

MECHANICAL INVENTIONS.

An improvement in spinning machines consisting of a revolving thread guide, has been patented by Mr. Thomas D. Wilmarth, of Providence, R. I. The great advantage of this invention is to relieve the thread or yarn of tension, so as to prevent stretching and breaking, and to produce a more even and a stronger yarn.

An improved adjustable window cornice has been patented by Mr. William C. Hammett, of Toledo, O. The cornice is constructed so as to be drawn out the desired length, and then locked. Provision is also made for bay windows and niches of irregular forms. For persons who change their residence often, this invention is especially adapted.

A clothes rack constructed in such a manner as to afford a large amount of clothes receiving surface, which can be folded compactly for storage and transportation, and which when not required as a clothes rack can be readily arranged for use as a table, has been patented by Mr. William Klinschmidt, of Haddonfield, N. J. Thus one piece of furniture is made to accomplish two objects.

An improved feed winding regulator for spinning mules has been patented by Messrs. Edward H. Gilbert, of Ware, and Thomas H. Greenwood, of Hardwick, Mass. The object of the invention is to keep an even tension upon the thread, and thus make the thread of a uniform quality, and prevent "break-downs" of the thread and the consequent waste of material.

An improved feather renovator has been patented by Mr. Augustus C. Dudley, of Nashville, Tenn. The invention consists of a jacketed cylinder mounted in supports by trunnions which supply steam to the cylinder and the jacket, respectively, in the renovating process. The cylinder is provided with an extension for the connection of the tick to receive the feathers, and a discharger for delivering the feathers into the tick after their treatment.

An improvement in means for attaching loose or removable handles to crosscut, pit, or other saws has been patented by Mr. Benjamin Gouiton, of Kaco, Wanganara, New Zealand. The invention consists in a blade which is furnished with a slot to which the handle of the sawbar is fastened by means of a cross rivet or pin, and of a secondary slot into which passes a pin which is fixed on a slide operated by a spring, which spring holds the pin firmly in the slot, but which can be readily pushed back by hand when the handle is to be removed.

An equalizing apparatus for pumping and other machinery has been patented by Mr. Charles Bridges, of San Fernando, Cal. This improvement is designed to be applied to powers where walking beams or levers for working pumps, etc., are employed. In a walking beam, one end of which is connected with the pump, and the other is attached to a large pinion wheel operated by a crank shaft, the invention consists in applying a balance weight and a secondary balance weight in such a way that not as much power is required to operate the pump as would otherwise be needed.

Messrs. Isaac Burnett and Joseph E. Clifton, of Geneseo, Ill., have recently patented an improved coal chute. The improvements relate to the construction and arrangement of coal chutes used for coaling locomotive tenders and other carriages, and to save time in the coaling operation, by the combination, with the coal box or chute, of a balanced apron, which, when turned down, forms a chute or slide for the coal to pass over. The gate of the coal box is automatically released when the apron is brought in place for discharge of the coal, and is ingeniously arranged for the purpose.

Mr. James M. Collier, of Atlanta, Ga., has patented an improved grinding mill. The invention is an improvement on a mill patented by Mr. Collier in 1882, and the object is to effect a more accurate adjustment of the parts, and thus render its facilities for grinding more perfect. By the use of a swiveled screw and hinged arm, combined with a lever attached to a shaft connected with the upper and lower stone carrying racks, the stones can be adjusted with accuracy. To the lower rack is fulcrumed a lever, which is connected with the upper rack by a rod and nut, so that the upper stone can be raised at will without changing its adjustment or set.

Matthew Van Tassel, of Brooklyn, N. Y., has recently patented an improved brake rod for cars, which he claims is more durable and less liable to break than the old style straight rods usually employed. The invention consists in a brake rod made with a U-bend at its rear end. The brake beam is placed upon the short arm of the brake rod, and the two arms are connected at the forward side of the brake beam by a link, so that the bending of the rod from the turning of the brake beam will be made to occur in the body of the rod. The rod thus constructed is less likely to crystallize, rendering it less likely to break when brought suddenly into action.

