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INVENTIONS PATENTED.

NOTE.—Patents are granted for 15 years. The term of years for which the fee has been paid, is given after the date of the patent.

No. 37,858. Nut Lock. (*Arrête-écrou.*)

Marcus B. Earnest and Adolph Burster, Fort Madison, Iowa, U. S. A., 1st December, 1891; 5 years.

Claim.—The combination, with the bolt having the threaded portion and terminating in the squared end, of the nut threaded on the bolt and having the rectangular body portion and cylindrical crown or hub, the latter provided with longitudinally disposed inclined ratchet teeth, the flat spring pawl engaging the teeth and twisted and bent to form the eye for engaging the square end of the bolt, and means for retaining the pawl on the bolt, substantially as specified.

No. 37,859. Automatic Railway Switch.

(*Aiguille de chemin de fer.*)

James McCarthy and Walter Elam Stratton, both of Marinette, Wisconsin, U.S.A., 1st December, 1891; 5 years.

Claim.—1st. In an automatic railway switch, the combination, with the pivoted switch rails and the bridle bar connecting the same, of a lever connecting said bridle bar with a lever mounted vertically in suitable stand provided with flanges at its upper end, a shifting block mounted slidably upon said flanges and having at its upper side a groove or slot formed with converging sides, and a roller mounted adjustably upon a locomotive to engage the said grooved shifting block, substantially as and for the purpose set forth. 2nd. In an automatic railway switch, the combination, with the pivoted switch rails and the connecting levers, of the shifting stands provided at their upper ends with flanges forming tracks, the shifting blocks mounted slidably upon the same and having in their upper sides grooves or slots provided with converging sides, a rack bar mounted slidably upon a locomotive and having a downwardly extending roller at its outer end and means for adjusting the said rack bar, substantially as and for the purpose set forth. 3rd. In an automatic railway switch of the class herein described, the combination, with the shifting block mounted slidably upon a suitable stand and having in its upper side a groove or slot provided with converging sides, of a transversely sliding rack bar mounted upon a locomotive and having a downwardly extending roller at its outer end, a shaft having at its front end a spur wheel engaging said rack bar and provided at its rear end, which is extended within reach of the engineer, with a hand wheel having suitable stops, and a pawl or catch adapted to engage the latter, substantially as and for the purposes set forth.

No. 37,860. Water Gas Furnaces and Devices Therefor. (*Fourneau à gaz pour l'eau et appareil pour cet objet.*)

William Stewart Hutchinson, Chicago, Illinois, U. S. A., 1st December, 1891; 5 years.

Claim.—1st. An injector for a furnace provided with a transverse centrally perforated diaphragm through which the air and steam pass into the furnace. 2nd. In a water gas furnace, a front wall having a transverse air passage or way with vertical air passages leading to it, and a steam pipe in the transverse passage and a series of air injectors connected with the steam pipe and projecting through the wall into the furnace. 3rd. A furnace wall consisting of a series of boxes, tubes or plates built up or constructed as shown so as to provide an upper transverse passage or box with lower vertical passages or boxes leading thereto so that the air is taken from the ash pit to the upper transverse box and thence discharged into the furnace. 4th. The combination with a locomotive furnace, of a steam pipe leading from it to the base of the smoke stack to produce the draft, pipes leading from the steam pipe to two or more

sides of the furnace, and injectors connected with such steam pipes and adapted to receive air and discharge into the furnace. 5th. A furnace front built up of plates and boxes in the proportions and substantially as shown and described. 6th. Making fluid fuel for furnaces by discharging into the furnace atmospheric oxygen and hydrogen with steam in such manner and in such proportions as with these gases combine with suitable quantities of carbon generated from the artificial fuel in the furnace to create what is known as water gas which then burns within the furnace.

No. 37,861. Wind Apparatus for Generating Electricity and Charging Secondary Batteries. (*Moulin à vent pour la génération de l'électricité et charger les piles secondaires.*)

James Madison Mitchell, Lawrenceville, Georgia, U. S. A., 1st December, 1891; 5 years.

Claim.—1st. In an apparatus for generating electricity, the combination, with a wind wheel, of a shaft journaled in a drum or casing, an armature mounted on said shaft, a field magnet arranged in said drum, a pivotal support for said drum, conductors arranged upon said support and contacting with conducting devices on the bearing for said pivotal support, a working circuit for the dynamo, a derived circuit for said dynamo, and an automatic device closing the working circuit when the dynamo generates a current of predetermined strength and breaking said circuit and making the derived circuit when the current falls below a given point, substantially as described. 2nd. In a mechanism for generating electric currents, the combination, with a dynamo, of a wind wheel upon the shaft on which the armature is mounted, a pivoted support for said parts, conductors connecting the poles of the dynamo to the poles of a storage battery, devices intermediate between the movable and the rigid members for the dynamo, and automatic means for closing the charging circuit and simultaneously breaking the derived circuit, and vice versa, substantially as described. 3rd. In a mechanism for generating electric currents, the combination, with a dynamo enclosed within a casing, a shaft journaled in said casing, a wind wheel on the shaft, a directing vane hinged or pivoted on the casing and centered by opposite springs, an electro-magnet mounted on said casing and when energized attracting an armature on the vane, a circuit for the dynamo connected with a secondary battery charged by the generated current, a derived circuit for the electro-magnet attracting the vane, an automatic device for making and breaking the charging circuit and the derived circuit for the dynamo, respectively, and an automatic circuit closer for the secondary circuit of the electro-magnet, substantially as described. 4th. In a mechanism for generating electric currents, the combination, with a dynamo arranged in a casing pivoted upon a tubular support, of a shaft having a wind wheel driving the armature of said dynamo, a pivotally mounted directing vane, springs centering the said vane, an electro-magnet attracting an armature on one side thereof, a working circuit for the dynamo, in which are interposed brackets mounted on the pivoted part of the support and having rolling contacts on annular conductors on the fixed part of said support, a storage battery charged by the working circuit a derived circuit for the dynamo, an electro-magnet and armature forming part of the working circuit and derived circuit for the dynamo, a secondary circuit for the electro-magnet attracting the vane and a second electro-magnet interposed in a separate secondary circuit, the armature of which magnet opens and closes the circuit of the electro-magnets attracting the armature on the vane, substantially as described. 5th. In an apparatus for generating electric currents, the combination, with a dynamo arranged in a pivotally supported casing, of a shaft carrying the armature of the dynamo, a wind wheel, driving the said shaft, a pivoted directing vane on the casing, springs centering the same, an electro-magnet attracting an armature on the vane when said magnet is energized to swing it to one side, a secondary or storage battery, a charging circuit for said battery, a battery circuit for the electro-magnet actuating the vane, an electro-magnet interposed in the charging circuit, an armature for said magnet having an insulated portion forming part of the charging circuit and a second insulated portion forming part of a separate circuit for the dynamo, and contacts, one in each of