

ENGINEERING INVENTIONS.

A cable grip for traction railways has been patented by Mr. Orlando H. Jadwin, of New York City. It has a laterally projecting counterbalance, and means for securing to the grip perfect flexibility in all directions, so as to reduce cramping and binding strains and adapt the parts to a free and easy motion through the varying conditions and positions of use.

A switch for tracks for carrying iron has been patented by Mr. Edwin A. Kern, of Girard, Ohio. It is designed for use in rolling mills, etc., where a number of side tracks join the main track, and is a vertically tilting switch pivoted at a point higher than the main track, but adapted to be lowered to rest upon the main track and held in place thereon when in use.

A rotary engine has been patented by Mr. Joseph E. Beauchemin, of Sorel, Quebec, Canada. It has a series of cylinders secured radially on a hub which forms a valve seat, with ports and an exhaust chamber, the ports leading into the cylinders, in which pistons having central openings operate on the rim of a wheel held eccentrically to the hub, the engine being adapted to be operated by water, air, or steam.

AGRICULTURAL INVENTIONS.

A harvester guard renovator has been patented by Mr. George W. East, of Heltonville, Ind. It is for sharpening worn-out or dulled harvesting or mowing machine guard fingers, and comprises a swage, a steel re-enforcing anvil plate, and a truing up gauge, whereby the work can be quickly, easily, and thoroughly accomplished.

Cultivating harrow teeth form the subject of a patent issued to Mr. Charles C. Crumb, of Burlingame, Kansas. The teeth are to be made lighter or heavier, according to the style of the cultivator or harrow, but they are of novel form, designed to work easily and be practically self-cleaning, to promote light draught of the implement, and so it will not clog easily.

A hay press has been patented by Mr. William A. Laidlaw, of Cherokee, Kansas. This invention is an improvement in that class of presses known as continuous, and whose followers are operated by a reversible sweep that allows them to be thrown back by the rebound of the hay or other material being pressed, after reaching the limit of the forward movement.

A check row planter has been patented by Mr. John Clark, of Sheffield, Iowa. It is for planting corn or other seed in accurate rows, and may be made with one or two or more feeds to plant different rows of hills, two rows of hills being preferred, the draught being very light, and the machine being designed to be operated successfully by one horse in well prepared ground.

A band cutter and feeder for thrashing machines has been patented by Mr. John H. Spurgin, of Carthage, Mo. Combined with endless horizontal slat belts is a vertical partition held between the belts, a second set of endless slat belts being held above, passing over a swiveling table, on the under side of which fixed knives are held at each side of the partition, pushing prongs or fingers being secured to the ends of the slats of the central slat belt, with other novel features, the invention being an improvement on a former patented invention of the same inventor.

MISCELLANEOUS INVENTIONS.

A carpenter's rule has been patented by Mr. Michael H. Walsh, of Boston, Mass. This invention covers a novel construction, making a rule which may be used as a bevel or square as well as a rule, in which the legs may be adjustably clamped in any desired position.

A nose guard for eyeglasses has been patented by Mr. George H. Emerson, of Bucksport, Me. A nose piece is adjustably secured upon arms which project from the opposing edges of the glass frame, the adjustment being simply, conveniently, and readily made.

A running gear for vehicles has been patented by Mr. Adam Bock, of Murfreesborough, Tenn. This invention relates to an improvement in front platform carriage gear, in which it is designed to simplify the construction, and provide a light, durable, and conveniently applied device.

A horseshoeing rack has been patented by Mr. Samuel M. Martin, of Sidney, Ohio. It consists of a pen that is readily adjustable to the size of any animal, and in which the animal can readily be securely fastened, the rack being such that it can be readily taken down and removed out of the way.

A snare tightener for drums has been patented by Mr. John H. Buckbee, of New York City. It consists of snare clamping jaws mounted on guide rods on the side of the drum in such way that by turning a thumb screw in one direction the snares are tightened, while a reverse movement loosens them.

An oil filter has been patented by Mr. George W. Gallaway, of Rye, N. Y. It consists of a can with a partition, and having one or more overflow pipes, in combination with one or more filtering pans mounted above the partition, for filtering waste oil such as drips from bearings, etc.

