

### RECENTLY PATENTED INVENTIONS. Electrical Devices.

**BATTERY-PLATE.**—G. B. RINEHART, Ashland, Wis. The invention relates to battery plates, the more particular object being to produce a type of plate suitable for use in storage batteries, and perhaps in some instances in dry batteries, the arrangement of the plate being such as to hold the active material in place.

**ELECTRIC TRAP FOR RATS, ETC.**—J. T. NORRIS, Troy, N. C. In this case the invention relates to improvements in traps for the extermination of rats and other vermin and has for its object to produce a simple, cheap and efficient means of ridding houses of rats and other pests, which can be easily handled and moved about as necessity requires.

**TROLLEY.**—E. H. GREEN, Emeryville, Cal. The trolley shown in this patent is provided with a contact roller, and in connection with the roller the inventor provides a guard at each end, the guards being given a downward and forward curve, the arrangement being such that either cross wires or wires running crosswise with the conductor are engaged with facility so that the roller is lifted and prevented from damaging the wires.

### Of Interest to Farmers.

**MANURE PULVERIZER AND LOADER.**—J. N. FROST, Arlington, Mass. In a general way the invention is carried out by the provision of a carriage on which the pulverizing mechanism is mounted. This mechanism is fed by an elevator arranged at the rear end of the carriage, and the mechanism discharges upon a conveyor leading to one side of the carriage, the mechanism, elevator and apron all being driven from a motor mounted on the carriage.

**COTTON-CLEANER.**—A. L. TREESE, Jennings, Okla. This invention concerns itself especially with providing means for ejecting the treated cotton from the device; the invention further provides means for treating the cotton with the boll to remove the boll and dirt, and it is also adapted for treating the cotton without the boll when it is simply necessary to clean the cotton.

**DOUBLE-RAKE.**—R. M. KENNEY, Clinton, Okla. The more particular purpose here is to provide a vehicle body with two sets of rake teeth operated to some extent independently, and to further provide the body with a turntable whereby the horses used for drawing the body may be turned around without materially disturbing the relative positions of the rake members, so that one of the rake members may be filled and afterward practically turned to the rear in order to allow the other one to be filled.

**BEATER.**—H. C. JARR, Plummer, Minn. The invention has reference to threshing machine beaters, and particularly to a beater comprising parts rotatable about different axes so that one is eccentric with respect to the other, and a plurality of adjustable teeth carried by one of the parts and controlled by the other so that the teeth have a constant angularity when the parts rotate, that is, the teeth are always at the same angle.

**HARROW ATTACHMENT FOR CULTIVATORS.**—J. F. BARBEE, Grand Island, Neb. The device is capable of being applied to any ordinary cultivator and be readily applied to or removed from the cultivator and is suitable for use in working a variety of crops such as corn in rows or hills, oats and other small grain, and can be used in planting as well as in cultivating, as it assists in covering the seed and pulverizing the soil.

**HARROW ATTACHMENT FOR PLOWS.**—J. F. BARBEE, Grand Island, Neb. The particular feature is the manner in which the device is attached to the frame of the plow or other implement, whereby side draft is avoided. The harrow is attached so as to follow the mold board of the plow closely and so act on the soil at the best time, that is immediately after it is turned. By means of levers the slant of the harrow teeth and also the relation of the harrow frame to the plow frame may be varied to suit the work or other conditions.

### Of General Interest.

**PROCESS FOR MOLDING TOOTH-CROWNS AND THE LIKE.**—S. SHIMURA and Y. MINAGAWA, No. 20 Gofuku-cho, Nihombashi-ku, Tokyo, Japan. This invention has reference to new and useful improvements in processes for use in molding tooth-crowns and the like and the object consists of obtaining a perfect occlusion, securing thereby a permanency of the cusps in crowns and bridges and also obtaining a perfect and easy fit of the gold inlays.

**PIANO-PEDAL MOUNTING.**—H. SANDNER, Union Hill, N. J. The intention in this case is to produce a mounting which will be very simple in construction, and which will operate effectively to support the pedal pivotally in such a way that it will move very freely, yet so that it will be held securely and adjustably.

**AIR-SHIP.**—W. RUMBLE, New York, N. Y. The purpose of the inventor is to provide a casing surrounding the propeller and in connection with the car, having means against which the current generated by the propeller acts, tending to revolve the casing, and the car to which it is connected, in the same direction as the propeller, thus compensating

for the reactionary force developed in driving the propeller.

