card, by mail, free, Mandactured by fromestidated Sufer-



Concrete Cement Reinforced Concrete **Building** Blocks Concrete

SCIENTIFIC AMERICAN SUPPLEMENT 1543 contains an article on Concrete, by Brysson Cunningham. The article clearly describes the proper composition and mixture of concrete and gives the results of elaborate

SCIENTIFIC AMERICAN SUPPLEMENT 1538 gives the proportion of gravel and sand to be used in concrete.

to be used in concrete.

SCIENTIFIC AMERICAN SUPPLEMENTS
1567, 1568, 1569, 1570, and 1571 contain an
elaborate discussion by Lieut. Henry J. Jones
of the various systems of reinforcing concrete, concrete construction, and their applications. These articles constitute a splendid
text book on the subject of reinforced concrete. Nothing better has been published.

SCIENTIFIC AMERICAN SUPPLEMENT 997 contains an article by Spencer Newberry in which practical notes on the proper preparation of concrete are given.

SCIENTIFIC AMERICAN SUPPLEMENTS 1568 and 1569 present a helpful account of the making of concrete blocks by Spencer Newberry.

SCIENTIFIC AMERICAN SUPPLEMENT
1534 gives a critical review of the engineering value of reinforced concrete.

SCIENTIFIC AMERICAN SUPPLEMENTS 1547 and 1548 give a resumé in which the various systems of reinforced concrete con-struction are discussed and illustrated. SCIENTIFIC AMERICAN SUPPLEMENTS 1564 and 1565 contain an article by Lewis A. Hicks, in which the merits and defects of reinforced concrete are analyzed.

SCIENTIFIC AMERICAN SUPPLEMENT 1551 contains the principles of reinforced concrete with some practical illustrations by Walter Loring Webb.

SCIENTIFIC AMERICAN SUPPLEMENT 1573 contains an article by Louis H. Gibson on the principles of success in concrete block manufacture, illustrated.

SCIENTIFIC AMERICAN SUPPLEMENT 1574 discusses steel for reinforced concrete. SCIENTIFIC AMERICAN SUPPLEMENTS 1575, 1576, and 1577 contain a paper by Philip L. Wormley, Jr., on cement mortar and concrete, their preparation and use for farm purposes. The paper exhaustively discusses the making of mortar and concrete, depositing of concrete, facing concrete, wood forms, concrete sidewalks, details of construction of reinforced concrete posts, etc. SCIENTIFIC AMERICAN SUPPLEMENT
1372 contains an article by A. D. Elbers on
tests and constitution of Portland cement.
SCIENTIFIC AMERICAN SUPPLEMENT

1396 discusses the testing of cement.
SCIENTIFIC AMERICAN SUPPLEMENT
1325 contains an article by Professor William K. Hatt giving an historical sketch of slag cement.
SCIENTIFIC AMERICAN SUPPLEMENTS

955 and 1042 give good accounts of cement testing and composition, by the well-known authority, Spencer B. Newberry. SCIENTIFIC AMERICAN SUPPLEMENTS

ISIO and ISII present a discussion by Clifford Richardson on the constitution of Portland cement from a physico-chemical standpoint.

standpoint.
SCIENTIFIC AMERICAN SUPPLEMENT
1519 contains an essay by R. C. Carpenter
on experiments with materials which retard
the activity of Portland cement.
SCIENTIFIC AMERICAN SUPPLEMENTS
1465 and 1466 publishes an exhaustive illustrated account of the Edison Portland cement works, describing the machinery used, SCIENTIFIC AMERICAN SUPPLEMENT 1491 gives some fallacies of tests ordinarily applied to Portland cement.
SCIENTIFIC AMERICAN SUPPLEMENT

SCIENTIFIC AMERICAN SUPPLEMENT
1561 presents an excellent review by Brysson
Cunningham of mortars and cements.
SCIENTIFIC AMERICAN SUPPLEMENT
1533 contains a resumé of the cement industry and gives some valuable formulæ.
SCIENTIFIC AMERICAN SUPPLEMENT
1575 discusses the manufacture of hydraulic
cement. L. L. Stone is the author.

cement. L. L. Stone is the author.

SCIENTIFIC AMERICAN SUPPLEMENTS

1587 and 1588 contain an able paper by
Edwin C. Eckel on cement material and
industry of the United States.

SCIENTIFIC AMERICAN SUPPLEMENT

1586 contains a review of concrete mixing
machinery by William L. Larkin.

SCIENTIFIC AMERICAN SUPPLEMENT

1580 cives walkable surgestions on the selec-

SCIENTIFIC AMERICAN SUPPLEMENT 1583 gives valuable suggestions on the selection of Portland cement for concrete blocks.

SCIENTIFIC AMERICAN SUPPLEMENT 1581 splendidly discusses gates. A helpful paper.

SCIENTIFIC AMERICAN SUPPLEMENT 1595 presents a thorough discussion of sand for mortar and concrete, by Sanford E, Thomson.

Each number of the Supplement costs 10 cents. A set of papers containing all the articles above mentioned will be mailed for \$3.50

Order from your Newsdealer or from

MUNN & CO., Publishers, 361 BROADWAY, NEW YORK CITY

Inexpensive Classified Advertisements

Advertising in this column is 50 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.

SALE AND EXCHANGE.

A TECHNICAL SCHOOL desires to purchase second-hand physical apparatus, especially electrical. Give full description. Those having such apparatus for sale, address M. I., Box 773, New York.

FOR SALE.—Patent No. 724,914 Double Stroke Wind Mill. This device doubles the power of wind mills, utilizing both strekes, simple in construction, handle more water with less wind than any mill. O. Johnston, Coleman, Tex.

MOTION PICTURE MACHINES, Film Views, Magic Lanterns, Slides and similar Wonders For Sale. Cata-logue Free. We also Buy Magic Machines, Films, Slides, etc. T. S. Harhach, 80 Filbert St., Philadelphia, Pa.

FOR SALE STATE RIGHTS.—Patentembracing carpenters' gauge, square, bevel, miter box, angle and framing table in one small tool. Simple and inexpensive, enabling anyone to build a bouse or similar work. Will sell on sight. O. Johnston, Coleman, Tex.

FOR SALE—White Rubber Tubing, & inch and 1 inch, at special prices. 50 footlengths. Samples furnished For further particulars address Burlington Drug Co., Burlington, Vt.

POULTRY PAPER, 44 pages, illustrated, 25c. per year, 4 months, 10c; sample free; 64-page practical moultry book free to yearly subscribers; book alone, 10c; catalogue poultry books free. Poultry Advocate, Syracuse, N. Y.

IF YOU WANT to buy a machine, engine, boiler, power equipment, electrical, steam, pneumaticor other machinery—anything in the machine line—Tell Us and we will see that you get full descriptions, prices, catalogs, etc., from all the first-class manufacturers. Verage, etc., and the first-class manufacturers when the province. Address Modern Machinery Daily News, Security Building, Suite 10, Chicago.

MANLOVE AUTOMATIC DRIVEWAY GATE.— Always in order: open ted by any wneel Safe, hand-some, valuable. 10 Mo workine. (Canadian rights for sale.) Manlove Gate Co., 272 Huron Street, Chicago, Ill.

