#### RECENTLY PATENTED INVENTIONS. Engineering.

ENGINE AND SUPERHEATER.-James C. Walker, Waco, Texas. This invention comprises a superheater apparatus and engine driven by it, which in turn is utilized to automatically shift the steam-heating and cutoff devices, the mechanism requiring but a minimum of power to move the piston, there being also provided a primary heating or steam-producing means arranged to sift the steam of all solid particles of water. It is preferred to combine the use of this improvement with a rotary engine, such as formerly patented by the same inventor, and means are provided to retain the heat within the several steam-holding compartments or reservoirs, to utilize as far as possible its superheated energy.

VALVE.-Thomas P. Ford, Brooklyn, N.Y. This is a combined regulating device and mechanism for controlling it primarily designed for controlling the draught under a boiler, to regulate the steam pressure, being also applicable to various other uses. The invention relates to valves forming the subject of two former patents issued to the same inventor, the present improvements being designed to promote a very sensitive action of the valve on the slightest variation of the fluid pressure.

#### Railway Appliances.

SWITCH.-John W. Umscheid and Charles H. Klute, Union Hill, N. J. These inventors have devised a switch and switch-working mechanism which may be conveniently operated from a passing train. Combined with the switch points are pivoted levers, there being connections between the levers and the points and swinging arms for engaging the levers. The working mechanism may be operatively connected to turn a number of switch points, turning either switch point at the discrimination of the operator on the train, the mechanism not being liable to become inoperative or be clogged.

REFRIGERATOR CAR. -Charles S. Hardy, San Diego, Cal. According to this invention an apparatus is provided for refrigeration and storage, comprising a folding ice box to which is hinged a drain flue section with drip guards, the ice box sections being adapted to open outward to position for use, and having locking devices to prevent the collapsing or folding of the box by external pressure. The invention affords simple means to prevent shifting cargoes from closing in the folding sections of the ice box, and also operates to support the folding side section while the floor section is being raised, the drain passage also being of novel construction.

CAR COUPLING.- Levi L. Freeman, Broadlands, Ill. This is a coupling of the automatic latching type, in which an arrow-headed link bar is employed to connect two drawheads, by which the cars will be automatically coupled and may be quickly uncoupled from either side of the car. In a forwardly recessed, oppositely slotted drawhead, are pivoted spring-pressed latch plates vibratile in the slots, side rods being adapted to swing the latch plates outwardly.

CAR COUPLING.-James W. Elliott, Galveston, Texas. In the middle line of the drawbar of this coupling is a vertical slot in which is pivoted a coupling latch, the hook of which reaches to just within the flaring mouth of the drawhead. At the rear end of the latch there is an eccentric upon a horizontal shaft, there being crank arms adjustably connected with the ends of the shaft, by which the latch may be adjusted to engage entering links from cars of different heights. With this improvement a whole train of cars may be coupled by one backing movement of the engine, the brakeman having previously passed down the line and set all the cranks

ILLUMINATED STREET CAR SIGNS.-William H. Carroll, Jersey City, N. J. This inventor has designed an improvement whereby one may readily distinguish a car of a certain line at night, preventing distinguish a car of a certain mean mean per the per second of the depth of cut to be made. The difference of the depth of cut to be depth of cut to roof, the sign bearing the distinctive title of the route the car passes over, the whole arrangement being quite simple and inexpensive.

#### Mining, Etc.

AMALGAMATOR.-Lewis D. Coe, Leadville, Col. The mercury well of this apparatus has an outlet channel, and there is a chute above the well with a valved opening in its bottom, a supply pipe leading being riveted to each outer end of the tube a flange whose from the opening in the bottom of the chute to the mercury well near its bottom, the inner end of the supply pipe projecting a short distance into the well and being the end of the tube, where it receives the internal ballcovered by a screen. The apparatus is designed to save t interruptio

being arranged over each die plate, and being adjusted simultaneously with the die blocks in a convenient and xpeditious manner

MOTOR CHARGING DEVICE. - James T. F. Conti, Paris, France. This invention provides means for automatically charging the reservoirs of cars propelled by compound air or other fluid, at certain points of their travel. The motive fluid is supplied through a main pipe, with branch pipes leading to the points at which connection is made with the reservoir on the vehicle, the delivery nozzle rising as the vehicle passes, the charging nozzles having a vertical and a lateral rocking movement, a piston valve controlling the admission of the fluid to the nozzle, a cock controlling the admission of the fluid to the chamber of the piston valve, while a tripactuated by the vehicle operates the cock.

WIRE GLASS MACHINE.-Francis M. Rvon, Streator, Ill. This is a machine to embed wire netting in rolled plate glass, and is intended for use in at about the height of the chair arm, and this screwconnection with tables for rolling rough or ribbed plate glass. With this machine it is not necessary to provide heat for the tables or rollers, other than that imparted by the molten glass while the sheets are being rolled, it being necessary on the other hand to apply cold water to the table plate and roller at more or less frequent intervals. Less power is also required and a smoother finish given.

#### Agricultural.

CULTIVATOR. - Benjamin M. Rolph, Dixon, Ill. This invention relates especially to disk cultivators, providing adjustible connections whereby disks may be set to run readily in ground that may be very hard, and for overcoming the difficulty heretofore experienced of shifting them in the cultivation of crooked rows. Two disks are, in this cultivator, owing to their adjustment, made to do the service of two gangs, lessening the weight required for their operation, and the arrangement is such that the disks will not clog up in wet ground, while the machine may be readily converted into a shovel plow.

BALING PRESS.-Hezekiah Bailey, Willamina, Oregon. This press is especially designed to form a valuable adjunct to a thrashing machine, baling the straw as fast as delivered from the thrasher, and thus receiving a continuous volume of material in the feed chamber. Its construction is such that a bale is formed at opposite ends of the press by the alternate strokes of the follower, there being opposite press chambers and an intermediate receiving chamber fed by the feed belts.

#### Miscellaneous.

RAISING SUNKEN VESSELS .-- William A. and Fred E. Turner, Malden, Mass. According to this invention a series of airreceptacles is to be connected with the deck or outside of the vessel, the receptacles being inclosed by an exterior netting, and attached to a chain to be passed around the vessel. In each receptacle is an air inlet, the several inlets to be connected with an air pipe leading to a tug, air being thence pumped to fill drews, Bellows Falls, Vt. To prevent damage from ice POPULAR ENGINEERING. Being inter-the several receptacles, after they have been placed in and snow to the gutters and spouts on buildings, this inthe several receptacles, after they have been placed in position by divers or otherwise, until sufficient air pressure is obtained to raise the vessel.

CAN SOLDERING AND TESTING.-Noah L. Bishop, Wassaic, N. Y. In a plant devised by this inventor a series of machines is so connected that a can, partially formed, and entered at one end, is automatically carried through the various machines and delivered from the final one completely finished and labeled if desired. The invention also provides an initial feed device, supplying the cans to the final soldering machine, and not liable to clog, though having many branches, there being novel connections between the several machines, and the soldered cans being thoroughly and efficiently cleaned while passing from one machine to another.

WHEELED SCRAPER.-Cary S. Heath, Montrose, Col. For excavating and leveling, this machine is arranged to permit the operator readily to adjust the scraper blade according to the material to be treated earth, it is lifted out of the ground and the load dumped by the rising of the driver from his seat. The operator stands on the platform when moving the machine from place to place to hold the scraper blade off the road. A special attachment, with spring cultivator teeth, is provided for orchard work.

CYCLE WHEEL.-Samuel A. Donnelly. Chicago, Ill. This inventor has devised a simply and strongly made wheel hub, of tubular body section, there perpendicular part connects with the spokes, while its horizontal part embraces and closely fits and reinforces bearing cases, the inner ends of the rivets fastening the all the precious metals and to permit of conducting the fiange to the tube forming stops for the ball-bearing

LEVELING INSTRUMENT.-Erasmus F. Hargrett, Boston, Ga. According to this invention a level bar is hinged to one end and a graduated arm pivoted to the other end of a base bar, there being an index on the level bar, and the bail or handle secured to the base bar having a curved arm provided with a guideway concentric with the hinge. A fastening de vice secured to the level bar is made to engage the guideway of the handle. The instrument is designed to facilitate indicating the proper side slope of roads, ditches, etc., for plumbing or setting posts at any inclination, or cutting posts or bevels on bridges.

FAN. - George H. Newton, Monson, Mass. To permit the occupant of a chair to conveniently fan himself by a slight continuous tilting motion of an ordinary arm chair, or by rocking gently in a rocker, this simple and inexpensive device has been devised. A standard carrying at its top fan wings is screw-threaded threaded portion of the standard is engaged by a loosely sliding nut forming a portion of the outer end of an articulated arm which is attached at its other end to the chair arm.