**PACKING-BOX.**—M. H. LONGFELLOW, Portsmouth, Ohio. The purpose here is to provide a knock-down or collapsible metal box constructed and arranged so that its parts can be rapidly and easily assembled or knocked down and compactly bundled for transit to and from distant places, and so that it can be made as light as possible for protection to the goods in transit.

**TILE.**—A. S. JANIN, New York, N. Y. The invention pertains to tiles for walls, floors and similar purposes, and its aim is to provide a tile having a symmetrically curved outline arranged so that similar tiles can be readily interlocked to prevent displacement in any direction and to present a highly ornamental surface.

**WELL-PACKER.**—W. H. KESSELMAN and L. P. KESSELMAN, Parkersburg, W. Va. The invention relates to well packers and more particularly to packers used in connection with oil, gas, and artesian wells, for use in preventing the flow of fluid of any kind into the well from an opening effecting communication between the well and a pocket or cave adjacent thereto.

**PAPER-ROLL CARRIER, GUIDE, AND CUTTER.**—C. R. HORTCHKISS, Water Valley, Miss. The object in this instance is to provide a device which affords a convenient support for a paper roll, permits a detachment thereof from said support, provides a guide for the free end of the paper, means for moving the end portion beneath the guide, and means for cutting the portion of paper that is projected at the end of the guide from the portion that is held beneath the guide.

**VENTILATOR.**—R. F. HUNTER, Bellefonte, Pa. The ventilator is self-regulating, and will admit an ordinary current of air, but prevents the entrance of strong currents. An ordinary current of air passing in an upward direction will have no effect on the damper, but should a stronger current take place, the damper will be swung into a position depending upon the strength of said current, a strong one completely closing the damper. Means are provided for diminishing the circulation of dust.

**SOLIDIFYING PROCESS FOR INGOTS.**—E. P. CUINAT, Steel Works, Unieux, Loire, France. This process is for use in solidifying ingots having a fluid interior which consists in spraying the side walls thereof to produce a sudden cooling, and to form a hard external shell, and simultaneously pressing said shell inwardly upon the soft interior to weld together the inner parts of the opposing side walls at a high temperature.

**DENTAL IMPLEMENT.**—C. C. MURRAY, Huntingdon, Tenn. Mr. Murray's invention is an improved implement or tool for use in inlay work. In carrying out the invention he employs a hollow conical metal body having a hole in the apex for reception of the pin which is to hold the wax model, and the body of the cone is provided with a handle and a clasp adapted to secure the pin detachably.

**TUBE.**—P. J. GROUVELLE, E. H. ARQUEMBOURG, and L. J. JORET, 71 Rue du Moulin Vert, Paris, France. The invention comprises a tube having gradually decreased capacity from its ends toward its center, the sides of the tube having depressions, the cross sectional area of which gradually increases toward their longitudinal center. The mode of manufacture consists in producing the contracted or minimum section of the square tube by inwardly stamping the face of this tube according to a predetermined shape.

**CHARGE FOR USE IN TREATING IRON AND STEEL.**—M. L. BRICKER, Cleveland, Ohio. More particularly the invention involves a novel charge or flux designed to be added to the molten iron or steel, and which will serve to increase its fluidity, drive off sulfur and other impurities, and to render castings made from the iron or steel stronger, of closer grain and without blow-holes often occurring.

**BUCKLE.**—J. F. YOUNG and F. A. LIBBY, Morristown, N. J. This invention is an improvement in buckles, more especially designed for use in the traces of harness, heavy straps, and other stiff materials in connection with which buckles are used. It is often difficult to withdraw the free end of a strap of this nature from the keeper and disengage it from the tongue of the buckle in view of its small flexibility. The improvement overcomes this difficulty.

**FILE-WRAPPER.**—W. R. HARRIS, Louisville, Ky. The invention is particularly useful in connection with vertical filing systems. It relates to wrappers which comprise backs and covers, between which the papers to be filed can be inserted, and which have removable, centrally-disposed means for fastening the papers to be filed in position. The wrapper prevents the loss of the papers to be filed, keeps them smooth and in good condition, and papers can be filed in it with rapidity and ease. It is of large capacity and is well adapted for use in connection with vertical filing systems.