A tobacco frame has been patented by Mr. Joseph F. Drury, of St. Vincent, Ky. It is for carrying tobacco in leaf form in a suspended or unpacked condition, the invention covering a novel construction of rack upon which the tobacco can be readily placed, or from which it can be conveniently removed.

A precautionary device for poison bottles has been patented by Mr. Frank H. Nutter, of Minneapolis, Minn. Combined with a stopper is a plate having pricking points on its outer face and a fastener on its under face to secure it to the stopper, so that when bottles in which it is used are thoughtlessly grasped the points will prick the fingers.

A portable tea and coffee pot has been patented by Emma E. C. Thompson, of Chicago, Ill. It has an upper and a lower communicating section, one being expandable and contractible horizontally to fit within or outside of the other section, whereby greater portability and convenience is obtained than is ordinarily possible.

A chain wrench has been patented by Mr. Jules Magnette, of Long Island City, N. Y. It is especially adapted for use in connection with pipes, and is so constructed that the pipe may be turned from right to left, or vice versa, without removing the wrench, while it permits of tightening the chain less than the length of the link.

A hoof parer has been patented by Mr. Henry F. Riblett, of Mannington, West Va. It is of the kind made with pivoted arms, one of which has a buttress resting against the horse's hoof and the other a paring knife, the invention providing such a tool with which the paring may be evenly done and the tool be rendered durable.

An inkstand has been patented by Mr. Samuel B. Jerome, of New York City. It has a base with a series of ink wells, and lids so hinged thereto, and connected together by a chain, that the opening of one lid will close all the others, and the writer thus be prevented from dipping his pen in any other than the well in use.

A carriage top has been patented by Mr. Salem E. Kierolf, of Jackson, Tenn. This invention is designed to promote convenience and facility in getting in or out of the carriage, employing, in lieu of the common front bow, a bow restricted in its limits to the canopy or cover, additional braces being connected to the front and middle bows.

An open front heater has been patented by Mr. John Hucksans, of Brooklyn, N. Y. This invention relates to portable grates, etc., in which a baffling plate is arranged at the back, below the damper, to cause the heat to be thrown out into the room, the invention providing a convenient adjustment of the plate to suit the state of the fire in the grate.

A ditching machine has been patented by Mr. Isaac N. Knight, of Boise City, Idaho. Combined with a plow beam having plows on its under side is a parallel shaft on which rollers revolve, with means for raising and lowering the beam relatively to the shaft, whereby two or more furrows or ditches for irrigating may be made.

A safety attachment for car heaters and car lamps has been patented by Mr. George F. Seaver, of Dover, N. H. A sliding hood is provided for each heater and each lamp, with various novel details and combinations of parts, whereby, in case of accident to the car, it will not be liable to take fire from the burning fuel in either the heater or lamps.

A door check has been patented by Mr. Benjamin F. Boughn, of Randolph, Neb. It consists of a frame adapted to be attached to the floor, in which is a pivoted spring-actuated lever catch and a sliding abutment, to act as a stop in preventing the door from injuring the wall, and also to hold the door open and prevent it from slamming to again.

An improvement in gig saddles for harness has been patented by Mr. Marcellus M. Hitt, of Luray, Va. The skirts and tug straps are held by terrets, the straps being folded under at the lower ends and secured permanently to the skirts, in combination with a ring for supporting the thill loop, with a snap hook secured to the loop.

A wire tightener has been patented by Mr. David T. Brown, of Walker, Mo. It is an improved device, comprising a gripper for the wire, a rotating head supporting the gripper, a holder supporting the head or body, and a handle by which to turn the body and the gripper connected with it, for tightening fence and other wires.

A coal chute has been patented by Mr. John H. Du Bois, of Hoboken, N. J. It has a series of tapering hoppers connected together by links, whereby the series of hoppers may be swung out of action one at a time, and with which coal may be loaded from a high coal dock into a vessel below without pulverizing or breaking the coal.

A wagon curtain has been patented by Mr. John H. Huckle, of Brooklyn, N. Y. Ways carrying sliding blocks are secured to the sides of the wagon, arms being attached to the blocks to control the curtain, so that by sliding the blocks toward the front of the wagon the curtain may be lowered and closed, or the curtain may be held half open, or rolled entirely up.

