Fence making machine, A. K. Degood............ 388,643

- show window. A. Arrange a light tin velvet-covered coffin so as to be held in mid-air by a magnet and held down by two fine silk threads. Use a black back ground, and the threads will be unseen, and you will have a representation of "Mahomet's coffin."
- (3) Millwright writes: Please explain whether there is or is not a place in the center of prevolving shaft which does not turn? A. All places and particles in a revolving shaft turn with it. There is no place that does not turn.
- a handsome design of the simple electric motor as described March 17, Scientific American. Have followed directions very carefully and minutely, also watched and benefited by the correspondence on same in your columns. Made my field magnet of solid wrought iron 1/2 inch thick, 2/2 inches wide, with 1/2 inch square, iron clamped and bolted between the ends, and all connecting surfaces filed true. Armature ring core is No. 18 soft iron made as described, and I got on 11 coils of 8 convolutions, each 4 layers deep, and could only get 7 convolutions in the 12th coil. The contact of each coil with the brass commutator screw is perfect. I commenced to wind field magnet coils at inside end each coil, and connected as per corrected description in Sci-ENTIFIC AMERICAN. My armature runs true without any vibration at all, and brushes of copper on hard rubber disk are all connected up as described. The coils on armature are encircled by two bands each consisting of five strands silver-plated steel wire No. 28. I run the motor 2,500 revolutions per minute by attaching it to our mill, and it did not generate any electric current. I attached two wires from a two-jar Diamond carbon battery to its binding posts, and it would not turn the motor, but when I revolved the armature myself I could see brilliant electric sparks flowing between the copper brushes and the brass screw heads. Each jar contained 7 carbon rods $\frac{1}{2}$ ×7 inches and 1 zinc rod. Can you tell me where to remedy the defect, if any, in my motor? Will not 4 jars Diamond carbon battery run one sewing machine by the motor? A. By making your armature coils of unequal size you have introduced one element of weakness. The coils should be all of the same size. With due care 12 coils of full size can be wound on the armature core. You should replace your steel binding wire with hard drawn brass. One binding at the center is sufficient. Two cells of Diamond carbon battery are insufficient to move the motor. It requires 6 or 8 large cells of plunging bichromate battery. 2. Will I be infringing on any one if I should construct the 8 light dynamo for my own use? A. We believe there is nothing in the dynamo that is covered by existing patents.
- (5) D. M. B.—Almost any transmitter and receiver when carefully adjusted and used on a clear, well insulated line, with the maximum of battery, and with a resonator attached to the receiver, may be heard over a distance of 25 or 30 feet in a very quiet place. Edison's loud-speaking telephone may be heard farther than that. Probably the reason why loudspeaking telephones are not more largely in use is that they require more care and attention than the ordinary
- (6) H. M. asks: 1. How must I change the simple electric motor to receive twice the power? A. Make it one-half larger in all of its dimensions, linear. 2. How many watts are equal to one man's power? A. 1/2 horse power is generally allowed for a man power, equal to 931/4 watts. 3. What battery will last longest, and which will give most power-Bunsen, Smee, or Grenet, all being of same size? A. Of the three named, the Bunsen will give the most power for the longest time on the average. At first the Grenet or Smee will give more current, but it will soon run down. 4. How large a spark can I obtain from an induction coil which is 7 inches long, being wound with 2 layers of No.16 cotton covered wire and about 6 ounces of No. 38 silk covered wire, the core being made of No. 18 iron wire 1 inch in diameter, using 4 cells of half gallon Smee batteries? A. Probably not more than 1/4 inch. To get the best effect from your coil you should use at least twice as much fine wire. 5. How can I make an electric cartridge of small size, which can be set off with an induction coil? A. In a wooden or paper cartridge shell insert two wires from opposite sides to within one sixteenth inch of each other, then fill in with powder. Connect the wires with the terminals of your induction coil. 6. How can I make a good resistance box, such as used to govern electric currents? A. Make it of coils of insulated German silver wire of different sizes and lengths.
- (7) K. B. asks: 1. Could a secondary battery charged by four gravity cells be adapted to the simple electric motor? A. It is possible, but not practicable. It would require a long time to charge the requisite number of secondary cells. 2. If so, could l make one like Gaston Plante's, using the alloy which comes with tea instead of the lead most used? A. The lead is too thin. It would last only a very short time. 3. Could you turn the motor into a dynamo, giving the same current that would be required to run the motor? A, When run as a dynamo, it would not produce the current required to run it as a motor. 4. Could you use No. 12 or 14 iron wire for the armature ring? A. Yes.
