RECENTLY PATENTED INVENTIONS. Agricultural Implements.

HAY-PRESS HORSE-POWER. - CHRISTIAN F. Kohlruss, Augusta, Ga. The invention is an improvement in horizontal, rotary horse-powers in which a horizontally-moving pitman is operated by a horizontal rotary horse-power, giving two full actions to the pitman at every revolution. The objects of the improvement are to provide a continuous circle move for the horse, to increase and compound the power as the resistance against the pitman increases, and to move the pitman in a horizontal and entire straight line.

LAND-WHEEL ATTACHMENT FOR SULKY PLOWS. GEORGE A. LITZENBERGER, Sunbeam, Ill. The inventor has devised means for connecting two landwheels with a mounted or sulky plow, so effecting the attachment that the position of the plowshares is not changed relatively to the ground when the land-wheels travel over an undulating surface, enabling the implement to work perfectly either crosswise or lengthwise with the ridges and hollows of corn rows.

Electrical Apparatus.

CONTINUOUS-CURRENT TRANSFORMER.-AL-FRED WYDTS and GUSTAV WEISSMAN, Rue Chaptal 3, Paris, France. The principle of the invention consists in rendering a continuous current alternating in order to enable it to be readily transformed by means of electromagneticinduction, the secondary alternating current of this transformer being then rectified by means of a commutator operated by the same mechanical device as that employed for rendering the original continuous current alternating, in such a manner that the secondary alternating current is rectified isochronously, because the phases of the secondary current, although lagging behind or displaced relatively to those of the primary current, are isochronous with them-that is, the intervals separating the phases of the secondary current are equal to those separating the phases of the primary current.

ARC-LAMP .- EDWARD L. BROWN, McComb City, Miss. The inventor has provided a simple, ingenious device for automatically regulating and controlling the carbons to produce a constant light. The device is particularly adapted for search-lights, magic lanterns, and the like. The mechanism consists of spring-actuated gearing which is operated antomatically as the current is cut out by the burning away of the carbons.

Engineering Improvements.

PACKING.-John J. Moss, 640 South Fairfield Avenue. Chicago. Ill. The nacking is useful both for nacking rods and joints and for various forms of machinery. The packing removes a certain amount of friction on the rod, and works automatically to the slightest friction. It can be placed in any position and oiled like a brass bushing. A packing-sleeve, comprising a spiral, is connected at one end with the stuffing-box. The other end of the sleeve bears between a spanner and the stuffing-box and serves continually to maintain the spiral under pressure.

Mechanical Devices.

FIRE-ESCAPE.-CHARLES H. SHIELDS and ALVIN SHAW, Spokane, Wash. The invention comprises a tubular ladder at each end of which a carrying-wheel is mounted. The wheels run on tracks secured to the building. A platform is attached to the lower end of the ladder and projects outwardly transversely. An extension-ladder is hingedly mounted on an outward extremity of the platform and is capable of swinging up and down thereon. The carrying wheels are driven by a chain-

DUMB-WAITER.-CHARLES W. HOFFMAN, Manhattan, New York city. By means of the improvements devised by the inventor, the manufacturer is enabled change the cage-supporting rope-pulley to suit the width of the well or shaft and to bring the runs of the rope in proper alinement with the cage and the WATER. - CHARLES F. CONOVER, Manhattan, New counterbalancing-weight, without the use of extra guidepulleys. The arrangement also affords a convenient and simple support for the brake mechanism of the

ELEVATOR CONTROLLING APPARATUS .-JOHN J. COOK, Butte, Mont. The apparatus is particularly adapted to mine-elevators and is so constructed that distilled water. The evaporation of the water heated by a sure and effective means is provided for holding the elevator, these means being continually under the control of the operator. The car moves past a guide rail. and causes it to boil at a much lower temperature than Shafts are mounted on the car, and a dog is attached to when subjected to atmospheric pressure. each shaft and works with the guide-rail. Gears are attached to the shafts and mesh with rigidly connected racks fastened to a link. A lever, mounted on the car, is pivoted to the link. A hand-latch is mounted on the lever, and a quadrant on the rack, coacts with the hand-latch to hold the lever in the desired position.

WASHING-MACHINE. - CHARLES W. THOMSON. Ontario, Cal. The object of the invention is to provide an improved washing-machine, simple in construction and improved washing-machine, simple in construction and arranged to enable the operator to pick up and thoroughlyn, New York city. The design provides a rectangular above cannot in any case give the correct area of a circle. ly wash any part of the clothes without the least danger of injuring the clothes. The machine has beaters and in large cities. handled arms carrying the beaters. The folcrum portions of the arms are reinforced; and bushings screw into the reinforced arms.

Railway-Contrivances.

DUMPING-CAR.-GEORGE H. LAWRENCE, Middletown, N. Y. The car is a coal-car of the hopper-bottom type, and is provided with a winding-shaft located on the under side of the car and at one side of the dumpingits ends on the shaft, the chain extending transversely inventor has produced a stretcher-plate of novel form across the dumping-door and having a traveling connec tion with the car to allow the chain to equalize. Un- device. The plate is of triangular form and has a series are thus prevented.

DUMPING CAR.-WILLIAM H. ONION, New Orleans, La. The dumping-car does not require extra track-sectious or alterations in the bridge or track upon which it is to be used. A stop or bumper is provided. that upon striking the stop, it will be automatically of this paper.

dropped to dumping position and a section of the body operated to discharge the load. Means are provided for varying the inclination of the car-body when the load is to be dumped and supporting a car at its discharge end while dumping. The movements of the car are con-trolled by a cable which is directly utilized for raising a section of the car-body and caused, in connection with the stop, to incline the car-body suitably for dumping.

Miscellaneous Inventions.

WELL-PULLEY .- JAMES FOSTER, Gober, Tex. Conected with a winding drum and its frame is a guide device for a rope, adapted to guide the rope as it is wound upon and unwound from the drum. The guide-device is mounted to travel upon a feed screw carrying a driving-wheel. The winding-drum has vertical movement in its frame to gravitate into driving engagement with the driving-wheel. The rope carrying the bucket can be automatically controlled in a manner to insure the rope's being guided to and upon the pulley in raising and low ering the bucket, thus preventing the hoisting-rope's coming in contact with the mud and water that usually accumulate around a well-curb.

PILING - WILLIAM B. BONNELL and ROBERT F. SMITH, Macon, Ga. The object of the invention is to provide an improved tubular, metallic piling, designed to take the place of the wood piling now generally used in the construction of breakwaters, levees, and the like. The piling consists of a number of metal tubes arranged side by side. Over the upper edges of the tubes a cap is fitted. Through the lower edges of the cap, bolts extend transversely, which engage sundry tubes so as to hold the cap in place and stiffen the positions of the piles. Metal piles are more durable than wooden piles, are stronger, and are not liable to the attacks of insects.

GATE .- JOSHUA TENNANT, Carson City, Mich. The gate is capable of being swung from its swing-post to or from a team or person and of being slid past the swingpost and opened as far as desired. The gate can be raised or lowered while in either its normal position or when slid past the swing-post and held in the position to which it can be vertically adjusted in order to clear any obstructions, or can be held sufficiently from the ground to prevent snow-drifts from rendering the gate inoperative. The gate, in addition to its pivotalsupport, has a crane-support, so that it will not be affected by lateral or vertical strain.

