ENGINEERING INVENTIONS.

A friction coupling for shafts, toothed wheels, and pulleys has been patented by Mr. Franz Braun, of Berlin, Germany. The invention provides a novel construction and arrangement of parts, whereby shafts can be coupled and uncoupled very easily and rapidly, without causing stoppage of work or lateral pressure on bearings.

A noiseless steam nozzle has been patented by Mr. Carleton W. Nason, of Montclair, N. J. It has a slotted tube surrounded by a perforated casing pacsed with asbestos fiber, filling the intermediate space, so the steam must go through this fiber in passing into water, whereby all noises or water hammering is pre-

A railway signal has been patented by Mr. William Hadden, of Brooklyn, N. Y. The invention makes a novel arrangement of the circuit in the "block" system by which the signals are operated on a closed circuit, and worked with equal facility from either end of the section automatically, or from any part of the line, by means of a switch of peculiar construction,

A car coupling has been patented by Mr. John C. Bryan, of Holly Springs, Ark. It combines, in connection with the drawhead, and a frame carrying the coupling pin, an arrangement of levers and retaining spring, making a novel mechanism forcar coupling, automatic in its operation, and that may be actuated from the top or either side of the car.

A railroad switch stand has been patented by Mr. Charles H. Talmage, of Atchison, Kas. It is an improvement for what is known as the "three throw split switch," and there are gears connecting the two switch shafts with the shaft of an operating lever by a partly toothed wheel, so the two switches may be onerated by the same hand lever, thus simplifying the apparatus and lessening the cost.

MECHANICAL INVENTIONS.

A machine for making wire or other solder has been patented by Messrs. Edmund L. Young and Lucius Dyer, of Millbridge, Me. In running or casting wire solder, the molten solder, by this invention, is run into grooves on a revolving mould and cooler, and is picked up therefrom and afterward reeled or otherwise delivered either as coiled wire, sticks, or as desired.

A machine for making coiled wire ferrules has been patented by Mr. Joseph Crowfoot, of Bridgeport. Conn. It has a mandrel revolved by suitable mechanism within a stationary band having an inclined upper edge to raise the wire as it is coiled and form a space for the next coil, with a jacket for supplying solder, and novel arrangement and construction to keep the mandrel cool and do rapid and efficient work.

... AGRICULTURAL INVENTIONS.

A cultivator has been patented by Mr. Frederick L. Hilsabeck, of Shelbyville, Ill. This invention is designed to improve cultivators used for working on both sides of a row of plants, and has a runner device on which the cultivator may ride to carry the plows above ground.

A cotton seed planter and fertilizer distributer has been patented by Mr. Ge Hu Port, of Seventh District, Coweta County, Ga. It has a peculiar arrangement and construction of parts, so that the drive wheel rocks a feed wheel, and the bottom of the feed box is loose, so that a smaller or larger discharge may he arranged for as desired.

A straw stacker has been patented by Mr. Thomas Major, of Jackson Township, Clinton County, Ind. The object of the invention is to facilitate the adjusting, controlling, and moving of straw stackers, and promote efficiency in their working, the straw being received from the thrasher or separator upon the lower part of the carrier and discharged from the upper end upon the stack, the carrier being conveniently arranged for the increasing height of the stack, and the stacker turning laterally through nearly the arc of a semicircle.

MISCELLANEOUS INVENTIONS.

An improved swamp and grab hook has been patented by Mr. Albert M. Millard, of Wausau, Wis. It is a special form of hook for rolling logs on to crotches in the forests, and for grabbing and pulling chains, skids, and other objects.

A game register and trump indicator has been patented by Mr. George W. Hyatt, of New York city. This invention provides a convenient means of keeping the score in games, and the points of each game, while at the same time indicating the trump of the game in progress.

An improved harness has been natented by Mr. Green Thompson, of New Salem, Ind. The object is specially to improve harness for working hay car- that may be used to hold or for heating food. riers and hoisting gear, and a rigid bar trace is provided which, with the other parts, wholly does away with by Mr. William S. French, of Jackson, Mich. A drum the falling of the whiffletree.

bany, N. Y. It is strong and simple, consisting of a extend to the different rooms, to be pulled from any dashboard suspended in a frame, and having a connect one in case of fire, when an alarm will be sounded and ing rod for imparting motion either directly or by a crank to connected machinery.

