The Knowles Steam Pump Works, 113 Federal St., Boston, and 93 Liberty St., New York, have just is sued a new catalogue, in which are many new and im proved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

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

Curtis Pressure Regulator and Steam Trap. See p. 364.

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scription. Billings & Spencer Co., Hartford, Conn. Cushman's Chucks can be found in stock in all large cities. Send for catalogue. Cushman Chuck Co., Hart-

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Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N.Y. See illus. adv., p. 28.

Quints' patent automatic steam engine governor Correspondence solicited from manufacturers of throttle governor engines. Leonard & McCoy, 118 Liberty Street, New York,

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HINTS TO CORRESPONDENTS.

HINTS TO CORRESPONDENTS.

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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 sill, 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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Minerals sent for examination should be distinctly marked or labeled.

(1) Slip of Car Wheels.—Allow me to make the following remark as to your explanation in regard to the locomotive running over a curve, as question solved in your issue of 17th Dec. I claim that in every case the inner wheels will slip, for this reason: For instance, the locomotive is running over a short curve or long curve at their general speed, as whatever it may be, of course its tendency while it met with the carre was to go in a straight line. Now, the change of its direction is due to the curve of the rails in combination with the flanges on the driving wheels (that is, on the uter ones). Thereby more friction is created on them than on the inner ones, consequently the inner wheels will slip easier. The elevation of the outer rail is suptending to throw the flanges against the outer rail, and or any other preparation for the hair that will make it as only the flange of the forward driving wheel impinges against the outer rail, there is no reason for concluding that the inner wheels always slip. The whole weight of the locomotive is tended to go in a straight line, as before stated. Now, by meeting with the curve its tendency is being broughtin a centrifugal motion, and hence the force being sustained by the outer rails and wheels, thus decreasing the weight of the locomotive on the inner ones, and adding equally as much on the outer. Consequently the inner wheels will slip easier. This is what is claimed in No. 10. Notes and Queries, for a locomotive when drawing. When running under momentum only, the tilting of the locomotive by the elevation of the outer track and the angular position of the truck tends to prevent undue friction on the flange of the forward driver. When the locomotive runs on to a curve reversed, the slip ne cessarily takes place on the outer rail.

(2) W. H. D. asks how to make a canvas bag to hold hydrogen or oxygen gas under pres-

rubber cement or a solution of rubber in carbon disul-

(3) C. E. asks: What will be the best method to clear a waste pipe where mucus is forming or has formed from waste of beer or water, or what would be best to run through it in order to clear itself? A. Use a strong hot solution of soda.

(4) J. H. A. desires a receipt to stain white pine cherry and rosewood color. A. For cherry stain, take of rain water 3 quarts, annatto 4 ounces boil in a copper kettle till the annatto is dissolved, then put in a piece of potash the size of a walnut; keep it on the fire for half an hour longer, and it is ready to bottle for use. For rosewood stain, take alcohol 1 gallon, camwood 2 ounces; set them in a warm place 24 hours, then add extract of logwood 3 ounces, aquafortis 1 ounce, and when dissolved it is ready for

(5) H. M. P. asks: 1. What battery what size, and how many cells will it require to run Edison's incandescent 6 candle power lamp, resistance 6 to 7 ohms, requiring 9 to 15 volts E. F. and 1.40 ampered current? A. A series of twenty bichromate cells would give you voltage enough for your lamp. Taking a quart battery, you might allow ½ ohm to each cup. This would give ten ohms internal resistance and would give through a 60 hm lamp a low lighting current, say 1.25 amperes. 24 square inches of zinc in a porous cup cell are allowed by some per ampere on short circuit. 2. Would this lamp be sufficient candle power to light a room 17 by 17 feet? A. The light would be quite insufficient for the room. 3. How should the batteries be connected? A. The batteries in above calculation are connected in tension. The more you use in parallel, so as to bring down the resistance, the less acid and zinc will be used. See Scientific American, vol. 57, No. 2, page 16, for article on this subject. 4. What would probably be cost of maintenance per hour? A. The cost per hour depends on so many factors that it cannot be given. It will cost probably one or two cents an hour in chemicals and zincs, irrespective of the trouble. 5. Is it possible to run the lamp with gravity battery? If so, how many cells? A. A gravity battery is not available for this work. 6. Will these lamps de velop the power as given by manufacturers? A. The lamps can be run far over the rated power, but they wear out sooner. 7. If this lamp is too small for practical purposes, please give battery, etc., required for 16 candle power lamp. A. For a 16 candle lamp 40 cells in series would answer

