

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**CALCINING FURNACE.**—Arthur H. Wethey, Butte, Montana. Three patents have been granted this inventor for improvements in furnaces such as illustrated and described in the *SCIENTIFIC AMERICAN* of May 30, the furnaces being preferably built in pairs, with two furnaces located opposite each other, and each provided with longitudinal hearths or compartments. The furnace is for rapidly and thoroughly desulphurizing ores, in a ground, crushed, or pulverized state. One of the patents is for a traveling shoe to actuate a lever mechanism whereby the end doors are automatically opened to permit rakes or plows to enter or leave the hearth, the doors automatically closing as soon as the rakes or plows have left the door opening. These rakes or plows are for stirring and moving the contents of the furnaces, and another of the patents is for tripping doors to close the slots on the inner sides of the furnace, the doors being self-closing and normally in a closed position, but being opened successively by the passing through of the stirring device. A series of overlapping doors is pivoted at their upper ends and adapted to be engaged edgewise by the axle or other part of the stirring device to cause an upward swinging of the door for the passage of the axle, and one of the patents provides for a carriage mounted to travel and supporting an axle carrying a series of shovels or plows. The carriage is pulled along between the two furnaces, and projecting supports extend into the furnace compartments and with their shovel blades agitate and push forward the material.

## Railway Appliances.

**CAR FENDER.**—William B. Altick, Lancaster, Pa. This fender may be attached either to the front or bottom of a car, to remain there as a fixture, and has two frames, a trip and a bed frame, in connection with a main frame. The two frames are normally lifted from the ground, but the trip frame, when struck by an object in the path of the car, releases the bed frame to lower it and provide a safe receptacle for the object struck, the trip frame also dropping with the bed frame. Any body in the path of a moving car provided with this fender will, it is designed, be caught up without injury and safely retained on a yielding bed until the car is stopped.

**FREIGHT CAR DOOR.**—Alfred P. Le Gros, Louisville, Ky. Crank arms mounted to swing on the side of the car, according to this invention, carry top and bottom runners on which a door is fitted to slide, and a crank shaft journaled on the car has a hasp forming a handle, the shaft having crank arms engaging bearings on the runners to give them a swinging motion. This door may be conveniently opened and closed, fitting snugly into the door casing, and is especially adapted to facilitate ventilating the car, as the runners may be swung to move the door bodily out of its seat to a position in front of the door opening, with the hasp still locking the door, and preventing the entry of persons without first unlocking the door.

**RAILWAY CAR LOAD INDICATOR.**—Carl Henrich, Webb City, Mo. This is an improvement in weighing appliances in which an indicating beam is made to move by the movement of the car body under its load, co-operating with a graduated bar by which the amount of the load is determined. The invention provides an improved construction of the fulcrum and pivot of the indicating lever, so that each may be more readily and effectively adjusted, thus making it possible to obtain more accurate results than heretofore practicable.

**REFRIGERATOR CAR.**—Charles S. Hardy, San Diego, Cal. This is an improvement in cars which have an "ice plug" and other parts co-operating with a lid in closing openings that receive ice in the roof of a car, and provides a plug whose parts are adjustable to permit the conversion of the plug into a ventilator, permitting the same plug to be used in winter, when the cars are employed in the shipment of fruit without ice. The apparatus has a separate outer lid or hatch and an inner ice plug with foldable section, whereby its heart may open up and adapt it to co-operate with the lid or hatch in forming a ventilator and an outer lid or hatch door, avoiding the use of separate structures and insuring the providing of the car with either an ice plug or a ventilator.

## Mechanical.

**WRENCH.**—Thomas Wilson, Dillon, Montana. This tool is especially designed for a nut wrench of quick action and large scope, having a ratchet latch capable of automatically locking and of being readily unlocked by the fingers of the hand grasping the wrench handle. Provision is also made for protecting the ratchet teeth of the locking device from possible injury by contact with objects with which the wrench may be brought in engagement.

**MILLING ATTACHMENT FOR LATHES.**—Charles C. Keyser, New Decatur, Ala. According to this improvement a frame is adapted to be attached to the lathe in place of the tool post, a live center mounted to be turned in the head stock of the frame, and a dead center adjustably held in the tail stock of the frame. The attachment is of simple and durable construction, quickly attached to the lathe and arranged for producing all kinds of work usually done on high grade milling machines.

