

vided with a bolt hole with a tread provided with a fastening bolt and a nut, for locking said tread to said plate; 8th. A metallic supporting plate provided with a bolt hole, a guard formed upon the under surface of the plate to surround the bolt hole; 9th. The combination, in a carriage step, of a metallic supporting plate having a plane surface with a crowned tread consisting of a crowned metal plate having a treading surface attached thereto, and fastened to said supporting plate in such a manner that its edge shall be firmly held against said supporting plate; 10th. A new article of manufacture, in a tread of India rubber or other suitable material, united by vulcanization or cement to a thin metallic plate adapted to be fastened to a metallic supporting plate by cement composed of white lead and oil, or gutta-percha and pitch, or by the metallic fastening described; 11th. The combination, in a carriage step, of a metallic supporting plate and tread, and a cement for uniting said tread to said plate, composed of white lead and oil or gutta-percha and pitch; 12th. The combination of a metallic supporting plate and tread, and an insoluble cement or pitch and gutta-percha, for packing or sealing the joints between said tread and plate.

No. 11,148. Improvements on Heating Drums. (*Perfectionnements aux poêles sours.*)

William C. Doddridge, Hickman, Ky., U. S., 19th April, 1880; for 5 years.

Claim.—The body A B C provided with the top and bottom openings, and having open ended tubes D and the deflectors arranged horizontally.

No. 11,149. Machine for Spreading Manure. (*Machine pour distribuer les engrais.*)

Joseph S. Kemp, Magog, Que., and William M. Burpee, Derby, Vt., U. S., 20th April, 1880; (Extension of Patent No. 4,659), for 5 years.

No. 11,150. Improvements in Duplex Telegraphy. (*Perfectionnements aux télégraphes à double courants.*)

Alexander Muirhead, Westminster, England, James A. Briggs, Jubbulpore, and George K. Winter, Anconam, Madras, India, 21st April, 1880; (Extension of Patent No. 10,924), for 5 years.

No. 11,151. Improvements in Duplex Telegraphy. (*Perfectionnements aux télégraphes à double courants.*)

Alexander Muirhead, Westminster, Eng.; James A. Briggs, Jubbulpore and George K. Winter, Anconam, Madras, India, 22nd April, 1880; (Extension of Patent No. 10,924), for 5 years.

No. 11,152. Quadruple and Multiplex Telegraphs. (*Télégraphes à quadruple et multiple courants.*)

Alexander Muirhead, Westminster, Eng.; James A. Briggs, Jubbulpore and George K. Winter, Anconam, Madras, India, 22nd April, 1880; (Extension of Patent No. 10,640), for 5 years.

No. 11,153. Quadruple and Multiplex Telegraphs. (*Télégraphes à quadruple et multiple courants.*)

Alexander Muirhead, Westminster, Eng.; James A. Briggs, Jubbulpore, and George K. Winter, Anconam, Madras, India, 23rd April, 1880; (Extension of Patent No. 10,640), for 5 years.

No. 11,154. Improvements in Means for Effecting the Combustion of Fuel, and in Fire-places and Furnaces therefor. (*Perfectionnements dans les moyens d'effectuer l'embrasement du combustible, et dans les foyers et fourneaux pour cet objet.*)

Rudolf Müller, Berlin, Germany, 23rd April, 1880; for 5 years.

Claim.—1st. The means for effecting the production and combustion of gaseous fuel, without separate gas generator, whereby an incandescent layer of fuel or an incandescent porous grate is caused by a regulated admission of air to effect, first, the distillation of the volatile constituents of a charge of solid fuel and then the conversion of the residue thereof into combustible gases, the gases so produced being directly afterwards made to enter into combustion with heated air admitted at a certain distance from the layer of solid fuel; 2nd. In combination with the means for producing and effecting the combustion of gaseous fuel referred to in the preceding claim, the carrying off the heavy gaseous products of combustion through channels having apertures situated at or near the bottom of the combustion chamber, while the light gaseous products are caused to escape from time to time at or near the top of such chamber, whereby a quiescent combustion is insured and chimney draught dispensed with; 3rd. Apparatus for effecting the production and combustion of gaseous fuel consisting of a combustion chamber wherein a restricted quantity of air is supplied to the fire grate through apertures below and at the level thereof, such apertures being provided with regulating slides or valves, while a further air supply is caused to pass through other passages, so as to issue in a heated state into the upper part of the combustion chamber for effecting the combustion of the gaseous fuel; 4th. In combination with the apparatus for effecting the production and combustion of gaseous fuel referred to in the preceding claim, flues for the escape of the heavy gaseous products of combustion arranged with their escape apertures at or near the bottom of the combustion chamber, other flues or passages being provided at the top of the combustion chamber for carrying off the light gaseous products; 5th. In apparatus for effecting the production and combustion of gaseous fuel, the combination of the combustion chamber A, fire grate a, ash pit door b with air holes i, air passages g m m' n n' p and escape flues x y.