BUSINESS OPPORTUNITIES.

WANTED.—Articles to manufacture in either iron or wood by well-equipped foundry, machine and woodworking plant. For terms address Vpsilanti Machine Works, Ypsilanti, Mich.

YOUNG MAN with capital and business experience, good salesman, will buy interest in established business manufacturing preferred, or will take agency for N. Y. and vicinity. Confidential, Box 773, New York.

LET US BE YOUR FACTORY.—Hardware special-ties manufactured under contract, models developed. We are specialists in patent articles. Prompt service, first-class workmansbip, reasonable prices. America Company, Momence, Ill.

AUTOMOBILE EXPERTS are in constant demand at high salaries. Our seven weeks' course is the most thorough and practical, fitting men to drive, bandle and repair. Day and evening classes. Special course for owners. New York School of Automobile Engineers. 146 West 55th Street, New York.

BARGAIN for one desiring a small and well-established manufacturing business, fully protected by patients, clearing \$10,000 annually. Investigation solicites. Inquire Manufacturer, Box 7:3, New York.

WANTED. Huyers for our one and two-seated business and pleasure Concord saving wagons. Send for Ski-page carriage and harness eafalog, free. Box 525. Kalamazoo, Carriage & Harness Co., Kalamazoo, Mich.

HELP WANTED.

OPENINGS in offices of best railroads for bright young men with or witbout experience. Excellent chance for advancement. Write us to-day. Hapgoods, 365 Broadway, New York.

ENVELOPE Machine Adjuster or Machinist who has had some experience on envelope machinery. State aze, experience, and salary expected. First-class reference required. Marcus Ward Co. 116-124 35th St., Brooklyn.

WANTED.--Good executive to take charge of order and shipping departments of large electrical factory in Canada. Apply, stating experience, references, age, salary wanted, to Executive, Box 773, New York

POSITION WANTED.

YOUNG MAN GRADUATE of a celebrated technical school desires position where be can advance himself by bard work and attention to duties. Address Mecbanical Engineering, 80x 773, N. Y.

A COMPETENT ENGINEER wants good position. A plant generating its own electric light and power preterred. For further particulars address P. O. Box Sfs, San Jose, California.

PARTNERS WANTED.

WANTED.—A partner for the manufacture or patentee will sell the entire patent rights of an interesting partir game (patented.) A. Ehebald, 33 E. 139th Street, New York City.

PATENTS FOR SALE.

TO CAPITALISTS AND MANUFACTURERS.— Schnell's Patent Lamp Co., Ltd., are open to receive a reasonable offer for the sole American rights to their valuable incandescent lamp burner, patent No. 822.870. Correspondence cordially invited. Address "Lamp," care Lee & Nightingale, Liverpool, England.

BY TENDER. Sale of American and Canadian Patents, of an up-to-date money-maker. Send at once for cuts. circulars, particulars, Willis, 46 Dundas Street, Toronto, Canada.

NEW PATENT - My Rubber Angle Worm, just patentee, for sale cheap. If taken at once will take \$755. For further particulars address C. H. Olsby, Valley City, North Dakota.

PATENTS SOLD ON COMMISSION. If you wish to buy or sell a patent write for purticulars to E. L. Perkins, 72 Broad Street, Roston. Patent Sales Exclusively.

To Book Buyers

We have just issued a new 48-page catalogue of recently published Scientific and Mechanical Books, which we will mail free to any address on application.

