

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. KARSSSEN, 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.