A lead pencil sharpener has been patented by Mr. George H. Coursen, of Baltimore, Md. It has a fixed conical body having a file-like outer face, a swinging arm being pivoted upon the body, provided with a pencil-holding tube, the arm having a rotary motion, the sharpening being accomplished by revolving the arm, and without danger of breaking the point.

A washing machine has been patented by Mr. John R. Welpton, of Red Oak, Iowa. This invention consists of a tubular washing wheel provided with a series of compartments closed by doors and having outer and inner openings for inlet and exit of steam and water, to wash different kinds of clothes at the same time separately and in the same water.

A speed indicator has been patented by Mr. Hezekiah Conant, of Pawtucket, R. I. It consists of a clock gear, a gear for connection with an engine, and a differential gear in mesh with both, having indicator hands moving forward or backward according to the predominance of motion in the clock or engine gear, to conveniently and certainly show the rate of speed of a revolving shaft.

A device for dressing the teeth of saws has been patented by Mr. Wallace C. Yeomans, of Condersport, Pa. It consists of a frame adapted to slide and carry a file, with means for adjusting the frame in such position in relation to the saw that the file stands at an angle to the teeth, making an implement for side-dressing the teeth accurately on both sides to any desired angle.

A wagon body has been patented by Mr. Felix Burgess, of Darlington, Wis. Combined with the bottom boards are interlocking transverse connecting bars secured to the under side of the bottom, and provided with pivoted buttons, making a body which can be conveniently removed or placed on the wagon by a single person, and which may be knocked down or built up in any small barn or wagon shed.

A thill coupling has been patented by Mr. Oscar P. Barker, of Peoria, Ill. This invention covers a novel construction for the secure attachment and ready detachment of the thills or tongue of a vehicle, so that they may be quickly changed, providing also an anti-rattler, and allowing for the detachment of the horse from the vehicle should he become unmanageable.

The art of ornamenting cards forms the subject of a patent issued to Mr. Charles Schwartz, of Brooklyn, N. Y. The method consists in placing ornamental paper coated with an adhesive in a die having raised letters or ornaments, then placing the sheet to be ornamented on the coated surface of the ornamental paper, and subjecting both to pressure, thus cutting and sticking the latter to the sheet, all in one operation.

A wagon body has been patented by Mr. Richard G. Hart, of Quincy, Mo. This invention is designed to provide for undue wear of the bottom and sides of the body by the bolsters and standards, braces being let into sockets in the bottom of the body and having a stepped or ribbed connection with the sides, angle plates being offset from and applied to the bottom of the body and forming the bottoms of the sockets.

SCIENTIFIC AMERICAN
BUILDING EDITION.

SEPTEMBER NUMBER.—(No. 35.)

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- Perspective view and floor plans of a beautiful residence at Rochelle Park, near New York. Our engraving was made from a photograph taken specially for the SCIENTIFIC AMERICAN BUILDING EDITION.
- Perspective and floor plans of the residence of I. C. Goodridge, Esq., at Rochester, N. Y.
- A Queen Anne cottage lately erected in Rochelle Park, near New York. Perspective and floor plans. Cost, five thousand six hundred dollars, complete.
- A beautiful seaside cottage, at Bath Beach, Long Island. Floor plans and perspective. Cost, about two thousand five hundred dollars.
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- Engraving showing perspective, with accompanying plans, of a six room cottage, lately erected on Hancock Avenue, Bridgeport, Conn., at a cost of sixteen hundred dollars.
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- A basement cottage, lately built, at Bath Beach, Long Island, at a cost of two thousand three hundred dollars, complete. Floor plans and perspective.
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- Miscellaneous contents: Ancient use of bronze.—An experiment in optics.—Planting ornamental trees.—Disinfection of sewers.—The rose jar.—Effect of time on slaked lime.—How to build a barn, with plans.—Interior finish.—Seamless eaves troughs with mitered corners (illustrated).—The oscillation of high chimneys.—Imitative and conventional ornament.—A model Boston kitchen.—Weeds.—Artistic furniture (illustrated).—Improved ventilating fans (illustrated).—Bent glass for circular fronts and towers.—Stains for coloring and tinting mortar.—Roof painting.—The Florida steam and hot water heaters (illustrated).—A venerable larch.

