a perfectly smooth dead black varuish for brass, etc.? A. A good black for brass consists of thin seed ac varnish (made by dissolving seed lac in alcohol) and refined lamp black. The varnish must be quite thin to insure a dead black, and it should be strained after the addition of the lamp black, to remove all lumps. 2 How to make a transparent dip varnish or lacquer for silver plated and gilt work (on metals)? A. Use a thin shellac varnish, made by dissolving white shellac in alcohol

(4036) J. B. says: Kindly answer through Scientific American what causes clicking in pipes fine or paraffine or some similar series. We doubt its when steam is turned on? Give scientific explanation and remedy. Why would not it be a good idea in order to increase the speed of our fast boats, to have oil forced out at the bow and keel? This would naturally rise and envelop the hull, forming a film of oil for the boat to ride on, thereby reducing the friction of the water. Give a scientific explanation of how electricity makes a motor revolve. Give suggestions of some simple way of heating water closets in this cold climate. A. The noise in the pipes is caused by water hammer. The steam is rapidly condensed in the cold pipe, and is thrown against the pipes, elbows or bends by the velocity of the steam through them. The water also accumulates in small masses, which are dashed against each other; this in a confined space like a pipe produces a hammering noise. Your suggestion is good, but expensive. Air has been tried on a steamboat in New York Bay, but did not meet expectation. A motor is driven by maintenance of poles in the armature attracted or repelled by the field magnet poles. We suggest that you move the water closet into the house, or put up a

(4037) W. L. asks: 1. Would a bar magnet be as strong magnetically if tempered hard only at the ends (say one-fifth of the length at each end) as it is often alloyed with copper. 3. Action and reaction being equal, will a dirty gun "kick" any worse than a clean one, with the same charge? Also why do some powders produce less noise than others? A. No. Some powders burn progressively with less oise than suddenly detonating ones. 4. Isnot linseed oil a good substance for water-proofing canvas boats? A. Yes. 5. Is the process of raising bread by means of hydrochloric acid and soda economical or healthful? A. It is not a safe one for unskillful or careless hands. 6. Is there any easy method of deodorizing skunk skins? A. It can be done by burying the skins in the earth.

(4038) E. D. asks: 1. Will an amperemeter register equally as well on the positive as on the negative wire? A. Yes. 2. Will the same number of amperes that are delivered on the positive return on the negative? A. Yes. 3. What per cent of slip on dynamo belts is good practice? A. No slip.

(4039) E. E. W. asks: Will you please answer the following question: Is there anything (about 1-32 inch thick) I could place between a staple shaped magnet and a flat piece of steel to keep it from drawing? A. No insulator of magnetism has been discovered. Perpetual motionists have been looking for a thing of this sort since magnets were known. We fear they are doomed to disappointment.

before it reaches the atmosphere, or is it produced by transmission through the air? A. The atmosphere sound travel equally in all directions, or in a straight line from a common center? A. It depends much on the manner of producing the sound and the condition of the propagating medium. The sound from a bell hung in a clear space and surrounded by a quiescent homogeneous air can be heard equally well in all directions. 3. Is a person in an audience at twice the distance from a speaker able to hear better than one sphere, or does all light possess the quality of heat? A. The atmosphere is heated when acted on by ether waves, especially when it contains moisture. 5. Is the form of vibration of heat-producing light materially different from non-heat-producing light? A. They are probably the same, but there is no conclusive proof that they are. 6. Is all light convertible into heat on passing through a suitable lens? A. This is an undecided question

manganese? For what purpose is it used, and what is its value? A. It is a compound of manganese and oxygen; its formula is MnO₂. It is used in batteries to a certain extent as a depolarizer, but its principal use is in the manufacture of bleaching powder. Its value depends on its purity and quality. It retails by the barrel at from 4 to 7 cents per pound, but in gross lots would bring far less than this.

is also found native. b. By double decomposition of salt and magnesium sulphate at low temperatures. c. By roasting iron or copper sulphide with salt. d. By calcining a mixture of sodium nitrate and magnesium sulphate. e. It is a by-product of petroleum refining. paily used? A. Principally in the manufacture of glass, ultramarine, and soda ash. 3. How much is annually works? A. Sometimes in wool dyeing.

