

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**ROTARY ENGINE.**—James C. Walker, Waco, Texas. This engine has four independent annular steam chambers, each provided with but a single piston and sliding abutment, the arrangement being adapted to give a live steam impulse upon the shaft at each quarter revolution, to not only gain increased speed and power, but insure a full expansion of the steam in each chamber, and without giving a jerky, irregular motion to the shaft. Owing to the peculiar relation of the pistons and abutments, and simple gate-operating devices, as steam is cut off from one chamber the valve inlet discharging into another chamber is being opened, the exhaust port in each of the chambers being located in advance of the sliding abutment.

**PRESSURE GAGE.**—Henry Rauser, Charles Wieber, and Alexis Sokoloff, Moscow, Russia. This device is so constructed as to relieve the parts of the gage from excessive strain by reducing the pressure of steam or other medium before it acts on the indicating column. It has two communicating tubes, one employed as a gage tube while the other serves as an expansion chamber for the inflowing steam to act on the liquid in the communicating tubes, a tube being also provided for the exhaust steam, of sufficiently reduced diameter to prevent the steam from escaping out of the expansion chamber without acting on the liquid. With this improvement a short gage glass indicates a wide range of pressure, and there is no danger of the glass bursting.

## Railway Appliances.

**CAR STEP.**—Lemuel S. Manning, Alessandro, Cal. This improvement provides an extensible step or tread piece in the steps for platforms of passenger cars, with means for locking the step in position, being designed to facilitate entrance to and exit from the cars in places where the height of the car platforms from the ground is above the regular distance for which the fixed steps are provided. Hanger plates vertically movable on the fixed steps carry an auxiliary step, the hangers being provided with longitudinal slots having transverse branches into which extend the arms of a conveniently actuated rock shaft, the extension being very quickly made as occasion arises, the auxiliary step being swung down the desired distance.

**CAR PLATFORM.**—The same inventor has devised a self-adjusting extension or apron for the fixed platform of a car to bridge the space intervening between the ends of two coupled cars and afford a continuous passageway from one car to another, conducting to the safety of passengers and trainmen. The invention provides a novel arrangement of apron and buffer block, whereby they accommodate themselves to the side movement of the cars, so that the apron will be maintained in conjunction with an adjacent platform on a coupled car while the cars are on a curve as effectively as if on a straight line.

**CAR VESTIBULE.**—In line with the invention above noted, the same inventor has provided improvements in vestibules for cars, that they may coact with his improved telescopic car platform, and which may also be applied to any longitudinally yielding platform, and afford shelter as well as safety for passengers moving from one car to another. The vestibule consists of a flexible waterproof cover secured in arched form over and on each side of the end door, an arched supporting frame being made in two sections connected at the top, and telescopic braces being connected to the frame and the end of the car.

**DOOR FOR CAR PLATFORMS.**—This is a further invention of Mr. Manning relating more particularly to doors for passenger cars that are furnished with vestibules, whereby the doors are adapted to furnish guards for the floor openings at the car steps at the sides in the body of the car near the ends. According to a feature of this improvement the floor of the car is rendered intact when the side car doors are shut, and the step passages are automatically opened when the doors are similarly adjusted. The invention provides a neat, simple, and practical construction, preventing the entrance within the car of dust and air draughts.

**GRAIN CAR DOOR.**—Joseph H. Goode, William H. Anthony and Thomas S. Lloyd, Richmond, Va. This door is hinged to swing inward, and its bottom does not extend to the car floor, where a grain discharge opening is left the full width of the door, such opening, when the car is filled, being closed by a slide or cut-off. The slide is an angle iron casting, its upper portion being made as a rack with which engages a cog gear actuated by a crank handle on the outside of the car, the handle being held locked by the car seal until the load is to be removed, when the slide may be drawn back the desired distance to afford a discharge mouth under the door.

**FENDER FOR STREET CARS.**—William H. Brock, Brooklyn, N. Y. This fender is adapted to be moved forward beyond the platform when desired, and withdrawn beneath the platform when not required for use, the motion of the car being utilized to effect such forward and backward sliding movement through a gear on one of the car axles, with which an upper or lower rack on the fender may be brought into engagement. The fender will be moved in or out, according to the direction in which a lever is moved that extends above the car platform in convenient reach of the motor man or grip man.