MUNN & COMPANY Publishers of Scientific American 361 Broadway, New York

Post of M. Warner	
	830,599
Fence post, G. M. Koontz Fence post, C. F. Davis Fence post, artificial stone, G. & H.	830,599 830,824
Fence post, artificial stone, G. & H. Brink	830,962
Fence post, cement, R. J. Angell	830,954
Fence post, artificial stone, G. & H. Brink Fence post, cement, R. J. Angell Fence posts, means for securing wires to, W. F. Hendershot Fence stretching device, wire, A. Adam. Fence wire to posts, device for securing, O. D. Reeves Fencing tie, wire, E. E. Tobias Ferment and producing the same, Johnson	830,997
Fence wire to posts, device for securing,	830,553
O. D. Reeves	830,848 830,750
Ferment and producing the same, Johnson	830,506
Fertilizer distributer, W. J. Elsom	830,773 830,701
O. D. Reeves Fencing tie, wire, E. E. Tobias Ferment and producing the same, Johnson & Hare Fertilizer distributer, W. J. Elsom Fifth wheel, J. H. Booth Filing case, G. B. Burrage Filter, pressure, G. W. Durbrow Fire escape, E. Senn Firearm, T. C. Johnson Fireman's belt, M. J. Lovett Fireproof door, automatically closing, H. C. Smith	830,701
Filter, pressure, G. W. Durbrow	830,652 830,678
Firearm, T. C. Johnson	830,594 830,606
Fireproof door, automatically closing, H. C.	000,000
Smith Floor scraper. C. Duda	830,745 830,651
Fluid tempering apparatus, B. Haynie	830,995 830,953
Furnace charging mechanism, D. Baker	830,958
Furnace grate, J. Ferguson	830,625 830,705
Fireproof door, automatically closing, H. C. Smith	830,870
Fuse, burning time, K. Wieser	830,948 830,801
Game apparatus, Singleton & Gleason	830,535
Game apparatus, educational, R. W. Mansfield Garment fastener, J. M. Steinhardt. Garment suspender, A. Hansel. Gas apparatus, L. A. Watts. Gas burner, L. T. Alton Gas consuming furnace for crematories, F. L. Decarie Gas for extracting tar, water, and ammonia, treating coal, W. Feld Gas generator, W. H. Cone Gas igniter, distant acting electrical, G. Lentschat	830,514
Garment fastener, J. M. Steinhardt Garment suspender, A. Hansel	830,685 830,785
Gas apparatus, L. A. Watts	831,022 830,758
Gas consuming furnace for crematories, F.	830,974
Gas for extracting tar, water, and am-	000,014
Gas generator, W. H. Cone	830,983 830,883
Gas igniter, distant acting electrical, G.	831,013
Gas producer, W. H. Cone	830,919 830,884
Gas producer, Campion & Wyant	830,968 830,591
Gas igniting and extinguishing device, R. N. Oakman. Gas producer, W. H. Cone. Gas producer, Campion & Wyant Gas producers, grate for, R. Hilprecht Gates, trip for automatic, C. Hocker Gear wheel, yieldable, J. A. Brown Gearing, C. W. Van Vliet Glycerin nitrates, manufacture of, A. Mikolajczak	830,789 830,641
Gearing, C. W. Van Vliet	820,865
Glycerin nitrates, manufacture of, A. Mikolajczak Governors, driving gear for, F. Reichen-	830,909
Governors, driving gear for, F. Reichenbach	830,742
Grain drill, F. E. Davis 830,644, Grinding machine roll W M Wilhelmi	830,645 830,550
Gun, automatic, H. Lehmann	830,511
mechanism for, H. Lehmann	830,510
Hairs and the like out of bundles, apparatus for drawing, A. Dinklage	830,578
bach Grain arill, F. E. Davis 830,644, Grain arill, F. E. Davis 830,644, Grinding machine, roll, W. M. Wilhelmi. Gun, automatic, H. Lehmann Guns, cartridge extracting and ejecting mechanism for, H. Lehmann Hairs and the like out of bundles, apparatus for drawing, A. Dinklage Hanger for garments and other articles, J. M. Walker	830,813
Hay press attachment, S. H. Christepher.	830,881
Headlight, F. Buchanan	830,826 830,767 830,768
Headlight screen attachment, F. Buchanan. Heating apparatus, T. Fihelly	830,768 830,984
Heating system, A. G. Paul	831,017
J. M. Walker Hay press attachment, S. H. Christepher. Head rest, F. De Fontes Headlight, F. Buchanan Headlight screen attachment, F. Buchanan Heating apparatus, T. Fibelly Heating system, A. G. Paul. Hides and skins, machine for treating, H. S. Corwin Hinge, R. E. McChen	830.571
Hook, A. Feageans	830,704
Hook and eye, A. B. Reid Horseshoe, J. T. Johns Horseshoes, padded safety plate for, E. Dar-	830,528 830,665
Horseshoes nadded salety higte for R: Dar-	830.643
Hose, lady's and child's, A. A. Farrant	830,775
Hose, lady's and child's, A. A. Farrant Hose, process of and apparatus for manufacturing lined metallic, E. Witzenmenn	
mann Hose to couplings, tool for attaching, E.	830,695
A. Wilcox	830,549
Ice cream scraper, C. H. Bradbury	830,897 830,763
Hose, process of and apparatus for mann- facturing lined metallic, E. Witzen- mann Hose to couplings, tool for attaching, E. A. Wilcox Hub box attachment, N. Harris Ice cream scraper, C. H. Bradbury Incubator, A. Schafer Indicator, See Potential indicator. Indicator, D. P. Principles	830,677
Inflated ball, C. R. Fleischman 830,581,	830,582
Inhaler, F. E. & A. D. Jousset	831,004
Inhaler, F. E. & A. D. Jousset	831,004 830,634
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley	831,004 830,634
Incubator, A. Schafer Indicator. See Potential indicator. Inflated ball, C. R. Fleischman 830,581, Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley	930,941
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley	831,004 830,634 930,941 830,585 830,536
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley 830,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk	930,941 830,585 830,536 830,859 830,888
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley 830,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jenter gage, J. W. Lindsay	930,941 930,585 830,585 830,586 830,859 830,888 830,577 830,603
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley 830,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewery box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal box stop, P. J. Harrigan	930,941 930,585 830,536 830,536 830,859 830,858 830,877 830,603 830,832
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley S30,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, muking cast, A. W. Slocum, Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeunnal bex stop, P. J. Harrigan Jeunnal bexes, waste supporting attachment for, J. S. Patten	830,634 930,941 830,585 830,536 830,859 830,888 830,577 830,603 830,832 830,523
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley S30,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, muking cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. F. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Jeurnal bexs, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little	830,634 930,941 830,585 830,536 830,859 830,888 830,577 830,603 830,832 830,523 830,523
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley S30,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jointer gage, J. W. Lindsay Journal box stop, P. J. Harrigan Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and evelets, machine for set-	830,634 930,941 830,585 830,536 830,859 830,859 830,877 830,603 830,832 830,523 830,523
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley S30,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk. Jewelry box, W. P. Devine Journal box stop, P. J. Harrigan Journal box stop, P. J. Harrigan Journal box waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. R. Lane	830,634 930,941 830,585 830,536 830,859 830,888 830,577 830,603 830,832 830,523 830,905 830,803 830,803 830,803
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley S30,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, musking cast, A. W. Slocum, Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Jeurnal bexs, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp chimney, H. M. Webb.	831,004 830,634 930,941 830,585 830,596 830,859 830,859 830,852 830,523 830,523 830,523 830,523 830,523 830,523 830,905 830,838 830,603 830,803 830,603 830,603 830,603
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley S30,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Journal box stop, P. J. Harrigan Journal box stop, P. J. Harrigan Journal box waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp chimney, H. M. Webb Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman.	831,004 830,634 930,941 830,555 830,536 830,859 830,859 830,577 830,603 830,583 830,523 830,661 830,803 830,661 830,803 830,668 830,668
Inhaler, F. E. & A. D. Jousset Inkstand, F. M. Ashley S30,633, Innersole for welt boots and shoes and manufacturing the same, welt, C. H. Walden Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jointer gage, J. W. Lindsay Journal box stop, P. J. Harrigan Journal box stop, P. J. Harrigan Journal box waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goebst.	831,004 830,634 930,941 830,555 830,556 830,585 830,585 830,585 830,585 830,582 830,583 830,583 830,661 830,803 830,661 830,803 830,60
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,677 \$30,832 \$30,523 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,677 \$30,832 \$30,523 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,677 \$30,832 \$30,523 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,632 \$30,832 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum. Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Journal box, W. P. Devine Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamps, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R.	\$30,585 \$30,559 \$30,859 \$30,859 \$30,888 \$30,652 \$30,832 \$30,523 \$30,523 \$30,661 \$30,803 \$30,602 \$30,602 \$30,608 \$30,608 \$30,608 \$30,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, incandescent, Klumpp & Herman. Lamps, combined canale base and socket for minature electric, J. H. Goehst. Lathe tool holder and steady rest, L. R. Barker Laundry article marking machine, C. W. Canine Leyel, folding, C. Masters Level, plamb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Lock Et, H. Roy Lock strike, H. P. Townsend Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass. Match case, E. Van Deusen Matthess, wire, C. S. Lloyd Measurer, yre, A. J. & C. K. Johnston.	830,525 830,536 830,836 830,832 830,603 830,832 830,605 830,965 830,961 830,803 830,602 830,961 830,708 830,708 830,776
