

No. 4150. WILLIAM HAARMANN, Berlin, Prussia, 10th December, 1874, for 5 years: "Manufacture of Vanilline." (Fabrication de la Vanilline.)

*Claim.*—The production of artificial Vanilline by treating conifer or the cambial juice of conifer or coniferin, or a watery extract of conifer or any substance containing coniferin by either of the two processes as set forth.

No. 4151. JOHN J. HIGGINS, New York, U. S., 10th December, 1874, for 5 years: "Automatic Umbrella Runner." (Douille automatique de parapluie.)

*Claim.*—In combination with the stick C and springs c, c', of an umbrella, the runner composed of the inner tube A and outer tube B, all constructed and arranged to operate as set forth.

No. 4152. WILLIAM STAFFORD, Montreal, Que., 10th December, 1874, for 5 years: "Harrow and Cultivator." (Herse-cultivateur.)

*Claim.*—1st. The frame a, a; 2nd. The mode in which the teeth d, d are secured to the frame a, a; 3rd. The mode of attaching each section to master-tree h, regulating or draught holes k, k, in frames a, a; 4th. Regulating or draught holes in centre of master tree h.

No. 4153. FRANKLIN MARSH, Northampton, Mass., U. S., 11th December, 1874, for 5 years: "Rotary Steam Engine." (Machine à vapeur rotatoire.)

*Claim.*—1st. The combination of the slide valves D and D', the steam passages or ports h, h, h, and h, and the piston B, said combination and arrangement giving to the engine the feature of a double cut off, as described; 2nd. In combination with the piston B, the reverse valves a, a, a, and a, the slide valves D and D', and the passages h, h, h, and h, as set forth; 3rd. In combination with the piston B, the passages h, h, h, and h, the reverse valves a, a, a, and a, the slide valves D and D', and the exhaust passage n, as set forth; 4th. In combination with the passages h, h, h, and h, the reverse valves a, a, a, and a, the lever j and the connecting rods e, whereby a reverse rotary movement is given to the piston B, by moving all said reverse valves at once through the medium of said lever and rods as described; 5th. The arrangement of the passages h, h, h, h, and the steam chambers c, extending and beyond said passages in combination with the valves D and D', whereby said valves are moved inward by the force of the steam entirely and operate at their rear ends, to cut off the steam from entering said passages when the valves are at their extreme outward position, as set forth.

No. 4154. GEORGE BARCLAY and JAMES KENNEDY, Oshawa, Ont., 11th December, 1874, for 5 years: "Improvements on Horse Rakes." (Perfectionnements aux râteaux à cheval.)

*Claim.*—1st. The combination of the spring shooting bar B, having pins c, d, slotted hollow axle C, and collar B, having radial grooves f with the wheel hub A, to operate as described; 2nd. The draw-bracket I, secured to the draw bar and sleeved on the axle, having a cam projection J, for automatically disengaging the pin c from the radial grooves f, in the process of dumping; 3rd. Providing the rake with a foot bracket G, hinged centrally to its pivotal connection and having a lever e, as described; 4th. The tooth holders K, bolted separately to the axle and formed with a slotted vertical projection L, and having a slot h in the base to hold the tooth in position as set forth.

No. 4155. JOHN TESSEYMAN and PRESERVED SMITH, Dayton, Ohio, U. S., 11th December, 1874, for 5 years: "Valve Gear." (Appareil de Soupape.)

*Claim.*—1st. The combination of valve moving lever C, c, actuated directly by the piston rod A, reciprocating plunger E, c, and spring G, connected and operating in the manner specified; 2nd. The combination of cam D, b, lever C, c, plunger E, c, and spring G; 3rd. In combination with plunger E, c, and fixed support F, the adjustable head f, adjustable nut I, and spring G, operating as specified.

No. 4156. NORMAN W. WHEELER, New York, U. S., 11th December, 1874, for 15 years: "Process and Apparatus for the Reducing of Iron

and other Ores." (Procédé et appareil de réduction des minerais de fer et autres.)

*Claim.*—1st. The process of reducing metals from the ores thereof described, that is to say by showering granulated ore downwards through a double atmosphere composed of a column of flame over a column of reducing gases; 2nd. In combination with means for reducing metals, by showering the ore down through a double atmosphere, consisting of a rising column of flame, over a rising column of reducing gases, the process described of transferring it from the foot of the shaft A, to the hearth of the oven B, connected therewith and there exposing it to the action of flame produced and controlled in the manner set forth; 3rd. The process described of making carbon steel, that is to say, by showering iron ore down through a double atmosphere consisting of a rising column of flame over a column of reducing gases, into a bath of carbonized iron, maintained in a state of fusion as described; 4th. The process of making chrome steel described, that is to say, by showering the ores of chromium and iron, in measured relative quantities, down through a reducing shaft containing a rising column of flame over a rising column of reducing gases, into a bath of molten metal; 5th. The feeding apparatus consisting of the cylinder m, hopper k, and suitable means for guiding the ore; 6th. The combination of the feeding apparatus with the reducing shaft A; 7th. The combination of both ore and flux feeding apparatus with the reducing shaft A; 8th. The combination of the gas conduit a, leading from a gas producer and a reducing shaft A, having the full combustion air holes g, g, and feeding holes f, f; 9th. The combination in a reducing shaft A of the full combustion air holes g, g, ore feeding holes f, f, and flux feed holes c, c; 10th. The combination of a reducing shaft, as A, having full combustion air holes g, g with the furnace or oven B, gas conduit a, air conduit b, and door i, as described.

No. 4157. THOMAS HEAD, Copetown, Ont., 11th December, 1874, for 5 years: "Potato-Digger." (Extracteur à patates.)

*Claim.*—1st. The combination of moveable or shaking grated mould board B, to plough or digger; 2nd. The combination of rod C, crank D, shaft F, for communicating motion to grated mould board B, and the use of moving or other machine as prime mover to shaft F, as set forth.

No. 4158. ELMER A. SMALLEY, Hyde Park, Vt., U. S., (Assignee of N. F. Reed and T. O. Andrus, 11th December, 1874, for 5 years: "Rein-Holder." (Accroche guides.)

*Claim.*—1st. In combination with the cams D, D, and screw B, the adjustable elastic cord a. 2nd. The combination of the clamp, A, A, post C, rod b, cams D, D, all constructed as set forth.

No. 4159. GEORGE BARCLAY and JAMES KENNEDY, Oshawa, Ont., 11th December, 1874, for 5 years: "Improvements on Horse Rakes." (Perfectionnements aux râteaux à cheval.)

*Claim.*—1st. The combination of the cog wheel B, affixed to the hub, A, and a pawl bracket C, secured to the axle having a spring pawl D, to operate as described; 2nd. The projecting arm H, secured to the draw bar to release the pawl engagement, automatically as set forth.

No. 4160. WILLIAM H. PAGE and SAMUEL MAWRY, Greenville, Ct., U. S., (Assignees of G. C. Setchell), 11th December, 1874, for 5 years: "Improvements on House and Garden Trellises." (Perfectionnements aux treillis de maison et de jardin.)

*Claim.*—The trellis described, made by subdividing boards into rectangular strips and bars, and fastening the subdivisions together in various curved forms by the spring of the curved parts in the manner set forth.

No. 4161. HUBERT R. IVES, Montreal, Que., (Assignee of W. Burlingame), 11th December, 1874, for 5 years: "Steam Drum." (Réservoir à vapeur.)

*Claim.*—A steam drum or reservoir divided into two compartments as set forth; the lower compartment receiving steam from the generator by a series of ports and the partition between the chambers being perforated as explained, the whole being as stated.