**CAR REPLACER.**—Philip J. Schmidt and George Weber, Hoboken, N. J. This is a simple and effective adjustable support for a derailed car and its truck, affording convenient means to facilitate the use of opposite lifting jacks of any approved make. The improvement comprises two bearing blocks of novel form, to be used with a connecting bar loosely engaging the blocks, whereby a suitable support will be made for the truck frame, enabling the jacks to be advantageously applied.

**CAR AXLE BEARING.**—William J. Tripp, New York City. The cylindrical hub of the car wheel, according to this invention, projects into a journal bearing in which rollers are interposed between the hub and bearing, while a journal box has vertical sliding

movement in guideways of the truck, the journal bearing being adapted to be turned in the journal box. Locking means are provided to engage with the bearing and the surrounding box to hold the parts in their relative positions, the bearing being turned from time to time, according to the wear, so that a new surface will be brought into use, prolonging the wear of the journals.

## Electrical.

**ELECTRIC RAILWAY.**—Benjamin F. Comstock, Decatur, Ill. This improvement provides for running a double track electric railway from a single trolley wire, the trolleys of two meeting cars passing each other on the same wire without injury. The outer end of each trolley arm has an attached metallic plate with flanged rollers near each end, and the ends of the plate are tapered or pointed, the points of the plates being so small as to be free from liability of catching, and one trolley riding over the plate of the other trolley as two trolleys meet and pass each other.

**SIGNALING APPARATUS.**—James W. English, New York City. This is an improvement in apparatus in which visual signals are swung from a hidden to an open position. A number of targets are arranged in series, each comprising a common staff and oppositely projecting signal flags, an electric motor being geared to swing each target, while the mechanism is contained in a case having a single sight aperture fore which the targets appear. The motors are independent of each other and may be worked from any ordinary switch board.

## Agricultural.

**PLANTER.**—James E. Betts, Wilmington, Ohio. This machine is designed to work well in fields where there are stumps or trees, or upon uneven ground, has a simple means for regulating the drop of the seed and is provided with a marker which drops marking material simultaneously with the dropping of the seed. This improvement may be attached to any planter, and the construction is such that the drop may be made sooner or later than ordinary, which is an advantage when passing over raised places, or where the rows become longer and only the same number of hills may be made.

**HAND SEED PLANTER.**—James M. Baskett, Leota Landing, Miss. This is a device for planting corn, peas, beans, etc., and is so made that both its main stem and lever may be grasped by and operated with one hand while walking briskly along. The main stem has a trowel point, and at one side is a seed box holding as much as may be conveniently carried. The point of the trowel is forced into the ground at an angle as the operator moves along, and the opening for the seed is enlarged by bringing the implement to the perpendicular, when the operating lever is pressed to move the seed slide and discharge the seed, the earth falling into the hole as the trowel is withdrawn.

## Miscellaneous.

**MARINE SIGNAL.**—Frances V. Stewart, Atlanta, Ga., administratrix of George W. Stewart, deceased. A sliding and swinging signal head, having a bell mouth, is, according to this invention, arranged at the bow of the vessel, and contains a steam or compressed air chamber, connected by a telescoping tube and pipe with a source of supply on the vessel, a whistle being arranged in the head. The bell mouth is also adapted to receive sounds made by a corresponding apparatus on another vessel, and is connected by flexible tubing with the pilot house. This apparatus is designed to make the water the medium by which sound is transmitted and received.

**REIN HOLDER.**—Thomas J. Weir, Cincinnati, Ohio. This device comprises a fixed section, to be secured to any overhead support, as to the front bow of a canopy, and a pivoted swinging section, which may be adjusted higher or lower. The reins may with this holder be held so that they will clear the horse's tail while driving, and they may also be readily clamped to the hood or other portion of the vehicle to which the attachment is applied. The device may also be adjusted to serve as a lever, enabling the driver to check any sudden start of the horse.

**ANTI-RATTLER FOR THILL COUPLINGS.**—Frank P. Johnson, Danville, Pa. This device is self-adjusting to all styles of coupling. It is made of two spring-connected wire loops, a wear plate extending the length of one of the loops, and a yoke movably located upon the opposite loop. The device is inexpensive, is designed to have a maximum amount of bearing surface on the coupling, and to automatically take up wear.