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

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

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and though we endeavor to reply to all, either by letter or in this department, each must take his turn.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

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Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(1) E. J. T. asks: If there is a stove polish manufactured in the form of a paste, which will not black a person's hands? A. Not that we know of. An excellent polish consists of 2 parts of copper sulphate, 1 of bone black, 1 of black lead, with sufficient water to form a creamy paste.

(2) M. H. S. asks for a novelty for his 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 background, 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 a revolving 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.

(4) J. J. S. writes: 1. I have completed 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 1/2 inches wide, with 1 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 SCIENTIFIC 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 1/2 x 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 loud-speaking telephones are not more largely in use is that they require more care and attention than the ordinary ones.

(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 93 1/2 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 I 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 of iron, 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 6 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-

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.

(10) A. P. S. asks for some paste or grease that can be applied to advantage to gun barrels used 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 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 thin 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 locomotive; 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 shape? A. Use corundum wheels, such as are used by 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 Christmas tree candle? A. Yes. 3. Also how many batteries 2 quart Bunsen does it take to light a six candle lamp? A. Four.

(14) H. P. M. asks: 1. How near could the poles of a circular magnet be, and still give the full 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 attraction 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. See our advertising columns.

(15) F. W. G.—The size and insulation of wire for dynamos and motors depend entirely on the kind of motor or dynamo and the kind of current passing through its conductors. A high tension current requires better insulation than a low tension current. Nothing poorer than the best double covered wire should be used.

(16) C. V. A.—The dynamo described in SUPPLEMENT, No. 161, will run three 5 candle power Edison lamps. It is not an easy matter to make a good storage battery; you can however make an experimental one by roughening lead plates, coating them with a paint made of red lead and dilute sulphuric acid—water 10 parts, acid 1 part—separating the plates by rubber 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 answer well for the core of the armature ring of the simple electric motor, as it is not readily magnetized and demagnetized. 2. The wire sent is No. 20; it is too small for the armature winding.

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

August 28, 1888,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with names and page numbers, including Acid distributor, Sulphuric, S. Frazier; Anatomical apparatus, E. Smith; Badge holder, G. B. Franks; Bag, See Paper bag; Baling press, C. Peterson; Banjo, J. F. Luscomb; Bar, See Finger bar, Grate bar, Pinch bar, Truck bar; Barrow, W. M. Potts; Basket, E. N. Little; Batteries, electrode for secondary, S. L. Tripp; Batteries, electrode for storage, J. T. Van Gestel; Battery, See Galvanic battery; Battery zincs, making, Carr & Borden; Beehive, T. M. Cobb; Beer cooling device, J. F. Theurer; Bell ringer, steam, G. B. Snow; Belt, electric, H. P. Pratt;