(4043) F. T. K. writes: 1. I made a battery of the Chaperon-Lalande type, by plugging a piece of two inch gas pipe in one end and fitting a cap to the other, through which I put the zinc (a % inch x 6 inch

(4035) V. L. C. asks: 1. How to make wrong? A. Your trouble is due to the use of cupric hydrate instead of oxide. Make the oxide by heating thin copper plates to red heat in the air, and after cooling beat off the oxide and reheat until it is all oxidized. 2. At the railroad shops I am employed at they have a gas plant of the Pintsch system for lighting the passenger coaches. The gas for use in the coaches is compressed to about 14 atmospheres, and during compres sion there is a liquid condensed from it which the man in attendance calls hydrocarbon, which has wou quite reputation as a cure for rheumatism. What is this liquid and what do you think of it as a cure for rhenmatism? A. The residue is a hydrocarbon of the oletherapeutic value.

(4044) T. H. B. H. says: We have a 20 horse engine, 30 horse boiler, run two 60 saw gins, jet and pump, and until recently a frictiou pulley press We have put in instead a "direct steam press," 30 inch cylinder. In pressing the bale, we make four charges, i.e., put into the press a certain amount of cotton, run up the press," and "dogs" for the purpose hold up the cotton thus presend until more cotton is put in. and another charge or run-up is made. When making is the last or fourth charge, often the water is drawn out of the boiler from two gauges to less than one. What the danger, and how to prevent? The press factory sent a man here to adjust the press, and he condemns the dome system, Ours is 24 inches by 24 inches. His plan is to have a pipe 11/4 inch in diameter and four or five feet long inside of boiler, perforated with a number of 1/4 inch holes, and to take steam from boiler by said pipe instead of by dome, arguing that the small boles in the pipe would not permit the water to escape from the boiler to the engine and press, as the large orifice, now in boiler for the dome, does. A. There is would be if tempered for the full length? A. Yes. 2. the water in the boiler. This is bad, and dangerous What are the ordinary impurities of aluminum? A. It | practice. Go a little slower in opening the valve, and no more than enough to fill the cylinder slowly. 1¼ inch pipe from the top of the dome to the cylinder, with a 11/2 inch valve, would be preferable to a larger steam pipe and valve--anything to throttle the sudden ontrush of steam which causes the lifting of the

> (4045) E. E. B. asks: If a man with a rifle and one with a cannon are placed any distance apart within range, and both fire at the same time toward each other, the cannon ball to travel twice as fast as the rifle ball, the rifle ball penetrating the cannon ball all the time until it is brought back to the place it started from, does therifie ball at any time come to a dead stop? Second, if a man is on a moving train. and he starts from the front and walks toward the rear, can it be said that he is going in two directions at once? Third, if anything is started in any direction, is it possible for it to return to the starting point on the same line, without stopping first? Fourth, does the pendulum of a clock stop in swinging back and forth? A The rifie ball stops at the instant its motion is reversed. The man moves only in one direction. All reversing motions have a dead stop. The same with the pendu-

(4046) H. M. asks: 1. What pressure per square inch is exerted by illuminating gas com (4040) C. H. F. asks: 1. Is light | pressed to one-tenth its original bulk? A. Gas compressed will give about 135 pounds gauge pressure. 2. What is the limit of gas compression? A. There is plays no part in the production of sunlight. 2. Does no limit above the point of liquefaction. 3. Would one-sixteenth inch steel plate be strong enough to stand the pressure referred to in question one? A. Yes, if not over 1 inch diameter. 4. What is the difference in strength and also in weight between steel and aluminum? A. Aluminum has about one-third the tensile strength of steel, depending upon their quality. 5. As one horse power steam engine equals 33,000 foot pounds per minute, would this be the same as 550 pounds per back of him (the speaker)? A. Yes. 4. Is heat prosecondone foothigh? A. Yes. The best results are about
duced by the transmission of light through the atmo21 cubic feet gas per hour per horse power. 6. What is the weight of a 100 horse power gas engine (Otto for instance) and how much gas per hour does it consume? A. Address the Otto Cas Engine Co., Philadelphia, Pa

