# RECENTLY PATENTED INVENTIONS.

LATH SAWING MACHINE.—David S. Abbott, Olean, N. Y. This invention covers a novel combination and arrangement of parts in a machine whereby, by reason of the angle of the forward shafts, the feed rollers cause the material fed to draw toward the guide, even when the saw is dull, and prevent the tendency to draw the material the other way, preventing the ends of the laths from being made thin.

WINDMILL. - Edgar C. Beebe and Riley Stoner, Glen Elder, Kansas. This invention provides simple and efficient means for the automatic adjustment of the windwheel in accordance with the force and direction of the wind, without a vane, and for the automatic government of its work, so that the speed of the windwheel will remain practically constant.

LACE PAPER MACHINE. - Giuseppe Paci, New York City. Combined with a pattern wheel are two wheels having wooden rims, with means for bolding them in frictional contact with the pattern wheel, together with a roller having an elastic rim held on top of the pattern wheel, the machine also having other novel features, while the paper is passed through a box containing soapstone powder, with which it is so coated that the cut strips are easily separated.

#### Electrical.

NIGHT SIGNALING APPARATUS.—Emil Kaselowsky, Berlin, Germany. This invention covered a means of signaling at sea by differently colored elcctric lamps brought to view singly or in groups, the current being switched to and from the lamps and a supplementary resistance to produce the signals, with means whereby the current may be maintained at a constant resistance, momentary interruption and extinguishment of the lamps being prevented.

ELECTRIC CLOCK WINDING.—Heinrich Rabe, Hanau, Germany. This is an electrical mechanism for winding clocks having torsion or rotary pendulums, the mechanism being adapted for raising the weight or resetting a spring which drives the clockwork, when the actuating power has been exhausted, the apparatus working automatically.

#### Metallurgical.

ZINC FURNACE.—Gustaf M. Westman, New York City. Combined with a reducing furnace are regenerators connected alternately therewith, condensers connected with the reducing furnace, coolers connected with the condensers, and a blast engine connected with the coolers and the regenerators, with other novel features, to promote the reduction of iron or zinc ores, and the manufacture of phosphor, sodium, and other substances.

DEPHOSPHORIZING IRON ORE.-Thomas F. Witherbee, Port Henry, N. Y. This is a process which consists in mechanically separating apatite or phosphorus holding compounds from iron ore, then dissolving the remaining small percentage of apatite with dilute sulphuric acid, and finally washing the ore with water.

HYDROCARBON BURNER.—Frank B. Meyers, Fort Plain, N. Y. 'This burner is provided with a casing to the front end of which is secured a bell-mouthed tube, usually passing through the mouth of the furnace, whereby air under pressure and atomized oil are vaporized to make a gas to produce a high heat in the furnace, the quantity of air and oil to be mixed being adjusted by a valve and regulator.

# Miscelluneous.

CUFF HOLDER.—Stephen V. Thomas, West Branch, Mich. The holder is adapted to fit in the eyes or loops of a cuff button, and has an offset or shoulderthat springspast the eye or loop of one button, while on the opposite side of this eye or loop it has a spring that flexes or bows outward to hold the offset or shoulder out of alignment with the button eye or loop

REFRIGERATING TOWER. - Alfred R. Pechiney, Salindres, France. This invention covers a stone tower, in the interior of which are arranged glass tubes through which cold water is kept flowing for the cooling offree chlorine and vapor of hydrochloric acid, or any mixture of these bodies in the state of gas, the invention covering various novel details of construction and combinations of parts.

GRAIN METER.-Valentin Weber and James R. Harrison, Princeville, Ill. This is a device for use in connection with an elevator of any approved construction, whereby the grain box is automatically dumped whenever a certain weight is obtained, the tripping device acting automatically and receiving its motion from the continuous motion of the elevator

LAMP EXTINGUISHER.—Alexander E. McLeod, Hallock, Minn. This is a device of simple construction by which, when the light is extinguished. no gas or smoke can escape from the wick and pass into the room, and when the extinguisher is left in closed position there will be no evaporation of oil.

SIDE CURTAIN FOR BUGGIES.—Joseph W. Thomas, Sargent, Neb. This is a curtain constructed of independent upper and lower sections adapted for senarate or united use, the sections having button holes along their upper and lower margins, and being made to overlap, making an effective rain curtain to protect the occupants of a vehicle in stormy weather.

WAGON BRAKE LEVER.-William A. and Enoch G. Haney, Media, Kansas. This lever has a slide mounted thereon and pivotally connected to a link, the connecting rod extending to the brake shoe, providing for the application of power to the greatest advantage at the time when the brake shoe is brought against the face of the wheel,

AXLE. - Edward M. Allen, Stafford, Md. This axle is made with connection blocks and upper and lower shafts secured rigidly thereto, with ham, Belleville, Kansas. This invention covers a novel

other novel features, being intended especially for use in connection with automatic brake devices forming the subject of former patents issued to the same in-

CLEVIS - Arthur W. Rumsey Kiowa. Kansas. Combined with clevis bars or sections having extended portions lapped together, with coincident openings, is an elongated link secured in the openings and made to secure the sections snugly together or to permit their movement apart when adjusted relatively

GATE.—Thomas Tyson. Mound City. Mo. This invention covers novel features of construction and combinations of parts in a gate designed to swing outward from two sides, while the gate may be opened from a distance by a pedestrian or a party in a vehicle, the means for operating it being simple, durable, and readily manipulated.

WIRE FENCES. - Dwight H. Scott, Flora, Dakota Ter. This invention provides a device for expeditiously taking up the slack in wire fences and retaining the wire under tension, and whereby also a broken strand of wire may be united without in jury to the hands, and such strand be put under any desired

STORE ORDER.—Charles S. Hempstead, Fairchance, Pa. This invention covers a form of order to be used by merchants and others, mainly by retailers, who sell goods in small quantities that aggregate in value a limited and specified sum.

GOODS DELIVERY .- William H. Bailey, alford, Lancaster County, England. This invention relates to improvements in machines for the delivery of prepaid articles in which a revoluble cylindrical or other shaped magazine is employed to hold the goods to be delivered, the improvement enabling the indicator dial to be setatan oblique angle to the machine, instead of vertically or horizontally.

CHEESE CUTTER. - Bernard Barry, Schenectady, N. Y. This is an improved knife formed of a thin flat plate, one of whose ends is beyeled to serve as a straight cutting edge, while one of the longer side edges of the plate is extended laterally at a right angle and provided with an oblique cutting edge, the knife being especially adapted to cnt wedge-shaped slices from the body of a cheese by one movement

Lock HINGE.—Benjamin F. Boughn, of Randolph, Neb., and William Cashner, of Pleasan This hinge consists of two sections connected by a pintle, the knuckles of one section being exteriorly non-circular in cross section, while the other section has a spring-actuated bearing plate pressing against the non-circular knuckles, with a casing iu which the plate and its actuating spring or springs

ADVERTISING DEVICE. - Andrew Dahlstrom, Ashton, Micn. This is a display device consisting of a cylindrical body baving a series of openings and a tape or ribbon npon which are printed advertisements so placed upon the ribbon as to be always in alignment with one of the openings when the ribbon is revolved, one roller unwinding while an opposite roller winds up the ribbon.

DENTAL MATRIX.—Christ. A. Meister. Allentown, Pa. This is a matrix for teeth, consisting of a band having a body for engaging a tooth, and integral extension of the band consisting of slotted inclined side pieces, a crosshead engaged in the slots of the sides, with means for actuating the crosshead, to be used on a tooth while it is being filled.

SPECULUM. - William Molesworth, Brooklyn, N. Y. This invention provides an implement by means of which the wall of a passage or cavity may be dilated and access had to any portion of the wall while the passage or cavity is held in dilated position.

INSECT TRAP.—Jennie G. F. Johnson, Monnt Vernon, N. Y. This invention covers a bait box or receptacle having a surrounding trough adapted to receive a poisonous substance, over which insects cannot readily pass, the whole being inclosed in a structure having an overhanging hood, the device being especially designed as a roach or ant trap.

EXTRACTING COPPER FROM PYRITES. -Josef Perino, Chariottenburg, near Berlin, Germany. This invention covers a process of obtaining copper from copper pyrites, by heating the pyrites mixed with nitric salts of iron to a temperature of about 200° Centigrade, whereby sulpbate is produced, lixiviating the mass with water, and finally precipitating the copper.