- (8) F. A. W. H. writes: In talking about hydraulic presses, I said that in launching the Great Eastern the weight was so tremendous, the vessel being sent off sideways, and the ground sinking, that the water used in the presses was driven through six inches ofiron, not pouring through, but standing out in beads. My listener refused to believe such a thing possible-that water could be driven through iron; and so we agreed to refer it to you. A. Driving water through iron in this way is not an unusual phenomenon with hydraulic cylinders. They will leak ammonia when they will not show water.
- (9) W. H. R.—The walls of ice houses should be started from the bottom with hay packing at least e inches thick, with tight board lining inside and double row of hay packing above ground. Pack the ice with 6 inches of hay next to the walls all around. Hay is better than straw to confine the air in the pack-

(2) M. H. S. asks for a novelty for his ing. Place 2 to 3 feet of hay on top of the ice. Take out the ice from the top, always covering as soon as possible.

(19% A. P. S. asks for some paste or ase that can be applied to advantage to gun barrels sed in sea ducking to prevent rust. When the sea is rough, water often comes over the side of the boat and drenches the gun. Oils and vaseline are not effective being washed off by the first few waves. A. Try melted paraffine or beeswax. Warm the gun and smear a thin coat of wax on the metallic parts of the gun with a rag. Or clean the gun free from grease, and varnish (4) J. J. S. writes: 1. I have completed with shellac or spar varnish. Clean when required with alcohol or turpentine.

- (11) F. W. S. asks (1) a receipt for making a black that will stand, on the stack and smoke arch of a locomotive. A. Paint the stack with thir coal tar mixed with finely ground plumbago. Make of the consistency of ordinary paint. 2. A receipt for polishing brass. A. Tripoli and engine oil on a cloth is all that is necessary for polishing the brass work of a lo comotive; wipe often with an oily cloth. Too much polishing wears off corners and edges, and soon makes the brass work look old from wear.
- (12) R. A. W. asks (1) if there is any cement or glue that will fasten rubber to iron. A Pitch and gutta percha equal parts melted together will cement rubber to iron. 2. What quick process is there to grind small white brook pebbles down to any A. Use corundum wheels, such as are used dentists for grinding porcelain teeth. They must be used wet.
- (13) C. V. asks: 1. How many 2 quart Bunsen batteries does it take to operate a 2 candle lamp? A. It depends upon the resistance of the lamp Probably two cells would answer. 2. Will such a lamp give as much power of light as a common Christ mas tree candle? A. Yes. 3. Also how many batteries 2 quart Bunsen does it take to light a six candle lamp
- (14) H. P. M. asks: 1. How near could the poles of a circular magnet be, and still give the ful force of the magnetism? A. It depends upon the size of the magnet. Probably the most favorable distance can be determined only by experiment. 2. What kind of steel is best for a permanent magnet of true circular form? A. Chrome steel. 3. Would there be any at traction at any other part of the circle besides at the poles? If so, would it be the same at all points around the circle? A. It would diminish to zero gradually as the distance from the poles increased. 3. Where could I get a magnet of this kind made and charged? A. By any of the manufacturers of electrical instruments. Se our advertising columns.
- (15) F. W. G.—The size and insulation of wire-for dynamos and motors depend entirely or thekind of motor or dynamo and the kind of curren passing through its conductors. A high tension current requires better insulation than a low tension cur rent. Nothingpoorer than the bestdouble covered wire should be used.
- (16) C. V. A.—The dynamo described SUPPLEMENT, No. 161, will run three 5 candle powe Edison lamps. It is not an easy matter to make a good storage battery; you can however make an experimenta one by roughening lead plates, coating them with paint made of red lead and dilute sulphuric acid-wate 10 parts, acid 1 part-separating the plates by rubbe bands arranged vertically, and connecting alternate plates with one pole of the dynamo and intermediate plates with the other pole.
- (17) R. B. H.—1. Cast iron will not inswer well for the core of the armature ring of th simple electric motor, as it is not readily magnetized and demagnetized. 2. The wire sent is No. 20; it is to small for the armature winding.

TO INVENTORS.

An experience of forty years, and the preparation o more than one hundred thousand applications for pa tents at home and abroad, enable us to understand the laws and practice on both continents, and to possess un equaled facilities for procuring patents everywhere. synopsis of the patent laws of the United States and al foreign countries may be had on application, and person contemplating the securing of patents, either at home o abroad, are invited to write to which are low, in accordance with the times and our ex tensive facilities for conducting the business. Addres MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broad way. New York.

