

ENGINEERING INVENTIONS.

A railroad gate has been patented by Mr. James H. Pollard, of Clarence, Mo. This invention covers a novel construction and combination of parts in a gate, so arranged that an approaching train strikes a projection of a bar pivoted in connection with the rails, whereby the gate is automatically opened by the train, and is closed automatically after the train has passed.

A gate has been patented by Mr. Fred. W. Sensiba, of Talbot, Mich. It is intended especially for drawbridges, and is hung upon a shaft which is rotary reciprocated by connections from another shaft rotated by a weight and held from revolution by the end of a lever, with other novel features, whereby the gate will be automatic in its action so long as the weight is wound up.

A car seat recorder has been patented by Messrs. Joseph K. Bywaters and John G. Burke, of Paris, Texas. It is located in the middle of the car seat, the seat being thus divided into two parts, and is connected by gearing with the car axle, so that when depressed by the weight of a passenger it will record the number of miles traveled by the vehicle while the seat is so occupied.

AGRICULTURAL INVENTIONS.

A two horse hay rake has been patented by Messrs. Alexander Anderson and Robert Rutherford, of Brush Creek, Iowa. It is made with a truck connected with the reach frame of the rake by hooks on the reach frame engaging an annular plate, and a king bolt forming a fifth wheel, and provided with a hinged tongue, whereby all weight from the rake will be taken from the horses' necks.

A check rower has been patented by Mr. Jeremiah C. Butler, of Lexington, Mo. The shaft revolving wheel is secured on, one and the marking wheel on the other end of a shaft journaled in suitable bearings above the runners, and the arms of the marking wheel are so curved that in leaving the ground they make a clear and distinct mark, the machine being very simple in construction and operation.

A cotton cultivator has been patented by Messrs. Joseph Wilkinson and Frank Curtin, of Kentucky, Ala. It is so constructed that front hoes will bar off and rear ones side up the cotton, while the chopping mechanism intermediate of said hoes will cut the cotton into stands, it being arranged so, the frame carrying the cultivating and chopping mechanism may be lowered to cause the mechanism to operate in the ground to any desired depth.

A hay rack has been patented by Mr. Joseph A. Withrow, of Scranton City, Iowa. Combined with a central bar are transverse bars, adjustable angled rods, longitudinal bars, slotted curved springs and clips, with other novel features, so the rack may be readily applied to wagons for transporting hay and grain, and adjusted to wagons of different sizes, or it may be converted into a frame to receive a canvas covering for a wagon to adapt it for use by excursionists, etc.

MISCELLANEOUS INVENTIONS.

A windmill has been patented by Mr. Joshua G. Benster, of Duncan, Neb. This invention relates to solid vertical wheel windmills, and it provides for such construction as to be self-regulating in winds of widely varying force, while it is adapted for a variety of uses in driving small machines and for pumping.

A gate has been patented by Mr. Geo. A. Grant, of Eddyville, Iowa. It is composed of a number of wires hinged at one end to a fixed post and their opposite ends secured to a movable upright, the invention covering novel features in the construction and operation of such a gate.

A hame tug has been patented by Mr. John T. Condon, of Kingsley, Ohio. Its construction is such as to provide a strong pivot and one that prevents any rotary or twisting movement of the tug, which rests against the roll of the collar, while the tug stands out and will not dig into and wear the collar.

A roller skate has been patented by Mr. James B. Harris, Jr., of Geneseo, N. Y. It has a socket arm with an adjustable stop, the arm being fixed to and extending from one of the roller carriers, the object of the invention being to allow persons using roller skates to stop instantly or slacken speed at will.

A stand for photographic cameras has been patented by Messrs. William H. Lewis and Erasmus B. Barker, of New York city. It is a camera tripod in which the legs, which are composed of three or more sections, are built up to give a regular tapering and firmer support for the stand, while the whole is very light and may be packed in small space.

A pen holder has been patented by Mr. Marshall J. Hughes, of Jersey City, N. J. The handle is split at one end, and has a clamping screw for drawing the parts together, with angled clamps for receiving ordinary pens, and arms in the slot of the pen handle, whereby ordinary pens may be used to make parallel lines at such distance apart as desired.