A receiving telephone has been patented by Mr. Lyman W. Sutton, Jr., of Newton, N. J. The invention covers a magneto electric telephone consisting of the combination of a resonant magnetic tube, open at both ends, a magnet, and a helix, all in inductive relation to each other.

A folding baby carriage has been patented. by Mr. Harry A. Jackson, of Brooklyn, N. Y. It is of special construction, whereby it may be folded compactly when notin use, and has a canopy attachment, or improved device for holding a sunshade in any desired position.

The invention consists principally of a float and attach- cut out and grounded simultaneously.

ed weight and screw for moving a drop weight or other object, to give an alarm when the water in the hull rises above a certain level.

An improved fire escape has been patented by Messrs. Otis G. Moore and Morris H. Marcus, of Edinburgh, Pa. It provides for a chute officxible ma. chute body, alternated with movable grate bars, conterial extending from a window to the ground, down which persons slide in escaping from fire, and the chute is made in sections to give it rather a zigzag shape.

An improved crutch has been patented by Mr. William H. D. Ludlow, of La Porte City, Iowa. This invention provides for an extensible prod connected to the hand hold, so that, by a rotary adjustment there, the prod may be projected as a safeguard against slipping, or withdrawn when it is no longer required.

A folding egg case has been patented by Mr. esse J. De Berry, of Smithville, Mo. It occupies but little space when not in use, or when being returned to the shipper, as it can be compactly folded, but by the use of hinged side and end boards, and folding parti- ing the cane to help eliminate green vegetable matter, tions, a practical case for shipping eggs and other arti- then expressing the juice and filtering and boiling, thus cles to market is readily set up.

presses and other uses has been patented by Mr. Patrick Slattery, of Charleston, S. C. It is made with a box through which passes a screw with two nuts connected by two sets of gear wheels with an intermediate gear wheel, to which power is applied by a ratchet pawl

fruits, fancy topped tables, birds, etc., has been patented by Elmina Brady, of Portlandville, N.Y. It consists of hard stone, common sand, slate stone, white sand, clam shells, common brick, charcoal, blue clay water, and linseed oil, in certain proportions, prepared after a specific manner.

A road cart has been patented by Mr. Henry Hortop, of Rutherford, Cal. It has springs above place by staples attached to the thills, guide eves on the side bars and yokes, so the unpleasant motion of the cart is prevented, and the cart can be readily adjusted for a large or small horse.

A button fly clamp has been patented by Mr. Isidor Felber, of Nyack, N.Y. It facilitates the labor of scalloping shoe button laps or flies, and avoids the necessity of making nail holes in the stock, there being a clamp and plate swiveled to an operating screw with pins for gniding the plate, cushions for protecting the pattern, etc.

An improved artificial stone has been patented by Mr. William Howell, of Philadelphia. Pa. The stone is adapted to be used for building, pavements, drain pipe, or plastering, and other uses, and is composed of a special preparation and combinations of moves along, the basket or parcels to be carried to be muriatic acid, flour of sulphur, molasses, iron scale, attached to the spool. sand, and cement.

fence wires has been patented by Mr. John N. Killough, of Aurora, Texas. It is a cheaply made and durable contrivance, affording material advantages for stretching wires along the fence posts, straining them taut giving regular pressure with shock, doing the work while being fastened, and also for removing or changing them in resetting the fence.

A machine for cutting out garments has been patented by Mr. Solomon Rich, of Joplin, Mo. In combination with a cutting table is an endless flexible Mr. Geury A. Chapman, of Strawberry Point, Iowa. knife belt, against which belt cutter the material is advanced as it is cut, under a pressing roller to keep the material free from wrinkles or plaits, so that several patterns may be cut at once.

A watch regulator has been patented by Messrs. Ernest J. Roux and Louis U. Fatio, of Geneva, Switzerland. It is an improved device for adjusting the hair spring regulator very finely and accurately, for by turning a wheel the distance of one tooth the pointer is moved a distance so minute that it could not be similarly adjusted by hand.

A saw back has been patented by Mr. Thomas Beard, of Kokomo, Ind. The invention relates to improvements in constructing the common saw bucks to hold the wood firmly; plates are provided with coarse saw-shaped teeth secured to the saw buck, in combination with a toothed lever pivoted thereto, provided with springs and a foot treadle.