INDEX OF INVENTIONS

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August 28, 1888,

AND RACH BRARING THAT DATE

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ation rely on current on current on current on curred wire a good mental with a water rubber ternate nediate l not of the zed and is too tion of for pand the ess unre. A and all persons ome or prices, our exaddress Broad-	Cigar bunching machine, M. A. Winget. Cigarette case, J. Berthel Cleaner. See railway track cleaner. Stove pipe or flue cleaner. Clocks, electric motor for self-winding, F. W. Brainerd. Clothes drier, G. Conover Clothes drier, G. Cox Clutch, friction, S. H. Pitkin Coffin fastener, M. Bremer Commode, earth closet, or similar appliance, C. L. Doll Condiments and the like, pot for, R. H. Finlay Conduit, fluid, S. L. Bailey Cooking vessel, C. J. Parker Cooling rooms, etc., ammonia system for, J. Ring Corset, M. P. Bray Cotton scraper and sweep, W. R. Craig Coupling. See Car coupling. Thill coupling. Crank pins, device for turning, T. Urquhart Creaming can, C. W. Parks Creosote, etc., obtaining, F. S. Clark Cuckoo, G. R. Olhey Cutter. See Paper cutter. Rotary cutter. Cutter heads, tread guard for, J. L. Packard. Damper regulator, F. Leclere Dental electric apparatus, C. A. Eisenhart Dental matrix, H. P. Booth	388,542 388,617 388,632 388,633 388,436 388,580 388,561 388,513 388,523 388,523 388,523 388,523 388,523 388,523 388,523 388,523 388,523 388,433 388,523 388,432 388,621 388,566 388,621 388,566 388,621 388,576 388,760 388,760 388,760 388,760 388,760 388,566 388,566 388,576 388	
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ation rely on current on current on current on current on curred wire a good mental with a water rubber ternate nediate l not of the zed and is too tion of for pand the ess unre. A and all persons ome or prices, our exaddress Broad-	Cigare bunching machine, M. A. Winget. Cigarette case, J. Berthel Cleaner. See railway track cleaner. Stove pipe or flue cleaner. Clocks, electric motor for self-winding, F. W. Brainerd Clothes drier, G. Conover Clothes drier, G. Conover Clothes drier, G. Co. H. Pitkin Coffin fastener, M. Bremer Commode, earth closet, or similar appliance, C. L. Doll Condiments and the like, pot for, R. H. Finlay Conduit, fluid, S. L. Bailey Cooking vessel, C. J. Parker Cooling rooms, etc. ammonia system for, J. Ring. Corset, M. P. Bray Cotton scraper and sweep, W. R. Craig Coupling. See Car coupling. Thill coupling. Crank pins, device for turning, T. Urquhart Creaming can, C. W. Parks Creosote, etc., obtaining, F. S. Clark Cuckoo, G. R. Olney Cutter. See Paper cutter. Rotary cutter. Cutter heads, tread guard for, J. L. Packard Damper regulator, F. Leclere Dental electric apparatus, C. A. Eisenhart Dental matrix, H. P. Booth	388,542 388,617 388,632 388,632 388,433 388,580 388,541 388,516 388,523 388,523 388,503 388,722 388,503 388,722 388,503 388,523 388,523 388,523 388,433 388,523 388,433 388,523 388,433 388,566 388,621 388,566 388,760 388,760 388,770 388,566 388,576 388,576 388,576 388,576 388,576 388,577 388,576 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,577 388,573 388,773	

Beits, apparatus for stretching, M. Gandy	Fence making machine, J. Zengel	3,780
Blind finishing machine, L. Rivers	Fence, portable, E. Demuth	3,451
Blower, rotary pressure, G. Crowell 388,639 Boat, H. E. McGuire 388,786	Fertilizer distributer, W. W. Turnipseed 388 File and binder, letter, B. Lawrence 388	,421
Boot, lumberman's, J. H. Stickney	Filing case, B. H. Morgan	3,550
	Finger bar, L. D. Minnick	5,519
Bottle stopper, W. A. Bond	Fire alarm signal box, electric, S. A. Chase 588 Fire alarms, thermal circuit closer for, Petit &	
Bracket. See Window shade bracket. Brake. See Car brake.	Bresson	6,804
Bucket, well, J. L. Van Hook 388,747 Bullet, F. P. Langfitt 388,496	Fire escape, L. Hill	
Burglar alarms, circuit changing device for, F. H. Nutter	Fire extinguisher for railway cars, F. E. Squire 388 Fishing rod holder, A. F. & W. Meisselbach 388	
