Business and Lersonal,

The Charge for Insertion under this head is One Dollar a Line for each insertion. If the Notice exceeds Four Lines, One Dollar and a Half per Line will be charged.

Agricultural Implements and Industrial Machinery for Export and Domestic Use. R.H. Allen & Co., N.Y. D. Frisbie & Co. manufacture the Friction Pulley-Captain-best in the World. New Haven, Conn.

Wanted—Parties to manufacture, on a royalty, an instrument to prove Steam Gauges. Address E. F. Osborne, St. Paul, Minn.

"Eureka"—Best Weather Strip out. Patent for Sale, cheap. Make an offer. I mean business. Illustrated in Sci. American, Oct. 9, '75. Frank Fleury, Springfield, Ill.

India Rubber-Capitalists are invited to Examine a new process of manufacturing India Rubber, by which one half the labor and machinery are saved. Address India Rubber, 52 Park Place, New York City.

Foundrymen, letter your patterns with Metallic Letters made by H. W. Knight, Seneca Falls, N. Y.

First class Mechanical Draughtsman is open for engagement. Address T. P. Pemberton, 502 Clermont Avenue, Brooklyn, N. Y.

Wanted-An Analytical Chemist. Address, stating age, experience, references, and salary expected, P. O. Box 1041, New York.

A good Machinist is wanted, who can invest \$2,000 in a good paying business, which will be permanent. Address N. Upham, Agent. Athol, Mass.

A Scraper Patent for Sale. Address R. Verea 88 Wall St., New York.

More than Ten Thousand Crank Shafts made by Chester Steel Castings Co., now running; 8 years' constant use prove them stronger and more durable than wrought iron. See advertisement, page 189.

Solid Emery Vulcanite Wheels-The Solid Original Emery Wheel-other kinds imitations and inferior. Caution.—Our name is stamped in full on all our best Standard Belting, Packing, and Hose. Buy that only. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, New York.

Glass Blown Cylinders. T. Degnan, 129 Milk St.

Planing Machines—For the best and cheapest traveling-bed or "Farrar" Planers—24,27, and 30 in. also 15, 18, and 24 in. stationary-bed machines, addres Lane M'f'g Company, Montpelier, Vermont.

Models for Inventors. H. B. Morris, Ithaca, N.Y. Steel Name Stamps, post paid, for 18c. per letter. Marks on Wood, Iron, and Steel. Agents wanted. Steel Stamp Works, 213 Chapel St., New Haven, Conn.

Handbook of Useful Information for Lumber-nen, Millwrights, and Engineers (152 pages) sent free by Lane M'f's Company, Montpelier, Vermont.

Horse Nail Machines—Wanted Machines for finishing and pointing Horse Nails. J. W. Britton, 18th Ward, Cleveland, O.

Jethro Wood.—If any of our readers can send or refer us to any publication containing a portrait of Jethro Wood, the plow inventor, we should be obliged.

For the cheapest and best Small Portable Engine manufactured, address Peter Walrath, Chittenango, N. Y. Circular Saw Mills of the celebrated and popular Lane" pattern, made under, direct supervision of in-

ventor by the Lane M'f'g Company, Montpelier, Vt. M. Shaw, Manufacturer of Insulated Wire for galvanic and telegraph purposes, &c.,259 W. 27th St., N. Y.

F. C. Beach & Co., makers of the Tom Thumb Telegraph and other electrical machines, have removed to 530 Water Street, New York.

Pat'd Graining Stencils-J. J. Callow, Clevel'd, O.

Lathe Dogs, Expanding Mandrels, Steel Clamps, tc., for Machinists. Manufactured by C. W. LeCount, So. Norwalk, Ct. Send for reduced Price List.

"Abbe" Bolt Forging Machines and Palmer Power Hammers a specialty. Send for reduced price ists. S. C. Forsaith & Co., Manchester, N. H.

400 new & 2d hand Machines, at low prices, fully described in printed lists. Send stamp, stating just what you want. S.C. Forsaith & Co., Manchester, N. H.

Lane's "Monitor" Turbine Water-Wheels are not perpetual motion machines, but they combine more and greater advantages than any other water motors offered the public. Address Lane Mfg Co., Montpelier, Vt.

Driving Belts made to order, to accomplish work required. Send full particulars for prices to C. W. Arny, 148 North Third St., Philadelphia, Pa.

See Boult's Paneling, Moulding, and Dovetailing Machine at Centennial, B. 8-55. Send for pamphlet and sample of work. B. C. Mach'y Co., Battle Creek, Mich.

John McDonald (formerly of Kingston, Jamaica) vill please address Geo.B.Lundy,Balmoral,Ontario, Ca.

Hydrant Hose, Pipes, and Couplings. Send for prices to Bailey, Farrell & Co., Pittsburgh, Pa.

"Dead Stroke" Power Hammers—recently greatly improved, increasing cost over 10 per cent. Prices reduced over 20 per cent. Hull & BeldenCo., Danbury, Ct.

Power & Foot Presses & all Fruit-can Tools. Ferracute Wks., Bridgeton, N. J. & C. 27, Mchy. Hall, Cent'l.

Shingles and Heading Sawing Machine. See advertisement of Trevor & Co., Lockport, N. Y. Steel Castings, from one lb. to five thousand lbs. Invaluable for strength and durability. Circulars free.

Pittsburgh Steel Casting Co., Pittsburgh, Pa. For best Presses, Dies, and Fruit Can Tools, Bliss & Williams, cor. of Plymouth and Jay, Brooklyn, N. Y. For Solid Wrought-iron Beams, etc., see advertisement. Address Union Iron Mills Pittsburgh, Pa.

for lithograph, &c. Hotchkiss & Ball, Meriden, Conn., Foundrymen and workers of sheet metal. Fine Grav Iron Castings

to order. Job work solicited. For Solid Emery Wheels and Machinery, send to the Union Stone Co., Boston, Mass., for circular.

Clapboard Machinery-Sawing, dressing, and trimming-a specialty of the Lane M'f'g Company,

Hydraulic Presses and Jacks, new and second nand. Lathes and Machinery for Polishing and Buffing metals. E. Lyon, 470 Grand Street, New York.