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, incandescent, Klumpp & Herman. Lamps, combined canale base and socket for minature electric, J. H. Goehst. Lathe tool holder and steady rest, L. R. Barker Laundry article marking machine, C. W. Canine Leyel, folding, C. Masters Level, plamb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Lock Et, H. Roy Lock strike, H. P. Townsend Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass. Match case, E. Van Deusen Matthess, wire, C. S. Lloyd Measurer, yre, A. J. & C. K. Johnston.	830,525 830,536 830,836 830,832 830,603 830,832 830,605 830,965 830,961 830,803 830,602 830,961 830,708 830,708 830,776
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, incandescent, Klumpp & Herman. Lamps, combined canale base and socket for minature electric, J. H. Goehst. Lathe tool holder and steady rest, L. R. Barker Laundry article marking machine, C. W. Canine Leyel, folding, C. Masters Level, plamb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Lock Et, H. Roy Lock strike, H. P. Townsend Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass. Match case, E. Van Deusen Matthess, wire, C. S. Lloyd Measurer, yre, A. J. & C. K. Johnston.	830,525 830,536 830,836 830,832 830,603 830,832 830,605 830,965 830,961 830,803 830,602 830,961 830,708 830,708 830,776
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, incandescent, Klumpp & Herman. Lamps, combined canale base and socket for minature electric, J. H. Goehst. Lathe tool holder and steady rest, L. R. Barker Laundry article marking machine, C. W. Canine Leyel, folding, C. Masters Level, plamb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Lock Et, H. Roy Lock strike, H. P. Townsend Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass. Match case, E. Van Deusen Matthess, wire, C. S. Lloyd Measurer, yre, A. J. & C. K. Johnston.	830,525 830,536 830,836 830,832 830,603 830,832 830,605 830,965 830,961 830,803 830,602 830,961 830,708 830,708 830,776
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, incandescent, Klumpp & Herman. Lamps, combined canale base and socket for minature electric, J. H. Goehst. Lathe tool holder and steady rest, L. R. Barker Laundry article marking machine, C. W. Canine Leyel, folding, C. Masters Level, plamb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Lock Et, H. Roy Lock strike, H. P. Townsend Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass. Match case, E. Van Deusen Matthess, wire, C. S. Lloyd Measurer, yre, A. J. & C. K. Johnston.	830,525 830,536 830,836 830,832 830,603 830,832 830,605 830,965 830,961 830,803 830,602 830,961 830,708 830,708 830,776
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, incandescent, Klumpp & Herman. Lamps, combined canale base and socket for minature electric, J. H. Goehst. Lathe tool holder and steady rest, L. R. Barker Laundry article marking machine, C. W. Canine Leyel, folding, C. Masters Level, plamb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Lock Et, H. Roy Lock strike, H. P. Townsend Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass. Match case, E. Van Deusen Matthess, wire, C. S. Lloyd Measurer, yre, A. J. & C. K. Johnston.	830,525 830,536 830,836 830,832 830,603 830,832 830,605 830,965 830,961 830,803 830,602 830,961 830,708 830,708 830,776
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, incandescent, Klumpp & Herman. Lamps, combined canale base and socket for minature electric, J. H. Goehst. Lathe tool holder and steady rest, L. R. Barker Laundry article marking machine, C. W. Canine Leyel, folding, C. Masters Level, plamb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Lock Et, H. Roy Lock strike, H. P. Townsend Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass. Match case, E. Van Deusen Matthess, wire, C. S. Lloyd Measurer, yre, A. J. & C. K. Johnston.	830,585 830,536 830,836 830,832 830,603 830,832 830,603 830,803 830,602 830,803 830,602 830,803 830,602 830,708 830,708 830,708 830,776
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Jeurnal bex stop, P. J. Harrigan Lache hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, electric, A. Ackerman Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Lathe tool holder and steady rest, L. R. Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Locks, E. H. Roy Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, circui	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jowelry box, W. P. Devine Jounal boxes, waste supporting attachment gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman. Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, electric, A. Ackerman Lamp, incandescent, Klumpp & Herman. Lamp, electric, A. Ackerman Lamp, combined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Laundry article marking machine, C. W. Canine Leg rest, F. W. Flagg Level, folding, C. Masters Level, plumb, W. A. Sneed Lifting jack, J. C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Liquids from solids, apparatus for separat- ing, E. P. Starbird Loading apparatus, A. Marvin Lock, E. H. Roy Lock mechanism, H. G. Voight Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Looms, automatic stop metion mechanism for power, J. F. Blumer Lubricant, H. N. Potter Mail box, G. E. Hasseman Match case, E. Van Deusen Match safe, pocket, G. F. Dunn Mattress, wire, C. S. Llord Measuring and mixing device, Trump & Mathessurer, dry, A. J. & C. K. Johnston. Measuring and mixing device, Richards & Hubbard Mining harness, J. Poehlman Mixing ingredients, A. Q. Nash Mooltener, envelop, J. T. Dean Mold, M. Kuller Mold, G. Pellinger Nut lock, W. H. Harlow Nut lock, G. W. H. Harlow Nut lock, G. W. Jones Nut lock, G. W. Jones Nut lock, G. W. H. Harlow Nut lock, C. E. Hill Nut lock, A. H. Knopf Ore no device and pin holder, F. B. Metzger. Nose bag, C. B. Howard Nut lock, W. H. Harlo	830,525 830,536 830,838 830,603 830,603 830,603 830,602 830,603 830,602 830,603 830,602 830,603 830,602 830,708 830,609
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jowelry box, W. P. Devine Jointer gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman. Lamp, ecombined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Level, folding, C. Masters Level, folding, C. Masters Level, folding, C. Masters Level, folding, C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Liquids from solids, apparatus for separat- ling, E. P. Starbird Lock, E. H. Roy Lock mechanism, H. G. Voight Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Looms, automatic stop metion mechanism Match case, E. Van Deusen Mattress, wire, C. S. Lloyd Measuring and mixing device, Trump & Mattress, wire, C. S. Lloyd Measuring and mixing device, Richards & Hubbard Mills heating and cooling device, Richards & Hubbard Mining harness, J. Poehlman Mixing ingredients, A. Q. Nash Moistener, ery, A. J. & C. K. Johnston. Measuring and mixing device, Richards & Hubbard Mining harness, J. Poehlman Mixing ingredients, A. Q. Nash Moistener, ery, A. J. & C. K. Johnston. Measuring and mixing device, Richards & Hubbard Mining harness, J. Poehlman Mixing ingredients, A. Q. Nash Moistener, ery, A. J. & C. K. Johnston. Mold, G. Pellinger Nut lock, W. H. Harlow Nut lock, G. W. H. Harlow Nut lock, A. H. Knopf Nut lock, C. E. Hill Nut lock, A. H. Knopf Nut lock, M. H. Knopf Nut lock, A. H. Knopf Nut lock, A. H. Knopf Nut lock, M. H. Harlow Nut lock, M. H. Harlow Nut lock,	830,585 830,569 830,888 830,603 830,603 830,623 830,602 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jowelry box, W. P. Devine Jointer gage, J. W. Lindsay Journal boxes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for set- ting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman. Lamp, ecombined candle base and socket for miniature electric, J. H. Goehst Lathe tool holder and steady rest, L. R. Barker Level, folding, C. Masters Level, folding, C. Masters Level, folding, C. Masters Level, folding, C. Gebhart Linotype machine, F. Johannesen Liquid dressing, device for applying, W. Liquids from solids, apparatus for separat- ling, E. P. Starbird Lock, E. H. Roy Lock mechanism, H. G. Voight Lock strike, H. P. Townsend Locks, circuit closer for, A. Glass Looms, automatic stop metion mechanism Match case, E. Van Deusen Mattress, wire, C. S. Lloyd Measuring and mixing device, Trump & Mattress, wire, C. S. Lloyd Measuring and mixing device, Richards & Hubbard Mills heating and cooling device, Richards & Hubbard Mining harness, J. Poehlman Mixing ingredients, A. Q. Nash Moistener, ery, A. J. & C. K. Johnston. Measuring and mixing device, Richards & Hubbard Mining harness, J. Poehlman Mixing ingredients, A. Q. Nash Moistener, ery, A. J. & C. K. Johnston. Measuring and mixing device, Richards & Hubbard Mining harness, J. Poehlman Mixing ingredients, A. Q. Nash Moistener, ery, A. J. & C. K. Johnston. Mold, G. Pellinger Nut lock, W. H. Harlow Nut lock, G. W. H. Harlow Nut lock, A. H. Knopf Nut lock, C. E. Hill Nut lock, A. H. Knopf Nut lock, M. H. Knopf Nut lock, A. H. Knopf Nut lock, A. H. Knopf Nut lock, M. H. Harlow Nut lock, M. H. Harlow Nut lock,	830,525 830,536 830,836 830,603 830,603 830,602 830,603 830,602 830,608
Insulator for telegraph and telephone wires, Graves & McDaniel Iron articles, making cast, A. W. Slocum Jar closure, F. Smith Jar opener, fruit, W. W. Cronk Jewelry box, W. P. Devine Jeinter gage, J. W. Lindsay Journal bex stop, P. J. Harrigan Journal bexes, waste supporting attachment for, J. S. Patten Kneading board and barrel cover, combined dough, W. S. Little Knee pad, pneumatic, E. G. Gresham Lacing hooks and eyelets, machine for setting, A. Raiche Lamp, M. E. B. Lane Lamp, M. E. B. Lane Lamp, incandescent, Klumpp & Herman Lamp, incandescent, Klumpp Lamp, W. A. Sneed Lifting jack, J. C. Gebhart Liquid dressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Liquid sressing, device for applying, W. Leonard Liquids gaparatus, A. Marvin Lock, E. H. Roy Lock strike, H. P. Townsend Locks strike, H. P. Townsend Locks strike, H. P. Townsend Locks, circuit closer for, A. Glass Locks, C. H. Roy Lock strike, H. P. Townsend Match case, E. Van Deusen Match case, E. Van De	830,525 830,536 830,836 830,832 830,603 830,832 830,601 830,833 830,602 830,835 830,961 830,835 830,962 830,768 830,778 830,768 830,778 830,778 830,778 830,778 830,778 830,778 830,778 830,778 830,778 830,789 830,545 830,780 830,545 830,780 830,545 830,780 830,545 830,780 830,634 830,638 830,838