Burner. See Liquid fuel burner. Hydrocarbon burner.	Forming tool, W. W. Emerson	,652
Button, E. S. Dodge	Frog or car replacer, portable, W. O. Cooke 388 Fruit jar, G. H. Harvey	
Calendar or memorandum roll, H. S. Hack	Furnace fuel feeder, A. Warne	3,468
Can. See Creaming can. Cannon, making, J. P. Lavigne	Galvanic battery, A. V. Meserole	3,430
Car brake, J. W. Sims. 388,731 Car coupling, H. H. Burden 388,336	Guseous fuel, apparatus for the manufacture of, A. Thompson	
Car coupling, A. W. Burnham	Gate. See Elevator gate. Water gate. Gate, D. England	
Car coupling, H. B. Johnson 388,777 Car coupling, L. Showalter 388,792	Gate, J. W. Paulen	5 02
Car, dumping, J. W. Nesmith	Gill boxes, etc., device for lowering the fallers in. J. Stake	
Car heaters and car lamps, safety attachment for, G. F. Seaver	Glass mould, W. Haley 388	3,556
Car loader, W. H. Jennings	Grain binders, bundle carrier for, H. J. Case 388 Grain binders, packing mechanism for, J. S Davis 388	
Car, railway, C. M. Smith (r)	Grain hoppers, means for operating the slides of, J. Dable	
Car signal, railway, Larned & Sill 388,420 Car, stock, C. Hager 388,671	Grate, F. S. Bissell	3,691
Cars, coupling device for street, F. A. Pierce 388,506 Cars, propelling and heating street, W. E. Prall 388,444	Grate bar, J. Mahony	3.647
Cars, ventilating, H. Penoyer	Grinding machine, F. C. Hall	
Cards, ornamenting, C. Schwartz	Grooving machines, cutter head for, J. T. Grzy- bowski	3,410
Carpet sweeper, W. J. Drew	Guns, breech mechanism for, T. Nordenfelt 388 Hair crimper, N. Allen	
Cart, road, L. Miller	Handle. See Trunk handle. Hanger. See Eaves gutter hanger. Vehicle	
Caster, C. Stengel	spring hanger. Hardening and tempering by electricity, appara-	
Coffin 388,476 Chain wrench, J. Magnette 388,568	tus for, P. Diehl	
Chamois holder, A. T. Veeder 388,800 Chuck, jeweler's lathe, H. N. Moseley 388,573	Harness hooks, wear plate for, W. B. Hayden 388 Harrow, C. La Dow	3 .676
Churn, W. H. Curtice 388,537 Churn, R. & T. Stockdale 388,740	Harrow disks, machine for grinding, E. A. Sloat 388 Harrow tooth, cultivating, C. C. Crumb	5,732
Chute, coal, J. H. Du Bois	Harrows, machine for making disks for, W. J. Hogan	
Cigarette case, J. Berthel	Harvester, J. S. Davis	3,765
or flue cleaner. Clocks, electric motor for self-winding, F. W.	Harvester, grain binding, A. O. Slentz 388	3,793 3,543
Brainerd	Hasplock, L. A. Brown 388	3,394
Clothes drier, G. Cox	Hat brims, machine for shaping, L. H. Hoyt 388 Hats, adjustable block for stretching, J. E.	
Clutch, friction, S. H. Pitkin	McLoughlin	
Commode, earth closet, or similar appliance, C. L. Doll		954
Condiments and the like, pot for, R. H. Finlay 388,657 Conduit, fluid, S. L. Bailey 388,616	Hay rake, horse, B. Desautels	
Cooking vessel, C. J. Parker	Heating apparatus, E. E. Gold	
Corset, M. P. Bray 385,623 Cotton scraper and sweep, W. R. Craig 358,398	able combination gas, H. P. Miller	
Coupling. See Car coupling. Thill coupling. Crank pins, device for turning, T. Urquhart 388,745	Heeling machine, A. E. Ellis	
Creaming can, C. W. Parks	E. Merritt	S ,53 5
Cuckoo, G. R. Olney	ing, J. J. Green	9,663
Cutter. See Paper cutter. Rotary cutter. Cutter heads, tread guard for, J. L. Packard 388,578	J. Green	3,662
Damper regulator, F. Leclere		
Dental matrix, H. P. Booth 388,619, 388,620	Green	
	Hinge, J. M. Grau	8,409
Desk, school, M. W. Kidder 388,417 Ditching machine, I. N. Knight 388,566	Hinge, J. M. Grau	8,409 8,466
Desk, school, M. W. Kidder 388,477 Ditching machine, I. N. Knight 388,566 Door check, B. F. Boughn 388,621 Door plate and letter box door, combined, R.	Hinge, J. M. Grau	8,409 8,466 8,585 8,787
Desk, school, M. W. Kidder 388,417 Ditching machine, I. N. Knight 388,566 Door check, B. F. Boughn 388,621 Door plate and letter box door, combined, R. Stafsvick 388,596 Dovetailing machine, N. S. Clement 388,760	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,569