A permutation lock has been patented by Messrs. William B. Atkinson and John H. Foster, of Franklin, Ky. This invention relates to an improvement on a part of a lock patented by Mr. Atkinson in May, 1883, and consists in special means for adjusting the tumbler to throw it in and out of engagement with the ward wheels

A dinner pail has been patented by Mr. William H. Carbaugh, of Columbus, O. The invention covers a particular construction and arrangement of parts, by which coffee may be kept in a tight pot, in an unobjectionable position, or can be removed for heating without leaving the pail uncovered; there is also a pan

or roll is to be arranged in the cornice brackets for An improved apparatus for utilizing wave winding up a chain or similar ladder, the drum being power has been patented by Mr. Thomas Mayes, of Al- held by a wheel and pawl, from which cords or wires the ladder let down

> Mr. August Kroesing, of Berlin, Germany, assignor for Mr. E. Gustav Eschenhorn, 17 Neu Kolm, the same city. It is waterproof, and has buoyant wings to inase its buoyancy and stability, with eyes or rings for fastening ropes or holding signals, packing strips in the joints, and angle plates overlapping the cover and secured to the sides and ends of the bottom section.

A cut-out for telephones has been patented by Messrs, Austin Williams and Joseph M. Gannon, of Negaunee, Mich. It provides for a swinging board or strip with a series of metal strips connected with the line wires, the board so adjustable that its metal An improved bilge water alarm has been strips close the circuit between the line wires, or bepatented by Mr. George W. Gilmore, of Webster, Pa. | tween those and the ground wires, so all lines may be

A coal cleaner has been patented by Mr. William H. Shepherd, of Pittston, Pa. It is designed to separate slate from coal as the latter passes down the chutes from the grading screens, for which purpose stationary grate bars are placed in an opening in the nected by cross bars with sliding rods, also connected with a rock shaft driven from a rotary crank shaft.

An improvement in rubber clothing has been patented by Mr. George Platt, of Butte, Montana Ter. The object is to provide a complete suit that can best paper for the purpose. Send be easily put on and off, and fit neatly and keep out the list. Keuffel & Esser, New York. wet. The boots and trousers are combined, the latter having inner and outer flies, while the coatalso has two sets of flies, with properly arranged buckles and straps, the trousers being suspended from the coat.

A process of making sirup and sugar from sorghum cane has been patented by Mr. Andrew J. Adamsom, of Sabetha, Kas. It consists in first roastgetting a much purer sirup than by the usual method, A screw driving mechanism for baling one that will not sour so readily, and free from rank

A carriage spring has been patented by Mr. Benjamin P. Morrison, of Abingdon, Va. The spring is very simple in construction, and can mostly be made in an ordinary blacksmith's shop, its design being such that the effect of a load on either of the supporting bars A composition of matter for moulding will depress the body alike from end to end, or the bars may be so connected that a load on any part will depress the whole bed equally.

A combined shovel and shield has been patented by Mr. John J. Holland, of New Orleans, La. The blade is detachable for use as a shield, the handle is formed in hollow sections, adapting it for the reception of small implements, a sling pouch is also provided for carrying the dismembered sections, and the whole and below the forward ends of the side bars, kept in | is capable of quick and interchangeable adjustments for various uses.

> An improved pipe coupling or joint has been patented by Mr. Robert M. Reilly, of Baltimore, Md. It provides for horseshoe pieces, each with lug and pins, inserted between collars opposite each other on the male portion of the pipe, and secured to the female portion by bolts through a flange, the whole to facilitate the turning of the pipe, for branch connection or pitch, without impairing the joints.

> A single cable track railway has been patented by Mr. Joseph J. Clisham, of San Diego, Cal. It provides for a single wire, loosely hung between posts, and the wire passing once around the axis of a spool; cords from the ends of the axis connect with a cord attached to a balloon or kite, which the wind

A press for moulding glass has been pa-A machine for stretching and removing tented by Messrs. Adrien A. and Leon A. Appert, of Paris, France. It is intended to use compressed air, or other suitable means, the system giving as strong a pressure as desired, acting rapidly or slowly as desired, rapidly, and not calling for more than one workman, whatever the pressure and size of the piece.

