

The Locke Adder

simplest, handiest, most practical and durable low-priced ag machine. No business complete without it. Adds, s, Multuplies, Jivides. Easily learned, lasts a lifetime. ne. labor, money, and

QUICKLY PAYS FOR ITSELF

acy, releases from mental strain. Adds all coly. Capacity 999,999,999.

Ensures securacy, Teleason ...

Ensures securacy, Teleason ...

An Unsolicited Letter:

Executive Department, Austin, Texas.

C. E. Locke Myg. Co., August 12, 1901.

Kensett, Iowa.

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

Very respectfully,

JOE LEE JAMESON, (State Revenue Agent).

Price \$5.00, Charges Prepaid.

Descriptive booklet FREE.

Agents wanted. E. Locke Mfg. Co. 25 Walnut St., Kensett. Iowa



"The New Henricks" Igniter \vee

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

Booklet free.

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

CREST 3, 5, 7 H. P. MOTORS. Sparking Pugs and Coils. CREST MFG. CO.,



Fay @ Bowen Motors

(OPERATED BY GASOLINE VAPOR)

For Launches and Yachts are revelations to those who have used motors of other makes. They are safe, durable, economical, and easy to operate. Above all they start when started. We use no crank or handle. The Igniror is Absolutely Unique, and is the only perfect and satisfactory one in use, acting always positively and instantly. We could handsome laus account to the could handsome laus to the creaty for installation. Hotors as Auxiliaries for sailing craft a specialty. Send for Catalogue. BOWEN, 35 MILL STREET, AUBURN, N. Y.

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



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

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



"WOLVERINE"

Gas and Gasoline Ling.

STATIONARY and MARINE.

The "Wolverine" is the only reversible MarineGas Engine on the market. It is the lightest engine for its power. Requires no licensed engineer. Absolutelysafe. Mfd. by WOLVERINE MOTOR WORKS, 12 Huron Street,

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

New Microscope for Nature Study and for use in the Examination of Ores, Metals, Wools, Fibre, etc.

Queen Acme No. 6 1 in, objective giving power of about 100 diameters, 1 set of 12 prepared slides of insect parts and other interesting specimens, all in case, \$16.00 as Ask your nearest optician for it.

QUEEN & CO., INC.
Optical and Scientific Instrument Works.
1010 Chestnut St., Phila., Pa.
Write for Circular.
59 Fifth Ave., New York.

A MAGAZINE FOR THE HOME MAKER NOW READY.

The ... Scientific American Building Montbly

buildings, including some of the more important examples of large city dwellings. The leading architects of the country are now contributing to this magazine a series of "Talks" on important and popular architectural subjects. The contributors to this new and original feature in architectural journalism in the current volume areall men bigh in their profession.

SPECIAL DEPARTMENTS:

Monthly Comment on Timely Topics. Reviews of the Newest Books. Correspondence. Notes and Queries. Household Notes.

Legal Notes. New Building Patents (Classified) Price, bound in stiff covers, \$2.00.

MUNN & CO., Publishers, 361 Broadway, New York.

F. Hurtig 694,478 Vehicle steering mechanism, motor, C. W. Hunt 694,384 Vehicle steep, Peyton & Luttrell. 694,572 Vehicles, variable speed and gear reversing mechanism for motor road, De Dion & Bouton 694,542 Velocipede frame, J. R. Moore 694,842 Velocipede frame, J. R. Moore 694,567 Ventilating apparatus, W. H. & J. F. Jordan 694,648 Vizor and eye shield, combined, H. L. Waldron 694,449 Voting machine, H. A. Adams 694,342 Voting machine, H. B. Cary 694,522 Voting machine, L. W. Luellen 694,765 Voting machine, S. D. Carpenter, et al. 694,830 Waistbond, A. Bernstein 694,820 Waist shaping means, M. J. Hennessy 694,641 Washboard, J. T. Sargent 694,660 Washboard, J. J. Joecken 694,760 Washboard, P. J. Joecken 694,760 Washboard, P. J. Joecken 694,864 Washer. See Bottle washer 694,864 Water heater, E. J. Muller 694,660 Water heater, E. J. Muller 694,860 Wires or bars to pieces of metal, plug or bush for connecting, E. A. Richardson 694,452 Wood pipe machine, automatic, G. W. Lottringe 694,404 Wires or bars to pieces of metal, plug or bush for connecting, E. A. Richardson 694,522 Wood working machine guard, A. Cook,694,834, 694,835 Work conveying and presenting mechanism, R. B. Fuller 694,529

DESIGNS.