Desk, school, M. W. Kidder 388,417 Ditching machine, I. N. Knight 388,562 Door check, B. F. Boughn 388,621 Door plate and letter box door, combined, R. Stafsvick 388,596 Dovetailing machine, N. S. Clement 388,760 Drier. See Clothes drier. Drill grinding attachment, twist, F. Mossberg 388,784	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,569 8,670 8,748
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,563 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 388,769 Drier. See Clothes drier. 383,784 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,456	Hinge, J. M. Grau	8,409 8,466 8,585 8,797 8,586 8,569 8,748 8,748 8,728
Desk, school, M. W. Kidder 388,417 Ditching machine, I. N. Knight 388,506 Door check, B. F. Boughn 388,621 Door plate and letter box door, combined, R. Stafsvick 388,596 Dovetailing machine, N. S. Clement 388,760 Drier. See Clothes drier Drilligrinding attachment, twist, F. Mossberg 388,784 Drilling device, A. K. Cross 388,837 Drilling device, P. M. Sharples 388,456 Drum, E. Zoeller 388,506 Drum, military, B. Fleck 388,771	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,569 3,670 8,748 8,728 8,728 8,798 3,683
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,566 Door check, B. F. Boughn. 388,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 388,760 Drier. See Clothes drier. 388,784 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,637 Drum, E. Zoeller. 388,606 Drum, military, B. Fleck 388,771 Drums, snare tightener for, J. H. Buckbee, Jr. 383,527 Eaves gutter hanger, M. Koch 388,495	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,569 8,748 8,748 8,788 8,788 8,788 8,798 8,798 8,798 8,798 8,798
Desk, school, M. W. Kidder 388,417 Ditching machine, I. N. Knight 388,562 Door check, B. F. Boughn 388,621 Door plate and letter box door, combined, R. Stafsvick 388,596 Dovetailing machine, N. S. Clement 388,760 Drier. See Clothes drier. 388,760 Drill grinding attachment, twist, F. Mossberg 388,637 Drilling device, A. K. Cross 388,637 Drilling device, P. M. Sharples 388,506 Drum, E. Zoeller 388,506 Drum, military, B. Fleck 388,771 Drums, snare tightener for, J. H. Buckbee, Jr. 385,295 Eaves gutter hanger, M. Koch 388,495 Eccentrolinead, A. J. Tyler 388,793 Educational apparatus, I. F. Hall 388,486	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,748 8,748 8,748 8,748 8,748 8,788 8,718 8,718 8,759
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,562 Door check, B. F. Boughn. 388,621 Door plate and letter box door, combined, R. Stafsvick 388,796 Dovetailling machine, N. S. Clement 388,760 Drier. See Clothes drier. 388,760 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples 388,466 Drum, E. Zoeller. 388,508 Drum, military, B. Fleck 388,77 Drums, snare tightener for, J. H. Buckbee, Jr. 388,527 Eaves gutter hanger, M. Koch 388,485 Eccentrolinead, A. J. Tyler 388,485 Electric arc light support, Schardt & Jones 388,729 Electric conduit, underground, E. H. Phipps 384,442	Hinge, J. M. Grau	8,409 8,466 8,585 8,737 8,586 8,737 8,586 8,748 8,748 8,748 8,424 8,798 8,424 8,798 8,718 8,518
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,563 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 388,700 Drier. See Clothes drier. 388,700 Drilli grinding attachment, twist, F. Mossberg. 388,637 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,636 Drum, E. Zoeller. 383,506 Drum, snare tightener for, J. H. Buckbee, Jr. 383,527 Eaves gutter hanger, M. Koch. 383,495 Eccentrolinead, A. J. Tyler. 388,793 Electric arc light support, Schardt & Jones. 388,723 Electric light carbons, furnace for baking, J. 388,465 Burns 388,757	Hinge, J. M. Grau	8,469 8,466 8,585 8,787 8,586 8,569 8,748 8,788 8,424 8,798 8,798 8,718 8,759 8,759 8,759 8,759 8,570 8,570
Desk, school, M. W. Kidder. 388,417 Ditching machine, I. N. Knight. 388,562 Door check, B. F. Boughn. 388,621 Door plate and letter box door, combined, R. Stafsvick. 388,769 Dovetailing machine, N. S. Clement. 388,769 Dovetailing machine, N. S. Clement. 388,769 Drier. See Clothes drier. 388,769 Drilling device, A. K. Cross. 388,679 Drilling device, P. M. Sharples. 388,456 Drum, E. Zoeller. 388,504 Drum, military, B. Fleck. 388,771 Baves gutter hanger, M. Koch. 383,495 Eccentrolinead, A. J. Tyler. 388,739 Educational apparatus, I. F. Hall. 388,723 Electric arc light support, Schardt & Jones. 388,723 Electric conduit, underground, E. H. Phipps. 384,42 Electric light carbons, furnace for baking, J. * Hurns. 388,757 Electric machines, commutator for dynamo, J. T. Van Gestel. 385,518	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,569 8,748 8,748 8,748 8,748 8,748 8,759 8,759 8,759 8,518 8,510 8,570 8,570