> A compressor for compressing bran and other substances into packages has been patented by By this invention bran may be compressed so its weight will be greater than that of an equal cubic measure of grain, but the strain in compression in no way comes on the sides or bottom of the sack, and the cover may he made fast while the bran is under compression.

> An improved calf weaner has been patented by Mr. Max J. Ahlgrim, of Rose Lawn, Ind. The invention consists of a half muzzle, made of wire or other light material, which is hung over the calf's nose on pivots fastened in a halter at the cheeks. There are arms connected with the muzzle which extend down below the jaw, and these carry a weight which a little overbalances the muzzle above. The weaner is automatic, for when the calf lowers its head to feed, the muzzle will swing above its nose and so not interfere with its feeding, but when the calf raises its head up to suckits nose will move in the muzzle, which is also armed with barbs, thereby interfering with its getting hold of theteat. It is attached and detached by simply unbackling the halter.

NEW BOOKS AND PUBLICATIONS.

The "ART AGE," is the title of a handsomely gotten up and beautifully printed monthly publication, issued by Arthur B. Turnure, 132 Nassau Street, New York city. It is designed to place before the trade and people of educated tastes generally, something in advance of what has yet been done in the way of artistic printing and book hinding. As a contemporary says of it, Art Age is designed to become the organ of new and advanced ideas of art, as applied in all forms of printing and bookmaking.

A fire escape and alarm has been patented Suggestions to China Painters. Miss M. Louise McLaughlin. Robert Clark & Co., Cincinnati.

The chapters on "Colors," "Preparing gold and silver for the decoration of porcelain," and "The use of metallic paints" are especially worth attention as giving a good deal of information in but few words. The book is illustrated with simple and artistic An improved trunk has been patented by designs for plaques, vasces, cape, const. used, treatment, etc.

> A "RETAIL DRUGGIST'S DIARY AND WANT Book," published by Frederick Stearns & Jompany, manufacturing pharmacists, of Detroit, Mich., contains a great deal of information in very convenient form for daily use in the drug store. It has also, besides diary pages, a pharmaceutical catalogue of over 14,000 items, and an extended list of non-secret medicines.

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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.

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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 Supple-MENT referred to in these columns may be had at the 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 indenti-

- (1) G. E. asks: Can I cast a zinc plate 8x 8 in., 3 in. thick, in a plaster of Paris mould? How can sputtering of the metal, when poured in the mould, be prevented, and how can I get a smooth casting? Could a small furnace, say 4 in. inside diameter, 8 in. high, be made of fire brick, to produce sufficient heat for smelting small quantities of brass, lead, copper, or even iron, to be heated with small hard coal and a blast from hellows? A. You may possibly make a zinc casting in a plaster mould smooth by oiling the mould withlin seed oil. A better way is to cast in moulding sand, such as brass foundries use. You may melt a few ounces of brass or copper in a small crucible in a furnace of the size you
- (2) C. E. B. writes: 1. I want to know the best way to make a small steam engine, one rating from one-half to one horse power? A The inverted vertical crank on a good and mechanical principle, and will it do be a guide on the outer end of rod. The "yoke," as it is pated called, will have more friction than a crank pin box and unless the yoke and connections are very stiff, will have a tendency to spring when in operation. A connecting rod is preferable. 3. What is the cause of the vibration of the armature on a telegraph instrument when it is connected by a wire to the base of the key? Is there any appliance which I can put on the instrument to obtain any power? A. An intermittent contact of the wire with the base. A small motor might be made to work on a similar principle, but there are better ways of obtaining power from electricity.
- (3) J. C., Jr., asks: 1. Where is the castor oil bean most extensively raised? A. The castor bean is largely grown in Illinois, Missouri, and California, where it is made into oil. Large oil works in Jersey City, N. J., are purchasers of the beans from all The bean is, as we understand, largely cultivated in Texas. If the large seed is used which is best suited to Southern soil, a hundred bushels to the acre may be produced. 2. By what means is it gathered—hand or machinery? A. Hand picking is usual.

