Essence of Lemon. BY ARTHUR A. BARRETT, MESSINA.

A few notes on the manufacture of essence of lemon will. I hope, be acceptable. In the first place, we all learn in England that essence of lemon is made with an ecuelle. Every book I can find says so, and on coming out here I was not a little surprised when I could not find a single one. The principle on which the extraction of the essence is carried on may be illustrated in this way: If you hold a piece of lemon peel up to the light and turn it inside out, a fine shower of mist will be seen to be forcibly ejected. This is not all oil, but a mixture of oil and water. Most people are unpleasantly acquainted with this phenomenon, though many have not actually seen it, for in peeling a lemon or orange with the fingers a little of the oil is often ejected into the eye, causing a considerable amount of pain. By turning the lemon peel inside out, almost the whole of the essence is removed from the peel, for each little globule of oil appears to be surrounded by water, and the liquid which remains adherent to the peel consists principally of water. As it is impossible to turn every piece of peel actually inside out, the following method is adopted:

One man takes a lemon in his hand, and with three rapid strokes with a large knife cuts off nearly all the peel in three slices. The central portion, which is left, consists of most of the pulp with a little of the peeltop and bottom. This is simply pressed for making lemon juice. The slices pass to a second workman, who sits on a low chair, with an ordinary common quality bath sponge, worth about 6d., in one hand. With the other he presses the slice of peel against the sponge, pressing the edges of the peel only with his fingers, the object being to press the convex piece of lemon peel as nearly flat as possible. The amount of pressure used is very slight, and at first sight it seems incredible that the oil globules can have been broken, but if you try the experiment of turning this exhausted peel inside out, nothing more can be extracted. The sponge is periodically squeezed. One man working in this way can extract about 1½ pounds (English) essence of lemon per day. To insure the cells being fully charged with moisture, it is usual to allow the lemons to stand in water for a short time; and I myself propose washing the lemons in a stream of running water. A second method, which, so far as I know, has not yet been published in England, originated in a clever fraud; but it is now, I believe, a thoroughly well understood business.

* Pharmaceutical Conference Proceedings.

peel packed in brine, which has been exported for the manufacture of candied peel. Formerly the peels were sent in the natural state. They are now exported with out into a tumbler and shaken up after placing the about three-fourths of the essence removed. This is accomplished as follows: The lemon, instead of being ration and size of the bubbles and froth, the color is cut as before described, is cut in two, lengthwise. noted, and one smell is taken with the glass full and Should there be any defect in the lemon, the workman thin slice, the defect is cut away and two half lemons Conducted in this way the purchase of essence of lemon out with a kind of spoon, care being taken not to rupclined to condemn this process; though, as I have not vided. It is a very easy matter to empty this and atseen the product and compared it with that made with tend to the calls of nature without exciting suspicion. the oil, I cannot say that it is inferior. It is stoutly | The following inferior qualities of essence of lemon maintained that if the essence were not removed it are distinguished here: would be destroyed by the brine; and it is possible that there is some truth in this. As the essence made to deposit and the clear portion poured off. There rein this way is of superior quality, being made from the mains a deposit in the bottom which is pressed in a finest fruit, I hope it may be so.

sumed in England that all pure essence of lemon is only small quantities of essence are made, and the degood. This is far from being the case, and I have myself seen essence of lemon containing 15 per cent of tur- is extraordinarily bad. The cake which is left after pentine which was really superior to essence of lemon made the same day in my presence, and absolutely pure. This results from the extraordinary variation in distilled essence of lemon which was made in Sicily is the quality of the essence made in the various months. This difference is not noticed much in England, even the best exporters having to make an average sample which they can supply all the year round. Turpentine is in large use, and is purified in a peculiar way, which I have not discovered, so as to have very little smell. One exporter is said to use ten tons per annum. Strange to say, the worst qualities of essence all go to London. Manchester, and Glasgow. English wholesale druggists in particular have an unenviable reputation here for buying low qualities. One Sicilian dealer thinks that the climate has something to do with the inability, the fine flavor of its own, described as the smell of the of Englishmen to distinguish between turpentine and essence. In addition to the difference depending upon the season, the product of different districts varies. Experienced buyers claim to be able to distinguish the in the United States.

A large trade has already been done here in lemon district and village in which an essence has been made simply by smell and inspection.