LEVELING ATTACHMENT FOR VEHICLES. JOHN NASH, Dayton, Wash. The object of the invention is to provide a means for adjusting the body of a vehicle (especially a threshing-machine) to a level position, thus preventing the vehicle from capsizing and avoiding the labor of digging pits for the wheels, to level the body. A hinge-section is pivoted at one end to the running-gear and at the other end to a portion of the body. By means of adjusting devices at each side of the end of the line without danger of breaking through the body, the hinge-section can be swung to level the the insulations and forming a short circuit with the re-

GATE. JAMES M. ADAMS, Deckertown, N. J. The gate is of the sliding and swinging class and is provided with a simple means whereby it can be adjusted vertically to clear it of snow or to permit small animals to pass underneath and to form a barrier for large animals. Connected with the gate and its foot-post is a guiderail secured to the foot-post. A head or block is vertically adjustable on the rail and is provided with a perforated lug engaged by a pintle extended from a gatesupporting roller.

FIFTH-WHEEL.-AMBROSE E. ABBOTT, American plate to which springs are attached. Segmental plates Rollers are mounted in depressions formed in opposite ends of the segmental plates. Heads on the ends of the rollers prevent their displacement lengthwise. The use of grease or other inbricant is unnecessary, thus preventing the accumulation of dust and dirt.

APPARATUS FOR PRODUCING DISTILLED York city. The invention consists of a system of treating water by which it is evaporated and then condensed so as to produce pure water. One object sought to be accomplished is the utilization of waste sources of heat for the evaporation of water and the subsequent condensation of the water so as to form chemically pure or waste-heat is rendered possible by the employment of a vacuom-pump, which lowers the pressure on the water

Designs.

CANE OR UMBRELLA-HANDLE. - WILLIAM H. SPEARS, Queens, New York city. The design consists in alternate plain and fluted panels, the plain panels being circumferentially continuous and arranged in the same general plane.

CHIMNEY.CAP MEMBER.-JOHN COOPER, Brookmember for chimney-caps, such as are used on all houses

HOLDER.-FRANK A. SMITH, Chicago, Ill. The device is designed to hold hats, coats, umbrellas, and cards. The holder can be nailed to the wall in any desired place.

BOX-BLANK, EDWARD E. PINKERTON, SIOUX City I Iowa. The blank is reinforced at certain portions so as to form a box stronger than that ordinarily produced from a one piece blank.

STRETCHER-PLATE FOR CARPET-TACKING adapted to be used in connection with a carpet-tacking carpet and stretch the same. The plate is also intended to be reversed when necessary, and by its peculiar form is very useful in stret; hing carpet in the corners and along the sides of rooms.

Business and Personal.

Marine Iron Works. Chicago. Catalogue free

For bridge erecting engines. J. S. Mundy, Newark, N.J.

"U.S." Metal Polish. Indianapolis. Samples free. Yankee Notions. Waterbury Button Co., Waterb'y, Ct.

Handle & Spoke Mchy. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Book "Dies and Diemaking," \$1, post paid. J. L. Lucas, Bridgeport, Ct. Send for index sheet.

Ferracute Machine Co., Bridgeton, N. J., U. S. A. Full line of Presses, Dies, and other Sheet Metal Machinery. Special and Automatic Machines built to drawings or contract. The Garvin Machine Co., 141 Varick St., N. Y.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Ma chine Company. Fort of East 138th Street, New York.

The best book for electricians and beginners in elecs "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co. publishers, 361 Broadway, N. Y.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.



HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated: correspondents will bear in mind that some nawers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

or in this department. Each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of

Mineralssent for examination should he distinctly marked or laheled.

(7852) J. A. DeV. asks: Can such a current be passed over a cable, composed of six number 6 wires of the Brown and Sharpe gage for copper wire, that will deliver 200 amperes at 2,000 volts to a motor at turning cable of the same size, which lies close along beside it. The cables to be five miles long and submerged in the sea but protected by gutta percha insulation to an amount that will equal the cables themselves in weight. A. The underwriters allow a No. 6 wire in waterproof insulation to carry 65 amperes. Your six wires could carry about 400 amperes. If the insulation is all right. there is no reason why the return may not lie alongside of the other cable. Much higher voltages are now put in the same sheathing.

(7853) W. J. Lasks: What proportions are required in the building of a dynamo which is 18, 10 Fork City, Utah. The fifth-wheel comprises a ring- or anything in that vicinity of a horse power? The Edison with a drum armature is the one I want to build. are secured to the axle at opposite sides of the king-bolt. Give all about size of pieces in the armature and commutator plates, and amount of wire and size of it required. Also, give size of the iron cores of the field magnets and amount and size of wire used in the winding of them. A. Your request is too indefinite. You do not even state the voltage you expect to have from your dynamo. We recommend you to purchase Parkhurst's "Electric Motor Construction for Amateurs, price \$1 by mail; or Watson's "One quarter Horse Power Motor," price 50 cents and follow the plans given there.

(7854) J. E. C. asks: Have you any thing on subject of Clarke's wireless telegraphy as per page 213 Scientific American, issue of April 2, 1898, so one can build the machine. In the issue given above no measurements or data are given. A. We have no plans with details of the instruments used in the Marconi system of wireless telegraphy, so that one could build machine.

(7855) X. Y. Z. asks why the following rule is incorrect for calculating the area of a circle or 'squaring the circle.' I have no doubt it is fallacious, but why? The area of a circle equals the square of onefourth of the circumference. A. The area of a circle is found from the formula: Area= π^2 ; in which $\pi=3.1416$. To apply the rule given above,—The circumference $=2\pi R$. (14 of circum.) $^2=\pi^2 R^2$ 4. Substitute for π^2 its value given above and we have for the area of a circle

electricity? A. This is done in great quantities in the doors. An equalizing chain is arranged for winding at DEVICES.—CHARLES P. KNAPP, Deposit, N. Y. This manufacture of water gas. Coal is raised to a high temperature in a furnace, which is then closed and the steam is blown through the hot coal, raising it above the temperature of dissociation. The SCIENTIFIC AMERICAN equal closing of the door and, consequently, loss of coal of prongs on its lower face adapted to engage with the Supplement has contained several articles upon this subject. 3. What is the temperature of the oxy-hydrogen blow-pipe flame? A. It is estimated at about 4.000° Fahr. 4. Can oxygen and hydrogen be introduced into the blow-pipe in a mixed state without danger of an ex-Note.—Copies of any of these patents will be furn-plosion? A. They are so mixed in the mixed jet comcapable of convenient and expeditions application to a ished by Munn & Co. for ten cents each. Please state monly used in the stereopticon. Special care must be rail at any point in its length. The car is so constructed the name of the patentee, title of the invention, and date had in the arrangement of such a blow-pipe to avoid explosions.

TO INVENTORS.

n experience of fifty years, and the preparation more than one hundred thousand applications patents at home and abroad, enable us to understand for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

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

MARCH 27, 1900.

AND EACH BEARING THAT DATE. | See note at end of list about copies of these patents.]

De la Baume. 645,940
Alkaii sulfates, apparatus for decomposing, J. G.
A. Rhodin. burn, J. A. Parker.
burn dasher, A. Hazelton
gar bunching machine, J. H. Hoeffler
gar wrapper cutting machine, N. Du Brul...
amp for textile fabrics, C. L. Weichelt...
oth cutter, R. J. Hearne...
butch mechanism, A. P. Morrow...
oat lock, D. E. Cathrell... lutch mechanism, A. P. Morrow.
oat lock, D. E. Cathrell.
oin controlled apparatus, R. W. Sowers.
ollar, W. F. Sommers.
oller, plow, W. S. Metcalf.
ooler See Milk cooler.
oop, folding fowl, A. W. R. Maas.
oop, polding fowl, A. W. R. Maas.
oop, polder, G. M. Scarborough.
ore bar coating machine. M. H. Fletcher.
orn crib. C. I. Simpson.
ornice, box. C. M. Prutsman.
orset. apparel. C. Jullien-Binard.
orset. apparel. E. M. Steward.
otton compress, roller, L. Raborn.
otton feeders, valve gear for pneumatic, G. W.
Williams.
otton in flue system. T. C. Eharbarat. 246766 R², while the true value is 3·1416 R². The rule above cannot in any case give the correct area of a circle. Its only fallacy is that it is false.