 3. How many gallons of oil does it yield per acre? A. We do not know the yield of oil per bushel or acre. 4. Does it take expensive machinery to extract the oil? A. It requires a mill and a press. The price is suited to the quantity of work to be done. Four hundred dollars to eight hundred dollars would probably set up a small oil works.
- (4) A. W. H.—Most of the so-called bear's grease is prepared as follows: Take of washed hog's lard (dry) 114 lb. avoirdupois; melt it hy the heat of a water bath, add of balsam of Peru 2 drachms; flowers of benzoin and palm oil (bright), of each, 1 drachm; stir vigorouslyfor a few minutes to promote solution. Then remove the panfrom the bath, and after repose for a short time, pouroff the clear portion from the sediment. and stirthe liquid mass until it begins to cool. 2. For article on imitation coral see Parkesine, Celluloid, Dage 3617, Scientific American Supplement, No. 227.
- (5) J. F. A.—Your question is so indefinite that we cannot give you any satisfactory answer. The values of the different grades cannot be determined from cost of the trees, but from the differences in quality of the different gums, these being quite arbitrary.
- (6) G. A. H.—For removing printer's ink from paper use a solution of chlorinated soda, called by some chemists Larabeque solution. Use as directed on
- (7) A. and E. ask for directions for tempering coiled springs the best way, so as to get the most

- experience with the particular kind of spring that you | cells to do the same work. 2. Can you send us prices wish to temper. A coiled spring does not give us the faintest idea of its form, size, length, thickness, kind | Carbon plates are not very expensive. The price de-of steel, or whether it is a clock spring or car spring, all pends upon the size. Any of our dealers in electrical of which must be considered in the method of treatment. As a general rule, springs that are slender and liable to lose shape in a common fire, should be heated in an oven or muffle, and hardened in water or oil. The temper should be drawn in boiling linseed oil. Springs that have stiffness, like car springs, may be heated in a covered forge fire to good advantage, and hardened in lard oil. The temper can be drawn by burning off.
- (8) W. C. J. asks: 1. What are the physical causes of yawning? A. Yawning is supposed to arise from a reflex action of the nerves, caused by weariness, and is kindred to many other kinds of involuntary motions, that are probably derived from the nerve centers, 2. What is the chemical reason that bicarbonate of soda relieves a burn? A. We presume that it is by neutralizing the acid products of decomposition arising from the burn. 3. What is the distinction between a fruit and a vegetable? A. There is no absolute distinction between fruit and vegetable, fruit being that part of the AND BACH BEARING THAT DATE. vegetable kingdom found growing upon stalks or trees, and containing the seeds and sometimes being the seed itself. Whereas all organic nature not animal is said to be vegetable. In common parlance our soil grown products for culinary use are called vegetables, and some that are really fruit are also called vegetables. The terms overlap so much by customary nomenclature that distinctions become difficult. 4. Can you instance an artesian well where the water is perfectly soft? A. We know of no artesian wells that produce water as soft as rainwater.
- (9) G. R. P. asks: 1. Is it advantageous to shellac the plates of a Holtz electrical machine? A. Yes. It prevents the accumulation of moisture. 2. Why are two carbons used in the Grenet potassium bichromate hattery? A. The quantity of current is somewhat increased by the additional carbon plate. 3. How may I distinguish gutta-percha articles, as buttons, from those made of horn, vulcanite, etc.? A. By the odor developed by heat or friction.