GATE LATCH.-William F. Wilson, Cookstown, Pa. According to this improvement the locking latch can be readily adjusted at all times in relation to the keeper in case the gate sage, and without removing the entire latch frame. The latch turns on a bolt fitted for up and down movement and adjustment in the frame plate, the bolt being fastened in desired position by a wing nut.

FIRE ESCAPE.—Henry Vieregg, Grand Island, Neb. This is an improvement upon a formerly patented invention of the same inventor, the improve ment especially consisting of a brake automatically con-trolled through a governor, whereby the rapidity of descent will always be kept within a safe limit, an auxili ary brake being also provided in connection with the antomatic brake.

FIRE EXTINGUISHER VALVE. - Henry P. Amos, Chicago, Ill. This is a valve which is automatic in operation, and is designed not to be affected by increase in the water pressure. It has a stem comprising two parts which normally align to hold the valve to its seat, a pressure device forcing the joint in one direction to bring the stein sections in aligument, while a spring acts in the opposite direction to assist in bringing the stem sections out of alignment.

SASH FASTENER. -John B. Lashbrook, Oxford, Neb. This is a simple, inexpensive and reliable device, adapted for use on buildings or passenger cars, making a dust proof lock of the sash joints. The im- metol. The comparative illustrations of telephoto work provement comprises a serrated keeper strip along one side edge of the sash and fast on the casement, a serstrip with its reversed sloped teeth, and adapted to bind device to slide the locking strip.

GUTTER ATTACHMENT.-George Anventor has devised a simple attachment by means of which the gutter may be tipped up beneath the eaves, and the spout also turned beneath the eaves of a building, so that neither will collect snow, ice, or other matter, while in case of rain the spout and gutter are both turned back to position.

SUPPORT FOR MOPS, BROOMS, ETC.-Henry H Holmes, Council Bluffs, Iowa. This holder, which may be conveniently secured to a wall or elsewhere, for holding a broom, mop, etc., ready for use, consists of a bell-shaped case, with a passage for the handle. Adjacent to the passage is a rubber abutment, against which the handle is pressed by a flexible tip on the inner end of a spring lever oppositely fulcrumed, the broom being released by pressing on the outer end of the lever.

DESIGN FOR SASH FASTENER FRAME. William D. Wilkinson, Toronto, Canada. From a flat base there rise plane parallel sides presenting separate iperroduced in it matter familiar to our readers. We may spaced figures at the front and top, the sides being cut away obliquely on their rear edge from near the base to the top

Note.-Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

#### NEW BOOKS AND PUBLICATIONS.

FROGLAND WEDDING. Words and & Lee. Price boards 50 cents, holiday binding \$1.

THE CENTURY CYCLOPEDIA OF NAMES.

praise of all. Its biographies are pre-eminently satisfactory, for although we have termed them biographical notices, they are so condensed as really to give a full ccount of the leading points in the lives of their subjects.

RADIANT SUNS. A sequel to "Sun, Moon and Stars." By Agnes Giberne. With a preface by Mrs. Huggins and many illustrations. New York : Mac-millan & Company. 1894. Pp. xi, 328. Price \$1.75.

This beautifully illustrated book by Miss Giberne, with preface by Mrs. Huggins, is a testimony of what women can do in the higher fields of learning. There seems to be something in astronomy and in the higher mathematics especially congenial to the female mind. This elegantwork forms most interesting reading. We would, however, have recommended the authoress, before writing the story of Galileo, to have read the admirable monograph on this great investigator published in the ninth edition of the Encyclopedia Britannica, in which are broughtout the very curious errors perpetrated by him in astronomy, and the curious and false bases he selected in his upholding of the Copernican system, something far too little appreciated, the tendency of the day being to uphold Galileo as one of the early provers of the true theory of the earth's motion, whereas he rather figured as the reverse in attempting to uphold it on false proofs. One of the very interesting illustrations is a reproduction of a photograph of Dr. Huggins, which was taken by his wife. Dr. Huggins' new spectroscope forms the background for this picture.

THE INTERNATIONAL ANNUAL OF AN-THONY'S PHOTOGRAPHIC BULLETIN. Edited by Frederick J. Harrison. New York: E. & H. T. Anthony Company. Vol. VII. 1895. Pp. 352. Price \$1.25 cloth.

A beautifully printed annual on photography, containing 21 full page illustrations, and a great variety of articles on all sorts of subjects relating to photography, besides numerous formulæ. We note an interesting illustrated scientific article on the timing of shutters, by James E. Boyd and Thomas E. French, of Ohio State University, a subject more apropos to hand cameras, where the speed of the shutter should be known. Charles Richard Dodge describes how to photograph by gas light. Harry W. Smith explains a novel method of making flash light silhouettes. There are also useful hints on the new printing process, a method of making collotype or photogravure prints at home, considerable information on lantern slide making, and descriptions of the best methods of development, especially with the new agent by Professor D. L. Elmendorf demonstrate the great value of this new form of lens. Dr. Hugo Schroeder rated locking strip engaging the teeth of the keeper gives a few historical notes and a brief account of the recent improvements in photo lenses. It will be found one sash when slid on the keeper strip, while there is a to be a very readable book; the articles are short and interesting. It should be on the table or shelf of every photographer

> civil, mechanical, electrical, chemical, mining, military, and naval engi-neering graphically and plainly de-scribed and specially written for those about to enter the engineering profession and the scientific amateur, with chapters on perpetual motion and engineering schools and colleges. By F. Dye. London; E. & F. N. Spon. New York: Spon & Cham-berlain. 1895. Pp. viii, 496. Price \$3.

The title of this book describes precisely its contents. It is a thoroughly practical work, treating of all sorts of practical scientific work, from chemistry, civil and mechanical engineering to shipbuilding. The illustrations are very numerous, not always of the finest quality, but graphic and attractive, and we believe that the work will be found a decidedly popular and useful one. We notice pass without notice its minor inaccuracies. Some details of the ancient history of engineering-for the work of seventy years ago is ancient history-are especially interesting. The section of perpetual motion might be commended to dreamers of the present day.

E AERONAUTICAL ANNUAL. 1895. Edited by James Means. Boston, Mass.: W. B. Clarke & Co. No. 1. Тне Pp. 171. Price \$1.

Mr. Means is himself an investigator of aeroplane soarillustrations by Roy Conger. Music ing, and this annual is devoted largely to old-time re-by Helen Hitchcock. Chicago: Laird cords of attempts to fly. Curiously enough, comparatively little is said about Lilienthal, Maxim, and Langley, for a very large portion of the book is devoted to antiques and the publications of the early part of the century. The utmost, then, that we can assume this annual to be,

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COAL WASHER AND SEPARATOR. — the flanges connecting with the spokes. Thomas M. Righter, Mount Carmel, Pa. This is a machine for washing coal and separating it from the slate, Gercke, Jr., Hamburg, Germany. In accordance with dirt and other refuse. The entire operation of washing and separating is carried on under water, there being metal bands, hinged clips, and a cutting apparatus, provided convenient means of discharging the refuse and coal at different points, and the work being done very rapidly and cheaply.

#### Mechanical,

SECTIONAL WHEEL.-Perry H. Williams, Memphis, Tenn. This is a simply and strongly made wheel which may be attached to a shaft without removing the latter from its bearings. It is made in two half sections, each having a broken rim and sectional hub, the sections being united on the shaft by slotted lugs, flanges and bolts.

ferent thicknesses of the web, the punching mechanisms operative relation with the pendulum,

cases. The sprocket wheel is secured by bolts to one of

BOOKKEEPING APPARATUS. - Georg this invention two boards or plates are employed, with whereby loose leaves or sheets may be used in making daybook entries, in registered order, for convenient addition, checking and copying, before the accounts are transcribed to the ledger, the sheets afterward affording coupons to be kept and classified after any necessary ultimate reference.

LAWS OF GRAVITY AND MECHANICS. Justin S. Hemenway, River Falls, Wis. This inventor has devised a simple apparatus for demonstrating the laws of falling bodies and some of the laws of mechanics, the apparatus comprising a suitable frame with graduated upright, there being journaled in the frame a horizontal shaft with which is connected a cord to which a weight

BEAM FLANGE PUNCH. - Robert H. is attached, there being a toothed wheel on the shaft and Ireland, New York City. Two tables, at spaced dis-tances apart, receive the web of the beam, according to pendulum is also suspended from the frame, with its three columns. It would be easy enough to find omis-graphy and photo-mechanical printing processes are dethis invention, die plates being mounted on the tables | axis of motion axially in line with the shaft, there being sions, and we have, naturally enough, found several, but | scribed. It is unfortunate the publishers should have  $adjustably by a screw-threaded shaft to accommodate dif- \left| independent detents to act on the toothed wheel and in a screw-threaded shaft to accommodate dif- \left| independent detents to act on the toothed wheel and in the toothed wheel act on the toothed wheel and in the toothed wheel act on the$ 

A pronouncing and etymological dic-tionary of names in geography, bio-graphy, mythology, history, eth-nology, art, archeology, fiction, etc. Edited by Benjamin E. Smith. New York: The Century Company. Pp. vii, 1085. Price, cloth, \$10; full THE BRITISH JOURNAL PHOTOGRAPHIC obcome 215 sheep, \$15.

