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INVENTIONS PATENTED.

No. 11,172. Improvements in the Art of Manufacturing Wood Pulp. (*Perfectionnements dans l'art de fabriquer la pâte de bois.*)

Angus McDonald, Windsor Mills, Que., 24th April, 1880; for 5 years.

Claim.—The art of renewing the spent caustic liquor used in making wood pulp, for paper making and other purposes, by treating it (directly it becomes spent, that is to say, without evaporating to dryness) by boiling and clarifying and adding quick or caustic lime thereto.

No. 11,173. Improvements in Pads for Horses' Hoofs. (*Perfectionnements aux bourrelets pour les sabots des chevaux.*)

DeWitt C. Baker, Buffalo, N. Y. U. S., 24th April, 1880; for 5 years.

Claim.—1st. An edgewise expansible metallic plate made in two parts, which, when united, have the approximate shape of the interior space of a horse shoe, and provided with fingers to extend over the upper inner margin of the shoe upon a hoof; 2nd. The combination, with the plate adapted to fit and be supported within the horse shoe, of the elastic heel pad; 3rd. The combination, with the pivoted sections of the plate, of the cleft or bifurcated spring heel pad.

No. 11,174. Improvements on Horse Powers. (*Perfectionnements aux manèges.*)

John H. Edw rd, Stillwater, Minn., U. S., 24th April, 1880; for 5 years.

Claim.—1st. The combination of the following elements, viz.: a rectangular supporting frame, a master wheel provided upon one side only with cogs, and mounted to rotate in a horizontal plane above the rectangular frame, two short shafts arranged within the master-wheel and upon opposite sides thereof, a shaft arranged below the two short shafts and upon a line parallel therewith, a spur pinion mounted upon the lower shaft, and meshing with a spur-driving gear mounted upon one of the upper short shafts, pinions upon the outer ends of the upper short shafts and (meshing with the master wheel) bevel gears mounted upon the inner ends of the upper short shafts, and connected with each other by means of two bevel gears mounted upon a shaft supported between the inner ends of the upper short shafts, at right angles thereto, and in the same longitudinal planes; 2nd. In bifurcated standard *e*, bed plate *e* and arms *e* provided with bearings for the friction roller, in combination with the girts D D, bearing *k* and bolts *e*s, adapted to the master wheel and pinions I I, in proper working relation to each other.

No. 11,175. Improvements on Lubricators. (*Perfectionnements aux graisseurs.*)

Peter Barclay, East Boston, Mass., U. S., 24th April, 1880; for 5 years.

Claim.—1st. The combination, with the oil cups A having discharge tube *o* at the top, of the inner perforated bottom *c* and steam supply pipe *d*; 2nd. The perforated bottom *c* placed either inside the oil cup A or in an adjoining chamber formed on, or attached to the steam pipe *d*.

No. 11,176. Improvements on Envelope Machines. (*Perfectionnements aux machines à enveloppes.*)

Daniel M. Lester, Norwich, Ct., U. S., 24th April, 1880; for 15 years.

Claim.—1st. The combination with the vertically reciprocating gummer of an envelope machine and its gumming roller passing backward and for-

ward over its face upon guides, the duplicate gum boxes and supply rollers, whereby a single movement of the gumming roller in either direction gathers a supply from either box alternately and places it upon the gummer; 2nd. In a machine for picking up and gumming envelopes, the combination of the bed or elevator automatically fed up with its entire pile of blanks, by the pendent rack and meshing gear wheel at each revolution of the machine, with the vertically reciprocating gummer which picks up and gums the envelopes at one operation; 3rd. In combination with the corner guide posts for the pile of blanks, the fingers pivoted to the rear of said posts and bent at about right angles to pass through a slot in said posts and rest with their front ends upon the blanks; 4th. In a counting attachment to envelope machines, a horizontal receiver reciprocated to one side and the other in the same horizontal plane by a lever operated by a serpentine cam attached to a rack wheel having fifty teeth, said rack wheel being automatically moved forward through the communicated revolutions of the operating shaft; 5th. The combination with the reciprocating push plate of an envelope counting machine in which the receiving bed reciprocates in a horizontal plane only, a projection hanging down in the path of the envelopes and operated by each as it passes, said projection being upon a shaft which, through lever connections, operate to remove a check plate from the path of the pawl which forces forward a circular rack and serpentine cam; 6th. An envelope counting machine in which the bed moves only in a horizontal plane, a rack wheel of fifty teeth, carrying a serpentine cam with two breaks or bends in its path, and a pin moving in said cam and connected with a jointed lever to reciprocate side wise the receiver for the envelope packs.

No. 11,177. Improvements on Rolling Machines. (*Perfectionnements aux machines à laminer.*)

John H. Whitney, New York, U. S., 24th April, 1880; for 5 years.

Claim.—1st. A rolling machine made with two roller shafts, one of which is surrounded by a sleeve having a cog wheel mounted on one end and a cam wheel on the other end, whereby the rollers are brought in contact as the work proceeds; 2nd. The combination, with the shafts A B, of the sleeve K, the cog wheel L, pinion M, cam wheel N and smooth wheel O; 3rd. The combination, with the shafts A B, of the sleeve K, worm wheel L, worm M, cam wheel N, and smooth wheel O; 4th. The combination, with the shaft A, of the pivoted bearing J, the sleeve K and the cam wheel N; 5th. The combination, with the shaft A provided with a pivoted journal J, of the L-shaped levers V pivoted at the sides of the shaft A; 6th. The rollers E E with a knife P or P' at each end; 7th. The combination, with the frame G of the guard tube S, of the adjustable sliding pieces U holding said tube; 8th. The combination, with the rollers E E, of the guide tube S and the adjustable pieces U holding said tube; 9th. The combination, with the shaft A, of the pivoted journal J; 10th. The combination, with the guide tube S, of three or more rollers T between which it is mounted; 11th. The method of making rivets, bolts and other articles, consisting in rolling the metal between rollers rotating in the same direction.

No. 11,178. Improvements on Knitting Machines. (*Perfectionnements aux machines à tricoter.*)

John Nelson, Ralph Emerson and William A. Talcott, Rockford, Ill., U. S., 24th April, 1880; for 15 years.

Claim.—1st. The combination of a series of alternating tubular yarn carriers provided with reciprocating brushes and mechanism for operating the carriers and brushes, whereby one yarn may be substituted for another during the operation of knitting automatically and without interruption to the work; 2nd. The combination, with a reciprocating cam bar, of a plate or bracket provided with a distributing eye through which the yarn passes to the needles, shifting yarn carrier which successively supply yarn to the needles, and a swinging intermittently oscillating frame, all reciprocating with the cam bar; 3rd. The combination of a plate provided with a distributing eye through which yarn passes to the needles, shifting carrier, adapted to successively supply yarn to the needles, and a cutter to sever the yarn as its carrier moves out of working position; 4th. The combination of shifting yarn carriers adapted to successively supply the yarn to the needles, a cutter adapted to be opened by the carrier as it moves out of working position, and a cam adapted to close the cutter to sever the yarn; 5th. The combination of a needle bed, a reciprocating cam bar, shifting yarn carriers reciprocating with the cam bar, and shifting mechanism operated by the cam bar; 6th. The combination of a reciprocating cam bar, yarn carriers mounted in a frame pivoted thereto and reciprocating therewith, and mechanism which