**THAWING-POINT.**—A. H. HAKES, Fairbanks, District of Alaska. Means are provided in this invention to force the free end of a hose down tightly into contact with the side of the thawing point to make a steam-tight joint. The point of the thawing-point is inserted in the frozen gravel, driven into the gravel by blows on the striking head, steam

meanwhile being admitted through the hose and the opening to the point of the thawing point. After thawing the clamps may be removed from the point and said point left in the gravel until dug out.

**SAFETY-RAZOR.**—J. H. FLAGG, New York, N. Y. The special objects here are to provide a form of handle, whereby the razor may be more firmly held in any desired position: to provide an improved form of lather retainer disposed adjacent the blade but spaced therefrom, and to provide means for supporting the blade and holding it in place.

**CAN ATTACHMENT.**—R. Dow, Mansfield, Ohio. The invention has reference to means for opening tin cans and other receptacles, and has for its object to provide a novel means for opening sealed cans, which will not require any instrument of peculiar construction by which it may be operated.

### Hardware.

**SQUARE.**—L. V. SHEPHERD, Los Angeles, Cal. In this square the legs or members are separably connected with each other to allow carpenters, machinists and other mechanics using the square to readily employ the same for its legitimate purposes, and to permit of detaching the members for carrying the same conveniently in a tool chest or the like. The invention is such as shown and described in Letters Patent of the U. S., formerly granted to Mr. Shepherd.

**MEASURING-LINE.**—G. H. PRIER, New York, N. Y. The purpose here is the provision of eyelets or openings at points along the length of the tape or line, said openings comprising end or outer openings and intermediate openings, the latter being arranged in two pairs, with the openings of each pair spaced apart a distance sufficient to permit their being brought into register and forming the tape, when the end openings are in register, into a triangle, ordinarily a right-angle triangle.

**HOSE-COUPLING.**—B. MORGAN, Newport, R. I. The invention has reference to fastening devices in which a band is employed for encircling the parts to be fastened, and having a shoe at one end thereof and threaded for the reception of a nut at the opposite end thereof, said nut engaging with the shoe to hold the ends of the bands together. It is adapted for use in connection with bodies of various diameters.

**PLUMB-BOB AND CHALK-LINE HOLDER.**—W. N. CAVILEER, San Francisco, Cal. The aim of the improvement is to produce a device having means for operating the reel which is contained in the body of the bob, and upon which the cord winds, and to provide an arrangement whereby the part which rotates the reel may be used as a fastener for the line or cord.

### Heating and Lighting.

**PRISM FOR ELECTRIC LAMPS.**—J. C. ZUBLI, Seattle, Wash. The invention relates to electric lamps used for decorating and illuminating purposes for signs and the like, and the object is to provide a prism for electric lamps, arranged to utilize the rays of light of the electric lamp for giving a brilliant effect.

**GAS-PRODUCER.**—P. G. SCHMIDT, Tumwater, Wash. The object of the inventor is to produce an apparatus wherein the depth of the fuel in the decomposing zone of the producer may be regulated, while retaining the same relation between the decomposing zone and the distillation zone and without interrupting the operation of the producer.

**ELECTRIC-LAMP SOCKET.**—V. E. EXTROM and C. H. GRUNDY, Tomahawk, Wis. The purpose of the invention is to provide a construction for a socket, which will serve to control the flow of current to two lamps by the turning movement of a single key, and thus effect the lighting of either one of two lamps, light both lamps simultaneously or extinguish them together or successively as desired.

**REGULATOR FOR PRODUCERS.**—P. G. SCHMIDT, Tumwater, Wash. In this patent the improvement is in regulators for producers and is especially adapted for use in gas producers, and is designed to automatically regulate the admission of air, water, steam, and inert gas to the producer and to properly proportion the mixture.

**GAS-PRODUCER.**—P. G. SCHMIDT, Tumwater, Wash. The object of the present invention is to provide an apparatus to be used in gas producers, to remove the products of distillation from the parts of the producer not in the direct line of draft and outside of the zone of decomposition, and to conduct the products into and through such zone.

**BURNER.**—G. COSMOVICI, Bucharest, Roumania. In this instance the invention relates to burners for use in burning fuels, and more especially crude petroleum and its residues in furnaces whereby both the fuel and the sucking medium (steam, air, or the like) are supplied by two superposed chambers.