	Belt, apparel, O. A. Lebman 35,792 to	35,794
ı	Candlestick, E. Goetze	35,786
Į	Cup, C. Graff	35,785
1	Dish, etc., covered, C. E. Haviland	35,783
1	Game board, F. B. Hollister	35,791
ı	Lamp, gas, R. L. Doran35,787,	35,788
	Plate, etc., C. J. Abrenfeldt	35,781
	I'late, etc., C. E. Haviland	
	Register, side wall, G. Auer35,789,	35,790
1	Spoons, forks, etc., handle for, W. C. Cod-	
i	man	35,780
	Teapot, etc., C. E. Haviland	35,784

TRADE MARKS.

I RADE MARKS.	
Atomizers and orthopaedic apparatus, I.	
Lundquist	37,889
Beer, Wm. J. Lemp Browing Co	37,901
Beverages, sweet non-alcholic, C. G. Arm-	27 000
strong Butter, cheese and eggs, G. T. Lawrence	37,900 37,899
Confectionery and articles of food, filling for	31,000
certain, H. H. Ottens	37,897
Confectionery and bakers' supplies, certain	01,001
Confectionery and bakers' supplies, certain named, H. H. Owens	37,896
Cotton goods, bleached and unbleached, G.	
Willis	37,883
Face cream, R. C. Hupp, 2d	37,891
Fish hooks, Henry Milward & Sons37,911, Flannels, Lamson Brothers	37,912
Gas or vapor burners, incandescent mantles	37,885
for, Stillwell Light Co	37,913
Graphite and carbon and graphite and car-	.,,010
bonaceous product, Int'l Acheson Graphite	
Co	37,907
Medicated cotton toothache cures, Ceana Mfk.	a= aaa
Co	37,892
Medicated soap, Willard Chemical Co	37,890
Medicine, cough, Cough Checker Manufactur-	37,894
ing Co	111,001
celsior Manufacturing Co	37,904
Oil, fuel and illuminating, Big Four Oil Co	37,905
Paint, Seaboard Paint Co	37,902
Photographic card mounts, A. Clements Remedy for colds in tablet or pill form, C. N.	37,888
Remedy for colds in tablet or pill form, C. N.	07 000
Leigh Sauces, ketchups, relishes, pickles, chow-	37,893
chow, and condiments, J. Shaw	37,898
Sewing machines and attachments, A. G.	.,,000
Mason	37.910
Sheetings, W. H. Wisner & Co	37,884
Shirts, collars, cuffs, and drawers, Regent	
Shirt Co	37,886
Bentley & Olmsted Co	37.887
Smalt W. C. Peter 97 009	37,909
Smalt, W. C. Estes	37,895
Tableware, flat. Cattarangus Cutlery Ca	37.882
Wood, preparation for effecting the combus-	
tion of fire, Dunbar Co	37,906

LABELS

"Sen Sen," for Sen-Sen products, T. B. Dunn Co. 471

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, provided the name and number of the patent desired and the date be given. Address Munn & Co., 361 Broadway, New York

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

NEW BOOKS, ETC.

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

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

No 'More Bearing Troubles!

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

Descriptive booklet on application.

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

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

EDUCATIONAL NOTICE.

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

Write to W. L. B., Box 3737, Boston, Mass., for

particulars if you are ambitious and in earnest.



BENEDICT = NICKEL A dense, tough, inert tubing. White metal clear through. Write for booklet. Benedict & Burnham Mfg. Co. dills and Main Office, - WATERBURY, CONN New York, 253 B'way—Boston, 172 High St. IS HIGHLY NON-CORROSIVE

THE FRANKLIN DYNAMO

50 Watts, 10 Volts, 5 Amperes 3,000 to 4,000 revolutions. Sets of materials, finished parts, complete machines. For amateur construction—very efficient. Will drive a dental engine, sewing machine or small lathe; run as a generator, will furnish current for six 6-candle lamps. Parts, \$3.50, \$6.00, \$8.59. Complete, \$12.50. Write for circular 9.