Diamond Tools-J. Dickinson, 64 Nassau St., N. Y. Temples and Oilcans. Draper, Hopedale, Mass. affin I can get here is made up into candles, which in getting a journal to make itself a seat in a from flowing over the back edge of it, into the



It has been our custom for thirty years past to devote a considerable space to the answering of questions by correspondents; so useful have these labors proved that the SCIENTIFIC AMERI-CAN office has become the factorum, or headquarters to which everybody sends, who wants special information upon any particular subject. So large is the number of our correspondents, so wide the range of their inquiries, so desirous are we to meet their wants and supply correct information, that we are obliged to employ the constant assistance of a considerable staff of experienced writers, who have the requisite knowledge or access to the latest and best sources of information. For example, questions relating to steam engines, boilers, boats, locomotives, railways, etc. are considered and answered by a professional engineer of distinguished ability and extensive practical experience. Enquiries relating to electricity are answered by one of the most able and prominent practical electricians in this country. Astronomical queries by a practical astronomer. Chemical enquiries by one of our most eminent and experienced professors of chemistry; and so on through all the various departments. In this way we are enabled to answer the thousands of questions and furnish the large mass of informa tion which these correspondence columns present. The large number of questionssent-they pour in upon us from all parts of the world—renders it impossible for us to publish all. The editor selects from the mass those that he thinks most likely to be of general interest to the readers of the SCIENTIFIC AMERICAN. These, with the replies are printed; the remainder go into the waste basket. Many of the rejected questions are of a primitive or personal nature, which should be answered by mail; in fact hundreds of corresspondents desire a special reply by post, but very few of them are thoughtful enough to enclose so much as a postage stamp. We could in many cases send a brief reply by mail if the writer were to enclose a small fee, a dollar or more, according to the nature or importance of the case. When we cannot furnish the information, the money is promptly returned to the sender.

- T. B. G. can remove tattoo marks from the hands by the process described on p. 331, vol. 30.-G. B. should read our remarks on p. 202, vol. 34, on dissolving shellac.—B. can ebonize white wood by the process described on p. 50, vol. 33. I. F. D. H. will find directions for making printing ink on p. 107, vol. 35.—Mrs. R. can chemically preserve natural flowers by dipping them in hot melted paraffin.—G. S. can best clarify varnish by filtration.—B. C. is informed that a recipe for erasive soap was published on p. 181, vol. 31.—B. L. F. will find directions for cutting glass with hydrofluoric acid on p. 379, vol. 33.—F. S. can polish white metallic alloys by the process described on p. 57, vol. 34.—R. W., T. D., W. S. H., W. B., W. A. R., A. A. C., G. M., J. B., J. M. P., J. E. S., and others who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogu
- (1) M. M. C. asks: Does a point on a con necting rod between the centers of the crank pin and crosshead journal describe a perfect ellipse, or is the figure which it describes slightly larger at one end than at the other? A. Slightly larger at one end.
- (2) A. W. H. asks: I have a side stroke slide valve portable engine. Cylinder is 71/2 inches in diameter, with 14 inches stroke. It is rated at 12 horse power. I run a gin stand with it at speed of 250 to 300 revolutions per minute. I think it ought to run at 125 or 130 revolutions of the driving wheel per minute when the gin saws are at their maximum, 300 revolutions per minute. A friend contends that the engine would do the work more easily running at 75 revolutions per minute. Which is right? A. You are.
- (3) J. P. says: Of what benefit is lagging petween the jacket and the boiler of a locomo tive? A. It prevents the heat passing off, by conduction, to the air.
- (4) A. B. says: We have two engines, each 7x 12 inches, attached to one shaft; they are reversible by link motions, and are provided with ordinary slide valves. One of the engines has too much opening on either center. How can we shorten the stroke so there will not be more than $\frac{1}{64}$ inch opening on either center? A. Place the eccentric more nearly at a right angle to the
- (5) G. M. F. asks: Will plaster of Paris, made in the form of a cup, answer for the porous cup in the Bunsen battery? A. No, for the reaon thatit is not porous.
- (6) C. W. M. asks: 1. What should be the inside and outside diameter of a helix, whose length is 3 inches? A. Inside 1 inch, outside 2 inches. 2.0f what size should the wire be, to give the greatest lifting force? A. Use No. 14 copper wire. 3. Would any kind of wood do for a spool for winding it on? A. No spool is necessary. Wind the wire on the iron core.
- (7) W. B. asks: If two magnets be placed parallel, with their opposite poles together, the poles will attract each other. If the magnets be placed end to end, with the positive pole of one to the negative pole of the other, they will repel, according to Ampere's theory, whereas in practice they attract. How is this explained? A. According to Ampere, they should attract under the conditions mentioned.
- (8) A. S. says: I am making an electromagnet, which I wish to insulate by winding on silk, and then dipping in paraffin. The only par-

would spoil my wire after I have taken the pains to wind it. Would you advise me to use it? A The silk is sufficient. The dipping in paraffin will do harm.