A gasometer has been patented by Mr. George E. Johnson, of Albion, Ind. It is designed for the use of dentists and others, for producing anaesthesia by nitrous oxide and other agents, and has a dry gas chamber, so the water forming the seal cannot absorb much gas, and the gasometer is small as compared with its capacity.

A mixing and vaporizing device for inhalers has also been patented by the above inventor. It is for thoroughly mixing anaesthetics, such as nitrous oxide or laughing gas and ether, at the time they are being used, and consists of a simple apparatus with chambers connected by bores with a common tube, with gauge, regulating screw, etc.

An exhibitor for paper hangings, etc., has been patented by Mr. Lewellen A. Ely, of Muir, Mich. Combined with an upright rod or tube, with a

sleeve surrounding it, are frames hung on the sleeve, and handles on the sleeve for turning it, making a device for effectively displaying paper, borders, pictures, oil cloths, carpets, etc.

A mop wringer has been patented by Mr. Daniel Lynch, of Glens Falls, N. Y. It consists of a frame adapted to rest upon the top of a bucket or tub, and has two sets of fingers, one made to work toward and within the other to squeeze or wring the cloth of the mop as it is drawn through the two closed sets of rows of fingers, thus saving time and labor.

An umbrella casing has been patented by Mr. Romeo E. Ghezzi, of New York city. It is formed of a series of telescoping tubes, making a shell to hold the covering and frame of an umbrella together very compactly, and which can be applied and removed quickly, serving when so desired as a drip cup for the water running down from the umbrella.

An embroidering machine has been patented by Messrs. Henry E. Schmitz and Edward Aldom, of Brooklyn, N. Y. It is a novel attachment for sewing machines, in which a single thread chain stitch is used to secure on the surface of the material to be embroidered a strip or length of cord, braid, chenille, beading, or other embroidering strip, of any desired color.

A machine for building wire fences has been patented by Mr. William H. Bigelow, of Worthington, Minn. It consists of a platform suitably mounted on wheels for moving from place to place, carrying an earth auger and means for driving posts, with apparatus for stretching and fastening as many wires as desired on the posts so driven.

A prairie fire extinguisher has been patented by Mr. Arthur W. Rumsey, of New Kiowa, Kansas. It has a water tank and beaters, so arranged that when propelled over the lines of a fire it will beat out and extinguish the fire at each side, and burn a swath or belt around haystacks, buildings, or farms, for protection against approaching fires.

A plastic compound to be used in the manufacture of burial caskets, furniture, etc., has been patented by Mr. Thomas Law, of Moulton, Iowa. It consists of rosin, black lead, sulphur, and rubber, melted and mixed together in stated proportions, that will readily mould and harden to make a waterproof and imperishable compound, and will also form an excellent cement.

A cotton chopper and cultivator combined has been patented by Mr. Joseph L. Murray, of Weimar, Texas. It has a cultivating plow located in the rear of the chopping apparatus, and in line with the point at which the chopping apparatus cuts out the row, whereby the cut out portion will be cultivated, and mechanism whereby the cultivating plow may be elevated over the stands of plants.

A head screen has been patented by Mr. Horace Garst, of Council Bluffs, Iowa. It is made of mosquito netting or fine gauze, in the shape of a bag, with a band at its upper end to fit upon a hat body, and a band at its lower end to fit loosely around the neck, with flexible weights at the lower edges, the whole so arranged that the screen can be raised and worn around the hat.

An attachment for rod rolling mills has been patented by Mr. Andrew J. Day, of Pittsburg, Pa. It is for use in connection with the ordinary form of rolls, and so designed that the rod, having once been delivered to the bite of the second pair of rolls, will take care of itself until the operation of rolling has been completed, avoiding the kinking which has heretofore required the careful attention of skilled workmen.

A lamp chimney cleaner has been patented by Mr. Andrew S. Reisor, of Reisor, La. It consists of a wire bent double and provided with a slip bar or loop, with a clamp wire hinged to the bend of the main wire and adapted to be locked on a pad or mop by means of the slip bar or loop, so it can be conveniently applied to the inside surfaces of chimneys or globes.

A feed mechanism for stone sawing machines has been patented by Mr. Francis H. Cook, of Rutland, Vt. It consists of cone-shaped spreaders arranged beneath the feeding tubes, with deflecting racks beneath the spreaders, and other novel features, whereby the sand or other abrading agent may be evenly distributed over a large surface, or confined to a particular portion when such delivery is required.