ACETYLENE LIGHTING

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

BURNISHINE.

The rost marvelous metal polish in the world.



in the world.

Contains no Acids or anything injurious to the Metal or Hands.

Produces a wonderful brilliant lustre on Brass, Copper, Tin, Zinc, Silver, Nickel and all Metals.

A few rubs and the article is bandsomely hurnished.

Will not soil the hands or leave deposits in corners or surface of the metal.

Will restore burnt or rusty Nickel on Stoves to its original lustre.

Put up in cans at prices as follows:

2 Pint, 25c. 1 Pint, 40c. 1 Gallon, \$1.25.

If your dealer does not keep it write direct to J. C. PAUL & CO.,

39 Bearborn St., Chicago.

Send for Catalogue.

BLAKE & JOHNSON,

P. O. Box 7, WATERBURY, CONN.





The MEDART SYSTEM

E.E. JOSEF MFG. CO.

of supplying Roat Building Materials enables anyone ordinarily handy with tools, to build boats the beautiful boats and the boat factory's price. Freight low. Lumuches, Sailing Yachts and Row Boats.

FRED MEDART, 3545

Dekalb St., St. Louis, Mo.



Write for new catalogue of these and our Feed-Water Heater and Purifier HOPPES MFG. CO., 25 Larch Street, Springfield, Ohio.

formulas. Scientific American Supplement 1:23. Price 10 cents. For sale by Munn & Co. and all news-dealers. Send for catalogue. FROM ST. MICHAEL

TO MANILA,

11,974 MILES.

And the Stars and Stripes affording protection to American Commerce all the way.

See the new "Round the World" folder of the New York Central

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

FRICTION DISK DRILL

FOR LIGHT WORK. Has These Great Advantages:

The speed can be instantly changed from 0 to 1600 without stopping or shifting belts. Power applied can be graduated to drive, with equal safety, the smallest or largest drills within its range—a wonderful economy in time and great saving in drill breakage. W. F. & JNO. BARNES CO.,

1999 Ruby Street, - Rockford, Ill.



To MANUFACTURERS
GENERALLY
All factories should be equipped with our
exhaust system for conveying shavings,
sawdust and dust from wood-working
machinery, lint, dust, etc. from polishing
machinery,

P8u USE GRINDSTONES ?

If so we can supply you. All sizes mounted and unmounted, always kept in stock. Remember, we make a special typoses. By Ask for catalogue. The CLEVELAND STONE CO. 2d Floor, Wilshire, Cleveland, O.

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

ELECTRICAL SUPPLIES

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



What Do You Want To Buy?

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

Most Wonderful Book of the age

X. La Motte Sage, A.M., Ph.D., LL.D. Formerly Professor, Pierce's Col-lege, Philadelphia, Pa. New York Institute, New York City. 100 Pages. Profusely Illustrated

This work instructs you how to thoroughly master all the secrets of Hypnotism, Mesmerism, Personal Magnetism, and other Occult Sciences.

Quickest and Surest Methods on Earth

Anybody can learn them and exert a magic influence over others. The acquirement of these powers brings happiness and health; develops will power; gratifies ambitions; gives one the key to personal and social success, and suggests many opportunities to make money.

EXTRACTS FROM UNSOLICITED TESTIMONIALS.

We will Forfeit \$1,000 in Gold if each Testimonial is found other than Genuine

P. B. Baker, A.M., of Searcy, Ark, says: "It is superior to anything I have ever seen on the subject. I will be pleased to tell anyone what I think of it."

A. J. Merritt, Editor Western Funcier, of Madison, Ind., writes:—"Since receiving your course of instructions I am compelled to say they are far in advance of all others."

J. A. Le Conte, Quitman, Ga., Auditor South Georgia Railway Co., writes: "After a few trials with increasing success, I put my first subject into a deep sleep."

Dr. W. H. Hammersley, Harrisburg, Pa, writes - They (the instructions) cover the whole field and ar and a simple any person can learn to hypotize it a very short time. I am not in the habit of giving testi monials, but think your course certainly deserves it."