Testing is carried out as follows: A sample is poured hand on top. Great attention is then paid to the duanother after emptying it. Turpentine will certainly contrives to cut it in such a way that, by removing a be detected in this way if over five per cent is present. remain, both free from blemish, and only a thin piece is a matter requiring great judgment, and most of it wasted. The pulp and a little of the white is then cut | being sold by peasants in small quantities, dealers cannot avoid sometimes buying a bad lot. If you make ture the oil vessels of the peel. Another workman then essence in your own works, the difficulties are not represses the half lemon in various directions against a moved, only changed the substitution of turpentine sponge, and, though it is evident that the sponge pro- for essence by the workmen being frequent and so concess is rather at a disadvantage, he manages to ex- trived as to be very difficult to detect. A favorite tract about three-fourths of the total amount. The means of bringing turpentine into the works is by quantity of essence obtained in this way is considera- means of a bladder and tube, which is carried as near ble. As a consumer of candied peel, I should be in- as possible to the bladder with which we all are pro-

Sacotte.—As soon as the essence is made it is allowed small bag (sac). The essence thus obtained is consid-This brings me to another point. It is generally as-lerably inferior to the bulk, and in those places where posits are left for some time to accumulate, the quality expression is distilled in a very rough way, yielding lambicato or distilled oil of lemon. The whole of the now made in this way. Often enough the dregs have commenced to ferment, and in some cases have lost the whole of the lemon smell before being distilled.

Essence of lemon made from the rejected fruit from the warehouses.—In November and December a large amount of fruit is cut and packed, but instead of being at once sent abroad, it is stored in warehouses-fruit gathered at this season having qualities which enable it to be kept longer than any other. Before sending it abroad it is all repacked, the bad and doubtful fruit being used for essence making. This essence never has wood (di legno), which is easily recognized.

ACCORDING to the last census there are 33,163 lawyers

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR COUPLING.—Thomas Courser, coupling hook connected therewith, and is provided also with an auxiliary pivoted coupling hook, the latter knuckle is adapted to be emp.oyed in the same manner as such conpling devices are ordinarily used, while the auxiliary device may be used in connection with an be employed if any accident happens to the hook of article. the knuckle. The device is very simple and easily

or laterally should an obstruction be met with on the track. By an operative mechanism connected with a storage reservoir of compressed air the engineer may elevate or lower the plow as desired. The plow consists of a clearing board or fender in the shape of two sides of a triangle, a cutter being centrally formed thereon and downwardly extending brushes are adapted to engage with the treads of the rails.

Mechanical,

BALANCE WHEEL.—Hiram Bouck and Julius H. Lovendale, Salt Lake City, Utah Ter. This is a wheel having radial and circumferential slots, holes extending through the wall of the wheel being connected with the slots, while screws and nuts may be entered in the holes and fastened in the several slots, whereby an adjustment may be readily made without ing a swinging support for sashes to facilitate cleaning removing the wheel from the shaft, the weight being them. The improved jack is light and cheap, and is adadjusted to come more or less on one side of the center as desired.

SAW HANDLE ATTACHMENT.—Mitchell Pyper, New York City. Secured to the blade of a handsaw, immediately in front of the handle, are sidepieces forming abutments for a swinging square arm and bevel arms, whereby the saw may be conveniently used as a square and bevel. The swinging arm is pivoted and held by a thumb screw in any desired position. or may be detached at will, it being split longitudinally and held to straddle the saw blade.

Miscellaneous,

TREATING GOLD ORES.-Louis C. Daumas, Paris, France. This invention covers a process and apparatus for extracting gold from the ore. Protochloride of sulphur saturated with dry chlorine is used to dissolve gold at about 130° Centigrade, a double chloride of gold and sulphur being formed. while if the ore contains other metals they are transformed into oxide by roasting. The apparatus comprises a hopper-like receptacle surrounded by a steam

coil, cross pipes extending through the receptacle and a filtering material being held in its lower portion.

SATURATING ARTICLES.—John A. Titzel, Glenshaw, Pa. This invention relates to an Lake City, Fla. This device has a knuckle with a improved process of coating or saturating electric cables, to secure insulation, etc., and similarly treating hard and soft wood, terra cotta, etc., rendering the ar being concealed when the main hook is in use. The ticles treated waterproof and preventing decay. The articles are first subjected to heat, to expand the air and fluids in the pores, and then immersed in a coating or saturating liquid, at a lower temperature, causing opposing drawhead of the link and pin type, or it will the liquid to be drawn into the pores of the heated

CENTRIFUGAL HONEY EXTRACTOR. Charles W. Metcalf, Santa Paula, Cal. This is a device SNOW PLOW .- Patrick H. Craddock, in which a rotating frame supports swinging holders or Leadville, Col. This is a plow adapted to be secured baskets, the centrifugal force of the frame causing the to the pilot board of an engine, and its construction is honey in the outer half of the combs to be ejected, the such that it will automatically adjust itself vertically baskets then being reversed so that the comb holders change their position and the remainder of the honey is extracted, after which the comb-holding baskets can be readily removed and the holders refilled,

> WINDOW WASHER.—David Mendelson, New York City. This is a simple and cheap apparatus with which a person may stand in a room and readily wash the outside of a window, the apparatus also facilitating the cleaning of the inside of the window, or the washing of a wall or ceiling. It consists of a telescopic main handle in hinged sections, fastening devices fixing the position of the sections, and a fixed jaw and a spring-pressed jaw being carried at the upper end of the handle. The jaws carry a wet swab at on end and a dry cloth at the other.

