

RECENTLY PATENTED INVENTIONS.

Apparatus for Special Purposes.

COUNTER-PRESSURE RACKING AND BUNGING APPARATUS.—H. REININGER, New Orleans, La. In the present case the object of the invention is to provide a new and improved apparatus for racking and bunning beer and other carbonated liquids from a storage cask or tank into smaller packages without loss of carbonic acid or waste of liquid under treatment.

Engineering Improvements.

MOTOR DRIVEN BY WATER-CURRENTS.—T. A. MACDONALD, Paterson, N. J. It is the object of this invention to provide an improvement in the class of motors which are adapted for utilizing the force of flowing water by transforming it into electrical energy or for driving machinery of any kind. It is well known to those acquainted with such motors that they have proven generally unsatisfactory for several reasons, and are hence rarely used. This device avoids the chief defects of its predecessors.

VAPORIZER FOR EXPLOSIVE-ENGINES.—C. F. PEARSON, Chicago, Ill. This improvement has reference to a vaporizer intended especially for use in connection with internal-combustion engines, and the leading feature of the invention lies in improved means for imparting a rotary movement to the air, thus effecting a more immediate association between the air and the oil.

TUNNEL CONSTRUCTION.—D. PHILLIPS, Pony, Mont. In this patent of Mr. Phillips the invention has reference to improvements in the method of constructing tunnels under and on the bed of a stream, an object being to provide means whereby a submerged tunnel may be rapidly and economically constructed.

WELL-DRILLING APPARATUS.—C. S. WRIGHT, Quaker City, Ohio. In this case the invention relates to an apparatus for drilling wells; and it lies in certain novel features of construction and arrangement concerned with the mast, the walking-beam and the drums for operating the bull-line and sand-line. Means are provided whereby the entire machine is placed under the control of a single operator.

Hardware and Tools.

KNOCKDOWN MITER-BOX.—A. C. BIRGE, Cleveland, Ohio. The inventor's purpose in this case is the provision of a miter-box of very simple and practical construction which will permit any kind of a hand-saw to be used in the box and which may be easily and quickly taken down and packed in convenient and compact form for transportation and as easily set up.

OPERATING DEVICE FOR WINDOW-BLINDS.—A. C. PRICE, Russellville, Pa., and W. J. CONNOR, Bart, Pa. This invention relates to improvements in devices for operating window-blinds or shutters, the object being to provide a device of this character by means of which window-blinds may without opening the window be opened and closed and locked in either of such positions or locked at any desired opening or bowing.

SNAP-HOOK.—J. A. GAVITT, Pendleton, Ore. The principal feature of this invention lies in the tongue and means for mounting it and holding it in either of its two positions (opened or closed), these means consisting in a slightly-yielding guide attached to the tongue and embracing the shank of the hook, whereby to mount the tongue to slide toward and from the bill of the hook, and in interengaging surfaces on the tongue and shank which act to hold the tongue in either of its positions.

LOCK.—T. H. REA, Cambridge, Ohio. In Mr. Rea's patent the invention has reference to locks of the kind used upon doors, gates, etc. More particularly the inventor's object is to produce a neat, simple, and efficient form of lock in which the weights of certain parts enter to some extent as factors in the working of the lock.

SASH-LOCK.—J. H. CLEMENTS, Copetas Cove, Texas. An object in this invention is to provide a sash-lock that is simple, cheap, and effective in operation. A further object is to provide a device which may be applied to a window-frame to lock the sash without defacing the frame or sash and one which may be applied to windows already in use. Another object is to do away with the use of weights to hold the sash at any elevation and provide in their place a device equally as effective.

CLAMP.—N. K. TELLBORG, Wausa, Neb. The invention relates to wood-working; and its object is to provide a clamp which is simple and durable in construction, very effective in operation, arranged for convenient use on carpenters' and wheelwrights' work-benches or sawbucks and other devices, and arranged to securely clamp a board or other piece of work in position for the mechanic to work on it.

HANSAW.—R. F. E. OKRASSA, Antigua, Guatemala. The claim of this invention for an object is the provision of a new and improved handsaw which is simple and durable in construction, readily adjustable for accommodating saw-blades and for giving the desired tension to the saw-blade, and arranged to allow a convenient removal of a worn-out blade and insertion of a new one.

Heating and Ventilating.