If at all interested, don't fail to write for this great book. It is sent Absolutely Free. We guarantee you success. New York Institute of Science

\$12 to \$18 a WEEK

PAID IN ADVANCE for sending us addresses of magazine readers. Permanent employment. Men or women can devote part or whole of time to the work. A wonderful opportunity. Write quick before some one else secures the position in your place. Send references, as we send payment in advance. U.S. Publication Co., Dept. 12, 125 East 23d Street, New York.



These boats when folded can be carried on the back in a buggy, or on the cars. Used by U.S. government Just the thing for trout fishermen.

CORK WALLS AND FLOORS

as well as Cork Ceilings, are now in vogue among up-to-date architects and builders on account of their durabili-ty, artistic beauty and economy.

NONPAREIL CORK

is water-proof, sound-proofand germ-proof; a non-conductor of heat or cold, noiseless and sanitary and is excellent for decorative ceilings and walls and for the floors of houses, churches, schools, etc., and the decks of yachts, etc.

THE NONPAREIL CORK M'F'G CO., Bridgeport, Conn.



has long been recognized as the best incubator in the world. That is why the U. S. Department of Agriculture uses it exclusively. That's why it won 342 first premiums over all other makes of machines. This year we have made a catalog to fit such a machine. 50 tinted plate pages: 4 original paintings and over 700 half tone illustrations. Mailed free as long as they last. Write for catalogue No. 112.

PRAIRIE STATE INCUBATOR CO., HOMER CITY, PA



CYPHERS INCUBATOR,
World's Stanuard Hatcher.
Used on 26 Gev. Experiment Stations in U. S.,
Canada, Australia and New Zealand. Gold
Medal at Pan-American, Oct. 1001. 16-p. circuher inc. Complete catalogue, 180 p. 8x11 nn10c. Complete catalogue, 180 p. 8x11 nn10c. CyPHERS INCUBATOR CO.,
Buffalo, N.Y., Chicago, Ill., Boston, Mass., New York N., L.

SET EGGS IN the SURE HATCH ands do, and they are making money. Guaranteed for 10 years and hatch every hatchable egg. Anyone can run them, because they run themselves. Anyone can own them, because the price is right. Send for our big free catalogue, giving hundreds of actual photographs of poultry yards, etc. Address Sure Hatch incubator Co., Clay Center, Neb., or Columbus, O

REVERSING STEAM TURBINE.



nearly 200 trees and a number of shrubs Many of America's beautiful trees are illustrated by the colored plates. It is complete in itself, employing no technical terms that it does not define, and requiring no other book to make it intelligible, and it is not too large to be a handy companion in the woods, fields and roads, and will prove an excellent text-book for the instruction of beginners. While, perhaps, popular in scope, it does not sacrifice scientific accuracy in any degree,

SOUTHERN WILD FLOWERS AND TREES. By Alice Lounsberry. With illustrations by Mrs. Ellis Rowan. New York: F. A. Stokes Company. 1901. 12mo. Pp. 570. Price \$3.65.

"his is the first popular work to cover this extensive field. Upward of one thousand plants are included. The text treats also of the personality of the plants; their uses by the peo-ple and of the legends and folk-lore which it has been possible to gather concerning them. There are sixteen colored plates of considerable excellence, and there are 161 plates and diagrams from pen-and-ink drawings, and 16 half-tones from wash drawings showing scenes in which this remarkable flora is found. The author has done a signal service to botany in the production of this book, which is very well made, the green edge being particularly attractive.

PATTERSON'S ILLUSTRATED NAUTICAL EN-CYCLOPEDIA. Revised and Enlarged Edition. By Captain Howard Patterson. Cleveland: The Marine Reterson. view Publishing Company. 8vo. Pp 514. Price \$3.

The reputation of the author of this work, Captain Howard Patterson, who has been long known as Principal of the New York Nautical College, and the author of excellent professional works for the use of those who follow the sea, is a guarantee that this volume will be all that its name implies. It has the great advantage of being most liberally illustrated; the drawings are clear, and in most of them the parts are freely lettered, with explanatory references tabulated below the cut. While the work is fully up to the necessities of the experienced navigator and naval architect, it is so clearly and simply written and admirably arranged that the layman will have no difficulty in finding quickly what he wants and understanding it when he has found it.