A PUBLIC DUTY AND ITS PERFORMANCE

If you personally owned the entire equipment and personally controlled the entire organization of the American Cigar

And if you used this equipment and knowledge to produce cigars exclusively for your own smoking—

You could make no better cigars nor make them more care-

fully than we are now making them for you.

We believe that the possession of the largest equipment, organization, resources and business ever known in the cigar industry, binds us to a public duty to give the public the best cigars possible to make. Furthermore,

It Is Good Business Policy

We are good enough judges of human nature to appreciate the fact that meritorious service is the best and most permanent foundation of commercial success. If we give better cigars at lower cost than can be given by any other manufacturer, we shall secure, by perfectly logical and common-sense methods, what is virtually a franchise from the public to supply it with its cigars.

A franchise based upon public preference is stronger and more enduring than any that can be secured by legislative enactment, and it is this sort of franchise, obtained in this way that we want.

Gaining Success by Deserving It

Cigar smokers know what they want. is constantly improving, demanding better goods all the time. There is no way of forcing people to purchase any brand of cigar which does not appeal to them on its own merit.

From the beginning we have devoted the entire force of this organization and equipment to the problem of improving cigar quality and lowering cigar cost.

An "All-Round" Production

The products of our varivariety of cigars—from the "Royal Bengals" to the Havana."

An important adhensiveness of output gives to us to grade curately. This asformity—a feature by the discrimin-

The "Triangle A" Merit Mark Insures Honest Cigar Values The tremenin quality, due to

ous factories include every little cigar such as the highest type of "Seed and

> vantage in this comprelies in the power it our tobacco very acsures unvarying unimuch appreciated ating smoker.

dous improvement our new and ex-

clusive processes of curing, blending and ripening American grown leaf, extends through our entire line. These proleaf, extends through our entire line. cesses are performed in our own gigantic "stemmeries." They have superseded the old, crude hap-hazard methods which have been followed with blind devotion since the days of Sir Walter Raleigh. These scientific processes have improved the domestic cigar at least 100 per cent., giving a "mellowness," mildness, freedom from bitterness and a developed fragrance to our 5c. cigars, for example, which were by no means common even in the 10c. cigar a few years ago.



An Unbroken Line of Successes

This improvement has been demonstrated to the smoking public with ever increasing emphasis by the appearance of brand after brand of cigars selling at 5c. possessing a superiority which has made them instantly popular and permanently successful. These are of different brand-names and different characteristics, but are all marked with our "A" (Triangle A) merit mark and possesses the fundamental qualities of fragrance and "ripeness"

containing such cigars, and may be accepted implicitly as a guarantee of mellowness, "smoothness," quality, fragrance, and uniformity of character.

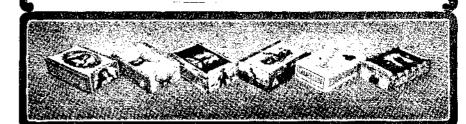
Among the "A" (Triangle A) brands each smoker is sure to find the cigar

The list is so long that only a few of the more prominent can be he wants. mentioned here:

The New Cremo (Victoria), Anna Held, George W. Childs (Cabinets), Buck, Spanaflora, Tarita, Stickney's New Tariff, Cubanola. The Continental, Chancellor, Caswell Club. The Unico, Benefactor, Captain Marryat, Roxboro, General Braddock, Orlando. And the Palma de Cuba, and Isle of Pines.

"A" (Triangle A) brands offer the widest obtainable range of choice and absolutely dependable quality in whatever brand suits your taste.

AMERICAN CIGAR COMPANY, Manufacturer



Valuable Book Home Mechanic for Amateurs

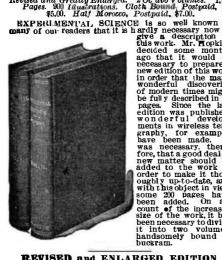


This book has achieved an unparalleled successing week, and a Special Fittin of 4.000 copies has been ordered. It is by far largest and best book the subject ever offered where the subject ever offered such a low price. It thow to make things right way—the "only" we—at small expense. It prove of value to you much more than your ize. Do things with yhands. Send for a circulars cost only a cent-book \$1.50 postpaid. If book could meet you for face you would be first to purchase. The first to purchase. The first power of the provided in the

326 Engravings Price \$1

TWENTY-THIRD EDITION EXPERIMENTAL SCIENC

By GEORGE M. HOPKINS Revised and Greatly Enlarged. 2 Oc avo Volum Pages. 900 Illustrations. Cloth Bound, Pos \$5.00. Half Morocco, Postpaid, \$7.00.



REVISED and ENLARGED EDITION The Scientific American

Of Receip Lyclopedia Notes an Queries. Notes and 15,000 Receipts. 734 Pages.

Price, \$5.00 in Cloth. \$6.00 in Sheep. \$6. in Half Morocco. Post Free.



This work has been vised and enlarged, 900 New Formula

The work is so arrang as to be of use not only the specialist, but to t genera rea der It sho nave a place in ewhome and workshop circular containing t Table of Contents we sent on application. These who already hat the Cyclopedia may obta

Price, bound in cloth, \$ postpaid.