A door lock has been patented by Messrs. Garret G. Ackerson and Julius F. Shy, of St. Louis, Mo. The key holes for opposite sides of the door are out of line with each other, and the locking bolt has two key bit receiving notches, and there are also special key hole guard plates, making a simple and strong lock, not easily picked, and preventing peeping through key holes.

A gate has been patented by Messrs. William L. and John C. Wilson, of Cynthiana, Ind. A lever is pivoted to the lower rear part and extends diagonally upward and forward about to the top of the gate, a draw uprod connecting the lever with the upper rear part of the gate, with other novel features, to prevent the sagging of gates, and to hold their outer ends up any desired distance from the ground.

An electric leak alarm for pipes has been patented by Mr. Henry G. Bauman, of Pittsburg, Pa. It consists of a jacket inclosing the joint of a pipe, with a flexible metallic diaphragm and an insulated contact screw supported near the diaphragm, with electrical conductors connected with the pipe or jacket and with the insulating contact screw, to give alarm in case of leaks in the joints of pipes.

A signal horn has been patented by Mr. Charles A. Volke, of Stapleton, N. Y. It consists of a tube closed at one end, and with a neck at the other end, for connection to a steam or air pipe, the tube having a mouth at one side, below which it is divided by a bridge, making upper and lower chambers, connected by a narrow slit in the bridge, there being an adjustable valve for varying the tone.

A shutter fastener has been patented by Mr. Frederick A. S. Perry, of New York city. It

consists of a latch adapted to be held in a slot in the blind, in connection with a spring and sliding jointed rod, and other novel features, whereby the blinds can be readily closed, and locked in place when closed, without extending the arm out of the windows to release them from their open position.

A beehive has been patented by Mr. William O. Vincent, of Newfoundland, Ky. This invention covers a novel construction and combination of parts, whereby a hive may be used to receive three distinct swarms of bees, or otherwise the bees can be allowed to pass back and forth between the brood chamber and the honey box, and the bees can generally be readily controlled and fed and protected from moths.

A fire escape has been patented by Mr. Theodore D. Jenkins, of Jersey City, N. J. A metal box has arms and guides for an escape line, with a lever arrangement, whereby, when the line is secured by one end in a window and the other end cast out, one may place a belt about the person, grasp a lever, and leave the window, the rate of descent being readily controlled by the lever.

A floor grinding machine has been patented by Mr. James B. Harris, Jr., of Geneseo, N. Y. A grinding wheel or block is fixed in a frame which also carries a seat for the operator, so that the weight of the latter can be thrown upon the grinding wheel, and the machine will abrade or level surfaces which it is drawn across, being especially designed for leveling the floors of skating rinks.

A vehicle curtain has been patented by Mr. Joseph E. Bimm, of Dayton, O. The construction is such that the curtains can be so attached to the vehicle top that when not in use they are preserved from injury, and at the same time are ready and handy for use when required, and the arrangement is such that the entire vehicle top, with the curtains, can be made and trimmed up independently of the vehicle body.

A plate joint for stoves or ranges has been patented by Mr. Nathaniel A. Boynton, of New York city. Cast metal plates having parallel ribs are used in connection with sheet or wrought metal plates having marginal flanges bent to form an obtuse angle with their bodies, and arranged to fit within the grooves formed by the ribs of the cast metal plates, to make the necessary compartments and walls of the flues in a stove or range.

A composition for making sewer invert blocks has been patented by Mr. Samuel A. Miller, of Philadelphia, Pa. It is formed of hydraulic cement, sand, iron scale, or slag and iron, or steel sludge, the ingredients being thoroughly mixed with as small a quantity of water as possible; the composition is rammed down into a mould, and a mixture of one part of sand and one of cement is applied to the face of the bottom block of the mould, to give a hard and smooth finish to the top surface of the invert block, while the rest of the block is made to have great strength and durability, and to resist great pressure.

A machine for making stereotype matrix impressions has been patented by Mr. Friedrich Schreiner, of Philadelphia, Pa. It is designed for making impressions of each line successively on soft paper, from which a stereotype cast of the impressed sheet may be taken and used for printing, while an extra copy may also be obtained at the same time on tissue or carbon paper. A type case for use in connection with these machines has also been patented by the same inventor, and it holds the types in such a manner that as soon as they are released from the holder where used for taking an impression, they are automatically drawn back into the place which they had before.