(7856) S. E. A. asks: 1. What is the exact temperature required to change steam into the gaseous state? A. Swam is already a gas formed by the evaporation of water. The question perhaps is intended to ask for the temperature of the separation of steam into its constituent gases, oxygen and hydrogen. The dissociation of steam begins at 2,200° Fahr. and is complete at 4,500° Fahr. 2. How can the two gases of which it is composed be most easily separated without the use of electricity? A. This is done in great quantities in the Devulcament, A. P. Price.

Dish dramer, M. L. Price.

Display apparatus, T. Hansen.

Display cabinet, J. L. & C. D. Strow.

Door button, sliding, D. Schuyler.

Door lock, sliding, A. Newell.

Door opener, automatic, J. Compton.

Door spring, F. & H. F. Keil.

Dowel, wooden, J. Catbrein.

Drawers, lady's, J. Marcoux.

Drill, See Rock drill.

Drying room, J. H. Therien.

Dust collector and separator, A. W. Banister.

Dyeing fabrics, G. Tagliani

Dynamos, automatic regulator for alternating,

G. S. Neely.

Basel support, G. A. Peterson.

Bectric coupling, R. D. Ireland.

Electric machine, dynamo, B. G. Lamme.

Electric machine, dynamo, B. G. Lamme.

Electric maton.

Continued on page 221.)

646,308 646,156 646,179

(Continued on page 221.)



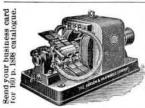
AMERICAN PATENTS.— AN INTEResting and valuable table showing the number of patents granted for the various subjects upon which petitions have been filed from the beginning down to December 31. 1894. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1002. Price 10 cents. To be had at this office and from all newsdealers.

ENGINE A FOOT MACHINE SHOP OUTFITS, TOOLS AND SUPPLIES A PARTY ST. SEBASTIAN LATHE CO. TO CHARACTERS TO THE STATE OF THE S

PHYSICAL AND SCHOOL APPARATUS .

INDUCTION COILS for experiments in X rays and other electrical work.

E. S. RITCHIE & SONS, BROOKLINE, MASS.



Catalogue Free.

NICKEL

Electro-Plating Apparatus and Material. Hanson & VanWinkle

Co., Newark. N. J. 135 Liberty St., N. Y. 30 & 32 S. Canal St Chicago.

ACETYLENE GAS AND CARBIDE OF ACETYLENE GAS AND CARBIDE OF Calcium.—All about the new illuminant, its qualities, chemistry, pressure of liquefaction, its probable future, experiments performed with it. A most valuable series of articles, giving in complete form the particulars of this subject. Details of furnaces for making the carbide, gas generators, gasometers, burners, etc. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 998, 1004, 1007, 1012, 1014, 1015, 1016, 1022, 1035, 1051, 1057, 1064, 1071, 1072, 1082, 1081, 10

PERFECT - PUMP - POWER.



They are mechanical, simple and durable. Will pump hot or cold fluid, thin or thick. Requires no skilled mechanic. Most power at least cost. All parts interchangeable. Made of iron, steel or bronze. Can be driven! belt, motor or enge illustrated. Calalogue free

gine attachment. Large Illustrated. Catalogue free TABER PUMP CO., 32 Wells St., Buffalo, N.Y., U.S.A.

SUB-PRESS PUNCHES AND DIES

We make to order to drawings or models blanking, shaving and swaging dieseither simple or compound, for work requiring accuracy and finish. Sub-Press Dies for the parts of watches, cyclometers, and other small mechanisms a specialty. We carry in stock different sizes of Sub-Press Bases and Stands. Send for Descriptive Circh.

THE PRATT & WHITNEY CO. Hartford, Conn., U. S. A.



* WEISS KEROSENE

and GAS Engine
burns KEROSEN E cheaper
and safer than gasoline. Automatic, simple, reliable No
electric battery or flame used
Perfect regulation. Betted or
directly coupled to dynamo
for electric lighting, charging storage batteries and
all power purposes.
6.3 Sead for Catalogue.
A. MIETZ,
Markt & Co., London, Hamburg, Paris





WOLVERINE MOTOR WORKS, 12 Huron Street, Grand Rapids, Mich.

YOUR UWN MUIUN

Complete Working Drawings of 1 h. p. Jacketless Gas-line Motor in our EXPLOSIVE MOTOR NUM-BER. 72 pages. Contains many other interesting artis BER DER. 72 pages. Contains many other interesting articles on Gasoline Motors. Price forents—stamps or coin.
STEAM BOILER NUMBER treats fully of Steam Automobiles. Price 10 cents—stamps or and of the contained of



This heats Wind, Steam, or Horse Powe We offer the WEBSTER 23/2 actual borse

GAS ENGINE

**150. less 10 per cent dissount for cash. Bult

interchangeable plan. Bullt of best material,
interchangeable plan. Bullt of best material,
idecian lots of 100 therefore we can make the price,
oxed for shipment, weight 800 lbs. Made for Gas
Gasoline. Also Horizontal Engines. 4 to 39 h. p. WEBSTER MFG. CO., 1074 West 15th St., Chicago. Eastern Branch: 38-D Dey Street, New York City. Southern Agents: Boland & Gschwind Co., Ltd., So. Peter and Lafayette Sts., New Orleans, La.

Engine. See Explosive engine. Fluid pressure engine. Pumping engine. Rotary engine. Steam or other elastic fluid Engraving machine diamond holder, pantograph. J. & J. Hole, Jr. Mr. well. G46,189 Explosive engine. J. F. Duryea. S46,339 Explosive engine. C. Sintz. G46,322 Explosive engine. C. Sintz. G46,322 Explosive engine. C. Sintz. G46,322 Explosive engine. C. Sintz. G46,002 Fastener setting machine gage attachment. G45,338 Explosive engine. C. Sintz. G46,002 Fastener setting machine gage attachment. G46,360 Fastener setting machine gage attachment. G46,360 Freeding device. boiler. F. J. Weiss. G46,002 Freeding device. boiler. F. J. Weiss. G46,002 Freeding device for boilers, safety, F. J. Weiss. G46,002 Freeding device for boilers, safety, F. J. Weiss. G46,002 Freeding device for boilers, safety, F. J. Weiss. G46,002 Freeding device for boilers, safety, F. J. Weiss. G46,002 Freeding device. F. L. Taylor. G46,360 Filie, newspaper, F. C. Blaisdell. G46,360 Filie, newspaper, F. C. Blaisdell. G46,360 Filing box cabinet. R. W. Pope. G46,360 Filing box cabinet. R. W. Pope. G46,360 Fire escape, I. Sperling. G45,362 Fire escape, I. Sperling. G45,362 Fire escape, H. Sperling. G46,362 Fire escape, H. Sperling. G46,362 Fire escape, H. Sperling. G46,362 Fire escape, I. Sperling. G46,362 Fire

Milling and fulling machine, E. Gessner, Jr.
Miter box, S. Levan.
Mold making machine, sand, W. Murchey.
Molds, means for filling, P. Wernicke.
Mortising and boring machine, combined, G. W.
Meserve.
Motion mechanism, step-by-step, R. Hundhau-646.125

cles on Gasoline Motors. Price (locents—stamps or coin. STEAN ROILER NUBBER treats fully of Steam Automobiles. Price (locents—stamps or coin. Subscribt for a year; 6 months, \$1.0). Foreign, \$5.00. Subscribe for a year; 6 months, \$1.00. Foreign, \$5.00. THE HORSELESS AGE, Weekly. Established 1895.

THE HORSELESS AGE, Weekly. Established 1895.

