

HINTS TO CORRESPONDENTS.

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 This is for our information, and not for publication.

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

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some 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 be expected without remuneration.

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

Minerals sent for examination should be distinctly marked or labeled.

- (1) L. Z. asks: 1. Does a lion belong to the cat or dog family? A. The cat family, 2. Why is it necessary to have the pneumatic gun, described in Scientific American of October 31, 1885, so long in construction, and was there ever any other projectile tried than the one described in the same issue? A. The gun is required to be of considerable length to realize the full expansive force of the air. We believe there have been some minor changes made in the cartridge carrying the dynamite, but nothing has been used in this gun similar to the buffer-like arrangement used where dynamite has been fired with powder from regular service guns.
- (2) J. R. asks if glass is porous? A. According to the usual understanding of the word "porous," glass is not porous.
- (3) A. F. H. asks: Is it an essential in a dynamo, substantially after the Siemens pattern, that the armature coil should be wound upon iron? Will not a wood core answer the purpose? A. A current can be generated in an armature without an iron core, but it will be very weak. The iron core seems to be necessary for the production of strong currents.
- (4) N. J. asks: 1. What is the temperature kept up in the so-called "flasher" engines (i. e steam engines without a boiler, where the steam quired for each stroke is generated by injecting a sm quantity of water into a heated vessel)? If above 35 how is it that the water does not assume the spheroi shape? A. The temperature may vary between will e limits. To generate a pressure of 100 pounds to an in a temperature of 320° Fah. must be maintained. With sufficient heat, the water would assume a spheroidal condition. 2. "Flasher" engines are said to be impracticable on account of their rapid destruction. In which way does this destruction take place? Is it owing to the rapid succession of high pressure and low pressure in the heated vessel, thus loosening the joints. and tending to tear the vessel, or is it the surface action on the heated brass, where the water spray strikes it? And if so, is the abrasion of the surface of the brass due to the mechanical action or to increased chemical action of the water jet? A. The rapid destruction of such engines is due to the oxida tion of the steam generator.
- (5) C. E. M. asks for information for making pocket battery for Edison's incandescent light Explain theory of Holtz electrical machine. A. A battery which will operate a small Edison lamp for a short time, say a half hour or so, may be made by using two elements, each composed of one zinc rod, from % to 1/2 inch in diameter, and two carbon rods such as are used in electric lighting. The zinc must be amalgamated. The solution used is that formed of bichromate of potash, sulphuric acid, and water, which has been so often described in the Notes and Queries. For a description of Holtz electric machine consult Supple-MENT, Nos. 278, 279, 282, 70, 291, and 321.
- (6) F. J. S. writes: I am using a McIntosh galvanic battery, the hard rubber cups of which have become leaky; is there any way of repairing them? A. Stop the leaks with a cement composed of equal parts of gutta percha, brown pitch, and shellac.
- (7) A. J. H. writes: 1. I have for some time been using glass lamp chimneys known as "lead glass," also called fireproof; very often they fiv to pieces. especially in cold weather; can you explain the reason why? A. It is due to the unequal expansion caused by heating one part of the chimney more than another. or by the exposure of one part of the chimney to a draught of cold air, causing a sudden contraction of that part. 2. Some claim that it is caused by the friction raised by rubbing them when cleaning them with a cloth, while others hold that it comes from the gas generated by the coal loil that accidentally gets inside. A. We think that the answer to your first query is sufficient explanation.
- (8) G. F. asks: 1. Can you refer me to back number, or repeat solution to plate brass or cop per, in a bath, without electric current? A. You do not say what metal you desire to use in plating the copper. 2. Can you tell me how to make and apply the black japan or paint on woodwork, like trays, handles, pen holders, and the like. A. You will find full instructions for japanning in Supplement, No.
- (9) J. F. asks (1) for an ink for hand stamps that will not injure the rubber. A, Mix and dissolve 2 to 4 drachms aniline color, 15 ounces alcohol, 15 ounces glycerine. The solution is poured on the cushion and rubbed in with a brush. 2. How to make a varnish or covering for woodwork, such as the black handles on enameled water pails, and the like. A. 1 ounce nutgall broken into small pieces; put into barely 1/2 pint vinegar, which must be contained in an open vessel, let stand for about 1/2 hour, add 1 ounce steel filings; the vinegar will then commence effervescing; cover up, but not sufficient to exclude all air. The solution must then stand for about 21/2 hours, when it will be ready for use. Apply the solution with a brush or piece of rag to the article, then let it stand until dry; if not black enough, coat it until it is, each time of

course letting it remain sufficiently long to dry thoroughly. Afterthe solution is made, keep it in a closely corked bottle.