- (9) M. A. G. asks: 1. Is a hollow lightning rod as good a conductor of electricity as a solid one of the same diameter and same metal? No. 2. Is the conductive property of a rod in proportion to its surface, or to its solid contents? A. To its solid contents.
- (10) C. M. says: 1. I have an electrical conductor on my dwelling house, composed of three twisted iron wires and a small copper wire between each of the three strands, about 1/2 an inch diameter altogether. Is such a rod a suitable protector against electric shocks? A. Yes, if properly connected with the earth. 2. Would a galvanized iron rope of 34 inch diameter be as good as a conductor? The rope would be probably twice the weight per foot of the lightning rod. A. Yes, better than the other.
- (11) W. N. G. asks: What is the average distance which a printer's hand travels for each type set? A. About 30 inches.
- (12) L. C. K. says: I wish to bring water into my house from a spring 30 rods from the house and 100 feet higher. I wish to use 1/2 inch iron pipe. I am told that it will fill in a short time with rust so as to stop the flow of water entirely. Would it be advisable for me to lay iron or lead pipe? A. A tin-lined iron pipe is now being introduced into the market, which we think will best answer your purpose, and probably not cost more than a lead pipe of sufficient thickness to bear the pressure.
- (13) T. E, K. asks: Is there a preparation for rusting steam joints together? A. Use a mixture of cast iron borings 100 lbs. and sal ammoniac 8 ozs., well wetted with water.
- (14) G. D. M. asks: Can you tell me what substance plasterers mix with their white glue in making molds for ornamental plaster work, to give a gray color and make it tough like rubber? A. No; glycerin is said to be a good coating for the interior, but lard and oil is most commonly used. Plaster casts, immersed in a hot solution of glue long enough to be well saturated, will bear nail driven in without cracking.
- (15) F. R. asks: Is solder as good after it has been in use on iron and brass as when new? A. No.
- (16) L. S. C. asks: 1. What good material or paint can you recommend to cover a shingle roof, to make it approximately fireproof against sparks and heat in case of the burning of an adjoining building? A. Quicklime boiled in linseed oil and applied hot is said to be fireproof. 2.Can a durable wall 9 inches thick be made of sundried unburnt brick for a building one story high the foundation being of burnt brick? A. We should consider the wall too thin: it is not likely to sustain the roof: 16 inches thick would do bet ter. It could be laid up in clay. 3. Would hydraulic cement adhere to such a wall, if plastered on the outside? A. No; it would be better to fur off the inside, and lath and plaster it in the
- (17) J. R. K. asks: Has the temperature any effect on a steel spring blade? A. The effect will not be noticeable by ordinary measure-
- (18) T. M M. asks: Is there not such a thing as getting lumber too dry? We kiln our lumber in a very hot dry house. Sometimes we leave it in a week longer than we should if we were in a great hurry for it. Our foreman claims that there is no such a thing as getting lumber too dry; but we find sometimes, after we have used lumber that has been in the kiln so long, that the end wood swells. A. We think your foreman is right; but kiln-dried lumber isno doubt more subject to swell by the absorption of moisture than that which is seasoned by long exposure to the action of the weather. If you stack your lumber two or three years before using it, you will no doubt have the best seasoned stuff.
- (19) J. S. asks: How much powder will a small mortar, with a bore of 4 inches diameter and length 41/2 inches, take to throw a shell 1/4 of a mile? A. From 1/2 to 3/4 lb.
- (20) B. F. M. says: I have canned some blackberries and raspberries, but I have lost about 25 cans by the cans pulling in two; sometimes they will burst all to pieces. Can you give us some reason for it? A. In canning fruit it is necessary, in order to expel as much of the air as possible, as well as to destroy any incipient germs of fermentation, (1) that the vessels should be as full as possible and (2) that before being sealed they should be placed for a short time in boiling water until their contents become of the same temperature as the surrounding water, in which condition they should be sealed, and imme diately thereafter removed and allowed to cool.
- (21) L. A. asks: Is there anything except muriatic acid that I can use for soldering copper or tin to galvanized iron, or for solderiug the iron itself. and make a smooth job? A.Use borax, acid chloride of zinc, or sal ammoniac.
- (22) B. W. says: We have some steelvards that have no poise. Can you tell me how to make or adjust one? A. The principle on which the steelyard acts is that of the simple lever. If you can get two or three correct weights, you can make a poise by experiment. To calculate the proper weight of the poise, measure the lever arm of the weight, and that of the poise to one or more of the notches, and use the proportion that any given weight is to the required poise as the distance from the fulcrum to the poise is to the distance from the fulcrum to the weight.
- (23) C. E. C. asks: How can I best succeed

I fear may be adulterated with something that bearing that is slightly too narrow for it? A File out the sides of the bearing.

- Is it likely that any other substance than oil or mud is the cause of the water foaming or surging in the upright tubular boiler? A. There are other causes, such as want of sufficient steam power.
- (24) F. H. S. says: My friend claims that in a chronometer watch the escapement will commence to move at the same moment that the detent liberates the said escape wheel. I claim that the inertia of the train of wheels is sufficient to retard the time for commencement of motion of the escape wheel sufficiently to allow the balance to move through a space of at least three degrees from the time the detent has just liberated the escape wheel to the time that said escape wheel commences its movement with every beat of the balance, pendulum, or whatever it may be. Who is correct? A. Your view of the matter is the more correct of the two, though the amount of motion of the balance wheel before the other commences to move could only be settled by experiment. It should be noted, also, that the teeth of the escape wheel could have such a shape that it would be in motion while disengaging from the escapement. Possibly this is the case in some watches.
- (25) J. E. W. says: I am running my en gine at the rate of 175 revolutions per minute. What would be the difference in the amount of steam that I should use if I ran it at 200 revolutions per minute, provided that I increase the size of pulley on machinery so that the engine will be doing the same amount of work? A. There will be no great difference, but there will probably be a little gain by using the increased
- (26) A. L. asks: What would be the safe essure for 1½ inch external diameter steel pipe 0.3 inch in thickness, and also of 1 inch external diameter steel pipe, 1/4 inch thick? A. About 5,000 and 2,000 lbs. per square inch respectively.
- (27) W. R. H. says: In a recent issue you describe a new electric battery. I have had this battery in use since January last. The jar is a common glass tumbler. The zinc cylinder is sheet zinc, twice the hight of the tumbler. The porous cup is made of blotting paper around the zinc turned in at the bottom. The copperwire is coiled over the paper, which keeps the zinc and paper in place. Sulphate of copper solution is used as in a Daniell battery. This battery can be constructed for twenty cents, and will from 5 to 8 weeks, producing a current suitable for experimental purposes. By making the zinc cylinder twice the hight of the tumbler, the battery remains in working order longer. The zinc, being very thin, is soon destroyed on the lower edge; but by pushing the cylinder down, the same amount of surface is exposed to the action of the acid. A. The Daniell battery is capable of many modifications, and this is as good as many others which have been used.
- (28) E. S. asks: What will remove a linseed oil stain from common white cloth? A. Try benzine or naphtha, and press with a little warm
- (29) R. T. S. asks: How can I dye white kid slippers black? A. First steep the material in a strong, hot solution of logwood, and then in one of sulphate of iron (copperas). Repeat if necessary.
- (30) W. B. asks: How can I pulverize mica? A. Heat it as hot as possible, and while in this condition plunge it suddenly into cold water. It thus becomes very brittle and may be reduced without difficulty.
- (31) W. G. S. asks: What is the hydraulic essure of a column of water 30 feet high? A. About 121/2 lbs. on the square inch.
- Can I get a full large blaze from glycerin by putting the fluid above the light? I can get it to burn, but it gives a small blaze which, it seems, will not get any larger. A. A higher temperature in contact with the air will produce a rapid decomposition of the glycerin, giving a much stronger flame, but at the same time liberating irritating and offensive fumes of acrolene. 2 What is the cost of it compared with alcohol? A. Glycerin, in comparison with alcohol, is very cheap.
- (32) D. F. E. asks: How much sand and lime does it take to mix one bushel of Rosendale cement in mortar for laying brick? A. One of cement, one of lime, and six of sand will make a good mortar for brickwork.
- (33) W. G. W. says: I am bringing water 250 feet from a well through a 11/4 inches plain wrought iron pipe. The water is clear and good, to all appearance; but when it has stood in a pail or vessel of any kind an hour or more, a greasy reddish scum arises to the surface in sufficient quantity to color the inside, so that it requires considerable scrubbing to clean it off. Is there any chemical property in the water that causes the difficulty? A. The sediment you mention is very probably due to some corrosive action of the water on the iron conduits. This may be due in part to the presence of free carbonic acid. Draw a quantity of the water, add to it a small quantity of lime water, and allow to stand overnight; then draw off the clear water. The addition of the lime water will neutralize the free acid, with which it forms an insoluble salt, and at the same time precipitate any iron that may be in sofution. Experience will soon teach you the proper quantity of lime water necessary.
- (34) J. A. V. asks: What is the most efficient means of stopping and preventing leaks in gutters? I have one of copper that leaks terribly, thereby ruining the cornice of wood beneath. A. If your roof is a steep-pitched one, the copper lining of the gutter may not extend up far enough under the covering to prevent the water

woodwork of the cornice; or the contraction and riations in the force of the current will make no here in keeping gutters, that are simply lined with tin, tight.