A novel fishing float has been patented by Mr. Ralph W. E. Aldrich, of Northampton, Mass. This invention consists of a float carrying a mast, sail, and fishing reel, the latter so arranged as to hold the line and to automatically signal the hooking of a fish, and at the same time give play line to the hooked fish. The mast is spring supported on the float and is adapted to be locked down flat upon the deck. The mechanism for locking the mast flat on the deck is at the same time adapted to lock the reel with as much line paid out as desired, according to the depth of the water and the kind of fish sought. The reel and locking mechanism are so arranged that the jerking of a fish at the hook will release locking mechanism, the reel, and also the mast, which will then be raised by its springs to a vertical position, unfurling the sail and giving the signal.

Mr. Silas Van Patten, of Duanesburg, N. Y., has patented an apparatus for loading and unloading wagons, an improvement upon a patent granted to same inventor Dec. 27, 1881. The invention consists in the combination, with the tongue, a slotted block attached to the rod sliding in the tongue, and the brake rod, of an elbow lever, and a bend formed upon the

shaft of the brake lever, whereby the said sliding rod can be readily locked and unlocked. The bend attached to the U-shaped end of the extension rod is made with a flange upon its upper side and a pin at its lower side to adapt it to serve as a stop for the neck yoke ring. The derrick is made curved and tubular, and is provided with a pulley at its upper end to receive the hoisting rope. The socket rings in which the derrick turns are provided with bushings to adapt them to receive different sized derricks. With the rear axle of the wagon is a clamp operated by a rod to grasp the hoisting rope and hold the load when partly raised and allow the apparatus to be readjusted.

AGRICULTURAL INVENTIONS.

An improvement which relates to means for attaching cultivator plows or teeth to the beam has been patented by Messrs. Amenzo W. Diefendorf and Peter H. Merrill, of Wyocena, Wis. The invention consists in a stock pivoted to the beam of the plow and provided with a groove for connecting the plow or tooth to the beam by bolting the shank of the plow in this groove. A strong leaf spring is attached to the back of the beam to hold the plow forward to its work, but capable of yielding to let the plow swing back to avoid any obstruction that may be too deeply embedded to be displaced by the plows.

An improved sulky plow has been patented by Mr. Enoch C. Eaton, of Pinckneyville, Ill. The invention consists in a plow constructed in such a manner that it will be held steady and prevented from tipping toward either side, and can be raised from and lowered to the ground by operating a lever. Also the driver will be able to raise and lower the plow while at work by operating this lever with his foot, and will also be able to use the lever to assist in raising the plow from the ground. Also, should the plow incline to run out of the ground, it can be held down by pulling the foot lever slightly upward.

An improved check row corn planter has been patented by Mr. John J. Fraikin, of Ottawa, Ill. In using the machine the marker next the planted rows is kept raised. At the ends of the rows the other marker is raised. The machine is then turned, and as the cross ribs of the wheels come into a vertical position the pin which holds the push rod is inserted, and the lever locks the wheels from turning, and when the marker is over the mark made by the cross rib of the drive wheel at the last crossing, the push rod is again connected, the lever releases the wheels, and the machine is driven forward, planting the hills in accurate check row.

A combined seed planter and fertilizer distributor has been patented by Mr. Richard S. Wright, of Monticello, Ark. The machine consists of a distributing wheel attached to the axle of the vehicle and revolving with it, which is furnished with equidistant cups or cavities for receiving the grain from the hopper above. These cups may be closed, so that only one hill may be planted to every revolution of the wheel, or if left open as many as five or even six hills may be planted to every revolution. Within the hopper is arranged an agitator, which is rotated by a cog wheel attached to the wheels of the machine. To the draught shaft of the machine is attached a plow which opens the furrows, and in the rear are pivoted two other plows and a covering block, so arranged that the rows planted may be instantly covered. The covering block may be so adjusted as to make the hills of any required height.

An improved wheat grader and cockle separator has been patented by Mr. Judson N. Merchant, of Bloomingdale, Mich. The machine consists in two screen shoes arranged one above the other, the upper one being longer than the other and of such a size of mesh that the large grain will be carried down to the end of the shaft to fall into a reservoir prepared for it, while the small grain and chaff will fall through the screen into the slide below. The upper screen is agitated by the revolution of the drive shaft, which at the same time revolves certain rollers between which the grain is made to pass. In operation the grain passes from the screen shoes into the corrugated cylinders, whence it falls partly separated upon the revolving rollers and from thence on to other rollers, when the process of separation will be thoroughly accomplished. The wheat treated in this machine will be divided into two grades and all the small seeds will be removed from the wheat.