THE ELECTRIC HEATER.—A VALUable paper, with working drawings of various forms of the electrical heaters, including electric soldering iron, electric pad for the sick, etc. 6 illustrations. SCIENTIFIC AMERICAN SUPPLEMENT 1112. Price (locents. For sale by Munn & Co. and all newsdealers.

This brats Wind, Steam, or Horse Power.

This brats Wind, Steam, or Horse Power.

We offer the WEIS-TER 25/2 actual berse power or drange apparatus for mechanically loading.

Nut lock. Wilson & Whitcomb.
Ordnance, apparatus for mechanically loading,
I Krone.
Ore concentrator. W. E. Wild.
Ore or rock breaking machine, E. Comerford.
Organ, reed or pipe, M. S. Wright.
Pad. See Hoof pad.
Pail, self beating dinner, H. L. & C. Marlett.
Pail, ventilated. W. T. Follweller.
Pan. See Roasting or baking pan. Scale pan.
Paper bag, O. G. Goodman.
Paper baces, machine for making, C, W. Gay.
Pen, fountain, W. I. Ferris.
(Continued on page 222) 646,369 645,987 646,204 646,046

A Goodform Closet Set

will make your closet look like this picture. months. Money back then if you say so.

LADIES' SET-12 Garment Yokes, 12 Skirt Hangers, 2 Shelf Bars and 2 Loops. (See loop on door.)

MEN'S SET-12 Garment Yokes, 6 Automatic Trousers Hangers, 2 Shelf Bars and 1 Loop.

Sets, \$3.00 each—two in one shipment, \$5.50, express paid. Our Trousers Hanger is much prized by gentlemen; sample 30c.; 4 for \$1.00; 6 and 1 Loop, \$1.50, prepaid.

Sold in first-class dry goods stores and by clothiers and furnishers. If you cannot buy them from a dealer in your town, remit to us. Mention your dealer's name. We send free an illustrated descriptive booklet.

CHICAGO FORM COMPANY, 101 La Salle Street, Chicago.

SPROUT, WALDRON & CO. SEND FOR CATALOG Nº 4.) MUNCY, PA.

THE BUFFALO CASOLENE MOTOR

Scientifically Correct.

The only drill grinder ever made requiring but one preliminary adjustment. Gag-Jaws, Chucks and other fire-consuming apparatus thrown to the winds. Any clearance obtained instantly. Drills cut like razors. A boy can use it. Iron Workers! The machine will pay for itself many times each year. Correct work impossible without it. Write us NOW while thinking of it.

THE FULLER MFG. CU., Successor to G. T. Eames Co.,

THE BUFFALO CAS'

THIS cut shows our four cylinder, 4½ h orse power, non-vibrating, shifting spark, varyieg speed from 100 to 1.500 revolutions, Gasolene Vehicle Motor, which we have demonstrated to be the most practical power in the market, occupying a space of 18 x 20 inches, manufactured upright or horizontal; weight 175 pounds. We build from one to eight horse power. For vehicles, boats and light stationary work, we can prove superiority.

Dewitt and Bradley Streets.

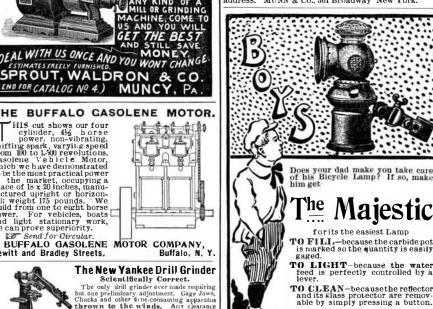
MORAN FLEXIBLE JOINT for Steam, Air or Liquids.
Made in all sizes to stand any desired

AUNCHES.

pressure.
Moran Flexible Steam Joint Co., Inc'd
147 Third Street, LOUISVILLE, KY.

ACETYLENE APPARATUS

Acetylene number of the SCIENTIFIC AMERICAN STIPPLEMENT, describing, with full illustrations, the most recent, simple or home made and commercial apparatus forgene rating acetylene on the large and small scale. The gas as made for and used by the microscopist and student; its use in the magic lantern. The new French table lamp making its own acetylene. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, NO. 1957. Price 10 cents prepaid by mail. For other numerous valuable articles on this subject we refer you to page 21 of our new 1837 Supplement Catalogue, sent free to any address. MUNN & Co., 361 Broadway New York.



SUBMARINE TELEGRAPH.—A POPplar article upon cable telegraphing. SCIENTIFIC AM-RICAN SUPPLEMENT 1134. Price 10 cents. For sale by Munn & Co. and all newsdealers.

Edw. Miller & Co., Meriden, Ct.

STANDARD STRAINER CO., Dripless Tea and Coffee Strainers.

37-40 MAIDEN LANE, New York.

25 cents.

MONITOR AND MOGUL AGENTS WANTED. 🌊 MONITOR SAND RAPIDS MICH. SATALOGUE

DON'T SEW ON BUTTONS!



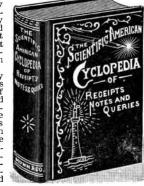
Bachelor's Buttons mad with Improved Wash burne Patent Fastener useful novelties made with these fasteners, free on request. American Ring Co., Box P. Waterbury, Conn.

Cyclopedia of Receipts, Notes & Queries

12,500 RECEIPTS. 708 PAGES.

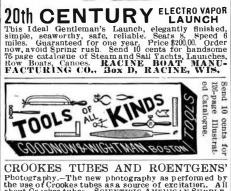
Price, \$5.00 in Cloth; \$6.00 in Sheep; \$6.50 in Half Morocco, Postpaid.

THIS great
work has now
been on the market for nearly
six years, and
the demand for it
has been so great
that twelve editions have been
called for,
The work may



MUNN & Co., Publishers, Office of the SCIENTIFIC AMERICAN.

361 BROADWAY, NEW YORK,



CROOKES TUBES AND ROENTGENS
Photography.—The new photography as performed by the use of Crookes tubes as a source of excitator. All about Crookes tubes. SCIENTIFIC AMERICAN SUPPLE—
10.5995 (10.50), 10.50, 10.54, 10.55, 10.56, 10.57, also (10.50), 10.50,





A Way to Change **Your Work** Prepare for a better position without neglecting your present work. Our students advance in salary and position while studying. 150,000 students and graduates TAUGHT BY MAIL TAUGH I DI mosam Mechanical or Architectural Braughing; Electrical, Millian and Electrical Willian and Electrical Willian and Electrical Architecture; Sur-veying; Book-keeping; Stenog-raphy, &c.

TAUC HT BY MAIL
Professional, Elective, Commercial,
Law 'Ourses. Gusrantees best instructionever prepared. Indorsedby
students and attorneys everywhere.
Easy terms. Begin now.

The International orrespondence Schools, Bar 930 Serasion, Pa.

NATIONAL CORRESPONDENCE SCHOOL OF LAW, 38 North Pa. St., Indianapolis, Ind.

ELECTRICAL Thousands are successful ENGINEERING thousand salaries study ing at home by our mai TAUGHT system. We teach Electrical Empression of the successful Engineer BY MAIL trio Lighting, Short Popular Electrical Course, Elementary Mathematics, etc., by mail. Study in spare time only. Institute endorsed by Thomas A. Edison and others. Catalogue free. ELECTRICAL ENGINEER INSTITUTE, Dept. A, 220 Liberty Street, New York.



5 CENTS ADAY pays for the use of

The Shimer Cutter Heads To match 12.000 ft. of 4 in. strips (board measure) single tongue and groove—the most economical Cutter Head in all the world. Send for Catalogue, No. 22. Address

🕈 S. J. SHIMER & SONS, Milton, Pa. MERITORIOUS INVENTIONS

finance or patents sold outright. Capital furnished for good enterprises at 5 per cent. Stock companies formed and influential directors procured. Stocks and honds sold. We transact all business on commission strictly. No advance fees. PETER WHITNEY, 100 Broadway, New York.