- (10) H. M. D. writes: 1. Should I have a return wire on a telephone line three hundred feet long? A. You may use either a return wire or a ground connection. 2. Can I have as many turns as I wish on the line? A. Yes. 3. Can I use two gravity batteries (one at each end) towork two bells, and what size wire should I use? A. Yes. Use No. 12 iron wire or No. 16 copper wire.
- (11) W. S. G. writes: I am desirous of becoming an electrician. What books would be the best for me to study on the subject to learn it thoroughly? A. Begin with Ganot's "Physics," then study Gordon's "Electricity and Magnetism," Prescott's "Eectricity and the Electric Telegraph," "Electric Batteries," by Niaudet, "Electric Illumination," by Jarses Dredge. As you continue your study, other works will suggest themse lves.
- (12) W. W. R. asks: Will you please explain the phenomenon of electrical currents as employed in telegraphic circuits-whether bythe application of ground wires at the termini a direct current is formed, or that the circuit is completed by the attaching of engine is as good as any. For plans, dimensions, etc., ground wires, which communicates the electricity geneconsult the works on steam engineering. 2. Is the in- rated in the batteries to a general body of fluid which closed rough sketch for connecting the piston to the is supposed to permeate the earth? A. It has been demonstrated by the experiments of Wheatstone, Caseli, its work as easily as the common slide (pillow) block con- and others, that the earth is a great reservoir of elecnection? A. It cannot be used as sketched; theremust tricity, and that currents flowing to the earth are dissi-
 - (13) R. W. R. asks: Will you please inform me how to make the induction coil, as described in SUPPLEMENT, No. 160, vol. vii., Jan. 25, 1879, so that I can regulate the current to give strong or weak shocks? A. Make the bundle of iron wires forming the core of the coil movable, so that it may be pushed into or withdrawn from the coil.
 - (14) W. P. B. writes: Referring to SUPPLE-MENT, No. 159, Jan. 18, 1879, in article on batteries, it is stated that in the porous cup of the "Marie Davy" quicksilver battery, protosulphate of mercury should be used in theform of a paste. I would like to know: 1 What substance is used with the mercury to form the paste, and in what proportions, respectively? A. Water. 2. Is protosulphate of mercury the same as the sulphate of mercury sold by dealers in chemicals? No. 3. Will such a battery be suitable for silver plating in a small way? A. It can be used in that way, but a Bunser
 - (15) J. A. B. asks: What would take the cale off polished cast iron, the scale being caused by continuous heat for several hours? A. Use, by volume, one part sulphuric acid, one part nitric acid, two parts water, applied warm-either the acid or cast iron. Better, by far, remove the scale by simple polishing or abrading substances.
 - anging ir ed by shrinkage of the gut. Release the string someed by shrinkage of the gut. Release the string some-what and place some olive oil on a woolen cloth, rub cleaner. See Coal cleaner. and will in a short time cause the gut to swell to its original size, and thus stop the singing.
 - (17) W. J. asks: Would you please inform me through your paper what would be the best form of battery for making copper electrotypes of any desired thickness? I wish a constant battery, which would require no attention for a couple of months. A. Daniell's or the gravity battery would probably answer your purpose. 2. Also if you could give directions for making nickel electrotypes of any desired thickness?