ORE ROASTER. - Charles J. Fendel, Anaconda, Montana Ter. This roaster has an outer and an inner cylinder connected by tubes, with imperforate passages on both cylinders, the tubes alternately connecting the forward end of a passage on one cylinder with the rear end of a passage on the other cylinder, and the forward end of the latter passage with the rear end of the next one on the first cylinder, whereby a continuous serpentine passage is formed, making a roaster designed to economically calcine the most re fractory ores,

PILE DRIVER.—Thomas J. Harriman, New Paris, Ind. This is an apparatus for driving pipes, piles, and fence posts, the invention providing a machine of simple construction, which can be readily and effectively manipulated, and which is so designed that the hammer will at all times strike the nile squarely upon the top, and not miss a stroke by reason of the pile getting out of line.

TANK VALVE. - Nathaniel W. Krouse, Washington, Pa. This is a cut-off valve especially adapted for oll tanks, and serving to close the valve in thepipeline automatically as soon as the oil has been drawn off into the pipe line with which the tank is connected, a spring-pressed valve being located in the pipe line, a bolt engaging the stem of the valve, and a float operating on the bolt to withdraw it when the oil in the tank reaches a low level.

GASOLINE STOVE.-William P. Dun-

construction and combination of parts in an improved gasoline stove, particularly with reference to the valve shaft lever and connection piece, whereby the latter will not slip when properly applied, the construction being simple and effective.

FRUIT DRIER. - Frederick Altman San Jose, Cal. The drying chamber has a ventilating fine with damper at its top, a central vertical air pipe with apertures opening into the drying chamber, the upper end of the air pipe having an air discharge outlet, an air supply pipe having a regulating valve, a furnace at one side of the drying chamber, in which is a circular hot air flue, with a rotary fruit tray rack located above the hot air flue.

VIGNETTING ATTACHMENT. — Joseph R. Tewksbury, Fort Madison, Iowa. This is an attachment for photographic printing frames, in which an independent frame secured to the face of the printing frame is provided with masks of cardboard or other thin material, certain of which are adjustable in relation to the others, whereby the effect of the light will be broken or softened, a variety of changes being made in an easy and simple manner.

DYEING VAT. - James W. Greaves, Providence, R. I. Combined with a stationary vat is a perforated basket, with a pressure pipe extending from the bottom to the top of the basket, through which the dyeing liquid is forced by steam or pump pressure, the apparatus being adapted for dyeing wool, yarn, and slubbing, or other tibrous material, and to avoid poling.

WELL CURB .-- John T. Lenoir, Columbia, Miss. This invention provides an attachment designed for use in connection with any well curb, whereby the water drawn may be delivered without spilling, while the well bucket and rope need not be handled in drawing and delivering the water to a pail, and whereby the well may be securely covered and the cover locked in position.

# SCIENTIFIC AMERICAN

### BUILDING EDITION.

APRIL NUMBER.-(No. 42.)

TABLE OF CONTENTS.

1. Plate in colors showing elevation in perspective and floor plans for a dwelling costing about four thousand dollars. Sheet of details, etc.

Elegantplate, in colors, of a residence of moderate cost, with floor plans, details, etc.

- 3. Perspective and floor plans of a modified Queen Anne cottage, at East Orange, N. J. Cost, six thousand five hundred dollars.
- 4. A cottage at East Orange, N. J. Plans and per-
- 5. Page engraving of a stairway in the Chateau de Chantilly. By Mr. H. Daumet.
- 6. Scenes at Zaandam, Holland, where the Czar Peter the Great learned shipbuilding in 1697.
- 7. Engraving of the new station and offices of the Great Indian Peninsular Railway, Bombay,
- 8. Perspective and plans of the new Biological Laboratory, Princeton College, New Jersey.
- 9. A residence at Roseville, New Jersey, costing five thousand dollars. Plans and perspective.
- 10. A cottage at Roseville, New Jersey, costing seven thousand dollars. Perspective elevation and floor
- The Orange Valley Church. Cost, sixty thousand dollars. Perspective and ground plan.
- 12. A residence at Fordham Heights. Cost, thirtyfour thousand dollars. Elevation and floor plans.
- 13. Perspective view of the new Trinity Methodist
- Episcopal Church: Denver, Colorado. 14. Designs for wall paper decorations. Flower scroll, designed by A. F. Brophy. Strap ceiling, designed by G. A. Audsley, Arabosque panel de-
- F, Day. Perspective and floor plan of an attractive carriage house in the Queen Anne style. Cost, nine hundred and fifty dollars.

corations, paper for staircases, designed by Lewis

Miscellaneous Contents: Something for architects and builders to remember.-Interior finish.-Sketch of Nathaniel J. Bradlee.-Colored decora tion of churches.-On estimating.-Crushing of masonry. The oldest architectural drawing. - Mahogany.-Flexible foundations.-Treatment of the ceiling.-The teredo.-The oldest timber.-Compressive strength of bricks and piers.-Repetition of ornament,-The Thomson-Houston electric system for street railways, illustrated.—An excellent system of heating.—The Ball high speed engine.-Beading, rabbet, slitting, and matching plane, illustrated.-The Sturtevant system of heating and ventilating, illustrated. - II. W Johns' liquid paints.-Soapstone laundry tubs and kitchen sinks, illustrated.-Carpenter's vise, illustrated .- Metallic hip shingles, illustrated .-Corrugated iron lath .- Weather vanes, roof ornaments, etc.

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Business Chance-Martin's Paving Process makes the ontractor \$15 to \$40 per day. Agents wanted everywhere. E. L. Martin, Decatur, Ill.

Announcement .- " Centennial Day," April 30, 1889. eing a legal holiday, ourfactory will not be run; but we shall have our works open for inspection all day. We extend an invitation to our friends, customers, and others interested to give us a call on that day and inspect our plant at our new location, Laight and Canal Streets. E. E. Garvin & Co.

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working machinery manufactory. Must beversed in designing, pattern making, and the handling of men. Address Indiana Machine Works, Fort Wayne, Ind.

For best casehardening material, address The Rogers & Hubbard Co., Middletown, Conn. Send for eirenlar,

Water purification for cities, manufacturers, and private users. The only successful legitimate system, Hyatt Pure Water Co., 16, 18 & 20 Cortlandt St., New York, —Ball Engine.—

Automatic cut-off. Ball Engine Co., Erie, Pa. For the best Hoisting Engine for all kinds of work, address J. S. Mundy, Newark, N. J.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Perforated metals of all kinds for all purposes. The Robert Aitchison Perforated Metal Co., Chicago, Itl.

The Holly Manufacturing Co., of Lockport, N. Y., will send their pamphlet, describing water works machinery, and containing reports of tests, on application.

No. 11 planer and matcher. All kinds of woodworking machinery. C. B. Rogers & Co., Norwich, Conn. C. E. Billings' Patent Surface Gauge. Drop Forgings. Brenze Fergings. Billings & Spencer Co., Hartford, Conn.

 ${\bf Steam\ Hammers, Improved Hydraulic Jacks, and\ 'Fube}$ Expanders. R. Dudgeen, 24 Columbia St., New York. Friction Clutch Pulleys. The D. Frisbie Co., N.Y. city.

"How to Keep Boilers Clean." Send your address for free % p. book. Jas.C. Hotchkiss, 120 Liberty St., N. Y. The best Coffee roasters, coolers, stoners, separators,

polishers, scourers, glossing apparatus, milling and peaberry machines; also rice and macaroni machinery, are built by The Hungerford Co., 65 Cortlandt St., N. Y. Lathes for cutting irregular forms. Handle and snoke athes. I. E. Merritt Co., Loekport, N. Y.

Automatic taper lathes. Heading and box board machines. Rollstone Machine Co., Fitchburg, Mass.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

# NEW BOOKS AND PUBLICATIONS.

PUBLICATIONS OF THE LICK OBSERVA-TORY OF THE UNIVERSITY OF CALI-FORNIA. Edward S. Holden, LL.D. Vol. I. 1887. Sacramento: State Printing Office. 1887. Pp. 312. With illustrations.

This elegant quarto brings the story of the work of the Lick Observatory up to a recent date and lcaves the ground clear for annual publications that shall keep its achievements more promptly on record. It gives the history of the founding and building of the observatory, the description of its buildings and instruments, and details of the work done from 1880 to 1885. The large telescope is of course not included, the contract for its construction only being given. Among the meteorological instruments illustrated, we notice the counterpart of the Scientific American vegistering barometer. The early observations, astronomical and meteorological, arc given, together with elaborate tables of contents. The instruments described arc illustrated by a number of well executed cuts, and a view of Mount Hamilton forms the frontispiece. The publication reflects much credit on Professor Holden, who edited it, and is a happy augury for the future.



HINTS TO CORRESPONDENTS.

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

References to former articles or answers should give date of paper and page or number of question. Inquirles not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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

Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of

Winerals sent for examination should be distinctly marked or labeled.