MISCELLANEOUS INVENTIONS.

A die for making clip king bolts has been patented by Mr. Nicholas Eccles, of Auburn, N. Y. The object of this invention is to manufacture clip king bolts by means of dies which produce a complete forging instead of blanks, as in the ordinary mode of making king bolts.

An improved nail extractor has been patented by Mr. George W. Lewis, of Portsmouth, Va. The invention belongs to that class of nail extractors which are provided with a long handle for leverage, and a grasping claw for seizing the head of the nail or bolt to be withdrawn. It seems to be a very useful implement as now improved.

A novel window reflector has been patented by Mr. William H. Shipman, of Newark, N. J. This invention is an improvement in the class of folding and adjustable mirrors which are adapted for use exteriorly to a window for the purpose of reflecting objects in the street or sidewalk, and the invention consists in placing mirrors in pairs in such angles and in such a manner that every portion of the street is brought within range.

An improved coffee pot, designed to extract the full strength of the coffee and free the liquid coffee from the grounds, has been patented by Mr. Edward H. Odendahl, of Norfolk, Va. The invention consists in the employment of a chamber or base having tubes or pipes passing through it from a point on a plane a little above its lower end to a suitable height above it, and connected with a cylinder, on which is fitted a perforated vessel or strainer.

A new mechanical telephone, the object of which is to increase upon the line the vibrations given to the diaphragm by the voice, so as to insure greater

loudness and clearness of tone, has been patented by Mr. Charles Egan, of Zanesville, O. The invention consists in employing two diaphragms, which are connected by wires that diverge from the center of the outer diaphragm, and are attached to the inner one at points between its center and edge.

A temporary binder of novel device has been patented by Mr. Joseph B. McNally, of Clearfield, Pa. The invention consists of a binder with a flexible back, one cover being furnished with two flexible prongs or fasteners which are to be forced through the sheets to be bound, and then inserted in holes in a metal strip and bent over. This metal band is also provided with a slot through which is passed and fastened a loop attached to the other cover, by means of which contrivance the two covers are closely bound to the sheets they are designed to hold together.

An improved fence, the object of which is to provide a fence which is portable, can be erected and taken down very easily and rapidly, and can be folded compactly for storage or transportation, has been patented by Mr. William McG Butler, of Dyersburg, Tenn. The invention consists in U-shaped clips attached to the ends of the slats, and provided with screw pintles which are passed through apertures in the posts, and in a polygonal base block provided with dovetailed recesses in the sides, which in combination with certain other elements form the details of the invention.

A very simple and effective permutation pad lock has been patented by Messrs. Frederick Michael and John W. Fowble, of Eaton, O. The invention consists of a long case with a hollow space extending longitudinally through it, into which perforations are made through which the attachment to the heads of tumblers project. These heads protrude through the case to enable the operator of the lock to manipulate the combination. On the plate of the lock and around the heads of tumblers an index and pointer is placed which act as a guide to the operator in setting the combination.

Mr. John Wilson Brown, Jr., of Baltimore, Md., has patented a machine for cutting green corn from the cob. This machine relates to that class in which the ear is forced by a plunger through a circular series of knives that cut the corn from the cob. The knives in this machine slide in radial grooves, and combined with the knives is a tapering feed throat which acts as a gauge, and in expanding to receive large ears of corn, expands the series of knives correspondingly. Between the cutting devices and the trough which receives the ears, a brush is arranged to clean the ear of silk or cross before it passes through.

An improved cotton gin rib has been patented by Mr. Jordan H. Mitchell, of Hatchechubbee, Ala. The invention relates to an improvement in that class of gin ribs that have at the point where the saw passes between them a steel plate for resisting the wear to which this part of the rib is subjected, and which plate, being detachable, may be removed and replaced by another whenever it becomes worn or defective. The invention consists in the peculiar construction of the detachable plate and the manner of fixing it in the face of the rib, which is claimed to be a great improvement over the old system.