**DUMPING WAGON.**—Alfred J. Thompson, Kaufman, Ill. The body of this wagon is pivotally connected by links with the truck and adapted to slide on inclined tracks, a rope being attached at its ends to the under side of the body, and the rope passing over a windlass. The wagon is especially designed for hauling and dumping broom corn and similar material.

**HORSE DETACHER AND BRAKE.**—Annie H. Chilton, Baltimore, Md. This invention provides simple and inexpensive devices, readily applicable to any vehicle, whereby the horse may be quickly detached from the shafts, the shafts held from the ground, and the brakes applied simultaneously. The several parts are released by a rod, chain or cord extended into the vehicle body in convenient reach of the driver. Should the horse fall, he may be released by the same means, and by drawing the wagon backward; the shafts, being connected with the body by spiral springs, will yield and not be broken.

**DRYING APPARATUS.**—Edward Robinson, 4 Castelnau Gardens, Barnes, London, S. W., England. This is an apparatus for drying tea, sugar, grain and other substances, in which volumes of heated air are obtained by means of a spirally constructed heater and driven into a revolving spirally constructed drier adapted to carry and pass through it the material to be dried. The apparatus can be driven at any required speed, to pass the material quickly to be dried, or to prolong the

operation according to the time required to complete the work.

**DISTILLING APPARATUS.**—Frank E. Wallace, East Orange, N. J. This is a simple and durable apparatus, more especially designed for household use. It consists of a series of centrally connected vessels located one above the other and all supported in a suitable frame, each vessel having a water and steam distributing plate arranged centrally above its outlet, while one outermost vessel is connected with a boiler and the other is provided with a trap forming an outlet for the purified water.

**MAKING PHOSPHATIC FERTILIZERS.**—John Gregory, Newark, N. J. Boneblack which has been used as a filtering material for various oils may be made into a fertilizer in a cheap and simple manner by a process devised by this inventor, which consists principally in mixing the material with sulphuric acid, and then boiling the mixture, when the boneblack forms a filter for the oil and other fatty substance contained in it.

**PORTFOLIO.**—Wladyslans Jeschke, Brooklyn, N. Y. This article is made in folding sections, quite narrow when closed, but the covers having sufficient area when opened for use to support sheet music of full size. A retaining device holds the cover in open position when straightened out, and also holds it closed when folded, in neither case interfering with the flexibility of the cover. The portfolio is compact, simple, inexpensive, and attractive in appearance.

**MUSICAL INSTRUMENT.**—Isaac St. C. Goldman, Los Angeles, Cal. This is a simple and inexpensive instrument, more especially designed for the use of beginners as a substitute for the piano. Its frame has a lower sound chamber covered by a sound board carrying frets over which pass the treble and bass strings, and a bass key lever carries a hook engaging a hammer adapted to strike the bass string, while toothed wheels are actuated by the hooks of the treble key levers to sound the treble strings. The instrument occupies but little space, being readily placed on a table or other support, and it may be made with the same number of octaves as an ordinary piano.

**CAN OPENER.**—David Earl and Abraham Goodman, Ashland, Ky. This opener has a flat handle extending beyond opposite edges of the can, a central pivot pin and cutting blades on each side of the pin. The pivot pin and blades are forced into the top of the can, and the handle is turned, its movement a half revolution cutting a circular disk, which is removed by lifting the handle.

**GAS BURNER.**—Henry A. Fry, San Francisco, Cal. A burner adapted to heat the gas before it reaches the flame has been devised by this inventor, to afford the maximum degree of illumination. The burner has a hollow body in contact with which is a heat-conducting shell or lining provided with sockets, while a series of superposed but separated perforated disks have projections which enter the sockets, the metal tip being in contact with the body and its lining.

**ICE PITCHER.**—Frank E. Wallace, East Orange, N. J. This pitcher is designed to cool the water without bringing it into direct contact with the ice. In the open top of the pitcher is a spout having a flange forming a seat, with locking projections adapted to engage an annular flange upon an ice receptacle to be thus held suspended in the pitcher. The top of the receptacle is closed with a screw-threaded cap.

**REFRIGERATOR.**—George A. Bowen, Fond du Lac, Wis. This is an improvement on a formerly patented invention of the same inventor, and provides a refrigerator more especially designed for household use. The provision chamber is completely separated from the ice compartment, preventing any moisture from the ice entering the chamber, and ready access may be had to both compartments. The several parts can be readily removed for cleaning.