MAGIC Stage Illusions and Scientific Div



Reference Book

12mo. 516 Pages. Illustrated. 6 Colored Plates. Price \$1.50, postpaid



Illustrated. 6 Colored to \$1.50, postpaid

The result of the queries of three generations of readers and correspondents is crystallized in this book, which has been in course of preparation for months. It is indispensable to every family and business man. It deals with matters of hiterest to everybody. The book contains \$0.000 facts and is much more exhaustive than anything of the kind which has ever been attempted. The "Scientific American Reference Book" has been compiled after gauging the kind which has ever been attempted. The scientific American Reference Book "has been compiled after gauging the kind which has been cryised by eminent statisticians. Information has been revised by eminent statisticians. Information has been down from over one ton of Government reports aone. It is a book of everyday reference—more useful than an encyclopeata, because you will find what you want in an instant in a more condeused form. Sixty years of experinces in the present to the purchasers leaguegation of information.

	Scienti	ific
	1	
0	Paper hobby horse, M. Bellian Paper pasting and cutting device, wall, M. A. Roberts Paper pulp, making, J. L. Coker, Jr. Parer, T. M. Guest Pencil sharpener, O. E. Hammond Pencil sharpening device, lead and other, H. A. H. Gubt	830,762
S	M. A. Roberts	830,616
	Parer, T. M. Guest	830,570 830,710 830,663
	Pencil sharpening device, lead and other,	830,663
S	Done valve attachment for fountain P O	000,000
	Conill Photographic lens mount, E. Bausch Photographic plate or film holder, G. Wishart Pianos or musical instruments, pedal board and nedal for self-playing. W. F.	830,88 5 830,820
	Photographic plate or film holder, G.	000,020
	Pianos or musical instruments, pedal board	830,9 50
on e Edi-	and pedal for self-playing, W. F.	830,823
the	Pie guard, pastry, E. L. Cole	830,492 830,837
d at	Pillow, sham, B. F. Cary	830,970
tells the	Pin attachment, G. W. Fletcher	830,777 830,76 0
way will	Pitching machine, Kieffer & Rebsamen	831,006 830,541
ou—	Planter, corn, L. H. McCormac	830,517 830,505 830,683 830,657
our	Plasterer's float, O. M. Spangler	830,683
rcu-	Plow rudder, C. W. Bixby	830,637
the the face	Pointer, T. H. Costello	830,495 831,008
the	Potential indicator, J. B. Taylor	831,008 830,938 830,611
first nost	Power from car axles, mechanism for	830,839
80	Press roll feed attachment, platen, Bruck-	000,000
.50	Presswork recorder, Palmer & Winnacott	830,766 830,923 830,617
	and pedal for self-playing, W. F. Cooper Pie guard, pastry, E. L. Cole Pillow, cool, C. B. Hurst Pillow, sham, B. F. Cary Pin attachment, G. W. Fletcher. Pipe reamer, C. P. Arnold Pitching machine, Kieffer & Rebsamen. Plane, bench, J. A. Traut Planter, corn, L. H. McCormac Planter marker, corn, O. B. James Plasterer's float, O. M. Spangler. Plow, P. F. Freeman Plow rudder, C. W. Bixby Pointer, T. H. Costello Potato digger, O. Knoerzer Potential indicator, J. B. Taylor Powder container top, F. W. Murray Power from car axles, mechanism for transmitting, D. E. Jobnson. Press voll feed attachment, platen, Bruck- man & Maiden Presswork recorder, Palmer & Winnacott Printing apparatus, L. Schlesinger. Printing, developing, fixing, washing, and drying apparatus, multiple, F. S. R. Prentiss Printing machine cylinder, G. F. Read.	830,617
E.	drying apparatus, multiple, F. S. R.	830,741
۷٠	Printing machine cylinder, G. F. Read	830,527
L,10 0	Pump, duplex steam, J. Kofoed	830,527 830,751 830,723 830,972
	Radiator, hot water, F. H. Wheelock	830,972 830,946
to v to	Rail, Taylor & Voynow	830,946 830,623 830,754
of	Rail joint, A. L. Plinipton	830,847 830,755
ths	Railway crossing gate, automatic, C. Hocker	830,755 830,788 830,927
re a	Railway motors and means for mounting	000,921
any	drying apparatus, multiple, F. S. R. Prentiss Printing machine cylinder, G. F. Read. Printing press, rotary, F. M. Turck. Pump, duplex steam, J. Kofoed Pump governor, N. G. Copley Radiator, hot water, F. H. Wheelock. Rail, Taylor & Voynow Rail joint, N. P. Walters Rail joint, A. L. Pimpton Rail tie and fastening, N. P. Walters. Railway crossing gate, automatic, C. Hocker Railway crossover, G. A. Ransom Railway motors and means for mounting the same, gear case for, A. Grammont	830,830
ght	Railway, multiple speed, L. McHarg Railway switches and signals, apparatus	830,733
last	for moving, F. P. J. Patenall	830,522
led, lop- ele-	mont Railway, multiple speed, L. McHarg. Railway switches and signals, apparatus for moving, F. P. J. Patenall Railways, etc. means for anchoring and se- curing flat bottomed rails in the per- manent ways of, A. MacLeod-Carey. Rake, C. F. Faes Razor, safety, L. T. Snow Refrigerator, window, C. Spadavecchia Resetting switch automatic. S. H. Couch.	830,607
ple,	Rake, C. F. Faes	830,580
ere-	Razor, safety, L. T. Snow Resetting switch, automatic, S. H. Couch Resetting switch, automatic, S. H. Couch Rifle construction, C. Hamilton Rifle front sight, T. A. Watson Rifles, telescope mount for, F. W. Mann. Rock drill, C. H. Shaw Roller feed table, J. W. Gocher Rotary engine, J. W. Stodders Rotary engine, J. Rodberg Roundabout, H. G. Traver Ruffler, A. G. Lamb Sanding device, E. V. Planta Sash controlling mechanism, J. C. Lodor. Saw, endless cbain, J. Smith Saw, metal, H. R. Geer Scale, computing, A. De Vilbiss, Jr. Scale, suspension bearing, W. H. Sargent. Scale, weighing, W. H. Sargent. Scale, weighing, W. H. Sargent. Scale, land Racher, Scale, Sampens L. L. Webb, T. T. Scannaber L. L. Webb, T. T. Scannaber L. L. Webb, T. T. Scannaber L. L. Webb, T. T.	830,746 830,861
be	Rifle construction, C. Hamilton	830,770
nor-	Rifle front sight, T. A. Watson Rifles, telescope mount for, F. W. Mann	830,868 830,729
iew ave	Rock drill, C. H. Shaw	830,744 830,990
ac-	Rotary engine, J. W. Stodders	830,621 830,673
sed bas	Roundabout, H. G. Traver	830,688
ride nes,	Sanding device, E. V. Planta	830,508
in	Sash controlling mechanism, J. C. Lodor Saw, endless chain, J. Smith	830,604
	Saw, metal, H. R. Geer	830,779 830,778
	Scale, computing, A. De Vilbiss, Jr	830,976 830,856
ots,	Scale, weighing, W. H. Sargent	820,930
4 3	Seal, L. A. Brown Sealing machine, bottle, A. A. Wood. Semaphore, J. F. Webb, Jr. Sewing machine, Bolton & Weiss Sewing machine, W. Arbetter Sewing machine sewing receptacle, folding, E. E. Boller Shaft support, S. W. Lanbam Sheet metal bending machine, M. D. Sadtler Shoe, M. V. R. Eyesson	830,551
50	Sewing machine, Bolton & Weiss	830,629
	Sewing machine, W. Arbetter	830,699
50	E. E. Boller	830,638 830,793
re-	Sheet metal bending machine, M. D. Sadtler	830,929
	Sloe, L. H. Voss	830,753
as.	Sheet metal bending machine, M. D. Sadter Shoe, M. V. B. Evesson Shoe L. H. Voss Shoe beading machine, W. B. Keighley Shoe holder, A. R. Anderson Shoes, box for toes of, J. N. Moulton Shovel tooth, steam, W. H. Bates Shutter fastener, P. P. Orum Shuttle, self threading, J. B. Daudelin, reissue	830,901
ged y to	Shoes, box for toes of, J. N. Moulton Shovel tooth, steam, W. H. Bates	830,911 830,960
the uld	Shutter fastener, P. P. Orum	830,672
ery	reissue Silicon, melting and casting, H. N. Potter. Sketch board, E. F. Chandler Slicing machine, E. F. Smith Smoke consumer, C. R. Blankenbiller. Smoke consumer, R. Brien Snow plow, R. Wilken	12,531
ull will	Sketch board, E. F. Cbandler	830,769
ave	Smoke consumer, C. R. Blankenbiller	830,560
ain	Snow plow, R. Wilken	830,765
۲.	Snow plow, P. Hannagan	830,993
1.00	Smoke consumer, R. Brien Smoke consumer, R. Brien Snow plow, R. Wilken Snow plow, P. Hannagan Sole pattern and sole rounding machine, J. J. Gillispie Spark arrester, A. N. & A. M. Holdaway Speed indicators, circuit closing device for, H. Dabl	830,584 830,599
<u>, </u>	Speed indicators, circuit closing device for,	990 407
er-		830,497 830,806 830,963
to	Square, bevel, and protractor, combined. E.	880,963
and at-	Square, bevel, and protractor, combined, E. H. Long Stackers, fan for pneumatic, J. K. Sharpe,	830,727
ons	Jr. Stall, C. A. Makowski Stand. See Umbrella stand, Stand, H. Wessels Steam boiler, oil burning, Heintzelman &	830,618 830,842
the av-	Stand. See Umbrella stand. Stand. H. Wessels	830,943
any	Steam boiler, oil burning, Heintzelman &	830 833
the m-	Camp	830.721