(705) R. M. P. asks: 1. Can you tell me what substances other than benzine and bisulphidecarbon will dissolve snlphur and paraffine? A. You can use as solvents fixed oils, such as olive oil, petroleum, turpentine, and benzole. The sulphur will be apt to separate out at ordinary temperatures, however, from

solution in fixed oils. 2. Can you direct me to good as great a difference as possible between the lowest other compounds. The magnesium is more actinic developing pictures, and when we tried to wash it out. by passing the air or fumes through fines of large area, or into large chambers, or by drawing them through muslin bage, as in zinc white factories. For electrical condensation of smoke or dust, we refer you to the Sci-ENTIFIE AMERICAN, vol. liv., pages 255 and 389. 3. Will sulphur combine with any oils? A. Sulphur combines with olive oil, on heating, producing a decomposition product formerly used in medicine and called oil of snlphur. You will find it described in the United States Dispensatory. 4. In what does paraffine oil differ from solid paraffine? A. In chemical composition; the oil contains more hydrogen and less carbon than the solid paraffine.

(706) W. L. P. asks for the most approved receipt or formula for germinating the alcoholic yeast plant. A. The plant is called Saccharomyces cerevisiae. A sample of yeast must be procured which examined microscopically shows a fair proportion of the characteristic cells. A quantity of brewer's wort is sterilized by boiling, and to test its sterility is allowed to flask is at once closed. This gives a new growth of cells, and the process is repeated with fresh sterilized wort, the new growth being used for inoculation. The process can be repeated a number of times, each time conducing to purity. The process was devised by Pasteur, and can only be carried out by careful atteution to all the precautions used by bacteriologists. A temperature ranging from 70° to 80° F. should be maintained

(707) H. F. S. - Your hydroquinone developer prepared as follows:

Sulphite sodium	400 grains.
Distilled water	10 oz.
Hydroquinone	100 grains.
Carbonate of notash	300 grains.

turns dark because of the oxidation by contact with the air and the presence of the potash. The developer will have more power and work quicker if you dissolve the potash separately and keep it in another bottle. Dissolve 300 grains of potash in 10 ounces of water. To develop, take one ounce of the hydroquinone and sui phite solution and one ounce of the potash.

(708) H. R. S. asks for a toning solution.

A.	Chloride of gold	15 grains.
	Acetate of soda	1 oz.
	Distilled water	15 oz.

One ounce of the above will tone one sheet of paper 18 by 22, and the solution should be prepared one week before required. When diluted for use, it should be used immediately, as it will not tone more than once Refore putting the print in the solution, pass it through a weak solution of plain carbonate of soda and water, which removes any acid in the paper, and allows the toning to proceed rapidly. For blue prints. Prepare:

```
A M mmonia citrate of iron .... 4 oz. 14 oz. 14
B | Fe rrid-cyanide of potassium... 21/2 oz.
```

Mix equal parts of A and B, filter, and coat the sheet of paper with a broad camel's hair brush. The film should be quickly dried. After printing, immerse in water for a few minutes, which will fix the print. To prevent cockling of prints, use the following mounting solution:

Nelson's No. 1 photo-gelatine	4	oz.
Water	16	••
Glycerine		
Methylated alcohol		"

Dissolve the gelatine in water, then add the glycerine and lastly the spirit.

(709) B. E. K.-A very good enamel

collodion is made as follows:

Alcohol	⅓ oz.
Ether	
Gun cotton	B grs.

No castor oil need be added. If the plate is rubbed over with considerable French chalk, and the latter rubbed off, and the coiledion flowed on, it will readily strip when dry. After the collodion is set, the print should be pressed down upon it. When dry, it will strip off from the glass. No gelatine solution is required. For additional particulars write to the Eastman Dry Plate and Film Company, Rochester, N. Y. It is better to mount the print on a thin card first, then mount all on the regular mount.

(710) E. W. G.-To tone blue prints an olive green of brown color, after washing immerse them in a bath made as follows:

Borax..... 2 1/2 oz. Hot water.... 38 oz.

Acidify with sulphnric acid until blue litmns paper turns red, then make the solution alkaline again by adding liquor ammonia until red litmus paper turns blne. Finally add 150 grains of gum catechu, occasionally stirring until it is dissolved. The bath will keep for any length of time. Tone until the color is right by reflected light.

- (711) G. J. B.—See the "Amateur Photegrapher," by Ellerslie Wallace, \$1, and Abney's book from our book department.
- (712) A. H. W. asks whether an ocean steamship can remove her propeller shaft and replace it by an entirely new shaft (provided she had an extra shaft on board) while at sea. A. It is possible, but we never heard of its having been done.
- (713) C. C. R. asks: What liquid will be converted into vapor with the least heat, or, in other words, if economy was not taken into account, what finid or liquid would do the most work with the same heat used in a boiler and engine? A. There is little difference in the latent heat of vaporization of water and other liquids referred to equal volumes of

dust arresters or separators? A. Dust can be separated and highest temperature of the liquid used and of its rapor as used in the engine and boiler.

> (714) A. T. C. writes: I wish to know which book explains the indicator card and the indicator, and the cost of the latest improved indicator? A We can supply you with "Twenty Years with the Indicator," by Thomas Pray, Jr., in two volumes. Price \$3. Also "Indicator Practice and Steam Engine Economy," by Hemengway, Price \$2. For dealers in indicators, gauges, etc., consult our advertising

(715) W. J. K. asks: 1. In making the simpleelectricmotor described in Scientific Ameri-DAN SUPPLEMENT, No. 641, I only put 11 coils on the armature; will that cause the machine not to run? The machine will run, but not to advantage. 2. Will soft Swedish iron wire do for the armature core? A. It will answer, but not as well as soft iron wire. 3. With what number of wire should it be wound to adapt it to the Fuller bichromate battery? A. The winding is right for the Fuller battery, provided the battery is stand some days in a tightly closed vessel. If no fer connected up so as to furnish a current of sufficient a platinum wire into wort prepared as above and the will it take to many cells of the Fuller battery quire about 18 cells. 5. How many to develop the full power of motor? A. Probably double the above number. 6. How should the cells be connected? A. Two in parallel and nine in series. 7. In the eight-light dynamo described in No. 600, Scientific American SUPPLEMENT, bow is the machine attached to the base? A. By tap bolts running up through the base into the poles of the magnet. 8. If I wish to use it always to run incandescent lights, how should it be wound to give the best results? A. It should be compound wound series and long shunt. (See diagrams in the article describing the dynamo.) 9. Could say four of the lights be burned at one house and four others at another house a quarter of a mile away? If so, what size wire should I use to convey the electricity? A. It would be impracticable to usethis dynamo in that way. 10. Cau cast irou washers be used on the armature core? If so, how thick should they be to give best results? A. Cast iron washers will not be satisfactory. 11. What is the weight of the wire on armature? A. Refer to the article describing the dynamo. 12. What would be the best battery to run the above as a motor? A. Probably the plunging bicbromate battery.

> (716) C. J. M. writes: 1. How can I blakea comparative test with reference to the candle or light-giving power of different grades of kerosene? A. Place a rod vertically on a table, with a smooth white sheet of paper on the table in front of it. Place two lamps identical in construction, each with sample of one of the oils in it, back of the rod and about one foot apart. They will cast two shadows of the rod. Move one or the other back and forth until both shadows appear of equal intensity. Then the light given by each lamp will be in proportion to the square of its distance from the rod. The oil consumed should be so adjusted as to be the eame in each lamp. The best you can do is to weigh each lamp before and after the experiment, and thus determine the true consumption, and correct by inverse Proportion, with allowance for specific gravity; but for any accuracy the consumption by measure must be identical, as this correction is only approximate. Of course you can measure the oil instead of weighing it. 2. Also the flashing point. A. For flashing point heat the oil in a cup immersed in a saucepan or other vessel containing water. Suspend an accurate thermometer with its bulb immersed in the oil. Gradually heat the water, and from time to time sweep a minute flame over the surface of the oil. When a flash is produced, note the thermometer. The best flame is a gas flame burning from a fine aperture at the end of a glass or other tube. Broom straws may also be used, or fine splinters of wood. You will find this test easier than the determination of candle power.

> (717) J. S. writes: In casting pots and other hollow ware, it happens now and then that the the cheeks or cope of the flask, and the pot or casting will show a lump on the inside and a corresponding depression on the outside. Of course, the casting is re jected. Now, what is the cause of this "scah"! Is it the sand? Sometimes for months not a scab appears, and all at once all the workmen are annoved by them. A. The scabbing of the sand is sometimes caused by what is called "weak sand," or sand that has been used too long without adding new sand. It may also be caused by the sand being too wet or rammed too hard. It genally occurs where the metal strikes the sand as it leaves the gate, the scab floating against the cope side. Sometimes too hot metal will cause scabs. Hard ramming confines the steam in the sand, against which the hot against the cope sand.