(4047) V. M. asks: 1. Are engineers licensed as to grade?-for instance, a man might be capable of tending boiler and the common slide valve en gines, but not the high grade of Corliss. Could he procure license? A. There are no provisions for the granting of valid license to engineers, except under muni-(4041) E. F. L. asks: What is black cipal regulations in cities. 2. What is a blister on a boiler sheet? How caused and where found? A. A blister arises from a scab or defective weld beneath the surface of the plate. This prevents the heat passing into the boiler at that point. The surface becomes overheated and expands the film of iron over the defective place, and in a short time raises a blister. It usually occurs on the fire sheet. 3. How is a pop eafety valve adjusted? A. A pop valve is regulated by (4042) A. B. C. asks (1) from what a screw at the top. 4. What is the best form of bat-Glauber salt is obtained. A. &. By treating salt with sulphuric acid and distilling off the hydrochloric acid. It can be used for producing the current of a medical is also found native. A By double decomposition of salt battery. 5. How are the flues arranged in vertical boilers? A. See "Steam Boilers and their Construction," by Wilson, \$2.50 mailed.

(4048) B. R. W. asks the construction of a battery in which saltpeter is used for the depolbut is not always utilized. 2. For what is it princi- anizer. Is it agood closed circuit battery, or is it only suited for open circuit? What is the voltage and amperage? A. It is the ordinary Grove combination. A used in this country? A. No reliable statistics are porous cup is used for the sodium nitrate solution, procurable, as a great part is made directly by those, which is best acidified with sulphuric acid; in this cup who use it. 4. Is it used for dyeing and in print is placed the negative plate. The positive plate of zinc, amalgamated, is in the outer vessel, which contains dilute sulphuric acid. There is nothing new in the combination. It gives 17 to 19 volts, and 18 an excellent open circuit battery.

(4049) L. S. G. says: Would like to know rod) insulated from the pipe. Not being able to procure if you could let me know of some way to give small the oxide of copper, I made some by precipitating a so- steel wire springs a good spring temper? Wire about lution of sulphate of copper with canstic soda. I the size of a 40 drill and 1% inches long. A. If you placed the oxide of copper in the tube to the depth of have a number of springs to temper, place them in a about an inch. The battery would ring a small bell for small sheet iron box with a little pulverized charcoal a few seconds, and then all action would cease. What is on the bottom and over the springs. Heat to a cherry

red and tip the springs into the water. Dry and spread them on a wire sieve and dip in boiling linseed oil for 2 or 3 seconds and again cool in water. Another way is to slightly polish the springs after hardening and lay them in a flat pan and heat until a full blue color comes and then quickly cool in water.

A. Y. O. aslas how to fine wine. - L. B. K. asks how to color brass a fine blue.-S. L. A. asks for a hair tonic or hair invigorator.-J. W. wants an iron paint.-Old Sub. asks: Will you oblige by giving the receipt for making the beautiful gloss that is found on collars and cuffs?—A. D. J. E. asks for receipts for making various kinds of matches .- H. D. H. says: How can I make a hektograph?-F. C. H. wants to know how to make hektograph ink .- C. H. asks (1) for a silver plating fluid for brass and steel. (2) A collodion for covering corns.-F. H. W. asks how to make a good glue mountant suitable for mounting photographs.-F. J. S. asks how to cure corns and bunions.-J. E. W. asks (1) for a good cement to splice belts with. (2) for a rust preventive.-B. V. H. wants to know a remedy for chapped hands.—M. D. asks for a lasting perfume, also for blonde hair dye.-R. H. W. wants to know how to make a depilatory for removing superfluous hair .- J. E. T. asks (1) for ink to use on typewriter ribbons, (2) carbon paper.—C. R. A. asks for a receipt for a hair invigorator.—J. F. F. says: Can you inform me how horu is dyed or stained in various colors?-H. M. A. asks the nature of the preparation used to clean wall paper .- G. A. M. says: Will you please give me (1) a formula for a combined toning and fixing solution, (2) for a hydrochinon developer, (3) how to preserve albumen paper ? -A. P. asks: Can you inform me through the query columns of your valuable paper how to make a paste or glue for use in book binding, or how to use common glue nothing wrong in the dome. The 11/2 inch pipe is too so that it will not crack, as I have found it to do?-H. E. small, and would be nearer the water than the dome. J. asks: Will you kindly inform me in what number I You probably open the steam valve too wide and lift can find a receipt for the ordinary writing fluids used at the present time, or send me a formula ?-C. D. asks; Would you have the kindness to advise me what publication to purchase that contains the information how to prepare solutions to do bronze, nickel, and silver plating with an electric dynamo?-H. R. S. asks: 1. Please give me a recipe for a waterproof glue to be used in putting the patch on a shipping tag. 2. Also a recipe for taking rust off fine steel tools.—C. N. F. says: Will you tell your subscriber how to make Roman candles ?-J. J. says: Could you give me a sure cure receipt for perspiration of the feet. Sometimes in my daily walks they annoy me very much and the odor is very offensive. If there should be a cure for such au ailment, I know you would benefit me as well as others that may be afflicted with it.-L. B. says : Please be so kind as to give one of your steady readers a recipe to make glue so that water will not act upon it after it has been applied on wood or any other articles.-M. M. asks: What preparations are used in making typewriter ribbons ?-A. A. F. says: I write to ask if you can suggest anything which, applied to one's hair, will take the stubbornness out of it.