### Household Utilities.

**HAT AND COAT RACK.**—E. L. PITTS, Yuma, Ariz. Ter. By varying the combination of the guide slots the key of one lock will not operate any other and by changing the position, number and grouping of the slots, com-

binations can be run to hundreds. Lock and key are correspondingly lettered or numbered so that when one hangs a hat, coat, umbrella, etc., on the hook and pulls down the arm he can remove the key and keep it as a check. In removing garments insert the key, push back the main plate and raise the arm. The key will then be held in the lock until the arm is again adjusted to the locked position.

**FLOOR-OILER.**—A. WEBER, New York, N. Y. One purpose of the inventor is to provide a device particularly adapted for oiling floors, so constructed that when a valve is opened controlling the outlet of oil from a reservoir that is a portion of the device, the oil flowing from the reservoir will be distributed to an absorbent rubber which in turn evenly distributes the oil over the floor surface.

**AUTOMATIC ASH-SIFTER.**—E. J. DEEGAN, New York, N. Y. The invention is an ash sifter of simple and convenient form, wherein the nuisance due to flying ash dust is abated so far as practicable, and in which a large proportion of coal and cinders remaining in the ash is extracted by the automatic action of the device.

**PAN-LIFTER.**—D. S. GOSSETT, Plover, Iowa. This lifter is such as used in removing hot pans or the like from a cooking range. The inventor's object is to provide a device very simple in construction and which can be quickly applied and removed, and which operates to hold itself in engagement with the pan after having been applied.

**BALL-COCK.**—F. CLARK, New York, N. Y. In this patent the invention has reference to ball cocks such as are used in connection with flush tanks. The object of the improvement is to provide a construction which will enable the valve or cock to operate effectively and substantially noiselessly.

### Machines and Mechanical Devices.

**AUTOMATIC REFILLING APPARATUS FOR PRESSURE-TANKS.**—T. P. FORD and T. B. FORD, New York, N. Y. The invention relates to sprinkling systems for buildings, and its object is to provide an automatic refilling apparatus for pressure tanks, arranged to automatically keep the overhead water tank supplied with water, and to maintain a predetermined pressure on the water in the tank.

**CALCULATING DEVICE.**—S. B. LAMB, St. Louis, Mo. The invention pertains to devices particularly adapted for quickly and accurately ascertaining the amount of wages or amounts to be paid to employees, and where the scale of wages and the amount of time of employment varies. It can be readily used in connection with time sheets, or a timekeeper's book.

**LET-OFF MOTION FOR LOOMS.**—H. HERZBERG, New York, N. Y. The purpose of the invention is to provide an effective and durable tension device readily applicable to the head of the warp beam of any loom, and which can be quickly and conveniently set to regulate the rapidity at which the warp thread shall leave the warp beam.

**CROWN FOR THE WINDING-STEMS OF WATCHES.**—H. AXTELL, Berkeley, Cal. The object of the inventor is to provide details of construction for the crown and connecting portions of the winding stem, which will reliably indicate when the main spring of the watch is wound up, and prevent breaking of said spring or injuring the winding gears.

**LATHE.**—A. SCHLESINGER, Decd., H. SCHLESINGER, Administrator, Werdohl, Germany. In this patent the invention has for its object a lathe in which two oppositely situated tools or groups of tools become operative alternately upon the forward and rearward movement of the lathe saddle and upon the alternate right and left-hand rotation of the spindle.

**CUTTER AND SCORER.**—S. M. LANGSTON, Camden, N. J. This is an attachment for machines adapted for use in subdividing cardboard, strawboard, or the like, or in providing the same with weakened lines, whereby it may be folded readily. The invention relates more particularly to that type of attachment in which there is employed a clamping block adapted to be secured to the machine, a frame adjustably secured to the clamping block, and a cutting or scoring disk or wheel carried by the frame.

**TORPEDO-LAUNCHING TUBE.**—A. E. JONES, Fiume, Austria-Hungary. In the present patent the invention has reference to a safety device for use in launching torpedoes and has for its object to simplify the manipulation of the tube, this being reduced to the opening and the closing of the breech and to acting upon the firing handle.

**GLASS MACHINE AND PROCESS.**—E. L. HEINTZ, Coffeyville, Kan. The invention relates to the art of glass making, and the object is to produce a process and apparatus by means of which a glass sheet may be drawn from a mass of molten glass in such a way that the smoothness and uniformity of the sheet of glass will be preserved throughout its entire area.

**TYPE-CHECKER.**—W. H. KOLVENBACH, New York, N. Y. In the present patent the invention has reference to type-checkers, the more particular object being to produce a device somewhat similar in its action to a

typewriter, but used for the special purpose of making out checks and the like, and of preserving a record of the same.