This superb work is a supplement to the Century Dictionary and must be considered as such in all criticisms. It contains biographical notices, historical facts, literary titles, descriptions of books, and a vast amount of other encyclopedic information which properly was not put into the Century Dictionary. In this sense it is a supplement of the dictionary, because in many cases what seem to be omissions in it will be found treated in the five volumes that preceded it. For instance, under "pons" the cyclopedia does not give the familiar "pons asinorum," which might seem to be an omisson, but on turning to the number of advertisements, which occupy 850 of the the Century Dictionary we there find the subject treated 1344 pages. It would be a mistake to suppose that fully. The general make-up resembles that of the Cen- these advertisements are without interest. All of the three columns. It would be easy enough to find omis- graphy and photo-mechanical printing processes are deit hardly seems necessary for us to give them, as the adopted a continuous pagination for reading matter and book is one of genuine merit and deserves the warm advertisements. The samples of work given do not com-

ALMANAC FOR 1895. Edited by J. Traill Taylor. London: Henry Greenwood & Co., 2 York Street, Covent Garden. 1894. 16mo. Pp. 1344. Cloth and paper. Price 50 and 25 conte 75 cents.

The British Journal Ahnanac is always a welcome visitor, both on account of the excellence of the articles which have been contributed and the valuable formulas which have for many years formed one of the features of the book. The large size of the volume is owing to

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#### pare favorably with those of the American annuals. In the introduction the editor has summarized the progres of the year in saying : "If the year just closing has not been remarkable for the introduction of any new photo graphic process of cardinal importance, steady progress and improvement in most branches has still to be re corded."

PUBLICATIONS OF THE LICK OBSERVA-TORY OF THE UNIVERSITY OF CALI-FORNIA. Vol. III. 1894. Sacra-mento: State Office. 1894. Pp. 229.

This report contains not only the purely astronomical work, but also papers treating of apparatus and materials. It will be a sine qua non in every astronomical library but it is also of interest to all cultured readers. The moon supplies a great part of the text, and a most superb series of plates from negatives taken at the observatory illustrate the contour of the lunar surface.

THE REPAIR AND MAINTENANCE OF MACHINERY. By Thomas Walter Barber. With about 400 illustrations. London: E. & F. N. Spon. New York: Spon & Chamberlain. 1895. Pp. x, 466. Price \$3.50.

This practical work seems to really cover, to a certain extent, a new field, relating as it does to the repairing of broken parts of machines. The book is excellently printed and contains a very full text, and it is impossi ble to believe that it does not fill a most excellent field, and it will doubtless be very acceptable to the practical machinist in this country. It is elaborately illustrated and contains a good index.

THE MECHANISM OF WEAVING. By T. W. Fox. London and New York: Macmillan & Co. 1894. Pp. xx, 472. Price \$2.50.

This work naturally does not lend itself to review. It is enough to say that it appears to embody an elaborate treatment of the subject, with numerous illustrations and full and satisfactory index. In its make-up it is worthy of all commendation; the illustrations are particularly clear and the type and paper most attractive, while as a sample of ornamental and suggestive binding it is especially to be noticed.

## SCIENTIFIC AMERICAN BUILDING EDITION

## JANUARY, 1895.-(No. 111.)

TABLE OF CONTENTS.

- 1. An elegant plate in colors, showing a Colonial cot tage at Williamsbridge, N. Y., recently erected for Chas. H. Love, Esq. Two perspective elevations and floor plans. Cost complete \$4,250. Mr. Arthur C. Longyear, architect, New York City. A pleasing design. 2. A Colonial residence at New Rochelle, N. Y., re-
- cently erected for J. O. Noakes, Esq., at Iselin's Park. Two perspective elevations and floor plans Cost \$5,000 complete. Mr. Manly N. Cutter, architect, New York City. An attractive design.
- 3. Colonial residence at Montclair, N. J., recently erected for Sylvester Post, Esq. Two perspective elevations and floor plans. Messrs. W. S. Knowless & A. H. Thorp, architects, New York City. A pleasing design.
- 4. A seaside cottage recently erected for C. H. Man ning, Esq., at Kennebunkport, Me. Two perspective elevations and floor plans. A picturesque and unique design after the "New England" lean-to roof order. Mr. H. P. Clark, architect. Boston, Mass.
- 5. A residence at East Orange, N. J., erected at a cost of \$7,000. Architect Mr. W. F. Bower, Newark, N. J. Perspective elevation and floor plans.
- 6. The First Presbyterian Church at Stamford, Conn. 'Iwo perspective elevations and ground plan. A design of great architectural beauty, treated in the Romanesque style. Mr. J. C. Cady, architect. New York.
- 7 A residence at Scranton, Pa., erected for E. B. Sturges, Esq., at a cost of \$5.000 complete. Archi-tect Mr. E. G. W. Dietrich, New York City. Perspective elevation and floor plans.
- 8. A summer residence at Cushing's Island, Me., re-cently erected at a cost of \$3,100 complete. Two perspective elevations and floor plans, also an interior view. Mr. John C. Stevens, architect, Portland, Me An excellent example for a summer home.
- 9. View of the Armory of the Seventy-first Regiment, New York City. Architect Mr. J. R. Thomas, New York City.
- 10. Perspective view and floor plans of the fourteen story Reliance Building.

### Business and Personal.

The charge for Insertion under this head is One Dollar a line for each insertion : about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issu

U.S." metal polish. Indianapolis. Samples free. Presses & Dies. Ferracute Mach. Co., Bridgeton. N. J. For stone quarry engines. J. S. Mundy, Newark, N. J Smith's Leather Pattern Fillet, Akron, O. Sample free. Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York. Centrifugal Pumps. Capacity, 100 to 40,000 gals. per ninute. Allsizesin stock. IrvinVan Wie, Syracuse, N.Y

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Patents of merit purchased or placed upon the market. Address with full particulars, Chas. Babson, 24 Congress Street, Boston, Mass.

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The best book for electricians and beginners in electricity is "Experimental Science,"by Geo. M. Hopkins. less a compass would be more correct, but the method By mail. \$4; Munn & Co., publishers, 36 Broadway, N. Y.

Woven wire brushes .- The Belknap Motor Co., of Portland, Me. are the patentees and manufacturers of the best woven wire commutator brush on the market. Competent persons who desire agencies for a new popular book, of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office. 361 Broadway, New York.

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Minerals sent for examination should be distinctly marked or labeled.

(6349) S. W. asks: 1. Having given 6 inches as length of coil and 11% inch as diameter of iron core, how many ampere turns are required to magnetize the said core to saturation, and how great (approximately) would be the lifting power of the electro magnet so formed ? A. Owing to leakage and to the fact that there is no real saturation point, no exact answer can be given. A very large number of ampere turns can be given with increase of the magnetic power on account of the longair path. 2. If I place two electro magnets end to end with poles near together, is the combined attractive power increased, i. e., will the magnets each pull more than they would acting separately on armatures f A. The combined power will be the same if similar poles face the same way.

(6350) T. H. B. writes: 1. Are all points of the earth's surface at the same potential (electrically)? I have heard it said that, owing to presence of certain minerals, metals, or acids in certain combinations, the potential might be higher at one place than at another, and that, owing to this difference of potential, a current might flow in a telegraph wire joining these two places sufficiently strong to operate instruments in circuit, even when all batteries were removed from the wire. (The line of course being grounded at the terminals.) I have heard that this experiment has been successfully tried on certain lines removed from any sources of induction. Is the current present in the wire due to conditions stated. or is it due to other sources, and is not such a current, if it exist, properly called an earth current? A. Earth currents so called act as described. Their canse is obscure, but they are due to chemical changes. Telegraphic messages have been transmitted by them. 2. What becomes of the energy of a coiled spring when dissolved (under tension) in acid? I have seen the answer to this question in an earlier copy of the SCIENTIFIC AMERI-CAN, but cannot recall it. A. The so-called energy is simply the capacity to convert heat into mechanical energy. If a spring does work, its temperature falls. By solution in an acid this capacity is destroyed; there is no destruction of energy (6351) H. C. R. writes: 1. Do you consider a plastered ceiling safe that has been saturated with water during a cyclone; and then again soaked before the roof could be repaired? A. No: not safe. 2. Would not the vibrations of a powert 1 church organ tend to bring down such a ceiling ? A. Yes. 3. Can such a ceiling be thoroughly examined by simplyinspecting the keys from above ? A. No. 4. Is it not possible for the keys to appear all right, while the plastering has given way below ? A. Yes.