(718) B. B. L. writes: Will you please inform me what is the best solution for hand grenades tion of glue etc., for casting plaster ornaments. A. to extinguish fires? A. Use bicarbonate of ammonia Use glue, water, and molasses made up as for printers' and sulphate of soda in strong solution.

(719) A. S. R.—Wrought iron expands more than cast iron with the same increment of heat. There is no perceptible difference in expansion with or across the grain. Platinum expands the least of the tincture of henna. well known metals, by heat,

(720) E. F. S. asks: 1. Will the simple electric motor described in SCIENTIFIC AMERICAN SUPon "Photographic Emulsions," \$1, which can be had PLEMENT, No. 641, April 14, 1888, be large enough to run a boat fifteen feet long, 42 inches wide, drawing 10 inches of water when loaded? A. The motor will run a boat of that length. 2. Howlarge should screw be forboat size of above? Should it be three or four blades? A. Use a two-bladed screw of 8 inches in diameter.

> (721) S. E. K.—The magnetic variation of the needle for any given place varies from year to year; new surveys require correction for compass bearngs. For western New York the annual variation of tablets. A. For 50 lb. of the best glue (dry) take 9

> (722) M. L.—You can obtain better water. Color with annline dissolved in alcohol. results about as quickly by foreing, by compressed air, | (737) J. M. W. asks how to take a stain

than any substance you can mix with it, and will flash as rapidly. If you have difficulty in flashing quick enough, make one or two preliminary flashes until you sitters become accustomed to the light. The effect of closed eyes is due to the reflection of the lightfrom the eveballs.

(723) "Courier" writes: Can you tell is of any preparation of paste which will make labels adhere to tin? A. (a) Use a freshly made solution of gum tragacanth in water. (b) Make a paste of rye flour and glue, and to each pint add 1/2 ounce each of linseed oil and turpentine. (c) Soak 5 parts glue in 20 parts of water for a day, add 20 parts rock candy and 3 parts gum arabic, and dissolve by heating in a glue pot.

(724) G. R. asks for the recipe for making paste for bill posters' use. A. Use rye flour added a little at a time to boiling water to a good working tbickness. If to be kept add a little oil of cloves. for extra adhesiveness a handful of glue, may be added to each pailful while still hot. The hearing must be done carefully, to avoid burning.

(725) Amateur Photographer.—Thecompound will not produce a photographic light. The simplest device is to blow 15 grains magnesium powder upward through a flame of alcohol. There are several lamps on the market for this purpose,

(726) L. M.—The lowest fluid temperature alloy made from metals that are solid at ordinary temperature melts at 150° Fah., and is made by mixing 12 parts tin, 25 parts lead, 50 parts bismuth, 13 parts cadmium. This melting point can be reduced to 130 by adding 2 parts mercury.

(727) J. M. W. asks how many lamps of eight-candle power would simple electric motor run if turned into a dynamo. A. Probably not more than one

(728) E. G. H. asks how the phosphorescent substance known under the name of Canton's phosphorus is prepared, also give name of books treating upon or referring to phosphorescence, stating where said books may be procured. A. You will find the subject of phosphorescence treated in the manuals of physics and in treatises on light. We also give you as references the following: Scientific American Suppliement, Nos. 229, 497, 539.249. Canton's phosphorus was made by igniting in a covered crucible at a strong heat sifted calcmed oyster shells 3 parts, sulphur 1 part.

(729) A. M. asks: 1. What is a prime conductor? A. The prime conductor is the portion of an electric machine which receives the charge from the generator. 2. Can a motor be driven by a current de- soda. rived from an electric Leyden jar? A. Static electricity is not adapted to the driving of motors. Rotary motion may be produced by the static discharge, but the power developed is very slight. 3. Could a discharge be derived from a Leyden jar coated with silver or gold leaf instead of tinfoil, and would the electricity be stronger by so coating? A. A discharge would be obtained. The material of the coating has little effect upon the charge.

(730) T. J. F. writes: 1. What is the best varnisk 😿 use with bronze powder so as to make a liquid gold solution? I have tried copal, shellac, and sandarac and mastic in methylated spirit, but in a short Ime verdigris appears and spoils the mixture. I want to keep it bottled np ready for use. A. For bronze powder varnish, see answer to query 378, in Scientific American of February 23, 1889. 2. How can I harden and temper small thin circular saws, from an inch diameter, so as to keep them perfectly flat? A. The plates are heated to a light cherry red and plunged into a bath of whale oil, resin, tallow, and beeswax. They are rubbed off with sawdust, and are very brittle and full of buckles. They are placed between tempering dies, hot plates pressed together by hydranlic pressure and flattened while thus heated until the temper is iron cuts into the sand of the core and throws it against | drawn to a blue. This flattens them permanently, but after this they are generally hammered to equalize the tension. The operation is described in the manuals. such as "Grimshaw on Saws," \$4.

> (731) T. A. asks whether all manufacturers of dynamos use double-covered copper wire or single, and why. A. Both kinds are used. The double-covered is preferable in most cases, as the heavy covering prevents short-circuiting.

(732) G. T. B. asks: 1. What is the specificgravity of kerosene oil? A. 0.730 to 0.850, 2, What effect will water or oil have on a steel or brass spring if immersed for a considerable length of time in either? A. Oil will have but little effect. If a vegetable oil, it metal impinges, causing a scab to burst away and float may tend to corrode steel a little. Water will oxidize steel, but will not affect brass

> (733) W. N. asks for the best composirollers,

> (734) A. M. K. asks: What ingredients. are used in making a light-colored furniture polish? A. Mix 1 pound olive oil, 1 pound oil of amber, 1 ounce

> (735) T. H. L. asks: Are aniline inks simple solutions of the desired color, or is gum or any other substance added? How many grains should be added to a quart of water to make a good ink? A. They are simple aqueous solutions; 1 part of the desired aniline color is enough for 80 to 200 parts of water, differentcolors having different intensities. If desired, 1 part of dextrine may be added to 100 parts of the fluid. Do not use gum arabic.

(786) G. A. F. asks for a recipe with correct proportions of ingredients for making a good liquid glue such as bookbinders use in the manufacture increasing and westward, amounting to about 616 lb. glycerine. Soak the glue for ten minutes and heat minutes each year.

vapor. Economy is to be found in working in accord. a small quantity of magnesium powdernpward through or bright spot out of a carpet, made by spilling sal soda A. Rub 2 lb. bleaching powder to a paste with water, ance with the second law of thermo-dynamics, by having a flame of alcohol than by mixing the powder with on it: it was a preparation of sal soda and water for strain through linen, and wash residue with 2 pints of

it became brighter. A. We fear the stain is ineradicable. Possibly vinegar might restore it. All depends on what the dye was which was affected, and no remedy can be given that will work for all conditions.

(738) J. W. E. writes: 1. Will you inform me whether there is any way of ascertaining tho weight of cold air in a small space, say 1 in, square? A. To make the determination directly requires very delicate apparatus and considerable manipulative skill. 100 cubic inches of air at 60° F. and 30 inches barometer weigh 30'935 grains. 2. Also the difference in weight between hot and cold air, if any, and the weight of each in the above space? A. As a gas is increased in tem-perature it expands aft of its volume at 32° F. for each degree of elevation, and hence a given volume weighs less as the temperature rises, if the pressure is constant. Thus a cubic inch of air at 32°F. would weigh nearly 32% grains.

(739) E. L. W. asks: 1. In making a plunge battery as described in Supplement, No. 157, to be used for a small electrotyping ontfit, which plates would give the best results—the silver or carbon? A Carbon is the best for a plunging battery, but we would not recommend a plunging battery for electrotyping. Better use a large Bunsen battery. 2. Should the carbon of one cell be connected with the zinc of the other, and so on? A. Should you determine to use the plunging battery for electrotyping, it would probably be better to connect all the zincs together and all the carbons to-

(740) C. F. W.—A galvanometer is of little value in measuring secondary currents of high intensity. Probably the best way to ascertain the strength of a secondary current is to measure the length of the space it is able to leap across

(741) F. P.—The years 1700, 1800, and 1900 are not leap years, as arranged in the Gregorian calendar. This arrangement makes the integral day division of the year through the centuries with the least possible error.

