

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**FURNACE.**—Wardell Guthrie, Chicago, Ill. Air pipes arranged alongside the furnace, according to this improvement, have openings into the furnace above the fire surface, and the furnace is fed by a screw conveyor in a trough lengthwise and centrally of the bottom, the fuel being fed back and upward as a projecting crank on the end of the screw is turned. The air is fed by force directly on the surface of the fire, as the fuel is fed up from the bottom. A dump or grate, for removing cinders or ashes, is placed at one or both sides of the feed screw.

**DRAG FOR STEERING VESSELS.**—Louis Boucher, West Superior, Wis. This is a device designed for use only when a ship's rudder becomes disabled, and it is so made that it may be conveniently stowed away and set up in a very short time when needed. The drag is an air-tight cylinder with pointed forward end, in which is a ring, there being annular flanges or fins on the cylinder. Attached to the ring is a chain which connects with two chains, one leading to each side of the vessel near the stern, where the chains are passed around pulleys in the outer ends of projecting beams, and thence over pulley blocks and a central capstan, whereby the drag may be easily moved to one side or the other in the rear of the vessel.

**PROPELLER.**—Frank J. Leisen, Woodbridge, N. J. This propeller has cylindrical, spirally formed and diagonally opposing exterior surfaces, and hollow interior formed with two pockets, one pocket visible from each side, and both pockets uniting to form a circular opening at the outer end. There are spiral exterior blades or ribs, each rib above a pocket. This improvement has been practically tested in a 16 inch propeller, demonstrating its superiority to an 18 inch fluke wheel, and a 36 inch pattern has been furnished the owners of Yankee Doodle, of Philadelphia, from which a propeller is to be made and given a public trial on that famous yacht.

## Railway Appliances.

**CAR COUPLING.**—Edward N. and Jacob J. Byers, Cameron, Mo. This invention provides a safety attachment for couplers of the Janney type, whereby, should the drawbar be drawn from its proper seat, the device acts automatically to uncouple the loosened drawhead from the opposing car. An uncoupling lever connected with the drawbar has one end located beneath the coupling pin, and a guide is so connected with a fixed support that the lever will be elevated beneath the pin as the drawbar or drawhead is carried outward from the proper position.

**PNEUMATIC SIGNAL.**—George V. Steeb, Brooklyn, N. Y. The utilizing of air pressure to operate signals or semaphores is the object of this improvement, which provides for bringing the air pressure into action by the passing of a train over the track. The air under pressure is supplied by a pipe from any suitably located compressing source to a cylinder located in a suitable chamber beneath or adjacent to the track, this cylinder being connected with another cylinder in which is a piston, the movement of which operates the semaphore rod, the action being controlled by a valve in a third cylinder, actuated as the wheels of the car pass over inclined planes at the side of the track. The apparatus may also be used to ring alarm bells, move crossing gates, etc.

## Electrical.

**CARBON HOLDER.**—Clark C. Hill, Newport, R. I. This holder is formed of a cylindrical, longitudinally slotted socket with thickened ends, and having near one end a circumferential groove to which is fitted a circular spring. With this improvement the upper and lower carbons of electric lamps may be held in the position of use without the employment of screw clamps or adjusting screws. The sections of the socket formed by slotting may also be made to clamp the carbons sufficiently without employing the circular spring.

**ELECTRIC REGULATOR AND SWITCH.**—Walter N. Jones, Jr., Petersburg, Va. This is an improvement for use on electric cars, in which the same adjusting devices serve to regulate the current to both the motor and the brake magnets, without allowing the current to be on the motor and the brake magnet at the same time from any inattention or forgetfulness of the motor man. Combined with two concentric rheostats, and two concentric shafts of segmental plates leading thereto, is a central shaft with insulated metal tubes bearing separate contact arms playing respectively upon the series of plates, the central shaft and metal tube forming two independent paths for the current centrally through the rheostats. The power increases in the motor by the movement of the crank in one direction, and increases in the brake by the mere reversal of the movement of the crank.

## Mechanical.

**HOOP SAWING AND SHAPING MACHINE.**—Ephraim O. Hall, Marshfield, Oregon. This machine is designed to cut two hoops from a round log each time the log is fed to the machine, the hoops being perfectly formed, their upper sides planed, the edges scarfed, and the under side, in the direction of the heart of the log, left rough, the machine requiring but a single attendant. A diagonal saw at the rear of a vertical saw produces a kerf meeting that formed by the vertical saw, a planer being operated in conjunction with the latter saw, while an adjustable planer and an adjustable saw are also diagonally located, the latter saw being held to cut beneath the surface planed smooth by the planer.

**HOOP CUTTING MACHINE.**—Alban H. Adams, Fort Meade, Fla. According to this invention a roller cutter is applied to an ordinary rotary veneer cutting machine, to score the log or make longitudinal incisions in it, making also perforations between the incisions, so that when the veneer is turned from the log it will fall apart at the places of the incisions, forming a series of hoops, the grain of which runs lengthwise, and which are already perforated to receive the nails. The hoops thus made are especially adapted for use on orange boxes and similar packages.