NEW BOOKS AND PUBLICATIONS.

A HISTORY OF THE UNITED STATES, FROM THE DISCOVERY OF AMERICA, IN 1492, TO 1885. By Emery E. Childs. New York: Baker & Taylor, 1885.

In a space of about 250 pages Mr. Childs has brought together a condensed account of American history, from the landing of Columbus to the World's Fair at New Orleans. It has been arranged in chronological order, and will be found a very convenient reference book. The main feature of the work is the careful record which has been made of important inventions, discoveries, the growth of national industries, and other matters of moment which have no direct political interest. It is a successful attempt to bring within the covers of a brief pocket edition about the same information that Professor McMaster has collected in his larger volumes, and will be appreciated by those who want a complete compendium in the fewest possible words.

THE HOLLY MANUFACTURING CO., of Lockport, N. Y., has issued a very attractive pamphlet, descriptive of the Holly System of Water Works and the Gaskill Pumping Engine used in connection with the system. It is designed to supply water to towns and cities without the use of reservoir or stand pipe. To maintain the required pressure in the mains, the operation of machinery is continuous; but as the demand for water is subject to constant variations, means are provided for the automatic regulation of the pumps, so that the amount of water delivered corresponds at any moment with the exact requirements. When the pressure in the mains falls below the standard, the regulator promptly acts to admit steam for a longer period into the cylinders; but when the pressure exceeds the prescribed standard, the action of the regulator is reversed, and less water is pumped. Another and important feature of the system is that by providing water under large pressure in the mains, the necessity of fire engines is avoided. The reports of the performance of the Gaskill engine are highly satisfactory. The pamphlet will possess considerable value for those interested in projected water works.

DESIGNS FOR STABLES. We have received from W. T. Comstock, of New York, "Thirteen Designs for Stables," being the third of a series of architectural designs of unusual merit. The plates, with specifications and details of construction, will be sent for \$1.00 by the publisher, No. 6 Astor Place, New York.

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.

Deep Sea Wonders

exist in thousands of forms, but are surpassed by the marvels of invention. Those who are in need of profitable work that can be done while living at home should at once send their addresses to Hallett & Co., Portland, Maine, and receive free full information how either sex, in all ages, can earn from \$5 to \$25 per day and upward. You are started free. Capital not required. Some have made over \$50 in a single day at this work. All succeed grandly.

For Sale.—\$350 buys a new patent of a novel kitchen device. C. A. Bryant, Box 61, Wakefield, Mass.

Wanted.—A partner, with small capital, to work a new and paying invention. Address T. S. Le Grand, 712 Main St., Lynchburg, Va.

Bargain.—A Type Writer. W. E. Lewis, Corry, Pa.

Take a Pill

to regulate the bowels and drive away the sick or bilious headache which is the result of constipation. But don't rack your frame and overburden your organs by taking the old-fashioned great, drastic, gripping pills. Science makes rapid advances, and Dr. Pierce's "Pleasant Purgative Pellets" are the result of careful study and skillful preparation. They are entirely vegetable, and operate without disturbance to the organs of the body, or to the occupation or diet of the patient.

Rubber Belting, Cotton Belting, Leather Belting, Economy Belting, Polishing Belting. Greene, Tweed & Co., New York.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. \$100 "Little Wonder." A perfect Electro Plating Machine. Sole manufacturers of the new Dip Lacquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

Blake's Patent Belt Studs. The strongest and best fastening for Rubber and Leather Belting. Greene, Tweed & Co., New York.

Small Bench Lathes, with Countershaft, \$16.00. Circular free. T. F. Welch & Co., 35 Battery March Street, Boston, Mass.

"Steel Stamps," J. E. Mathewson, Springfield, Mass.

Tools, Hardware, and other specialties made under contract. American Machine Co., Philadelphia.

Grimshaw.—Steam Engine Catechism.—A series of thoroughly Practical Questions and Answers arranged so as to give to a Young Engineer just the information required to fit him for properly running an engine. By Robert Grimshaw. 18mo, cloth, \$1.00. For sale by Munn & Co., 361 Broadway, N. Y.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Pumps for liquids, air, and gases. New catalogue will be ready in March.