**PRINTING-PRESS FOR SIMULTANEOUS PRINTING WITH DIFFERENT COLORS.**—C. A. LINDMAN, Södergatan 28, Helsingborg, Sweden. The invention refers to a device for printing-presses of the kind for use in printing with different colors at one impression. It is especially intended for rotating presses such as are employed for printing newspapers, and by the use of the invention it is possible, in a simple manner, to insert colored, and therefore particularly conspicuous, advertisements or notices in any part of the newspaper.

**SOUND-REPRODUCER.**—R. B. SMITH, New York, N. Y. The objects in this case are: To keep the stylus levers true in relation to the record grooves; to mount the stylus levers upon universal joints the axes of which are disposed in different planes crossing each other in a manner favorable for correct movements of the stylus levers; a lessening of the friction of the stylus levers in their respective mountings; and, to simplify the construction and improve the general efficiency of the same.

**ARTIFICIAL HAND.**—A. F. NELSON, Renton, Wash. Specifically, this invention relates to an artificial hand having a frame comprising an upper arm sleeve or section, and a forearm sleeve or section to which is attached a hand, including both fingers and a thumb together with mechanism controlled by the relative movements of the forearm and the upper arm, for contracting and releasing the fingers and the thumb.

**SLICING-MACHINE.**—J. F. NELSEN, Milwaukee, Wis. The invention pertains more especially to slicing machines for use in slicing meat or the like, which is constructed to be manually operated and which has a table for use in receiving the meat and a cutter slidably arranged in a frame adjacent to one side of the table and adjustable to vary the thickness of the slices.

**PHOTO-EXPOSURE METER.**—S. PRATT, Pasadena, Cal. In the present patent the invention has reference to instruments for use in measuring the degree of exposure to light, for instance, in photography, the more particular purpose being to provide a number of uses and involving a minimum of mechanical parts.

**COMBINATION-LOCK.**—C. H. COHN, New York, N. Y. The lock is readily operated by throwing the bolt and having improved means for holding the bolt in its locked or unlocked position. The case of the lock containing the lock mechanism may be readily removed and replaced in position and in connection with the operating members of the knob which controls the operation of the lock.

**Prime Movers and Their Accessories.**

**ROTARY ENGINE.**—A. J. CHARLTON, Bennett, Iowa. This invention is more particularly intended for rotary internal combustion engines. The inventor seeks to improve the form of the rotor and coating swinging vanes with corresponding casing or cylinder. A gasoline tank connects with an air compressing pump to supply the air for the explosion mixture and is operated by an eccentric or the like on the engine shaft.

**ROTARY ENGINE.**—F. M. WHITMAN, Tucson, Ariz. Ter. The object of this invention is the provision of a rotary engine arranged to permit convenient reversing and to utilize the motive agent to the fullest advantage. It is not liable to easily get out of order, and can be readily reversed at any time by the operator simply manipulating a hand-lever.

**ROTARY ENGINE.**—H. C. SCHAEFER, El Paso, Texas. More particularly the invention refers to that type of engine in which there is provided an outer casing or cylinder, and an inner rotatable body eccentrically mounted in respect thereto, and having a sliding blade held in engagement or closely adjacent to the inner surface of the casing or cylinder.

**MOTOR.**—J. SCHROEDER, Davenport, Iowa. The motor embodies in its construction an oscillatory cylinder provided with a working piston, and having valve-controlled means for use in alternately admitting and exhausting the motive fluid to and from the cylinder at opposite sides of the piston, the valve being preferably actuated from the piston through the usual driving by a segmental gear in mesh with a pinion fixed to the valve and provided with a radial arm through which a valve-rod is slidable, having stop collars.

**TURBINE.**—A. PETTICORE, Sedro Woolley, Wash. The aim of the invention is to provide improvements in the means for controlling the escape of the fluid, and also in the means whereby the fluid after impacting at high pressure with one rotor may flow through a second nozzle in a partition plate to impact with a second or low pressure rotor.

**ENGINE.**—R. J. A. PRINCE and J. N. PRINCE, St. Boniface, Manitoba, Canada. The purpose of the invention is to produce a type of engine in which a plurality of pistons are movable relative to each other in a single cylinder, for the purpose of applying power to more than one point upon the shaft, thus effecting an economical use of the expansive medium, avoiding excessive lost motion and attaining many advantages in construction and operation.