**PRINTER'S FURNITURE.**—Jacob C. Wolfe, New York City. The design in this furniture is to present the maximum of bearing surface with the least weight, while it may be quickly and conveniently cast, and will afford a facing of uniform thickness. It consists of a hollow block with top and bottom recessed to form a marginal rib, the bottoms of the recesses inclining from the side ribs to the center of the block, while it has also a longitudinal central wall and transverse partitions forming pockets in each side.

**WIRE BENDING MACHINE.**—Cyrus M. Suter, Ashton, Ill. This is a machine for making stays especially adapted for placing the strands of wire fences and holding them the desired distance apart. The construction of the machine is such that the operation of forming a stay is entirely automatic, the stays being made successively from a length or coil of wire.

## Agricultural.

**CULTIVATOR.**—August Leineweber, De Witt, Neb. This invention provides an improvement in cultivators of the disk type, and the cultivator shank is carried by and has vertical adjustment in a slide having movement upon the beam, there being a gear connection between the slide and the shank whereby the latter is revolved. Any desired number of cultivators may be placed upon a beam, and the cultivator disks are of peculiar construction, each disk being more or less cupped or rendered concave upon its inner face and convex upon its outer face.

## Miscellaneous.

**APPARATUS FOR LIGHTING BUILDINGS.**—John W. Davis, New York City. The lighting of interior rooms, basements and lofts, not readily lighted by windows, is the design of this improvement, the apparatus first condensing the beams of light, then carrying them to the desired locality and diffusing them, by a peculiar arrangement of mirrors operated by clockwork. A concave paraboloidal mirror is supported and adapted to travel above a light conduit, a convex paraboloidal mirror being held at the focus of the concave mirror and adapted to throw beams of light through an aperture in the latter, a plane deflecting mirror being held to receive the beams of light and throw them into the conduit.

**VEHICLE BRAKE.**—Eugene W. Cleveland, Routhwaite, Canada. This is a strong and simple device, more especially designed for use on portable engines and other heavy vehicles. It comprises a frame on which is a windlass, chains attached to and wound upon the windlass being extended in opposite directions and hooked upon spokes of the wheels of the vehicles.

**GLASS STRUCTURE.**—Edgar W. Cunningham, Jersey City, N. J. This improvement pertains to an improved construction of skylights and the roofs and sides of greenhouses or conservatories, combining with aligned panels a joining piece of two metal binding strips having straight abutting sides which are soldered together, and parallel flat upper and lower flanges which closely embrace the adjacent opposite ends of the panels, the lower flanges being extended and curved to form a gutter.

**SPIRIT LEVEL AND INCLINOMETER.**—James P. Famous, Norristown, Pa. This device comprises an adjustable level tube in an elongated level stock, there being a grade indicating slide block at each end and a fixed transverse level tube on the top of the stock, in combination with a swiveling sight tube on the stock. The implement is adapted to determine whether objects are level, plumb, or inclined, and exactly determine the degree of inclination from a horizontal plane, the device being adapted for use in building and engineering work of all kinds.

**ROCK DRILL.**—William O. Higgins, Kingwood, Ind. This is an implement which may be conveniently worked by hand and easily handled by one man to place it in the desired position. In a suitable upright frame are mounted a vertically movable drill shaft and a driving shaft, an eccentric on the latter operated by a pivoted lever, there being a sliding ratchet wheel on the drill shaft and a pawl pivoted to a centrally pivoted lever, and a link connecting the two levers. The drill is steadily fed downward, to be able at every stroke to deliver an effective blow.

**WRITING TABLET AND MANUSCRIPT HOLDER.**—Barton W. Scott, San Jose, Cal. This improvement is more especially designed for the use of stenographers, public speakers, type setters, and others, to permit of readily writing matter on a continuous sheet, and conveniently displaying the written matter. The invention comprises a casing having two winding drums for the paper, a main shaft being journaled in the casing and actuating two gear wheels, which are adapted to be geared with the winding drum.

**COAL SCREEN.**—Frank L. Sackett, Fredonia, N. Y. To facilitate the screening of broken coal for retail purposes is the object of this invention, and the device provided therefor is simple and inexpensive. It consists of an oblong frame, across which the screen proper is stretched, and having an end wall and discharge opening, and whose bottom slides on side bars of the screen, the hopper being adjustable and removable. The device may be attached to the side of a cart or inclined against an upright support.

**BICYCLE WHISTLE.**—John F. Hylan and Robert L. Sinley, Brooklyn, N. Y. This is a simple and practical device, which may be readily attached to a safety bicycle, and comprises an air pump, to be actuated by the rotary motion of the front wheel, to afford a copious supply of air, and on the movement of a lever, blow a loud blast on a whistle connected to the pump. The lever is projected below the handle bar, and the blast may be prolonged for as long a time as the lever is held gripped with the handle bar.