Dynamos—Motors.

Dynamos for Electric lighting, 15 lights up to 110 lights, 16 C. P. Motors for power purposes 1-6 H, P. to 76 H, P. First class machines of molern construction and fully guaranteed. Send for descriptive Rulletin. teed. S Bulletin

ROTH BROS. & CO.. Mfrs. 88-92 W. Jackson Street, Chicago, Ill., U. S. A.

HOW TO MAKE AN ELECTRICAL HOW 10 MARE AN EMECTRICAL
Furnace for Amateur's Use.—The utilization of 110 voit
electric circuits for small furnace work. By N. Monroe
Hopkins. This valuable article is accompanied by detailed working drawings on a large scale, and the furnace can be made by any amateur who in versed in the
use of tools. This article is contained in Scientific
American Supplement, No. 1182. Price 10 cents.
For sale by Munn & Co., 481 Broadway, New York City,
or by any bookseller or newsdealer



(Cover drawn back showing Air Sack and method of inflation CAMP, YACHT, HOSPITAL and HOME.
Also AIR CUSHIONS adapted for all uses.

Send for Catalogue.

MECHANICAL FABRIC CO., Providence, R. I.







BERKETELD FILTER CO., a Cedar St., New York.

	Scientific				
1	Pen fountain R R Goldsmith	646 070			
1	Pen, fountain, B. B. Goldsmith. Pen, fountain, W. E. McKee. Penholder, B. R. Goldsmith. Pessary, H. A. Hempel. Pew, W. H. Kratz. Phonograph, P. Von Wouwermans. Photographic print fabric J. A. Hervey	646,127			
	Pessary, H. A. Hempel	646,073 646,290			
	Phonograph, P. Von Wouwermans	646,014			
l	Picking and cleaning machine, C. W. White	646,138			
	Pile, (j. D. Coleman. Pin. See Safety pin.	020,021			
	Pin. See Safety pin. Pipe. See Hosc pipe. Pipe connections from leaking, apparatus for preventing, W. J. Sterling Plane, wood, H. M. Cee Planter attachment, corn, F. R. Eral Planter check row attachment, corn, M. B. Bennett	646 011			
	Plane, wood, H. M. Coe.	646,011 646,262 646,089			
ĺ	Planter check row attachment, corn, M. B. Bennett.				
ļ	nett. Planter, corn, P. W. Thomson. Planter, lister attachment, J. L. Pate Playing ball, A. R. Breinl. Plow attachment, C. Wilson. Plow jointer, G. W. Ream. Plow, rotary, M. T. Hancock. Plow seeding attachment, gang, A. J. Malsbary. Pneumaric separator, C. H. Lane.	646,256 646,045 646,235 646,350			
	Playing ball, A. R. Breinl	646,350			
	Plow pointer, G. W. Ream	645,989 646,312 646,280			
	Plow seeding attachment, gang, A. J. Malsbary	646,004 645,962			
	Potato pulping apparatus, Malinsky & Prokop	646,055			
	Pneumatic separator, C. H. Lane Potato pulping apparatus, Malinsky & Prokop Press. See Baling press. Steam press. Primary battery, F. B. Badt Printing, associating, and folding machine, web,	645,992			
	Printing, associating, and folding machine, web, R. C. Annand Projectiles, metallic compound for, Roth & Krnka. Projection apparatus, J. J. Frawley. Propelling apparatus, bydraulic, k. W. Simmons. Prospecting dish, W. G. Collins. Pruning implement, D. S. Donzella. Pulp articles, manufacture of, W. W. McEwan et al	646,341			
	Krnka	645,976 645,949			
	Propelling apparatus, bydraulic, F. W. Simmons.	645,949 646,391 646,382			
ĺ	Pruning implement, D. S. Donzella	646,048			
	et al	646,389 646,380			
	Pumping engine, G. W. McGill	646.079			
	Railway rails, etc., apparatus for recording flex-	646,400			
ı	ure of, J. E. Colas	646,067			
Į	Lundell	646, 22 9 646,039			
	Razor strop, duplex, J. H. Hemmerdinger	646,155			
	Jundell Railway switch. I. Rohbins. Railway switch. electrical, P. E. Perry. Razor strop, duplex, J. H. Hemmerdinger. Reflector, O. Hillstrom. Refrigerator, R. Frey. Refrigerator drip cup attachment, C. G. Spald-	646,277			
	Refuse destructor, Boulnois & Brodie	645.981			
1	Regulator. See rivid pressure regulator.	1			
	Riveting and punching machine, combined, H. C. Pomeroy Roasting or baking pan, Heatly & Leavell Robe for invalids, bed, M. E. Sims	646.035			
	Robe for invalids, bed, M. E. Sims	646,283 646,194 646,343			
	Took uith, it. Avery	646,343 646,362			
	ROOF Ventilator or chimney cowl. R. M. Pan-	646.371			
	Coast	646,091			
	Rotary engine, W. T. Mooney	646,393			
	Rotary engine, compound, A. Watkins	646,135			
	Rule, perforating, J. A. Lofstedt	646.184			
	Rotary engine, compound, A. Watkins. Roving can, R. R. Smith Rowing mechanism. bow facing, D. R. Sheen Rule, perforating, J. A. Lofstedt. Safety pin, M. V. Thorndike. Sash balance, H. P. Cayce Sash balance, W. J. Parsons. Sash balance, W. J. Parsons. Sash balance, compound antirattler, combined,	645,939			
	Sash balance, W. J. Farsons Sash balance, lock, and antirattler, combined, Sheen & Philiprick	046,042			
ı	Saw, D. Phillips	646.373			
	Saw and adjustable square, combined, J. E. Spatz. Saw, metal cutting, J. Hilton Saw setting apparatus, S. R. Robinson SawSad window, W. Holtzapid.	646,137 646,284			
	Saw setting apparatus. S. R. Robinson	646,159 646,286			
	Scale pan, W. G. Mizell Screen. See Window screen.	646,300			
	Saw Setting apparatus. S. R. Robinson. Scaffold. window, W. Holtzappie Scale pan, W. G. Mizell Screen. See Window screen. Secondary battery, Blumenberg & Overbury Secondary battery, W. L. Silvey. Separator. See Pneumatic separator. Sewing machine cabinet, F. Patzack. Sewing machine guide. C. W. Dodge. Shaving device S. L. Bligh.	646,348 645,978	ĺ		
Ĺ	Separator. See Pneumatic separator. Sewing machine cabinet, F. Patzack	646,154			
,	Shaving device S. L. Bligh.	646,065	į		
	Shears. See Metal shears.	040,677	١		
	Sewing machine callet, T. D. Dodge. Shaving device, S. L. Bligh. Shearing tool, J. K. Stewart. Shears. See Metal shears. Shears, J. T. Schnorr. Shirt, apparel, W. R. Chaplain, Jr. Shovel and sifter, combined, W. P. Hyrons Shredding and mlyerizing machine centrifugal	646,356 645,056	١		
	Shredding and pulverizing machine, centrifugal,	646,252	ļ		
,	F. Andree Sickle bar, W. H. & O. F. Brusman Sieve or bolting machine, gyrating, C. H. Lout-	646,353	l		
			١		
,	Sign, F. Tuchfarber. Siphon, S. H. Adams Snap switch, G. W. Hart. Soap, making, J. Stockhausen.	646,339 646,146	I		
	Sole rough rounding and chamiening machine. J.		1		
	E. Bertrand	645,934	ļ		