**Pertaining to Recreation.**

**GAME APPARATUS.**—J. BAUST, New York, N. Y. The construction comprises two members, one fixed, the other supported to axially turn, each having ring-supporting pins normally projecting toward the pins of the other member, with the pins of the fixed member arranged for the carrying of rings preparatory to their passage to the turning member; pins arranged below the members and means for holding the turning member in normal position adapted to be overcome by the weight of the rings and deposit the same on the last-mentioned pins.

**PORTABLE FISHING-CASE.**—W. H. THORNTON, Crossett, Ark. The invention relates more particularly to such fishing cases as are provided with a receptacle for carrying such tackle as reels, hooks, leaders, or the like, and a cylindrical case mounted thereon and adapted to receive the several sections of a jointed fishing rod.

**GAME-BOARD.**—A. A. STOCKER, Monroe, Wis. The invention relates to game boards wherein cavities are formed to be occupied by balls rolled by players, the value of the pockets entered determining the score by each player. The game affords amusement and also is useful as an educator in mental arithmetic.

**Pertaining to Vehicles.**

**VEHICLE.**—J. W. P. BOETTCHER, Elizabeth City, N. C. The invention is intended particularly for embodiment in buck-board vehicles. Above the buck-board body on a suitable post at about the center, a rocking frame is pivoted on which forward and rear seats are provided between which frame and the rear drive wheel sprocket and chain driving mechanism is provided comprising sprocket and chain and a ratchet and pawl mechanism so arranged that a forward or reversal movement of the vehicle is produced according to the direction in which the seat frame is rocked.

**TRUCK.**—W. P. RACHAL, Lake Charles, La. The invention comprises a main truck, and an upper platform truck mounted thereon, and articles can be loaded on the latter and rolled from the truck to the car or vice versa at a single operation without handling every piece or article individually, the loaded or unloaded main truck being backed up to the car door so that the platform truck can be rolled on or off the same without being unloaded.

**LOCKING WHIP-SOCKET.**—C. W. MAYHUGH, Atchison, Kan. In this instance the purpose is to provide a construction for a whip-socket, which may be used for holding the butt end of a whip stock, permitting the whip to be removed for use, and by a quick adjustment of a single part lock the stock in the socket and prevent its removal until the locking mechanism is released by the use of a suitable key.

**VEHICLE-WHEEL SLED-RUNNER.**—J. KARSSON, Holland, Mich. This improvement refers to a runner of the type adapted to be secured to the tire of the wheel to which it is applied and wherein the wheel is gripped laterally by the runner-supports while the wheel-tire is carried thereby. The object is to provide a runner which may be applied to a vehicle-wheel with facility.

**BARREL-CART.**—P. C. JORGENSEN, Ledyard, Iowa. The invention relates to carts which are adapted to be used for the transportation of barrels. By a very simple method the parts are so adjusted that a barrel will be closely fitted to the barrel supporter, which is pivoted to the standards of the cart. At any time the device may be used without the cross-bar by readjusting the parts so that the ring will fit a barrel just below its center.

**PICK-UP CART.**—P. C. JORGENSEN, Ledyard, Iowa. The cart is for use, among other purposes, for building and repairing barbed wire fences. Reels of wire may be carried, and at the same time tools and implements may be conveyed in the box, and with the same wheels and standards many similar reels and boxes may be conveyed to places where wire and tools will be of service. The cart may be used to carry materials of all kinds in the boxes, and the rope and other material may be wound on the reel, as may be desired.

**VEHICLE-WHEEL.**—C. E. HARRIS, Carbondale, Colo. The object of the inventor is to provide a wheel having resilient means for absorbing radial and tangential shocks. One purpose is to provide a wheel having a hub, around the hub a spaced spoke-ring, and intermediate the hub and the ring a pneumatic or cushion shock supporter.

**Railways and Their Accessories.**

**RECORDING - ANNUNCIATOR.**—W. B. WOODRUFF, Cadiz, Ky. The intention in this case is to provide a recording sheet driven by a clock, and a recording mechanism driven by the car and operating upon the sheet, the mechanism being provided with indications corresponding to the data to be recorded on the sheet, and being geared to bring the indications into position for recording, at the time the car reaches the point on the road to which the data pertain.

**CHAFING-IRON.**—V. LABADIE, Dallas, Texas. This invention is a chafing iron for use in vestibule passenger cars, and its object

is to provide a device of this character of a construction in which danger of passengers being injured by passing their fingers, hands, etc., between two of such plates while the car is in motion will be eliminated.