(742) H. L. asks: Of what kind of iron are the rings of the armature core in the 8-light dynamo made? Are the pins that secure the series of rings and wooden core to the shaft insulated, and how, or are they wood? A. The rings of the armature are made of wrought iron. It is not necessary to insulate the pins. They are put straight through the armature rings and

(743) H. B. M. asks how to kill blue grass growing between bricks around the lawn? A. Wash the bricks with salt water or strong solution of

(744) F. A. writes: In making electric notor as described in Scientific American, March 7. 1888, No. 16 cotton-covered wire is rather hard to work; would not the ordinary office wire be sufficient. If not, please state for what reason. A, You may use No. 18 cotton-covered wire on the armature of your motor, if you prefer to do so. Office wire will not answer on account of the thickness of its insulation. It will not admit of winding the required amount of wire in the allotted space.

(745) G. B. asks: 1. If better results vould be obtained by using two wires wrapped side by side in the primary coil of an induction coil? A. The second wire would not improve the results. 2. Does the intensity of the secondary current depend on the exient to which the core is magnetized? A. Partly upon the magnetism of the core, and partly upon the length of the secondary. 3. Could the current produced by a magneto-electric machine be utilized in running auother machine of nearly the same size and construction? A. This could be accomplished by using a commutator to convert the current from an alternating to a direct current. 4. What is the best and cheapest way to construct an induction coil to give a spark an inch and a half in length? A. For information on the construction of induction coils, consult SUPPLEMENT, No. 160.

(746) R. H. S. asks how he can make liquid hydrofluoric acid, and what is there he can rub over the etching so as to make it more distinct? A. Distill a mixture of 1 part fluorspar and 11/2 parts sulphuric acid in a lead retort, collecting the distillate in water. It may be concentrated by distillation from a platinum retort; water first comes off, and afterward the stronger acid. It must not touch glass or silica. To make etched marks more distinct, rub the surface with dry cinnabaror Venetian red and polish with a dry cloth, It is a very dangerous material to work with, and it is better to buy it ready made.

(747) C. F. H. writes: Will you kindly inform me through your paper how I can soften a hair brusb which I have, and which is too stiff for use? It being a very good one, I thought I might be able to soften it instead of going to the expense of another. A. Try washing it in water containing 10 to 25 per cent of glycerine.

(748) E. G. asks: 1. Will a paraffined wooden tub do for outer vessel in Supplement, No. 149, battery? A. We recommend porcclain or glass. 2. Give connections in Bell telephone armature. A. See SUPPLEMENTS on subject, especially 142 for telephone

and 167 for calling mechanism. (749) H. P. asks: 1. If quicksilver is compressed, and confined securely in a 1-16 inch thick brass shell, and such shell containing it be subjected to a white heat, would the mercury expand sufficiently to fracture the shell? A. It would amalgamate with the brass and destroy it without the application of heat. If steel, iron, or platinum were used, with which mercury does not easily amalgamate, it would burst the envelope unless it were exceedingly thick. The force exerted by a solid or a liquid in expanding is almost irresistible. 2 Which of the acids is it that is found in green gooseberries, sorrel, rhubarb, etc.? A. It is 3. What quantity of chlorine largely citric acid. would I require to bleach about 14 lb. of shellac at a time? Would it be as cheap to purchase the chlorine as to make it; I have stills and apparatus for all purposes.

water. To filtrate and washings add a solution I part of potash in 3 of water until no more precipitate forms; Two pounds of the shellac must previously have been digested in one gallon of strong alcohol. To this add, with constant stirring, the bleuching solution, After half an hour's standing add enough hydrochloric acid to give an acid reaction. The shellac is precipitated, and must be washed and kneaded in hot water until the water passes off clear. It is then dried in the air. The filtrate may be neutralized by addition of from which is used for polluting spirit into methylated spirits? A. Oak wood gives good results, though any wood may be used. 5. Does not the electric current, when passing a long a copper wire, pass through the exterior of the wire for its course in preference to the core of the wire, or equally throughout the wire? A. Under ordinary conditions (dynamic electricity) equally throughout the wire. 6. Has it ever been decided that the electric current flows only in one direction when in complete circuit, and that it is from negative to positive pole? A. No. There is no flow except as a matter of convenience in nomenclature. 7. Would a new donarture in carhons (for street lamps), which would yield twice the amount of light given by those now in use (with the same dynamo power), be advisable, even though such new make of carbons lasted only half time the present ones do, and cost the same at first? A. It might seem doubtful, hecause the great desideratum is to have carbons last a long time. But the line indicated secms so hopeful a one that it would probably well repay work and investigation. 8, I notice sheets of [mica are never used for photographic plates for negatives; is there any good reason that unfits them for preparation for that purpose? A. They are rarely clear enough, and if large are very expensive, and are also friable. 9. How could I silver fluted and convoluted glass articles with quickeilver? I manage sheet glass all right after the old method, but fail with irregular surfaces; is there any way of brushing it on to the glass in the shape of a sort of mercury paint? A. Sec query 438, Scientific American, March 16, 1889. 10. I wish to cut or turn a hole with radiated grooves through a block of box wood, not a screw worm hole, but a sort of ratchet evele groove, each groove to be uniform. How could I do so? A. This you might do with a hand tool, groove by groove, or cut a special chaser with straight cross-cut teeth. 11. What is the rule followed for eightingrifies? I have two of different makes; the foresight on one is merely a pin's head and the back sight very low for 200 yards; whereas in the other the foreeight is a semi-disk standing up quite an inch, with a back sight also very high. I can score equally as well with either, at 200 yards. A. The shape of rifle sights ls largely a matter of personal preference. Certain forms are generally considered more accurate than others, and sometimes may be "barred" or disallowed in matches

(750) G. S.—The soldering liquids are for making a perfect contact of the metals and their easy flow. Heat of a soldering copper is necessary for melting the tin and flowing it upon the surface.

(751) A. B. asks: Is there any way to prevent the corrosion of the connections of the carbons of a Grenet battery? A. Heat the ends of your carbons and apply paraffine, allowing it to soak well into the carbon. This will prevent the solution from reaching the electric connection of the carbon. Care should be taken to prevent the paraffine from reaching the portion of the carbon which extends into the solution.

(752) B. F. A. asks: When a weak solution (say 1 to 2 per cent) of copperas, protosulphate of iron, is mixed with decaying vegetable or animal matter, what arc the principal reactions that take place? i netice that copperas is an effective deodorizer, but do not understand its action. A. Your question is a difficult one. Offensive putrefaction is due largely to germs and low forms of bacterial life. Copperas is poisonous for these organisms, and so prevents decay.

(753) H. W. D.—So many young men are entering the field of electrical engineering, that you will flud it very hard to find a position. You should be willing to take any place that is in the electrical department, even if it is mcrely in charge of lamps or in the dynamo room. Wages will be low, work perhaps ilisagreeable to you, and the working up process will depend partly on your own activity and knowledge of the science and partly on opportunity. You will be in competition, morcover, with technically educated men. Having secured a place with some company, you should read and study assiduously. The addresses of companies can be procured from electrical journals' advertising pages.

(754) A. E. S.—Make your magnet cores of soft iron three-eighths of an inch in diameter and one and one-quarter inches long, and wind the cores to the depth of the diameter of the core with No. 24 wire We think that with a magnet of this kind you will have no further trouble with the bell.

(755) R. M. asks: 1. Will the dynamo explained in the Scientific American Supplement. No. 161, run iucandescent!lamps? If so, how many and of what power? A. It will run three five-candle power lamps of low resistance. 2. Would the current running through a one eighth inch bare wire on a circuit of 11/6 miles, lighting a bout 200 Edison 16 candle power incandescent lamps, be strong enough to cause death if a person should take hold of one of those wires? A. Probably not, hut we would not advise the handling of such wires.