(35) C. F. S. asks: 1. Is the radiation of the method of heating private dwellings with furnace in basement and tin pipe leading to different rooms at the floor called direct or indirect? A. Indirect. 2. When this method is used, where should fresh air be admitted to the room thus heated, at the floor or near ceiling? A. Fresh air should be taken from the exterior of the house at the basement, and supplied to the air chamber of the furnace by a special pipe or shaft, which may be of wood; it is this air, when warmed, that becomes the fresh air of the rooms. The fire-place flue will carry off the vitiated air, having its opening near the floor.

Can cast iron be casehardened with prussiate of potassa? A. Yes.

(36) L. W. asks: Will any injurious effects arise from working over and inhaling the vapor or steam arising from boiling or hot aniline dye? A. Yes, it is extremely unhealthy, if from no other cause than induced predisposition of the system to take cold and contract pulmonary complications.

(37) A. H. S. asks: Is it injurious to a person's health to sleep in a printing office after working in it all day? It is said that the antimony in type metal is poisonous. A. If the office is ventilated, and free from the odor of benzine and other exhalations, it will not be unhealthy. The antimony does not evaporate.

(38) G. G.says: I need a flexible tube to use in kerosene oil. What is the best material to make it of? A. Try one of leather. Rubber will not answer. 2. In a lamp burning kerosene oil, what is the best distance to have base of flame from surface of oil? A. About 21/2 inches.

(39) E.T. M. says: I am about to construct a flume for carrying off the smoke from a quicksilver furnace, the smoke being strongly impreg nated with sulphurous acid. What effect will it have on a four feet flue constructed of Portland cement, gravel, and sand? A. The effect will be to speedily convert the exposed surfaces of the lime into an oxysulphide, and finally into sulphate of lime, which will resist any further change.

(40) J. W. says: My cellar is always wet. If I die a drain or two in it, and dig a well down to the gravel, the drains going into it, will the water soak in the gravel? A. It depends upon the nature of the several strata over which your house stands. Better consult some of the older residents of your neighborhood. See query 20, p.

(41) M. E. A. asks: 1. I wish to build an icehouse on my farm, to hold about 8 tuns of ice, in which to keep meat, etc. A. You will find a description of one of this size on p. 251, vol. 31 (in which read "7 feet square" for interior chamber instead of 6.) 2. Is it best to build it into a bank and cover the top with earth, or build it all above ground? If the former, how shall I construct it? A. It is not necessary to build it in a bank; let the building be isolated, but the floor about 2½ feet below ground. 3. How should the door be made? A. Provide a canvas on the inside that will allow it to be packed with about 6 inches thick of sawdust. 4. Should the provisions be kept in the same room with the ice? A. No: but in the surrounding passage, as in the description above referred to.

(42) W. D. asks: Can vinegar be made directly from corn or corn meal without first converting the corn into starch, then to dextrin, and then to grape sugar, and then to vinegar? A

(43) J. H. P. says, in reply to B. D., who says: "I have a piece of gold which has been polished with mercury. What will remove the mercury? "A. Cover the gold in a glass vessel with nitric acid. The acid will eat the mercury all off, and will leave the gold less brittle than if heat had been applied to it.

(44) E. P. says, in answer to C. B., who asks how to plow with three horses abreast, and regulate the running of the plow: We often do this by shifting the outer end of the clevis off the beam towards the land, and fastening it at the right distance with a guide pin.

(45) J. M. L. says, in reply to H. P. B. who asks if eggshells can be utilized: Eggshells form one of the best clariflers for cider and wine. One pint of pulverized eggshells will clarify one barrel of cider or wine in from 24 to 48 hours, according to the clearness of the weather. As eggshells cannot always be had in sufficient quantities, can you tell me of a substitute for eggshells? What is the lime composition of the same? A It is the small quantity of residual adhering albumen, and not the lime salts composing the shell, that exerts the clarifying action upon the the liquor. A good substitute for the expensive egg albumen may be obtained from water that has been used to wash the starch from wheat flour or scraped potatoes, by allowing it to stand until it becomes clear, and then boiling it. By this means it is rendered turbid, and, after a short time, a flaky white substance deposits, which has the same properties as white of egg, and is known asvegetablealbumen. The shells are chiefly composed of the carbonate and phosphate of lime, together with a little organic matter. In some parts of Europe and elsewhere, it is common to clarify wines, etc., by heating for a short time with ordinary clean papier maché, and then filtering through bags of fine linen.

(46) N. A. B. asks: 1. Can I arrange the motive power of an electric clock so that a regulator will not be necessary, and so that slight va-

expansion may have worked the joints loose. The difference in the time kept? A. No. 2. I have latter should be closely examined, and, if loose, an instrument for producing shocks by the extra repaired before painting. We find no difficulty current; it has no secondary coil. If I should attach a condenser to it, could I obtain any of the effects of frictional electricity, or is the secondary coil necessary? A. A secondary coil is necessary to obtain static effects of any considerable tension.

> (47) J. V. A. says: Is there any metal or other substance that is perfectly or almost perfectly impenetrable to magnetism? If I take a magnet and place a plate of some substance above it, could the magnetism be prevented from going through it, so that it would have no influence on a piece of iron placed above it? A. No. There is nothing which will cut off magnetism except iron, which does so by itself absorbing the magnetism produced.

> (48) W. H. asks: 1. How can hard cistern water be made soft and good for table use? hardness arises from the cistern being built of cement. A. Boiling the water usually causes precipitation of some of the foreign matter. 2. Is a partition of common brick laid in cement, dividing the receiving conductor from discharge pump pipe, a good filter for a cistern? A. We

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributionsupon the follow ing subjects:

On Water Supply for Seaboard Towns. By H. B. M.