- (10) J. W. W.—The moulds for rubber stamps are made of plaster of Paris. The rubber is pressed into the mould with a small press or clamp, then placed in a small vulcanizing oven heated by steam or a furnace to a temperature from 250° to 275°. We do not know the cost of apparatus.
- (11) R. P. M. asks: What is the rule for silvering on glass, such as door knobs and ornaments? I have some glasswork which is hollow, and would like to silver them on the inside only. A. See "How to Silver Glass," contained in Scientific American Sup-PLEMENT, No. 105. Take silver nitrate 1 onnce, distilled water 1 pint, strong liquor ammonia sufficient quantity, added very gradually, to first precipitate and then redissolve the silver; then add honey, 14 ounce. Put sufficient quantity of this solution in the globe, and then place the globe in a saucepan of water; boil it for 10 to 30 minutes, occasionally removing it to see the effect.
- (12) D. P. asks the per cent of starch in white and vellow corn, also of potatoes. A. The average quantity is about 531/2 per cent in flat yellow American maize and 54% in the flat white and round yellow varieties. From 66 to 75 per cent of starch is obtained by the manufacturer from the potato.
- (13) M. B. S. B. writes: I have a lot of woolen clothing that has become soiled with linseed oil house paint. Please inform me what will remove it. A. Use turpentine, or benzine, and soap. See table on Removal of Stains and Grease Spots, contained in Sci-ENTIFIC AMERICAN SUPPLEMENT, No. 158
- (14) W. H. D. writes: I spilt tincture of iron on the edge of a book so that all the leaves are stained a little. Is there any way it can be removed without destroying the book? A. The tincture of iron is soluble in a solution of warm oxalic acid, in dilute hydrochloric acid, and in citric acid. These substances will readily remove the iron, but great care must be taken to avoid injuring or destroying the paper of the caves.
- (15) E. McG. asks what the ingredients of "Ayer's Hair Vigor" are. A. According to Professor Chandler's analysis of this preparation, it contains 2.89 grains of lead to the fluid ounce. It is therefore probably a perfumed solution of sugar of lead.
- (16) W. F.—All of the cotton factories in this and every other country produce cotton waste. All machine shops and all marine, river, and stationary engines, as well as all factories running machinery, use
- (17) P. D. L. asks a good recipe for walnut stain for pine wood. A. Make a solution of & ounces each permanganate of potash and sulphate of manganese, in 5 quarts hot water. Apply several times with a brush or dip small articles. When the proper tene is obtained, oil or varmed the work.
- (18) O. C. P. desires a cure for stammering. A. Reading aloud for several hours daily is often advised, but this fails to prevent stammering in speak ing. The latter appears to be a nervous affection, and its abatement depends upon the iudividual.
- (19) R. K. S. asks: Would the inletting of the ocean to the Sahara desert have any influence on the equilibrium of the earth? If not, why? A. Yes. It would change the center of gravity, proportionally, as the relative weight of the water let into the desert would to the whole weight of the earth divided by 2
- (20) H. G.-The piston travels fastest on the first half of its stroke, due to the impulse of the full pressure of the steam. This is not perceptible in engines with heavy flywheels running a large amount of shafting and machinery. It is very perceptible in the motion of the engines of sidewheel steamers
- (21) J. S.—Augers were twisted by hand hot by holding one end in a vise, by the early makers. Now they are made in dies and rollers by machinery, much of which is the subject of patents. The finishing is done with emery wheels and buffs.
- (22) W. S. C.—It is generally conceded that a high speed engine requires more lead than a slow speed. There are differences of opinion as to the requirements of the various kinds of engines, and engine builders generally set the lead to suit their own
- (23) T. S. W.—Pure, sweet, cold pressed lard oil mixed with ten per cent of Pratt's astral oil makes a good oil for lanterns. We cannot give the mixture sold by the dealers, as every one mixes to suit
- (24) J. S. asks: 1. What amount of tom of a well 30 feet deep 200 gallons of water in a minute, and what size pump and pipe would be required? A. Two horse power, including friction of pump. Pump should have 7 inch by 12 inch cylinder. and be worked 100 times a minute for 200 gallons. 2. If a vessel containing 50 gallons of air was placed at a depth of 30 feet under water, what amount of pound weight would it raise to the surface, how long would it be in making the ascent, and what amount of horse power would it produce? A. Fifty gallons of air will lift about 425 pounds in water. If placed at a depth of 30 feet, it must not be subject to compression for the above duty. If placed in an elastic inclosure, it will not lift more than 212 pounds at that depth, but will increase its lifting power by expansion as it rises. The time required to come to the surface might be 5 or more seconds according to the work required, and might produce 11/2 horse power.
- (25) J. A. H. writes: In replies to correspondents, October 3, 1885, is a recipe for aerated bread. 1. Are the directions there complete, for making this bread? A. Yes. 2. How much water should be used to the soda and acid? A. Sufficient to make a