(756) W. N. B. writes: In producing an electric light of 1/8 to 1 candle power, would it not be less expensive at the end of allyear to use an induction coil with one or two good cells of battery than to use a large power of battery alone? I wish to produce enough light to illuminate the front of a safe just so it will be visible during the night. A. You would gain nothing in economy by the nse of an induction coil in themanner proposed. The only advantage of an induction coil in electric lighting is in the distribution of the current. It permits of using a current of high potential on the line wires, and of reducing it at the point of use to a current of low notential suitable for incandescent

(757) H.L. H.-For making emery wheels see Scientific American Supplement, No. 125. 2. For preserving paste add a little alum water, 3 per cent, or a few drops of carbolic acid. Salicylic acid isalso an excellent preservative. 3. For black dye for leather: Boil 3 pounds logwood chips 16 to 1 pound fustic shavings, in 1 % gallons water; boil, filter, and apby distrilation. 4. What wood is methyl alcohol made solution of sulphate of iron. Dress the leather with oil or varnish as required. 4. For a quick-drying clear varnish use mastic dissolved in ether, or to make your shellac varnish clear, dissolve fine shellac in wood alcohol and allow it to settle in a bottle and decant the clear varnish. The muddy varnish is too thick for lacquer work. It is made for painters' use

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1	Bottle necks, tool for forming, W. A. Caswell	Fabric.         See k'ence fabric.           Faucet, self-closing, K. Maler.         401,288           Feed bag, W. M. Brooke         401,001           Feed regulator for roller mills, J. W. Wilson         400,986           Feed trough, G. D. Burton         401,249           Feeder, calf, W. L. Spencer         400,962           K'ence fabric, wire, B. Searles         400,954           Fence making machine, Parker & Landers         401,298           Fences, guard for barbed wire, M. B. Chappell         401,183	Oiler, eccentric, J. & I. Roshong       401,072         Ointment, C. V. Sutherland       400,967         Optical device for the observation of localities by reflection, E. A. Trapp       401,228         Orange grader, A. Ayer       401,241         Ore crusher and metal separator, J. C. Wiswell       400,988         Ore feeder, G. Johnston       401,074         Ore roaster, C. J. Fendel       401,023
1	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric.         401,288           Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong       401,072         Ointment, C. V. Sutherland       400,967         Optical device for the observation of localities by reflection, E. A. Trapp.       401,228         Orange grader, A. Ayer       401,241         Ore crusher and metal separator. J. C. Wiswell       400,988         Ore feeder, G. Johnston       401,034         Ore roaster, C. J. Fendel       401,023         Occillating chair, C. E. Whittlesey       401,089         Packing ring, renewable, H. R. Frisbie       401,262
1	Bottle necks, tool for forming, W. A. Caswell	Fabric.         See k'ence fabric.           Faucet, self-closing, K. Maler.         401,288           Feed bag, W. M. Brooke         401,001           Feed regulator for roller mills, J. W. Wilson         400,986           Feed trough, G. D. Burton         401,249           Feeder, calf, W. L. Spencer         400,982           Fence fabric, wire, B. Searles         401,954           Fence making machine, Parker & Landers         401,298           Fences, guard for barbed wire, M. B. Chappell         401,183           File, portable scrap, C. W. Taylor         400,968           Filtering apparatus, B. F. Perkins         401,057	Oiler, eccentric, J. & I. Roshong       401,672         Ointment, C. V. Sutherland       400,967         Optical device for the observation of localities by reflection, E. A. Trapp       401,228         Orange grader, A. Ayer       401,241         Ore crusher and metal separator, J. C. Wiswell       400,988         Ore freder, G. Johnston       401,034         Ore roaster, C. J. Fendel       401,023         Oscillating chair, C. E. Whittlesey       401,029         Packing ring, renewable, H. R. Frisbie       401,262         Pall cover, G. Fuchs       400,898
1	Bottle necks, tool for forming, W. A. Caswell	Fabric.         See k'ence fabric.           Faucet, self-closing, K. Maler.         401,288           Feed bag, W. M. Brooke         401,001           Feed regulator for roller mills, J. W. Wilson         400,986           Feed trough, G. D. Burton         401,249           Feeder, calf, W. L. Spencer         400,982           k'ence fabric, wire, B. Searles         400,954           Fence making machine, Parker & Landers         401,298           Fences, guard for barbed wire, M. B. Chappell         401,83           File, portable scrap, C. W. Taylor         401,968           Filtering apparatus, B. F. Perkins         401,657           Fire alarms, thermal circuit closer for, A. C.	Oiler, eccentric, J. & I. Roshong       401,672         Ointment, C. V. Sutherland       400,967         Optical device for the observation of localities by reflection, E. A. Trapp       401,228         Orange grader, A. Ayer       401,241         Ore crusher and metal separator, J. C. Wiswell       400,988         Ore feeder, G. Johnston       401,024         Ore roaster, C. J. Fendel       401,023         Oscillating chair, C. E. Whittlesey       401,089         Packing ring, renewable, H. R. Frisbie       401,262         Pail cover, G. E'uchs       400,908         Paint mixer, Schock & Wansbrough       401,306
1	Bottle necks, tool for forming, W. A. Caswell	Fabric.         See k'ence fabric.           Faucet, self-closing, K. Maler.         401,288           Feed bag, W. M. Brooke         401,001           Feed regulator for roller mills, J. W. Wilson         400,986           Feed trough, G. D. Burton         401,249           Feeder, calf, W. L. Spencer         400,982           Fence fabric, wire, B. Searles         401,954           Fence making machine, Parker & Landers         401,298           Fences, guard for barbed wire, M. B. Chappell         401,183           File, portable scrap, C. W. Taylor         400,968           Filtering apparatus, B. F. Perkins         401,057	Oiler, eccentric, J. & I. Roshong       401,672         Ointment, C. V. Sutherland       400,967         Optical device for the observation of localities by reflection, E. A. Trapp       401,228         Orange grader, A. Ayer       401,241         Ore crusher and metal separator, J. C. Wiswell       400,988         Ore freder, G. Johnston       401,034         Ore roaster, C. J. Fendel       401,023         Oscillating chair, C. E. Whittlesey       401,029         Packing ring, renewable, H. R. Frisbie       401,262         Pall cover, G. Fuchs       400,898
1	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric.         401,288           Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong       401,072         Ointment, C. V. Sutherland       400,967         Optical device for the observation of localities       by reflection, E. A. Trapp.       401,228         Orange grader, A. Ayer       401,241         Ore crusher and metal separator. J. C. Wiswell       400,988         Ore feeder, G. Johnston       401,034         Ore rosater, C. J. Fendel       401,023         Oscillating chair, C. E. Whittlesey       401,089         Packing ring, renewable, H. R. Frisbie       401,262         Pall cover, G. Fuchs       400,908         Paint mixer, Schock & Wansbrough       401,366         Paper box. D. S. Clark       401,009
1	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric.         401,288           Faucet, self-closing, K. Maler.         401,001           Feed bag, W. M. Brooke         401,001           Feed regulator for roller mills, J. W. Wilson         400,962           Feeder trough, G. D. Burton         401,249           Feeder, calf, W. L. Spencer         400,962           Fence fabric, wire, B. Searles         401,298           Fence making machine, Parker & Landers         401,283           File, portable scrap, C. W. Taylor         401,398           Filtering apparatus, B. F. Perkins         401,057           Fire alarms, thermal circuit closer for, A. C.         Lwanowski         400,917           Firearm, breech_loading, W. Anson         401,101	Oiler, eccentric, J. & I. Roshong         401,072           Ointment, C. V. Sutherland         400,967           Optical device for the observation of localities by reflection, E. A. Trapp         401,228           Orange grader, A. Ayer         401,241           Ore crusher and metal separator. J. C. Wiswell         400,988           Ore feeder, G. Johnston         401,024           Ore roaster, C. J. Fendel         401,023           Oscillating chair, C. E. Whittlesey         401,089           Packing ring, renewable, H. R. Frisble         401,282           Pail cover, G. Fuchs         400,908           Paint mixer, Schock & Wansbrough         401,308           Paper box. D. S. Clark         401,009           Paper, composition for waterproofing and prepar-
1	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric. Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong         401,672           Ointment, C. V. Sutherland         400.967           Optical device for the observation of localities by reflection, E. A. Trapp         401,228           Orange grader, A. Ayer         401,241           Ore crusher and metal separator. J. C. Wiswell         400.988           Ore freder, G. Johnston         401.034           Ore roaster, C. J. Fendel         401.023           Oscillating chair, C. E. Whittlesey         401.089           Packing ring, renewable, H. R. Frisbie         401.262           Pall cover, G. Fuchs         400.908           Paint mixer, Schock & Wansbrough         401.306           Paper, composition for waterproofing and preparing sheathing and building. Manahan & Gade.         401,462
