

## RECENTLY PATENTED INVENTIONS.

## Engineering.

## LOCK TO RAISE AND LOWER VESSELS.

—Franklin H. Bullis, Brooklyn, N. Y. This is a lock especially designed for use at the entrance to seaport harbors, and is so constructed that in passing through it the speed of vessels need be but slightly or not at all retarded. There are dikes and embankments at opposite sides of the channel, in which are larger and smaller locks side by side, the two central locks being the larger, and the ends of each lock being closed by transversely movable gates. Each lock is provided with wickets permitting the admission or draining of water to and from the locks without opening the gates.

**FURNACE**—Michael J. Graney, Allegheny, Pa. This furnace has a combustion chamber into which opens a mixing chamber provided with a gas supply near its bottom, a hot air chamber being located under the combustion chamber and connected at its rear end with a cold air inlet. The hot air chamber has in its front a downwardly extending passage leading to the bottom of the mixing chamber. The furnace is designed to be very simple and durable in construction, and to utilize all gases to effect the most complete combustion.

## Railway Appliances.

## CAR COUPLING.—Daniel Collen, In-

wood, Canada. This is a strong and simple coupler which couples automatically as the cars come together, and comprises a gravity locking device and swinging knuckle, a spherical body in a chamber in the coupling head automatically moving beneath the locking device after it is raised, and being also adapted to move the knuckle to an open position when the locking device is released.

**TRAIN PIPE CONNECTION.**—Harrison Reed, Logansport, Ind. According to this improvement a depending support is attached to the end of the car, with two coupling head sections and a pipe section projecting from each one, the pipe and head sections being arranged one above the other, while there are two vertically movable crossheads on the support, and a lifting lever. The invention affords reliable means for automatically joining the steam or air pipes on cars, being readily adjustable to compensate for varying heights of car bodies from the track.

## Electrical.

## BRUSH FOR DYNAMOS AND MOTORS.—

Friedrich W. Kreinberg, Eisey, Prussia. Two kinds of brush are provided by this invention, one consisting of a conducting wire bundle, incased or hermetically closed by aluminum or similar soft material until used, another form of brush consisting of bundles of fine wires braided together and saturated with a lubricant, a wrapping of wire cloth surrounding the casing.

**RAILWAY SIGNAL SYSTEM.**—Joseph Irwin, Omaha, Neb. This is a sectional signal system designed to enable an engineer having a train on a section to instantly determine when a train enters the section. The track rails at each station of the system are divided into pairs of insulated sections, two of the pairs having one of their members grounded and arranged to be connected by longitudinal bridging, in combination with a signal device, line wire and battery, forming three separate circuits, one setting the danger signal at that station in front, the other obliterating the danger signal at the rear, and the other setting rearwardly facing danger signals of intermediate stations.

## Mechanical.

**DIE FOR DROP PRESSES.**—William H. and William J. Clark, Salem, Ohio. This invention provides for an extremely strong construction of the female die, the body of which is made of tough cast metal and is provided with recesses or mortises adapted to receive a shaping block section made of forged or cast steel or chilled iron. Between the shaping block section and the body of the die is interposed a cushion of Babbitt, zinc, or other metal, so that the blocks will not crack under the impact of the die.

**WIRE GLASS MANUFACTURE.**—Carl S. Weber, New York City. According to this improvement a carriage is arranged to be moved over the table on which is poured the molten glass to form a sheet, a wire feed and pressing roller being journaled in the front part of the carriage, and a pressing roller in the rear of the feed, a finishing roller being journaled in a frame pivoted on the carriage in the rear. The wire netting is fed to the glass and simultaneously subjected to a rolling pressure whereby it is pressed completely beneath the surface.

## Agricultural.

**CORN HARVESTER.**—Wilson W. Smith, Fritchton, Ind. This machine, styled by the inventor the "eclipse harvester," is adapted to be drawn between two rows of corn to cut and deposit it in piles ready to be tied into bundles. The harvester car carries the bundles from shock to shock, and the attendant has to walk only eight hills to set up a shock. The machine is of simple and inexpensive construction and requires but one operator.

**COTTON HARVESTER.**—Clarence W. Edgar, Toledo, Ohio. This is a machine in which a rotary gathering device takes the cotton from the bolls, aided by a pneumatic system, by which the cotton is conveyed to a receiver. The gatherers are composed of convergent rotary spindles, a parallel suction tube inclosing one side of the peripheries of the spindles, which have a surface of card clothing. The slowly revolving picker spindles pass by the sides of the stalks as the machine is drawn along, entering among the limbs, allowing the pickers opportunity to gather the open cotton.