> Answers to all of the above queries will be found in the "Scientific American Cyclopedia of Receipts, Notes and Queries," to which our correspondents are referred. The advertisement of this book is printed in another column. A new circular 18 now ready.

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INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

February 9, 1892,

AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

Adjustable clamp for securing stands to various	
objects, C. E. Hudson	468,450
Aging and rectifying alcoholic liquids by ozone.	,
apparatus for, Broyer & Petit	468,326
Air brake, J. B. Knudsen	468,387
Air brake, automatic, A. Silcock	468,701
Alarm. See Burglar alarm. Low water alarm.	200,101
Annealing, S. H. Brown,	468,740
American description desired for D. A. Tebera	200,120
Annunciators, resetting de vice for, R. A. Schoen-	400 000
Arc light globe holder, C. A. Pfluger	400,007
Are light globe notiner, C. A. Finiger,	408,412
Arc light hanger for inside use, C. A. Pfluger	468,415
Armsture, ring, J. G. Pool.	468,690
Bag. See Mail hag.	
Bale tie, A. S. Robinson	468,467
Bale tie machine, W. S. Livengood	468,667
Baling press, Brown & Gehrt	468,638
Bar. See Cutter har.	,
Harrel tress, W. Ludwig	468,463
Basin cover, catch, W. M. Whitten	468,714
Hearing plate for vehicles, center, D. L. Barnes	468,471
Bedstead, wardrobe, W. D. Snyder.	
Roll door I W Boos	400,000
Bell, door, J. W. Ross. Belt, safety, J. C. Moore.	468,403
Beit, Salety, J. C. Moore.	468,574
Belt shifting apparatus, S. Barrett	468,478
Bending roll, E. Heyde.	468,659
Bevel, A. & J. L. Kershaw	468,386
Bicycle, F. Clement	468,643
Bicycle luggage carrier. A. B. Barkman	468.757
Bicycle saddle, L. A. Sherman	468,398
Bicycles, spring fork for, J. McCain	468,750
Block. See Pulley block.	,
Board. See Bulletin board. Wash board.	
Bobbin, sheet metal, H. Krantz	468,567
Boiler. See Steam boiler. Water tube hoi er.	200,000
Bolt header, S. Blenkhorn.	469 393
Rook check R W Morgan	468 441
Book, check, R. W. Morgan Book, coupon, W. F. Beck	468 626
Book or case cover, S. A. Stange	400,000
Books, means for locking, J. I. Covington	400,132
Poot closury I D Dwighott	400,012
Boot cleaner, J. B. Prickett	400,304
Bottle, nursing, G. A. Bobrick Bottles, etc., apparatus for capsuling, F. S. Pich-	468,759
Bottles, etc., apparatus for capsuing, F. S. Pich-	
Box. See Letter box. Musical box. Paper box.	468,389
BOX. See Letter box. Musical box. Paper box.	
Box fastener, J. G. Peace. Brace. See Shoulder brace. Vehicle spring	468,687
Brace. See Shoulder brace. Vehicle spring	•
brage.	
Brace, G. Larson	469,771
Brace, G. Larson. Braiding machine, A. Fornander	468 649
Braiding machine. Winchester & Hood.	463,432
Brake See Air broke. Car broke.	-001206