VENTILATOR FOR LEADER-PIPES.—G. M. VROOME, New York, N. Y. In this case the invention refers to ventilators for pipes, and more particularly for pipes of the type known as "leaders" and used for conducting water from roofs of buildings to the ground or sewer. The general object is to enable the interior of the leader to be dried quickly, thereby preventing damage to the sheet material of which the leader is composed.

Of Interest to Farmers.

KNIFE-CYLINDER FOR CORN HUSKERS AND SHREDDERS.—E. WISNER, Caro, Mich. The purpose in this improvement is to provide a knife-cylinder so constructed that the knives will be firmly and simply held therein and so that any one or all of the knives may be conveniently removed to be sharpened or when damaged and readily and quickly replaced without removing the cylinder from the machine and without removing any portion of the knife retaining or locking mechanism from the cylinder.

Machines and Mechanical Devices.

CENTRIFUGAL MACHINE.—J. D. KENNON, Duke, Texas. Mr. Kennon's invention relates to centrifugal machines employed as sugar-driers to separate the molasses from the crystallized sugar by centrifugal action within a rapidly-rotating and perforated cylinder. The invention consists in means for introducing the sugar, washing it, and then discharging it in a very convenient, rapid, and effective way.

FLOUR-PACKER.—C. W. GEIGER, Kirkersville, Ohio. This improvement is in the nature of an attachment to a flour-packer of that form in which a barrel or sack is raised upon a platform until it slips over a filling-tube in which rotary packing devices operate to pack the flour from a hopper into the barrel or sack. The platform is maintained in an elevated position by a brake-wheel and brake, and when the packing is complete the driving-gears which operate the packing devices are disconnected by a shipper-lever, the brake-wheel is released, and the platform, with the barrel or sack, descends to the floor.

BALING-PRESS.—W. C. SPURGEON, Milroy, Indiana. A main object in this invention, which relates to improvements in baling-presses for hay or light material, is to provide in connection with a press a simple means to facilitate the applying of the binding-wires—that is, to provide in connection with a baler a device by means of which the operator standing at one side of the machine may apply the wires, thus reducing the time usually required in the operation.

VOTING-MACHINE.—G. JOHNSON, Pigeon-cove, Mass. The intention of this inventor is to provide a new and improved voting-machine arranged to permit a voter to vote by manipulating certain mechanical devices or by resorting to writing, to allow voting a straight ticket or for candidates individually, to allow separate voting by females, and voting for amendments, licenses, etc.

Pertaining to Vehicles.

SWINGLETRÉE.—P. KRALL, San Francisco, Cal. The aim of this improvement is the provision of novel features of construction for a swingletree which absorb the jar and cushion the shock usually communicated to the shoulder of a draft-animal when attempting to start the movement of a heavy load or when moving a loaded vehicle over a rough road.

RUNNER ATTACHMENT FOR BICYCLE-FRAMES.—F. DUPRAS, Marquette, Mich. It is the object of Mr. Dupras in his invention to provide an improved rubber attachment for the ordinary bicycle-frame, the attachment including a driving mechanism which is operated by the ordinary chain-and-sprocket gear employed on bicycles.

Miscellaneous.

STORE-FRONT SASH.—J. B. PHELPS, Mendota, Ill. Among other objects this inventor seeks to provide an improved mounting which holds a glass securely in place without the use of putty, allows for expansion and contraction of the glass and for the settling of the store-front or sash-frame, so as to minimize the tendency of the glass plate to become broken, to permit the plate-glass to be mounted without cutting the glass if its edges are not true, to make provision for fitting two or more plate-glass panes to an angle corner or post, and to provide for circulation of air through the show-window and on the inner surface of the plate-glass.

FIXING TRAY.—G. T. MCKINNEY, Walla Walla, Wash. In this patent the invention relates to improvements in trays of the character generally known as "photographic" trays and employed for the purpose of fixing photographic plates or films. The principal object in this case is to provide a device of the character specified, which will enable plates or negatives of various sizes to be thoroughly fixed without employing a great amount of solution. Means are provided to prevent injury to negatives, and also to avoid using a large number of separate trays.

CURTAIN-DISPLAY APPARATUS.—M. J. BEBB, Xenia, Ohio, and E. G. EATON, Athens, Ohio. These inventors have obtained a former patent for a curtain-display rack so constructed

as to support curtains or other fabrics and facilitate their display. Their present invention has for its object to provide an attachment for such rack, its functions being to furnish an improved support for the dust-curtains, which protect the display-curtains, and to provide a bearing for the upper end of the rod or shaft upon which the arms for supporting the displaying-curtains are journaled.