dough. 3. Should any salt be used? A. No. Car | Cigar cutter and perforator, combined, A. Anbonate of magnesia and the muriatic acid combine and form salt. 4. Will the muriatic acid found at the stores do to use? A. It is best to buy the article from the druggist.

- (26) H. and M. have an argument about potassium. M claims it is a mineral. H says it is a metal Which is right? A. H is right. Potassium is a metal possessing curious qualities. It bursts into flame when it touches water. It is silvery in appearance but quite soft-softer than lead, and much lighter in weight than the latter. Potassium, although in itself soft, is a constituent of certain minerals found in one of the hardest rocks, namely, granite.
- (27) S. T. writes: In SCIENTIFIC AMERIcan of October 17, you state that a sailboat would not move forward if the wind from a bellows on board were directed against her sail. This of course is correc if the bellows were parallel and the sail at right angle with the boat; but supposing the bellows were placed at right angles with a cathoat, and directed against a sail held 30 or 35 degrees from the boat, as in sailing across the wind, would not there be a perceptible motion forward on still water? A. The principle of an artificial blast athwartship impinging upon an inclined surface or sail, and thereby imparting motion to the boat, is correct; but the mechanical effort produced in proportion to the power consumed is so small that any practical allusion to such projects savors of the ridicuous. The bellows will do more work if pointed astern and blown against the air or water.

