

## ENGINEERING INVENTIONS.

A boiler has been patented by Mr. Joseph Leigham, of Lebanon, Pa. The invention covers boilers arranged in the furnace, with tubes surrounding the fire chamber above the grate bars and connected by branch pipes with the boilers, with a superheater held above the boilers and connected with them by branch pipes, and a mud drum held below the boilers, with other novel features.

A sliding door lock has been patented by Mr. Edward B. Searles, of Baltimore, Md. It is a car door fastening, comprising a plate with a series of undercut sockets and a slot connecting them, with a block having a portion adjustable into any one of the sockets, and movable in the connecting slot from one to the other, by which the door may be made fast closed, or open to any desired degree.

A car coupling has been patented by Mr. George J. Ferguson, of Greenville, Tex. This invention provides a locking and unlocking device to be placed entirely outside of end of car, to allow any mode of attaching drawheads, the unlocking device being self-retaining in uncoupled position, and permitting operator to uncouple and leave cars uncoupled without their being pulled apart, while it is unnecessary to go between the cars for coupling and uncoupling.

A tubular hot air furnace has been patented by Mr. Frederick Shriver, of Grand Rapids, Mich. The shell of the chamber is made of plate iron, with the lower part of the vertical section lined with fire brick, to form a fire chamber, and resting upon a cast iron bed plate, the latter supporting a fire grate resting upon a brick foundation, with other novel features, making a furnace that can be readily cleaned and repaired, is easily built, and will be effective and durable.

A combined steam and hot air furnace has also been patented by the same inventor. It is so constructed that a large amount of water-heating surface and air-heating surface are exposed to the direct action of the products of combustion, and that all the parts of the furnace can be readily cleaned and repaired.

## AGRICULTURAL INVENTIONS.

A hay stacker and loader has been patented by Mr. Hubert L. Dewing, of Valley Center, Kansas. This invention covers a novel construction and combination of parts, so designed that the hay can be readily drawn upon the carrier, easily elevated, and dropped closer to or further from the rear side of the machine, as required.

A plow jointer has been patented by Mr. Thomas Lowden, of Lowell, Mass. It may be used as an attachment to any form of plow, and is so constructed as not to perceptibly increase the draught of the plow, being an improved form of device used for cutting off the edge of the furrow slice and depositing it in the previous furrow.

A sulky plow has been patented by Messrs. Joseph Marx and Adrian Virnig, of Cross Plains, Wis. It is designed so that two plows, preferably right and left hand plows, may be used alone or both together, in preparing lands or for cutting ditches and drains, and is arranged for conveniently guiding the machine and for regulating the operation of the plows, the colter, and the draught tongue, for working to any desired depth.

A hay gatherer has been patented by Messrs. James H. and Simeon W. Humphrey, of Platte City, Mo. It has a row of teeth forming a rake for gathering the hay, slats which form tables for the hay to accumulate on, and which may be used to assist in piling the hay upon the machine, turning the hay over upon itself and also in unloading, with levers which regulate the teeth for gathering, carrying the load, or traveling upon the road.

## MISCELLANEOUS INVENTIONS.

An excavator has been patented by Mr. Howard W. Roop, of McMeekin, Fla. The apparatus consists of a shore pulley and its driving mechanism, a bog anchor and its pulley, an endless cable passing around the pulleys, and a detachable excavator bowl adapted to be operated by the cable from the shore upon the edge of a bog.

A breast pump has been patented by Mr. Anaximander B. Tutton, of Sioux Falls, Dakota Ter. It is so constructed that the force of the suction is partly upon a water leg or column of water and milk in a long siphon tube, modifying its effect, while the pulsations of the bulb are broken up and rendered more like a uniform suction.

A toy carousel has been patented by Mr. Samuel Pinnell, of Brooklyn, N. Y. Combined with the handle is a frame pivoted thereto at its center, weighted to throw its center of gravity off the pivotal center and adapted to be oscillated by and with and revolved by the handle, with a series of figures fixed to the outer part of the frame.

A method of ornamenting curtain poles has been patented by Mr. Theodore J. P. F. Lindberg, of Brooklyn, N. Y. It consists in covering the wood with plain sheet metal, then passing the pole and covering through a hollow revolving chuck, with a point or tool to run in contact with the metal for impressing on it spiral ornamentation and embedding it into the wood.

A bow for musical instruments has been patented by Mr. Daniel Nettekoven, of Fort Shaw, Montana. The invention covers a tapering pocket in which are placed the ends of the hair, and a wedge fitting into the pocket, with other novel features, whereby the hair can be quickly removed and replaced, and is not liable to become loose in its fastenings.

A sofa and bed lounge has been patented by Mr. James P. Miller, of Boston, Mass. The seat has a back hinged to it and legs hinged to the back, with a spring secured to the seat and connected to the legs, for holding the back in a vertical position, with other novel features, so that but very little exertion will

be required to convert the lounge from a sofa to a bed, and vice versa.

A water heater has been patented by Messrs. Julius Helm and William H. Sweaney, of Williamsburg, Va. It is for heating water for bathing, laundry, or agricultural purposes, and the invention consists in a novel way of placing a stove constructed therefor in the end of a bath tub or other water receptacle, so that the water will partially surround the stove and be directly heated thereby.

A combined watch key and chain bar has been patented by Mr. Sherburn L. Swasey, of Newbury, Vt. It consists of a series of steel strips fixed in a barrel, the ends projecting from the barrel, and the inner sides of the strips shaped to form a square bore, which decreases in diameter from one end of the key to the other, the tubular barrel or bar having a chain-attaching ring secured between its ends.