 A. We know of no method of making nickel electrotypes. You can make copper electrotypes and afterward nickel them.
- (18) A. W. H. writes: in your Scientific AMERICAN SUPPLEMENT, you published a description of a small electric light to work with a 3 cell bichromate battery. We would hke to know if a 5 cell gravity batpower out of a given size of spring? A. The tempering tery would do, or if a gravity battery would do at all? Die shaping apparatus, Chamberlain & Martin 291,681

- of coiled springs requires much judgment, based upon A. No. It would require a large number of gravity of the gas carbons and could they be sent by mail? A. supplies can furnish them by mail. See our advertising
 - (19) F. W. D. asks for a good varnish to apply to designs printed in fine gold bronze on thin leather, something which will protect the bronze without coloring the leather and will dry quickly? A. Pale shellac, 5 oz.; borax, 1 oz.; water, 1 pmt; digest at nearly the boiling point, until dissolved, then strain. Equal to the more costly spirit varnish for many purposes; it is an excellent vehicle for water colors, inks, etc.; when dry it is waterproof.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

January 8, 1884,

[See note at end of list about copies of these pat	ents.]	
Abdominal supporter, H. A. Traver	291,551	ļ
Accordion, E. Schreyer	291.732	
Acid, concentrating sulphuric, M. A. Walsh Alarm. See Bilge water alarm.	291,821	
Aluminum, obtaining, F. J. Seymour		i
Animal power, L. C. Strong		
Axle journals, bearing for car, G. W. Stewart		i
Bag. See Mail bag.		i
Balance wheels, crank adjustment for, J. B. Thurston		l
Bale band tightener, R. L. Willis		ļ
Baling presses, etc., screw driving mechanism for,		
P. Slattery Bandage, suspensory, L. P. Griffin		
Barrel hooping machine, Duff & Allan	291,583	
Battery. See Secondary battery. Storage bat-		
tery. Bier or coffin stool, J. N. Knox	291,605	
¹ Gilge water alarm. G. W. Gilmore	291,711	
Hilliard cue tip, Easthope & Schneider	291,703	
Knox		
thind slats, device for wiring, G. W. Soulé	291,546	
Board. See Cigar maker's board. Sleeve board. Boots from celluloid, etc. manufacture of, Pit-		
man & Allaire	291,533	
Boot, W. Irvin		
Boot, Wood & Bond		:
Boot or shoe stitching jack, J. F. Ames	291,661	
Boot strap, C. B. Lamb Boots and shoes, exhibiting, C. L. Higgins	291,746 291,726	:
Boots and shoes, manufacture of, E. L. Sprague	291,796	i
Bottle and stopper, J. Story		i
Bottle stopper, glass, J. Story Box. See File box. Paper box.	291,637	į
Bracelet safety appliance, E. Jones	291,519	ļ
Brake. See Car brake. Wagon brake. Breastpin, D. F. Adams	901 564	
Bricks, tiles, etc., manufacture of, A. Dimpfl		
Bridle, M. M. Hitt		
Broom machine, Hoyt & Storch Buckle, I. Hartmann		
Buckle guard, harness, F. G. Harrison	291,346.	
Buckle, trace, D. Schoenthaler	291,540	
Levett	291,610	
Buffing wheel, H. E. Fowler		
Burial windlass, J. P. McDonald Button hole, F. Beiermeister. Jr		
Button hole stitching machine, D. W. G. Hum-		
phrey Buttom setting apparatus, S. L. Pratt		i
Buttons, attaching, W. H. Wood		
Calculator, percentage, S. J. Tucker	291,817	
Can. See Packing can. Can filling machine, J. Stevens	291,799	
Can opener, H. Bentham	291,567	
Canning device, fruit, F. Deplanty Car brake, S. Fairman		
Car brake, fluid pressure, R. J. Wilson		
Car coupling, J. C. Bryan,		
Car coupling, C. Devlin	291,753	
Car dumper, T. S. Stewart	291,801	
Car, railway passenger. E. P. Osgood Car, railway passenger, W. H. Paige		
Car starter and brake, G. M. Hatnaway	291,594	
Car wheel, G. W. Miltimore	291,618	
Car wheel, H. G. Taylor	291,676	1
Carpet stretcher, N. A. Veline	291.555	
Carriage spring, B. P. Morrison	291,761]
Cart, road, J. W. Breed	291,488 :	
Cart, road, H. Hortop	291.733	
Cartridge ring, extractor, J. Murphy	291,619	1
Caster, furniture, G. D. Clark	291,494	
Checkrower wires, machine for forming, G. B. Durkee	201 524]
Cigar eutter, Gratz & Hagedorn	291,509	1
Cigar maker's hoard A Thulheimer	201 644	

,	D. Switzer 20100
8	Coal cleaner, W. H. Shepherd 291.74
	Coal drilling machine, J. M. & J. W. Davies 291,57
	Cock. stop and waste, H. Taylor et al 291,80
נ	Compressor for compressing bran, etc., into pack-
t	ages, G. A. Chapman 291,68
у :	Cooler. See Water cooler.
1	Cooler for uniting oils in the manufacture of lard,
.	etc S. H. Cochran
	Cotton elevator and cleaner, seed, W. T. Taylor. 291,80
	Coupling. See Car coupling. Pipe coupling. Rod
?	
- :	Crutch, W. H. D. Ludlow. 291,75 Cultivator, N. Coleman 291,57
- 3	Cultivator, N. Coleman
	Cultivator, F. L. Hilsabeck
	Curtain fixtures, spring roller for, J. B. Finch 291,500