**STRAW STACKER.**—Peter Knapp, assigned to John Ten Barge, St. James, Ind. This is an improvement in machines for stacking hay or straw by means of a pneumatic tube, the invention providing a low-lying derrick or hoisting apparatus which may be readily used in barns and other buildings, the pneumatic

tube being vertically adjustable and operated laterally by power, and its sweep controlled, and an automatically operated reversing mechanism being provided. The machine is strongly made and inexpensive.

## Miscellaneous.

**CHOKER FOR GUNS.**—Randolph P. Cory, St. Louis, Mo. This is a separate attachable choke, which may be used or removed at pleasure. The choke section has a band portion which fits over the muzzle of the gun, and on this portion are studs engaged by eyes on yoke arms of a latching device which engages a catch fixed to the gun barrel. The yoke arms may be sprung off the studs to permit the use of the same yoke with different choke sections, several of which may be carried in the pocket.

**BOTTLE REFILLING PREVENTION.**—John J. Walsh, Yonkers, N. Y. This inventor provides a cap whereby the mouth of a bottle may be sealed without the aid of a cork, permitting the contents to be poured out through the cap, although the cap prevents the refilling of the bottle. The cap has a duct at one side and apertures to a main chamber in which is a gravity valve, a movable weight being located in the cap over the valve, while a temporary seal locks the valve in closed position.

**CARPET STRETCHER.**—Courtland A. Chamberlain, Canton, N. Y. This is a simple device by means of which a carpet may be stretched and held in stretched position while being tacked or nailed. A plate or board is provided with prongs to engage the carpet, and a standard on which is pivoted a lever is flexibly connected with and adapted to move the plate to stretch the carpet.

**SASH FASTENER.**—George W. Gardner and Lewis Appleton, Philadelphia, Pa. A bead of the window frame, according to this improvement, is provided with a rack, and on the bottom rail of the sash, at the edge near the rack, is a casing in which is a bolt movable to engage the rack, the bolt being actuated by a rod which extends to a thumb plate and handle centrally located on the bottom rail. The sash may be raised and lowered, or locked in any desired position, by taking hold of the handle and pressing upon the thumb plate, using only one hand.

**BEDDING VENTILATOR.**—Allan Fraser, Brooklyn, N. Y. This device consists of a tubular body with flanged outer end and a cap fitting snugly on its inner end, the bottom of the cap being open, and a perforated section being held in the body. The device is adapted to be pressed into and be self-fastening in mattresses, beds, bolsters, etc., to effect the thorough ventilation of the filling, prevent its usual tendency to pack and adhere together, maintaining it sweet and wholesome and keeping it elastic.

**FAN.**—Max Rubin, Brooklyn, N. Y. This invention provides an improvement in pocket fans in which the body of the fan is folded between receiving arms when not in use. By means of the improvement the receiving and retaining arms are held rigidly locked when the fan is opened, having the same solidity as though the arms were integral, the retaining device acting to securely hold the fan in closed or open position. The fan is also held more closely folded than possible heretofore, the bulk of the handle being decreased.

**COFFEE POT.**—Herbert Nicholson, Red Lodge, Montana. This invention is for a perforated receptacle to hold the coffee or tea within the pot in such manner as to insure its thorough saturation and the obtaining therefrom of the greatest flavor and strength, while the holder is removable without opening the lid proper, thus taking out the coffee grounds or tea dregs without emptying the pot. The pot, with its holder and screening devices, may be readily cleaned.

**SIRUP PITCHER.**—Harry Notice, Hyde Park, North Dakota. This is an improvement in pitchers which have a channel or way outside the pouring lip to receive the drippings and return them to the pitcher. A removable shell, forming a passageway to receive the drippings, is inserted in the neck, and there are two covers, one for the shell and one for the pitcher neck, the cover for the shell being opened and closed by the movement of the cover for the pitcher neck. The construction is simple, preventing all entry of dust, etc., and keeping the sirup pure and clean.

**AUTOMATIC FIRE EXTINGUISHER.**—Edward Livingston, New Orleans, La. This is an improvement on a formerly patented invention of the same inventor, and provides for pipes near the ceilings in buildings, each of the pipes having one or more fusion valves arranged to open when the temperature reaches about 160°, when fire-extinguishing fluid under pressure is discharged. Connected with the distributing pipe is a vessel connected with a supply tank, a liquid sealed gravity valve in the vessel controlling the supply of a gas-generating substance.