Table listing inventions with names and page numbers, including Belt shifter and tightener, S. Shive; Belts, apparatus for stretching, M. Gandy; Binder, temporary, W. D. Ready; Blind finishing machine, L. Rivers; Blower, folding fire, J. M. McMeen; Blower, rotary pressure, G. Crowell; Boat, H. E. McGuire; Boot, lumberman's, J. H. Stickney; Boot or shoe nailing machine, J. E. Cutlan; Boots or shoes, attaching heels and top lifts to, C. W. Glidden; Bottle stopper, W. A. Bond; Box, See Fire alarm signal box; Bracket, See Window shade bracket; Brake, See Car brake; Bucket, well, J. L. Van Hook; Bullet, F. P. Langatt; Burglar alarms, circuit changing device for, F. H. Nutter; Burner, See Liquid fuel burner, Hydrocarbon burner; Button, E. S. Dodge; Button fastener, C. M. Platt; Calendar or memorandum roll, H. S. Hack; Calipers, micrometer, E. J. Hadley; Can, See Creaming can; Cannon, making, J. P. Lavigne; Car brake, J. W. Sims; Car coupling, H. H. Burden; Car coupling, A. W. Burnham; Car coupling, G. W. Cisco; Car coupling, H. B. Johnson; Car coupling, L. Showalter; Car, dumping, J. W. Nesmith; Car, electric tram, J. T. Van Gestel; Car heaters and car lamps, safety attachment for, G. F. Seaver; Car loader, W. H. Jennings; Car, railway, C. M. Smith; Car seat, H. S. Hale; Car signal, railway, Larned & Sill; Car, stock, C. Hager; Cars, coupling device for street, F. A. Pierce; Cars, propelling and heating street, W. E. Prall; Cars, ventilating, H. Penoyer; Carding engine, J. M. Hetherington; Cards, ornamenting, C. Schwartz; Carpet fabric, J. Humphries; Carpet sweeper, W. J. Drew; Carriage top, S. E. Kierolf; Cart, road, L. Miller; Case, See Cigarette case, Filing case; Caster, C. Stengel; Centrifugal force, apparatus to illustrate, J. Coffin; Chain wrench, J. Maguette; Chamois holder, A. T. Veeder; Chuck, jeweler's lathe, H. N. Moseley; Churn, W. H. Curtice; Churn, R. & T. Stockdale; Chute, coal, J. H. Du Bois; 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. Olney; Cup, See Oil cup; 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; Desk, school, M. W. Kidder; Ditching machine, I. N. Knight; Door check, B. F. Bougahn; Door plate and letter box door, combined, R. Stafsvick; Dovetailing machine, N. S. Clement; Drier, See Clothes drier; Drill grinding attachment, twist, F. Mossberg; Drilling device, A. K. Cross; Drilling device, P. M. Sharples; Drum, E. Zoeller; Drum, military, B. Fleck; Drums, snare tightener for, J. H. Buckbee, Jr.; Eaves gutter hanger, M. Koch; Eccentric tread, A. J. Tyler; Educational apparatus, I. F. Hall; Electric arc light support, Schardt & Jones; Electric conduit, underground, E. H. Phipps; Electric light carbons, furnace for baking, J. Burns; Electric machines, commutator for dynamo, J. T. Van Gestel; Electric meter, H. G. Morris; Electric meter, K. Raab; Electric motor, J. Batley; Electric motor, J. T. Van Gestel; Electric wires, suspending overhead, A. E. Harris; Electrical conductor, W. A. Conner; Electrotyping dies, making, J. W. Tufts; Elevator, See Hydraulic elevator; Elevator, Bullock & Hanson; Elevator, G. A. Weld; Elevator gate, automatic, A. Miller; Engine, See Carding engine, Rotary engine, Steam engine, Traction engine; Engine shafts directly to the driven machines, device for gearing, E. H. Hewins; Engines, variable expansive and reversing motion for oscillating cylinder, J. W. Hartley; Eraser, blackboard, H. C. Goodrich; Eyeglasses, nose guard for, G. H. Emerson; Fabric, See Carpet fabric; Fabric turfing implement, D. Lewis; Fan or brush, by, H. Rembert; Faucet, right and left hand stop and waste, W. Briggs; Feathers, machine for reducing, C. Wolff; Feed trough, W. Andrus; Feed trough, Hughes & Wade; Fence, N. Shaftsmill; Fence machine, W. Peepser; Fence making machine, L. T. Curtis;