Sole rough rounding and channeling machine, J. 646,393
Sole rough rounding and channeling machine, J. 645,934
Sound reproducer, F. W. Noite. 646,370
Space and lead discarder and distributer loader, P. F. Cox. 646,359
Specific gravity apparatus, G. Himmel. 646,359
Specific gravity apparatus, G. Himmel. 646,359
Spinning machine top roll saddle and stirrup therefor, J. Bilsborough. 646,258
Spokes to rims of wheels, device for fastening, R. Muller. 646,306
Spool rack, ribbon, H. B. Moore. 646,388
Spring, See Doorspring. 646,388
Sprinkler. See Bottle sprinkler.
Sprinkling stopper, F. W. Cook, Jr. 646,018
Stacker, hay, A. Buchey. 646,388
Stamp, automatic time, N. H. Suren. 646,188
Starching machine, W. A. Newton. 646,018
Steam protary marking, H. E. Waite. 646,189
Steam generator, W. H. Harrison. 646,018
Steam generator, W. H. Harrison. 646,018
Steam or other elastic fluid engine, J. H. Street. 646,275
Stoker, mechanical draught and underfeed, R. M. Mc Beth. 646,007
Stove, hydrocarbon hurning, F. P. Glazter. 646,211
Stove, hydrocarbon hurning, F. P. Glazter. 646,211
Stovepire elbow making machine, A. N. Fairman. 646,021
Sugar juice beating apparatus, L. Hirt. 646,021
Swinging gate, J. E. Gibba. 646,118

(Continued on page 298)

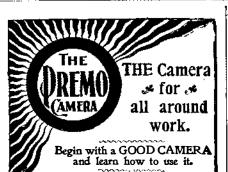
Dont Take Any Chances
on an inferior vehicle or harness. Your life and that of your family
depends upon their quality of and reliability. You can't tell very
much about the quality of a vehicle by simply looking at it. The
saint and varnish effectually hides the quality of material, Ve-

WE HAVE NO AGENTS 🔉

No. 608—Cancy-Iop Survey, with side curtains, finders, hampe, extern agree, some shades and barness in fact we are the largest manufacturers of vehicles and harness in the world finders, hampe, extern agree, some shades and pole or hants. Price, 632. As good a selle for 1850 more. You take no chances; we ship our nation and guarantee everything. Send for our large illustrated Catalogue before haying. IT'S FREE.



ELKHART CARRIAGE & HARNESS MANUFACTURING CO., Elkhart. Indiana.

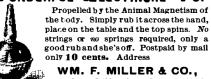


New Catalogue on application. 30 South St., Rochester.N.Y. THE BEST THING YET!

A New Button

In BE DEJ INNO ICI:
Is simple and durable, and can
be put on and taken off at will.
Nothing like it in the world.
Try a set and be convinced. If
your dealer does not keep them
send 25c. to Us for sample doz.
THE L & H. SUPPLY CO.,
85 Commercial Avenue,
Binghamton, N. Y.

₩ONDERFUL ŒLECTRICAL TOP





you want \$ \$ \$ \$? We want Agents everywhere! Windoor Collar and Cust Company, Windoor, Conn.

ELECTRO MOTOR, SIMPLE, HOW TO make.—By G. M. Hopkins. Description of a small electric motor devised and constructed with a view to assisting amateurs to make a motor which might be driven with advantage by a current derived from a battery, and which would have sufficient power to operate a four lathe or any machine requiring not over one man power. With 11 figures. Contained in SCIENTRIC AMERICAN SUPPLEMENT, No. 641. Price 10 cents. To be had at this office and from all newsdealers.

EVERY BOY HIS OWN TOY MAKER.

Tells how to make all kinds Toys, Steam Engines, Photo Cameras, Windmills, Microscopes, Electric Telegraphs, Telephones, Magic Lanterus, Æolian Harps, Boats from a rowboat to a schooner; also Kites, Balloons, Masks, Wagons, Toy Houses, Bow and Arrow, Pop Guns, Slings, Stilts, Fishing Tackle, Rabbit and Bird Traps, and many others. All is made soplain that a boy can easily make them. 20 handsome illus. This great book by mai, 10c., 3 for 25c. C. DEPUY. Pub., Syracuse, N. Y.



Manufactory Established 1761.

LEAD PENCILS, COLORED PENCILS, SLATE
PENCILS, WRITING SLATES, STEEL PENS, GOLD
PENS, INKS, PENCIL CASES IN SILVER AND IN
GOLD, STATIONFRS' RUBBER GOODS, RULERS,
COLORS AND ARTISTS' MATERIALS.

Dept. 3. 2 Chambers St., New York, 78 Reade Street. - - - New York, N. Y. Manufactory Established 1761.

EFFREY CHAIN DREDGES THE JEFFREY MFG. CO. COLUMBUS, OHIO.

Puncture Proof Folding Boats. Adopted by the U.S. War and Navy Depts. in March and Sep!., 1889. Only medal and award at World's Fair. Beautiful models, perfectly safe for family as well as sportsmen's use. Sails, centerboards, rudders. King Folding Canvas Boat Co., Kalamazoo, Mich., U.S.



IAS.E. PATTON CO., 227 Lake St., Milwaukee, Wis.



BALL BEARING AXLES AND RUB-DATAL BEARING ALES AND RUDE PROPERTIES. A paper read before the Carriage Buildets' National Convention, Philadelphia, October, 1834, sbowing the advantage to be derived from the use of ball bearings and pneumatic tires in road vehicles. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 992. Pricell cents. To be had at this office and from all newsdealers.





HAVANA Willsend, sample, 12 of our cirars containing genuine Cuban Island Havana filler, prepaid, for 36c.—full elze. Buy direct and save half. THE PORTO

I HE HUMEMADE WINDMILLS OF NEBRASKA. A most valuable series of articles condensed from the official Bulletin by Erwin Hinckley Barbour, is published in Supplements Nos. 1254, 1255 and 1256. The series is accompanied by thirty-three illustrations and gives a detailed description of a number of types of windmills which can be made by anyone who has any mechanical skill. These windmills are being made and used in Harge numbers in Nebraska and are giving great satisfaction. These Supplements for sale by all newsdealers. Ut cents each, or by Munn & Co., 361 Broadway, New York City. THE HOMEMADE WINDMILLS OF NEBRASKA.



A COMPLETE

Electrical Library

By PROF. T. O'CONOR SLOANE.



An inexpensive library of the best books on Electricity. Put up in a neat folding box, as shown in cut. For the student the amateur, the workshop, the electrical engineer, schools and colleges. Comprising five books, as follows:

Arithmetic of Electricity 138 pages, . . . \$1.00 138 pages, . . . \$1.00 Electric Toy Making, 140 pages, \$1.00 pages, ...

How to Become a Successful Electrician, 189
pages, ... \$1.00 pages, \$1.00 Standard Electrical Dic-tionary, 682 pages, \$3.00

Five volumes, 1,300 pages, Electricity Simplified, 158 and over 450 illustrations. pages, . . . \$1.00 A valuable and indisvensable addition to every library.

Our Great Special Offer.—We will send prepaid the above five volumes, handsomely bound in blue cloth, with silver lettering, and inclosed in a neat foliang tox, as shown in the illustration, at the Special Reduced Price of \$5.00 for the complete set. The regular price of the five volumes is \$7.00.

MUNN & CO., Publishers, 361 BROADWAY, NEW YORK. Founded by Mathew Carey, 1785.

HENRY CAREY BAIRD & CO. 810 Walnut St., Philadelphia, Pa., U. S. A.

To Our New and Revised Catalogue of Practical and Scientific Books, 32 pages, 8vo; a Catalogue of Books on Steam and the Steam Engine, Machinery, etc.; a Catalogue of Books on Sanitary Science. Gas Fitting, Plumbing, etc., and our other Catalogues and Circulars, the whole covering every branch Science applied to the Arts, sent free and free of postage to any one in any part of the world who will furnish his address.



Short stories by famous authors, and illustrated by eminent artists, are published in every issue of COLLIER'S WEEKLY.