Ditching machine, tile. Hoehn & Hilburn	291,511
Draft regulator, W. F. Grassler	291.713
Drill. See Grain drill. Rock drill.	
Drop lights, friction clutch for, Travis & Freancy.	291,816
Earth, gravel, etc. apparatus for transporting	
and dumping, Q. A. Fisk	
Egg case, folding, J. D. De Berry	
Elastic fabric, G. C. Moore	
Electric circuit closer, C. J. Van Depoele	291,648
Electric conductor circuit, underground, E. T.	
Starr	291,798
Electric machine regulator, dynamo, C. J. Van	
Depoele	291.554
Electric machine regulator, dynamo or magneto.	
F. Bain	
Electric motor, I., W. Stockwell	291,636
Electric motors, current regulator for, C. J. Van	
Depsele	
	291,649
Electric conductor, underground, Greives &	
Bleoo	
Electrical indicator and alarm. W. H. Baker. 291.483,	291,484
Elevator. See Cotton elevator. Hay elevator.	
Water elevator.	and 00#
Elevator, Beroud & Walsh	291,835
Elevators, safety automatic stop attachment for,	204 202
O. Brugger	291,888
Engine. See Steam engine.	001 - 10
Engine, S. N. Silver	
Envelope machine, H. A. Mann Jr	
Evaporator, A. Kayser	291,520
Extractor. See Cartridge ring extractor.	

Eyelet stitching machine, C. J. A. Sjoberg...... 291,855 Fan, blast or exhaust, Capell & Macbean 291,493 Faucet, self-closing, S. & S. L. Barker 291,668 291,743
 foot
 291,496

 File box, E. W. Byrn
 291,574

 File, letter or bill, O. C. Mackenzie
 291,752

 Filter, J. Toland
 291.550

 Fire escape, C. Kehr
 291,601

 Fire escape, Moore & Marcus
 291,756

Fire escape protector and supporter, H. Fairbanks 291,586
Flanging machine, R. C. Nugent 291,620
Floor jack, T. L. Wilber. 291,620
Flour packing machine, A. C. Hartzoke 291,582
Flue and pipe welder and fitter, Fieck & Herring 291,707

 Folding table, N. H. Long
 291,625

 Fruit picker, G. A. Smith
 291,792

 Furnace.
 See Hydrocarbon furnace.

 Furnace mouth, T. O'Brien
 291,768

Gas, apparatus for manufscturing, J. L. Stewart (r) 10.436
Gate, W. J. Hamilton 291,724 Gold and silver from their ores, by combined electrolytic and amalgamating processes, process of and apparatus for obtaining, M. Body..... 291,670 Grain drill, H. P. Tenant. 291,809 Grinding machine, J. B. H. Leonard. 291,609 Guard. See Buckle guard.

 Guard.
 291,812

 Harness, G. Thompson.
 291,812

 Harrow, rotary, J. H. Hoof.
 291,515

 Harrow, spring tooth, E. C. Comstock.
 291,840

 Harvester and husker, corn, J. W. Terman.
 291,648

 Hat hanging attachment, W. H. Barry.
 291,648

 Hat Ironing muchine, N. B. Hooper.
 291,598

 Hat lining. C. Raymond, 2d.
 291 536

 Hat lining and cover, J. H. Canning.
 291,679

 Hatchway, self-opening and closing, D. Hum-

 Heel burnishing and milling machine, P. J. Lapham
 291,608

 Heel plate, E. Hoxie
 291,599

House. See Sheep house. Hydrocarbon furnace, R. B. Avery. 291.830 lce cream freezer, V. Clad 291.685 Ice making and refrigerating apparatus, Reynolds indicator. Inkstand, T. B. Knowles.

Interlocking apparatus, hydraulic and electric. O. . 291,644 Jack. See Boot or shoe stitching jack. Floor jack. Knife holder and package, G. F. Felch. 291,704
Knob attachment, W. H. Gonne. 291,712

Lamps, safety cut out for series of electric, C. J.

 Lamps. safety out out for series of electric, C. J.

 Van Depoele
 291.652

 Lard and oil tank, H. Rall
 291,335

 Latch, W. Sallade
 291,539

 Lathe attachment, watch maker's, O. F. Main
 291,754

 Lifter. See Transom lifter. Lock. See Permutation lock. | Curtain fixtures, spring roller for, J. B. Finch. | 291,602 | Lock, Andrews & Sparks. | 291,663 |
Cutter. See Cigar cutter.	Lock, F. P. Clark.	291,636	
Cutting out garments machine for, S. Rich.	291,776	Lock, A. B. Todd.	291,646
Dental engine hand piece, A. W. Browne.	291,571	Locomotive lubricator, C. B. & C. H. Hodges.	291,847
Die shaming, Chamberlain & Martin	291,646		
Company of the Co			

Loom shuttles, tension regulating device for, G. Baldwin 291,831

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