

stantially as specified. 2nd. In a steam engine, the cam wheel having two annular cam grooves formed in a manner, substantially as described, fixed to the main or driving shaft by which motion is imparted from said shaft in opposite directions, in a line parallel with the axis of said shaft, to operate certain mechanism connected with the steam cylinders, as and for the purpose set forth. 3rd. A cam wheel, formed substantially as described, and fixed upon the driving shaft of a steam engine, one of the grooves of which gives motion to a steam abutment, and one or more slide valves on one side of said cam wheel simultaneously, and the other of said grooves alternately with the first giving corresponding motion to an abutment, and slide valves on the opposite side of said wheel, as and for the purpose set forth. 4th. A steam engine having two steam cylinders, one fixed to a base upon one side and parallel with a central plane, and one upon the opposite side of said plane, said cylinders being set with their common axis coincident with the axis of the driving shaft, in combination with concentric pistons provided with suitable piston heads, substantially as described, fixed upon and moving said driving shaft, when influenced by steam received into, and discharged from said cylinders, substantially as specified. 5th. The combination, with a steam cylinder fixed about the axis of the driving shaft of an engine, and a rotary piston fixed to and moving with said driving shaft, provided with a suitable head, of an abutment having an alternate movement into and out of said cylinder with an interval of rest, a rotary cam wheel provided with annular grooves about its periphery, and suitable rod connections for said cam wheel and abutment, all arranged as set forth. 6th. The combination, with the cylinder, rotary piston and steam abutment, substantially as described, of the slide valve operated from the motion of the main driving shaft through the influence of the cam wheel, grooved in its periphery and fixed to the driving shaft, and suitable connecting mechanism, as and for the purpose substantially as set forth. 7th. The combination, with the steam cylinders fixed at opposite points about the axis of the driving shaft, and provided with induction and exhaust ports, the rotary pistons, movable abutments, steam chests and slide valves, of the rotary cam wheel located between the steam cylinders upon the driving shaft, provided with cam grooves on its periphery, and connecting mechanism for the abutments, slide valves and cam wheel, substantially as set forth. 8th. The reversing mechanism composed of cocks B, E, E₂, E₃, shaft S, arm r, levers t, t₁, t₂, etc., and link bars q, q₁, and cranks connected to said cocks, whereby steam is changed and directed from one side of the abutments of the steam cylinders to the other, to give forward or backward movement to the pistons and driving shaft, substantially as specified. 9th. The combination, with a steam chest and slide valves moving horizontally therein, and the combined induction and eduction cocks, of the fixed concentric cylinders and rotary piston fixed to the driving shaft and moving in said cylinder, and the steam abutment moved horizontally from a concentric cam wheel, grooved as described and fixed to said driving shaft, as specified. 10th. A steam engine having duplicate cylinders and rotary pistons arranged about the axis of the driving shaft, duplicate slide valves and abutments arranged and moved in connection with a cam wheel having cam grooves, substantially as described, whereby said pistons are rotated by force of steam, which enters and continues to enter through an induction port into one cylinder, to drive its piston half a revolution and cuts off simultaneously with the entrance and continued entrance of steam in the opposite cylinder during a half revolution, thus keeping up an unabated steam pressure and movement consequently to the driving shaft, substantially as set forth. 11th. The combination, with the steam cylinders provided with suitable ports located at opposite points about the axis of the driving shaft, the pistons fixed to the driving shaft and moving with it within the said cylinders, of the double grooved cam wheel, the slide valves, the induction and exhaust ports connected with the cylinders and slide valves, the steam abutments and induction and eduction cocks, all arranged as and for the purpose set forth.

No. 24,673. Mowing Machine. (*Faucheuse.*)

William A. Morgan, Jr., Cambria, Iowa, U.S., 7th August, 1886, 5 years.

Claim.—In a mowing machine, the combination, with the frame having the portion A₁ and vertical guide or keeper L cast integral therewith, of a draft-pole M secured pivotally to said frame in rear of said keeper L, and devices, substantially such as indicated, for moving the body relative to said pole M, substantially as set forth.

No. 24,674 Method of Reducing old Railroad Rails into Steel Plates. (*Manière de Convertir les vieux Rails de Chemin de Fer en Plaques d'Acier.*)

Bernard Lauth, Howard, Penn., U.S., 7th August, 1886, 5 years.

Claim.—The method, substantially as hereinbefore described, of reducing railroad rails to plate metal, the same consisting in the presentation of a section of an old rail to grooved rolls, in order to reduce to a limited extent the head and the flange thereof, then presenting said section sidewise to plain surfaced rolls, of unequal diameters, and giving to it a succession of passes accompanied by reversals of the section, so as to present to the rolls, first one edge and then the other, and to the small roll, first one side and then the other, until finally, after so rolling until the proper width of plate has been attained, and then passing said plate edwise through the rolls to reduce it to the desired thickness, as set forth.

No. 24,675. Transom Lifter. (*Lever de Dormant.*)

Charles F. Leopold, Philadelphia, Penn., U.S., 7th August, 1886; 5 years.