(6) F. M. W. writes: Describe the process of polishing horn. A. It must be rubbed first with fine glass paper and then with a piece of wet linen cloth dipped in powdered pumice stone. This will give a very fine surface, and the final polish may be produced by washed chalk or fine whiting applied by a piece of cloth wetted with soapsuds. Care must be taken in this, and in every instance where articles of different fineness are used, that, previous to applying a finer, every particle of the coarser material is removed, and that the rags are free from grit.

(7) J. G. M. writes: I have recently fitted my main building, 100 x 40 feet and 35 feet high, with lightning rods, having 4 points 8 feet high and having two connections to the ground. Will you kindly tell me therequired size and thickness of copper plate for ground connection, whether it should be soldered to the rod or not and whether it should be put at lower end of rod, 6 feet down, or higher up? A. Use a copper plate having about 20 square feet area. Ordinary sheet copper, such as is used for roofing, or in the manufacture of culinary vessels, will answer. The lower end of the rod should extendacross the plate and be soldered. The plate should be buried in earth that is always moist. Another way to make a good ground connection is to dig a trench 10 feet long in earth that is constantly moist. Put a layer of coke on the bottom of the trench; loop the rod and lay it on the coke. Cover the rod with a layer of coke and fill in the trench with earth. The trench should extend away from the building.

(8) H. W. K. asks for a cement which can be used to stick art tile to iron. A. Try a gutta percha cement, made by melting together in an iron pan 2 parts of common pitch and 1 part of gutta percha. Stir them well together until thoroughly incorporated and then pour the liquid into cold water. When cold it is black, solid and elastic: but it softens with heat, and at 100° Fah. is a thin fluid.

(9) C. A. F. desires a receipt for preparing white linen cloth so that it can be written on without blotting, at same time making it stiff and glossy and to cut without fraying. A. Varnish the cloth with Canada balsam dissolved in turpentine, to which may be added a few drops of castor oil, but do not add too much, or it will not dry. Try a little piece first with a small quantity of varnish. The kind of cloth to use is fine linen. Don't let the varnish be too thick.

(10) J. H. R. desires a receipt for a wash curl. A. Take borax 2 ounces, gum arabic 1 drachm. add hot water (not boiling), 1 quart; stir, and as soon as the ingredients are dissolved add 3 tablespsoonfuls of strong spirits of camphor. On retiring wet the hair with the above liquid.

(11) E. H. D. desires (1) recipes for making purple, green, and black copying type writer inks. A. Take any desired shade of aniline dye 1/2 ounce, dissolved in 15 ounces pure alcohol, and 15 ounces glycerine, then apply to the ribbon. 2. Do strong electric or calcium lights produce sensible effect on photographic preparations? A. Calcium light has little effect, but electric light has an effect which, under sufficient exposure, is as great as sunlight.

(12) H. B. asks (1) for directions for making effervescing solution of citrate of magnesia. A. Dissolve citric acid 400 grains in water 2,000 grains. add carbonate of magnesia 200 grains; stir until dissolved. Filter into a 12 ounce bottle containing sirup of citric acid 1,200 grains. Add boiled and filtered sure for magic lantern use. A. Rubber bags are used water to fill bottle, drop in bicarbonate of potash in for this purpose, and you can most conveniently make 'crystals 30 grains and immediately cork. Shake until

a canvas bag air-tight by coating it with a layer of bicarbonate of potash is dissolved. The sirup of citric acid is made from citric acid 8 parts, water 8 parts spirit of lemon 4 parts, situp 980 parts. 2. How much power should I get from a bichromate of potash battery with a zinc plate 3 inches long, 2 inches wide, and 4 arc light carbons 3 inches long and 16 inch in diameter. two on each side of zinc, and what is its resistance? A. Your battery would give about 1/2 ampere, with resist ance of 4 ohms.

TO INVENTORS.