WINDOW OR DOOR SCREEN.—A. S. WINN, Escanaba, Mich. The purpose in the present case is to provide such a construction for the tops and the partition-moldings of any type of window or door screen that flies or other winged insects may readily pass out from a room, but will be effectually prevented from flying or crawling in through the openings prepared for their exit.

SPINNING-TOP.—C. MARX, New York, N. Y. The invention has reference to games and toys, consists of novel features and parts and combinations of the same, and has for its object the provision of a new and improved spinning-top arranged to allow spinning of a series of tops at one time by one exertion of the operator.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. **In every case it is necessary to give the number of the inquiry.**
MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.
Inquiry No. 4586.—For makers of hay presses with gasoline engines attached.
AUTOS.—Duryea Power Co., Reading, Pa.
For logging engines. J. S. Mundy, Newark, N. J.
Inquiry No. 4587.—For the makers of the Remy or Remy gasoline engine magneto igniter.
"U. S." Metal Polish. Indianapolis. Samples free.
Inquiry No. 4588.—For manufacturers of small pocket knife blades.
Handle & Spoke Mch. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.
Inquiry No. 4589.—For makers of fusible links for fire doors.
Mechanics' Tools and materials. Net price catalogue. Geo. S. Comstock, Mechanicsburg, Pa.
Inquiry No. 4590.—For makers of Hook and Ladder outfit.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.
Inquiry No. 4591.—For manufacturers of portable gasoline engines.
Let me sell your patent. I have buyers waiting. Charles A. Scott, Granite Building, Rochester, N. Y.
Inquiry No. 4592.—For the manufacturers of the Perfection Can Siphon.
Special and Automatic Machines built to drawings on contract. The Garvin Machine Co., 149 Varick, cor. Spring Streets, N. Y.
Inquiry No. 4593.—For makers of damper regulators for boilers.

FOR SALE.—United States, Canada and Great Britain patents that will control the steam hose trade. L. T. Foreman, Omaha, Neb.
Inquiry No. 4594.—For makers of entomological pins.
The largest manufacturer in the world of merry-go-rounds, shooting galleries and hand organs. For prices and terms write to C. W. Parker, Abilene, Kan.
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The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.
Inquiry No. 4596.—For makers of shanks or shank pins for pearl buttons.

Contract manufacturers of hardware specialties, machinery, stampings, dies, tools, etc. Excellent marketing connections. Edmonds-Metzel Mfg. Co., Chicago.
Inquiry No. 4597.—For parties engaged in enameling on wood.
Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery and tools. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.
Inquiry No. 4598.—For machinery for making collapsible tin tubes.
WANTED.—New novelties that are ready for the market. Must possess merit to justify extensive advertising in this and Foreign Countries. *What have you?* Wizard Novelty Co., Inc., 1007 Filbert Street, Philadelphia.

Inquiry No. 4599.—For makers of spirit levels, unattached.
Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway New York. Free on application.
Inquiry No. 4600.—For dealers in aluminium novelties.
PATENT FOR SALE ON ROYALTY.—The invention provides means for preventing bolts from turning when screwing nuts on same, and for preventing nuts from becoming accidentally loosened. Patent No. 732,817. Address Ole O. Bahle, Fergus Falls, Minn.
Inquiry No. 4601.—For a machine for cleaning carpets, etc., with and without taking them up.

WANTED.—Capable and experienced man to take entire management of plant employing 1,500 men manufacturing light machinery specialty of world renown. Mechanical engineer preferred, but business qualifications and knowledge of men essential. Unusual opportunity for a man of tact, broad, liberal education and large caliber. Applications treated in strictest confidence. Address Manager, Box 773, New York.
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Responsible manufacturer to make on royalty, best concrete construction appliances. Wall like hollow block, cost 25 per cent. less. S. A. Cramer, Coopersville, Mich.

Representatives for Spain.—Hormaechea, Elorriaga & Co., Calle Libertad No. 1, P. 10., Bilbao, Spain. Offer their services to represent American manufacturers of novelties and new patented inventions. Will handle agencies to entire satisfaction, guaranteeing best service. A 1 references furnished to parties interested.



HINTS TO CORRESPONDENTS.