	·	
!	Brake beam, J. M. Shook 4	68,421
:	Brake beam, J. M. Shook. 4 Brake hose support, air, E. M. Roberts. 4 Brake shoe, W. D. Sargeut. 4 Bread and pastry cabinet, E. Jackson. 4 Breast strap attachment, B. Lukens. 4 Breist schoring, J. C. Anderson. 4	68,693 68,581
: 1	Breast strap attachment, B. Lukens	68,623 68,669
	Brick machine, J. B. Mowry Rrick or tile machine E. M. Presse	68,396 68,396
•	Brake shoe, W. D. Sargent. Bread and pastry cabinet. E. Jackson. Bread strap attachment, B. Lukens. Brick, coloring, J. C. Anderson. Brick, coloring, J. C. Anderson. Brick, composition for W. Wads. Bricks, composition for W. Wads. Bricks, manufacture of viterous, J. C. Anderson. Brushes, bridle for paint, F. W. H. Weishaupt. Buggy top, J. C. Cose Buildings, system and apparatus for heating, cooling, and ventilating, W. M. Decker. Bulletin board, W. P. Rankin. Bung for bottlers, A. M. Donally. Burglar alarm, I. L. Silverberg et al. Burglar alarm, I. E. Silverberg et al. Burglar alarm, I. E. Silverberg et al. Burglar alarm, I. E. Silverberg et al. Burglar prick. Burner. See Gas burner. Oil burner. Cable grips, adjusting device for, Anderson & Fairchild. Can. See Milk can. Oil can.	82 304 68 320
i	Brushes, bridle for paint, F. W. H. Weishaupt 4 Buggy top, J. C. Coss	68,405 68,460
	Buildings, system and apparatus for heating, cooling and ventilating, W. M. Decker 4	68,645
	Bulletin board, W. P. Rankin. 4 Bung for bottlers, A. M. Donally. 4	68,550 68,437
	Burglar alarm, I. L. Silverberg et al 4 Burglarles, device for preventing, Andrews &	68,444
i	Fitzpatrick Rurner. See Gas burner. Oil burner. Cable grips, adjusting device for, Anderson & Fairchild. Can. See Milk can. Oil can. Candle holder, W. H. Pohlmann. Car and air brake coupling, W. H. Thresher. Car brake, H. H. Kenkel. Car brake regulator. W. C. Farnum. Car coupling, F. H. Brown. Car coupling, J. C. Burbank. Car coupling, J. C. Burbank. Car coupling, G. W. Dickey. Car coupling, J. E. Kine. Car door, G. M. Brill. Car door, G. M. Brill. Car door, J. Smith. Car, Leavise arailway, W. T. Shaffer. Car, frame, metallic hand, E. Courtright. Car, hank, E. Chamberlain. Car, hank, E. Chamberlain. Car, steeping S. M. Charles. Car, steek, J. D. Dow. Car wheel, H. F. Mann. Cars, adjustable guard rail for street, Catarieus & Cars, and contable guard rail for street, Catarieus & Cars, adjustable guard rail fo	68 557
	Can grips, adjusting device for, Anderson & Fairchild.	68,555
!	Candle holder, W. H. Pohlmann	68, 363 68, 379
	Car brake, H. H. Kenkel	68,409 68,562
į	Car coupling, F. H. Brown	68,739 69,327
i	Car coupling, F. C. Crowe	68,415 68,598
	Car coupling, F. A. Fox	68,600 68,76 5
i	Car coupling, L. B. Kenney	68,602 68,662
•	Car coupling, J. E. Kline	68,348 68,679
	Car door, G. M. Brill	68,434 168,7 9 8
	Car, elevated railway, W. T. Shaffer	68,699 68,511
	Car, hand, E. Chamberlain	68,611 68,760
i	Car, sleeping S. M. Charles	68,493 68,646
	Car wheel, H. F. Mann	68,676
1	Cars, motor gearing for electric, E. B. Phillips	168 ,454 168 ,526
	Carbonizing the vegetable matter in wool, appa- ratus for, B. Ballerstein. Carpet cleaning apparatus, W. H. La Fountaine, Carpet cleaning L. H. Folor. 468,521,	168,558
	Carpet cleaning apparatus, W. H. La Fountaine, 468,521,	168,522
	Carriage, baby, M. Herz.	168,522 178,333 168,342 168,553
	Cart, dump, M. S. McCraney	168,359 168,588
	Cartridge, E. Rubin. Cartridge magazine with loading frame ejector.	LCO EON
	A. Von Wehrstedt	468,443