On Shrunk-On Parts of Machinery. By T. I. B On the Radiometer and its Uses. By S. H. T. On the Pyramid and the Sphynx. By C. R. On the Sinking of a Large Pond. By J. N. On Working Men's Demonstrations. By J.E.E. On a Submarine Railway. By P. S. On Building Prisons. By H. G. K.

On the Hidden Key. By J. E. W. On Preparing Ornamental Leaves. By M.A. K. Also inquiries and answers from the following: T. P. P.-J. B. H.-W. G. W.-W. W. K.-M. W. W.

M. G. P. asks: Are not meerschaum pipes sometimes boiled in wax etc., to bring out the color? If so, what is the process?-F. S. K. asks: Please give me a recipe for keeping the weavil from corn after it is cribbed in the shuck.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are fent: "Who sells bicycles? Who bores for water by driving well tubes, and what is the cost of the operation? Who sells wooden clocks? Who makes envelope machinery? Who makes machinery for preparing moss for upholsterers' use?" All such personal inquiries are printed, as will be observed, in the column of 'Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

August 15, 1876, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn &Co., 37 Park Row, New York city

Alarm, electric burglar, J. N. Larned	
Animal tether, P. Francis	
Ax, J. W. Warner	
Baking and broiling, J. H. Bruce	181,139
Bale band tightener, C. H. Chase (r)	7,260
Bale tie tightener, J. Thayer	181,020
Bale tie, wire cotton, P. F. King	181,188
Ball thrower, mechanical, C. H. Bagley	181,128
Bark, rossing and grinding, S. R. Thompson (r)	7,264
Bellows, valve for, A. Smith	181,111
Belt, chain, J. Behel	181,028
Belt fastener, J. P. Burnham	181,035
Belt shifter, A. Crosby	181,049
Bill holder, revolving, S. W. Maynard	181,089
Bin, meal, D. C. Clous	
Bits, etc., holding, W. H. Barber (r)	7,263
Boiler and setting, steam, T. R. Butman	181,237
Boiler furnace, steam, W. Swindell	181,222
Boiler furnace, steam, J. E. Wootten (r)	7,267
Bolts, etc., rolling screw threads on.T.T. Proseer	181,010
Bone black, drying, P. Farley (r)	7,266
Boot heel, C. Schwerdtfeger	181,109
Boots, etc., screw for, A. Angst	181,126
Bosom form, A. W. Thomas	181,019
Bottles, cork fastener for, W. D. Balcom	181,026
Bracket, Jenks & Byatt	181,178
Brick machine, R. A. Drawdy	181,058
Broom, S. Hobbs	181,170
Brush, R. Rosenthal	181,209
Brush and sprinkler, G. Birtwistle	180,985
Buckle, Clinton & Bassett	180,992
Buckle, A. B. Woodard	181,02 ³

 Buckle and snap hook, F. J. Deisz
 181,052

 Buckle, harness, W. F. Whitney
 181,229

 Building block, cellular wall, N. J. Clayton
 181,043

 Bustle. E. J. Ham
 181,068

 Butter Fackage, B. Beller
 181,130

 Button pliers, C. M. Platt...... 181,204

 Can, square, J. H. Scott.
 181,011

 Cannon, R. B. H. Leighton
 181,081

 Car coupling, E. Zorger
 181,023

 Car draft bar, railway, W. R. Cross
 181,048

 Car, sleeping, W. H. Paige
 181,005

 Car truck, J. Ireland
 181,177
 Cars, dust guard for, W. Carr...... 181,038 Casting die plates, J. B. McCune...... 181,194

 Chain, C. W. Levalley
 181,082

 Chair, folding, W. B. Cogger
 181,143

 Chair, folding, A. Matthlessen
 181,082

 Chair, folding, F. F. Parker
 181,100

 Chair, perambulating, T. Divine...... 181,056
 Chimney cowl, J. M. Davies
 181,050

 Churn, P. K. Parkhurst
 181,006
 Cigar box, T. A. Dodd...... 181,057 Cigarette papers, case for, Beebe et al........... 180,984 Cloth-cutting machine, R. B. Sanson............. 181, 107 Clothes dryer, E. B. Gildersleeve...... 181,164 Coal hods, bottom for, G. F. Sawyer...... 181,013 Commode, S. E. Smith. 181,216 Cooler, beer, W. Lawrence. 181,078 Cooler, milk, T. Sexsmith...... 181,110 Corkscrew, R. Decker...... 181,147

 Cotton, baling, R. De Gray.
 181,052

 Cotton chopper and scraper, W. M. Sanders.
 181,211

 Cotton, borated, C. G. Am Ende
 181,024

 Cotton gin, H. A. Stearns.
 181,017

 Cotton gin feeder, F. W. Flynn (r).
 7,261
 Cradle for children, Frawley & Eviston...... 181, 162 Cultivator, H. D. Green...... 180,999 Cultivator, corn, G. Bradley...... 180,987
 Cultivator, prairie sod, W. J. Robertson
 181,106

 Curtain tassel clasp, J. M. Homiston
 181,171

 Cutter head, J. H. Whitaker
 181, 230

 Desk, C. A. Atkinson
 181,025

 Digger, potato, E. Bartlett
 181,027

 Digger, potato, A. L. Libbey. 181, 191
Digger, potato, S. Martin. 181,193 Dish and clothes washer, A. C. Jackson 181,075 Disks of metal, etc., cutting, D. Brix 181,138

 Drag teeth clasp, J. Gmeiner.
 180,539

 Drawing frame stop, I. N. Edgerly.
 181,059

 Dryer, Adams & Blondin.
 181,122

 Elevating and carrying, B. T. Snyder
 181,215

 Elevator, J. G. Kurtz.
 181,077

 Elevator and purifier, water, T. T. Bishop.
 181,134

 Elevator and puriner, water, T. F. Bisnop.
 181,134

 Elevator, brick and mortar, T. Mann.
 181,085

 Elevator, hydraulic, T. Stebins.
 181,113

 Engine, compound, E. F. Althans.
 181,124

 Engine cut-off, steam, J. C. Debes.
 181,051

 Engine valve, pumping, Cope et al...... 181,045 Faucet-locking device, L. Bleier 181,031

 Fauter-locking device, L. Bieler
 181,038

 Feather renovator, W. M. Shelton
 181,213

 Fire kindler, S. S. Brown
 181,038

 Flour bolt, W. D. Murray
 181,095

 Flying machine, F. X. Lamboley
 181,186

 Fountain for mineral waters, etc., A. D. Puffer. 181,103 Frame for family records, L. Patterson......... 181,008 Fruit jar, H. D. Hall.....