> WINDOW SASH JACK.—Valentine Schirmer, New York City. This is an improvement on a former natented invention of the same inventor providjustable to engage fixtures on different windows. The improvement was ou exhibition at the late fair of the American Institute, New York City, its simple construction admitting of the window sashes being swung inwardly, either right or left, for the purpose of ventilation or cleaning. One swinging jack or skeleton bracket is sufficient for a building, its weight not exceeding four pounds.

> COIN WRAPPER.—Ferdinand A. Jackel, Memphis, Tenn. This improvement provides an oblong wrapper, properly marked for different values, and gummed at one end, and having also a central longitudinal line of perforations, in which coin may be neat'.y wrapped in specific amounts, and the package quickly separated into two equal portions, thus releasing the coin.

TWINE HOLDER.-Walter T. Hanson, Macon, Ga. This device has a base plate provided with a conical friction plug or spindle to enter the core of a ball of twine, in connection with a stationary angled arm having a suspension eye and guide eyes through which the cord is passed. The holder may be conveniently attached to an overhead support, to a coun-

ter, or be suspended in any position, holding the ball in such manner that the cord may be readily unwound.

BAG HOLDER.—Michael Fortin, Stillwater, Minn. This holder is provided with a frame, with a board held in inclined position or which the bag rests, and the holder, made of a single piece of wire bent to form connected loops engaging staples in the board, has curved arms at right angles to the loops, and having a sliding connection at their ends. The device is of simple and durable construction, self-tightening, and arranged to expand and open the bag when filling it.

LOCK FOR BAGS, PURSES, ETC.—Frederick R. Deck, Brooklyn, N.Y. This lock comprises two leaves placed back to back and having interlocking knuckles, the outer edges of the leaves being flanged and a pivot pin passing through the knuckles of both leaves, while a spring coiled on the pivot pin exerts tension upon the flunges of the leaves. The improvement is designed especially for double frames for double pockets, to lock both sections of the frame, both leaves being controlled by the same spindle and spring, but each leaf being operated independently.

Cash and Parcel Carrier.—Samuel J. Besthoff, New York City. This improvement provides a car which may be placed upon a cable and carries its own driving mechanism, of a simple, durable, and inexpensive character. The car has a simple automaticlocking device to hold it upon the cable, and the opening of the door of the cash compartment winds up the propelling mechanism. A parcel carrier, to transport goods with the cash, may or may not be used, as desired, in connection with the cash car.

Pick.-Kenneth J. Morrison and Michael McLellan, Stellarton, Canada. This patent is for a pick head having transverse slots to hold removable points, air passages leading from the slots into the eye, this improvement preventing the broken or | emovable points.

DESIGN FOR BOOK REST AND UM-BRELLA HOLDER.—Charles Pegler, Eigin. Ill. This is a without a core, casting on other metals, casting upon combined book rest and cane and mbrella holder exhibiting a novel configuration of parts of bracket-like ends supporting a connecting goard or shelf placed at an angle.

DRAWING INSTRUMENT.—Charles L. Davis, New York City. This is a draughtsman's compass designed for conveniently and rapidly drawing spiral lines, ovals, ellipses, and other curvilinear geometrical lines and figures. The Improvement is included in a simple and durable construction, and the invention consists principally of a cord connected with one of the legs of the compass and adapted to wind on a drun mounted to rotate-toosely on a spindle held on the other leg at the joint of both tegs.

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.

METAL COLORING AND BRONZING. By Arthur H. Hiorns. London and New York: Macmillan & Co. 1892. Pp. xv, 328. Price \$1.10.

The coloring of metals for the production of bronzes and other color effects is every day exciting more attention. The present work quite exhaustively treats of the different aspects of the question and how to treat different metals. Numerous formulæ are given.

A PRACTICAL TREATISE ON THE MANU-FACTURE OF PERFUMERY. Comprising directions for making all Kinds of perfumes, sachet powders, fumigating materials, dentifriees, cosmetics, etc. By Dr. C. Deite, assisted by Borchert, Eichbaum, E. Kugler and H. Toeffner. Translated by W. T. Brannt. Philadelphia: 1f. C. Baird & Co. 1892. 12mo. Pp. 358. Illustrated. Cloth. Price \$3. kinds of perfumes, sachet powders,

This work also contains a full account of the volatile oils, balsams, resins, and other materials used in the manufacture of perfumes. This book gives more details of manufacturing perfumes and toilet specialties on a commercial scale than any work on the subject which has come under our notice. The section relating to hair preparations is excellent and the chapter on cosmetics seems to be well up to date. Fruit ethers receive a fair share of attention. The number of receipts given in the book is large.

THE PRACTICAL BRASS AND IRON FOUNDER'S GUIDE. By James Larkin. Philadelphia: H. C. Baird & Co. 1892. 12mo. Pp. 394. Illustrated. Cloth. Price \$2.50.