.	Cash indicator and register, C. Carr.	168,323 168,467
	Cash registers and indicator, C. Carr	168,330 168,422
,	Casting acid eggs, mould for, E. Allen.	68,610 68,70K
	Cartridge magazine with loading frame ejector, A. Von Wehrstedt. Cash and parcel carrier apparatus, C. F. Parker. Cash and parcel carrier apparatus, C. F. Parker. Cash enderer. C. Frederick. Cash indicator and register. C. Carr. Cash recorder, H. F. Marsh. Cash register and indicator, C. Carr. Cash registers and indicator, C. Carr. Cash registers, stop clock for, O. C. Reeves. Casting acid eggs, mould for, E. Allen. Center support or hanger, T. W. Snell. Chair. See Do l's rocking chair. Chuck, E. Phi ips. Churn, G. W. Bushaw. Cigar lighting and advertising apparatus, combined, A. Newhaus. Clamp. See Adjustable clamp. Clampb. See Adjustable clamp. Clampb. See Adjustable clamp.	168.525
;	Churn, G. W. Bushaw	468,762
,	bined, A. Newhaus	468,452
	Clapboard machine, S. L. Ingal s	168,495
	Cleaner. See Boot cleaner.	468,633
•	Clutch, friction, H. W. Hill.	468,616 468,615
	Clutch, friction, J. F. McLaughlin	468,683 468,683
	Coffee or tea pot, C. S. Jones	468,604 466,609
:	Combination lock, E. C. Penfield	468,429 468,504
	Composition material, G.S. Mayhew	468, 355
ı	Clamp. See Adjustable clamp. Claspos of machine. S. L. Ingal s. Clasp. See Necklace clasp. Clasp. A. Assorati. Cleaner. See Boot cleaner. Clock, electric alarm, W. S. Burroughs. Clutch, friction, H. W. Hill. Clutch, friction, H. W. Hill. Clutch, friction, F. Miller. Clutch, friction, F. Miller. Coffee or tea pot, C. S. Jones. Collar pad, G. A. Adams. Combination lock, E. C. Penfield. Composing stick, M. E. Lyon. Cooler. See Liquid cooler. Coupling. See Car coupling. Car and air brake coupling. Gun rod coupling. Insulating coupling.	
3		
r	Cove. G. S. Mayhew Crushing mill, F. A. Huntington. Cultivator fender support, G. W. Huddleston	468,544 468,764
	Cultivator fender support, G. W. Huddleston. Cup. See Oil cup. Cup. See Oil cup. Cup. See Oil cup. Cur. See Washer cutter. Cutter. See Washer cutter. Cutter bar, W. S. Sutton. Cutter bar w. S. Sutton. Cutter bar operating device, D. Kent. Cyclometer, T. A. Teate. Dash, vehicle, A. Lobde. Dental pilers, W. S. How. Dental pilers, W. S. How. Dental pilers, G. W. Geltz. Denture, artificial, E. A. Bryant. Doll's rocking chair, H. W. Farley. Drawing frame, J. A. Murphy. Dri ing machine, J. F. Cadel. Drinks, apparatus for dispensing, W. M. Fowler Driving attachment or power transmitter, F. Muller. See Fertilizer dropper. Dust, pan and broom holder, combined, G. H.	468,418
•	Cur ing tool, B. Westervelt	468,445
f	Cutter bar, W. S. Sutton. Cutter bar operating device, D. Kent	468,624 468,624
-	Dash, vehicle, A. Lobde	408,569
•	Dental plugger, G. W. Geitz	468,653 468 761
	Doll's rocking chair, H. W. Farley. Drawing frame, J. A. Murphy.	468,612 468,726
8	Dri ing machine, J. F. Cadell Drinks, apparatus for dispensing, W. M. Fowler	468,328 468,481
r	Driving attachment or power transmitter, F. Muller.	468,357
-	Dust pan and broom holder, combined, G. H.	100 199
3	Dye, red, O. Burgmann. Dyeing fabrics, machine for W. M. Robertson	468,539 468,579
	Educational appliance, S. M. Sapp. Electric cable, W. Vogler.	468,475 468,585
-	E ectric circuits, repeater for, Crane & Cole Electric conduit, elevated, C. O. Newton	468,473 468,388
5	Electric connector, G. Gibbs. Electric governor, J. T. O'Brian.	468,68 4 468,68 6
	Electric machine, dynamo, G. E. Dorman	468,487 468,416