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January 10, 1888,

AND EACH BEARING THAT DATE

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n it in sir	Car coupling, S. D. Locke. 376,387 Car coupling, T. W. McKee. 376,412 Car coupling, B. B. Morgan. 376,835 Car coupling, J. P. Runkel. 376,164 Car coupling, C. M. Shupe. 376,216 Car starter, H. P. Wayman 376,356 Cars by electricity, lighting, A. D. Stevens. 1376,116 Cars, track brake for, J. S. Bokenkotter. 376,363 Cars with hot air, apparatus for heating, Casselman & McGann. 376,138 Carburetor, F. J. Lothsmmer. 376,248 Carriage body, C. A. Reade. 376,162 Carriage, child's, T. Lanston. 376,218 Carriage spring, J. R. Northrup 376,158 Carriage top, H. B. Pitner. 376,141 Carrier. See Hay carrier. Cartidge shells, loading apparatus for, G. G. Greenough G. Greenough Casehardening and cementation compound, G. F. 376,148	Harvester, grain binding, S. V. Kennédy. Hay carrier, W. S. & E. J. Risley. Hay rake, horse, J. G. Alexander Heel burnishing machine, J. H. Buself. Hot trap, S. Loffer. Holder. See Barrel holder. Pencil rubber holder. Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook. Horse detacher, S. A. Pugh. Horse tail tie. O. Hasbrouck, Jr. Hot air furnace, W. Morrison. Hub boring machine, J. Bieber Hub, self-lubricating vehicle, J. V. Hawkey. Indicator. See Cash indicator. Injector, W. T. Ewing	\$76,284 \$76,199 \$76,109 \$76,109 \$76,105 \$376,066 \$376,388 \$76,107 \$76,151 \$376,909 \$376,003 \$376,003 \$376,152 \$
n it n	Car coupling, S. D. Locke. 376,432 Car coupling, T. W. McKee. 376,412 Car coupling, B. B. Morgan. 376,355 Car coupling, J. P. Runkel. 376,164 Car coupling, C. M. Shupe. 376,213 Car starter, H. P. Wayman. 376,256 Cars by electricity, lighting, A. D. Stevens. 1876,116 Cars, track brake for, J. S. Bokenkotter. 376,363 Cars with hot air, apparatus for heating, Casselman & McGann. 376,138 Carburetor, F. J. Lothammer. 376,138 Carriage body, C. A. Reade. 376,122 Carriage, child's, T. Lanston. 376,201 Carriage spring, J. R. Northrup. 376,158 Carriage top, H. B. Pitner. 376,144 Cartridge shells, loading apparatus for, G. G. Greenough Caschardening and cementation compound, G. F. Evans. Evans. 376,186 Cash carriers, air cushioned counterbalance for,	Harvester, grain binding, S. V. Kennédy. Hay carrier, W. S. & E. J. Risley. Hay rake, horse, J. G. Alexander. Heel burnishing machine, J. H. Buself. Hog trap, S. Loffer. Holder. See Barrel holder. Pencil rubber holder. Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook. Horse detacher, S. A. Pugh. Horse tail tie. O. Hasbrouck, Jr. Hot air furnace, W. Morrison Hub boring machine, J. Bieber Hub, self-lubricating vehicle, J. V. Hawkey. Indicator. See Cash indicator. Injector, W. T. Ewing. Injector, W. T. Ewing. Instand, safety, L. B. Prahar. Iron or steel, treating, E. D. Wassell. Jar fastening, W. H. Clarke. Jolnt. See Rail joint. Wood joint. Knife. See Corn removing knife. Drawing	\$76,284 \$76,199 \$76,109 \$76,109 \$76,105 \$376,066 \$376,388 \$76,107 \$76,151 \$376,909 \$376,003 \$376,003 \$376,152 \$