A station indicator of improved device has been patented by Mr. John Van Fleet Ryerson, of New Brunswick, N. J. The invention consists in rolls, on which webs having the names of the stations and destination marked on them are wound and unwound, so as to expose to view at the proper time the several stations successively, and the ultimate destination of the conveyance. These rolls are actuated automatically by one or more springs, an automatic stop mechanism is used for holding the roll at measured points in its rotation by means of the actuating spring; for the purpose of exposing each station on the web a gong bell is likewise provided for attracting the attention of the passengers to each change in the indicator.

An improvement upon that class of meat chopping machines in which spring supported knives and a revolving block are used, the knives and block being operated by means of a sprocket shaft, has been patented by Mr. Henry R. Shirk, of Albion, Ind. This invention provides a machine simple in construction, which can be readily adjusted according to the material to be chopped, both in effect and the power required to operate it, and when the block becomes worn and has need of dressing-off, it may be removed, and when the chopping surface has been cleaned and removed, say to a depth of half an inch, the block is replaced; and in order that it may be brought in proper relations with the knives it is elevated by means of a screw placed underneath for that purpose, by which devices the machine is made very durable and lasting.

An automatic car brake, designed to be operated by the momentum of the train, has been patented by Mr. Charles Van Dusen, of New Albany, Ind. In this brake two heavy rack bars, with buffers formed at their outer ends, are so supported under the car, one at each end, that they reach past the ends of the car and are capable of longitudinal movement. Arranged above the rack bars are two transverse shafts on which are secured grooved pinions, which mesh with the rack bars, and attached to these shafts are chains that connect with the brake levers. The inner ends of the rack bars are connected by chains that pass over the grooved pinions, and all of the rack bars in the train are upon the same line, except the rack bar of the tender, which is jointed and drops out of line while running; and this rack bar has practically no longitudinal movement. The tender is coupled longer than usual for furnishing the necessary slack in the train for putting on the brakes, and while running this slack is taken up by a hinged bumper, which must be raised for putting on the brakes. In putting on the brakes, at the same time the said bumper is raised, the jointed rack bar of the tender must be brought into line. The speed of the engine now being slackened, the momentum of cars will bring the buffer ends of the rack bars throughout the train together, causing them to have longitudinal movement, which will cause the pinions to lift the transverse shafts and thus wind up the brake chains, and set the brakes. Upon the forward movement of the train, the rack bars are brought to normal position by suitable springs, thus letting off the brakes.

Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

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Cope & Maxwell M'fg Co.'s Pump adv., page 142.

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C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 134.

Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p. 125.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 110.

Drop Forgings. Billings & Spencer Co. See adv., p. 109.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 110.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423 Pottsville, Pa. See p. 108.

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Notes & Queries

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Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) J. F. asks: 1. What is the best cement to make leather stick to iron pulleys? I have tried several with poor success. A. The following is said to be excellent: Soak equal parts of common glue and isinglass for ten hours in just water enough to cover them. Bring the whole to nearly the boiling point, and add pure tannin until the whole mixture becomes ropy, or appears like the white of eggs. Buff off the surfaces to be joined, apply the cement, and clamp firmly. The belt must not be used before the cement is thoroughly dry. 2. I have lagged the pulley which runs our electric light machine (the Edison), which is 46 inches diameter, driving the pulley on the machine, which is 10 inches diameter, 1,300 turns. What is the reason the lagging will not stay on the pulley? Is it the fault of the cement, or on account of the difference of diameters of the pulleys? A. It might be well to roughen the pulley, for it is probable that the speed at which it is run is too great, producing too much friction. Perhaps an endless rubber belt would be more serviceable.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

February 20, 1883,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications, not being printed, must be copied by hand.

Table listing inventions with patent numbers, including: Adding machine, W. H. Beasley; Advertising device, W. De Meza; Air compressing apparatus, J. J. Lawler; Air compressing machinery, G. H. Reynolds; Alarm, See Railway crossing alarm; Alcohol and other crude spirits, rectifying, Rousan & De Barbeyrac; Amalgamating machine, ore, E. R. Lucas; Amalgamator, W. E. Harris; Amalgamator, S. G. Lindsey; Amalgamator, W. Moller; Ammonia, apparatus for the manufacture of sulphate of, J. Coates; Animal trap, T. B. Zeller; Assay furnace, J. C. Tappeler; Automatic double gate, Austin & Chamberlain; Awning, J. L. Rieger; Axle box, car, R. Zeppenfeld; Bag, See Filtering bag, Mail bag; Baking pan, I. H. Graubam; Bar, See Chain bar, Grate bar, Railway rail splice bar; Battery, See Voltaic battery; Bed bottoms, device for stretching, I. Lorenzen; Bed, folding, C. Williams;