This is a new and enlarged edition of Larkin's well 'cracked 'sound so often made in using picks having known work. The work has been revised and brought up to date, so as to include Mitis castings, steel castings, bell founding, bronze casting, chill casting, casting inflammable materials, etc. Many sections of the old work have been entirely rewritten.

> THE MANUFACTURE OF INK. Comprising the raw materials, and the preparation of writing, copying, and hektograph inks, ink extracts and powders, colored inks, solid inks, lithographic inks and crayons, etc. By Sigmund Lehner. Translated by W. T. Brannt. Philadelphia: H. C. Baird & Co. 1892. 12mo. Pp. 229. Illustrated. Cloth. Price \$2.

The present work is founded on "Die Tinten-Fabrikation." A careful consideration is given to the raw materials, their selection and preparation. A large number of receipts is given, embracing nearly every kind of ink, and the author states that most of therecerpts have been tested. Great attention is paid to

ink specialtion and unusual forms and kinds of ink, such as safety ink, sympathetic ink, stamp inks, etc. while the important subject of printing ink is fully treated. Preservingagents for ink, the change of color in old documents and the memous of making faded writing ink legible come in for their full share of attention. This is the only treatise devoted entirely to the subject in print in the English language and is an important addition to technical literature,

THE HARDWOOD FINISHER. With rules and directions for finishing in natural colors and in antique, mahogany, cherry, birch, walnut, oak, ash, redwood, sycamore, pine, and all other domestic woods. Compiled all other domestic woods. Compiled and edited by Fred T. Hodgson. New York: The Industrial Publication Company. 1892. Pp. 94. Price

This excellent work, with its very practical aspec seems to cover a field that has been perhaps somewhat neglected. It is exceedingly practical, and with numer ous formulæ for all kinds of stains and wood dyes, as well as finishes, is one that is to be found of value to many operatives.

LE CHAUFFAGE ET LES APPLICATIONS DE LA CHALEUR DANS L'INDUSTRIE ET L'ECONOMIE DOMESTIQUE. Par Julien Lefevre, Professeur Suppleant a l'Ecole de Medecine de Nantes, Pro-fesseur a l'Ecole des Sciences. Avec 188 figures intercalees dans le texte. Paris: Librairie J. B. Bailliere et Fils. 1893. Pp. 356.

The French aspect of this book is evident in the title, and the very large ground which it. undertakes to cover is largely devoted to domestic heating, although other heating finds a place in it, and its numerous il lustrations and excellent arrangement of pictures indicate good judgment on the part of the editor and pub-

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SCIENTIFIC AMERICAN

BUILDING EDITION

DECEMBER NUMBER.-(No. 86.)

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- 2. Plate in colors showing a residence at Springfield Mass. Perspective views and floor plans. Cost \$12,000 complete. Mr. Guy Kirkham, architect Springfield, Mass. An excellent design.
- 3. A colonial residence at Newton Highlands, Mass Perspective view and floor plans. J. W. Beak architect, Boston. A picturesque design.
- 4. A pretty cottage erected at Bridgeport, Conn. a cost of \$1,600. Floor plans, perspective, etc. A. M. Jenks, architect, Bridgeport, Conn.
- 5. A dwelling house erected at Warberth Park, Pa. at a cost of \$4,478 complete. Mr. C. W. Macfarlane, architect, same place. A model design Floor plans and perspective.
- 6. A "Queen Anne" cottage erected at St. David's, Pa., at a cost of \$5,500 complete. A unique design Perspective elevation and floor plans. F. L. & W. L. Price, architects, Philadelphia.
- 7. A residence in the " Colonial " style of architecture erected at St. David's, Pa. Perspective view and floor plans. Cost complete \$5.800. F. L. & W. L. Price, Philadelphia, architects.
- 8. A residence on Golden Hill, at Bridgeport, Conn Perspective elevation and floor plans. D. R. Brown, architect, New Haven, Conn. An excel lent design.
- 9. A residence recently erected at Springfield, Mass Floor plans and perspective elevation. Cost \$2,490 complete. Mr. A. B. Root, architect, same place. A pleasing design,
- 10. Picture of Aldworth, Sussex the home of Lord Tennyson. Portrait of Lord Tennyson.
- 11. Sketch for a cottage at Saucelito, Cal.
- 12. Design for a thirty-story building.
- 13. Sketch of residence of Mr. Howard Bell, Atlanta,
- 14. Miscellaneous contents: Some of the merits.- Water tight cellars.-Read this with care.-Improve education of customers.—Erection of additional buildings .- Concave sounding boards .- A high railway bridge.-A complete steel house front, illustrated.-An improved woodworking machine.-Finely carved woodwork, illustrated.-Steam and hot water radiators, illustrated .-Plaster of Paris .- Disinfection by means of sulphur.-A novel newspaper building.-Fine steel ceiling in an art gallery.

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or in this department, each must take his turn.

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Minerals sent for examination should be distinctly marked or labeled.