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Boiler furnace grate, steam, M. A. Foster. 331,700 Boiler furnace, steam, R. C. Carpenter. 331,277 Boiler furnace, steam, M. A. Foster. 331,636 Boiler furnace, steam, J. Ham. 331,636 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,561 Boot, J. F. Shaw. 331,561 Boot, G. Valiant (r). 10,669 Boot or shoe nailing machine, W. P. Hopkins. 331,299 Boot or shoe sole, J. E. Tilton. 331,462 Bottling machine, H. Will. 331,354 Bouquet holder, M. L. Cardell. 331,614 Box. See Letter box. Paper box. Bracelet clasp, W. E. Willis. 331,864	Feed water heater, D. Lee. Feeding hogs, device for, H. Sloan. Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish. Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Pifard Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller Fire escape, J. R. Fuller Sire escape, C. S. Watson Fire escape ladder, A. Rose Fire extinguishers, automatic sprinkler for, A.	331,564 331,423 351,285 381,320 331,534 331,534 331,725 331,489 331,489 331,489 331,489
Boiler furnace grate, steam, M. A. Foster. 331,700 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, M. A. Foster. 331,237 Boiler furnace, steam, J. Ham. 331,636 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,636 Boot, J. F. Shaw. 331,636 Boot, G. Valiant (r) 10,669 Boot or shoe nailing machine, W. P. Hopkins 331,299 Boot or shoe sole, J. E. Tilton 331,462 Bottling machine, H. Will 331,347 Bow, See Letter box. Paper box Brake shoe, S. Uren 331,347 Brick machine, P. B. Mathiason 331,420 Brick machine, P. B. Mathiason 331,420 Brake shoe, S. Uren 331,347 Brick machine, P. B. Mathiason 331,420 Brake shoe, S. Uren 331,420 Brake shoe, S. Ur	Feed water heater, D. Lee Feeding hogs, device for, H. Sloan. Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Pifard. Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller Fire escape, P. H. Montague	331,564 331,423 381,285 381,320 331,534 331,324 331,725 331,489 331,429 331,746 331,736 331,394
Boiler furnace grate, steam, M. A. Foster. 331,707 Boiler furnace, steam, R. C. Carpenter. 331,277 Boiler furnace, steam, M. A. Foster. 331,637 Boiler furnace, steam, M. A. Foster. 331,636 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,636 Boot, J. F. Shaw. 331,561 Boot, G. Valiant (r). 10,669 Boot or shoe nailing machine, W. P. Hopkins. 331,289 Boot or shoe sole, J. E. Tilton. 331,462 Bottling machine, H. Will. 331,354 Bouquet holder, M. L. Cardell. 331,614 Box. See Letter box. Paper box. Bracelet clasp, W. E. Willis. 331,347 Brick machine, P. B. Mathiason. 331,432 Brick or tile die, J. L. Friend. 331,331 Buckle, R. M. Dillard. 331,337	Feed water heater, D. Lee Feeding hogs, device for, H. Sloan. Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Piffard. Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller Fire escape, P. H. Montague	331,564 331,423 381,285 381,320 331,534 331,531 331,725 331,489 331,429 331,736 331,736 331,312
Boiler furnace grate, steam, M. A. Foster. 331,700 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, M. A. Foster. 331,636 Boiler furnace, steam, J. Ham. 331,636 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,636 Boot, J. F. Shaw. 331,561 Boot, G. Vallant (r). 10,669 Boot or shoe aniling machine, W. P. Hopkins. 331,289 Boot or shoe sole, J. E. Tilton. 331,462 Bottling machine, H. Will. 331,346 Bouquet holder, M. L. Cardell. 331,614 Box. See Letter box. Paper box. Bracelet clasp, W. E. Willis. 331,342 Brake shoe. S. Uren. 331,420 Brick or tile die, J. L. Friend. 331,430	Feed water heater, D. Lee. Feeding hogs, device for, H. Sloan. Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish. Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Piffard. Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller. Fire escape, C. S. Watson. Fire escape, C. S. Watson. Fire escape ladder, A. Rose. Fire extinguishers, automatic sprinkler for, A. M. Granger. Fireproofing and other preservative purposes, composition for, A. J. Martin. Fishing rods. reel holder and fastening for, F. D. Divine. Flue cleaner, L. Duennisch.	331,564 331,423 381,225 381,320 331,534 331,531 331,725 331,489 331,746 331,394 331,312 331,394 331,312 331,380 331,691