it is ir is es gnie	Car coupling, S. D. Locke. 376,387 Car coupling, T. W. McKee. 376,412 Car coupling, B. B. Morgan. 376,835 Car coupling, J. P. Runkel. 376,164 Car coupling, C. M. Shupe. 376,213 Car starter, H. P. Wayman. 376,363 Cars by electricity, lighting, A. D. Stevens. 1876,116 Cars, track brake for, J. S. Bokenkotter. 376,363 Cars with hot air, apparatus for heating, Casselman & McGann. 376,138 Carburetor, F. J. Lothammer. 376,248 Carriage body, C. A. Reade. 376,248 Carriage spring, J. R. Northrup. 376,162 Carriage spring, J. R. Northrup. 376,152 Carriage spring, J. R. Northrup. 376,144 Carriage shells, loading apparatus for, G. G. Greenough Greenough Casehardening and cementation compound, G. F. Evans. 376,186 Cash carriers, air cushioned counterbalance for, L. G. Bostedo. 376,286	Harvester, grain binding, S. V. Kennédy. Hay carrier, W. S. & E. J. Risley. Hay rake, horse, J. G. Alexander. Heel burnishing machine, J. H. Buself. Hox trap, S. Loffer. Holder. See Barrel holder. Pencil rubber holder. Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook. Horse detacher, S. A. Puhh. Horse tail tie. O. Hasbrouck, Jr. Hot air furnace, W. Morrison. Hub boring machine, J. Bieber. Hub, self-lubricating vehicle, J. V. Hawkey. Indicator. See Cash indicator. Injector, W. T. Ewing	376,384 376,199 376,199 376,175 376,066 376,388 376,107 376,151 376,590 376,063 376,152 376,188 376,315 376,259 376,269 376,569
n it in sir	Car coupling, S. D. Locke. 376,432 Car coupling, T. W. McKee. 376,412 Car coupling, B. B. Morgan. 376,355 Car coupling, J. P. Runkel. 376,164 Car coupling, C. M. Shupe. 376,213 Car starter, H. P. Wayman. 376,256 Cars by electricity, lighting, A. D. Stevens. 1876,116 Cars, track brake for, J. S. Bokenkotter. 376,363 Cars with hot air, apparatus for heating, Casselman & McGann. 376,138 Carburetor, F. J. Lothammer. 376,138 Carriage body, C. A. Reade. 376,122 Carriage, child's, T. Lanston. 376,201 Carriage spring, J. R. Northrup. 376,158 Carriage top, H. B. Pitner. 376,144 Cartridge shells, loading apparatus for, G. G. Greenough Caschardening and cementation compound, G. F. Evans. Evans. 376,186 Cash carriers, air cushioned counterbalance for,	Harvester, grain binding, S. V. Kennédy. Hay carrier, W. S. & E. J. Risley. Hay rake, horse, J. G. Alexander. Heel burnishing machine, J. H. Buself. Hog trap, S. Loffer. Holder. See Barrel holder. Pencil rubber holder. Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook. Horse detacher, S. A. Pugh. Horse tail tie. O. Hasbrouck, Jr. Hot air furnace, W. Morrison Hub boring machine, J. Bieber Hub, self-lubricating vehicle, J. V. Hawkey. Indicator. See Cash indicator. Injector, W. T. Ewing. Injector, W. T. Ewing. Instand, safety, L. B. Prahar. Iron or steel, treating, E. D. Wassell. Jar fastening, W. H. Clarke. Jolnt. See Rail joint. Wood joint. Knife. See Corn removing knife. Drawing	\$76,384 \$76,199 \$76,199 \$76,175 \$76,066 \$76,388 \$76,107 \$76,151 \$76,903 \$76,053 \$76,152 \$76,259 \$76,259 \$76,259 \$76,569 \$76,569