No. 11,155. Improvements in the Manufacture of Wood Veneer and Paste-board Boxes. (*Perfectionnement dans la fabrication des boîtes en placage et en carton.*)

John Cross, jr., and Moses S. McCraney, Oakville, Ont., 23rd April, 1880; for 5 years.

Claim.—A metallic holder composed of two bars hinged together at one end, and bent to the shape of the cross section of the body of the box, for holding the box while the ends are being over-lapped and sewed, or otherwise fastened.

No. 11,156. Improvements on Shoulder and Back Braces. (*Perfectionnements aux bretelles-harnais.*)

Robert W. Gray, George Frost, George H. Phelps and George A. Frost, Dedham, Mass., U. S., 23rd April, 1880; for 5 years.

Claim.—1st. The two back pieces a b provided with curved edges 2 3, combined with the shoulder straps connected therewith, and adapted when joined with the back pieces at both ends to form arm eyes; 2nd. The back pieces a b laced together, and the shoulder straps combined with an attached umbilical supporter; 3rd. The back pieces a b, provided with gorges 10 stiffened and cut away at 2 3, combined with the shoulder straps, umbilical supporter and buttons or fastenings to support from the back pieces, other garments; 4th. The shoulder straps shaped in cross section and having the thin flexible inner edges T.

No. 11,157. Improvements on Hafting Cutlery. (*Perfectionnements aux manches des couteaux.*)

Edward Blaydes, John A. Blaydes and Joseph Wragg, Sheffield, England, 23rd April 1880; for 5 years.

Claim.—1st. The combination of the tang d arranged to interlock with the bolster m, and handle e having passage f; 2nd. Fitting the handle e provided with passage f extending completely through said handle to the mould a and with blade, &c., c having tang d passing through said handle and connecting with the bolster m and by introducing into the said mould liquified metal or compound of metals or other substances; 3rd. The combination of the tang d, handle e having passage f, and bolster m; 4th. The combination of the tang d, handle e having passage f, and bolster m, and projections h; 5th. The combination of the tang d, handle e having cuts K, and cap or bolsters m having projections l; 6th. The combination of the tang d, handle e having cut k extending all round, whereby the caps or bolster m are formed into a ferrule or cup.

No. 11,158. Combined Sewing Machine and Secretary. (*Machine à coudre et secrétaire combinées.*)

Henry E. Caulfield and Thomas W. Jenkins, Vienna, Ont., 23rd April, 1880; for 5 years.

Claim.—The combination of the fall leaf A with the swing machine attached, and a writing desk C.

No. 11,159. Improvements on Sugar Moulding Machines. (*Perfectionnements aux machines à mouler le sucre.*)

Charles H. Hersey, Boston, Mass., U. S., 23rd April 1880; for 5 years.

Claim.—The rotary drum and series of moulds combined with the hopper and distributors, and the packer is inclined toward and adapted to fill the moulds; 2nd. A drum carrying a series of transverse rows of moulds open at both ends and plungers to move in said moulds, the said plungers having shanks provided with eyes or loops, combined with bars or carriages, each one to enter all the said eyes or loops of one transverse row, and with cams to operate each bar to move all the plungers of one transverse row simultaneously; 3rd. The combination with the moulds, plungers and endless apron, of the rake to move the material shaped in the moulds, into a line upon the apron, and means to automatically move it forward as each line of moulds comes in position to deposit the moulded sugar; 4th. The combination of the drum and its attached ratchet toothed adjusting devices, with the plungers and their carrying bars.

No. 11,160. Improvements in Processes for the Treatment of Ores. (*Perfectionnements dans les procédés de traitement des minerais.*)

George Duryee, New York, U. S., 23rd April 1880; for 5 years.

Claim.—1st. In combination with an adjacent furnace A for burning coke or other fuel, to form a blow pipe frame, a revolving cylinder B with gearing m, n, hopper C, condenser D, expelling basis or pot E, blower and blow pipe K and hydrocarbon feeder j; 2nd. The method of de-sulphurizing sulphuret ores by means of the combustible materials which they contain by feeding them into a furnace first brought to a white heat with the use of little or no additional fuel; 3rd. The method of heating sulphuret ores by means of the combustible material which they contain with the use of little or no additional fuel, by feeding them into a revolving furnace first brought to a white heat by the use of a blow pipe blast through the flame of an adjacent ordinary furnace or chamber directed upon the ores to be treated. 4th. The method of treating ores in an inclined revolving furnace by the application of a blow pipe blast through the flame of a common adjacent furnace or chamber, in combination with petroleum, dead oil, coal tar, or other inflammable hydro-carbon fed in with the blast; 5th. The method of reduction and partial separation of gold, silver, or other ores, by first de-sulphurizing them by means of a blow pipe blast, directed through the flame of an adjacent furnace or chamber, with or without the addition of petroleum or other hydrocarbon fed in with the blast, thus causing them to part with their sulphur instantly, then fusing the quartz or gangue with lime, soda, lead,