Main table of inventions with patent numbers, including: Belt fastener, H. C. Hart; Belts on shafting, mechanism for preventing the lapping of, W. Hayes, Jr.; Belting, device for joining the ends of leather, J. J. Brislin; Berth guard for sleeping cars, H. S. Billings; Bessemer plant, W. Hainsworth; Beverages, apparatus for rapidly cooling and straining mixed, W. J. Wright; Binder or holding device, W. R. Clough; Blacking, waterproof preservative, J. A. Van Keuren; Blind fastener, A. C. Dunham; Blind support, window, W. W. S. Orbeton; Block, See Toy block; Blower, rotary fan, W. D. Smith; Board, See Pressing board; Boat knee, D. True; Boats, building veneer, E. G. Durant; Boiler, See Heating boiler, Steam boiler; Boiler furnace, steam, C. H. & S. S. Wilson; Boot and shoe nailing machine, S. Shepherd; Bottle stopper, W. L. Roorbach; Bottle washing machine, F. B. Seiberlich; Bottom support, H. W. Shepard; Bow, cross, G. Eger; Box, See Axle box, Fare box, Packing box, Photographic camera box, Stuffing box; Bracelet, H. Cockshaw; Bracket seat, O. E. Briggs; Bridge, truss, D. B. Maclock; Buckle, J. A. Park; Buckle attachment, G. B. Northrup; Burner, See Gas burner; Button, A. H. Savage; Button, J. S. Smith; Button and button fastener, A. McKeivitt; Button fastener, H. Schmoele; Button fastening, W. M. Hazel; Caisson, floating, P. H. Loud; Can, See Fluid can, Oil can; Car, coal, D. Hoyt; Car coupling, J. W. Alexander; Car coupling, B. Cade; Car coupling, E. S. Graver; Car coupling, N. Halsted; Car coupling, W. A. & C. S. Hawkins; Car coupling, H. Kroblen; Car coupling, F. G. Lawrence; Car door, grain, D. D. Miles; Car, sleeping, W. H. Paulding; Car, stock, A. C. Mather; Car window deflector, H. B. Mears; Carboy stand, C. T. Armstrong; Carpet stretcher, Peterman & Smith; Carriage top, L. Schmetzer; Carriage top-bow support, J. P. Whitman; Carrier, See Egg carrier; Cartridge shell, H. G. Piffard; Case, See Draining case, Dressing case, Eye-glass case, Show case, Ticket case; Casting shaft couplings, apparatus for, W. Tucker; Castings, facing for foundry, O. E. Weatherhead; Ceiling, fireproof, A. W. Cordes; Centering shafts, axles, etc., machine for, J. N. Kaufholz; Centrifugal machines, crushing attachment for, E. C. Knight; Chain bar, etc., E. S. Johnson; Chair, See Railway rail chair; Chair, W. H. Paulding; Chair and cutting table, combined, B. A. Hathaway; Chair fastening device, T. M. Blackstock; Charcoal kiln, H. M. Pierce; Chimney cap or ventilator, W. D. Bartlett; Churn, G. R. Barnes; Cleaner, See Fuel cleaner, Steam boiler cleaner; Cloak, W. B. Bowse; Cloak, D. W. Howard; Clock, W. S. McLewee; Clothes drier, J. S. Gold; Clothes pin, R. E. Perkins; Coffee mill, O. J. Range; Coffee or tea pot, J. Vachresse; Coffee pot and filter, A. Rutenick; Collar, horse, L. E. Woodward; Comb, See Curry comb; Compass, recording, R. Pickwell; Conduits of concrete, apparatus for forming continuous, W. M. Campbell; Cool atmosphere in rooms and apartments, producing a, H. D. Cogswell; Cooling and freezing liquids, apparatus