Modern M'ch. Tools a specialty. Abbe Bolt Forgers, Power Hammers, Lathes, Planers, Drills, and Shapers. Send for estimates. Forsaith M. Co., Manchester, N. H.

Wm. Frech, Sensitive Drill Presses, Turret and Speed Lathes combined, Power Punching Presses, 68 W. Monroe Street, Chicago.

Order our elegant Keyless Locks for your fine doors. Circular free. Lexington Mfg. Co., Lexington, Ky.

Send for catalogue of Scientific Books for sale by Munn & Co., 361 Broadway, N. Y. Free on application.

Woodw'kg. Mch'y, Engines, and Boilers. Most complete stock in U. S. Prices to meet times. Send stamps for catalogues. Forsaith M. Co., Manchester, N. H.

The Knowles Steam Pump Works, 44 Washington St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

Haswell's Engineer's Pocket-Book. By Charles H. Haswell, Civil, Marine, and Mechanical Engineer. Giving Tables, Rules, and Formulas pertaining to Mechanics, Mathematics, and Physics, Architecture, Masonry, Steam Vessels, Mills, Limes, Mortars, Cements, etc. 900 pages, leather, pocket-book form, \$4.00. For sale by Munn & Co., 361 Broadway, New York.

Machinery for Light Manufacturing on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y.

Send for Monthly Machinery List to the George Place Machinery Company, 121 Chambers and 103 Reade Streets, New York.

If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN patent agency, 361 Broadway, New York.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Wood Working Machinery. Full line. Williamsport Machine Co., "Limited," 110 W. 3d St., Williamsport, Pa.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn. Curtis Pressure Regulator and Steam Trap. See p. 142.

Nystrom's Mechanics.—A pocket book of mechanics and engineering, containing a memorandum of facts and connection of practice and theory, by I. W. Nystrom, C.E., 18th edition, revised and greatly enlarged, plates, 12mo, roan tuck. Price, \$3.50. For sale by Munn & Co., 361 Broadway, New York city.

Iron, Steel, and Copper Drop Forgings of every description. Billings & Spencer Co., Hartford, Conn.

Dynamo Machines

for all purposes. Dynamo machines of highest efficiency, accurately calculated (as to capacity, etc.), and built to meet requirements in connection with all

Industrial Applications of Electricity, including: Electric Lighting, Transmission of Power, Electro Mechanical Machinery, Electro Deposition of Metals, Electro Chemical Work, Telegraphy in place of Batteries, Electric Motors, of various horse power, to be run by Dynamo Currents. All dynamo and motor apparatus built to suit the work required and according to the best of known models for economy and efficiency.

J. H. Bunnell & Co., 106 and 108 Liberty St., New York.

Curtis Steam Trap for condensation of steam pipes, high or low pressure. Curtis Regulator Works, Boston, Mass.

Wholesale manufacturers of the Fibrous Asbestos Removable Pipe and Boiler Coverings.

Crescent Solidified Oil and Lubricators. Something new. Crescent Mfg. Co., Cleveland, O.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Emerson's Book of Stays free. Reduced prices for 1885. 50,000 Sawyers and Lumbermen. Address Emerson, Smith & Co., Limited, Beaver Falls, Pa.

Hoisting Engines, Friction Clutch Pulleys, Cut-off Couplings. D. Frisbie & Co., Philadelphia, Pa.

"How to Keep Boilers Clean." Send your address for free 88 page book. Jas. C. Hotchkiss, 86 John St., N. Y. Barrel, Keg, Hogshead, Stave Mach'y. See adv. p. 76.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 46.

Hercules Lacing and Superior Leather Belting made by Page Belting Co., Concord, N. H. See adv. page 158.

Timber Gaining Machine. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

Manufacture of Soaps, Candles, Lubricants, and Glycerine. Illustrated. Price, \$4.00. E. & F. N. Spon, New York.

Brass and Iron Working Machinery, Die Sinkers, and Screw Machines. Warner & Swasey, Cleveland, O.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Supplement Catalogue.—Persons in pursuit of information of any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto.

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

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

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

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.

(1) H. R. writes: We are about to lath and plaster a room in basement of store, to be used as a laundry. Can you suggest any way to effectually keep the fumes out of the store?