 Fruitjar, H. D. Hall
 181,082

 Furnace for roasting ores, H. G. Livermore
 181,083

 Furnace, heating, T. Angell
 181,125

 Gasmachine, Λ. C. Rand
 181,294

 Gasaliers, tube retainer for, J. C. Cassidy
 181,140

 Gate, U. W. Hardy
 181,071

 Gearing, double, J. Smith
 181,218

 Generator water indicator, E. H. Ashcroft 181,127 Generator water indicator, E. H. Assecrott ... 181,127
Glove, J. L. E. Ranniger ... 181,011
Governor attachment, C. Neer ... 181,086
Grate, transverse recking, H. Swindell ... 181,221
Grating, burglar-proof, C. P. Haughian ... 181,070 Gravestone, metallic, W. J. Dew 181,148 Grindstone hanging, C. Hefft...... 181,000 Gun barrels, turning, H. C. S. Dyer. 181,154
Gun, battery, A. E. Miltimore. 181,093
Hame, A. H. W. Michaelis. 181,092
Harness pad, Ridgley et al. 181,207

 Harvester, W. H. Pritz.
 181,203

 Harvester spring lever, Γ. S. Brown
 180,988

 Hay and stock rack, J. F. Temple
 181,116

 Hay for fuel, twisting, J. S. Foster. 131,160 Hinge, spring, I. Buckman. 180,989
 Hoof spreader, McIntosh et al.
 181,081

 Horse collar, C. J. Fox.
 181,161
 Hydrant or water plug, E. R. Jones 181,076 Ironing board, M. A. Bryant 181,085 Knitted goods, finishing, J. L. Williams...... 181,232 Lamps, torch for lighting, F. Billingham 181,030 Latch and lock, W. H. Taylor 181,115 Lathe, gage, L. Hull (r). 7,262
Lathe shaping attachment, W. Brede. 181,082

 Limekiln door, W. Gwynn.
 181,238

 Lubricating compound, Lyon et al.
 181,080

 Match holder, W. Ferguson
 180,985

 Mattress, life-preserving, G. N. Torrence
 181,118

 Metals, refining, Corson et al.
 18.,046

 Microscope, J. Zentmayer.
 181,120

 Millstone dress, J. K. Snavely.
 181,015

 Mosquito bar, A. L. Edwards
 181,157

 Mowing machine coupling, D. Manning
 181,192

 Music leaf turner, O. W. Clark.
 180, 991

 Nut lock, Haldeman & Stewart.
 181,166

 Ores, reducing, M. Laflin.
 181,003

 Ornamenting surfaces, M. Dietrich
 181,150
 Overalls, G. R. Eager 181,155, 181,156

 Overalls, S. Laskey
 181,190

 Painter's duster, etc., J. V. Richardson
 181,206

 Paper bag, J. S. Ostrander.
 181,198

 Pen-handle attachment, W. H. Foye
 181,062

Penholder, fountain, L. Berg................................. 181,182

Pianoforte, bell, Hill & Wing 181,169
Pistols, extensible stock for, E. Wilson 181,288