Boiler furnace grate, steam, M. A. Foster. 331,700 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, J. Ham. 331,636 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,636 Boot, J. F. Shaw. 331,636 Boot, G. Valiant (r) 10,669 Boot or shoe nailing machine, W. P. Hopkins 331,299 Boot or shoe sole, J. E. Tilton 331,492 Bottling machine, H. Will 331,318,492 Bottling machine, H. Will 331,531 Box. See Letter box. Paper box Brake shoe. S. Uren 331,347 Brick machine, P. B. Mathiason 331,420 Brick or tile die, J. L. Friend 331,337 Buckle, R. M. Dillard 331,378 Buckle, R. M. Dillard 331,378 Buckle, suspender, D. L. Durand 331,630	Feed water heater, D. Lee. Feeding hogs, device for, H. Sloan. Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Piffard. Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller. Fire escape, P. H. Montague	331,564 331,423 381,225 381,320 331,534 331,324 331,725 331,489 331,746 331,736 331,394 331,312 331,394 331,312 331,80 331,691 331,281
Boiler furnace grate, steam, M. A. Foster. 331,700 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, M. A. Foster. 331,237 Boiler furnace, steam, M. A. Foster. 331,636 Boiler furnace, steam, J. Ham. 331,536 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,663 Boot, J. F. Shaw. 331,663 Boot, J. F. Shaw. 331,661 Boot or shoe nailing machine, W. P. Hopkins. 331,299 Boot or shoe nailing machine, W. P. Hopkins. 331,299 Boot or shoe sole, J. E. Tilton. 331,462 Bottling machine, H. Will. 331,334,602 Bouquet holder, M. L. Cardell. 331,614 Box. See Letter box. Paper box. Bracelet clasp, W. E. Willis. 331,347 Brick machine, P. B. Mathiason. 331,420 Brick or tile die, J. L. Friend. 331,391 Buckle, R. M. Dillard. 331,391 Buckle, suspender, D. L. Durand. 331,630 Buckle, suspender, J. Spruce. 331,661 Cab, hansom, W. Johnstone. 331,504 Cabinet, jeweler's, H. Knickmann. 331,719 Calculator for measurement of logs, tabular, C.	Feed water heater, D. Lee Feeding hogs, device for, H. Sloan Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Pifard Filter, W. Neracher Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller Fire escape, P. H. Montague	331,564 331,423 381,285 381,320 331,534 331,324 331,429 331,429 331,736 331,394 331,312 331,394 331,312 331,380 331,691 331,281 331,281 331,281 331,281 331,281 331,282
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Boiler furnace grate, steam, M. A. Foster. 331,707 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, M. A. Foster. 331,637 Boiler furnace, steam, M. A. Foster. 331,636 Boiler furnace, steam, J. Ham. 331,636 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,631 Boot, J. F. Shaw. 331,561 Boot, G. Vallant (r). 10,669 Boot or shoe aniling machine, W. P. Hopkins. 331,289 Boot or shoe sole, J. E. Tilton. 331,462 Bottling machine, H. Will. 331,346 Bouquet holder, M. L. Cardell. 331,614 Box. See Letter box. Paper box. Bracelet clasp, W. E. Willis. 31,548 Brake shoe. S. Uren. 331,434 Brick machine, P. B. Mathiason. 331,430 Brick or tile die, J. L. Friend. 331,331 Buckle, R. M. Dillard. 331,331 Buckle, suspender, D. L. Durand. 331,630 Buckle, suspender, J. Spruce. 331,610 Cab, hansom, W. Johnstone. 331,504 Cabinet, jeweler's, H. Knickmann. 331,332 Camera. See Photographic camera. Can. See Sheet metal can. Car. Coupling, P. A. Aikman. 331,467	Feed water heater, D. Lee Feeding hogs, device for, H. Sloan. Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Piffard Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller. Fire escape, J. R. Fuller. Fire escape, C. S. Watson. Fire escape, C. S. Watson. Fire estinguishers, automatic sprinkler for, A. M. Granger. Fireproofing and other preservative purposes, composition for, A. J. Martin. Fishing rods. reel holder and fastening for, F. D. Divine. Fiuc cleaner, L. Duennisch. Folding apparatus, L. C. Crowell. Folding machine, L. C. Crowell. Fruit drier, A. J. Dodge. Fruit drier, A. J. Dodge. Fruit drier, J. C. Gunn. Fruit drier, M. Reynolds, Jr. Fur seal and other skins, removing stagy hairs from, A. Paterson.	331,564 331,423 331,285 381,320 331,534 331,324 331,725 331,429 331,736 331,394 331,312 331,394 331,312 331,380 331,691 331,281 331,281 331,281 331,281 331,284 331,294 331,548