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.
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(9174) F. M. L. asks: Does the constellation known as the "Big Dipper" make a complete revolution about the north star during the year? At present the "handle" points down toward the earth during the early evening. Does it ever come into such a position that the imaginary contents would be spilled out? Appreciating the favor of a reply. A. The Great Dipper makes a complete revolution around the north star every twenty-four hours. If you will observe at eight o'clock and for several hours after that time, you will see its change of position. When the basin is at its lowest it will hold water, but in twelve hours it will be inverted and will be bottom side up, nearly up to the zenith. There is also an annual motion around the north star. If you will observe at eight o'clock through a year you will see that it slowly changes its position as referred to the north star as a center, from week to week, so that in a year it will occupy all positions on a circle of which the north star is the center.

(9175) F. A. A. writes us: I would like to ask if you could make a list of books that you publish on astronomy in their order of advanced lessons for a student, such as starting with an elementary course and continuing to an advanced one? I am very anxious to study astronomy in all its forms and am not posted on instruction books if there are such. A. We would advise that you begin your reading of astronomy with Todd's New Astronomy, price \$1.50. After that might come Todd's Stars and Telescopes, price \$2. Next Young's General Astronomy, price \$3.50. This last will involve more mathematics than the first books named. After these are mastered you should take some work on practical astronomy and the use of the instruments of an observatory. You cannot become an astronomer except by working in an observatory and handling the instruments. We can at a later time advise you still further as to books, but as new and better ones are all the time appearing it is not advisable to give too many at present.

(9176) L. A. W. says: I have a one-story cottage 24 x 36, ground floor divided into five rooms, with a vestibule, south front, 9-foot ceilings. Cellar 16 x 20 under center of house, brick chimney from ground up. Will you kindly advise me the cheapest method of heating—hot water, steam, or hot-air furnace—from a standpoint of amount of coal consumed, and of the three methods which is the most sanitary? A. The comparative economy and convenience of hot-air, hot water, and steam-heating plants depend largely on the size and character of the buildings in which they are used, and all three systems we believe may be equally sanitary if they are properly installed in buildings to which they are adapted. In your one-story cottage we believe that you will probably find the hot-air furnace the cheapest and most economical of coal. It will also tend to improve your ventilation and thus help to keep the air in your rooms pure.

(9177) H. B. A. asks: I have a small telescope, the front lens of which measures about 1 1/4 inches. Will you please tell me how I can find the magnifying power of it? A. The simplest way to measure the magnifying power of a small telescope is to look through it with one eye at a brick wall and with the other eye directly at the bricks. A little practice will enable you to see the bricks with both eyes at once. Now count the bricks seen with the eye directly, which one brick, as seen through the telescope, covers. This is the magnifying power.

(9178) N. J. P. asks how to etch on cutlery. A. For etching on cutlery a ground wax is required, composed of equal parts asphaltum, Burgundy pitch and beeswax, melted together and thoroughly incorporated. In applying it, use a dabber, or ball of cotton covered with silk. Warm the piece of cutlery so that a stick of the wax will readily melt by touching. Smear a small quantity of the wax

on the blade or articles, and dab it evenly all over the surface. When cold, scratch the required design or name on the surface and touch the parts with acid (nitric acid 1 part, water 4 to 6 parts), using a camel's hair pencil to cover the surface and bring the acid into contact with all the lines. In a few minutes the biting is done. Dip in hot water to wash off the acid, and the surface may be cleaned by wiping with benzine. Another way is to make a varnish of asphalt and turpentine, with a few drops of linseed oil to make it tacky. Have a rubber stamp made of the required design, with a border, so as to stop off around the design. Stamp the goods, and with some of the varnish thinned down with turpentine and a brush stop off the surrounding parts; or surround the design with a small rim of beeswax, and apply the acid as above.

INDEX OF INVENTIONS
For which Letters Patent of the United States were issued for the Week Ending September 8, 1903, AND EACH BEARING THAT DATE.