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 385,568 Door check, B. F. Boughn. 388,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 388,769 Drier. See Clothes drier. 388,760 Drill grinding attachment, twist, F. Mossberg. 388,637 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,636 Drum, E. Zoeller. 388,506 Drum, military, B. Fleck. 388,772 Eaves gutter hanger, M. Koch. 388,495 Eocentrolinead, A. J. Tyler. 388,495 Educational apparatus, I. F. Hall. 388,486 Electric arc light support, Schardt & Jones. 383,723 Electric light carbous, furnace for baking, J. 388,757 Electric machines, commutator for dynamo, J. T. Van Gestel. 388,707 Electric meter, H. G. Morris. 388,707 Electric meter, K. Raab. 388,583	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,569 8,748 8,748 8,748 8,748 8,748 8,759 8,759 8,759 8,518 8,510 8,570 8,570
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,563 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 388,760 Drier. See Clothes drier. 383,784 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,637 Drum, E. Zoeller. 383,506 Drum, military, B. Fleck. 388,771 Drums, snare tightener for, J. H. Buckbee, Jr. 383,527 Eaves gutter hanger, M. Koch. 383,495 Eccentrolinead, A. J. Tyler. 388,793 Educational apparatus, I. F. Hall. 388,495 Electric arc light support, Schardt & Jones. 388,723 Electric ilight carbons, furnace for baking, J. 388,723 Electric ilight carbons, furnace for baking, J. 388,757 Electric machines, commutator for dynamo, J. T. Van Gestel. 388,707	Hinge, J. M. Grau	8,409 8,466 8,585. 8,585. 8,586 8,569 8,569 8,748 8,788 8,788 8,788 8,718 8,718 8,570 8,570 8,570 8,570 8,560 8,570 8,570 8,560 8,57
Desk, school, M. W. Kidder. 388,476 Ditching machine, I. N. Knight. 383,562 Door check, B. F. Boughn. 388,621 Door plate and letter box door, combined, R. Stafsvick 383,596 Dovetailling machine, N. S. Clement 388,760 Drier. See Clothes drier. 388,760 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples 388,463 Drum, E. Zoeller. 388,506 Drum, military, B. Fleck 388,571 Drums, snare tightener for, J. H. Buckbee, Jr. 388,598 Eccentrolinead, A. J. Tyler. 388,789 Educational apparatus, I. F. Hall 388,482 Electric are light support, Schardt & Jones. 383,723 Electric light carbons, furnace for baking, J. 4 Burns 388,757 Electric machines, commutator for dynamo, J. T. Van Gestel. Van Gestel. 388,518 Electric meter, H. G. Morris 388,753 Electric meter, K. Raab 388,553	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,569 8,748 8,788 8,788 8,718 8,798 8,718 8,570
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,563 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 383,796 Drier. See Clothes drier. 383,798 Drilling device, A. K. Cross. 388,637 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,575 Drum, E. Zoeller. 383,595 Drum, E. Zoeller. 383,595 Drum, snare tightener for, J. H. Buckbee, Jr. 383,577 Eaves gutter hanger, M. Koch 383,495 Eccentrolinead, A. J. Tyler. 388,799 Educational apparatus, I. F. Hall. 383,486 Electric arc light support, Schardt & Jones. 383,232 Electric conduit, underground, E. H. Phipps. 388,422 Electric light carbons, furnace for baking, J. * Burns 385,513 Electric meter, H. G. Morris 385,513 Electric meter, K. Raab 385,733 Electric motor, J. Batley 388,732	Hinge, J. M. Grau	8,409 8,466 8,585 8,787 8,586 8,569 8,567 8,670 8,788 8,788 8,788 8,788 8,788 8,788 8,788 8,788 8,779 8,570
