

nection with a shaft M slotted vertically at *m*, arm N, shaft O, and means for rocking the shaft to lift the plate, substantially as herein set forth. 4th. In a rail clearer for snow ploughs, the combination with a plate K slotted at *k*, and shaped at *k1*, *k2*, *k4*, substantially as specified, of the frame D fitted in ways E, fixed to the mould-board A, of the bracket hangers H, H, fixed to frame D, and entering slots *k* of plate K, the plate J fixed to hangers H, H, above plate K, and means for raising and lowering the frame D and plates K, J, substantially as herein set forth. 5th. In a rail clearer for snow ploughs, the combination with a plate K slotted at *k* and shaped at *k1*, *k2*, *k4*, substantially as specified, of the frame D fitted in ways E, fixed on mould board E, the bracket hangers H, H, fixed to frame D and entering slots *k*, of plate K, the plate J fixed to hangers H, H, above plate K, the shaft M fixed to frame D, and slotted at *m*, and the arm N, shaft O, and means for rocking shaft O, substantially as herein set forth. 6th. In a rail clearer for snow ploughs, the combination, with a plate K, slotted at *k*, and shaped at *k1*, *k2*, *k4*, substantially as specified, of the frame D fitted in ways E, fixed on mould-board A, the bracket hangers H, H, fixed to frame D, and entering slots *k* of plate K, the plate J fixed to hangers H, H, above plate K, the shaft M fixed to frame D and slotted at *m*, the arm N, shaft O, arm Q and reach rod R, substantially as herein set forth. 7th. In a rail clearer for snow ploughs, the combination with the plate K, supported above and across the rail C by a vertically movable frame fitted to slide in ways fixed to the snow plough, and said plate K being held to move independently lengthwise in said frame, and being shaped at its lower edge, as at *k1*, *k2*, *k4*, substantially as specified, of a roller L, journaled on plate K, and adapted to run against the edge of the head of the rail, substantially as herein set forth. 8th. In a rail clearer for snow ploughs, the combination, with the plate K, supported above and across the rail C by a vertically movable frame D fitted to slide in ways fixed to the snow plough, and said plate K having independent lengthwise movement in said frame, of a carrier roller G journaled in the frame D, or brackets thereon, and so as to ride on the rail C, substantially as herein set forth. 9th. In a rail clearer for snow ploughs, the combination, with the plate K supported above and across the rail C by a vertically movable frame D, fitted to slide in ways fixed to the snow-plough, and said plate K being shaped at its lower edge, as at *k1*, *k2*, *k4*, and fitted to move lengthwise, substantially as specified, of a roller G, journaled in the frame D, or brackets thereof, so as to ride on the rail C, substantially as herein set forth. 10th. In a rail clearer for snow-ploughs, the combination, with the plate K, supported above and across the rail C by a vertically movable frame fitted to slide in ways fixed to the snow-plough, and said plate K being shaped at *k1*, *k2*, *k4*, and fitted to move independently lengthwise, substantially as specified, of a roller G journaled in frame D or brackets thereon, so as to ride on top of rail C, and a roller L journaled on plate K, so as to ride against the edge of the head of the rail, substantially as herein set forth. 11th. In a rail clearer for snow ploughs, the combination, with the plate K, supported above and across the rail C by a vertically movable frame fitted to slide in ways fixed to the snow plough, and said plate K being shaped at *k1*, *k2*, *k4*, and fitted to move independently lengthwise, substantially as specified, of the plate J fixed to the frame above plate K, and the interposed thrust blocks I, I, and said block I being extended downward, as at *i*, to stand behind the plate K substantially as herein set forth. 12th. In a rail clearer for snow ploughs, the combination, with the mould boards A, A, of ways E, E, fixed thereto, the frames D, D fitted to slide vertically in said ways, the plates K, K, supported by frames D, D, and so as to move independently lengthwise, and formed at their lower edges, as at *k1*, *k2*, *k4*, rollers L, L fitted to plates K, K, rollers G, G, journaled in frames D, D, the plates J, J, fixed to said frames, the shafts M, M, fixed to frames D, D and slotted at *m*, the arms N, N, shaft O, arm Q and reach rod R, all substantially as herein set forth.

No. 21,466. Corn and Potato Cultivator and Hiller Combined. (*Cultivateur-Butteur pour le Blé d'Inde et les Patates*)

William G. Parmelee, Stone Church, N. Y., U. S., 20th April, 1885; 5 years.

Claim.—1st. The combination, with the trapezoidal frame B, C, and standards D having their upper ends secured thereto of the slotted plates I having the lower bent ends *d*, knife M, secured to the bent ends *d*, hiller N and bolts *e*, substantially as shown and described. 2nd. The combination, with the tongue A having mortises *a*, *a*, and frame B, C, D, carrying knives and hillers M, N, of a protector consisting of a top K, inclined sides L and standards H passing through the mortises *a* of the tongue, and adjustably secured thereto, substantially as shown and described.

No. 21,467. Process and apparatus for the Production of Poly sulphites and Double Salts for the manufacture of Cellulose or Paper Pulp from Wood Fibre. (*Procédé et appareil pour la Production des Poly-Sulfites et Doubles Sels, pour la Fabrication de la Cellulose ou Pâte à Papier de Bois.*)

Eugene B. Ritter and Charles Kellner, Podgoja, Austria, 20th April, 1885; 10 years.