(2) E. E. S. asks the cause of an engine knocking or thumping when oil or tallow is put in the cylinder? A. Possibly the piston rings are loose or have play between the head and follower.

(3) J. M. H. writes: Why does the iron made now rust so badly and decay, while the iron made many years ago rusts comparatively but little?

(4) F. H. L. asks: 1. What are the soft iron castings to be used for the electric machine described in SUPPLEMENT, 161, and how are they to be obtained? Are they malleable iron castings?

(5) G. M. L. asks: How can I make an induction coil, such as are used in medical batteries, also what number of the SCIENTIFIC AMERICAN or SUPPLEMENT contains descriptions for making different coils?

No. 36 silk covered wire. SUPPLEMENT, 160, gives directions for making induction coils.

(6) J. D. L. writes: I wish to make an induction coil that will give an inch spark. Will one 6 inches long and 3 inches in diameter be large enough?

(7) G. A. C. writes: In the SCIENTIFIC AMERICAN of July 11, 1885, Note 1, there is a recipe for a cement which is proof against even boiling acids.

(8) G. S. B. asks: 1. Why does the cloudiness of the air and the number of rainy days in the year increase gradually from the equator to the polar regions, while the annual quantity of rainfall decreases in the same direction?

(9) J. D. C.—The belt has no influence upon the regulating power of the flywheel, whether it runs on the flywheel as a pulley or on a separate pulley.

(10) V. W.—The eyebrows may be darkened permanently by the use of a silver hair dye, which can be obtained from any druggist.

(11) C. S. asks how to waterproof the tackle and rigging of vessels. A. Either of the following can be used: 1. India rubber in small pieces 1 ounce, boiled oil 1 pint; dissolve by heat, then add 1 pint hot boiled oil, stir well, and cool.

(12) E. W. writes: I have a small engine, 2 inches bore by 3 1/2 inches stroke. What size boiler is necessary, and how is the best way to make it? A. Your engine will give you a half horse power with 75 pounds steam.

(13) F. W. G. asks: 1. What amount of weight would borts or black diamonds (when set in drill bits) hold up without crushing? Suppose the bit stood on rock, and the pressure was downward, from weight of drill rods upon the bit.

(14) A member of the House of Representatives, U. S., asks the materials, quantities, and manner of making the starch by which laundries put the fine polish on shirt bosoms, etc.

(15) J. P. P.—It is extremely doubtful if you can rip 1 1/2 pine and hard wood with a 6 or 8 inch saw with any speed or comfort.

(16) E. R. B. asks: Does the bile ever enter the stomach? If so, does it remain long enough to be a cause of biliousness?

inches below. There is normally, therefore, no bile ever in the stomach, but it is abnormally often thrown backward into it, and thus produces irritation and nausea.

(17) J. C. S. asks the materials used in the manufacture of a paint sold under one of the special trade marks used by paint combinations which the trade has on sale.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined with the results stated.

F. B.—The specimen is pyrite, or sulphate of iron. It has no value.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted,

March 2, 1886,

AND EACH BEARING THAT DATE.