stage illusions, fire-eating, sw or d-swallowing, we or d-swallowing, mental magic, ancient magic, automata, curious toys, stage effects, photographs are all well described and illustrated, making a handsone volume. It is t astefully printed and bound. Acknowledged by the profession to be the Standard Work on Magic, the stage of the stage of the projection of moving photographs are all well described and illustrated, which were the stage of th





Announcement

R. HENRY SMITH WILLIAMS has taken the whole field of Science from the earliest times down to the present day, and put it into a readable, narrative form that will give anyone a right understanding of how Science began, how one discovery led to another, how all the Sciences are related to each other, and just what problems Science is working out to-day.

Everybody respects the word *Science*, and has some off-hand information about the tremendous achievements that Science has made in electricity, medicine, mechanics, etc., but few people have that general understanding of, and familiarity with, Science that they would like to have.

In this connection a more readable or more profitable set of books than "A History of Science," in five illustrated volumes, cannot be found. It is the only work that has ever attempted to put a comprehensive knowledge of Science within the grasp of the average intelligent reader.

A business man in Kansas City, Missouri, writes us that:

"Professor Williams has managed to make what I heretofore considered 'rather dry subjects' so very interesting, has explained the different stages of Science in so simple and concise a manner as to make it very intelligible and entertaining to the average reader.'

We could quote many similar letters of surprise and gratification that "A History of Science" has evoked from merchants, bankers, lawyers, shopkeepers, and others, to whom Science has been more or less of a mystery until they read these books. The author, Dr. Henry Smith Williams, M.D., LL.D., has that rare faculty of being able to write entertainingly on scientific subjects. He is widely known as a scientist and popular writer on scientific subjects.

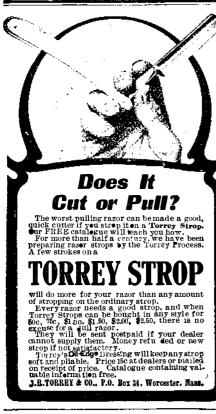
These five magnificent volumes are the very books you have perhaps often wished for. They are permanently bound in dark blue cloth with gold lettering, and fully illustrated with portraits of famous scientists, diagrams, facsimiles, pictures of scientific apparatus, etc.

OFFER OUR

Toothpicks, mechanism for cutting weeden, and is much work of the kind which are extended the lind which has ever been attempted. The scientific American Reference Book "has been compiled after gauging the k nown wants of thousands. It has been revised by eminent statisticians. Information has been drawn from over one ton of Government reports aone. It is a book of everyday reference—one conceused by eminent statisticians. Information has been drawn from over one ton of Government reports aone. It is a book of everyday reference—one conceused by eminent statisticians. Information has been drawn from over one ton of Government reports aone. Track laying apparatus, portable self, E. O. Rood.

Trolley pole controller, J. J. Tartt.

Trolley pole controller, J. J. Ta





SPECIAL SERVICE

JAMAICA

Colombia, Nicaragua, Costa Rica, Guatemala, Colon, Panama, and Hayti.

Weekly sailing by superb "Prinz" Steamers of the

Hamburg - American





Wild Rice That Will Grow

Did you ever attempt to grow Wild Rice and make a failure of it? It was because the seed had been dried. Our sees grows. It is kept moist from time of gathering until it reaches the purchaser. Shipped by express in wet moss in lots of 25 lbs. or more at 20 cents per lb. f. o. Minneapolis. Did you ever eat parched Wild Rice? It is the most delicious and appetizing dressing for game and domestic fowls. Price per lb. 45 cents post paid.

SEND FOR FREE BOOKLET.

NORTHRUP, KING & CO., Minneapolis, Minn.

NORTHRUP, KING & CO.,



Anyone sending a sketch and description may utckly ascertain our opinion free whether an item and the sending as the sending a

A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, \$3 a year; four months, \$1. Sold by all newsdealers. MUNN & CO. 361Broadway, New York Branch Office. 626 F St., Washington, D. C.



DESIGNS.

	DEGRAM	
.]	Brush back, A. E. Hathaway Button-hook or similar article, handle of a.	38,230
1	Button-hook or similar article, handle of a, A. E. Hathaway	38,229 38,235
i	Jug or similar article, C. J. Noke Mirror back, A. E. Hathaway	38,234
]	Refrigerator, C. H. Boeck Rubber matting, A. J. Whisler	38,237
١٤	Sewing rack, W. C. J. Lang	38,236
Š	Spoon, fork, or similar article, handle for a, G. Strohhaker	38 232
	G. Stromaker	00,202

TRADE MARKS

Line.