**CASE REST FOR PRINTERS' CABINETS.**—William A. Hurrel, Bloomdale, Ohio. To furnish a quick and ready support for any case in a cabinet or rack, allowing the case to be pulled fully out, and thus give access to all the boxes, this inventor provides standards to be attached to the uprights of the cabinet, the standards having channeled sides and offsets and connected arms being adapted to slide upon them, each arm having on its inner face a slideway to receive a case. The rest may be readily adjusted vertically, enabling any case to be brought up or down to a convenient height for setting type from it, and when not needed it may be quickly removed from the rack or cabinet.

**HATTERS' SHACKLE.**—Frank L. Butterworth, Newark, N. J. This is a tool employed by hat-

ters for curling and ironing the curls of hats, the invention providing a simple and convenient construction adapted to be heated by gas or hydrocarbon vapor, whereby repeated reheating is avoided. A frame carries a handle and a burner, and a removable ironing block is attached to the frame in a position to be heated, the block being readily removable in order that different styles or shapes of brims may be readily ironed by substituting different blocks on the same frame.

**FOLDING SHIRT WAISTS.**—Joseph Jonasson, New York City. A simple and inexpensive machine is furnished by this inventor by means of which shirt waists and similar articles, after laundering, may be quickly and uniformly folded, the machine being especially adapted to fold ladies' and children's waists that they may be packed and displayed to the best advantage. A forming board is placed on the garment spread out on a slotted table, and pivoted below the table are arms which project through the slots, the arms carrying rollers, which are made to move over the garment, as the folds are made, by the operation of a treadle.

## Miscellaneous.

**OPTICAL LANTERN.**—Charles Good-year, Jr., New York City. This is a lantern for scientific projection, in which the several attachments are made readily interchangeable, so that the lantern may be used for projections of widely different character without loss of time in making changes and adjustments. The lantern has tubes or sockets to receive the ends of rods or tubes projecting from and forming part of an optical bench, the latter being formed of two rods or tubes with supporting legs, the rods or tubes having extensions to fit the tubes or sockets of the lantern. Adapters are also fitted to the optical bench to hold the shanks of the different attachments, and an auxiliary bench is fitted to the adapters of the main optical bench to receive microscope attachments.

**RULER.**—Charles F. Windisch, Cincinnati, Ohio. To prevent ink from soiling or blurring the surface being used this inventor provides a ruler formed of separate members of thin material, of metal, wood, celluloid, etc., the members being secured together to leave a narrow free space between them. The upper member is wider and projects at both edges beyond the lower member, so that any ink adhering to the edges will adhere to the upper member only. The edges of the lower member are also coated with paraffin or an equivalent to repel the ink.

**MUSIC LEAF TURNER.**—John J. Walsh, Yonkers, N. Y. This is a device adapted for attachment to a piano, organ, or music stand, without marring the surfaces to which it is attached, and comprises a casing in which are leaf-turning arms, and devices for attaching leaves of music to the several arms. The invention provides for a quick releasing of the arms, one by one, when a sheet of music is to be turned, and all the music carrying arms may be simultaneously carried over to a position to receive the leaves, and locked in such position.

**REFERENCE GUIDE FOR BOOKS.**—James H. Hoch, Marion, Kan. For the use of preachers, lawyers, teachers and others, this inventor provides a device to be applied to books to enable the user to readily refer to various texts or solutions. The device consists of an attachment having tablets or markers carried on swinging arms on an articulated frame bar applied to the backs or covers by spring clasps. The articulation of the frame in the middle enables it to open or close and adjust itself automatically to the open or closed condition of the book.

**CARRIAGE SHAFT.**—Marie F. J. Willemin, Paris, France. This is an unbreakable shaft, having a kind of joint which permits it to fold when the horse falls. The invention provides coupling devices comprising sleeves, bolts, and a coupling block forming an articulated connection between the bolts, the block having lugs projecting between the meeting ends of the sleeves and springs on the bolts. With a shaft made according to this improvement, if the animal falls, no matter in what position he may be on the shaft, the latter will not be broken.

**FENCE POST.**—David N. Bay, Dee I. Foreacre, and Ford S. Dye, Cambridge, Ohio. In fence posts made of terra cotta or other plastic material, this invention provides for making a post open at the back, in order that staples and other fastening devices may be readily introduced through the front of the post and secured at the rear for holding fence wires in position. Each post is also made with an anchorage at the base, of a width greater than at any other point, and having such form as is designed to prevent the post from being forced upward by frost in the ground. The material of which the post is made is so utilized that only a minimum quantity is required, and the completed posts may be so packed together as to occupy but small space in transportation.