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

Table listing inventions with patent numbers, including: Advertising device, L. R. Gaynor; Agricultural implement, J. H. Auble; Air brake, A. J. De la Croix; Air compressor, hydraulic, J. H. Shedd; Air duct, A. C. McCord; Aluminum by hydrocarbons, reducing, A. Reuterdahl; Amusement device, Terry & Kirten; Anchorage for dams or other structures, J. E. Jackson; Asparagus holder, A. H. Brinkman; Auriphone, L. M. Atkinson; Automobile controlling mechanism, G. H. Day; Bar: See Breaker bar; Basket, F. Kretzschmar; Baskets, hoops for veneer, E. E. Leary; Batteries and product thereof, producing active material and electrodes for storage, E. P. Fritchle; Batteries and products thereof, producing active material and electrodes for storage, O. P. Fritchle; Bean picking machines, separating rolls for, E. E. Wemp; Bed bottom, spring, W. B. Smith; Bed couch, F. M. Finkham; Bed spring tension attachment, G. E. Distelhurst; Beds, sheet for, D. Grattan; Bedstead, C. Thompson; Belt, driving, G. S. Ingle; Bicycle bearing, H. B. Gillette; Bicycle motor, J. W. Meijer; Bicycle track, R. H. Erwin; Bluing, effervescent laundry, W. C. Pope; Boat, G. H. Hood; Boats propelled by electric or other power, means for guiding, H. Healy; Boats, winch for fish, J. J. McDonald; Body brace, W. B. Dewees; Boiler alarm, W. C. Heitkamp; Boiler fitting, hot water, J. J. Lawler; Boiler header, steam, E. J. Moore; Book carrier and scholar's companion, combined, R. Lincoln; Book for streets, railways, rivers, or the like, guide, C. Lewke; Book, index, J. A. Best; Book mark, J. L. Thompson; Boring machine, E. Hipolito; Bottle capping machine, J. W. Madison; Bottle closure, G. Morris; Bottle closure, Hatch & Cricks; Bottle filling machines, filling tube for, S. C. Miller; Bottle, non-refillable, W. E. Johnson; Bottle or the like, closure, C. B. Overbaugh; Bottles, means for preventing refilling of, J. Reid; Bowling alley, loop-the-loop, L. W. Maddaus; Box corner cutting machine, G. E. Priest; Box fastener, E. Samuel; Box shooks, machine for making, F. C. Irvine; Braiding machine spindle, L. W. Whitehead; Bread and kneading board, L. C. Hartsock; Breaker bar, M. F. Williams; Brick machine, W. C. Burzum; Bridges, automatic derailer for draw, J. P. Cowing; Brooder, chicken, C. Mittelstadt; Brush for bran dusters, bolters, scalpers, grain scourers, and separators, G. R. Davidson; Brush, fountain blacking, E. R. King; Brush, tuft cleaning, Rolph & Kuersten; Buckle, harness, M. E. Zeller; Buffer, F. B. Williams; Buggy top adjuster, A. F. Swaisc; Building block, B. F. Van Camp; Building blocks or the like, flask for molding, E. G. Durant; Burglar trap, J. M. Tyler; Burner, J. T. Burr; Bust developer, Madeira & Purcell; Button attaching machine, A. Hall; Can header attachment, E. D. Townsend; Candlestick, miner's, R. P. Rasmussen; Cank, magazine, torped, D. D. Weisell; Car brake, R. Moore; Car brake, combined rail and wheel, W. M. Deal; Car, combination, C. V. Keegan; Car coupling, H. Kelley; Car or o'phg, S. C. Mason; Car coupling, C. A. Tower; Car ends, safety platform for, P. Campbell; Car fender, Williams & Britton; Car, protected, E. Mangelsdorf; Car, railway tank, J. W. Van Dyke; Car replacer, W. Schott and W. Ewer; Car sign, street, J. J. Gill; Car sign, street, C. L. Penfield; Carbureting apparatus, A. Carlesimo, et al; Carpet beater, W. A. McDaniel; Carpet stretcher and tacker, E. S. Bragg; Carriage shifting rail, J. P. Smith; Cash register, E. W. Hudson; Cask, hermetic gaseous liquid compress, W. E. Dolsen; Casket receptacle, artificial stone or concrete, L. L. Parry; Casting machine, E. Strauch; Cement, manufacture of, W. A. O. Wuth; Centrifugal way, aerial, C. L. Hagen; Chains, detachable connection of, J. Solberg; Channeling tool, Puermer & Helme; Child's block, C. L. Pruyn; Clear punching machine, J. E. Sm...; Clear punch, L. Hopkins; Clinometer, F. T. Cable; Clock, illuminated, W. T. Bell; Cloth cutting gage, N. A. Morse; Cloth huffer, L. S. Whiting; Coal scuttle bottom, H. E. Detmers; Coat holder, J. L. Seltz; Cock or valve, ball, J. H. Cable; Column, metal, J. F. Clutter;