(6353) A. T. asks if following dimenand windings of dynamo will generate 30 amperes with a potential of 52 volts at the brushes; Length of wrought iron field magnets 81/2 inches by 5 inches diameter, wound with 28 pounds of No. 18 double cotton covered wire, 10 layers, 140 turns on each leg of magnet. Armature 414 inches diameter, 6 inches long, best laminated iron core, wound with No. 12 double cotton covered wire, 32 coils, 4 convolutions in each coil, speed about 1,800 revolutions per minute, general shape of dynamo about same as 60 light dynamo in SUPPLEMENT, No. 865. A. If you succeed in getting the above results, you will do well. If shuntwound, the product of your armature and field resistance should equal the square of the external resistance, or say three ohms.

(6354) J. P. G. asks: In making a Gramme size 31/2 inch diameter armature of 12 sections, is it absolutely necessary to wind each section in even layers and convolutions if wires on each section are of equal length? A. To secure a uniform current there should be an equal number of turns of wire in each sec tion; the length is not necessarily identical.

(6355) A. B. says: I take the liberty to offer a suggestion to your answer to F. G. C.'s query, No. 6329, in Scientific American of December 22, for telling the points of the compass by the aid of the sun and a watch. If the hour hand of the watch be pointed at the sun-the watch lying flat-half way between the hour hand and twelve on the dial will be south. After south is located the other points are easily determined. Doubt given will be found correct enough for ordinary require-

(6356) S. R. H. writes: I have a few questionsthat I would be glad to have answered in SCIEN-TIFIC AMERICAN. How far could a person live below the surface of the earth, say for instance 1, 2, or 3 miles deep? Would the air become too dense or compact for them ? Is it not a fact that the earth's surface acts as a medium line for the center of gravity, atmospheric and water pressure ? How far above the earth's surface is the air considered to be pure and healthy, to contain no poison matter ? A. The depth at which a person can live below the surface of the earth depends upon the condition of temperature and the constitutional ability of the person to bear heat. The internal heat of the earth increases 1º Fah. for every 50 to 70 feet of vertical depth in various regions, so that from 2,000 to 3,000 feet in depth is about the limit that a man can work. In parts of the earth which have been subject to volcanic action, as in some of the mining districts, the temperature rises somewat more than  $1^{\rm o}$  in 50 feet, and 120° is the temperature at about 1,500 feet in depth. At this temperature labor is very difficult and forced ventilation has to be resorted to, and by this resource a depth of 4,000 feet may be attained in the undisturbed strata of the earth. The earth's surface is the plane of demarkation for atmospheric and water pressure. The barometer indicates decreased pressure as we go down in mines, the same as in ascending in the air. Water also increases in pressure as the distance beneath the sea. The atmosphere has no known difference in composition at the greatest heights observed. It is its lightness or rarity that affects the lungs at great heights.