A pipe bending machine has been patented by Mr. George B. Brownson, of North Springfield, Mo. Combined with a semicircular grooved block and grooved supporting blocks on pivoted dovetailed heads, adjustable at desired distances apart, are suitable means for moving the semicircular bending block down upon the pipe resting on the supporting blocks on the portion between the points of support.

A staff holder has been patented by Mr. Joseph Husband, of Rockwood, Ill. It is a device for holding brooms, canes, and similar articles, and consists of a base board with a horizontal shelf, with jaws pivoted to the shelf, a pair of levers pivoted to the base board, and a rod connected with the levers and having a socket for receiving the end of the broom handle or other article.

A combined door bell and letter box has been patented by Mr. John H. Pierce, of Omaha, Neb. This invention covers a bell-striking mechanism and mechanism for locking the letter box, the opening of which is closed by a flap plate adapted also to receive a name, above which is a push button of glass, hollow, and filled with a wooden plug painted with luminous paint so it will be visible at night, with other novel features.

A hat felting machine has been patented by Messrs. James C. Grant and Jarvis C. Brush, of Newburg, N. Y. The invention consists principally in connecting the sizing machines by a conveyer leading from the discharge opening of one machine to the feed opening of the next succeeding one, thus rendering the felting continuous and obviating the necessity of the operator's transferring the hat bodies from one sizing machine to another.

A sewerage system for buildings has been patented by Mr. Charles H. Shepherd, of New York City. It embraces a receiver for taking the waste and delivering it to the sewer pipe, there being in the receiver a broom for stirring up and discharging accumulating matter, with means for flushing the receiver and applying disinfectants thereto, and devices for drawing a soil pipe cleaning brush through the pipes, while preventing entrance of sewer gas to the building.

A mechanism for transferring patterns has been patented by Mr. Isaac Marks, of New York City. A leaf carrying the pattern in embossed or raised outline is hinged to a cutting table or other suitable bed, on which the cloth to be marked is placed; the raised pattern on the leaf is then covered with chalk or other marking material, the leaf turned down upon the cloth, and a roller specially arranged therefor made to travel over the back of the leaf, thus marking the pattern on the material.

An apparatus for launching torpedoes and an automatic brake therefor have been patented by Mr. Emil Kaselowsky, of Berlin, Germany. The launching device is a bar or beam that may be extended outward from the torpedo tube, and having a guide that conforms to a guide stud on the outer surface of the torpedo, so that as the torpedo leaves the case the projection will enter the slot in the guide bar, and the torpedo be thus supported and guided until it has entirely emerged from its tube, while the brake-releasing mechanism operates automatically simultaneously with or slightly before the application of the projecting force to the torpedo, in order to avoid the possibility of compressed air or gas, or similar projecting force, being admitted to the torpedo tube while the brake is applied.

## NEW BOOKS AND PUBLICATIONS.

AGRICULTURE IN SOME OF ITS RELATIONS WITH CHEMISTRY. By F. H. Storer. New York: Charles Scribner's Sons. 2 vols. Pp. 529, 509.

While this is a work written for persons fond of rural affairs, and students of agriculture, it is not at all technical in the chemical information given; its character may be best judged by the fact that it is based upon lectures delivered by the writer, who is Professor of Agricultural Chemistry at Harvard, for two classes of students—young farmers and city men desiring acquaintance with land cultivation as connected with suburban homes. As is to be expected from this mode of treating the subject, the 1,000 pages of matter here presented furnish interesting reading throughout rather than dry technical details, although each chapter furnishes an epitome of the most recent and valuable information on some one branch of the study. The general relations of soil and air to the plant, the atmosphere as a source of plant food, and the movements of water in the soil, form the opening chapters, followed by a description of the instruments and operations of tillage, a consideration of soils as chemical agents, composting and the best ways of applying manures and fertilizers, the nitrates, phosphates, and ammonium compounds, lime, sodium, and magnesium and their compounds, with chapters on irrigation and draining, the rotation of crops, and special cultivation of hay, oats, barley, care of pasture land, etc. To one new to the subject, this work will furnish an invaluable guide, while the experienced agriculturist cannot fail to be benefited by its logical reasoning and rich store of clearly arranged facts.

BOILER MAKING. By W. H. Ford. New York: John Wiley & Sons.

This is a practical treatise on work in the shop, intended for the use of boiler makers, showing methods of riveting, bracing, staying, punching, drilling, smithing, etc. The descriptions in this little hand-book are so minute, accompanied as they are with illustrations showing the tools used and the best way of doing many kinds of work, details which workmen generally only acquire by long experience, that it cannot fail to be an extremely valuable assistant to the young boiler maker.

THE METAL TURNER'S HANDY BOOK. By Paul N. Hasluck. London: Crosby, Lockwood & Co.

This is an English manual for workers at the foot lathe, giving elementary information on the tools, appliances, and processes employed in metal turning. It is intended for the beginner, and has numerous illustrations, some of which are of styles of lathes and appliances differing somewhat from what one usually sees in this country.

## Received.

LEVELING; BAROMETRIC, THERMOMETRIC, AND SPIRIT. By Ira O. Baker. New York: D. Van Nostrand.

ANALYSIS OF ROTARY MOTION AS APPLIED TO THE GYROSCOPE. By Major J. G. Barnard. New York: D. Van Nostrand.

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