for, H. Egells; Cores, forming, S. J. Adams; Corn sheller, feed grinder, and horse power, combined, J. S. Tarr; Cotton gin hopper, E. G. Horne; Cotton opener and lapper, R. Kitson; Coupling, See Car coupling, Telegraph wire coupling, Thill coupling, Trace coupling; Crane, brake mechanism for a trolley of a, T. A. Weston; Crimp protector, G. C. Humphries; Cultivator, F. H. Johnson; Cultivator, G. F. Skank; Cultivator and plow, combined wheel, E. L. Murray; Curry comb, W. E. Lawrence; Cut-off mechanism, J. Thomas; Cut-off valve, B. Webster; Cutter, See Fodder cutter, Pipe cutter, Sod cutter; Dash pot bumper, F. G. Coggin; Davit for boats, J. F. Mumm; Desk cabinet, L. P. Ross; Desk cabinet, folding, L. P. Ross; Desk top, E. A. Paul; Diamond drill, J. P. Griscom; Disinfecting apparatus for water closets, Parker & Blackman; Ditches, machine for forming and cleaning, C. W. Case et al.; Door check, R. G. S. Collamore; Draught equalizer, G. M. Kerby; Draining and ventilating stores, etc., apparatus for, E. & W. C. Mentz; Draining case for barrels, Crapon & Pickett; Dress lining, E. W. Wheeler; Dressing case and wash stand, combined, J. Penney; Drier, See Clothes drier; Drill, See Diamond drill, Grain drill; Druggist's graduate, L. C. Leake; Dyestuffs for application to fibrous materials, preparing, H. W. Vaughan; Dyestuffs to fibrous materials, applying, H. W. Vaughan; Eccentric, R. R. Angell; Egg carrier, A. L. Hill; Ejector, Wickersham & Huston; Electric arc light, J. A. Wetmore; Electric underground conductor, R. M. Hunter; Electric wires, system of laying subterranean lines of, J. T. Goodfellow; Electrical currents, metallic circuit for, S. D. Strohman; Electro-magnetic regulator, R. H. Tucker; Electrotype or stereotype plate holder, H. G. Waterson; Elevator, See Water elevator; Elevator safety attachment, N. P. Cleaves; Elevator safety gate, W. H. Ivers; Engine, See Gas engine, Hydropneumatic engine, Traction engine; Envelope, D. Lubin; Evaporating pan, J. Shoemaker; Eyeglass case, C. H. Manning; Fan attachment, Crawford & Temple; Fan, exhaust or blower, W. W. Green; Fare box, J. B. Slawson; Faucet, M. Dunneen; Feather renovator, G. F. Tallman; Feed water, apparatus for removing impurities from, D. D. Wass; Feed water heater, J. W. Heylman; Feed water heater for steam boilers, E. J. Hall; Feeder, automatic boiler, T. W. Mather; Fence, metallic, C. H. Salisbury; Fence wire, barbed, O. P. Briggs; Fence wire, barbed, E. A. Devendorf; Fence wire, barbed, E. S. Lenox; Fertilizer distributor, G. R. Lewis; Fertilizer distributor and grain drill, A. C. Hendricks; Filtering agent, J. W. Hyatt; Filtering bag, F. Muench; Fire escape, A. T. Brown; Fire extinguisher, automatic, C. L. Horack; Fire extinguisher, automatic, V. Vankeerberghen; Flour mill dust collector, F. Prinz; Flue cleaner, W. J. Bradshaw; Fluid can, W. H. & W. J. Clark; Fodder cutter, L. M. Batty; Form or stand, dress, G. M. Rockwell; Frame, braced, F. H. Beattie; Fruit gatherer, S. S. Hickok; Fruit stoner, L. C. Hill; Fuel, machine for twisting grass for, G. A. Parker; Furnace, See