#### TO INVENTORS.

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Caltain Stee Potato cutter. Displaying reading matter, device for, H. B. Butts. But	532,382 532,024 532,369 532,369 532,369 532,201 532,367 532,405 532,405 532,405 532,405 532,405 532,405 532,405 532,405 532,2063 532,156 532,156 532,156 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,155 532,165 532,155 532,155 532,165 532,155 532,155 532,165 532,165 532,155 532,155 532,165 532,155 532,165 532,155 55
Caltain See Potato cutter. Displaying reading matter, device for, H. B. Butts. Butts. Distilling and sterilizing water, apparatus for, J. Magel Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door holder, H. Fletcher. Door stop, L. Funk. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugh equalizer, Smith & Barto. Electric conduct draugh equalizer. Electric conductor tension device, J. C. Love. Electric wires, crossarm for support of, E. J. Elevator and dump, R. Buills. Elevator and dump, R. Buills.	532,024 532,024 532,369 532,369 532,369 532,201 532,367 532,240 532,345 532,405 532,418 532,405 532,418 532,205 532,418 532,205 532,156 532,156 532,156 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 532,155 532,165 535
Caltain Steeler, C. Linder, Cutter. See Potato cutter. Displaying reading matter, device for, H. B. Butts. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, Flaxe, L. Brown. Door, flexible, E. Brown. Door bolder, H. Fletcher. Door stop, L. Funk. Draugbt equalizer, Smith & Barto. Drawing and evening sliver, machine for, W. V. Tbreifall. Dreif, See Brick drier. Portable drier. Drying kin, W. G. Galloway. Dril: See Hand drill. Dust collecting system, H. L. Day. Dust collecting system, H. L. Day. Dust separator, McNaughton & Seymour. Dyes blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eaves trough, W. S. Harris. Egg case, W. A. Hunfeld. Electric conductor tension device, J. C. Love. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. S. P. Kay. Elipsograph. J. Hottinger. Eads, See Blowing engine. Gas engine. Steam engine. Bogine. See Blowing engine. Gas engine. Steam engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine attachment, steam, M. H. Molloy. Envelope. A. D. Klaber. Escutcheon, C. R. Ubingann. Fastening and driving tool therefor, metallic. J.	532,382 532,024 532,024 532,390 532,369 532,369 532,201 532,201 532,205 532,418 532,418 532,415 532,418 532,415 532,414 532,389 532,156 532,166 532,166 532,166 532,166 532,166 532,156 532,156 532,156 532,156 532,156 532,156 532,156 532,156 532,156 532,156 532,156 532,156 532,156 532,156 532,206 532,206 532,207 532,215 532,206 532,207 532,215 532,207 532,215 532,207 532
Cutter. See Potato cutter. Displaying reading matter, device for, H. B. Butts. Nagel. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, flexible, E. Brown. Door, flexible, E. Brown. Door bolder, H. Fletcher. Door stop, L. Funk. Draugbt equalizer, Smith & Barto. Draugbt equalizer, Smith & Barto. Draught explanatus. Drill. See Hand drill. Duplicating apparatus. A. D. Klaber. Dust separator, McNaughton & Seymour. Dye. blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eases, expl. A. Hunfeld. Electric conductor tension device, J. C. Love. Elevator guide post clamping device, M. Christo- pherson. Elipsograph. J. Hottinger. End gates, locking device for wagon, J. T. Dun- can. Can. Barine. See Blowing engine. Gas engine. Gas. oil or vapor engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engris at taebment, steam, M. H. Molloy. Entralis, machine for cutting and cleaning. Rayels & Ebert (r). Evertow are engine and driving tool therefor, metallic, J. J. A. Guibaud. J. A. Guibaud.	532,382 532,024 532,024 532,390 532,369 532,369 532,201 532,021 532,021 532,021 532,021 532,021 532,021 532,015 532,405 532,405 532,405 532,405 532,205 532,106 532,216 532,266 532,166 532,166 532,166 532,166 532,166 532,216 532,260 532,216 532,200 532,201 532,200 532,202 532,205 532,166 532,216 532,206 532,206 532,207 532,206 532,207 532,206 532,207 532,207 532,206 532,207 532,207 532,207 532,205 532,206 532,207 532,207 532,207 532,207 532,207 532,206 532,207 532,007 532
Caltain Steep ot all conterners of the set of the set of the conterners of the set of the conterners of the set of the se	532,382 532,024 532,369 532,369 532,201 532,369 532,201 532,367 532,405 532,405 532,405 532,405 532,405 532,405 532,205 532,205 532,105 532,200 532,206 532,206 532,206 532,206 532,206 532,206 532,206 532,206 532,206 532,206 532,206 532,206 532,206 532,205 532,206 532,206 532,206 532,206 532,206 532,206 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,205 532,206 532,207 532,208 532
Caltain See Potato cutter. Displaying reading matter, device for, H. B. Butts. Butts. Distilling and sterilizing water, apparatus for, J. Nagel Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door, flexible, E. Brown. Door holder, H. Fletcher. Door stop, L. Funk. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugh equalizer, Smith & Barto. Dusi esparator, McNaughton & Seymour. Dye, blue disazo. Hunfeld. Eaves trouw, W. S. Harris. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and exciser for sugnort of, E. J. Ellipsograph J. Hottinger. Ean equation engine. Gas or petroleum engine. Hunce. Engine. See Blowing engine. Gas engine. Gas, of or vapor engine. Gas or petroleum engine. Engine. See Blowing engine. Cas engine. Steam engine. Engine. See Blowing tool therefor, metallic, J. J. A. Guibaud. Force, M. Shirtcliff. Fonce, L. M. Shirtcliff. Fonce and Briving tool therefor, metallic, J. Farefore, E. D. Klaber. Engine and driving tool therefor, metallic, J. J. A. Guibaud. Fonce and Direve engine. S. Morgan. Engine Brive, Berker & Contains, E. S. Morgan. Engine Brive,	532,024 532,382 532,303 532,369 532,369 532,369 532,201 532,367 532,405 532,415 532,418 532,405 532,418 532,205 532,418 532,205 532,165 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,206 532,207 532,207 532,207 532,207 532,207 532,207 532,207 532,207 532,207 532,207 532,207 532,207 532,207 532,207 532
Cutter. See Potato cutter. Displaying reading matter, device for, H. B. Butts. Nagel. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door bolder, H. Fletcher. Door stop, L. Funk. Draugbt equalizer, Smith & Barto. Draugbt equalizer, Smith & Barto. Draugbt equalizer, Smith & Barto. Drawing and evening silver, machine for, W. V. Tbreifall. Dreif, See Brick drier. Dring kin, W. G. Galloway. Dril: See Hand drill. Dust collecting system, H. L. Day. Dust separator, McNaughton & Seymour. Dyes blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eases, edsk, R. M. Hitch. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. S. P. Kay. Elipsograph. J. Hottinger. Engine. See Blowing engine. Gas on petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine at tachment, steam, M. H. Molloy. Envelope, A. D. Klaber. Estatie, and third, steam M. H. Molloy. Entralis, machine for cutting and cleaning. Reyels & Ebert (r). Envelope, A. D. Klaber. Estatienent, steam, M. H. Molloy. Entralis, machine for cutting and cleaning. Reyels & Ebert (r). Envelope, A. D. Klaber. Escutcheon, C. R. Ublmann. Fasteming and driving tool therefor, metallic, J. J. A. Guibaud. Fence machine, wire weaving, E. S. Morgan. Fence post, Pittery & Gardner.	332,382           332,382           532,024           532,024           532,390           532,390           532,390           532,390           532,201           532,201           532,315           532,345           532,405           532,315           532,316           532,316           532,316           532,156           532,156           532,156           532,201           532,201           532,201           532,201           532,201           532,201           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,2083           11 463           532,2082           532,2082           532,2082           532,2082           532,2082           532,2082           532,2082           532,2082
Caltain Stee Potato cutter. Displaying reading matter, device for, H. B. Butts. Nagel. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, flexible, E. Brown. Door, flexible, E. Brown. Door bolder, H. Fletcher. Door stop, L. Funk. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugh equalizer, Smith & Barto. Dust separator, McNaughton & Seymour. Dye. blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Easel, edsk, R. M. Hitch. Easee, edsk, R. M. Hitch. Elevator guide post clamping device, M. Christo. pherson. Ellipsograph J. HOutinger. End gates, locking device for wagon, J. T. Dun- can. Engrine. See Blowing engine. Gas engine. Gas. oil or vapor engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine at atabment, steam, M. H. Molloy. Entralis, machine for cutting and cleaning. Reyels & Ebert (r). Fastening and driving tool therefor, metallic, J. J. A. Guibaud. J. A. Guibaud. Fence, L. M. Shater. Fence machine, wire weaving, E. S. Morgan. Fere equater purifier, J. Mohr. Fence, L. M. Shirtcliff. Fence machine, wire weaving, E. S. Morgan. Fere equater purifier, J. Mohr. Fence, L. M. Shirtcliff. Fence machine, wire weaving, E. S. Morgan. Fere equater purifier, J. Mohr. Fence machine, wire weaving, E. S. Morgan. Fere equather purifier,	332,382           532,024           532,024           532,024           532,369           532,369           532,369           532,369           532,369           532,361           532,361           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,106           532,106           532,200           532,114           532,126           532,166           532,165           532,165           532,040           532,040           532,040           532,083           11 463           532,092           532,092           532,208           532,208           532,208           532,2092           532,2092           532,246           532,246           532,246           532,246           532,246 <t< td=""></t<>
Caltain Stee Potato cutter. Displaying reading matter, device for, H. B. Butts. Magel Distilling and sterilizing water, apparatus for, J. Magel Distilling anchine, H. M. & A. J. Fuller. Door, E. Hines. Enown. Door, flexible, E. Brown. Door boulder, H. Fletcher. Door stop, L. Funk. Doraugbic equalizer, Smith & Barto. Draugbic equalizer, Smith & Barto. Draugbic equalizer, Smith & Barto. Drange end evening sliver, machine for, W. V. Trier Stall discr. Portable driler. Dring and evening sliver, machine for, W. V. The Stall discr. Portable driler. Dring see Hand dril. Dust collecting system, H. L. Day. Dust collecting system, H. J. Day. Dust collecting system, H. S. Merris. Ege case, W. A. Humfeld. Electric conductor tension device, J. C. Love. Electric wires, crossarm for support of, E. J. Bullock. Elevator and dump, R. Buillis. Elevator and dump, R. Buillis. Engine. See Blowing engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Gas. oil or vapor engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine at abement, steam, M. H. Molloy. Entrails, machine for cuttin	332,382           332,382           532,202           532,202           532,369           532,369           532,369           532,201           532,405           532,405           532,405           532,418           532,205           532,205           532,115           532,205           532,205           532,126           532,156           532,156           532,156           532,156           532,155           532,155           532,206 <td< td=""></td<>
Caltain See Potato cutter. Displaying reading matter, device for, H. B. Butts. Butts. Distilling and sterilizing water, apparatus for, J. Nagel Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door, flexible, E. Brown. Door, flexible, E. Brown. Door boulder, H. Fletcher. Door stop, L. Funk. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugh equalizer, Smith & Barto. Dust separator, McNaughton & Seymour. Dye, blue disazo. A. W. Klaber. Basel, desk, R. M. Hitch. Eaves trough, W. S. Harris. Electric conductor tension device, J. C. Love. Electric conductor tension device, M. Christo. pherson and dump, R. Bullis. Elevator safety device. S. P. Kay Ellipsograph. J. Hottinger. Eagine at selbiwing engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine at sebine for cutting and cleaning. Radis & Ebert. Eacuteleon, C. R. Uhnann. Fase cime and triving tool therefor, metallic, J. Predope A. D. Klaber. Eacuteleon, C. R. Uhnann. Fase cime and triving tool therefor, metallic, J. Paster ending at t. C. Haater. Ference, L. M. Shirtellif. Fere examp. J. Haller. Fire examp. J. Haller. Fire examp. J. Haller.	532,024 532,024 532,369 532,369 532,369 532,201 532,367 532,241 532,345 532,405 532,415 532,418 532,205 532,418 532,205 532,148 532,205 532,148 532,205 532,165 532,265 532
Cutter. See Potato cutter. Displaying reading matter, device for, H. B. Butts. Nagel. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door bolder, H. Fletcher. Door stop, L. Funk. Draugb equalizer, Smith & Barto. Drawing and evening silver, machine for, W. V. Tbreifall. Dreif all. Duplicating apparatus. A. D. Klaber. Dust collecting system, H. L. Day. Dust separator, McNaughton & Seymour. Dye. blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eases, edsk, R. M. Hitch. Eases, edsk, R. M. Hitch. Elevator and dump, R. Bullis. Elevator and furth effer. Bullock. Elipsograph. J. Hottinger. Engine. See Blowing engine. Gas on petroleum engine. Magne. Butting and eriving tool therefor, metallic, J. A. Guibaud. Fence machine, wirg weaving, E. S. Morgan. Fence enschine, Wirg weaving, E. S. Morgan. Fenc	332,382           332,382           332,382           332,024           532,024           532,382           532,382           532,369           532,267           532,267           532,345           532,405           532,345           532,405           532,166           532,166           532,166           532,267           532,267           532,166           532,266           532,156           532,156           532,261           532,262           532,262           532,202           532,202           532,2040           532,205           532,2040           532,205           532,206           532,208           532,208           532,208           532,209           532,201           532,202           532,2040           532,208           532,208           532,208           532,208           532,208      532,380      532,208