1	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong         401,072           Ointment, C. V. Sutherland         400,967           Optical device for the observation of localities         by reflection, E. A. Trapp.         401,228           Orange grader, A. Ayer         401,241           Ore crusher and metal separator. J. C. Wiswell         400,988           Ore feeder, G. Johnston         401,024           Ore rosater, C. J. Fendel         401,023           Oscillating chair, C. E. Whittlesey         401,089           Packing ring, renewable, H. R. Frisbie         401,262           Pall cover, G. Fuchs         400,908           Paper box. D. S. Clark         401,009           Paper, composition for waterproofing and preparing sheathing and building. Manahan & Gade.         401,642           Paper machine, lace, G. Pact         401,034
1	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottle stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401,003 Bread raiser and kitchen safe, combined, D. Pentz. 401,055 Brick, T. Thorn. 400,374 Brick, incrusting, J. C. Anderson. 401,098 Brick kiln furnace, C. M. Keep. 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 400,891	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong         401,072           Ointment, C. V. Sutherland         400,967           Optical device for the observation of localities         by reflection, E. A. Trapp.         401,228           Orange grader, A. Ayer         401,241           Ore crusher and metal separator. J. C. Wiswell         400,988           Ore feeder, G. Johnston         401,024           Ore rosater, C. J. Fendel         401,023           Oscillating chair, C. E. Whittlesey         401,089           Packing ring, renewable, H. R. Frisbie         401,262           Pall cover, G. Fuchs         400,908           Paper box. D. S. Clark         401,009           Paper, composition for waterproofing and preparing sheathing and building. Manahan & Gade.         401,642           Paper machine, lace, G. Pact         401,034
1	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric. Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong         401,072           Ointment, C. V. Sutherland         400,967           Optical device for the observation of localities by reflection, E. A. Trapp         401,228           Orange grader, A. Ayer         401,241           Ore crusher and metal separator, J. C. Wiswell         400,988           Ore feeder, G. Johnston         401.034           Ore roaster, C. J. Fendel         401,023           Oscillating chair, C. E. Whittlessy         401,032           Packing ring, renewable, H. R. Frisbie         401,262           Pail cover, G. Fuchs         400,908           Paint mixer, Schock & Wansbrough         401,308           Paper box. D. S. Clark         401,009           Paper, composition for waterproofing and preparing sheathing and building, Manahan & Gade.         401,642           Paper machine, lace, G. Paci.         400,913
	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric. Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottle stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401,003 Bread raiser and kitchen safe, combined, D. Pentz. 401,055 Brick, T. Thorn. 400,974 Brick, incrusting, J. C. Anderson. 401,098 Brick kiln furnace, C. M. Keep. 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 400,891 Building blocks or paving tiles, frame for, B. W. Beiden. 400,998 Bundle carrier, F. Hickmann. 401,032	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong       401,072         Ointment, C. V. Sutherland       400,967         Optical device for the observation of localities       by reflection, E. A. Trapp.       401,228         Orange grader, A. Ayer       401,241         Ore crusher and metal separator, J. C. Wiswell       400,988         Ore feeder, G. Johnston       401,034         Ore rosater, C. J. Fendel       401,023         Oscillating chair, C. E. Whittlesey       401,089         Packing ring, renewable, H. R. Frisbie       401,262         Pall cover, G. Fuchs       400,908         Paper box. D. S. Clark       401,009         Paper, composition for waterproofing and preparing sheathing and building. Manahan & Gade       401,042         Paper machine, lace, G. Pact       401,054         Paper roll, toilet, O. H. Hicks       400,913         Pavement and paving brick, D. Harger       401,030
	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottle stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401,003 Bread raiser and kitchen safe, combined, D. Pentz. 401,055 Brick, T. Thorn. 400,974 Brick, T. Thorn. 400,974 Brick kiln furnace, C. M. Keep. 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 401,081 Buckle, D. B. Baker. 400,891 Building blocks or paving tiles, frame for, B. W. Belden 400,996 Bundle carrier, F. Hickmann. 401,032 Burner. See Gas lighting burner. Hydrocarbon	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
l re l e l e l e l e l e l e l e l e l e	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottle stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401,003 Bread raiser and kitchen safe, combined, D. Pentz. 400,655 Brick, T. Thorn. 400,974 Brick, incrusting, J. C. Anderson. 401,098 Brick kiln furnace, C. M. Keep. 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 401,097 Buckle, D. B. Baker. 400,891 Building blocks or paving tiles, frame for, B. W. Belden. 400,996 Bundle carrier, F. Hickmann. 401,032 Burner. See Gas lighting burner. Thydrocarbon burner.	Fabric. See k'ence fabric.         401,288           Faucet, self-closing, K. Maler.         401,001           Feed Dag, W. M. Brooke         400,001           Feed regulator for roller mills, J. W. Wilson         400,962           Feeder trough, G. D. Burton         401,249           Feeder, calf, W. L. Spencer         400,952           Fence fabric, wire, B. Searles         401,295           Fence making machine, Parker & Landers         401,283           File, portable scrap, C. W. Taylor         401,011.83           File, portable scrap, C. W. Taylor         401,057           Fire alarms, thermal circuit closer for, A. C.         Iwanowski         401,057           Firearm, breech_loading, W. Anson         401,01           Firearm, revolving, D. B. Wesson         401,07           Fishing reels, line guide for, Moller & Raettig         401,09           Flour bin and sifter. T. F. Crary         401,254           Flusbing urinals, etc., apparatus for, S. H.         Wright         401,321           Frame. See Awning frame. Embroidering machine frame. Harvester frame. Spectacle	Oiler, eccentric, J. & I. Roshong
l Ris le t	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric. Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
l e l e l e l e l e l e l e l e l e l e	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottle stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401,003 Bread raiser and kitchen safe, combined, D. Pentz. 400,655 Brick, T. Thorn. 400,974 Brick, incrusting, J. C. Anderson. 401,098 Brick kiln furnace, C. M. Keep. 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 401,097 Buckle, D. B. Baker. 400,891 Building blocks or paving tiles, frame for, B. W. Belden. 400,996 Bundle carrier, F. Hickmann. 401,032 Burner. See Gas lighting burner. Thydrocarbon burner.	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
l Risk L . C la e t	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottles stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401,003 Bread raiser and kitchen safe, combined, D. Pentz. 401,065 Brick, T. Thorn. 400,974 Brick, incrusting, J. C. Anderson. 401,088 Brick kiln furnace, C. M. Keep. 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 401,081 Budle carrier, F. Hickmann. 400,891 Bundle carrier, F. Hickmann. 401,032 Burner. See Gas lighting burner. Hydrocarbon burner. Butter mould, H. I. Carver. 401,130 Butter worker, H. I. Carver. 401,130 Butter worker, H. I. Carver. 401,130	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
l Rise a le t	Bottle necks, tool for forming, W. A. Caswell	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
l Rise a le ton	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottles stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401.003 Bread raiser and kitchen safe, combined, D. Pentz. 400,055 Brick, T. Thorn. 400,974 Brick, incrusting, J. C. Anderson. 401,088 Brick kiln furnace, C. M. Keep. 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 401,097 Buckle, D. B. Baker. 400,891 Building blocks or paving tiles, frame for, B. W. Belden. 400,996 Bundle carrier, F. Hickmann. 401,032 Burner. See Gas lighting burner. Hydrocarbon burner. Butter mould, H. I. Carver. 401,130 Button, G. H. Thomas. 401,084 Button, campaign. Winterdorf & Reymond. 401,094	Fabric. See k'ence fabric. Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottles stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401,003 Bread raiser and kitchen safe, combined, D. Pentz. 401,055 Brick, T. Thorn. 400,974 Brick, incrusting, J. C. Anderson. 401,035 Brick kiln furnace, C. M. Keep. 401,172 Bricks, etc., incrusted with metal. J. C. Anderson 400,891 Building blocks or paving tiles, frame for, B. W. Belden. 400,891 Bundle carrier, F. Hickmann. 401,032 Burner. See Gas lighting burner. Hydrocarbon burner. Butter mould, H. I. Carver. 401,130 Butter worker, H. I. Carver. 401,139 Button, G. H. Thomas. 401,034 Button, campaign. Winterdorf & Reymond. 401,034 Cable, wire, Batchelor & Latch. 401,112	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong         401,672           Ointment, C. V. Sutherland         400,967           Optical device for the observation of localities         by reflection, E. A. Trapp.         401,228           Orange grader, A. Ayer         401,241           Ore crusher and metal separator. J. C. Wiswell         400,988           Ore feeder, G. Johnston         401,034           Ore roaster, C. J. Fendel         401,034           Occillating chair, C. E. Whittlesey         401,089           Packing ring, renewable, H. R. Frisbie         401,262           Pall cover, G. E'uchs         400,908           Paint mixer, Schock & Wansbrough         401,366           Paper box. D. S. Clark         401,009           Paper, composition for waterproofting and preparing sheathing and building. Manahan & Gade         401,412           Paper roll. toliet, O. H. Hicks         400,913           Paper roll. toliet, O. H. Hicks         400,913           Pavement and paving brick, D. Harger         401,030           Paving block, R. B. Berrie         400,937           Perforating machine, S. D. Layman         401,089           Photographic brinting frames, vignetting attachment for, J. R.[Tewksbury         401,088           Planos, key leveling device for, C. H. Smith         401,303           Plan