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

Table listing inventions with patent numbers, including: Aerial navigation, ship for, L. A. Beardley; Air compressor, hydraulic, W. Thomas; Alarm, electric, J. Wilkins; Amalgamator, J. Wilkins; Animal trap, L. J. Hauserman; Ash pan, J. H. McKeown; Axle lubricator, car, W. H. Herbertson; Back band hook, S. Ward; Baling press, W. S. Bryan; Band tightener, J. Reid; Barrel, wooden, W. M. Allyn; Battery, secondary, J. C. Silver; Bed bottom, spring, M. C. Silver; Bedclothes holder, F. P. Sargent; Bed, folding, Horn & Hopf; Bedstead, cabinet, Cochrane & Kirk; Beehive, W. O. Vincent; Bell, call, W. C. Homan; Belt reel, D. B. Kuhn; Belting, machinery, R. F. M. Chase; Bending block, D. C. & J. G. Mahon; Bicycle lock, A. P. Merrill; Bicycle saddle, F. J. Lillibridge; Billiard chalk holder, W. E. Davis; Binder for papers, temporary, E. L. Shipman; Biscuit cutter, R. J. Hewitt; Blind and wire screen, combination of, F. A. Ransom; Blind slat adjuster, R. M. Martin; Blind, window, H. Hawley; Block, See Bending block. Horse block; Blotting pad and memorandum book, combined, H. C. Whitney; Board, See Siding and roofing board. Wash-board; Boat, See Fisherman's minnow boat; Boller, See Steam boiler; Bolt holder and pipe wrench, combined, A. W. Becker; Book cover and removable leaf, combined, E. W. & J. F. Snow; Boot drier, Brewster & Sherwood; Boot or shoe, rubber, J. S. Owner; Boot or shoe sole, E. S. Harris; Boots or shoes, machine for making box toes and stiffeners for, Riedel & Litch; Bottle stopper, A. Luedemann; Bottle washer, G. J. Fritz; Bottle washing machines, brush holder for, J. M. Hoyt; Box, See Signal or call box. Toy money box; Brake, See Car brake. Vehicle brake; Brake machine, F. Doerfler; Bricks, etc., drying shed for, O. McCoy; Broom holder, A. D. Stansbury; Brush, electrical, J. D. Culp; Bung, barrel, H. Roemhildt; Bung for beer kegs, casks, etc., W. W. Jackson; Bung, venting, F. R. & G. W. Tibbitts; Burner, See Gas burner. Lamp burner; Button fastener, G. W. Prentice; Buttons, making, F. A. Smith, Jr.; Buttons to garments, fastening for attaching, Powell & Nolan; Cabinet, L. F. Gerbing; Candy, apparatus for cooling and heating, T. Burkhard, Jr.; Car brake, P. A. Gambaro; Car brake and starter, J. F. Morell; Car coupling, A. N., Jr. & A. L. Gabel; Car coupling, J. H. Harrington; Car coupling, G. M. Veteto; Car coupling, F. E. Rousseau et al.; Car, motor, R. N. Allen; Car, railway, R. H. Wyman; Car seat recorder, Bywaters & Burke; Car starter, W. H. Johnson; Car, stock, G. D. Burton; Car, stock, G. Grossman; Car wheels, machine for rolling, T. W. Bean; Cars, track sanding apparatus for street, W. T. Butler; Card cutting machine, W. A. Kelsey; Carpet cleaning reel, Miller & McKenna; Carpet cover, F. Sanderson; Carpet sweeping machine, C. L. Travis; Carriage, baby, C. Lyne; Carriage body, J. Delahunty; Carriage curtain fastening, J. G. English; Carriage spring, R. B. Williams; Carrier, See Hay carrier; Cart, dumping, B. McGregor; Cart, road, J. D. Wilson; Cartridge loading machines, wad feed attachment for, O. F. Belcher; Case, See Honey box case; Centrifugal machine, J. Laidlaw; Chain, drive, J. A. Jeffrey; Chair, See Child's chair. Reclining chair; Chart, dress, J. Penley; Check rower, J. C. Butler; Child's chair, F. A. Parker; Chimney cowl, H. F. Seidel; Chuck, brace, J. Chantrell; Churn, L. D. Bunce; Cigars, machine for stamping, L. Grathwol; Clamp, See Floor clamp; Clasp for poultry, game, etc., suspension, Schussler, Jr. & Fredericks; Clipper, hair, S. W. Burwell; Clock, electric alarm, C. Korfhage; Clock striking mechanism, A. Fischer; Clothes line stretching device, F. Schweizer; Clutch, C. S. Scott; Clutch, friction, W. B. Tatro; Coat hanger, M. R. Maxwell; Cock, gas, E. P. Irons; Cockle and grain separator, J. B. Dishmaker; Coffin, J. Maxwell; Cold and manufacture of ice and apparatus therefor, production of, A. Schmitz; Cold storage chamber or