**SURGICAL OPERATING TABLE.**—Richard Kny, Brooklyn, N. Y. According to this improvement a longitudinally slotted table top is loosely connected to a frame and adjustable to various inclinations, a gutter being secured to the top to move therewith. The table is arranged to be easily kept clean, and to permit the operator or nurse to conveniently manage the various parts, to move a patient into any desired position.

**VETERINARY SPECULUM.**—Michael McNally, St. Louis, Mo. This is an improvement in implements for holding open the jaws of horses, etc., for examining the throat or administering medicine, and comprises pivoted sections having bits adapted to enter and bear on the jaws, the frame having a convenient locking device for holding its sections rigidly in position after they have been adjusted.

## Designs.

**DISPLAY STAND.**—Ernest Greene, New York City. This stand comprises a polygonal casing with superposed panels defined by ornamental framework, there being a dome of ornamental metal work and an ornamental finial.

**BRACKET.**—Dewitt C. Bowen, Kansas City, Mo. This is a double bracket of substantially X shape, the members being curved and terminating in horizontal surfaces at top and bottom.

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## Notes &amp; Queries

## HINTS TO CORRESPONDENTS.

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(6758) G. C. G. asks how to drill or bore

a glass shade. A. To drill a quarter inch hole in a glass shade, make a hole in a piece of wood or metal of the size that you desire to drill in the glass. Fasten it with beeswax upon the glass for a guide. A piece of brass or copper tubing, quite thin, is supplied with emery (No. 100) and water and twirled between fingers, or with a bow string. This will cut a hole in a few minutes. You can feed the emery and water a little at a time through the tube. The sketch will give an idea as to the principle.

(6759) G. G. asks: What kind of glue or cement can I use that will dry quickly and very hard and tough when thickly applied to several sheets of paper? I have tried Le Page's glue and Major's cement. The latter dries hard enough, but not quick enough. I wish to use it on an ordinary platen printing press for embossing purposes. A. Ordinary flour paste is usually used for the purpose you mention. A small percentage of good glue added to the paste might improve it.

(6760) L. S. asks: 1. How many and what kind of battery will it take to each 6 candle power incandescent electric lamp to give a steady and bright light for six consecutive hours each night, and, also, how often will the batteries need refilling? A. Use 5 cells secondary battery. Address the Electric Storage Battery Company, Drexel Building, Philadelphia, Pa., for same. 2. What kind of battery will suit best for an induction coil? Can you give me a receipt to prepare carbon paper? A. Melt 10 parts lard, 1 part of wax, and mix with a sufficient quantity of fine lampblack. Saturate unglazed paper with this, remove excess and press.

(6761) X Ray says: 1. I desire to charge a series of Leyden jars with a large induction coil, and when charged, wish to employ the stored current to work a second induction coil. Should the second or discharge coil be in the circuit while the series are being charged, or if put in afterward, will the current discharge in the manner I anticipate, or in one large spark? A. It must be out of circuit. The discharge will appear as a single spark. Of course, it will really be oscillatory. 2. Can you give me the formula for substances that possess fluorescent qualities? A. See our SUPPLEMENT, Nos. 318 and 351, and for luminous paint, Nos. 229, 497, 922, and 939.

3. How can I determine when the Leyden jars above referred to are fully charged? A. Use a pith ball electro-scope, with a scale to measure divergence of the balls. Determine by experiment the divergence corresponding to the maximum sparking distance.

(6762) E. R. L. asks: 1. Have articles been published in SCIENTIFIC AMERICAN or SCIENTIFIC AMERICAN SUPPLEMENT concerning telephones? Method of wiring wanted most. If so, what numbers? A. Yes; very numerous and interesting ones. See our SUPPLEMENT catalogue and consult the query printed below. 2. Articles about simple calculations in electricity, What numbers? A. For these we refer you to Sloane's "Arithmetic of Electricity," which we can supply for \$1 by mail. 3. Can back numbers of SCIENTIFIC AMERICAN and SCIENTIFIC AMERICAN SUPPLEMENT be obtained? A. All of the SUPPLEMENTS and the SCIENTIFIC AMERICAN for a number of years back, at 10 cents each, by mail.

(6763) H. M. writes: I am in want of a telephone, good for a distance of 400 or 500 feet. I should prefer a simple one which does not require a battery. Please give me information so I can procure circulars and descriptive catalogues. A. We refer you to our SUPPLEMENT, Nos. 142, 163, 191, 425, 500, 501, 502, 508, 856, 966, and others, for telephones.