Assay furnace, Boiler furnace, Gas, apparatus for the purification of coal, C. C. & W. T. Walker; Gas burner and pipe pliers, P. Mihan; Gas engine, L. C. Parker (r); Gas purifying screen, E. M. Provonchar; Gate, See Automatic double gate, Elevator safety gate; Gate, A. W. Chilcott; Gate, L. D. Meekley; Gearing and un gearing mills and other machinery, pinion lifter or apparatus for, Underwood & Daniels; Generator, See Steam generator; Glycerine from fatty matter, extracting, Ams & Litzelmann; Gold washer, J. P. Spencer; Grain and seed cleaning mill, W. Bowen; Grain binder, J. P. Bullock; Grain binder, J. F. Steward; Grain cleaning apparatus, W. Shaw; Grain drill, fertilizing, A. C. Hendricks; Grate, L. Bannister; Grate bar, J. Ritchie; Grindstones, device for roughening, G. Andrews; Guard, See Berth guard, Pulley guard; Gun magazine, P. Boch; Halter trimming, O. P. Letchworth; Harness back band hook, O. Pitts; Harness breast strap slide, J. A. Park; Harrow and cultivator, wheel, C. H. Eggleston; Harrow, riding, Mighell & Hull; Hay and cotton press, W. J. F. Liddell; Hay rack, J. R. Steitz; Hay rake and loader, combined, W. W. New; Heater, See Feed water heater; Heating boiler, steam, Hopkins & Pockler; Hedge trimming machine, M. Lowrey; Hitching device, horse, J. H. Osgood; Hoisting apparatus, hog, G. B. Flangan; Hoisting machine, E. Harrington; Hoisting machine, H. S. Haskins; Holdback, vehicle, J. H. Stamp; Holder, See Electrotype or stereotype plate holder, Whisk-broom holder; Hook, See Harness back band hook; Hoop fastening for buckets, etc., H. B. Phillips; Horseshoe, H. Olson; Horseshoe calk, removable, F. Fawcett; Hydropneumatic engine, L. G. Cook; Ice cream freezer, C. W. Packer; Ice creeper, A. W. Eichelberger; Incubator, A. H. Morgan; Indicator, See Train indicator; Injector and ejector, combined, G. H. Little; Insulated electric conductor, A. A. Cowles; Irrigating agriculture and other lands, M. A. Martindale; Jack, See Lifting jack; Jar and bottle stopper, J. H. Wood; Joint, See Screw joint; Kiln, See Charcoal kiln; Knife, See Roofing knife; Knitting machine, W. Carter; Knitting machine, G. A. Leighton; Knitting machine, circular, G. A. Leighton; Knockdown table, G. D. Post; Lacing hooks, machine for making, S. N. Smith; Ladder, top extension step, M. G. Gartrell; Lamp, R. Marsh; Lamp support, tubular, J. Krummenauer; Lamp, tubular, J. Krummenauer; Lathes for turning crank-pins, attachment to, J. W. Wilbraham; Lifter, See Stove cover lifter; Lifting jack, J. S. Kirkwood; Light, See Electric arc light; Lock, See Nut lock, Padlock, Seal lock; Lock, E. P. Teeters; Locomotive, A. A. E. & H. Blackman; Locomotive sanding device, J. B. Collin; Lubricator, A. W. Swift; Mail bag, I. H. Northrup; Match cards, machine for sawing, Flewelling & Harris; Measuring and cutting out garments, apparatus for, W. Abrabart; Measuring and weighing grain, apparatus for, F. C. Mason; Measuring machine, cloth, F. Sanderson; Mechanical movement, G. B. Peare; Metal, chill for chilling, W. Tuttle; Meter, See Water meter;