Table listing inventions with patent numbers, including: Concentrator table, R. T. Schraubstadter; Concrete, structure of strengthened, W. E. Williams; Cooking boiler, L. J. Renoy; Cord tip, W. Kaesling; Corn husker corn separating device, W. Gutenkunst; Corn husking and shredding machine, A. Rosenthal; Cotton chopper, Carlton & Harrell; Cotton gin attachment, J. C. W. Stanley; Coupling, W. McConny, Jr.; Crate, W. M. Woodworth; Cross for church towers, J. A. Blenke; Cultivator, I. A. Weaver; Curbing plate fastener, J. L. Landis; Curtain pole, Michael & Scott; Curtain support, M. E. Brown; Cuspidor, sanitary, M. E. Headland; Cutting mechanism, J. West; Debranning apparatus, Foote & McKee; Dentist's tool for crimping edges of metal crowns, E. Betts; Deposit box, safety, E. A. Strauss; Dish and flanging machine, C. Gabriel; Display frame, J. T. Henshaw; Display stand, J. L. Moore; Distance instrument, Saegmuller & Searle; Distilling apparatus, wood, W. Billinger; Ditching machine, P. Berglund; Doll, puppet, or the like, F. Reinhardt; Door closing device, thermal, F. M. Edmonds; Dough dividing machine, P. Mieleke; Downdraft kiln, double, F. W. Dennis; Draft equalizer, J. B. Yeagley; Draw gear and buffing apparatus, J. H. McCormick; Drawing press, F. M. Leavitt; Dye, red, O. Nastvogel; Electric apparatus, R. A. Stubbs; Electric currents, apparatus for changing character of, N. S. Harter; Electric machine brush, C. R. Phillips; Electric motor control, apparatus for remote, W. V. Ash; Electric heater or radiator, E. G. Rivers; Electric traction, preventing leakage of current to studs in surface contact systems of, B. H. Bedell; Electrical tools, automatic switch handle for, J. A. Mayer; Elevator door operating mechanism, F. K. Fassett; Engine exhaust muffler, F. T. Cable; Engines, belt tightener for traction, H. C. Clay; Engines, variable cut off for steam, Bates & Douglass; Engraving machine, I. R. Beam; Envelope machine, back folder for, G. T. Lemelin; Envelopes, making, J. West; Envelopor for, J. West; Hayes; Explosive engine, J. D. Lyon; Extension table, C. E. Smith; Fabric coating machine, J. N. Myers; Faucet, measuring, A. J. Stephan; Feed apparatus for steam boilers, E. Schoof; Feed cutter, J. V. Frederick; Feed water regulator, indicator, and alarm, combined, Collins & Tobias; Fence machine, wire, W. S. Pugsley; Fertilizer distributor, R. G. Cartin; Filter, L. E. Rogers; Filter, J. P. Rummel; Flining, A. E. Berry; Fire escape, M. Cody; Fire hose, means for bridging over, W. L. Doughty; Fire truck and fire escape, C. A. Barnes; Fireproof floor construction, P. T. Shields; Fireproofing for books, C. D. Levey; Flax treating machine, G. H. Ellis; Floor box, H. Krantz; Fluid receptacles, delivery attachment for, E. Hey; Flushing apparatus, closet, G. Hoffman; Food, apparatus for producing and preparing certain articles of, Romero & Rodriguez y Arce; Fuel burner, E. F. Gwynn; Furnace, C. McMillan; Furniture, etc., brace for, J. H. Pace; Gage. See Cloth cutting gage; Galvanic cell, L. Fiedler; Game, A. J. Branham; Game apparatus, E. F. Wilson; Game apparatus, D. McRuer; Game apparatus, baseball, I. J. Jacob; Garment hanger, A. H. Holland; Garment supporter, B. F. Orewiler; Garment supporting girde, L. Fagan; Gas burner, J. L. Graham; Gas burner, E. F. Gwynn; Gas burner, independent, A. Bachner; Gas burner lighting attachment, A. G. Chubb; Gas burner, safety, D'Aquila & Martelli; Gas check, adjustable, J. F. W. Jost; Gas extinguisher, automatic, W. A. Strom; Gas generator, W. C. Dillon; Gas generator, acetylene, J. T. D. Heaton; Gas generator, acetylene, W. A. Gribble; Gas generator, acetylene, G. E. Chandler; Gas generator, acetylene, G. Goodyear; Gas generator, acetylene, N. Goodyear; Gas generator, acetylene, C. W. Beck; Gas, manufacturing, H. S. Elworthy; Gas or vapor generator and motor, combined, O. F. Good; Glass shaping apparatus, W. Butler; Glove or garment fasteners, stud member of, J. V. Washburne; Glue and gelatin, making, H. Weiss; Gold saving device, P. H. Carlyon; Governor, H. C. Sergeant; Governor, engine, J. E. Whelock; Governor, engine, C. E. Knothe; Governor for fluid compressors, automatic, N. A. Christensen; Grain separator, R. S. Rinker; Gun, field, E. K. Rothe; Gun, magazine, C. F. Outlaw; Gun, quick firing, Dawson & Silverman; Hair drier, H. V. Halliwell; Hair pin, safety, A. H. Mosher, reissue; Harrow, G. D. Schlosser; Harrow, J. F. Fulkerson; Harrow, J. F. Kittinger; Harvester, grass, H. H. & N. O. Michaelson; Hay carrier, W. Loudon; Hay rake, L. S. Bortree; Hay tedder, L. S. Bortree; Heat retaining pad, J. Rich; Heating system, O. W. Mapes; Heel and sole protector, shoe, R. A. Register; Heel breasting machine, B. B. Waterman; Heel stretching implement, R. J. Barton; Hinge making machine, L. T. Weiss; Hoisting apparatus, Stevenson & Watson; Hoisting machine brake, automatic, Lovell & Palen; Holdback, vehicle, H. Breiding; Hook and eye, S. A. Bromberg; Horn, reed, S. Goldberg; Horseshoe, Agnew & Denman; Horseshoe, M. R. Jackson; Horseshoe, cushion tread, A. A. Spadone; Hose supporter, R. Gorton; Hose supporter, H. E. Crandall; Hot water, boiler, F. H. Jones; Huller. See Clover huller; Husking machine, G. R. Sherwood; Hydrocarbon burner, C. H. George; Hydrocarbon burner, I. P. Wilson; Igniting device, electric, H. B. McNulty; Incandescent burner, W. Parfrey; Incubator, F. C. Keck;