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 385,568 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 388,769 Drier. See Clothes drier. 383,784 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,637 Drilling device, P. M. Sharples. 388,506 Drum, E. Zoeller. 388,507 Drum, military, B. Fleck. 388,575 Eaves gutter hanger, M. Koch. 388,495 Eocentrolinead, A. J. Tyler. 388,495 Educational apparatus, I. F. Hall. 388,486 Electric arc light support, Schardt & Jones. 388,723 Electric conduit, underground, E. H. Phipps. 388,442 Electric light carbons, furnace for baking, J. J. Burns. 388,753 Electric machines, commutator for dynamo, J. T. Van Gestel. 388,753 Electric meter, K. Raab. 388,753 Electric motor, J. Batleg. 388,753 Electric wires, suspending overhead,	Hinge, J. M. Grau	8,409 8,466 8,466 8,568,8,585 8,569 8,568 8,468 8,469 8,748 8,748 8,748 8,748 8,748 8,778 8,778 8,778 8,778 8,778 8,774 8,774 8,774 8,774 8,774 8,774 8,774 8,774 8,774 8,774 8,774 8,774 8,774
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,563 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick 383,596 Dovetailing machine, N. S. Clement 383,596 Drier. See Clothes drier. 383,708 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples 388,637 Drum, E. Zoeller. 383,506 Drum, military, B. Fleck 388,711 Drums, snare tight-ener for, J. H. Buckbee, Jr. 383,527 Eaves gutter hanger, M. Koch 383,495 Electric arc light support, Schardt & Jones 388,723 Electric arc light support, Schardt & Jones 388,723 Electric light carbons, furnace for baking, J. 388,452 Electric machines, commutator for dynamo, J. T. Van Gestel 385,513 Electric meter, H. G. Morris 388,757 Electric meter, K. Raab 385,533 Electric meter, K. Raab 385,513 Electric motor, J. T. Van Gestel 388,523 Electric wires, suspending overhead, A. E. Harris 388,427	Hinge, J. M. Grau	8,409 8,466 8,466 8,585 8,787 8,586 8,424 8,670 8,670 8,578 8,578 8,570
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,562 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 388,760 Dovetailing machine, N. S. Clement. 388,760 Drill grinding attachment, twist, F. Mossberg. 388,873 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,506 Drum, E. Zoeller. 388,506 Drum, military, B. Fleck. 388,506 Drum, sare tightener for, J. H. Buckbee, Jr. 388,572 Eaves gutter hanger, M. Koch. 388,495 Eccentrolinead, A. J. Tyler. 388,495 Electric are light support, Schardt & Jones. 388,723 Electric conduit, underground, E. H. Phipps. 388,442 Electric light carbons, furnace for baking, J. 388,757 Electric machines, commutator for dynamo, J. T. Van Gestel. 388,505 Electric meter, K. Raab. 388,633 Electric meter, K. Raab. 388,633 Electric motor, J. Batley 388,637	Hinge, J. M. Grau	8,409 8,466 8,585,8,787 8,568,8,569 8,568,8,787 8,568,8,788 8,424 8,798 8,475 8,592 8,592 8,592 8,592 8,570 8,574
Desk, school, M. W. Kidder	Hinge, J. M. Grau	8,409 8,466 8,585 8,585 8,569 8,569 8,569 8,424 8,778 8,475 8,475 8,570
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,563 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 383,596 Dovetailing machine, N. S. Clement. 383,798 Drill. See Clothes drier. 383,793 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,637 Drulm, E. Zoeller. 383,596 Drum, E. Zoeller. 383,596 Drum, military, B. Fleck. 388,771 Drums, snare tightener for, J. H. Buckbee, Jr. 383,527 Eaves gutter hanger, M. Koch. 383,495 Eccentrolinead, A. J. Tyler. 388,792 Educational apparatus, I. F. Hall. 388,495 Electric arc light support, Schardt & Jones. 388,793 Electric conduit, underground, E. H. Phipps. 388,462 Electric light carbons, furnace for baking, J. 88,752 Electric motor, J. T. Van Gestel. 388,513 Electric meter, H. G. Morris. 388,53 Electric meter, K. Raab.	Hinge, J. M. Grau	8,409 8,466 8,585 8,585 8,597 8,596 8,596 8,592 8,748 8,748 8,748 8,748 8,748 8,748 8,748 8,748 8,748 8,748 8,592 8,518
Desk, school, M. W. Kidder	Hinge, J. M. Grau	8,409 8,466 8,565 8,757 8,566 8,569 8,569 8,568 8,718 8,718 8,774
Desk, school, M. W. Kidder	Hinge, J. M. Grau	8,409 8,466 8,565 8,787 8,586 8,568 8,568 8,568 8,788 8,788 8,788 8,788 8,798
Desk, school, M. W. Kidder	Hinge, J. M. Grau	8,409 8,466 8,585,8,737 8,586,8,583 8,583,870 8,748 8,748 8,748 8,759 8,518 8,759 8,518 8,759 8,518 8,759 8,518