Boiler furnace, steam, M. A. Foster. 331,700 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, J. Ham. 331,636 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,636 Boot, J. F. Shaw. 331,536 Boot, G. Valiant (r) 10,669 Boot or shoe nailing machine, W. P. Hopkins. 331,299 Boot or shoe sole, J. E. Tilton. 331,492 Bottling machine, H. Will. 331,3140 Bouquet holder, M. L. Cardell. 331,614 Box. See Letter box. Paper box. Brake shoe. S. Uren. 331,347 Brick machine, P. B. Mathiason 331,420 Brick or tile die, J. L. Friend. 331,331 Buckle, R. M. Dillard. 331,338 Buckle, suspender, D. L. Durand. 331,630 Buckle, suspender, D. L. Durand. 331,630 Buckle, suspender, J. Spruce. 331,631 Cab, hansom, W. Johnstone. 331,504 Cabinet, jeweler's, H. Knickmann. 331,719 Calculator for measurement of logs, tabular, C. Rich. 331,332 Camera. See Photographic camera. Can. See Sheet metal can. Car coupling, P. A. Aikman 331,630 Car coupling, J. Hirn. 331,630 Car coupling, S. Moorman 331,317	Feed water heater, D. Lee. Feeding hogs, device for, H. Sloan Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Piffard. Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller Fire escape, P. H. Montague	331,564 331,423 381,320 331,534 331,324 331,725 331,429 331,736 331,394 331,312 331,394 331,312 331,380 331,691 331,281 331,281 331,281 331,281 331,548 331,548 331,548
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Boiler furnace, steam, M. A. Foster. 331,707	Feed water heater, D. Lee Feeding hogs, device for, H. Sloan. Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Piffard Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller. Fire escape, J. R. Fuller. Fire escape, C. S. Watson. Fire escape, C. S. Watson. Fire estinguishers, automatic sprinkler for, A. M. Granger. Fireproofing and other preservative purposes, composition for, A. J. Martin. Fishing rods. reel holder and fastening for, F. D. Divine. Fiue cleaner, L. Duennisch. Folding apparatus, L. C. Crowell. Folding machine, L. C. Crowell. Fruit drier, A. J. Dodge. Fruit drier, A. J. Dodge. Fruit drier, M. Reynolds, Jr. Fur seal and other skins, removing stagy hairs from, A. Paterson Furnace, See Boiler furnace. Furnace, W. Westlake.	331,564 331,423 331,235 331,534 331,334 331,325 331,429 331,429 331,736 331,312 331,331 331,312 331,380 331,691 331,281 331,281 331,281 331,281 331,281 331,588 331,548 331,548 331,548 331,548 331,548 331,548 331,548
Boiler furnace, steam, M. A. Foster. 331,700 Boiler furnace, steam, M. A. Foster. 331,277 Boiler furnace, steam, M. A. Foster. 331,237 Boiler furnace, steam, J. Ham. 331,636 Boilers, furnace for heating steam, M. P. Elliot. 331,287 Book rest, adjustable, W. A. Sipe. 331,636 Boot, J. F. Shaw. 331,563 Boot, G. Valiant (r) 10,669 Boot or shoe nailing machine, W. P. Hopkins. 331,299 Boot or shoe sole, J. E. Tilton. 331,492 Bottling machine, H. Will. 331,312 Bottling machine, H. Will. 331,314 Box. See Letter box. Paper box. Brake shoe. S. Uren. 331,347 Brick machine, P. B. Mathiason 331,347 Brick machine, P. B. Mathiason 331,347 Brick machine, P. B. Mathiason 331,347 Buckle, R. M. Dillard. 331,338 Buckle, suspender, D. L. Durand. 331,630 Buckle, suspender, D. L. Durand. 331,630 Buckle, suspender, D. L. Durand. 331,630 Buckle, jeweler's, H. Knickmann. 331,719 Calculator for measurement of logs, tabular, C. Rich. 331,332 Camera. See Photographic camera. Car. coupling, P. A. Aikman. 331,467 Car coupling, S. Moorman. 331,317 Car door, grain, W. McGuire. 331,331 Car door, grain, W. McGuire. 331,337 Car, railway, J. A. Enos. 331,388 Car formaria for steam 331,388 Car, railway, J. A. Enos. 331,388 Car formaria for steam 331,388 Car formari	Feed water heater, D. Lee. Feeding hogs, device for, H. Sloan. Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt Fence, J. Du Bois. Fence building machine, W. N. Parrish Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga File, H. G. Piffard. Filter, W. Neracher. Filtering liquids, apparatus for, M. M. Monsanto. Fire escape, J. R. Fuller Fire escape, J. R. Fuller Fire escape, C. S. Watson Fire escape ladder, A. Rose. Fire extinguishers, automatic sprinkler for, A. M. Granger Fireproofing and other preservative purposes, composition for, A. J. Martin Fishing rods. reel holder and fastening for, F. D. Divine. Flue cleaner, L. Duennisch. Folding apparatus, L. C. Crowell. Fruit drier, A. J. Dodge. Fruit drier, M. Reynolds, Jr. Fur seal and other skins, removing stagy hairs from, A. Paterson. Furnace. See Boiler furnace. Furnace, J. A. Price. Furnace, W. Westlake. Gauge, See Railway track gauge. Game apparatus, G. Marzari. Garment supporter, W. H. Frost. Gas, apparatus for making illuminating, F.	331,564 331,423 331,285 331,534 331,334 331,324 331,429 331,429 331,736 331,312 331,331 331,312 331,380 331,691 331,281 331,281 331,281 331,588 331,538 331,538 331,538 331,538 331,538 331,538 331,538 331,538 331,538 331,538 331,538 331,538 331,538
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