refrigerator, G. C. Roberts; Collar, G. N. March; Collar, G. K. Snow; Collar, horse, P. R. Turneure; Colter, rolling, S. W. Ball; Comb, See Curry comb; Compass attachment for maps, J. Adler; Connecting pin, expandible, H. M. Montgomery; Copying roller, J. B. Leckie; Corkscrew, W. Crabb; Corn husker, J. P. Withrow; Corn husking device, N. Evinger; Coupling, See Car coupling; Cowl, See Chimney cowl; Crane, portable window, A. Anderson; Cream separator, W. H. Johnson; Cultivator, F. H. Austin; Cultivator, D. & R. B. Motherwell; Cultivator, cotton, Wilkinson & Curtin; Curtain fixture, G. H. Baer; Curtain pole ring, A. D. Field; Curry comb, T. Gingras; Cut-off valve, J. P. Simmons; Cutter, See Biscuit cutter. Stalk cutter. Strawberry runner cutter. Vegetable cutter. Wire cutter; Damper, stove or range, A. M. Blakesley; Digger, See Potato digger; Dish, soap, A. M. Hayward; Disinfecting device, A. H. Kidney; Display rack, J. A. Miller; Distance registering device for wheeled vehicles, E. S. Brownson; Distilling oil, process of and apparatus for, Norton & Rouse; Door lock, Ackerson & Shy; Door lock, W. Bohannon; Draught regulators, safety apparatus for automobile, C. W. Nason; Drawing and twisting, head for continuous, D. O. Pease; Drier, See Boot drier. Grain drier; Drill, See Fork drill; Drills, machine for clearing twist, J. A. Morton; Electric battery cell, J. W. Carter; Electric current meter, Borel & Paccard; Electric leak alarm for pipes, H. G. Bauman; Electric light fixture, S. Bergmann; Electric lighting circuit, R. Mackie; Electric lighting system, Mackie & McCarty; Electric machine, dynamo, F. Bain; Electric machine regulator, dynamo, N. Tesla; Electric machines, armature for dynamo, F. Bain; Electric machines, circuit connection for dynamo, N. McCarty; Electrical conductor, H. A. Clark; Electrical machine, frictional, A. L. Robbins; Electricity for destroying living organisms in the bodies of slaughtered animals, applying, C. S. Jones et al.; Electroliner, extension, J. T. Robb; Elevator, See Water elevator; Elevator bucket, H. B. Haigh; Elevator safety attachment, H. R. Ferris; Elevator safety device, A. O. Wunnsche; Embroidering machine, Schmitz & Aidom; Engine, See Gas engine. Hydraulic elevator engine. Hydrocarbon engine. Rotary engine. Steam engine; Envelope machines, drying attachment for, E. H. Woodford; Evaporators, apparatus for automatically feeding liquids to, M. C. Barden; Excavating apparatus, odorless, P. F. Dewey; Extension key, J. H. Shaw; Extension screen, adjustable, T. C. Peck; Fabric turning implement, M. A. Rafter; Fabric turning machine, M. F. Connett, Jr.; Fare boxes, money drawer for, W. H. Harrison; Fastener, metallic, G. W. McGill; Faucet, force and drain, F. R. Tibbitts; Feed water heater, J. Mahoney; Feed water heater, O'Brien & Weaver; Fence post, J. Burns; Fence stay, wire, W. C. Gholson; Fences, machine for building wire, W. H. Biegelow; Fertilizer distributor, J. H. & T. Dodds; Fifth wheel anti-rattler, J. Long; File, bill and letter, J. S. Vanhorn; File handle, J. Chantrell; Filing device, bill and letter, J. S. Vanhorn; Filter, centrifugal, R. L. De Lisser; Filtering device for feed water pipes, J. Heath; Fire alarm boxes, attachment for, H. H. Rebeck; Firearm, G. W. Cilley; Fire escape, J. Bien; Fire escape, J. D. Jenkins; Fire extinguisher, hand grenade, A. E. Lytle; Fire extinguisher, prairie, A. W. Bunsey; Fire extinguishing projectile, W. A. Bartlett; Firepot, tinner's, J. Carter; Fisherman's minnow boat, F. W. Ward; Fishing hook and device for capturing fish, Scotland & Cordon; Fishing lines, reel for drying, J. W. Brooks, Jr.; Floor clamp, B. Page; Floor grinding machine, J. B. Harris, Jr.; Flooring, flexible, Adams & Hasson; Food for animals, preparing, C. H. Voigt; Fork drill, C. Snedekum; Frame, See Picture frame; Fruit, flowers, etc., device for picking, J. S. Langhorne; Gas and obtaining ammonia and other products therefrom, purifying coal, C. F. Claus; Gas apparatus, Gogin & Jones; Gas, apparatus for the production of pure sulphurous, F. Randon;