Pliers, W. P. Huntoon	101,11
Plow draft, A. B. King	181,180
Plow, stock, J. A. Price	181,102
Piow, sulky, A. Hamilton	181,069
Plow, sulky, J. M. Payne	181,200
Plows, weed turner for, W. Banworth	181,129
Post hole borer, Caler & Merrick	181.036
Press, cotton, W. Golding	180,998
Printing press, E. Hely	
Privy seat, Howard & Allard	
Pump, chain, J. S. Corbin	
Pump, submerged, J. W. Collet	
Pump valve, Hill & Rowland	181.168
Pump bucket, chain, Potter et al	181.20
Railway gate, M. Fulcomer	
Railway rail joint. J. De Pew	
Railway signal, automatic, J. E. Ross	
Railway time signal, J. C. Paige	181.098
Railway track, lifting, R. Aldred	181.123
Rake and tedder, hay, E. J. Knowlton	
Rake, horse hay, A. W. Coates	
Refrigerator, J. J. Ross	
Rivets, etc., making, E. E. Pierce	181 101
Roofing, making composition, C. L. Fowler	
Ruler and protractor, G. D. Wyckoff	
Saw tooth. A. Boynton	
Scales, automatic, C. A. Whedon	
Scales, weighing, A. Pangburn	
Seeds, coating, W.R. Brandriff	
Separator, middlings, C. F. Keller	
Sewers, expansible gate for, Brady & Manning	
Sewing machine, shuttle carrier, A. W. Eldredge	
Sheet metal box, O. M. Sloat	
Shirt bosom, S. Laskey	
Shoes, etc., fastening, G. W. Lascell181,187,	
Sign, revolving, J. O. Belknap	
Skirt elevator, Λ . W. Thomas	
Smoke, consuming, J. Todd	181,117
Spinning flier, F. P. Holt	
Stone channeling machine, N. J. Green	181,066
Stool, blacking, A. Waterman	
Stove attachment. cooking, T. R. Timby	
Stove, cooking, J. C. McClamroch	181,090
Stove leg or foot, self-locking, W. W. Tice	I81.223
Stove, summer, C. H. Chase	181, 040
Stove, summer, C. H. Chase	181, 0 40
Stove, summer, C. H. Chase	181, 0 40
Stove, summer, C. H. Chase	181,040 181,009 181,208
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm.	181,009 181,208 181,231
Stove, summer, C. H. Chase	181,040 181,009 181,208 181,231 181,214
Stove, summer, C. H. Chase	181,040 181,009 181,208 181,231 181,214 181,226
Stove, summer, C. H. Chase	181,040 181,009 181,208 181,231 181,214 181,226
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sleaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett	181,040 181,208 181,231 181,214 181,226 181,061 180,983
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington Sugar machine, centrifugal, E. Rochow Sugar, refining, J. Wilhelm Swing, A. Sieaforth Syringes, etc., piston for, R. Vander Emde Tanning process and compound, W. Farris Telegraph circuit, fire alarm, J. P. Barrett Toilet cabinet, D. Daggett	181,040 181,009 181,208 181,231 181,214 181,226 181,061 180,983 180,993
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sleaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds.	181, 040 181, 009 181, 208 181, 231 181, 214 181, 226 181, 061 180, 983 181, 104
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow Sugar, refining, J. Wilhelm	181, 040 181, 009 181, 208 181, 231 181, 214 181, 226 181, 061 180, 983 181, 104 184, 1
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sleaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toygun, C. W. Fries.	181,040 181,208 181,231 181,214 181,226 181,061 180,983 181,104 184,1 181,0
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker.	181,040 181,009 181,206 181,231 181,214 181,226 181,061 180,983 181,104 184,1 181,0
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin.	181,040 181,009 181,208 181,231 181,214 181,226 181,061 180,983 181,104 184,1 181,0 181,114 181,065
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Tollet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin	181,040 181,008 181,206 181,231 181,214 181,226 181,061 180,983 181,104 184,1 181,0 181,114 181,0
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, F. E. Rice.	181,040 181,009 181,206 181,231 181,214 181,226 181,061 180,983 181,104 184,1 181,0 181,114 181,065 181,105 181,105
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson.	181,040 181,208 181,214 181,214 181,215 181,061 180,983 181,104 181,104 181,105 181,086 181,086 181,086
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson Trap, fly, C. Olson	181,040 181,208 181,214 181,224 181,225 181,061 180,983 181,104 184,1 181,065 181,066 181,106 181,106 181,106 181,106 181,106 181,106
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson Trap, fly, C. Olson	181,040 181,208 181,214 181,224 181,225 181,061 180,983 181,104 184,1 181,065 181,066 181,106 181,106 181,106 181,106 181,106 181,106
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, fly, C. Olson Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Supporter, A. H. Wright.	181,040 181,009 181,208 181,231 181,224 181,226 181,061 180,983 180,983 181,104 184,1 181,0 181,114 181,065 181,106 181,106 181,106 181,106 181,107 181,181,181
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, fly, C. Olson Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Supporter, A. H. Wright.	181,040 181,009 181,208 181,231 181,224 181,226 181,061 180,983 180,983 181,104 184,1 181,0 181,114 181,065 181,106 181,106 181,106 181,106 181,107 181,181,181
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm	181,040 181,009 181,203 181,214 181,226 181,061 180,993 181,104 184,1 181,065 181,105 181,105 181,105 181,105 181,105 181,105 181,105 181,105 181,105 181,105 181,105 181,105 181,105 181,105
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sleaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin. Trap, animal, J. Martin. Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice Valve gear for reversing, W. H. Downing.	181,040 181,009 181,208 181,214 181,225 181,061 180,993 181,104 184,1 181,065 181,105 181,105 7,265 181,072 181,235 181,255 181,155
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy brown of the strong of the str	181,040 181,009 181,231 181,226 181,231 181,214 181,226 181,081 180,983 181,104 181,106 181,107 181,106 181,107 181,106 181,107 181,106 181,107 181,106 181,107 181,106 181,107 181,106
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Tollet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, fly, C. Olson Trap, fly, C. Olson Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagonbeds. attaching dericks to, G. H Smith.	181,040 181,009 181,231 181,226 181,231 181,225 181,061 180,983 180,983 180,993 181,104 184,1 181,105 181,105 181,105 181,105 181,105 181,152 181,255 181,253 181,253 181,1531
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sleaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, roach, R. Hagen. Umbrella. G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H. Smith. Wagon cover, C. Creiner.	181, \$40 181, 208 181, 218 181, 226 181, 218 181, 226 181, 226 181, 268 180, 939 180, 939 180, 939 181, 191 181, 105 181, 1
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, roach, R. Hagen Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon cover, C. Cremer. Wagon, steam, S. B. Stone.	191, \$40 191, 200 181, 231 181, 241 181, 241 181, 061 181, 061 181, 065 181, 106 181, 106 181
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson Trap, roach, R. Hagen Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon cover, C. Cremer. Wason, steam, S. B. Stone. Washer, steam, C. C. Carter.	181, \$40 181, 208 181, 218 181, 214 181, 208 181, 228 181, 061 180, 988 180, 988 180, 988 181, 181, 108 181, 108 181, 108 181, 114 181, 06 181, 165 7, 268 181, 165 181, 205 181, 153 181, 217 181, 217 181, 217 181, 217 181, 217 181, 217 181, 217 181, 217 181, 217 181, 217 181, 217 181, 217 181, 217
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washer, steam, C. C. Carter. Washing machine, J. J. Daly.	181, \$40 181, 201 181, 214 181, 214 181, 215 181, 214 181, 215 181, 061 181, 081 181, 181, 181
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Try planter, J. E. Goodwin. Trap, animal, J. Martin. Trap, animal, J. Martin. Trap, naimal, J. Martin. Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly. Washing machine, G. W. Marlatt.	191, \$40 191, 200 181, 231 181, 244 181, 265 181, 061 180, 989 181, 104 184, 1 181, 06 181, 104 181, 105 181, 1