(4604) O. C. asks: 1. What speed can be had with a 16 foot boat, 4 feet beam, using an engine 21/2 inches hore, 3 inches stroke at about 60 pounds steam pressure? A. You should be able to run the boat 6 miles per hour. 2. What should be the diameter, pirch, and speed of the propeller to give best results? A. Propeller wheel should be 18 inches diameter, 36 inches pitch and make 250 turns per minute. 3. Should the propeller have two or three blades? A. A three-blade wheel is preferred. 4. What size boiler would be required and would the pipe boiler described in the Scientific American Supplement be suitable? A. A vertical tubular boiler having 20 square feet of actual heating surface with shell 22 inches diameter by 36 inches in height, 33 tubes 11/2 inch, will give all the steam required. The No. 3 pipe boiler described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 702, with 8 inches addition to the length, will make a safe boiler your property.—How to catch contracts.—The in which you carry 100 pounds steam pressure if de sired, and large enough for the above speed.

> (4605) R. T. McK. writes: Will you please answer me through your columns why it is that you can pump up a higher air pressure than your steam pressure by the gauge on a double acting air pump, the steam and air cylinders being of the same diameter, and the pistons operating on the same piston rod? A The difference between the initial pressure in the steam cylinder and final pressure in the air-compressing cylinder is due to the difference in the mean pressur for the expansion of steam and the mean pressure for the compression of air. This is at once apparent to the eye when examining the indicator cards of equal sized steam and air compressing cylinders. The mean engine pressure for 70 pounds at % cut-off is theoreti cally 52 pounds per square inch. The mean adiabatic pressure of the air cylinder for delivery of air at 100 pounds pressure is 50 pounds, while the mean isothermal pressure is but 30 pounds. The absorption of the heat of compression by water injection or jacket cooling brings the extremes to a mean, which, if 1/8 is ab sorbed, will make the mean pressure of the air cylinder about 43 pounds per square inch, with 9 pounds as the margin for compressor friction.

(4606) R. M. asks: 1. Is smoke a wet | Car motors, device for transmitting motion for electric street, W. E. Harrington. 487,089 (watery) or dry vapor? A. Smoke is more or less mixed car, railway construction, C. C. Brown. 487,085 (car roofing, box. W. S. Morris. 487,085 (car roofing, box. W. S. Morris. 487,086 (car roofing, box. W. S. Morris. 487,086 (car roofing, box. W. S. Morris. 487,087 (car roofin with the vapor of water, part of which is derived from the moisture in the fuel and another portion from the oxidation of the hydrogen forming part of the fuel. 2. What weight would a ball 100 pounds indicate on a balance if dropped from a height of 100 feet? A. The weight multiplied by the fall is equal to 10,000 foot pounds. If the balance arrests the fall of the ball in 6 inches after contact, the average impact force is 20,000 pounds. See Scientific American Supplement, No. 862, on impact or the force of percussion.

(4607) G. C. W. asks how to bleach the hair of an animal. A. Gaseous chlorine and hydrogen peroxide are effectual agents in bleaching hair. The hair should be thoroughly cleaned, with a warm solution of sods, then washed with water. While moist it is put into a jar and chlorine gas introduced, until the air in the jar looks greenish. Allow it to stand for twenty-four hours, and if necessary repeat.

(4608) T. H. says: 1. It is proposed to deliver water in an inch pipe one mile distant over an elevation 120 feet high, the point of delivery is 25 feet lower than the starting point. It is asserted that it would require 75 per cent more force power to deliver at the summit and let it go down by gravity than to continue the pipe the whole distance. Can you throw light on it? A. It will require 52 pounds pressure and theadditional pressure due to friction to deliver the water at the summit of the siphon. The down leg can only relieve the pump pressure to the amount of a vacuum, or 14.7 pounds, which may be offset by the friction in the down leg of the siphon. The difference in length of the two legs of the siphon may make a trifling difference only, whether delivery is through the whole length or discharged at the top. 2. Suppose thata shell made of strong steel 11/4 feet in diameter. with a cavity in the center large enough to hold 2 ounces of powder (11/2 inches), with a vent of a size to admit the smallest possible wire that would conduct electric fluid, had electricity applied, would the powder ignite? Would there be an explosion, or what would there be? A. The powder would explode and create a pressure of probably 40,000 pounds per square inch, which would fizzle out through the vent and burn out the wire.