**SPARK-ARRESTER.**—F. J. PIERCE, McCook, Neb. The arrester is arranged to completely arrest the sparks and cinders while the locomotive is running, and means allow of conveniently and quickly cleaning the arrester of sparks and cinders at any time and at the will of the engineer, and using the exhaust steam for drawing the cinders against the arrester or arresting the cinders and for removing the cinders from the arrester for cleaning purposes, the arrangement also permitting of opening the arrester for free draft when firing up.

**MINE-CAR WHEEL.**—J. T. PARKS and M. T. DAVIS, JR., Charleston, W. Va. The novel features of the wheel reside in the mode of detachably securing the wheel to the axle spindle, and to the lubricating arrangement. The spindle has an annular groove near its outer end and the wheel has a hole leading laterally to the bearing for receiving a pin that enters the groove of the spindle; the pin is held in place by a screw plug. The hub is hollow to form a lubricant chamber and holes lead from the chamber to the bearing.

**MEANS FOR FASTENING IN POSITION RAILWAY-SPIKES OR THE LIKE.**—G. LAKHOVSKY, 5 Avenue du Bois de Boulogne, Paris, France. The present invention pertains to a metallic filling constituting a kind of divided nut adapted to fix itself in railway sleepers to receive the ordinary spikes employed either for retention of broad-footed rails or for fixing in position the chairs which receive double-headed rails.

**SPARK-ARRESTER.**—J. E. KNIGHT, Bellingham, Wash. The purpose of the invention is to provide an arrester, that affords an adjustable canopy over the exhaust pipe in the smokestack of a locomotive or other portable engine, whereby a concave deflector is afforded, which is connected with a spark-conductor for the transfer of sparks from the smokestack to a point of discharge, and that, when not in service, may be contracted in diameter so as to afford a draft passage of increased area when fuel combustion is to be effected by the natural draft of the stack.

**TRACK-STRAIGHTENER.**—M. E. LOEHR, Claypool, Ala. In view in this case is the combination of a cable, a member composed of two principal sections threaded together, one designed to be applied to a rail the other to a cable, clamps for engaging the rail at opposite ends of the cable and having means for locking them to the rail when the cable is placed under tension, and oscillatory means operable in both directions of its movement to separate the sections of the member and force the rail and cable apart.

**LOAD-CONTROLLED BRAKE.**—J. B. GRAY, C. J. GRAY, and S. B. GRAY, Ottawa, Kan. In view in this invention is the provision of supplementary means for shifting the fulcrums of the braking or floating levers, to compensate for the difference in power required to check the speed or bring the car to a stop when in loaded and unloaded conditions. To this end a device has been constructed, automatic and positive in action, which may be applied to the well-known types of brakes now in use.

**TORPEDO-PLACER.**—E. P. S. ANDREWS, West Windham, N. H. The invention relates more particularly to such placers as are adapted for the placing of torpedoes or other detonating signals upon the tracks while trains are in motion, and which include supports adapted to be secured on a car and having shoes for engaging the rails, the supports and the shoes acting as guideways to position the torpedoes on the tracks.

**LOCOMOTIVE ELECTRIC ALARM SYSTEM.**—G. NOREAU, Quebec, Canada. The invention relates to details of construction whereby the efficiency of the signaling mechanism is greatly increased. In operation each engineer before starting tests his local circuit. As two locomotives approach each other, and arrive upon the same portion of the third rail, the means provided complete a circuit which rings the bells upon both, and the warning gives the engineers time to prevent a casualty.

**DIE FOR SHAPING COMPOSITION PLATES.**—J. P. WRIGHT, Newark, Del. This inventor molds the plate into an article which is purposely distorted in order that the natural tendency inherent in the plate to straighten out, may correct the distortion and leave the finished article as nearly as possible in its ideal shape. It is difficult to confer upon the finished plate the exact form needed, as in one plate distortion is greater than in the other. He finds, however, that it is highly practical to so form the plates that their shapes will be sufficiently near perfect to give great satisfaction.

**Designs.**

**DESIGN FOR A FINGER-RING.**—A. LOCHER and E. C. KELLY, New York, N. Y. In this ornamental design, the finger-ring is extremely diversified in its edges, owing to the forms of a cross, a seal marked I. H. S., one with pin-cers and hammer, etc.