Send for illustrated literature, telling you about this and other superb cruises to all parts of the world.

35 and 37 Broadway, New York.

1229 Walnut St., 159 Randolph St., Chicago, Ill. 1056 Broadway, 901 Olive Street, Oakland, Cal. St. Louis, Mo. 90 State Street, Boston.

AGENCIES IN ALL LARGE CITIES.

MAKE MONEY

Giving Moving Picture Shows, Free Catalog.

Eugenne Cline, Dearbora & Randolph Sts., Chicago, Eugenne Cline, Dearbora & Randolph Sts., Chicago, Ill. 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, Ill. 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, Ill. 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, Ill. 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, Dearbora & Randolph Sts., Chicago, 1056 Broadway, 901 Olive Street, 1056 Broadway, 1056 Broadway, 901 Olive Street, 1056 Broadway, 901 Olive Street, 1056 Broadway, 1056 Broadway, 901 Olive Street, 1056 Broadway, 1056,320 Broadway, 1056 Broadway, 1056,320 Broadway, 901 Olive Street, 1056 Broadway, 1056,320 Broadway, 901 Olive Street, 1056 Broadway, 1056,320 Broadway, 1056 Broadway, 1056,320 Broadway, 1056,3

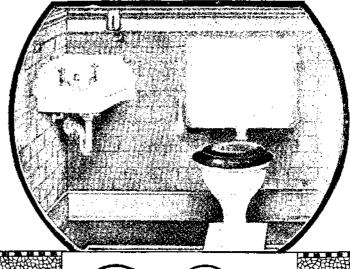
LABELS.

PRINTS.

A print d 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 begiven. Address Munn & Co., 361 Broadway, New York

York.

Canadian patents may now be obtained by the inventors for any of the inventions named in the forgoing list. For terms and further particulars address Munn & Co., 361 Broadway, New York.



The Mark of Closet Sanitation

What disinfection means to the surgeon—what vaccination means to the public health—all that and more does the Sv-clo Closet mean to the sanitation of the home. The Sv-clois more than the best closet—it is a wonderfully efficient and perpetual safeguard of health.

Unlike the ordinary closet, the SY-Clo has a double cleaning action. Instead of being merely flushed, its bowl is instantly and completely emptied by a powerful syphonic pull from below, and at the same time, thoroughly washed by a copious flush of water from above. The outlet of the SY-Clo closet is closed by a water seal of unusual depth, that makes the escape of sewer gas impossible.

Being of a single piece of hand moulded china, the Sy-Clo is without crack, seam or crevice that might collect impurity and furnish a breeding place for germs of disease.

The Sy-clo closet has no surface to chip off or crack, is not affected by acid, water, or wear, and with ordinary care, will outlast the building in which it is installed.

The name "SY-CLO" on a closet guarantees that it is made under the direction and supervision of the Potteries Selling Company, of the best materials, and with the aid of the best engineering skill, and has the united endorsement of eighteen of the leading potteries of America.

Booklet on "Household Health" sent free if you mention the name of your plumber.

Lavatories of every size and design made of the same material as the Sy-clo Closets.

POTTERIES SELLING COMPANY. Trenton, N. J.



Water **S**upply Pumps Automatic. No Repairs.

c pump. Send for catalogue if you want to improve your supply The Niagara Hydraulic Engine is the most wonderful automatic p NIAGARA HYDRAULIC ENGINE CO.,

WRITE FOR ESTIMATE ON ANY ARTICLE
YOU WANT MANUFACTURED
STAMPINGS, MODELS, EXPER WORK
WRITE FOR FREE BOOKLET
THE CLOBE MACHINE & STAMPING CO.

970 Hamilton St., Cleveland, O.

KNIPE" BALL BEARINGS

For thrust or weight or both. No fitting, just push them on. All sizes 1.4 in. Shaft and up All NZCS 1.4 In. Shaut and up. 10 cts. in Stamps for samples. PRESSED STEEL MFG. CO., 5 4 5 The Bourse, Phila., Pa.

AUTOMOBILE INSURANCE owner of an Auto should in sure his car against r damage, whether in actual riding or in transit. Illy insure you against such loss or damage, how-ustained. Premiums low Fullest reliability. H. W. BEALS, 76 William Street, New York

WE MAKE GOOD

SHOP ROOM TO LET
FULLY EQUIPPED MACHINE SHOP
S. A. NICHOLAS, 30 Greenwich Avenue

Corliss Engines, Brewers and Bottlers' Machiners. THE VILTER MFG. Co., 880 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 GEO. M. MAYER, 1131 MONADNOCK, CHICAGO WORKING DRAWINGS

DRYING MACHINES. S. E. WORRELL Hannibal, Mo.

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

THE SCHWERDTLE STAMP CO.

STEEL STAMPS, LETTERS & FIGURES.
BRIDGEPORT CONN.

NOTE THE EAGLE TOOL CO., Sept. A, tineinnait, o.

PROPOSALS.

WANTED.—Ship Draftsmen, 83.60 per diem. Assistant Ship Draftsmen, 82.80 to \$3.28 per diem. A competitive examination will be held September 26, 1965, for the purpose of establishing an eligible register of ship traftsmen and assistant ship draftsmen. For further information address. "COMMANDANT, Navy Yard, Brooklyn, N. Y."

-DON'T DRINK Our Filters Purify, Deodorize, Decelorize. Booklet Free. Ruhring Water Purifying Co. 68 Murray St., New York

Start A Mail Order Business.

Acknowledged by shrewed business men one of the most pleasant and profitable business in the World. Stop working for others—big profits—meney comes with orders—our plan for starting beginners as a sure winner and effers you a chance to get in business for yourself. Full particulars for starup. A. FRANKLIN-HOWARD CO., Kansas City, Mo.

EARN WATCHMAKING

We teach it thoroughly in as many months as it formerly took years. Poes away with tedlous appren-ticeship. Money carned while studying. Positions secured. Easy terms. Send for catalog. ST. LOUIS WATCHMAKING SCHOOL, St. Louis, Mo.

LEARN PLUMBING A few months' instruction at our school under the supervision of expert plumbers will enable you to earn regular plumber's wages. We have a special department to aid our students in securing a position after graduating. Write to-day for FREE LLUSTRATED CATALOGUE. ST. LOUIS TRADE SCHOOL, 3972 Olive Street, St. Louis, Mo.

NOVELTIES & PATENTED ARTICLES
MANUACTURED BY CONTRACT, PURCHING DIES, SPECIAL MARRIMER
E.KONIGSLOW STAMPING & TOOL WORKS, CLEVE LAND.

Telegraphy automatic teacher. 5 styles \$2 up. 0 MN 19 RAPH 10 CO., Dept. 52, 35 Curtinand St., New York.



Magical Apparatus.

Grand Book Catalogue. Over 700 engravings

25c. Parlor Tricks Catalogue, free. MARTINKA & CO., Mfrs., 493 Sixth Ave., New York.

MASON'S NEW PAT. WHIP HOIST for Outrigger hoists. Faster than Elevators, and hoist direct from teams. Saves handling at less expense.

Manfd. by VOLNEY W. MASON & CO.. Inc. Providence, R. I., U. S. A.