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INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

November 29, 1892,

AND EACH BEARING THAT DATE

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

Advertising novelty or display card, J. Robin-

Advertising novelty or display card, J. Robin-	
Agricultural implement, A. Caldwell486,849,	486,899 486,850
Alarm. See Burglar alarm.	
Alarm. See Burglar alarm. Album, A. Bartholme. Alloys, electro-depositing, S. O. Cowper-Coles Animal catcher, A. Otto Automatic brake, McKee & Hatchett. Axle, car, D., Sr., & D. Roberge, Jr. Axle box, car, S. Robertson. Axle lubricator, H. M. Goodman. Axle, vehicle jointed, E. F. Steele. Baling press, A. Wickey. Battery. See Galvanic body battery. Bearings, making cages foranti-friction, F. Mossberg.	487,170
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Automatic brake McKee & Hatchett	486,939
Axle, car, D., Sr., & D. Roberge, Jr.	486.898
Axle box, car, S. Robertson	487,231
Axle lubricator, H. M. Goodman	487,181
Raling press A. Wickey	486 997
Battery. See Galvanic body battery.	100,001
Bearings, making cases foranti-friction, F. Moss-	
Bed folding I Genev	487,194
Belt, electric J. H. Johnson	487.185
Belt fastener, E. L. Matteson.	487,021
Bench dog, C. A. Wayland	487,106
Bevel, W. G. Avery	487,010
Bicycle brake, W. T. Lewis	486 935
Bicycle saddle support, E. M. Staples	487,081
Binder, C. H. Stoelting	486,989
Bodkin P R Stevens	487,123
Boiler. See Steam boiler.	401,104
Boiler furnace, W. R. Parks	486,955
Boiler furnace and smoke consumer, J. Connelly.	486,854
Boiler furnace, locomotive of marine, F. Barclay,	486,824
Bolster plate, D. B. Oli ver.	486.890
Book, blank, H. H. & F. H. Hoffmann	487,014
Book guard, blank or other, J. D. Mets	487,191
Bottles etc. liquid-ejecting device for F S	400,011
Bearings, making cases foranti-friction, F. Mossberg Bed, folding, J. Ganey Bed, folding, J. Ganey Belt, electric, J. H. Johnson. Belt fastener, E. L. Matteson. Bench dog, C. A. Wayland. Bevel, W. G. Avery. Bicycle, S. H. Kimball. Bicycle brake, W. T. Lewis. Bicycle saddle support, E. M. Staples. Binder, C. H. Stockling Bit brace, A. Knudsen Bolkin, P. R. Stevens. Boller. See Steam boiler. Boleler furnace, W. R. Parks. Boiler furnace, W. R. Parks. Boiler furnace, Steam, F. Barclay, Boiler furnace, Steam, F. Barclay, Bolster plate, D. B. Oil ver. Book, blank, H. H. & F. H. Hoffmann Book guard, blank or other, J. D. Mets. Bottles, etc., liquid-ejecting device for, F. S. Cooley. Box. See Confectionery or other box. File	487,088
Box. See Confectionery or other box. File	
hox	- 1
hox	- 1
box. Box corner, J. Austin. Box fastener, C. D. Suffrins. Boxes, apparatus for making metal, F. J. King	- 1
box. Box corner, J. Austin. Box fastener, C. D. Suffrins. Boxes, apparatus for making metal, F. J. King Brace. See Bit brace. Brake. See Automatic brake. Bicycle brake.	486,844 487,082 487,186
box. Box corner, J. Austin. Box fastener, C. D. Suffrins. Boxes, apparatus for making metal, F. J. King Brace. See Bit brace. Brake. See Automatic brake. Bicycle brake.	486,844 487,082 487,186
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box. Box corner, J. Austin. Box fastener, C. D. Suffrins. Boxes, apparatus for making metal, F. J. King Brace. See Bit brace. Brake. See Automatic brake. Bicycle brake.	486,844 487,082 487,186 486,931 487,174 487,174 487,161 486,483 486,483 486,483 486,483 487,044