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Table listing inventions with patent numbers, including: Inking pad, J. B. Loughton; Insect destroying machine, Dyer & Willette; Insect trap, H. L. Goodwin; Insulator for handled vessels, heat, C. E. Allen; Insole and arch support, combined, B. Nathan; Irrigating apparatus, D. Astle; Irrigating device, C. I. Wilson; Jewelry, initial attachment for, Roitman & Ruby; Justifying mechanism, F. B. Converse, Jr.; Knitting and mixing machine, C. Cristodoro; Lamp, W. F. Loudon; Lamp, acetylene, J. A. Kruseman; Lamp, electric arc, C. E. Foster; Lamp, horizontal gas or vapor electric, P. C. Hewitt; Lamp socket, W. A. Church; Lamp socket, L. Erikson; Lamp socket, incandescent, Yost & Kenney; Lamp, table, A. Kitchin; Lantern globes, manufacturer of, A. B. Houghton; Lard compound, J. G. Scheinert; Lathe attachment, O. A. Gooch; Lathe tool turret, O. L. Brainard; Leather joint, peg strip, B. O. Beland; Life raft for ships, detachable, B. W. Booker; Light projector, colored, S. P. Van Nort; Lister attachment, Simonds & Butler; Lock, Bell & Brown; Lock, H. P. Townsend; Locomotive controlling device, automatic, C. H. Hanel; Locomotive engineer's alarm, E. McClintock; Locomotive smoke box, J. E. Cooke; Loom turner, sawmill, F. T. Wilkes; Loom shuttle checking mechanism, J. E. Tichon; Loom shuttle detecting means, I. Snow; Loom take-up mechanism, O. A. Sawyer; Loom weft replenishing mechanism, A. E. & G. Walker; Mail bag, osman, H. J. Hillig; Mail bag fastener, H. J. Hellig; Mail bag fastener, S. J. Brown; Mangle, G. Horig; Mantle support, J. T. Lister; Massage apparatus, Reade & Birtman; Massage apparatus, pneumatic, R. Watson; Match box, C. Mitschening; Match protector, lighted, H. C. Bowman; Measuring distances of distant objects, apparatus for, T. D. Brown, et al.; Measuring thickness of surfaces, machine for, E. W. Strout; Mechanical movement, P. Bendixen; Mine curtain raiser, J. Wack; Mining, machine for washing and cleaning gravel in gold, J. G. Camp; Molding apparatus, A. K. Beckwith; Molding apparatus, B. C. White; Molding apparatus, multiple, A. K. Beckwith; Money box, J. A. Steinmetz; Mosaic, P. Semmer; Motor controlling mechanism, C. E. Ennes; Mowing machine, J. F. Steward; Mowing machine, P. Weynand; Music leaf turner, A. D. Crist; Music rack, J. J. Neumann; Musician's exercising device, A. E. Jones; Net making machine, Phil & Olsen; Nitro compounds, reducing, M. Buchner; Nut, axle, P. Dansereau; Nut and washer, H. T. Love; Nut lock, J. G. Waggoner; Nut lock, Hoffman & Ebersole; Nut lock, J. V. Berry; Nut lock, C. H. Chittum; Oar, bow facing, E. S. McCauley; Oil burner, C. W. Sievert; Oil vapor burner, A. J. Lindemann; Oils for medicinal use, preparing, P. Lewy; Oiling and cooling bearings of vertical shafts, device for, J. H. Baker, et