it is ir is es gnie	Car coupling, S. D. Locke. 376,387 Car coupling, T. W. McKee. 376,412 Car coupling, B. B. Morgan 376,835 Car coupling, J. P. Runkel 376,164 Car coupling, C. M. Shupe 376,213 Car starter, H. P. Wayman 376,236 Cars by electricity, lighting, A. D. Stevens 1876,116 Cars, track brake for, J. S. Bokenkotter 376,363 Cars with hot air, apparatus for heating, Casselman & McGann 376,138 Carburetor, F. J. Lothammer 376,138 Carriage body, C. A. Reade 376,122 Carriage spring, J. R. Northrup 376,201 Carriage spring, J. R. Northrup 376,158 Carriage shells, loading apparatus for, G. Greenough 376,144 Castendening and cementation compound, G. F. Evans 376,186 Cash carriers, air cushioned counterbalance for, L. G. Bostedo 376,286 Cash carrier apparatus, pneumatic, Pain & Webber 376,159 Cash indicator and register, Schickner & Rothlis-	Harvester, grain binding, S. V. Kennédy. Hay carrier, W. S. & E. J. Risley. Hay rake, horse, J. G. Alexander. Heel burnishing machine, J. H. Buself. Hog trap, S. Loffer. Holder. See Barrel holder. Pencil rubber holder. Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook. Horse detacher, S. A. Pugh. Horse tail tie. O. Hasbrouck, Jr. Hot air furnace, W. Morrison. Hub boring machine, J. Bieber. Hub, self-lubricating vehicle, J. V. Hawkey. Indicator. See Cash indicator. Injector, W. T. Ewing	\$76,384 \$76,199 \$76,199 \$76,175 \$76,066 \$76,388 \$76,107 \$76,151 \$76,509 \$76,003 \$76,003 \$76,152 \$76,815 \$76
nit in sir in see an le in see	Car coupling, S. D. Locke	Harvester, grain binding, S. V. Kennédy. Hay carrier, W. S. & E. J. Risley. Hay rake, horse, J. G. Alexander. Heel burnishing machine, J. H. Buself. Hog trap, S. Loffer. Holder. See Barrel holder. Pencil rubber holder. Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook. Horse detacher, S. A. Pugh. Horse tail tie. O. Hasbrouck, Jr. Hot air furnace, W. Morrison Hub boring machine, J. Bieber Hub, self-lubricating vehicle, J. V. Hawkey. Indicator. See Cash indicator. Injector, W. T. Ewing. Injector, W. T. Ewing. Instand, safety, L. B. Prahar. Iron or steel, treating, E. D. Wassell. Jar fastening, W. H. Clarke. Joint. See Rail joint. Wood joint. Knife. See Corn removing knife. Drawing knife. Knitting machine, circular, W. J. McDevitt. Ladder, step, J. T. Miller	\$76,384 \$76,199 \$76,199 \$76,175 \$76,066 \$76,388 \$76,107 \$76,151 \$76,073 \$76,152 \$76,152 \$76,152 \$76,299 \$76,421 \$76,569 \$76,569 \$76,569 \$76,569
nit in sir in see a gnie in see a see a p	Car coupling, S. D. Locke. 376,337 Car coupling, T. W. McKee. 376,412 Car coupling, B. B. Morgan. 376,335 Car coupling, J. P. Runkel. 376,164 Car coupling, C. M. Shupe. 376,213 Car starter, H. P. Wayman. 376,235 Car starter, H. P. Wayman. 1876,316 Cars, track brake for, J. S. Bokenkotter. 376,363 Cars with hot air, apparatus for heating, Casselman & McGann. 376,138 Carburetor, F. J. Lothammer. 376,428 Carriage body, C. A. Reade. 376,138 Carriage, child's, T. Lanston. 376,201 Carriage sping, J. R. Northrup. 376,152 Carriage top, H. B. Pitner. 376,141 Carriage shells, loading apparatus for, G. G. Greenough Caschadening and cementation compound, G. F. Evans. Evans. 376,186 Cash carriers, air cushioned counspreadance for, L. G. Bostedo. Cash carrier apparatus, pneumatic, Pain & Webber. 376,159 Cash indicator and register, Schickner & Rothlisberger. 376,166 Casting apparatus, hub, F. H. Ensign 376,162	Harvester, grain binding, S. V. Kennédy. Hay carrier, W. S. & E. J. Risley. Hay rake, horse, J. G. Alexander. Heel burnishing machine, J. H. Buself. Hor trap, S. Loffer. Holder. See Barrel holder. Pencil rubber holder. Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook. Horse detacher, S. A. Pugh. Horse tall tie. O. Hasbrouck, Jr. Hot air furnace, W. Morrison. Hub boring machine, J. Bieber. Hub, self-lubricating vehicle, J. V. Hawkey. Indicator. See Cash indicator. Injector, W. T. Ewing. Instand, safety, L. B. Prahar. Iron or steel, treating, E. D. Wassell. Jar fastening, W. H. Clarke. Joint. See Rail joint. Wood joint. Knife. See Corn removing knife. Drawing knife. Knitting machine, circular, W. J. McDevitt. Ladder, step, J. T. Miller Ladles, machine for making, I. Hamilton. Lamp, electric, L. H. Leber. Lasting machine, F. Chase. Lead traps, making, J. A. Lowe.	\$76,384 \$76,199 \$76,199 \$76,175 \$76,066 \$76,688 \$76,107 \$76,151 \$76,063 \$76,150 \$76,063 \$76,152 \$76,152 \$76,153 \$76,259 \$76,259 \$76,569 \$76,569 \$76,569 \$76,323 \$76,323 \$76,323 \$76,233 \$76,233 \$76,233 \$76,233 \$76,233
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nit in sir - s. s. s gnie i- r i. s. s. pdn	Car coupling, S. D. Locke. 376,337 Car coupling, T. W. McKee. 376,412 Car coupling, B. B. Morgan. 376,335 Car coupling, J. P. Runkel. 376,164 Car coupling, C. M. Shupe. 376,213 Car starter, H. P. Wayman. 376,235 Car starter, H. P. Wayman. 1876,316 Cars, track brake for, J. S. Bokenkotter. 376,363 Cars with hot air, apparatus for heating, Casselman & McGann. 376,138 Carburetor, F. J. Lothammer. 376,428 Carriage body, C. A. Reade. 376,138 Carriage, child's, T. Lanston. 376,201 Carriage sping, J. R. Northrup. 376,152 Carriage top, H. B. Pitner. 376,141 Carriage shells, loading apparatus for, G. G. Greenough Caschadening and cementation compound, G. F. Evans. Evans. 376,186 Cash carriers, air cushioned counspreadance for, L. G. Bostedo. Cash carrier apparatus, pneumatic, Pain & Webber. 376,159 Cash indicator and register, Schickner & Rothlisberger. 376,166 Casting apparatus, hub, F. H. Ensign 376,162	Harvester, grain binding, S. V. Kennédy. Hay carrier, W. S. & E. J. Risley. Hay rake, horse, J. G. Alexander. Heel burnishing machine, J. H. Buself. Hor trap, S. Loffer. Holder. See Barrel holder. Pencil rubber holder. Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook. Horse detacher, S. A. Pugh. Horse tail tie. O. Hasbrouck, Jr. Hot air furnace, W. Morrison. Hub boring machine, J. Bieber. Hub, self-lubricating vehicle, J. V. Hawkey. Indicator. See Cash indicator. Injector, W. T. Ewing. Injector, W. T. Ewing. Instand, safety, L. B. Prahar. Iron or steel, treating, E. D. Wassell. Jar fastening, W. H. Clarke. Joint. See Rail joint. Wood joint. Knife. See Corn removing knife. Drawing knife. Knitting machine, circular, W. J. McDevitt. Ladder, step, J. T. Miller Ladles, machine for making, I. Hamilton. Lamp, electric, L. H. Leber. Lasting machine, F. Chase. Lead traps, making, J. A. Lowe. Lock. See Coin operated lock. Electric lock. Nut lock. Safe lock. Seallock. Wagon lock.	\$76,384 \$76,199 \$76,199 \$76,175 \$76,066 \$76,388 \$76,107 \$76,151 \$76,063 \$76,152 \$76,803 \$76,152 \$76,259 \$76,421 \$76,569 \$76,569 \$76,569 \$76,373 \$76,37