**FLOOR DRAINAGE VALVE.**—Oliver Barratt, New York City. This is a valve more especially designed for use in tiled floors of hospitals and other buildings to carry off the floor wash water, insuring a proper closing of the valve after being used by the attendant, to prevent sewer gas from entering the room. The valve has a bowl shaped body in the bottom of which is the valve seat, a yoke carrying a cap extending in the body, while the valve has a flange screwing into the cap to open and close the valve. The cover of the valve is ordinarily flush with the floor, but when opened to let out the wash water, the cover cannot be closed down until the valve is seated to prevent the escape of sewer gas into the room.

**RUNNER FOR STOOPS.**—Archia L. Ross, New York City. A series of mats, made of rubber or similar material, flexibly connected with each other, and preferably fluted longitudinally, are provided by this inventor as a covering or runner for stoops and sidewalks of private houses, theaters, and other buildings, to prevent slipping and falling in icy weather. Each mat is adapted to hook with its rear end on hooks permanently secured on the steps of the building, and the several mats for the steps are preferably connected by chains, so that when the runner is not in use the several mats may be readily stored away one on top of the other.

**WINDOW FASTENER.**—Michael F. Robinson, New York City. According to this improvement a gear is mounted to rotate on a supporting plate or casing, a rack meshing with the gear being secured on the window sash, and the casing being provided with square openings in which slides a squared shaft. The shaft carries a stop which is engaged and disengaged from the teeth of the gear when it is moved endwise, and a spring holds the shaft in normal position. When it is desired to raise or lower the window the sliding shaft is moved by a key, when the window may be moved up or down as freely as though a fastener were not applied to it.

**STEAM COOKER.**—Albert J. Finlay and Charles Wilson, Silverton, Oregon. This is a simple and inexpensive cooker, comprising a body vessel of any desired shape, with a cover, and a tray with legs, adapted to be placed in the vessel. The tray is divided into compartments to contain vegetables, meat, etc., and has fine perforations to permit steam from the water chamber below to pass up into the various compartments, the steam being prevented from escaping into the compartment of the tray until comparatively dry. The tray may be removed from the body receptacle without danger of burning the hands.

**PORTABLE ELEVATOR.**—John F. Fairman, Axtell, Neb. This is an inclined way elevator having at its upper end a pivoted dump section and jointed trough. A wagon may be hoisted up the elevator to dump its contents in a crib by means of a rope or cable carried over pulleys and then connected with a team. The machine is mounted on wheels to enable it to be readily moved from place to place, the apparatus being especially advantageous as a time and labor saver, availing the necessity of shoveling or other hand work in unloading corn and other material from a wagon.

**BALING PRESS.**—Thomas H. Killingsworth, Waco, Tex. In presses for baling cotton, this invention provides a simple and easily operated device in which the cotton bat is wound into cylindrical form without the use of a metal or similar core. In a frame made in separate sections are mounted rotary drums, there being pressure rollers and tension rollers, each having movable bearings, and endless belts with supporting bands traveling with them. When the compression is accomplished each layer is compressed as it is added, thus adding to the pressure of the interior of the bale.

**HOISTING DEVICE.**—Alfred Bogardus, Jersey City, N. J. For dumb waiters, etc., this invention provides a device by means of which the dumb waiter may be permitted to descend rapidly or slowly, as desired. Combined with a hoisting shaft on which is a ratchet wheel is a box wheel loosely mounted upon and surrounding the ratchet wheel, there being gravity pawls in the box wheel and a strap brake engaging its periphery. The ratchet wheel turns freely in the box wheel while the load is being lifted, but with the stoppage of pull on the hoisting rope the pawls prevent the descent of the load. By slackening a rope connected with the strap brake, the load is permitted to descend more or less rapidly.

**SAFETY ATTACHMENT FOR GAS COCKS.**—Charles B. Duffy, New York City. To prevent the accidental opening of a gas cock after the gas has been turned off, this inventor provides a simple attachment whereby the movement of the plug is controlled by a spring-pressed lever operated by a knob or thumb piece adjacent to the finger piece of the cock. Persons not acquainted with the proper manipulation of gas cocks will not be able to light a gas burner having this attachment until its operation is explained to them, and an accidental opening of the cock after it has been closed is rendered impossible.

**PARING KNIFE.**—John H. Groeters, Boyden, Iowa. This is a knife especially adapted for paring fruit, vegetables, etc., the blade being so located and the device so adjustable that a thin or thick paring may be taken off, as desired. The blade portion is curved and has a slot, in the rear of which, in a counter-sunk portion following the curvature of the slot, is secured a cutting blade, while in the front wall of the curved slot is secured an adjustable guide plate, by whose movement up or down the thickness of the paring is regulated.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

## NEW BOOKS AND PUBLICATIONS.

**HOW TO FEED CHILDREN.** A manual for mothers, nurses, and physicians. By Louise Hogan. Philadelphia: J. B. Lippincott Company. 1896. Pp. 236. Price \$1.