	Electrica indicator, M. A. Donal	468,716 468 507
	E evator. See Hay elevator.	468.756
	Muller. Dust pan and broom bolder, combined, G. H. Bishop. Dyeng fabrics machine for, W. M. Robertson. Dyeng fabrics machine for, W. M. Robertson. Educational appliance, S. M. Sapp. Electric cable, W. Vogler. E ectric circuits, repeater for, Crane & Cole. Electric conduit, elevated, C. O. Newton. Electric governor, J. T. O'Brian. Electric ighting system, S. L. Trippe. Electric ighting system, S. L. Trippe. Electric machine, dynamo, G. E. Dorman. Electric machine, dynamo, G. E. Dorman. Electric machine, magneto, J. Hunt. Electric motor, J. T. Wilson. Electrical indicator, M. A. Deuel. E evator. See Hay elevafor. Elevator bucket, F. G. Winkler. E evator control gear, T. W. Heermans. Engines and other motors, apparatus for stopping, J. P. Tirrell. Envelope, merchandise, J. Speed. Evaporator. See Fruit evaporator. Evaporator, J. A. Morrell. Excavator, earth, B. F. Johnson. Extrector. See Grease extractor. Magnetic extractor. Ergelasse, A. J. Bellati.	468,517 468,520
	Engines and other motors, apparatus for stop- ping, J. P. Tirrell.	468,753
	Evaporator. See Fruit evaporator.	468,528
_	Excavator, earth, B. F. Johnson	468,393
	tractor. Eyeglasses, A. J. Bellati	468.459
0	Fence, E. W. Allis	468,381
6	Fencing bands, machine for forming wire, H. E. Schnabel.	468,696
1 n	Filter, E. M. Knight	468,346 468,664
7	Fire es cape, folding, J. Gillingham.	468,722 468,722
2 3	Fire kindler, E. R. Murdock.	468,427 468,427
0	Fencing bands, machine for forming wire, H. E. Schnabel. Schnabel. Fertilizer dropper, hand, A. L. Johnson Filter, E. M. Knight. Filter, E. M. Knight. Filter and separator, feed water, E. P. Mandigo. Fire extinguishing apparatus, C. L. Fortier Fire extinguishing apparatus, C. L. Fortier Fire extinguishing apparatus, C. L. Fortier Fied hair artificial, E. F. Pflueger. Kishing it, C. W. Lpton. Flour cabinet, A. A. Tinker. Fluid regulator, J. R. Anderson Flushing tank, W. B. Malcolm Fly paper making machine, f. B. Claggett. Food compounds, making, H. McKinney. Food compounds, making, H. McKinney. Foot, artificial, J. Linker! Frame. See Car frame. Drawing frame. Truck	468,376 468,700
7	Fluid regulator. J. R. Anderson. Flushing tank, W. B. Malcolm.	468,737 468,725
8	Fly paper making machine, f. B. Claggett Food compounds, making, H. McKinney	468,641 468,751
34		46N,7572
183	rame.	468,731
8	nace. Ore roasting furnace. Regenerative furnace,	
9		468,401 468,492
Q	Furnace for burning cement, etc., rotary, J. F. De Navarro (r)	11,224 468,532
8	Navarro (r) Furnsoe platform open hearth, E. L. Ford Furniture drawer, O. A. Norman Gauge. See Micrometer gauge. Water gauge.	468,53 2 468,684
37		
33	Gas, process of and apparatus for the manufac- ture of i uminating. C. R. De Lamarra	468,635 468,747
11 16	Gas retorts, apparatus for charging, G. C. Trewby Gases of combustion, apparatus for the separa-	468,374
12 12	tion of smoke from, W. Wills	468,378
34 59	Gate, S. S. White. Gear wheel, S. Harris. Generator. See Steam generator.	468,712 468,767
39	Glass. See Opera glass.	400
37	Grain hinder G Sabuhart	468,657 468,657
71	Greass extractor, Hussey & McCarui Grinder, C. Koegel	468,345 468,350
19	Grisan extractor, Hussey & McCarn. Grinder, C. Koeel. Grinder, circular knife, J. Mallon. Grinding and polishing gear wheels, mechanism for, Gardner, Sr., & Coburn.	468,535
	tor, Geruger, Sr., & Coburn	4°25, 600)