	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottles stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401.003 Bread raiser and kitchen safe, combined, D. Pentz. 400,055 Brick, T. Thorn. 400,974 Brick, incrusting, J. C. Anderson. 401,088 Brick kiln furnace, C. M. Keep. 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 401,097 Buckle, D. B. Baker. 400,891 Building blocks or paving tiles, frame for, B. W. Belden. 400,996 Bundle carrier, F. Hickmann. 401,032 Burner. See Gas lighting burner. Hydrocarbon burner. Butter mould, H. I. Carver. 401,130 Button, G. H. Thomas. 401,084 Button, campaign. Winterdorf & Reymond. 401,094	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottles stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns. 401,003 Bread raiser and kitchen safe, combined, D. Pentz. 401,055 Brick, T. Thorn. 400,974 Brick, Incrusting, J. C. Anderson. 401,038 Brick incrusting, J. C. Anderson. 401,072 Bricksetc. incrusted with metal. J. C. Anderson 401,089 Building blocks or paving tiles, frame for, B. W. Belden. 400,993 Burner. See Gas lighting burner. Hydrocarbon burner. Butter mould, H. I. Carver. 401,130 Buttor worker, H. I. Carver. 401,129 Button, G. H. Thomas. 401,084 Button, campalyn. Winterdorf & Reymond. 401,084 Cable, wire, Batchelor & Latch. 401,1112	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong         401,672           Ointment, C. V. Sutherland         400,967           Optical device for the observation of localities         by reflection, E. A. Trapp.         401,228           Orange grader, A. Ayer         401,241           Ore crusher and metal separator. J. C. Wiswell         400,988           Ore feeder, G. Johnston         401,034           Ore roaster, C. J. Fendel         401,034           Occillating chair, C. E. Whittlesey         401,089           Packing ring, renewable, H. R. Frisbie         401,262           Pall cover, G. E'uchs         400,908           Paint mixer, Schock & Wansbrough         401,366           Paper box. D. S. Clark         401,009           Paper, composition for waterproofting and preparing sheathing and building. Manahan & Gade         401,412           Paper roll. toliet, O. H. Hicks         400,913           Paper roll. toliet, O. H. Hicks         400,913           Pavement and paving brick, D. Harger         401,030           Paving block, R. B. Berrie         400,937           Perforating machine, S. D. Layman         401,089           Photographic brinting frames, vignetting attachment for, J. R.[Tewksbury         401,088           Planos, key leveling device for, C. H. Smith         401,303           Plan
l resident	Bottle necks, tool for forming, W. A. Caswell. 400,898 Bottles stopper, S. Marks. 400,997 Bottles, means for facilitating the opening of internally stoppered, Barrett & Varley. 400,892 Box. See Paper box. Work box. Brace. See Back and leg brace. Drill brace. Brake. See Car brake. Vehicle brake. Wagon brake. Brake handle, S. A. Burns 401,003 Bread raiser and kitchen safe, combined, D. Pentz 400,055 Brick, T. Thorn 400,074 Brick, incrusting, J. C. Anderson 401,098 Brick kiln furnace, C. M. Keep 401,172 Bricks. etc., incrusted with metal. J. C. Anderson 401,097 Buckle, D. B. Baker 400,891 Building blocks or paving tiles, frame for, B. W. Belden 400,996 Bundle carrier, F. Hickmann 400,32 Burner. See Gas lighting burner. Hydrocarbon burner. Butter mould, H. I. Carver 401,130 Button, G. H. Thomas 401,084 Button, campaign. Winterdorf & Reymond 401,094 Cable, wire, Batchelor & Latch 401,112 Calorimeter. Steam, G. H. Barrus 401,112	Fabric. See k'ence fabric.  Faucet, self-closing, K. Maler	Oiler, eccentric, J. & I. Roshong
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lighting. We think it would he better if you were to employ a few cells of gravity battery and a storage bat-	Car coupling, M. M. Carmona y Valle	Gas burners, apparatus for lighting, A. A. Lister 401,184 Gas engines, igniting apparatus for, L. C. & B.
tery.	Carcoupling, C. A. McDourall         401,046           Car coupling, J. L. Monasmith         401,198	Parker
(757) H.L. H.—For making emery wheels see Scientific American Supplement, No.	Car heater, Mead & Thomson	Gas pressureregulator, W. H. Metcalf
125. 2. For preserving paste add a little alum water, 3 per cent, or a few drops of carbolic acid. Salicylic	Car, stock. J. R. Wilson	Gate, C. Chiddister
acid isalso an excellent preservative. 3. For black dye for leather: Boil 3 pounds logwood chips, ½ to 1 pound	min	Gate, T. Tyson
fustic shavings, in 1 % gallons water; boil, filter, and apply to the surface of the leather. Then apply a wash	Cars, brake shoe attachment for railway, G. A.  Diedel	Gearing, frictional, G. F. Evans
solution of sulphate of iron. Dress the leather with oil or varnish as required. 4. For a quick-drying clear	Cars, lamp fixture and ventilator for railway, J. Williams et al. 400.984	Glassware, apparatus for shaping. J. Anderson 401,099 Glove fastening. W. S. Richsrdson400,948, 401,070 Grain binders, band securing mechanism for, J. S.
varnish use mastic dissolved in ether, or to make your shellac varnish clear, dissolve fine shellac in wood	Cars, safety guard for railway, G. W. Remington. 401.068 Carrier. See Bundle carrier. Harvester sheaf	Davis
ulcohol and allow it to settle in a bottle and decant the	carrier. Case. See Book case.	Grain drill, J. W. Rhodes 400,947 Grain separator, H. Stoker 400,985
clear varnish. The muddy varnish is too thick for lacquer work. It is made for painters' use.	Caster, G. D. Clark	Grinding machine, W. S. Robbins
(758) L. J. writes: A ball falls 64 feet from the mast of a moving ship to the deck. During	Chain and uncoupling device therefor, door, H.  Maul	Guard. See Snow guard. Hair curier. F. Faust
the time of the fail, the ship moved 24 feet. Represent the actual path of the ball. Find its length. A. The	Chair. See Oscillating chair. Switch rail chair. Chute indicator, coal, J. Elder	Hair plucking machine, J. H. Brierley
ball will fall vertically from the mast to the deck, as a plumb line would hang, save variation by the wind. In	Cigar bunching machine, S. A. Shepard	Handle. See Brake handle. Cutlery handle.  Harness hook, D. E. Kempster
relation to a stationary vertical line, the path of the ball	Cigar cutter and support, P. Kern	Harrow, wheeled, McSherry & Swope
would be parabolic, having the vertical line at the moment of starting as the axis, with the acceleration of	Circuit connecting device, J. C. Reilly	Harvester frame, R. Brown
fall and the motion of the ship as co-ordinates. By working out the co-ordinates for moments of flight you	Clevis, awning, W. M. Brown	Heater. See Car heater. Heating apparatus, electric, H. F. Watts,
will obtain the true length of the curve.  Books or other publications referred to ahove	Rahe       401.065         Clother drier, C. D. Fuller       401.264	Heel burnishing machine, J. W. Carver 401.131
can, in most cases, be promptly obtained through the SCIENTIFIC AMERICAN office, Munn & Co., 361 Broad-	Clothes line support, J. T. Crane	Hinge, W. S. Larimer
way, New York.	Clutch. friction, King & Barnhart.       401,176         Cocks.floor key for. J. Powell.       400,944	Hoe blank, G. B. Ely
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An experience of forty years, and the preparation of more than one hundred thousand applications for pa- tents at home and abread enable us to understand the	Coffins, frame for the pillows of, C. Krauser 401.284 Commutator bars, fitting, F. Bailley 400.994	Hub, wheel, E. C. Roberts
tents at home and abroad, enable us to understand the laws and practice on both continents, and to possess un-	Conduits, leading-in apparatus for, J. A. Seely 400,858 Cone duster for fibrous substances, F. G. Sargent. 400,853	Hydrocarbon burner, J. Akin
equaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons	Cooking apparatus, portable, H. Fricker	Hydrocarbon burner, W. L. Fisher. 401.149 Hydrocarbon burner, A. F. Fletcher. 400,906 Indicator Sea Chuta indicator Power india
contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices,	Copper from copper pyrites, extracting. J. Perino 401.036 Corn husking implement, J.M. Culberson	Indicator. See Chute indicator. Power indi- cator.
which are low, in accordance with the times and our ex- tensive facilities for conducting the business. Address	Corset, F. E. Denzel	Induction coil and self-inductive apparatus, E. Thomson
MUNN & CO., office Scientific American, 361 Broadway, New York.	Cotton picking machine, T. J. Gray	Insulating and coating compound, A. De Figa- niere
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