THE ROYAL LIST DIARY AND NAVAL HAND воок. A Naval Encyclopedia. London: Witherby & Co. 1901. 8vo. 500 pages.

This work has been prepared especially for the use of naval officers. Its title is somewhat misleading, as it does not convey an adequate idea of the large amount of information contained between the covers. It is a complete naval almanac drawn up with a view to the needs of naval officers both ashore and afloat; and while it has been prepared especially for officers of the British navy, it contains such varied information that it will prove a useful hand-book for any naval officer in our own service. It contains full astronomical data for every month of the year, lists of the navies of the world, articles on the progress of naval construction during the past twelve months, and concludes with several pages of technical data especially selected for the needs of the naval officer. Many new features have been added this year which have not appeared in the previous hand-books.

DIE CHRONOPHOTOGRAPHIE. Im physiologischen Institute der k. Universität in Moskau. Von Prof. Dr. L. Morokhowetz, Director des Physiologischen Institutes, Priv.-Doc. Dr. A. Samojloff und Dr. A. Judin, Assistenten am Physiologischen Institute. Moscow. 1900. Post octavo. pp. 27, two plates.

BIOMETRIKA. A Quarterly Journal for the Statistical Study of Biological Problems. Edited in Consultation with Francis Galton, by W. F. R. Weldon, Karl Pearson, and C. B. Davenport. Cambridge: University Press. London: C. J. Clay & Sons. New York: The Macmillan Company. Price \$2.50 pet \$2.50 net.

This is distinctly the most ambitious periodical publication that has ever come to our notice. The articles contained in the first number are valuable monographs, all of them. and certainly fulfill the promise made in the opening editorial that "Biometrika shall serve as a means not only of collecting under one title biological data of a kind not systematically collected or published in any other periodical but also of spreading a knowledge of such statistical theory as may be requisite for their scientific treatment." Future numbers of the magazine will be watched for with interest.

DRYING OILS, BOILED OIL AND SOLID LIQUID DRYERS. By Louis Edgar Andés. London: Scott-Greenwood & Co. New York: D. Van Nostrand Company. 8vo. Pp. 342. 1901. Price \$5.

The publishers of this volume are doing a most commendable work in the publication of the remarkable treatises on paints and var nishes they have issued in the last few years The present volume is fully up to the other works and is written by one of the recognized authorities of the world on varnishes, paints and printing inks.



AN EXCEPTIONAL **OPPORTUNITY**

of which offers to the readers of this paper, for a limited time, a portion of the first allotment of Capital Stock. The Company by Bankers exclusively and THE GIANT OIL PRODUCTION COMPANY allotment of Capital Stock. The Company is controlled by Bankers exclusively and endorsed by financiers generally. Methods and plans are open to investigation, and information is cheerfully furnished. The shares at the present quotation offer the best investment to be had, consistent with reliability and good profits. Write at once for prospectus, terms and references.

THE GIANT OIL PRODUCTION CO. 428-429 Stock Exchange Building CHICAGO, ILL.

MACHINE WORK WANTED

Have your Models of Engines, etc., made, and small Machine Work done in a thoroughly equipped machine shop. Estimates Cheerfully given. H. BARTOL BRAZIER,

1811-18-15 Fitzwater Street,

Better than Red Lead

DIXON'S PIPE-JOINT COMPOUND.

Joints can be easily taken apart after years of use even when the pipes are rusted. Manufacturers, machinists, engineers, contractors and gas com-panies freely use and endorse it. Booklet free.

JOSEPH DIXON CRUCIBLE CO. Jersey City, N. J.

DRILLING Machines

Over 70 sizes and styles, for drilling either deep or shallow wells in any kind of soil or rock Mounted on wheels or on sills. With engines or norse powers. Strong, simple and durable. Any mechanic can operate them easily. Send for catalog. WILLIAMS BROS., Ithaca, N. Y.

There is Risk of Personal Injury in Working Around Machinery

Accidents usually mean loss of income. You can secure for yourself a weekly income while disabled by taking out

An Accident Policy

in The Travelers Insurance Company of Hartford, the oldest Accident Company in America and the largest in the world. These policies guarantee large amounts for loss of legs, arms, hands, feet or eyes. If death ensues, a stated sum is paid.