COLLIER'S WEEKLY has a circualtion of over 200,000 copies per week-the largest of any periodical in the world that sells for \$3.00 or more per year. For sale on all news-stands. 10 cents per copy. Sample copy free. Address COL-LIER'S WEEKLY, 521 West 13th St., New York

The No. 4 **YOST** WRITING **MACHINE**



The distinctive features of the Yost Machine, permanent alignment, direct inking, beautiful work, strength, simplicity, and durability are shown in perfection in the No. 4 Model.

Yost Writing Machine Co.

NEW YORK CITY.

LONDON, ENG.

Che Cypewriter Exchange



11:6 Barclay St. NEW YORK 124 La Salle St., CHICAGO 38 Bromfield St., BOSTON 817 Wyandotte St., KANSAS CITY, MO. 209. North 9th St. 5T. LOUIS, MO.

432 Diamond St... PITTSBURGH, PA. 3 West Baltimore St., BALTIMORE, MD

536 California St., San FRANCISCO. CAL We will save you from it to 50% on Typewriters of all makes. Send for Catalogue

Mechanical Movements

Powers, Devices, and Appliances. Ry GARDNER D. HISCOX, M E., Author of "Gas, Gas-

oline, and Oil Engines."

A Dictionary of Mechanical Movements, Powers, Devices, and Appliances, embracing an illustrated description of the greatest variety of mechanical movements and devices in any language. A new work on illustrated mechanics, mechanical movements, devices and appliances, covering nearly the whole range of the practical and inventive field, for the use of Machinists, Mechanics, Inventors, Engineers, Draughtsmen, Students, and all others interested in any way in the devising and operation of mechanical works of any hind.

400 Pages. 1,649 Illustrations. Price \$3. A full table of contents will be sent free upon

MUNN & CO., Publishers,

DESIGNS.

١	Badge, W. E. McCarty	32.378
ı	Rath tub W Scott	39 411
1	Bath tub, W. Scott Bed end frame, E. J. Barcalo	39 410
J	Beetthinner, J. Venhuizen.	29 410
1	Polt P to Poppy	29 410
1	Belt, R. F. Barry Broom holder, F. J. Wallace	20 200
ı	Broom noider, F. J. Wallace	32,500
	Carpet button, stair, D. Walker	
ı	Coat. Pad, G. Goldman	32,417
	Corset, I. W. Birdsey	32,418
	Douly, J. W. Catty. Filament for incandescent electric lights, S. B.	32,414
	Filament for incandescent electric lights, S. B.	
	Husselman	32.396
	Fork, R. J. MacDowell	32,380
	Hammer head, D. C. Whitford	32,402
	Hook, garment supporting, Taylor & Hammond	32.383
	Hook, whiffletree, L. S. Larson	32.405
	Lamp, bicycle, W. J. Frost.	
	Leather fabric, J. Nieder	
	Level, G. F. Conner	32,390
	Lock case, H. G. Voight	20 000
	Madallian III III Con	20,774
	Medallion, W. W. Coe	02,019
	Pan, cake, M. J. Rutherford	32,380
	Photographic cabinet, B. E. Underwood	
	Post base, J. G. Gladney	32,404
	Pulley case, H. A. Frost	32,394
	Railway rail, S. Hazard	32,406
	Razors, etc., handle for, W. M. Taussig	32,382
	Rein holder, T. W. Porter	32,395
	Scale frame standard, J. W. Culmer	32.393
	Scoop, W. W. Baird	32,387
	Scoop, W. W. Baird Seal body, self locking, E. Tyden	32.391
	Show case, display, J. G. Hutchinson	32,413
	Siphons, etc., shield or guard for, J. Cederstrom	32,397
	Soap dish. J. P. Steppe.	
	Sole fabric, shoe, J. E. Kennedy	
	Spoon or fork handle, J. H. Leech	32:381
	Sprayer hody D R Smith	39 300
	Sprayer body, D. B. Smith	35 300
	Store besting I V Mel angelin	29,480
	Stove, heating, J. K. McLaughlin	20 400
1	Tricycle frame, W. Robson	20 407
۱	Tricycle Irame, W. Robson	02,507
ı	Vehicle motor casing, F. A. Phelps	52,408
ı	Wrench, G. F. Conner.	52,401
ı		

TRADE MARKS.

TIME MINING.	
Bakery product, certain named, F. Rayner Baking powder, Buyit & Tryit Company Beer, lager, Pabst Brewing Company	34,383
Brushes, John L. Whiting & Son Company 34,388, Phemical and pharmaceutical preparations. Heine & Company	34,389
Sigarettes, cigars, and smoking and chewing to- bacco, Union Tobacco Company of America,	
otton fabrics, J. Farnum & Company	34,377 34,358
Curios, certain named, F. H. Stearns Cmbalming fluid, B. Wheatley, Jr	34,387
Engine, double cylinder piston movement gaso- lene. Pennsylvania Iron Works Company	34,395
'lour, wheat. Herklotz, Corn & Company 'ood products, certain named, Stobie Cereal Mills	34,384 34,382
Mills	34.390
Hoves, certain named. J. Adler & Company Hammers, A. R. Robertson	34.355 34,394 34.359
Hosiery, knit underwear, and gloves, Ferguson- McKinney Dry Goods Company	34.356
ce cream in block form, F. L. Davis	34.381 34.372
Matches, American Match Machine Company Mendicaments, certainnamed, H. A. Blair Medicine, certain named, Winkelmann & Brown	34,365
Drug Company	34.364 34.354
oil of tobacco for cancer cure, Krengel & Williby. Packing house products, certain, Swift & Com-	
pany. Perfume, L. R. Harrison & Company Pills, iron tonic, Kamps & Sacksteder	34,375 34,366
Remedy for certain named diseases, E. G. Sim- cox Remedy for certain named diseases, liquid, U. V.	34,362
Remedy Company	34,393
Shade rollers, Stewart Hartshorn Company Curpentine. T. Sealy	34.380
Whisky, E. Martin & Company	34,378
Colton Wire Cloth Company	34,392

LABELS.

	"Austro Silk," for dry goods, W. Simpson Sons &	1
- 1	Company	1
н	Company	ł
- 1	ing solution, E. C. Bernbeim	1
- 1	"Britannia Old Tom London Gin," for gin, Witte-	1
•	mann Brothers	П
-	mann Brothers	ı
N	nelius	1
4	"Eat Sun (Rise) Rolled Oats for Breakfast," for	1
1	rolled oats, S. F. Butts	1
K	"Highland O. P. S. Scotch Whisky," for whisky,	1
ò	Withemann Brothers	1
Ň	" Hunt's Perfect Baking Powder," for baking pow-	1
•	der, P. B. Hunt	1
.	pany	ı
١.	pany	1
	ment I R Roker 7442	1
١.	ment, J. B. Baker	П
	"Laughlin's Infant Cordial, the Child's Cure	ł
١.	When Teething," for a cordial, J. G. McLain 7.447	1
	" Malt-Oats Breakfast Food," for an oat cereal,	- 1
	Maited Cereals Company	1
	"Mundy's Specific Compound," for a medicine,	. 1
1	Bonsall, Atwell & Company	4
ö	"O. P. S. Scotch Whisky," for whisky, Wittemann	1
2.	Brothers	4
2		П
:	& Anderson	1
,	for ready made clothing, Solomon Brothers &	1
٠	Lempert 7.431	١
•	1.empert	اا
- 1		1
		1
.		4

PRINTS.

Argenteuil Asparagus," for asparagus, A. Jouan-

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1985, will be furnished from this office for licents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 351 Broadway, New York. Special rates will begiven where a large number of copies are desired at one time.