Claim.—1st. The process of producing a bi-sulphite solution, consisting of sulphurous acid, combined with a double base, in the proportions of more than two atoms of the acid with one atom of the respective base. 2nd. The process of producing a bi-sulphite solution, consisting of sulphurous acid, combined with a double base, in the proportions of more than two atoms of the acid with one atom of the respective base, said process consisting in first bringing a solution of sulphurous acid water in contact with a base and thereby forming a sulphite solution with said base, then unregenerating said solution with sulphurous acid and bringing the same into contact with the second base. 3rd. In and apparatus for the continuous production of bi-sul-

phites by the combination of sulphurous acid with a suitable base, an absorption chamber subdivided into a series of communicating compartments through which the gases are caused to circulate in one direction, in combination with a liquid supply, constructed and adapted to effect a circulation of the liquid through said compartments in an opposite direction to the gases, for the purpose described. 4th. An apparatus for the production of bi-sulphite by the combination of sulphurous acid, with a suitable base, comprising the following elements, viz: an absorption chamber subdivided into communicating compartments provided with grating to receive coke or limestone and connected through suitable pipes and sluice valves with the gas supply, a series of liquid reservoirs surmounting and communicating respectively with said compartments, a series of basins with pipes leading to said reservoirs by way of intermediate pumps or delivery devices, and with said compartments by means of discharge pipes or conduits whereby the gases and liquid are caused to circulate through said compartments in opposite directions, boxes adapted to contain carbonates of the base, meters arranged at the entrance and discharge ends of said boxes and communicating therewith, and pipes leading in series from one compartment of the tower to one box thence to a reservoir basin next to the last compartment through which the liquid circulates, thence to the second box, and finally to the reserve basin, all substantially as described and shown.

No. 21,468. Floor Grinding Machine.

(*Machine à Dresser les Parquets.*)

James B. Harris, Jr., Genesee, N. Y., U. S., 20th April, 1885; 5 years.

Claim.—1st. The grinding machine consisting of the wheel or block A, the axle B carrying rollers at its end, the tongue I and the seat F, combined for operation substantially as described. 2nd. In a floor grinding machine, the combination, with the grinding block or wheel, of an axle hung to rock upon the wheel, and provided with a seat for the operator, substantially as described. 3rd. In a floor grinding machine, the combination of the axle D and the grinding wheel or block A provided with the vertical stud or post C upon which the axle is hung, substantially as described.

No. 21,469. Process for Extracting Gold and Silver from Copper Ores, Oxides of Copper, Manganese Ores, etc. (*Procédé pour Extraire l'Or et l'Argent des Minerais de Cuivre, Oxides de Cuivre, Minerais de Manganèse, etc.*)

George Thomson, Dillonton, Que., 20th April, 1885; 5 years.

Claim.—The improved process for the extraction from copper and other ores and oxides, by adding to them hydro-chloric acid in the proportions set forth, heating the mixture to a point above that of calcination, thereby driving off the acid and volatilizing the precious metals, and then collecting such metals, all as herein set forth.

No. 21,470. Road Engine. (*Machine Routière.*)

George F. Page, Baltimore, Ind., U. S., 20th April, 1885; 5 years.

Claim.—1st. In a road-engine, the driving and pilot wheels provided with peripheral grooves, and connected by an endless chain having a V cross-section, substantially as and for the purpose specified. 2nd. In a road-engine, the driving and pilot wheel, connected by an endless track composed of hollow links having extensions which extend into the adjoining links, substantially as and for the purpose specified.

No. 21,471. Insertible Saw Tooth.

(*Dent de Scie Mobile.*)

John C. Trullinger, Astoria, Oregon, U. S., 20th April, 1885; 5 years.

Claim.—1st. In a saw of that class having a rotary clamping bit seated in a recess at the bottom of the throat in front of each tooth, the removable tooth back or shank having a case-hardened portion at the back of the inserted portion of the tooth, substantially as and for the purpose set forth. 2nd. In a saw, the combination, with the blade, of the rotary clamping bit seated in a curved recess at the bottom, of the throat in front of each tooth, and the removable tooth shank or back curved at its front side to conform to the curvature of said recess or seat, together with the tooth with its lower portion interposed or held between said shank and bit, substantially as and for the purpose set forth. 3rd. In a saw the combination, with the blade or plate of the rotary clamping-bit seated in a curved recess at the bottom of the throat in front of each tooth, and the removable shank or back curved to conform to the curvature of the aforesaid recess and having a case-hardened portion along its upper curved surface together with the tooth with its lower portion held or interposed between the case-hardened portion of the removable shank or back and said bit, substantially as and for the purpose set forth.

No. 21,472. Button. (*Bouton.*)

Dilman B. Shantz, Berlin, Ont., 20th April, 1885; 5 years.

Claim.—A button, consisting of the annular front ring A, back B, provided with shank C and disk D confined by the back and ring, as set forth.

No. 21,473. Production of Compounds containing Nitro-Cellulose. (*Production de Compositions contenant de la Nitro-Cellulose.*)

William V. Wilson, London, and Joseph Storey, Lancaster, Eng., 20th April, 1885; 5 years.

Claim.—The use of acetate of amyl as the solvent nitro-cellulose, which may be used either alone or in combination with any of the well known menstrua, and the application of the dissolved or softened