<ul> <li>Cartain Stee Potato cutter.</li> <li>District. See Potato cutter.</li> <li>Door. Be machine. H. M. &amp; A. J. Fuller.</li> <li>Door. Be Hines.</li> <li>Door. Door. C. Fonk.</li> <li>Door. Be Hines.</li> <li>Door. Be Hines.</li> <li>Door. Door. Be Hines.</li> <li>Door. Be Hines.</li> <li>Door. Door. Be Hines.</li> <li>Door. Door. Be Hines.</li> <li>Door. Be Hines.</li> <li>Discollecting aystem. H. L. Day.</li> <li>Dust collecting aystem.</li> <li>Dost. See Hand drill.</li> <li>Dupte. Sine disazo.</li> <li>A. Weinberg.</li> <li>Dast collecting aystem.</li> <li>Beaves trough. W. S. Harris.</li> <li>Ege case.</li> <li>Ege Asc. W. A. Humfeld.</li> <li>Electric onductor tension device.</li> <li>J. C. Love.</li> <li>Electric onductor tension device.</li> <li>M. Schrein.</li> <li>Elect</li></ul>	332,382           532,024           532,024           532,024           532,369           532,369           532,369           532,369           532,369           532,021           532,021           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,205           532,106           532,205           532,106           532,106           532,155           532,040           532,040           532,040           532,052           532,054           532,054           532,054           532,054           532,054           532,054           532,054           532,054           532,054           532,054           532,054           532,054           532,054           532,054
Caltain Steeler, of Linder. Cutter. See Potato cutter. Displaying reading matter, device for, H. B. Butts. Magel. Distilling and sterilizing water, apparatus for, J. Magel. Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, fextble, E. Brown. Door, flextble, E. Brown. Door boulder, H. Fletcher. Door stop, L. Funk. Dor about equalizer, Smith & Barto. Draugbt equalizer, Smith & Barto. Draugbt equalizer, Smith & Barto. Draugbt equalizer, Smith & Barto. Drawing and evening sliver, machine for, W. V. Tbroßen et al. States and the s	332,382           332,382           532,202           532,204           532,369           532,369           532,201           532,201           532,369           532,201           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,105           532,106           532,156           532,156           532,156           532,155           532,165           532,155           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,207           532,208           532,208           532,208           532,037           532,038 <td< td=""></td<>
Caltain See Potato cutter. Displaying reading matter, device for, H. B. Butts. Butts. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, Extible, E. Brown. Door, flexible, E. Brown. Door holder, H. Fletcher. Door stop, L. Funk. Drambie equalizer, Smith & Barto. Drawing and evening sliver, machine for, W. V. Tbreffall lick drier. Portable drier. Drying kin, W. G. Galloway. Dril: See Hand grill. Dust collecting system, H. L. Day. Dust separator, McNaughton & Seymour. Dye. blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eaves trough, W. S. Harris. Electric conductor tension device, J. C. Love. Electric wires, crossarm for support of, E. J. Bullock. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, Gas or petroleum engine. day ates, locking device for wagon, J. T. Dun- can can Engine at tachment, steam, M. H. Molloy. Engine at tachment, steam, M. M. Molloy. Engine at tachment, steam, M. H. Molloy. Engine at tachment, steam, M. Fireprofer, metallic, J. J. A. Guiband. Fence use, J. Klaber. Escutcheon, C. R. Ubirgann. Fastening and, C. Hauger. Fire excine, Was C. Hauger. Fire excine, See Blowing engine. Gas hording. Fence escape, J. J. Hailer. Fire excine. See Hot water furnace. Siphon fur- Fire excine. See Hot water furnace. Siphon fur- Furnace. See Hot water furnace. Siphon fur-	332,382           332,382           332,382           332,382           332,382           332,382           332,382           332,385           332,345           332,345           332,345           332,405           532,418           532,345           532,418           532,382           532,345           532,166           532,166           532,166           532,2061           532,2061           532,2063           532,2063           532,2063           532,2061           532,2061           532,2061           532,2061           532,2061           532,2061           532,2061           532,2061           532,2061           532,2061           532,2061           532,2062           532,2040           532,2023           532,2037           532,2054           532,2054           532,2058           532,2054           532,2058           532,2058
Cutter. See Potato cutter. Displaying reading matter, device for, H. B. Butts. Butts. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door, flexible, E. Brown. Door bolder, H. Fletcher. Door stop, L. Funk. Draugb equalizer, Smith & Barto. Drawing and evening silver, machine for, W. V. Threifall. Duplicating apparatus. A. D. Klaber. Dust collecting system, H. L. Day. Dust separator, McNaughton & Seymour. Dye. blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eaves trough, W. S. Harris. Egg case, W. A. Hunfeld. Electric conductor tension device, J. C. Love. Electric wires, crossarm for support of, E. J. Bullock. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Sullis. Elevator safety device. S. P. Kay. Elipsograph, J. Hottinger. End gates, locking device for wagon, J. T. Dun- can. Barline. See Blowing engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine at acbiment, steam, M. H. Molloy. Entralis, machine for cutting and cleaning. Reyels & Ebert (r). Entralis, machine for cutting and cleaning. Reyels & Ebert (r). Entralis, machine for cutting and cleaning. Fence machine, wire weaving, E. S. Morgan. Fence enschine, wire weaving, E. S. Morgan. Fence enschine, wire weaving, E. S. Morgan. Fence, L. M. Shirtcliff. Ferneening vat. C. Hauger. Fire exting machine, A. Weed. Fire exting machine, A. Weed. Fire exting walker of therefor, metallic, J. J. A. Guibaud. Fereventing vat. C. Hauger. Fire exting walker device, M. Sohnson. Fire escape. J. J. Hailer. Fire exting walker device, Siphon fur- nace. Furnace, See Hot water furnace. Siphon fur- nace.	332,382           332,382           532,024           532,024           532,390           532,391           532,391           532,201           532,2021           532,203           532,405           532,405           532,151           532,405           532,405           532,166           532,166           532,166           532,166           532,166           532,156           532,156           532,166           532,201           532,202           532,204           532,204           532,205           532,206           532,204           532,205           532,204           532,204           532,204           532,205           532,206           532,206           532,207           532,208           532,208           532,208           532,208           532,208           532,208           532,208           532,208 <t< td=""></t<>
Caltain Stee Potato cutter. Displaying reading matter, device for, H. B. Butts. Butts. Butts. Butts. Distilling and sterilizing water, apparatus for, J. Magel Distilling machine, H. M. & A. J. Fuller. Door, Beribe. Door Beribe. Beribe. Door Beribe. Beribe. Door Beribe. Beribe. Door Beribe. Beribe. Door Beribe. Beribe. Door Beribe. Beribe. Door Beribe. Beribe. Beribe. Beribe. Door Beribe. Berib	332,382           332,382           532,024           532,024           532,369           532,369           532,369           532,369           532,201           532,201           532,405           532,415           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,205           532,105           532,206           532,206           532,206           532,2156           532,106           532,207           532,208           532,156           532,2040           532,203           532,2040           532,203           532,203           532,203           532,203           532,203           532,203           532,037           532,038           532,038           532,038           532,038           532,038           532,038           532,038
Caltain Steeler, of Linke. Contrer. See Potato cutter. Displaying reading matter, device for, H. B. Butts. Magel. Distilling and sterilizing water, apparatus for, J. Magel. Door, E. Hines. Door, E. Hines. Door, fexible, E. Brown. Door, fexible, E. Brown. Door boulder, H. Fletcher. Door stop, L. Funk. Dorable, C. Brown. Door boulder, H. Fletcher. Door stop, L. Funk. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugb equalizer, Smith & Barto. Draugh equalizer, Smith & Barto. Dusk esparator, McMarghton & Seymour. Des eolie diss system, H. L Day. Dusk esparator, McMarghton & Seymour. Des eolie diss est end while and the system of support of, E. J. Buectric onductor tension device, J. C. Lore. Elevator and dump, R. Buills. Elevator and dump. Reviels Ebett for wagon, J. T. Dun- eque. See Slowing engine. Gas or petroleum engine. Hordorearbon engine. Rotary engine. Gas medine. Engine at abement, steam. H. Molloy. Engine at abement, steam. H. Molloy. Engine at abement, steam. H. Molloy. Engine at abement, steam. Engine, S. Ellipsogen, D. K. Baber. Engine ext. C. Hauger. Free extinguisher, automatic, W. Esty. Fire exting machine for cutting and cleani	332,382           332,382           532,202           532,202           532,202           532,201           532,201           532,201           532,201           532,360           532,201           532,405           532,405           532,405           532,405           532,205           532,205           532,205           532,105           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,207           532,208           532,208           532,208           532,208           532,037 <td< td=""></td<>
Caltain Steeper, C. Linder, Cutter. See Potato cutter. Displaying reading matter, device for, H. B. Butts. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door, flexible, E. Brown. Door, flexible, E. Brown. Door bougt, L. Fletcher. Door stop, L. Funk. Draugbt equalizer, Smith & Barto. Drawing and evening sliver, machine for, W. V. Tbreffall. Trefing Rink, W. G. Galloway. Drill. See Hand drill. Duplicating apparatus. A. D. Klaber. Dust collecting system, H. L. Day. Dust collecting system, H. L. Day. Dust separator, McNaughton & Seymour. Dye. blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eaves trough, W. S. Harris. Electric conductor tension device, J. C. Love. Electric wires, crossarm for support of, E. J. Bullock. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator safety device. S. P. Kay. Elipsograph, J. Hottinger. Ead gates, locking device for wagon, J. T. Dun- can. can. can. Regine. See Blowing engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine at tachment, steam, M. H. Molloy. Entralis, machine for cutting and cleanink. Reyels & Ebert (r). Entralis, machine for cutting and cleanink. Reyels & Ebert (r). Entralis, machine for cutting and cleanink. Reyels & Ebert (r). Entralis, machine, Kater. Escutcheon, C. R. Ublimann. Fastening and triving tool therefor, metallic, J. J. A. Guibaud. Fence ender, M. Shirtcliff. Fence maching, wire weaving, E. S. Morgan. Fence, M. Shirtcliff. Ference post. Pithey & Gardner Fire excing walk. C. F. W. Doebring. Fireproof ceiling, C. F. W. Doebring. Fireproof ceiling, C. F. W. Doebring. Fireproof ceiling, C. F. W. Doebring. Fireproof wall. C. F. W. Doebring. Fireproof ceiling, C. F. W. Doebring. Fireproof ceiling, C. F. W. Doebring. Fireproof ceiling, C. F. W. Doebring. Fireproof ceiling. C. F. W. Doebring	332,382           332,382           332,382           332,2382           332,024           532,201           532,201           532,201           532,201           532,201           532,201           532,201           532,201           532,305           532,405           532,405           532,106           532,106           532,205           532,106           532,205           532,206           532,106           532,201           532,202           532,202           532,206           532,206           532,206           532,206           532,206           532,206           532,206           532,208           532,208           532,208           532,208           532,208           532,208           532,208           532,208           532,208           532,208           532,208           532,208      >532,309           532,218
Caltain Stee Potato cutter. Displaying reading matter, device for, H. B. Butts. Butts. Disting machine, H. M. & J. Fuller. Door, E. Hines. Door, E. Hines. Door, B. Evile. E. Brown. Door holder. H. Fletcher. Door and the second stream of the second stre	332,382           332,382           532,024           532,024           532,390           532,391           532,391           532,391           532,391           532,201           532,405           532,405           532,405           532,205           532,156           532,166           532,205           532,166           532,205           532,166           532,206           532,165           532,165           532,165           532,201           532,202           532,204           532,204           532,205           532,204           532,205           532,206           532,2040           532,208           532,2092           532,2092           532,2092           532,2092           532,2092           532,2092           532,2093           532,2094           532,2095           532,2095           532,2095           532,2095 <tr< td=""></tr<>