Canadian patents may now be obtained by the inventors for any of the inventions named in the fore going list, provided they are simple, at a cost of \$40 each. If complicated the cast will be a little nore. For full instructions address Munn & to. 361 Broadway, New York. Otherforeign patents may also be obtained.



will do better work for a longer time, with less exertion, than any other writing & & machine. Thousands of satisfied users pronounce it....

Perfectly Simple and Simply Perfect.

Let it lighten your business burden.

ILLUSTRATED CATALOGUE FREE.

The Smith Premier is especially adapted to the "Touch System" of Typewriting.

The Smith Premier Typewriter Co. 2222 Syracuse, n. Y.. U. S. A.

SECOND HAND ENGINE For sale one Prof. engine, 11x16 cylinder. In excellent condition; has bad best of care. A bargain. Send for particulars. W. F. & JNO. BARNES CO., itockford, ill.

PATENT for sale or on royalty. Apparatus for ex-for dwellings, stores, factories, sleeping apartments. etc. U. S., English and French patents for sale. Address P. BARNIKEL, Inventor, 705 DeKalb Ave., Brooklyn, N.Y.

AN ENGINEER

who can give security, and who represents German locomotive works, desires to communicate with competent locomotive builders (that can turn out work at short notice) for the sale of Tender Locomotives in Germany. Competent firms are requested to send particulars, as well as sketches or catalogues of their Locomotives, to J. C., 7539, care of RUDOLPH MOSSE, Berlin, S. W., Germany.



Anyone sending a sketch and description may quickly ascertain our opinion free whether an ovention is probably patentable. Communications strictly confidential. Handbook on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive pecial notice, without charge, in the

Scientific American.

A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, \$3 ayear; four months, \$1. Sold by all newsdealers.

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

FOR SALE—at Low Price—the following list of Machinery—used but short time. 3 Baker Bros. Geared Drill Presses (Joined). 2 3-Spindle Barnes Drill Presses. 2 Warner & Swasey Turret Lathes, 19-16 in. hole through spindle. 2 Warner & Swasey Turret Lathes, 23-16 in. hole through spindle. 112-in. Swing Pratt & Whitney Speed Lathe. 1 Small Profiling Machine Co. 13 sprocked Milline Machine Garvin Machine Co. 1 Sprocked Milline Machine Co. Speed Lathe. 114-in. Swing Diamond Machine Co. Speed Lathe. 2 Pratt & Whitney Wheel Trueing Tables. 2 Wheel Lathe. 2 Pratt & Whitney Wheel Trueing Tables. 2 Wheel Lathe. 1 Fox Machine Co. Tube Cutter. 1 Fox Machine Co. Rim Washer Press. 2 Diamond Machine Co. Belt Strapping Machines. 2 No. 3 Diamond Machine Co. But fins Machine. 1 No. 5 Emery Wheel Grinder (double. 1 No. 3 Emery Wheel Grinder (double. 1 No. 3 Emery Wheel Grinder. 3 Gas Brazing Stands—complete. 1 Tube Brazing Furnace.

FOR SALE. Patent on Water Color Board for writing, etc. Folds compactly and is easily transportable. Inexpensive to make-demand large. For terms and particulars address, COLLINS, Box 773, N. Y.

MACHINES, Corliss Engines, Brewers' and Bottlers' Machinery. THE VILTER MFG. CO, 899 Clinton Street, Milwaukee, Wis.

THE RANSOM AUTOMATIC GAS MA-CHINE. Gas made from Gasoline. RANSOM GAS MACHINE CO., 371 E. Water St., Milwaukee, Wis.

TURBINES JAS. LEFFEL & CO. Springfield, Ohio, U. S.A.

STATES LES MODELS L'EXPERIMENTAL WORK, SMALL MICHIGAN NOVEL SE SETS, ME WYONG STERRIL WORK SMALL MICHIGAN NOVEL MESSAU ST NET.

INVENTIONS PERFECTED. ccurate Model and Tool Work. Write for Circular PARSELL & WEED, 129-131 West 31st St., New York.

.... CORK SHAVINGS O. HEROLD & CO., Lisbon, Portugal.

Experienced Draughtsmen wanted on mill machinery and machine tools. Permanent employment assured to rapid and accurate draughtsmen, Bethlehem Steel Co., 80. Bethlehem, Pa.



The Jewett hasn't hem tacked-on-to. It's new. It's this year's model. I'he machine wesoldeight years ago is giving good service to-day. It lasts. It

STANDS HARD SERVICE Our 1909 Jevvett lasts because constructed along the same lines, but it meets to-day's requirements better. It is being built to supply to-day's demands. Write for booklet, which illustrates and explains everything.

Jewett Typewriter Co., 616 Locust St., Des Moines, la

Best in the World



FINE FISH TACKLE

handmade and Bristol Steel Rods, Cosmic Lines, Reels, Flies etc., etc., selected for retail trade. Rushton Canoes and Boats. Morris, Canoes. THE H. & D. FOLSOM ARMS CO., 316 Broadway, N. Y.

Ghost of the Glacier

And Other Tales, including Making a Revolution, Susquehanna Trail, Sculpture of the Elfs, Once a Pillar of the World, Feathers of Fashion, and others. A delightful volume, beautifully illustrated. Ready for distribution about May 1. Send 10 cents to T. W. Lee, General Passenger Agent, Lackawanna Railroad, 26 Exchange Place, New York City. Edition Limited.





XOV MAKE BIG MONEY Entertaining Motion Pictures, the new Grapho-Ampliphone Taking and Musical Combination and Panoramic Stereontic at Views \$60 to \$300 per week without previous experience. Only a little money needed to start with, and any man can operate our outfless successfully. Write for catalog. Entertainment Supply Co., 56 & 58 Fifth Av., Chicago.

D'AMOUR & LITTLEDALE MACHINE CO. 130 WORTH 5T. NEW YORK. Make Models of Any Machine to Order.

THE BICYCLE: ITS INFLUENCE IN Health and Disease.—By G. M. Hammond, M.D. A valuable and interesting paper in which the subject is exbaustively treated from the following standpoints: 1. The use of the cycle by persons in health. 2. The use of the cycle by persons diseased. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1002. Price 10 cents. To be had at this office and from all newsdealers.

BOYS PAPER FREE if you will send names of 5boy friends over 12 years of the free. Greatest boys paper published. Address with stamp. THE STAR, Dept. 54, OAK PARK, ILLS.

DEASE PAYS EXPENSES and per month. Steady position; self-seller; no experience needed.send 2 of or contract.

PEASE MFG. Co., Cincinnati, O., Dept. 10.

Bendusyouradhean and we will show you read the show the show the locality where you live. Bendus your address and we will explain the business fully; remember we guarantee a clear profit of \$4\$ for every day's word; absolutely sure, wife at once.

WHY NOT MAKE RUBBER STAMPS

DO YOU WANT to GO INTO BUSINESS for YOURSELF. or ADD a GOOD LINE to Your Present Business?



With a "New York" Rubber Stamp Vulcanizer and Manufacturing Outfit, requiring but little money to start, you can have pleasant and profitable work that can be made to pay well in a permanent location, or traveling. It will pay any Stationer or Printer well to put in one of our Outfits. These machines, by their FATENTED LEVER ACTION, produce the finest class of Rubber Stamps. They received HIGHEST AWARD—MEDAL AND DIPLOMA—at WORLD'S FAIR, CHICAGO, and are used by the leading: stamp manufacturers of the United States. With each machine is sent our Pocket Guide, "How to Make Rubber Stamps for Profit," which makes every detail so plain that any person can at once turn out first-Class Stamps. This liftle book is also sold separately at \$1.00 per copy, which amount is refunded to purchasers of our Vulcanizers. Write at once, to-day, for Catalogue "C."

We manufacture Rubber Stamps, Ink Pads, BARTON MFG CO., 338 Broadway, New York.