The Life Policies

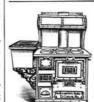
The Life Policies
of The Travelers Insurance Company appeal particularly to business and professional men because they furnish straight life insurance at the lowest possible cost.
Travelers policies are issued on the stock plan and the net cost is known in advance. The difference between the lower cost in the mutual and dividend-paying companies remains in your pocket as a dividend in advance.

Let us send you some interesting matter bearing on the superor advantages of The Travelers Policies.

Branch offices in nearly every city.

The Travelers Insurance Company

Hartford, Conn. (Founded 1863)



I Pay The Freight \$2 Will ship C. O. D. to any station in the United States for The "WILLARD STEEL RANG

Has 6 8-in. lids, oven 17x12x21, 15 gallon reservoir, large warming closet, duplex grate, burns wood or coal, weights 400 lbs., lined throughout with asbestos. grate, burns wood or coal, weights 400 lbs., lined throughout with aspestos.

GUARANTEED TO BE AS REPRESENTED. Write for free descriptive circulars and testimonials from parties in your section who are using one.

WM. G. WILLARD, Dept. 14, 619 N. 4th St., St. Louis, Mo. AGENTS WANTED TO SELL FOR CASH OR ON CREDIT.

WRITE US. We can show You how you can make 30 to 50 per centiust as easy. If you want orders executed on the Texas Exchanges write us. Information on any Oil Stock. Latest price, market news, etc., free. If You want big, sure profits on your money write us to-day. The present chance of buying good stocks at 50c on the dollar can't last. Many are now selling at par or more and prices going up.

TEXAS OIL INVESTMENT CO., 376 Montauk Block, Chicago.

WARREN'S Natural Asphalt Stone Surfaced Ready Roofing.







We are specialists in Noiseless Gearing. If you are interested in anything in this line, write for our catalogue. Our New Process Gears which are the only Noiseless Gears which are durable. We have pinions in operation transmitting from 350 to 450 horse power. We also make metal gears to order, both spur and bevel, the latter planed accurately to cone lines.

THE NEW PROCESS RAW HIDE CO., Syracuse, N. Y.





The "Best" Light is a portable 100 candle power light, costing only 2 cts. Der week. Makes and burns its own gas. Brighter than electricity or acetylene, and cheaper than kerosene. No Dirt. No Grease. No dor. Over 100 styles. Lighted instantly with a match. Every lamp warranted. Agents Wanted Everywhere. THE "BEST" LIGHT CO. 87 F. 5th Street, CANTON, OHIO.

NOISELESS CEARS Patents

PATENT PROTECTED, BY THE PATENT TITLE GUARANTEE CO. NEW YORK.

Protected

Against Infringers. Dealers in and Manufac-turers of PATENTED ARTICLES. Owners and Users of COPYRIGHTS AND TRADE-MARKS

PROTECTED against dangerous litiga-tion at a nominal cost.

Booklet on application. PATENT TITLE & GUARANTEE CO.,

CAPITAL \$500,000.00.
Tel. 4232 Cortlandt. 150 Broadway, New York.

Compressed

ITS PRODUCTION, USES AND APPLICATIONS.
By GARDNER D. HISCOX, M. E.

LARGE 8VO.

AUTHOR OF 820 PAGES.

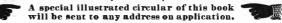
"MECHANICAL MOVEMENTS." 547 ILLUSTRATIONS

PRICE, bound in Cloth, \$5.00.

Half Morocco, \$6.50.

A complete treatise on the subject of Compressed Air, comprising its physical and operative properties from a vacuum to its liquid form. Its thermodynamics, compression, transmission, expansion, and its uses for power purposes in mining and engineering work: pneumatic motors, shop tools, air blasts for cleaning and painting. The Sand Blast, air lifts, pumping of water, acids and oils; aeration and purification of water supply: railway propulsion, pneumatic tube transmission, refrigeration. The Air Brake, and numerous appliances in which compressed air is a most convenient and economical vehicle for work—with air tables of compression, expansion and physical properties.

A most comprehensive work on the subject of Compressed Air.



MUNN & CO.,

Publishers of the Scientific American.

361 Broadway, New York.