Caltain Stee Potato cutter. Displaying reading matter, device for, H. B. Butts. Magel Distilling and sterilizing water, apparatus for, J. Magel Door, E. Hines. Enown. Door, Bethles. E Brown. Door, Bethles. E Brown. Door bodle. H. Fletcher. Door stop. L. Funk. Doraugbt equalizer, Smith & Barto. Draugbt equalizer, Smith & Barto. Draught & S. Harris. Egg case, W. A. Humfeld. Electric onductor tension device, J. C. Love. Electric wires. crossarm for support of, E. J. Bullock. Elevator and dump, R. Builis. Elevator and dump. C. Sa or petroleum engine. Hydrocarbon engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Gas. oil or vapor engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine at abement, steam, M. H. Molloy. Entrails, machine for cutting and cleaning. Reyels & Ebert (r.) Envelope, A. D. Klaber. Escutcheon, C. R. Ubinann. Fastening and driving tool therefor, metallic, J. J. A. Guibaud. Fereeton st. Pitrey & Gardner. Frence, J. J. H	332,382           332,382           532,024           532,302           532,369           532,369           532,369           532,201           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,205           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,106           532,203           114,63           532,037           532,037           532,037           532,038           532,038           532,038           532,038           532,038           532,038           532,038           532,038
Caltain See Potato cutter. Displaying reading matter, device for, H. B. Butts. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door, Stop, L. Funk. Drier, See Blick drier. Portage and explained and the state of the state o	332,382           332,382           332,382           332,2382           332,2382           332,382           332,382           332,345           332,2405           332,345           332,345           332,418           332,345           332,345           332,405           532,418           532,382           532,156           532,166           532,166           532,206           532,166           532,266           532,166           532,200           532,201           532,202           532,114           532,206           532,206           532,206           532,206           532,206           532,2040           532,2040           532,2040           532,2042           532,2043           532,2042           532,2042           532,2043           532,2045           532,205           532,206           532,207           532,208
Caltain Steep ot the culter. Displaying reading matter, device for, H. B. Butts. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, E. Hines. Door, flexible, E. Brown. Door bolder, H. Fletcher. Door stop, L. Funk. Draugbt equalizer, Smith & Barto. Drawing and evening sliver, machine for, W. V. Tbreffall. Duplicating apparatus. A. D. Klaber. Dust collecting system, H. L. Day. Dust separator, McNaughton & Seymour. Dye. blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eaves trough, W. S. Harris. Elevator and dump, R. Bullis. Elevator and dump, R. Kay. Elipsograph, J. Hottinger. Ead gates, locking device for wagon, J. T. Dun- can. can. can. do trayer engine. Gas of petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine attachment, steam, M. H. Molloy. Envelore, A. D. Klaber. Estertier purifler, J. Mohr. Fence machine, wire weaving, E. S. Morgan. Fence engine, Attaer. Fire aver purifler, J. Mohr. Fence engine, C. R. Ublimann. Frastening and triving tool therefor, metallic, J. J. A. Guibaud. Freedwater purifler, J. Mohr. Fence engine, C. Hauger. Fire excine water furnace. Fire aver set of water furnace. Fire aver set of water furnace. Fire aver set of water furnace. Fire apparatus, C. W. Doebring. Fire secape. J. J. Hailer. Fire apparatus, C. W. Joebring. Fire furnace air distributer, Burnshire & Click. Furnace air apporter, G. D. Nichols. Garment supporter, G. D. Nichols. Garment supporter, G. D. Nichols. Garment supporter, G. W. Zaremba. Garment supporter, G.	332,382           332,382           332,382           332,2382           332,2382           332,2382           332,2405           332,2405           332,2405           332,2405           332,418           332,418           332,2405           532,345           532,418           532,416           532,205           532,166           532,166           532,201           532,202           532,203           532,204           532,205           532,156           532,201           532,202           532,2040           532,2040           532,205           532,206           532,206           532,208           532,208           532,2040           532,208           532,209           532,2015           532,202           532,203           532,2040           532,205           532,205           532,206           532,207           532,208 <tr< td=""></tr<>
<ul> <li>Cartan See Potato cutter.</li> <li>Distan See Potato cutter.</li> <li>Door, Bernk.</li> <li>Door holder. H. Fletcher.</li> <li>Door holder. H. Fletcher.</li> <li>Door holder. H. Fletcher.</li> <li>Door holder.</li> <li>Drawing and evening sliver, machine for. W. V.</li> <li>Threffall.</li> <li>Duplicating apparatus. A. D. Klaber.</li> <li>Dust collecting system. H. L. Day.</li> <li>Dust collecting system.</li> <li>Dust collecting system.</li> <li>Base. L. Day.</li> <li>Dust collecting system.</li> <li>Base. Conductor tension device, J. C. Love.</li> <li>Electric onductor tension device, M. Christopherson.</li> <li>Elevator and dump. R. Bullis.</li> <li>Elevator and dump. R. Bullis.</li> <li>Elevator afty device. S. P. Kay.</li> <li>Elipsograph. J. Hottinger.</li> <li>End gates. locking device for wagon, J. T. Duncan.</li> <li>Engine. See Blowing engine. Gas engine. Gas.</li> <li>oil or vapor engine. Rotary engine. Steam engine.</li> <li>Engine at tachment, steam. M. H. Molloy.</li> <li>Engine. See Blowing coll therefor, metallic, J. J. A. Guibaud.</li> <li>Feedewater purifier, J. Mohr.</li> <li>Fence ne, M. Shirtcliff.</li> <li>Fence acting wat. C. Hauger.</li> <li>Fire exting was constant.</li> <li>Fire exting was constant.</li> <li>Fire exting was constant.</li> <li>Fire exting was constant.</li> <li>Furda cut and driving tool therefor, metallic, J. J. A. Guibaud.</li> <li>Ferdewater purifier, J. Mohr.</li> <li>Fere extend. C. K. Ubirann.</li> <li>Fire exting was beer. Hurbay.</li> <li>Fire potor wall. C. F. W. Doebring</li></ul>	332,382           332,382           532,024           532,024           532,390           532,391           532,391           532,391           532,391           532,391           532,391           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,405           532,156           532,166           532,165           532,165           532,165           532,165           532,200           532,2155           532,200           532,201           532,202           532,2040           532,203           532,2040           532,2040           532,2040           532,2040           532,2032           532,2032           532,2032           532,2037           532,208           532,208           532,208           532,208           532,208
Caltain Stee Potato cutter. Displaying reading matter, device for, H. B. Butts. Magel Distilling and sterilizing water, apparatus for, J. Magel Door, E. Hines. Door, Berthe, E. Brown. Door, flexible, C. Brown. Door, flexible, C. Brown. Door, flexible, C. Brown. Door, flexible, C. Brown. Draugbic equalizer, Smith & Barto. Dring kiln, W. G. Gallowar. Dring and evening sliver, machine for, W. V. The State Briek dier. Portable disazo. A. Weinber. Basel, desk, R. M. Hitch. Ege case, W. A. Humfeld. Electric conductor tension device, J. C. Love. Electric wires. crossarm for support of, E. J. Bullock. Elevator and dump, R. Builis. Elevator and dump. C. Saengine. Gas. oil or vapor engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine. Engine at taebment, steam, M. H. Molloy. Brytelope, A. D. Klaber. Escutcheon, C. R. Ubinann. Fastening and driving tool therefor, metallic, J. J. A. Guibaud. Feence, D. J. Hailer. Freence, J. J. Hailer. Fire exting machine. A. Weed. Firearm, gas-operated, C. Johnson. Fire exting machine. A. Weed. Firearm, Sasoperated, C. Johnson. Fire exting machine. A. Weed. Firearm, Sasoperated, C. R. Uberann. Fundace. See Hot water furnace.	332,382           332,382           532,024           532,302           532,369           532,369           532,369           532,369           532,369           532,369           532,201           532,405           532,405           532,405           532,405           532,405           532,405           532,205           532,405           532,205           532,205           532,205           532,205           532,205           532,205           532,205           532,206           532,206           532,207           532,208           532,208           532,208           532,208           532,208           532,203           532,203           532,203           532,203           532,203           532,203           532,203           532,203           532,203           532,203           532,203           532,203 <td< td=""></td<>
Caltain See Potato culter. Displaying reading matter, device for, H. B. Butts. Distilling and sterilizing water, apparatus for, J. Magel. Distilling and sterilizing water, apparatus for, J. Magel. Door, E. Hines. Door, fexible, E. Brown. Door bolder, H. Fletcher. Door stop, L. Funk. Dorable, C. Brown. Door bolder, H. Fletcher. Dorable, C. Brick drier. Draubt equalizer, Smith & Barto. Draubt equalizer, Smith & Barto. Dupleating apparatus. A. D. Klaber. Dust collecting system, H. L. Day. Dust separator, McNarchton & Seymour. Dyes plue dis Boo. Hitchies exclosed on device, J. C. Love. Electric conductor tension device, M. Christo- pherson de post clamping device, M. Christo- pherson de post clamping device, M. Christo- pherson engine. Rotary engine. Gas of prophonengine. Rotary engine. Steam engine. Engine at acbine for cutting and cleaning. Royeles & Ebert. Escutchen, C. R. Ublerann. Fastening and driving tool therefor, metallic, J. J. A. Guibaud. Frence, D. C. Hubrann. Fastening and driving tool therefor, metallic, J. J. J. A. Guibaud. Frence machine, wire weaving, E. S. Morgan. Frence, J. J. Hailer. Fire extinguisher, automatic, W. Esty. Fireson eall, C. F. W. Doebring. Fireproof wall, C. F. W. Doebring. Fireproof wall, C. F. W. Doebring. Furnace. Set Hot water furnace. Siphon fur- nace. Furnace ari distributer, Burnshire & Click. Furnace ari distributer, Burnshire & Click. Furnace ari distributer, Burnshire & Click. Furnace ari distributer, Burnshire & Click. Fur	332,382           332,382           332,382           332,382           332,232           332,382           332,382           332,345           332,2405           332,345           332,345           332,445           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,345           332,342           332,352,352           332,156           332,166           332,240           332,241           3532,240           332,241           352,240           352,240           352,240           352,246           352,246           352,246           352,246           352,246           352,246           352,246           352,248
Caltain See Potato cutter. Displaying reading matter, device for, H. B. Butts. Distilling and sterilizing water, apparatus for, J. Nagel. Ditching machine, H. M. & A. J. Fuller. Door, Extible, E. Brown. Door, flexible, E. Brown. Door holder, H. Fletcher. Door stop, L. Funk. Drambide equalizer, Smith & Barto. Drawing and evening sliver, machine for, W. V. Tbreffall. Trefing kin, W. G. Galloway. Drive and evening sliver, machine for, W. V. Tbreffall. Duelicating apparatus. A. D. Klaber. Dust collecting system, H. L. Day. Dust collecting system, H. L. Day. Dust collecting system, H. L. Day. Dust separator, McNaughton & Seymour. Dye. blue disazo. A. Weinberg. Easel, desk, R. M. Hitch. Eaves trough, W. S. Harris. Electric conductor tension device, J. C. Love. Electric ond dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator and dump, R. Bullis. Elevator safety device. S. P. Kay. Elipsograph. J. Hottinger. Engine at tachment, steam, M. H. Molloy. Engrine. See Blowing engine. Gas or petroleum engine. Hydrocarbon engine. Rotary engine. Steam engine, See Blowing the for cuting and Cleaning. Reyels & Ebert (r). Envelone, A. D. Klaber. Escutcheon, C. R. Ublimann. Fastening and cleaning. H. Molloy. Envelone, A. D. Klaber. Escutcheon, C. R. Ublimann. Fastening and cleaning. Fence maching. wire weaving, E. S. Morgan. Fence escape. J. J. Hailer. Fire excling. Wire weaving, E. S. Morgan. Fence aching. wire weaving, E. S. Morgan. Fence aching. wire weaving, E. S. Morgan. Fereewaching wat, C. Hauger. Fire escape. J. J. Hailer. Fire and a thributer, Burnshire & Click. Firumace air distributer, Burnshire & Click. Furnace air distributer, Burnshire & Click. Furnace, U. P. Smith. Furnace. See Hot water furnace. Siphon fur- Hace. Fire and supporter, G. D. Nichols. Gament supporter, G. W. Doebring. Fire profo	332,382           332,382           332,382           332,2382           332,2382           332,2382           332,2382           332,2405           332,2405           332,2405           332,2405           332,418           332,2405           532,345           332,418           532,418           532,241           532,353           532,156           532,166           532,266           532,156           532,266           532,261           532,261           532,262           532,261           532,262           532,266           532,156           532,262           532,260           532,260           532,260           532,260           532,260           532,282           532,208           532,208           532,208           532,208           532,208           532,208           532,208           532,208           532,208