Car, ranway construction, C. C. Brown	487,045 487,193 487,034 11,239
Car, railway construction, C. C. Brown. Car roofing, box, W. S. Morris. Car seat, J. Lemman. Car street, F. B. Brownell (f). Carbon, electric light, J. Clegg. Carpet sweeper, W. J. Drew. Carriage, child's, Heller & Hirsch. Cartriage, Child's, Heller & Hirsch. Cartriage, J. A. C. De Latouche. Cartridge, gun, V. Ginalsky. Case. See Facking machine sack case. Case. See Facking machine sack case. Cash register, C. Carr. Cash register, C. Carr. Cash register and indicating machine, E. N. Foote. Cash register and indicating machine, E. N. Foote. Celling, fireproof, G. Hayes. Centrifugal extractor, W. E. Johnson. Chain, drive, A. Worner. Chasing mill, H. C. Higglinson. Clyar machine hopper, M. A. Winget. Cigar mould, M. A. Winget. Cigars or cigarettes, ignition cap for, M. R. Swiss. Clothespin, G. W. McCoole. Clutch, rope, P. T. Sundberg. Coal jig, C. S. S. Cool for printing on textile fabrics, A. Hoz. Combination lock, E. Vanwart. Comdenser head, C. S. Onderdonk. Confectionery or other box, H. Buehl. Corn popper, A. B. Olson (f). Coulling, See Car coupling. Pipe coupling. Crift, egg, W. Tisher. Cultivator Cipper, A. J. Bruner. Cultivator Cipper, A. J. J. J. G. Hell. Cultivator Cipper, A. J. J. J. J. J. Rest. Door spring, C. Koon. Electric Lightling apparatus, automatic, L	487,046 487,212 487,050
Cartridge, gun, V. Ginalsky	487,028 487,048
Cash register, C. Carr	486,980 486,979
Ceiling, fireproof, G. Hayes	486,982 486,876 486,920
Chasing mill, H. C. Higginson	487,146 486,919 487,108
Cigars or cigarettes, ignition cap for, M. R. Swiss. Clothespin, G. W. McCoole	487,232 486,954 487,061 486,907
Cog wheel. F. Saxon. Coin and delivering tick ets, device for receiving, J. Williams.	487,129 487,139
Color for printing on textile fabrics, A. Hoz Combination lock, E. Vanwart Condenser head, C. S. Onderdonk	486,873 487,138 487,036 487,085
Corn popper, A. B. Olson (r)	11,290
Crate, egg, W. T. Fisher	487,144 487,113 487,218 486,892
Cutter. See Buttercupcutter. Cutter head, E. S. Judkins. Cutter head knife, S. J. Shimer.	487,015 486,901
Cutting bead, W. B. Huther	486,874 487,084 486,855 487,110
Door spring, C. Koon Drapery or garment hook, safety, J. Berkey Dress pad, S. E. Stanley	486,975 487,171 487,164
Drilling apparatus, J. T. Cowley	486,856 487,024 487,042 487,042
Electric current indicator, C. P. L. Noxon	487,093 487,022
Woolley. Electric switch, J. J. Nate. Electric switch, W. J. Schultz.	487,109 487,092 486,987
Electrical transformer, E. Thomson	486,916 486,888
S. Stone Electrode, arc lamp, C. W. Hazeltine Elevator. See Hay elevator.	487,102 487,220
Electric fighting apparatus, automatic, L. G. Woolley Woolley Electric switch, J. J. Nate Electric switch, W. J. Schultz Electrical spaparatus, coil for H. C. Buck Electrical transformer, E. Thomson Electrical transmitting apparatus, Neal & Eaton Electricity, development and distribution of, J. S. Stone Electrode, arc lamp, C. W. Hazeltine Elevator, J. H. Tardy Elevator, J. H. Tardy Elevator doors, means for operating, R. W. Hare Engine. See Cylinder engine. Rotary engine. Steam engine.	486,953
Steam engine. Steam engine. Engine J. Smith. Engine reversing gear, J. O. Des Chapelles. Engines, bogie frame for locomotive, G. Lentz. Eraser, ink, J. E. Maynew. Eugenol benzyl-ether and preparing the same, F.	487,132 487,115 487,187
Eugeno benzyl-ether and preparing the same, F. Explosive powder, J. V. Skoglund. Extractor. See Butter extractor. Centrifugal extractor and recistor portable J. F. Allien	487,167 487,080
Extractor. See Butter extractor. Centrifugal extractor. Fare receiver and register, portable, J. E. Allison Faucet and bushing M. Anthony 487.906	487,168 487 207
Feed mechanism, self-adjusting, G. Ehrhardt Feed regulator, L. S. Campbell. Feed trough T. Doolan.	487,116 486,851 487,003
Fence, W. Arthur. Fence, C. C. Trout. Fence machine, wire, J. Harper. Fence post or base metallic O. M. Knov.	487,238 487,083 487,184 486,973
File box, W.I. Ohmer File box, Ohmer & Wayne File, check, F. Tremblay	487,150 487,006 486,993
File cover fastener, court, A. E. Walkup File, paper, W. I. Ohmer File, paper or music, W. Jeschke	486,962 487,230 486,875
Fire alarm signal apparatus, auxiliary, C. E. Scribner Fire escape, J. B. Stott.	487,095 487,135
Fire escape, portable tower platform, J. Volz et al. Fire kindler. S. Elsinger. Flour bolt. W. D. Grav	487,039 486,966 487,004
