

the other with a supply of standard gas, substantially as set forth. 2nd. The combination, with a gas tester, of two pumps, one communicating with a chamber containing the gases to be tested, and the other with a supply of standard gas, and means for varying the pumping action to vary the proportions of the gases forced to the tester, substantially as set forth. 3rd. The combination, with a gas testing apparatus, of two supply pumps connected therewith, and with a mine chamber and standard gas supply respectively, of adjustable devices for varying the action of one of the pumps, substantially as described. 4th. The combination, with a gas testing apparatus, of pumps communicating therewith, and one with a mine chamber, and the other with a standard gas supply, both pistons connected to a single walking beam, and one of the pumps being adjustable in respect to said beam, substantially as set forth. 5th. The combination of a gas tester, two pumps communicating one with the standard gas supply and the other with a mine chamber, means for varying the pumping action, a communication between each pump and the tester, and a valve in said communication, substantially as set forth. 6th. The combination of a gas tester, of two pumps communicating therewith, and with a mine or gas chamber, and a standard gas supply, and a graduated beam or beams connected with the pistons of said pumps for operating the same, substantially as set forth. 7th. The combination, with a gas tester, of two pumps communicating therewith, and with a mine chamber, and a standard gas supply, a graduated walking beam connected to operate the piston of each pump, one of the said pumps and its connections being adjustable to said beam, substantially as set forth. 8th. The combination of a gas tester, a pump communicating therewith and with a supply of standard gas, another pump communicating with the tester and with a series of mine chambers, and a valve, whereby either of said chambers may be put in communication with the latter pump, substantially as described. 9th. The combination of the pumps A, B, a walking beam G provided with a series of connections for the rod of the pump B, a support upon which the latter pump is adjustable, a valve device for controlling the flow of gases from pumps connected with the walking beam to be operated thereby, and a gas tester, substantially as set forth. 10th. The test apparatus consisting of a cylinder uncovered at one end, and communicating at the other end with a pipe for supplying the mixture to be tested, and a burner adjacent to the open end of the cylinder, substantially as set forth. 11th. The combination of a cylinder closed at one end, and communicating with a pipe for supplying the mixture to be tested, and uncovered at the other end, and a burner arranged adjacent to the open end of the cylinder, substantially as set forth. 12th. The combination of the cylinder closed at one end and uncovered at the other, a supply pipe, a burner, and a shield surrounding the burner, substantially as and for the purpose specified. 13th. The combination, with the cylinder uncovered at one end and closed at the other, and with a burner adjacent to the open end, of a supply pipe extending into the cylinder end, constructed and arranged to distribute the gas uniformly within the latter, substantially as set forth. 14th. The combination of a cylinder closed at one end and uncovered at the other and arranged horizontally, a supply pipe communicating with the cylinder near the closed end, and a burner arranged opposite the open end, and adjacent to the lower part of the cylinder, substantially as and for the purpose set forth. 15th. In gas testers, the balance weight and lever *W*, in combination with bow springs *T*, and bow thread *X*, operating as described and for the purpose set forth. 16th. In gas testers, the combination of test tube shown and described in Fig. 11, with test pump cylinder A graduated to deliver definite measured quantities of gas, operating in the manner described and for the purpose set forth.

No. 31,700. Thill. (*Limonière.*)

Elijah J. Hagan, Bayard, Iowa, U.S., 2nd July, 1889; 5 years.

Claim.—1st. The combination, with the forward axle of a vehicle of a thill B formed with the compound curve *b1, b2*, a cross-piece D, a curved heel C and a thill E, substantially as set forth. 2nd. The combination, with the forward axle, of a vehicle *b1, b2*, a cross-piece D, a curved heel C a thill E, a lever pivoted to said cross-piece and formed with a loop, a singletree, a pivotal bolt, a link secured to the intermediate portion, and a connecting rod hooked at one end to the link and at the other end to a curved thill, substantially as and for the purpose herein described. 3rd. The combination of the curved thill, the cross-piece, the curved heel secured to the cross-piece at a point near its centre, the equalizing lever having one end pivoted to the cross-piece, and at its other end formed into a loop, a singletree pivoted in the said lever, a link pivoted to the lever at a point intermediate its length, and a brace-rod secured to the link and to a lip on the curved thill, substantially as and for the purpose described.

No. 31,701. Razor Sharpening Machine.

(*Machine à aiguiser les rasoirs.*)

Alexander Dey, Glasgow, Scotland, 2nd July, 1889; 5 years.

Claim.—1st. In combination with the main frame and rotary strap-carriers, a razor holder, supporting-bracket pivoted to the main frame axially parallel with the plane of the strap-carriers, and a stay holding said bracket and connected to the main frame adjustably laterally in relation to the razor holder, as set forth. 2nd. In combination with the main frame, and strap-carriers pivoted to said frame rotatably in a vertical plane, a post rising from the said frame, a bracket pivoted to said post and oscillatory in a horizontal plane, a screw working in the frame horizontally and at right angles to the plane of oscillation of the bracket, and holding the said bracket in its position, and a razor-holder mounted on said bracket, as set forth. 3rd. In combination with the main frame and strap-carriers pivoted to said frame rotatably in a vertical plane, and a razor-holder arranged on the frame in a line parallel with the plane of the strap-carriers, a crank attached to the strap-carriers at one side thereof, a post rising from the frame at the opposite side of the strap-carriers, and a handle attached to said post, substantially as described and shown. 4th. In combination with the main frame and rotatable strap-carriers, a bracket on said frame provided with two posts standing in line with the plane of the strap-carriers, a yoke pivoted to said posts,