11. Miscellaneous contents.-Buffbrickpopular.-Ceiling and cornice tinting .- Home ground arrangement of plants, illustrated .- Stone dressing by compressed air. illustrated.-Brick dust mortar.-Interesting ruin of cliff dwellers .- Removing the front wall of a warehouse, with sketches .- Improved woodworking machine, illustrated, -Buff brick in New York .- Ceiling paper .- " Dec-core-o," a new material for decorative purposes, illustrated .- Improved gutter hangers, illustrated. Draughtsman's supplies, illustrated.

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Sox fastener, W. H. Howe 532,067	Hay press, H. O. Hem	532,060
brace. See Boiler brace. Folding brace.	Hay rake, A. E. Mathwich	532,079
Braided moulds, method of and device for finish-	Heater. See Hot water heater. Lamp heater.	
ing coverings of, F. Markgraf 532,280	Steam or hot water beater.	
rake. See Carriage brake. Hoisting apparatus	Heater, H. Gutschmidt	532,273
brake. Pneumatic brake.	Heel and sole for boots, etc., elastic or anticon-	-
Irake, J. Gardner 532,048	cussion, L. Rogers	532,429
Brick drier, W. T. Nicholls 532,178	Hinge, adjustable. J. K. Fagan	532,044
rick kiln, C. J. Holman 532,154	Hoisting apparatus brake, A. Bolzani	532 227
Brick machine, Rolfe & Johnson 532,186	Hook. See Bench book. Hat and clothes hook,	
Brick or tile cutting machine, J. Thompson 532,222	Transfer hook. Whiffletree hook.	
Brick truck, A. T. Bemis 532.356	Hook and eye. S. I. Slade	532,401
Irush mould, W. Morrison 532,210	Horses, undercheck for, J. R. Buchanan	532,308
Brush, wire, J. F. Bigelow 532,259	Hose carriage, B. L. Stowe	532,432
Suckle, W. F. Sweet	Hose rack, B. L. Stowe	532,431
luckle, suspender, J. Kennedy 532,381	Hot water boiler, A. Burt	532,139
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