Desk, school, M. W. Kidder. 388,477 Ditching machine, I. N. Knight. 383,566 Door check, B. F. Boughn. 383,621 Door plate and letter box door, combined, R. Stafsvick. 383,596 Dovetailing machine, N. S. Clement. 383,796 Drier. See Clothes drier. 383,784 Drilling device, A. K. Cross. 388,637 Drilling device, P. M. Sharples. 388,637 Drilling device, P. M. Sharples. 388,506 Drum, E. Zoeller. 388,506 Drum, military, B. Fleck. 383,572 Eaves gutter hanger, M. Koch. 383,527 Eaves gutter hanger, M. Koch. 383,495 Eccentrolinead, A. J. Tyler. 383,495 Educational apparatus, I. F. Hall. 383,486 Electric arc light support, Schardt & Jones. 383,723 Electric light carbons, furnace for baking, J. 384,422 Electric bachines, commutator for dynamo, J. T. Van Gestel. 383,535 Electric machines, commutator for dynamo, J. T. Van Gestel. 388,535 Electric motor, J. Batley 383,537 Electric motor, J. T. Van Gestel. 388,532	Hinge, J. M. Grau	8,409 8,466 8,585,8,797 8,586 8,569 8,569 8,788 8,798
Desk, school, M. W. Kidder	Hinge, J. M. Grau	8,409 8,466 8,585,8,787 8,586 8,569 8,788
Desk, school, M. W. Kidder	Hinge, J. M. Grau	8,409 8,466 8,565 8,757 8,566 8,569 8,569 8,768 8,768 8,768 8,768 8,768 8,774 8,774 8,759 8,769

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Loop key, C. E. Scribner	St
Whalen	St
Scribner. 388,454 Measuring vessel. G. Hayes. 388,677	Su
Mechanical motor, P. Hockett	Sy
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	Watches, cannon pinion for, L. C. Briggs. Watches, setting mechanism for, A. Fischer Water gate, C. J. Cheney Water heater sectional, W. Kirkwood Water motor, J. Wilhelm Water wheel, current, L. Colt.	. 388,625 . 388,404 . 388,652 . 388,418 . 688,750 . 388,531	3
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3036	Watches, cannon pinion for, L. C. Briggs. Watches, setting mechanism for, A. Fischer Water gate, C. J. Cheney. Water heater sectional, W. Kirkwood. Water motor, J. Wilhelm. Water wheel, current, L. Colt. Wheel. See Metal wheel. Traction wheel. Wate wheel. Wick, lamp, A. S. Yanez Window dresser, G. F. Hall. Window shade bracket, T. Gorsuch Wire rope or cable, H. W. Farley. Wire tightener, D. T. Brown. Wire working machines, reel stand and stop for L. J. Crecellus Wood rack and carrier, W. H. Moody Wrench. See Chain wrench. Pipe wrench.	388,626 388,404 388,652 388,418 688,755 388,531 r 388,606 388,776 388,606 388,776	
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3 3 3 6 3 8	Watches, cannon pinion for, L. C. Briggs Watches, setting mechanism for, A. Fischer Water gate, C. J. Cheney Water heater sectional, W. Kirkwood Water motor, J. Wilhelm. Water wheel, current, L. Colt Wheel. See Metal wheel. Traction wheel. Wate wheel. Wick, lamp, A. S. Yanez Window dresser, G. F. Hall Window shade bracket, T. Gorsuch Wire rope or cable, H. W. Farley Wire tightener, D. T. Brown Wire working machines, reel stand and stop for L. J. Crecellus Wood rack and carrier, W. H. Moody Wrench. See Chain wrench. Pipe wrench. Wringer. See Mop wringer. Yarn for filling, etc., preparing, R. C. Newell	388,625 388,404 388,632 388,418 688,756 388,531 r 388,636 288,776 288,777 288,777 388,656 388,626	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
3 3 3 3 6 3 8 1	Watches, cannon pinion for, L. C. Briggs. Watches, setting mechanism for, A. Fischer Water gate, C. J. Cheney Water heater sectional, W. Kirkwood Water motor, J. Wilhelm Water wheel, current, L. Colt Wheel. See Metal wheel. Traction wheel. Wate wheel. Wick, lamp, A. S. Yanez Window dresser, G. F. Hall. Window shade bracket, T. Gorsuch Wire rope or cable, H. W. Farley Wire tightener, D. T. Brown Wire working machines, reel stand and stop for L. J. Crecellus Wood rack and carrier, W. H. Moody Wrench. See Chain wrench. Pipe wrench. Wringer. See Mop wringer.	388,625 388,404 388,632 388,418 688,756 388,531 r 388,636 288,776 288,777 288,777 388,656 388,626	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5

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