The fine little child should be a very healthy being, if attention is given to all that is published concerning its welfare. The present book, treating of the advance system of feeding, should be welcomed by those having children in charge; it is a contribution to dietetics, one which will do its part to produce good results upon the coming generations.

**THE WISCONSIN ENGINEER.** University of Wisconsin Engineering Journal. Quarterly. Madison, Wis. Pp. 160. Price \$1.50 a year.

**ELECTRICAL ENGINEERING IN MODERN CENTRAL STATIONS.** By Louis A. Ferguson. S. B. Madison, Wis.: Published by the University. 1896. Pp. 259. Price 35 cents.

The last named excellent monograph, by the electrical engineers of the Chicago Edison Company, gives the Edison treatment of the central lighting station, problem, which will be of interest to all electrical engineers. Mr. Ferguson is one of the special lecturers of the University of Wisconsin. We also note the reception of the Wisconsin Engineer, a quarto published by the students of the State University, and containing articles by them, the alumni, and professors, with a valuable index of engineering literature.

## Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

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The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 128th Street, New York.  
The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4, Munn & Co., publishers, 361 Broadway, N. Y.  
Concrete.—See Kidder's new book on "Building Construction and Superintendence." Comstock, 23 Warren Street, N. Y.  
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Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

## Notes &amp; Queries

## HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.  
References to former articles or answers should give date of paper and page or number of question.  
Inquiries not answered in reasonable time should be repeated: correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.  
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.  
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.  
Scientific American Supplements referred to may be had at the office. Price 10 cents each.  
Books referred to promptly supplied on receipt of price.  
Minerals sent for examination should be distinctly marked or labeled.

(6931) J. B. O. says: Can you give me directions for preparing russet leather shoe polish?

A. 1. Soft soap.....2 parts.  
Linseed oil.....3 "  
Annatto solution (in oil).....8 "  
Beeswax.....3 "  
Turpentine.....8 "  
Water.....8 "

Dissolve the soap in the water and add the annatto; melt the wax in the oil and turpentine, and gradually stir in the soap solution, stirring until cold.

2. Palm oil.....16 parts.  
Common soap.....48 "  
Oleic acid.....32 "  
Glycerin.....10 "  
Tannic acid.....1 "

Melt the soap and palm oil together at a gentle heat, and add the oleic acid; dissolve the tannic acid in the glycerin, add to the hot soap and oil mixture, and stir until cold.

3. Oil turpentine.....20 parts.  
Yellow wax.....9 "  
Common soap.....1 "  
Boiling water.....20 "

Dissolve the wax in the oil with the aid of the water bath, and the soap in the water; mix the two solutions in a hot mortar, and stir until cold.—American Druggist.

(6932) W. S. writes: I have twenty-five 16 candle power lamps, 50 volts, drawing their supply from a 50 ampere transformer. I want to know how to make a dimmer. A. For a dimmer use insulated copper wire of the same size as that of your present lead. Wind it in a coil one foot long and two inches internal diameter. Mount a bundle of iron wires as near 2 inches in diameter as possible, to slide in and out of the aperture. With a current of sufficiently high frequency of alternation this will be a large enough dimmer. By sliding the core in, the lamps are dimmed.

(6933) E. F. G. writes: I desire to make an alum cell for microscopic projection, to restrain the heat from the microscopic object. How thick should the alum cell be? What proportion of alum should be used in the solution? A. Curve a 3/8 inch square strip of rubber, so as to form the bottom and ends of the cell. On opposite sides of this strip clamp pieces of plate glass. The glass should be at least 1/8 inch thick. The space between the glasses should be 3/8 inch at least. A strong, but not quite saturated, solution of alum should be used. Water alone answers a very good purpose. To avoid the formation of air bubbles, the alum solution, as well as the water, should be boiled and put in bottles to cool, the bottles being corked as soon as filled. If air bubbles should form in the cell, they may be dislodged by means of a feather or a wire. A piece of heavy rubber tube may be used instead of the rubber strip.

(6934) H. C. S. writes: Please give me the directions and what material to use in making a dry battery. A. Ammonium chloride, 1 part by weight; plaster of Paris, 3 parts; water, 2 parts. Some makers use in addition to this a small proportion of zinc oxide, also of zinc chloride.

(6935) W. W. C. asks: 1. How long should a spark be to take radiographs? A. Two inches. 2. What is the length of spark given by induction coil in SUPPLEMENT, No. 160? A. One to one and a half inches. We have not the other records asked for. 3. In