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



Full hints to correspondents were printed at the head of this column in the issue of November 14 or will be sent by mail on request.

(12005) H. M. K. asks: What is the chemical composition of wood, bituminous and anthracite coal, and natural and artificial gas? Is the composition of natural gas the same in the various gas-producing rocks and fields? How and in what proportion should natural gas and air be combined in order to create the most heat? Please explain this combination, and also the formation of the new compounds (and elements, if any) giving also the proportionate amounts. Is it possible for the air mixer to allow too much air to mix with the gas? How and in what way in the process of burning is heat made? Most stoves are made so that the gas and air mix before combustion, but in some stoves they do not. Is it possible to get the same amount of heat from 1,000 feet of gas in each case? Does the draft of the stove or the pressure of the gas burnt affect in any way the proper mixture of the gas and air by the mixer? What is the color of the flame in perfect combustion, and why should the color be different in imperfect combustion? What are the evil effects produced by burning gas without a flue connection? A. We may state that the chemical composition of anthracite coal is as follows: Carbon, 86; volatile hydrocarbons, 4; ash and moisture, 10. The composition of bituminous coal varies very greatly, but as a general average we would give the following: Fixed carbon, 65 to 45; volatile hydrocarbons, 25 to 45; ash and moisture, about 10. Wood kiln dry: Carbon, 50; hydrogen, 6; oxygen, 41 1/2; nitrogen, 1; ash, 1 1/2. Natural gas: Marsh gas, 93; hydrogen, 1 8/10; nitrogen, 3 2/10; other gases, 2. Coal gas: Marsh gas, 40; hydrogen, 46; carbon monoxide, 6; small quantities of other gases, 8. The chemical composition of all of these varies in different localities, but the above figures may be regarded as giving an approximate average. Natural gas and artificial gas both burn with the best results when they are both mixed with air in just the right proportion to give perfect combustion. The best mixture of air and coal gas is one part of gas to about five to seven parts of air measured by volume. The proportion with natural gas is about the same. It is possible for the air mixer in a burner to admit too much air. In the combustion of gas or solid fuel the hydrogen combines with the oxygen of the air to form H<sub>2</sub>O, and carbon in the fuel combines with the oxygen of the air to form CO<sub>2</sub>. This union of hydrogen or carbon with the oxygen of the air is what produces the heat. It is better to mix the gas and air before combustion, but it is possible to get perfect combustion if this is not done. It is also possible to get perfect combustion regardless of the pressure of the gas or draft on the stove, and so long as the combustion is perfect the same amount of heat is produced. Where the gas and air are mixed before combustion the flame is apt to be nearly colorless, and when they are not so mixed the flame is apt to have considerable color, especially if there is much carbon present in the gas. Where there is no flue connection the products of combustion escape into the room and vitiate the air.

(12006) J. M. C. asks: In all articles I ever read I have gotten the idea that a dynamo of a given current (say 10 amperes) could be run at any voltage, say 14, 25, 52, 75, or 110, and give out 10 amperes, provided lamps in circuit called for that amount. In fact, my idea has been that I could use eight 14-volt, eight 25's, eight 52's, ten 75's, or sixteen 110's, voltage varying with speed, but amperes still the same if lamps call for it. You see I figure eight amperes in circuit (about) in all the voltages, leaving 2 amperes for variation of excitation. Am I right or wrong, yes or no? A. The voltage of a dynamo depends upon the speed of the armature, which determines the number of lines cut per second. The amperes depend upon the resistance of the circuit, internal and external. If you have a resistance which allows 10 amperes to pass without overheating, you can within the limits of safety vary the speed and so the voltage, and the same 10 amperes will flow. But it is not possible to have such a range of voltage as you mention. To change from 14 to 110 volts requires eight times the speed of the armature. No armature could stand the centrifugal force of such a speed. The proposition as you make it is not practicable.

(12007) J. C. writes: I am making a flying machine, and have all complete with the exception of power. I am trying to use rubber bands, but cannot get the necessary power. My machine is about 6 feet long, and weighs about 7 pounds. Now, if you can help me out, you would be doing a great favor to one of your constant readers. A. With a properly designed aeroplane model you should lift about 1/2 pound with each square foot of surface. Elastic bands will hardly be powerful enough for a model of this size, but we think that a 1/2 to 1 horse-power small steam engine would more nearly answer the purpose. We can give you the address of the maker of such an engine upon application.