Check hook, W. R. Moore Check rein attachment, G. Hosley Chisel, J. R. Bailey	376,306
Chopper. See Cotton chopper. Cigar fillers, mould for measuring and partially	
shaping, F. A. Ford	376,056
Clock striking mechanism, W. E. Counter	
Closet. See Water closet. Closet flushing and regulating device, siphon, P, Harvey	2 7 2 000
Cock, sea, F. C. Starke	376,27 0
Cock, water, H. D. Medrick	
J. W. Brook	
Coffin handle, G. C. Frazier	376,182
Color, production of a new red azo, A. Mylins Combination table, Riser & Bardonner	376,415
Coop, chicken, G. W. Brown	378,165
Corn removing knife, C. Langbein	376,274
Cotton, etc., machine for opening and cleaning, D. H. Rice	
Coupling. See Car coupling. Pipe coupling. Tug coupling.	010,010
Crate, T. W. Lankford	376,321 37 6. 336
Curtain fixture, J. Cremer	
Dial, indicator, L. L. Mitchell	376,103 376,222
Digger. See Potato digger. Display rack, J. M. Laudick	376,318
Ditching machine, tile, W. Skinner Door check, W. H. Stevens	376,117
Draught equalizer, W. A. Perkins	376,277
Electric circuit breaker, W. R. Cole Electric conductors, pole indicator for, A. Berg-	376,071
hausen Electric lock, C. A. Tucker	376,281
Electric machine, dynamo, F. Jehl Electric machine or motor, dynamo, E. Thomson.	376,307
Electric machines, armature for daynamo, H,	
Electrical circuit breaker, W. R. Cole Elevator, F. L. Palmer	376,340
Elevator safety device, A. C. Ellithorpe End gate, J. Clayton	
Engine. See Gas engine. Steam engine. Envelope for newspapers and other merchandise,	
R. W. Macgowan Envelopes, machine for sealing and stamping, H. J. Moore	
Eraser, rubber, W. Friend Explosive derived from phenol, S. H. Emmens	376,081
Fan, power, J. A. Mason et al	376,327
Faucet, liquid measuring, H. M. Nye Feed mill, T. C. Cadwgan	376,254
Feeding salt to live stock, device for, W. H. Barger	•
Fence, W. Van Horn Fence machine, Elliott & Reid	376,218
Fence, portable, P. Newby Fences, clamp for wire and picket, A. Fickett	376,337
Fifth wheel for vehicles, W. Blume File, bill, C. C. Chamberlain	376,140
File, bill, S. Ely	376,185 376,095
Fire alarm, circuit, J. P. Barrett Fire engines, heater for steam, E. Medden	376.330
Fire engines, speaking tube for, W. E. Cassells Fire escape, G. Pritchett	376,160
Fire escape, folding, f. B. Stillman Fire extinguisher, W. H. Durant Fire extinguishing attachment for car stoves,	376,239
Ross & Brooker	376,163
Fishing reels and rods, wedge ferrule for, H. Prichard	
	376,118
Furnace. See Hot air furnace. Gauge. See Water gauge.	
Garment or coat hanger, G. Pavlik. Garment protector, S. L. Salomon	376,210
Gas engine, H. K. Shanck Gas pressure regulator, M. W. Kidder	
Gate. See End gate. Swinging gate. Generator. See Steam generator.	000.00
Grader, road, O. E. Moats	376,123
Grain separator, N. Nilson Grate, H. P. Tallmadge	376,157
Grooving machine, A. V. Allen	376,057
Guns and ordnance, making, F. J. Seymour Hammer, drop, J. Sandage	376,168 376.111
Handle. See Coffin handle. Mason's float han- dle. Tool'handle.	•
Hanger. See Garment or coat hanger. Harrow, J. M. Childs (r)	10,893
Harvester, corn, A. Hollingsworth Harvester, grain binding, S. V. Kennedy	376,199
Hay carrier, W. S. & E. J. Risley Hay rake, horse, J. G. Alexander	376,109 376.175
Heel burnishing machine, J. H. Buself	376,388
Holder. See Barrel holder. Pencil rubber holder Photographic plate holder. Stub holder. Hook. See Bench hook. Check hook.	•
Hook. See Bench nook. Check nook. Horse detacher, S. A. Pugh Horse tail tie. O. Hasbrouck, Jr	376,107 376 151
Hot air furnace, W. Morrison	376,390
Hub, self-lubricating vehicle, J. V. Hawkey Indicator. See Cash indicator.	376,152
Injector, W. T. Ewing	376.188 376,315
Inkstand, safety, L. B. Prahar Iron or steel, treating, E. D. Wassell	376,259 376,421
Jar fastening, W. H. Clarke	376,369
Knife. See Corn removing knife. Drawing knife.	
Knitting machine, circular, W. J. McDevitt Ladder, step, J. T. Miller	376,102
Ladles, machine for making, I. Hamilton Lamp, electric, L. H. Leber	376,323
Lead traps, making, J. A. Lowe	376,203
Nut lock. Safe lock. Seal lock. Wagon lock Loom, F. Kesselring	