**BREATHING TUBE.**—Jacob T. Wilhide, Bruceville, Md. This tube is closed at one end and has graduated apertures in it near the closed end, on which turns a regulating cap with an aperture registering with any one of the graduated apertures. It is used to teach and insure proper and regular breathing, its open end being inserted in the mouth, the air being drawn in through the nose and exhaled through the tube, through one of the apertures registering with the regulating cap.

**LAWN SPRINKLER.**—Samuel H. Stott, Fullwood, Eng. A central vertical pipe having a spade point at its lower end to be forced into the ground is connected with a supply hose, and on the upper end of the pipe is screwed the novel form of sprinkler designed by this inventor, which is arranged to finely divide the water and discharge it in sprays, covering the ground uniformly in a circular area. The device may be conveniently cleaned, is not liable to become clogged, and is of simple and durable construction.

**SHIRT BOSOM PROTECTOR.**—Edward H. Carleton, Jr., Brooklyn, N. Y. This is a spring stay about the length of the side of the bosom, and provided with a series of spring clips or clasps adapted to grasp the bosom edge, holding the bosom partially away from the person of the wearer, and without creases or wrinkles. The device readily yields to any movement of the body, and the stay strips are not visible.

**NOTE.**—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

## NEW BOOKS AND PUBLICATIONS.

**THE ELECTRICIAN ELECTRICAL GRADES DIRECTORY AND HANDBOOK FOR 1894.** (Twelfth year.) London: "The Electrician" Company. 1894. Pp. cxxx, 846. Price \$2.

We are glad to receive this most useful manual now written up to date. Its characteristic feature, beyond the addresses and general information, is the biographical part, which we are glad to see has been brought well up to date. Among the portraits the place of honor is held by a full page engraving of Alexander Siemens, President of the Institution of Electrical Engineers.

**THE INVENTIONS, RESEARCHES AND WRITINGS OF NIKOLA TESLA, WITH SPECIAL REFERENCE TO HIS WORK IN POLYPHASE CURRENTS AND HIGH POTENTIAL LIGHTING.** By Thomas Commerford Martin. 1894. New York: "The Electrical Engineer." Pp. xi, 496. Price \$4.

Mr. Tesla's work in the field of alternating current researches has been so striking, so novel, and has attracted so much attention, that this manual by the editor of our contemporary the *Electrical Engineer* is a welcome contribution to the physics of the day. The volume claims to be a simple record of the pioneer work done in his special department by Tesla, and the results of some ten years' work are included. It contains lectures and miscellaneous articles by Tesla, with discussions thereon; and furthermore, it treats of all his inventions thus far known, particularly those bearing on the transmission of energy by polyphase currents. The volume is issued with Mr. Tesla's sanction and approval, and is very elaborately illustrated.

**THE LOCOMOTIVE.** Published by the Hartford Steam Boiler Inspection and Insurance Co. New series. Vol. XIV. Hartford, Conn. 1893. Pp. iii, 192.

We are glad to note the receipt of the annual issue of this journal of the Hartford Steam Boiler Inspection and Insurance Co., in whose year's issue a large amount of most useful information is contained.

**THE EVANSTON COLLOQUIUM.** Lectures on Mathematics. By Felix Klein. Published for H. S. White and A. Ziwet. New York and London: Macmillan & Co. 1894. Pp. vii, 109. Price \$1.50. No index.

Under the auspices of the World's Fair Auxiliary of Chicago, a congress of mathematics was held during the month of August. It was attended by Professor Felix Klein, of the University of Goettingen. After the adjournment a colloquium of mathematics was held at the Northwestern University at Evanston, Ill., and the present volume is a revised report of these lectures. The volume is of great interest, as giving the modern German view of the higher mathematics. The want of an index is to be regretted.

## SCIENTIFIC AMERICAN BUILDING EDITION.

MARCH, 1894.—(No. 101.)

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2. Plate in colors showing an attractive residence at Providence, R. I. Perspective view and floor plans. Estimated cost \$5,500 complete. An excellent design.
3. A dwelling recently erected at New Haven, Conn. Perspective view and floor plans. A unique design.
4. A beautiful residence at Edgewater, Chicago, Ill., recently erected for Clarence M. Stiles Esq. Perspective and floor plans.
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6. A suburban dwelling recently erected at Elizabeth, N. J., at a cost of \$4,200. Floor plans and perspective elevation. Messrs. Charlock & Howard, architects.
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