Claim.—1st. A transom lifter having a vertically-moving bar, a guide and a rod pivoted to said bar and the transom, the bar continuing below the lower guide, and the rod being pivoted to the lower end of said bar, substantially as and for the purpose set forth. 2nd. A transom lifter, having a vertically-moving toothed bar, a guide for said bar, and a gravitating pawl supported on said guide and adapted

to engage with the teeth of said bar and lock the same, said pawl being of the form of a tooth, having a weighted handle and provided with pivots which are mounted on the sides of the guides, substantially as and for the purpose set forth. 3rd. A transom lifter, having a vertically-moving toothed bar, a guide for the same, a locking dog for said bar and a rod, the dog being journaled on the guide, the bar extending below the guide, and the rod being pivoted to the transom and the lower end of the toothed bar, substantially as described.

No. 24,676. Waggon and Sleigh Box.

(*Caisse de Wagon et de Traineau.*)

James Cochran, Dorby, Ont., 7th August, 1886, 5 years.

Claim.—1st. The combination of the dove-tail fastening B, B, fastened on to the tail board A by the bolts a, g, and the perpendicular rod with collar, the keepers K, E, and inverted nut D, substantially as and for the purposes hereinbefore set forth. 2nd. The combination of the strap f, with eye fastened to side board, self keying hook F passing through bottom and cleat, and secured with nut rivetted on, substantially as and for the purposes hereinbefore set forth.

No. 24,677. Force an Lift Pump.

(*Pompe Aspirante et Foulante.*)

William M. Watson, Brantford, Ont., 9th August, 1886, 5 years.

Claim.—The combination of the piston B, with the handle C and piston rod D, substantially as and for the purpose hereinbefore set forth.

No. 24,678. Mode of and Apparatus for the Generation of Steam. (*Mode et Appareil de Production de la Vapeur.*)

Pierre E. Jay, New York, N.Y., U.S., 9th August, 1886, 5 years.

Claim.—1st. The method of converting water into steam, by dispersing, flashing, injecting, pouring, dropping, or otherwise introducing water into a fragmental, subdivided or granulated mass of heated metal, alloy, or other metallic substance. 2nd. The method of converting water into steam by dispersing, flashing, injecting, pouring, dropping, or otherwise introducing water into a fragmental, subdivided or granulated mass of heated metal, alloy, or other metallic substance, contained in a closed recipient to the exterior of which heat is applied. 3rd. The method of converting water into steam by dispersing, flashing, injecting, pouring, dropping, or otherwise introducing water into a fragmental, subdivided or granulated mass of metal, alloy, or other metallic substance, heated to a temperature at which water passes to steam without boiling, or assuming a spheroidal or globular state, substantially as set forth. 4th. The method of converting water into steam by dispersing, flashing, injecting, pouring, dropping, or otherwise introducing water into a fragmental, subdivided or granulated mass of metal, alloy, or other metallic substance, contained in a suitable recipient to the exterior of which the heat is applied, and heated to a temperature at which water passes to steam without boiling, or assuming a spheroidal or globular state, substantially as set forth. 5th. The combination, to form an apparatus for the conversion of water into steam, of a closed generator, recipient or containing vessel, a fragmental, granulated or subdivided mass or charge of metal, alloy, or other metallic substance contained therein, a furnace or other suitable means for heating the foregoing charge or mass, means for dispersing, flashing, injecting, pouring, dropping, or otherwise introducing water into said mass or charge, and means of exit for the steam generated. 6th. The combination, to form an apparatus for the instantaneous conversion of water into steam, of a closed generator, recipient or containing vessel, a fragmental, granulated or subdivided mass or charge of metal, alloy, or other metallic substance contained therein, a furnace or other suitable means for heating the foregoing charge or mass to a temperature at which water is instantly converted into steam, means for dispersing, flashing, injecting, pouring, dropping, or otherwise introducing water into said mass or charge, and means of exit for the steam generated, substantially as set forth. 7th. The combination, to form an apparatus for the instantaneous conversion of water into steam, of a closed generator, recipient or containing vessel, a fragmental, granulated or subdivided mass or charge of metal, alloy, or other metallic substance contained therein, a furnace or other suitable means for heating the foregoing charge or mass to a temperature at which water is instantly converted into steam, an injector for the injection of water into the contained mass or charge, and means of exit for the steam generated, substantially as set forth. 8th. The combination, in an apparatus of the class herein set forth, of the generator A, the contained metallic mass G, the water-inlet or feed-water pipe D, the injection tube C and the outlet or steam pipe E, substantially as described. 9th. The combination, in an apparatus of the class herein set forth, of the generator A, the contained metallic mass G, the water inlet or feed-water pipe D, the injection tube C, the outlet or steam pipe E, and the depending containing-sleeve for said injection tube, substantially as described. 10th. The combination, to form an apparatus of the class herein recited, of a furnace, a closed generator secured in connection with said furnace in such manner as to be heated thereby, a fragmental, subdivided or granulated charge of metal, alloy, or other metallic substance contained therein, and means for injecting or otherwise introducing water to the heart of the charge, substantially as set forth.

No. 24,679. Manufacture of Journal Bearings. (*Fabrication des Coussinets de Tourillons.*)

John J. Lappin, Toronto, Ont., 9th August, 1886; 5 years.

Claim.—A process for the manufacture of journal bearings, of revolving shafts having the acting face chilled in one or more parts, or over the full face, and cast face down, so that the pure and heavier metal will fall to the bottom and form the face of the bearing, substantially as shown and described and for the purposes set forth.