**THILL SUPPORT.**—Adolph Meyerhoff, New York City. A pair of keepers on the thill or pole is provided for by this improvement, and a slide bolt in the forward keeper has a head engaging the keeper, while a chain secured to the rear end of the bolt runs through the rear keeper, and a hook on the running gear engages the chain. The device is very simple and inexpensive, and may be attached to the thills or pole of any

vehicle to hold them at the necessary height for convenience in storing, or to hold them up to take their weight from the horse's back.

**FOLDING BED.**—Hugh Stevenson, New York City. This is an improvement upon a formerly patented invention, according to which, when the beds are folded, the bedding is suspended, both the covers and mattress, to permit a free circulation of air between the covers, that they may be thoroughly ventilated. The present patent provides an improved construction, whereby, when the bed is folded, the covers may be separated and held perfectly straight, the covers and mattress being also so held that the bed may be very easily made up when necessary.

**SHOE.**—William T. Loyd, Hiawatha, Kan. The sole of this shoe is formed of a single sheet of metal, with a metallic counter, and a flange around the toe and ball, a flexible toe piece being fastened to the front flange and a flexible lining at the heel. Beneath the ball and heel are also attached plates having serrated flanges, adapting the shoe especially for use as an ice creeper. The shoe is held on the foot by a strap over the instep.

**BOX FASTENER.**—Thomas Cole, St. Mary's, Mo. A safe and simple fastener, which will permit crates on which it is used to be packed on top of each other and slid about without disturbing the fastening, has been provided by this inventor. The fastening hasps are secured to staples made with spring coils, and the free ends of the hasps engage pins in recesses of the upper face of the lid, the spring tension holding the fastening firm, while the pressing up of the staple loosens the hold of the hasp on the pin.

## Design.

**SWEATERS.**—William T. Pitchers, Godalming, England. Five design patents have been awarded this inventor on this article of apparel. In the first the sleeves and body are ornamented with panels having adjacent angular figures alternately embossed and in intaglio, and in the second are decorative panels of diamond shape, with sunken body and embossed margin. In the third are intersecting figures of serpentine character, with interposed series of ribs; in the fourth, rectangular figures inclose grouped circular figures, and in the fifth the body and sleeves have a surface finish of embossed ribs arranged spirally or diagonally.

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NOVEMBER, 1893.—(No. 97.)

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8. Engraving showing some city dwellings of modern design at Washington Heights, New York City. Plans and perspective views. Mr. W. E. Mowbray, architect, New York.
9. Residence of Mr. C. T. Hemstead at Glenbrook, Conn. Plans and perspective. An excellent design.
10. Moving of the Normandy apartment building at Chicago. Supposed to be the largest building ever moved and turned around on rollers. Numerous illustrations.
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12. Sketches at the World's Columbian Exposition.
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(5502) H. E. W. asks how to run a 70 volt motor of  $\frac{1}{2}$  horse power on a 110 volt circuit. A. Connect your motor across a pair of 12 light leads or larger, and place in series with it a resistance of 8 ohms. For the latter use No. 15 wire, or if you have them, 30 lamps in parallel with each other and in series with the motor.

(5503) J. R. N. says: Suppose a tank at an elevation of 250 feet in height, 10 feet in width, and 15 feet in height, with a pipe attached to bottom of tank 3 inches in diameter, 250 feet in length, perpendicular. Suppose said tank to be filled with water. How many gallons of water will flow through said pipe per minute and what horse power would be required to keep this tank full of water, there being a constant discharge 3 inches in diameter? A. The pipe will discharge 1,275 gallons per minute and will require 80 horse power to keep the tank full.

(5504) E. A. S. says: Kindly inform me through the columns of your paper of a process for curing small skins, such as squirrel, etc. A. Mix bran and soft water sufficient to cover the skins. Immerse the latter and keep them covered for twenty-four hours, then remove, wash clean, and carefully scrape off all flesh. To 1 gallon of water (hot) add 1 pound of alum and  $\frac{1}{4}$  pound of salt. When dissolved and cool enough to admit entrance of the hand, immerse the skins for twenty-four hours, dry in the shade and rub. Stir the liquor again, immerse the skins for twenty-four hours, dry and rub as before; immerse for twenty-four hours in oat-meal and warm water, partially dry in the shade, and finally rub until entirely dry. This leaves the skin like white leather, and fit for immediate use.

(5505) L. M. asks: What is the best method to preserve pneumatic tires for bicycles from one season to another, that is, to keep them from cracking and keep them soft? A. Wash the rubber tires perfectly clean and dry. Warm them by a stove and rub melted paraffine over the surface with a warm cloth. A very thin coat answers the purpose. If rubber cement can be obtained, such as sold by the rubber trade, a thin wipe of it with a woolen rag over the surface of the tires will keep them in good order.

(5506) S. B. W. asks: What the power of an ordinary man would be equal to in horse