a razor-supporting bar pivoted to the yoke axially parallel therewith, springs sustaining said yoke and bar in their normal positions, abutments on one side of the said bar formed with screw-posts, clamping-nuts on the latter posts bearing on top of the razor-shank, a post rising from the opposite side of said bar, and a set screw passing horizontally through the post and binding the razor-shank between the said screw and aforesaid abutments, substantially as described. 5th. The improved razor sharpening machine, consisting of the frame A formed with the lateral base extension *A1*, and posts *P, P1* and *P11*, the strap-carriers F, F pivoted to the side of the post *P1*, and provided with the crank I, the handle H attached to the post *P1*, the bracket B formed with the vertical sleeve C pivoted to the post *P11*, and with the horizontal base-extension D, and upwardly curved post or arm *Dr*, the yoke *a* pivoted to the post *Dr*, and sleeve C, the bar *b* pivoted at opposite ends to the ends of said yoke, and provided with the downward projecting brace *c*, the spring *d* connecting the lower portion of the yoke to the base of the bracket B, the spring *d1* connecting the brace *c* with the said portion of the yoke, abutments *e, e* on one side of the bar *b*, formed with screw-threaded posts *e1, e1*, nuts *n, n* on said posts, the post *f* on the opposite side of the bar, the set-screw *g* passing horizontally through said post, and the set-screw *h* working horizontally in the frame A and at right angles to the base-extension B of the bracket, and provided with a circumferential groove in its head, and engaging thereby the extremity of the aforesaid base-extension, substantially as described and shown for the purpose set forth.

No. 31,702. Steam Engine. (*Machine à vapeur.*)

Robert McNaughton, Truro, N.S., 2nd July, 1889; 5 years.

Claim.—The combination of the steam chests *j, j* and the valves *c, c*, with the valve stems *d, d*, the cranks *g, g*, and the connecting rod *h*, substantially as and for the purpose hereinbefore set forth.

No. 31,703. Boot and Shoe Vamp.

(*Empeigne de chaussure.*)

Jean L. Peltier, Montréal, Qué., 2nd July, 1889; 5 years.

Résumé.—Un nouvel article de manufacture, une empeigne de chaussure composée de deux portions distinctes et symétriques en elles-mêmes, dont une A est découpée de manière à donner la courbe extrême *c*, les grandes courbes rentrantes *a1, a2*, les pointes *h, h*, les courbes aussi rentrantes *m1, m2*, *d* et l'échancrure *e*, et l'autre B en forme de fer de lance, et ayant les courbes extérieures *m3, m2, d1, d1, d2, d3* et la pointe *m3*, le tout tel ci-dessus décrit et pour les fins susmentionnées.

No. 31,704. Milk Can. (*Boîte à lait.*)

Henry R. Sayers, Hamilton, Ont. (assignee of Max Schwarz, Alexandria, Va., U.S.), 2nd July, 1889; 5 years.

Claim.—A The combination, with the can having the supports G, the handle H pivoted to said supports, and the locking flange R, of the cover comprising the concavo-convex portion, having the vertical peripheral flange *a* to fit in the neck of the can, the upper portion *b* having the vertical annular rim *c*, the annulus *d* at the lower edge of said rim and forming a groove to receive the upper edge of the neck of the can, and in the inner side of which groove, the upper edge of said flange *a* is secured, the bar J extending across the centre of the cover and having its ends secured inside of the annulus to the grooved annulus *d*, the catches N secured to, and projecting from opposite sides of the cover, and adapted to engage under the ends of the handle H, and the locking flange P secured to and projecting from the cover adapted to register with the locking flange R of the can, when the handle ends are engaged by the catches, the said locking flange P, having the downward stop Q adapted to engage the flange P, for the purpose set forth, substantially as described.

No. 31,705. Horse Power Hoisting Machine.

(*Montecharge à manège force de cheval.*)

Franklin L. Downend, Halifax, N.S., John O. Hibbard, Cincinnati Ohio, U.S., and Henry K. Fisher, Halifax, N.S., 2nd July, 1889; 5 years.

Claim.—The combination, with the horse power having the sweep O, spindle H, cog gear wheels B, C, and shaft A having clutch D, of the hoisting gear consisting of the frame N, drum E, brake-band M operated by lever L and lever K operating the clutch, as and for the purpose set forth.

No. 31,706. Sand Papering Machine.

(*Machine à appliquer le papier de verre.*)

Andrew Durand (assignee of William E. Spour), London, Ont., 2nd July, 1889; 5 years.

Claim.—1st. The combination of the grooved pulley R, having an oblique groove R1 formed therein, shaft A3, lever S, shaft A2, sand papering drum N, and means for operating the same, substantially as and for the purpose set forth. 2nd. In combination with the above, the anti-friction collar or thimble T, substantially as and for the purpose set forth. 3rd. The combination of the screws C1, operating hand wheel C3, collars C2, chain wheels G3 and G4, chain belt G5, brackets L, adjustable bearings B1, guides B, shaft A1 and feeding frictional drum I, substantially as and for the purpose set forth. 4th. In combination with the above, the shaft A3, chain wheels G1, G2, chain belt G, pivotal arm F, weight E and tightener chain wheel G6, substantially as and for the purpose set forth. 5th. The combination of the grooved pulley R, having an oblique groove R1 formed therein, shaft A3, lever S, shaft A2 and sand papering drum N with the feeding frictional drum I, and means for operating the same, substantially as and for the purpose set forth. 6th. In combi-