Continuation of the table of inventions with patent numbers, including: Middlings purifier, F. Prinz; Milk skimming device, W. Colditz; Mill, See Coffee mill, Grain and seed cleaning mill, Roller mill, Sawmill, Windmill; Motion, mechanical device for changing reciprocating to rotary, A. Trousdale; Motor, See Rotary motor, Spring motor; Motor, H. W. Gurney; Mule, self-acting, E. A. Baldwin; Nail or spike, W. Taylor; Neckwear shield, D. E. Mayer; Nut lock, J. M. Mack; Nut, top prop, A. Searis; Nut, top prop, H. Smith; Oil can, E. R. Deverall; Ore concentrating and amalgamating machine, D. H. Anderson; Ore concentrator, Adams & Carter; Ottoman, W. S. Wright; Packing box, reshipping, W. M. Baker; Padlock, C. H. Smith; Pails, pouring spout for milk, H. Leonard; Pan, See Baking pan, Evaporating pan; Paper cutting machine, W. F. Hill; Paper, damping and cutting, W. Scott; Pencil, lead, G. L. Jaeger; Photographic camera box, E. B. Barker; Photographic cameras, plate holder for, W. H. Lewis; Pick, J. C. Cramer; Pile, iron, Gray & Abbott; Pin, See Clothes pin; Pipe-cutter and tons, J. W. Calef; Pipe elbow, sheet metal, A. F. Peters; Pipe into sections, apparatus for cutting sewer, R. W. Lyle; Pipes of concrete, apparatus for forming underground, W. M. Campbell; Plane, recess, H. L. Tupper; Planter and cultivator, combined seed, J. J. Birdsong; Planter, automatic check row, W. H. Johnson; Planter check row lines, anchor for corn, A. Barnes; Planter check row attachment, seed, L. Eberhart; Planter check row, seed, F. C. Randall; Planter, corn, J. E. Bering; Plow, rotary, G. A. Betancourt; Pool ball rack, W. F. Whitney; Portable press, W. J. F. Liddell; Pot, See Coffee pot, Coffee or tea pot, Press, See Hay and cotton press, Portable press, Printing press; Pressing board, tailor's, J. Neerpaach; Printing machine, S. D. Tucker; Printing machine, J. T. Hawkins; Printing press, J. T. Hawkins; Printing press air cushioning device, G. P. Fenner; Printing press gripper motion, G. P. Fenner; Printing presses, automatic feeding device for, C. Ellery; Projectile for carrying and discharging oil, W. D. Baker; Protector, See Crimp protector; Pulley guard, band, C. E. Frick; Pump condenser, steam, W. A. Miles; Pump, force, A. Annable; Pump piston, J. O. Davis; Pump reel, chain, W. P. Harrison; Pumping engine condenser, W. A. Miles; Purifying, heating, and condensing apparatus, G. B. Field; Rack, See Hay rack, Pool ball rack; Railway crossing alarm, J. A. B. Lovett; Railway rail chair, Armstrong & Abbott; Railway rail splice bar, I. Nutt; Railway rail, street, T. L. Johnson; Railway rails, hot bed for cooling, W. K. Seaman; Railway signal, N. Allen; Railway signal, electric, E. L. Orcutt; Railway signal and switch system, electric interlocking, Knight & Baker; Railway sleeper metallic, H. Reese; Railway switch, W. Spielman; Ratchet wrench, J. W. Womelsdorff; Reel, See Pump reel; Refrigerated air and water, system of and apparatus for producing and distributing, H. D. Cogswell; Regulator, See Electro-magnetic regulator; Resawing machine, Jones & Wetherell; Roller mill, C. B. Campbell; Rolling steel springs, roll for, D. F. Kanaley; Roofing knife or tinner's scraper, G. J. Cline; Rotary engine, T. & J. W. Wilbraham; Rotary motor, G. Lenhardt; Rug making machine, O. Huff; Sash fastener, H. J. England; Saw and edge moulder, scroll, A. Showalter; Saw gauge, rip, T. A. McDonald; Sawmill, J. C. Wuerfel; Sawmill, reciprocating, J. H. Berkshire; Sawmill dog, G. F. Knight; Saw setting and jointing device, Beach & Burch; Saw teeth, device for dressing, S. H. Chase; Saw teeth, machine for swaging, J. Orm; Scale for weighing diamonds, balance screws of watches, etc., F. F. Ide; Screen, See Gas purifying screen; Screw, W. Schilling; Screw grinding apparatus, H. A. Rowland; Screw joint for metal pipe fittings, W. A. Miles; Seal lock, J. C. Rae; Seaming sheet metal cans, double, F. A. Walsh; Seat, See Bracket seat, Vehicle shifting seat; Sewing machine, T. A. Macauley; Sewing machine, D. Mills; Sewing machine, boot and shoe, C. Brown; Sewing machine buttonhole attachment, J. W. Cameron; Sewing machine feeding mechanism, G. R. Peare; Sewing machine guide, N. B. Williams; Sewing machine quilting attachment, A. Heartsill; Sewing machine ruffing attachment, T. B. Garretson; Sewing machine ruffing attachment, C. Grotz; Sewing machine, sole, McKay & Hoadley; Sewing machine trimming attachment, Wallace & Griffin; Sewing machine trimming mechanism, C. H. Bayley; Shade rollers, swinging bracket for, G. Lockhart; Shingle machine, J. P. Bowling; Ships and the rate of currents, electric log or apparatus for ascertaining the speed of, R. M. Lowne; Shirt, W. E. Hubbard; Shirt, M. O. West; Shoes or gaiters, manufacture of, O. E. Mellenny; Shoes, toe piece for rubber, J. L. Thomson;