al.; Ore separator, C. F. Lancaster; Ore sizer or classifier, W. B. Gilmore; Pad, See Heat Retaining Pad; Paint and making same, J. E. Kollinger; Painting apparatus, S. Worcester; Paper box, J. A. Scott, reissue; Paper box, J. A. Scott; Paper box blanks, roll for cutting, W. G. Cowell; Paper box, knockdown, A. W. Beers; Paper cutting machine, M. G. Ferrahian; Pea huller, E. G. Albaugh; Peat block, composite, W. A. Milne; Pedometer, W. E. Peter; Pen extractor, P. Grabber; Penholder, M. M. Woodworth; Perfumes and disinfectants, making, J. Bardin; Petroleum, desulfurizing crude, Burwell & Sherman; Phonograph attachment, E. Gilbert; Phonograph starting and stopping mechanism, E. Gilbert; Photographic developing apparatus, F. S. Davenport; Photographic diaphragm adjusting mechanism, A. Brandweiner; Photographic objectives, shutter for, E. Branburger; Photographic printing machine, C. Spaulding; Pipe driver buffer, L. P. Priestedt; Pipe and nut wrench, combined, A. W. Hjorth; Pipe connection, A. W. Cram; Pipe coupling, F. R. Waters; Pipe wrench, W. Littley; Pipes or other articles, hanger or support for, W. F. Irish; Placket closure, H. A. Taylor; Plane, A. W. Stanley; Plane, Stanley & Schade; Plastic composition, Eichengrum & Becker; Plastic material, forming articles composed of, Romero & Rodriguez y-Arce; Playing pieces, C. Sauer; Plumber's blast furnace, O. Bernz; Pneumatic tools, stroke changing mechanism for, J. Keller; Pocket, W. Delavoye; Poisson holder, W. J. Shelton; Pool table register, G. C. Beck; Poultry of vermin, apparatus for ridding, F. Leveck; Power producer, O. E. Waxel; Power wheels, bucket or vane for impact, F. M. F. Cazin; Precious metals from their ores, apparatus for extraction of, Baxeres de Alzugaray & Meret; Preserving device, J. Dowd; Printing machine, T. Cossar; Printing press sheet jogging device, J. W. P. Taylor; Projectile, explosive, H. S. Maxim; Pulley fastening, A. W. Hight; Pump, J. G. Roth; Pump, electric air, C. A. Eck; Pumping engine, duplex, E. P. Worden; Race horse starter, M. Cassidy; Race starting apparatus, C. A. Chapman; Raft construction, mooring derrick scows in, J. Ayres; Rail clamp, E. Gerrard; Rail joint tie, A. Krens; Rail system, third, J. H. Hughes; Railway rail brace or tie bar, W. E. Arthur; Railway rail stay, H. H. Spenberg; Railway switch, W. K. Smith; Railway switch signal, A. J. Park; Railway tie, R. E. Heller; Railway wagon, M. Hoogstraeten; Railways, contact shoe for electric, W. D. Rakes. See Hay rake; Refrigerator or cold storage room, E. J. Wirfs; Registering apparatus, A. Pollak; Registering machine, J. Heissenberger; Registering monetary transactions, apparatus for, J. Frydman; Rheostat, W. V. Ash; Roof, portable, W. Morris; Rope clamp, C. H. Mohland; Rule attachment, S. Murphy;

(Continued on page 210.)