Fuel feeder, flu d. E. T. Williams. Fumigator, R. Campbell. Furnace. See Boiler furnace.	486,998 487,173
Furnace, H. K. Tallmage Furnace grate, R. R se (r) Galvanic body battery, J. W. Shults	486,990 11,291 486,902
Game counter, W. C. & F. N. Weis	486,918 486,991 487,051 486,927
Gate. See Bridge gate. Tilting gate. Generator. See Steam generator. Glass articles, securing designs on, A. A. Graesei	487.013
Glove fastening, G. & J. Courcel	487,127 487,175 487,224 486,943
Guard. See Book guard. Gun, quick-fire, A. Odkolek	486,938 487,169
Halter, N. Gibbons. Hame, J. F. P. ye. Hame fastener, C. A. Smith.	487,145 487,157 486,903
Harrow, P. Blaker	486,925 486,900 487,223
Hay elevator, P. Burrell. Hay rack, L. A. Swan. Heater. See Steam beater. Heating apparatus attachment. J. Moak.	486,978 486,978
Heel press, W. J. Young. Hinge, W. S. Gillespie. Hitching device, E. E. Albin.	486,921 486,952 486,842
cake holder. Spool holder. Hook. See Button hook. Drapery or garment hook. Whiffletree hook.	,
Explosive powder, J. V. Skoglund. Extractor. See Butter extractor. Centrifugal extractor. See Summer extractor. 487,206, feed mechanism, self-adjusting, G. Ebrhardt. Feed regulator, I. S. Campbell. Feed trough. T. Doolan. Feed extractor. Fence W. Arthur. Fence, C. C. Trout. Fence w. Arthur. Fence meachine, wire, J. Harper. Fence meachine, wire, J. Harper. Fence post or base, metallic, O. M. Knox File box, Ohmer & Wayne. File, check, F. Tremblay. File cover fastener, court. A. E. Walkup. File, paper or music. W. Jeschke. File, paper or music. W. Jeschke. Filter, water, J. Davis. Fire escape, J. B. Stott. Fire escape, J. W. J. W. B. Fumiacator, R. Campbell. Furnace. See Boiler furnace. Furnace, H. K. Tallmage. Furnace w. Stubblebine. Furnace, H. K. Tallmage. Furnace grate, R. R. se (r). Gas washer or scrubber, J. C. Chandler. Gas washer or Scrubber, J	487,209 487,126 487,056
kins	. 487,057 . 487,038 487,177
Hub boring machine, D. H. Gowing	. 487,190 . 486,869 . 486,996 . 487,189
Horseshoe blank bars, rollfor making, C. H. Perkins. Horseshoe, nailless, C. W. Crannell. Horseshoeing rack, S. M. Martin. Hub boring machine, D. H. Gowing. Hub, vehicle wheel, C. Whitford. Hubs, dust and mud cap for vehicle, J. Maris, lee cake conveyer, G. E. Berna, indicator. Indicator. See Electric current indicator. Injector for locomotives, steam and air, F. Leadbeater.	. 487,001 . 486,951
beater Insect powder distributer, C. H. Joosten Ironing table, W. H. Little	486,934 487,122 486,878
F. Ach	. 487,205 . 487,236
Kiln. See Brick kiln. Knife. See Cutter head knife. Label attaching machine, H. W. Morgan	486,882
Inhaler, H. Ellis Injector for locomotives, steam and air, F. Lead- baster. Insect powder distributer, C. H. Joosten Ironit prable, W. H. Little. Isocupenol benzyl-ether and preparing the same, F. ch. Isocupenol benzyl-ether and preparing the same, F. ch. Isocupenol benzyl-ether and preparing the same, F. ch. Isocupenol benzyl-ether and preparing the same, Kilin. See Lifting jack. Journal bearing, C. A. Burton. Kilin. See Brick kil. Kilin. See Brick kil. Kilin. See Brick kil. Laber and burner, C. A. Burton. Lamp burner, R. Brayton. Lamp burner, R. Brayton. Lamp burner wick raiser. C. Pabst. Lamp plectric arc, C. E. Scribner. Lamp, electric arc, C. E. Scribner. Lamp, incandescent, J. H. F. Gorges. Lamp, socket, incandescent, C. B. Elliott. Lap ring, J. F. Pye. Latch, Sate, P. T. Rapson. Latth, S. Toney. Leggin, M. J. McGuigan. Letter box, house door, C. E. Calvert. Lifter, universal adjustable, J. L. Throop. Lifting jack, E. E. Albin. Link, sleeve, T. W. F. Smitten. Liquids with ozone, treating, Dittrich & Grum- bacher.	487,020 487,076 486,958
Lamp for ourning hydrocarbon or other oils, S. A. Johnson. Lamp, gas, L. A. Cooper	487,147 487,065 487,049
Lamp socket, incandescent, C. B. Elliott Lap ring, J. F. Pye Latch, C. Orth	. 487,213 . 487,156 . 487,153
Lath, S. Toney	. 487.166 . 487.226 . 487.210
Lifter, universal adjustable, J. L. Throop. Lifting jack, E. E. Albin Link, sleeve, T. W. F. Smitten	487,105 486,922 486,904
Lithographic plate, F. F. Haggenmuller	. 487,089 . 487,121
Litting with owner, treating, Dittrien & Grumbacher Lithographic plate, F. F. Haggenmuller. Lock. See Combination lock Locomotive, electric, C. M. Conradson. Loom shuttle guard, Hamilton & Boisvert. Looms, friction let-offfor, Wyman & Gordon (r), Lubricating compound, antifrict on, Wallace & Stemm.	487,114 487,183 11,288
StemmLubr cator. See Axle lubricator. Lubricator, J. B. Fondu	. 487,203 . 486,969