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice Trap, fly, C. Olson Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve, cut-off, F. B. Rice. Valve, costillating, W. Bellis. Wagon beds, attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly Washing machine, G. W. Marlatt. Washing machine, G. W. Marlatt.	191, \$40 191, 200 181, 201 181, 214 181, 214 181, 215 181, 061 180, 382 181, 114 181, 06 181, 106 181, 106 181, 106 181, 106 181, 107 181, 106 181, 107 181,
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson. Trap, fly, C. Olson. Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly. Washing machine, G. W. Mariatt. Washing machine, G. L. Witsil.	181, \$40 181, 200 181, 201 181, 214 181, 214 181, 214 181, 016 181, 081 181, 081 181, 181, 081 181, 181, 081 181, 181, 081 181, 181, 081 181, 182, 081 181, 183, 181, 181, 181, 181, 181, 181,
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson. Trap, fly, C. Olson. Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly. Washing machine, G. W. Mariatt. Washing machine, G. L. Witsil.	181, \$40 181, 200 181, 201 181, 214 181, 214 181, 214 181, 016 181, 081 181, 081 181, 181, 081 181, 181, 081 181, 181, 081 181, 181, 081 181, 182, 081 181, 183, 181, 181, 181, 181, 181, 181,
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, roach, R. Hagen Umbrella. G. Bockstaller (r). Umbrella, Hayward & Hoyland Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon cover, C. Creiner Wagon, steam, S. B. Stone. Washer, steam, C. C. Carter. Washing machine, J. J. Daly Washing machine, G. W. Marlatt. Washing machine, G. L. Witsil. Waster conductor fastener, L. Berger.	191, \$40 191, 200 181, 231 181, 242 181, 262 181, 061 180, 982 181, 101 184, 1 181, 06 181, 102 181, 103 181, 107 181, 106 181, 107 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 107 181, 108 181, 1
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson Trap, roach, R. Hagen. Umbrella. G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly Washing machine, G. W. Marlatt. Washing machine, G. W. Marlatt. Washing machine, G. L. Witsil. Washing machine, J. Zeller. Watch key, W. S. Hicks. Water wheel, B. C. Lambeth.	181, \$40 181, 206 181, 231 181, 241 181, 262 181, 061 180, 988 180, 938 180, 938 180, 938 180, 938 180, 938 180, 938 180, 938 180, 938 181, 165 181, 181, 181, 181 181, 181, 181 181, 181,
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Steaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, roach, R. Hagen. Umbrella. G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, out-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly Washing machine, J. J. Daly Washing machine, G. L. Witsil. Washing machine, G. L. Witsil. Washing machine, J. Zeller Watch key, W. S. Hicks. Water wheel, B. C. Lambeth. Water wheel, B. C. Jambeth.	191, 940 191, 200 191, 200 191, 200 191, 201 191, 225 181, 061 180, 939 181, 104 181, 105 181, 106 181, 107 181, 108 181, 1
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, roach, R. Hagen Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly. Washing machine, G. L. Witsil. Washing machine, J. Zeller Watch key, W. S. Hicks. Water wheel, B. C. Lambeth. Water wheel, B. C. Lambeth. Water strip, J. H. McIntire.	191, 040 191, 200 191, 200 191, 201 191, 214 191, 214 191, 214 191, 214 191, 215 191, 216 191, 2
Stove, summer, C. H. Chase. Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sleaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson. Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve, cut-off, F. B. Rice. Valve, cut-off, F. B. Rice. Wagon beds, attaching derricks to, G. H Smith. Wagon cover, C. Creiner. Washing machine, J. J. Daly. Washing machine, G. W. Marlatt. Washing machine, G. L. Witsil. Washing machine, G. L. Mitsil. Waster wheel, B. C. Lambeth. Water wheel, B. C. Lambeth. Water wheel, B. C. Lambeth. Water wheel, L. Long. Weather strip, J. H. McIntire. Windmill, M. T. & M. C. Chapman.	191, \$40 191, 200 181, 201 181, 214 181, 224 181, 061 180, 982 181, 114 181, 065 181, 106 181, 114 181, 065 181, 106 181, 137 181, 127 181, 127 181, 131 181, 121 181, 131 181, 121 181, 131 181, 121 181, 135 181, 138
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Steaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin. Trap, animal, J. Martin. Trap, roach, R. Hagen. Umbrella. G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, out-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon cover, C. Cremer. Washing machine, J. J. Daly. Washing machine, J. J. Daly. Washing machine, G. L. Witsil. Washing machine, G. L. Witsil. Washing machine, J. Zeller Watch key, W. S. Hicks. Water wheel, B. C. Lambeth. Water wheel, L. Long. Weather strip, J. H. McIntire. Windmill, M. T. & M. C. Chapman.	191, 940 191, 200 191, 200 191, 201 191, 228 181, 218 181, 228 181, 061 181, 193 181, 104 181, 105 181, 106 181, 107 181, 107 181, 107 181, 107 181, 107 181, 108 181, 1
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Swinges, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin. Trap, animal, J. Martin. Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly. Washing machine, G. L. Witsil. Washing machine, J. Zeller Watch key, W. S. Hicks. Water wheel, L. Long. Weather strip, J. H. McIntire. Windmill, M. T. & M. C. Chapman. Windmill, M. Humphrey. Windmill, M. Humphrey. Windmill, W. W. Marsh.	191, 940 191, 200 191, 200 191, 200 191, 201 191, 214 191, 214 191, 214 191, 214 191, 216 191, 2
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sleaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve, cut-off, F. B. Rice. Valve, cut-off, F. B. Rice. Wagon beds attaching derricks to, G. H Smith. Wagon cover, C. Creiner Wagon, steam, S. B. Stone. Washing machine, J. J. Daly Washing machine, G. W. Marlatt. Washing machine, J. Zeller Watch key, W. S. Hicks. Water wheel, B. C. Lambeth. Water wheel, L. Long. Weather strip, J. H. McIntire. Windmill, M. T. & M. C. Chapman. Windmill, D. Nysewander.	191, 940 191, 200 181, 231 181, 241 181, 242 181, 061 180, 982 181, 101 184, 1 181, 105 181, 105
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington. Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sieaforth. Swinges, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin. Trap, animal, J. Martin. Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve gear for reversing, W. H. Downing. Valve, oscillating, W. Bellis. Wagon beds. attaching derricks to, G. H Smith. Wagon, steam, S. B. Stone. Washing machine, J. J. Daly. Washing machine, G. L. Witsil. Washing machine, J. Zeller Watch key, W. S. Hicks. Water wheel, L. Long. Weather strip, J. H. McIntire. Windmill, M. T. & M. C. Chapman. Windmill, M. Humphrey. Windmill, M. Humphrey. Windmill, W. W. Marsh.	191, 940 191, 200 181, 231 181, 241 181, 242 181, 061 180, 982 181, 101 184, 1 181, 105 181, 105
Stove, summer, C. H. Chase Studs, etc., making, Potter & Buffington Sugar machine, centrifugal, E. Rochow. Sugar, refining, J. Wilhelm. Swing, A. Sleaforth. Syringes, etc., piston for, R. Vander Emde. Tanning process and compound, W. Farris. Telegraph circuit, fire alarm, J. P. Barrett. Toilet cabinet, D. Daggett. Tool, combination, M. Reynolds. Toy blow horn, C. W. Fallows. Toy gun, C. W. Fries. Toy spring gun, S. G. Stryker. Transplanter, J. E. Goodwin. Trap, animal, J. Martin Trap, animal, J. Martin Trap, animal, F. E. Rice. Trap, fly, C. Olson Trap, roach, R. Hagen. Umbrella, G. Bockstaller (r). Umbrella, Hayward & Hoyland. Umbrella supporter, A. H. Wright. Valve, cut-off, F. B. Rice. Valve, cut-off, F. B. Rice. Valve, cut-off, F. B. Rice. Wagon beds attaching derricks to, G. H Smith. Wagon cover, C. Creiner Wagon, steam, S. B. Stone. Washing machine, J. J. Daly Washing machine, G. W. Marlatt. Washing machine, J. Zeller Watch key, W. S. Hicks. Water wheel, B. C. Lambeth. Water wheel, L. Long. Weather strip, J. H. McIntire. Windmill, M. T. & M. C. Chapman. Windmill, D. Nysewander.	191, 940 191, 200 181, 231 181, 241 181, 242 181, 061 180, 982 181, 101 184, 1 181, 105 181, 105

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