(6764) W. W. M. asks: 1. What objections are there, if any, to a caustic potash battery? A. Low potential. 2. How does its economy compare with that of other batteries? A. Very well. 3. Can the caustic potash solution be made from wood ash lye? How? A. Yes; by treating with caustic lime, settling, and decanting. Better use caustic soda. 4. How can one tell when the solution is down to saturation? A. Weigh the caustic soda, so as to get a 30 per cent solution.

(6765) M. N. asks: Would you be so kind as to answer in your Notes and Queries whether the motor (SUPPLEMENT, No. 761) will stand 110 volts if the field is wound with No. 27 wire and the armature with No. 30; and will it stand 220 volts if the field is wound with No. 30 and the armature with No. 33 wire? A. A motor is made to stand a current, not merely by the size of the wire, but by the amount of wire of the specified size, and by the counter E.M.F. of the armature. Windings must be differently calculated according to whether a motor is shunt or direct wound.

(6766) W. G. M. asks: Can the light from a Crookes tube be seen? If so, why is it called non-luminous? I don't see how it could be light without being luminous, or how it could cast a shadow to take a picture. A. The tube gives fluorescent light, but, in X ray photography, rays of unknown nature and absolutely invisible and non-illuminating are employed. We suggest that you refer to our SUPPLEMENT, Nos. 181, 189, 243, 244, 792, 795, 905, 940, and 1050, and to the recent numbers of the SCIENTIFIC AMERICAN, especially those of February 15 and 22 and March 7.

(6767) G. G. writes: I have two copper (insulated) wires stretched parallel to each other and about 4 inches apart, from my house to the barn, which make quite loud sounds on still, cold nights. Can you tell me cause or the theory of the sound? A. It is produced by the wind. "Antihums," or India rubber packed attachments, are sold, designed to prevent the sound.

(6768) E. D. asks: Could the dynamo described in SUPPLEMENT, No. 161, be run as a motor, power being supplied from a battery? If so, could the armature be made of sheet iron punchings? A. It can be run as a motor. The drum armature for it is described in our SUPPLEMENT, No. 599. It is better than the two-pole armature.

(6769) Ralph asks the best steel to use in building a small magneto-generator, and the process to go through to get the best results. A. Use good tool steel. It is better to buy your magnets ready made. They are sold for your purpose as "machine magnets."

(6770) K. G. G. writes: 1. I am in a position to have the use of vacuum pump and sulphuric acid. How should I connect up the necessary apparatus to freeze water? A. Simply connect your flask to the system, and maintain a vacuum above the water. Wrap the flask up in a thick non-conducting covering. 2. What is meant by the term monocyclic system of electrical distribution? How does this system differ from the ordinary direct current system? What is the nature of the current? A. A simple alternating current, going first in one direction and then in another. 3. How can I test clay to know what percentage of aluminum it contains? A. By a chemical analysis.

(6771) C. W. E. asks: 1. Please indicate the pronunciation of Roentgen. A. Approximately, Runtgen, the g hard. 2. Our school building is heated by the hot air system. From the registers on many days an electric spark may be obtained; also from the metal portions of the seats or chairs, and sometimes when two persons clasp hands they feel an electric shock. Will you explain the cause of the same? A. The air is so dry that static electric excitation is easily maintained. The indications are that provision should be made for moistening the air. Your hot air system seems defective in that regard.

(6772) W. C. M. asks: Could you tell me how to wind the 8 light dynamo for 110 volts? Also, if I could do it by winding the armature different, but leaving fields the same (wound with No. 16 gage)? A. You could approximate to your requirements by using wire about one-third smaller in cross area on the field and armature. To change one and not the other would give poor results. Sloane's "Arithmetic of Electricity," \$1, by mail, gives such calculations.

(6773) J. E. P. asks whether he can remagnetize the permanent magnets to a telephone magneto that have lost their magnetism by the magneto having been run at too high speed for a long period. Can it be done by a battery current? Will the magnets have to be retempered? They still retain some magnetism, but not enough. A. You can remagnetize the magnets with a coil and strong current, or, perhaps, by simply touching to the poles of a dynamo field, and drawing away slowly, without axial change. Retempering is not needed.

(6774) M. J. B. asks: Can a 3 to 5 horse power motor described in SUPPLEMENT be wound to run