Table listing inventions with names and page numbers, including Fence making machine, A. K. Degood; Fence making machine, J. Zeigel; Fence, picket and barbed, J. Locher; Fence, portable, E. Demuth; Fence, wire, B. Searies; Fertilizer distributor, W. W. Turnipseed; File and binder, letter, B. Lawrence; Filing case, B. H. Morgan; Filter, oil, G. W. Gallaway; Finger bar, L. D. Minnick; Finger shield, A. Ahlquist; Fire alarm signal box, electric, S. A. Chase; Fire alarms, thermal circuit closer for, Petit & Bresson; Fire arms, rust preventer for, C. I. Wooster; Fire escape, L. Hill; Fire extinguisher, I. N. Goodnight; Fire extinguisher for railway cars, F. E. Squire; Fishing rod holder, A. F. & W. Meisselbach; Forming tool, W. W. Emerson; Frame, See Tobacco frame; Frog or car replacer, portable, W. O. Cooke; Fruit jar, G. H. Harvey; Furnace fuel feeder, A. Warne; Fuse lighter, W. H. Randall; Galvanic battery, A. V. Meserole; Gas condenser and tar separator, F. Bredel; Gaseous fuel, apparatus for the manufacture of, A. Thompson; Gate, See Elevator gate, Water gate; Gate, D. England; Gate, J. W. Paulen; Gate, J. B. Rowe; Gill boxes, etc., device for lowering the fallers in, J. Stake; Glass mould, W. Haley; Grain binders, bundle carrier for, H. J. Case; Grain binders, packing mechanism for, J. S. Davis; Grain hoppers, means for operating the slides of, J. Dable; Grate, F. S. Bissell; Grate bar, Kitson & Reagan; Grate bar, J. Mahony; Grate for furnaces, stoves, etc., fire, G. C. Dunklee; Grinding machine, F. C. Hall; Grinding mill, roller, W. D. Gray; Grooving machines, cutter head for, J. T. Gzybowski; Guns, breech mechanism for, T. Nordenfelt; Hair crimper, N. Allen; Handle, See Trunk handle; Hanger, See Eaves gutter hanger, Vehicle spring hanger; Hardening and tempering by electricity, apparatus for, P. Diehl; Harness, M. M. Hitt; Harness hooks, wear plate for, W. B. Hayden; Harrow, C. La Dow; Harrow disks, machine for grinding, E. A. Sloat; Harrow tooth, cultivating, C. C. Crumb; Harrows, machine for making disks for, W. J. Hogan; Harvester, J. S. Davis; Harvester, corn, P. R. Hunt; Harvester, grain binding, A. O. Slentz; Harvester guard renovator, G. W. East; Hasp lock, L. A. Brown; Hat brims, machine for shaping, L. H. Hoyt; Hats, adjustable block for stretching, J. E. McLoughlin; Hay or grain cock weather shield, J. A. & L. R. Symmes; Hay press, W. A. Laidlaw; Hay rake, horse, B. Desautels; Heater, See Open front heater, Water heater; Heating apparatus, E. E. Gold; Heating, cooking, and vaporizing apparatus, portable combination gas, H. P. Miller; Heel beading machine, J. H. Ryder; Heeling machine, A. E. Ellis; Heeling machines, manufacture of nail dies for, E. Merritt; Hemp, jute, ramie, etc., machine for disintegrating, J. J. Green; Hemp, ramie, etc., machine for disintegrating, J. J. Green; Hemp, ramie, etc., machine for treating, J. J. Green; Hinge, J. M. Grau; Holdback, vehicle, J. P. Van Dusen; Holder, See Badge holder, Chamois holder, Fishing rod holder; Hoop parer, H. F. Riblett; Hopple, B. Spieth; Horse power, A. Sampson; Horseshoeing rack, S. M. Martin; Horse tail tie, C. D. Haldeman; Hose connection, M. W. Webb; Hose nozzle supporter, O. P. Prescott; House, portable, A. Lindblad; Hydrant, A. J. Tyler; Hydraulic elevator, E. Hunt; Hydrocarbon burner, J. Reid; Ice or refrigerating machine, J. E. Siebel; Incrustation preventive, D. H. Cameron; Indicating and calculating machine, P. Yoe; Indicator, See Railway station indicator, Speed indicator, Street or station indicator; Ingot manipulator, O. P. Mason; Inkstand, S. B. Jerome; Insect powder blower, E. W. Mersereau; Ironing machine, G. J. Fritz; Jar, See Fruit jar; Key, See Loop key; Knitting machine, N. W. Pierce; Knitting machine, circular, H. C. Rightmire; Knitting machines, stop motion for, R. B. Goodyear; Knitting stockings, S. Henshall; Ladder, extension fire, T. W. Russell; Ladder, step, O. M. Sweet; Lamp, arc, J. Lea; Lampblack, apparatus for the manufacture of, S. Cabot, Jr.; Lamp, central draught, F. Rhind; Lamp, electric arc, Spencer & Jaquith; Lamp, incandescent gas, H. Shaw; Lantern, tubular, W. C. Whitney; Last, Bickford & Stetson; Last, H. M. Goodhue; Lasts, avril heel shoudering machine in the manufacture of, W. Thompson; Lathing machine, T. O'Boiger; Lathing, metallic, B. Searies; Leather splitting machine, D. Knox; Leather stretching machine, W. E. Adams; Life preserver or buoy, F. Gregson; Liquid fuel burner, C. J. Edmonds; Lock, See Hasp lock, Nut lock; Loom, H. Talks; Loom shuttle, self-threading, J. B. Daudelin; Loom take-up mechanism, F. A. Arbenz;