

having a double series of eccentrically-curved equi-distant bit-bearing surfaces *b, b'*, each series extending half the length of the outer bar or stock, with the advance edges *c* of one series centrally intermediate the advance edges of the other series, the detachable and interchangeable bits *B, B'*, of equal length throughout, constructed to fit the said bearing surfaces, and adapted to cut at an acute angle, and means for detachably securing the bits to the cutter-bar or stock, substantially as herein shown and described. 3rd. The washers *D*, provided with packets *g* adapted to carry removable weights, in combination with the cutter-bar and a series of bits, arranged around said bar and the screws *C*, substantially as and for the purpose herein specified.

No. 27,937. Machine Tool-Holder.

(*Porte-outil de machine.*)

Dudley S. Seymour, Hartford, Conn., U.S., 5th October, 1887; 5 years.

Claim.—The combination of the stock *A*, provided with the slot *B*, and the eye-bolt *E*, passing through that slot, the two parts being so constructed and combined that the eye-bolt holds the tool rigidly in a groove extending across the side of the stock and across the slot *B*, all substantially as described.

No. 27,938. Fence. (*Clôture.*)

Richard H. Sarvis, London, Ont., 5th November, 1887; 5 years.

Claim.—1st. A portable fence, consisting of a series of panels, constructed of boards or rails *A* attached alternately on front and back of end boards *B*, and connected lug links *d, e* passing through suitable mortises in said panels, said links being attached at their opposite ends to the heads of supporting half trestles *D*, and cross bars *E* abutting against end boards of panels, substantially as shown and specified. 2nd. In combination with the above described panels of a portable fence, the half trestles *D* having cross-bars *E* hinged thereto abutting against end boards *B* of panels and attached thereto lug, suitable links *d, e*, received in mortises *f, g* of end boards, and fastened therein, lug, wedge-shaped keys, substantially as shown and specified. 3rd. In combination with the above described panel *A, B*, of a portable fence, the locking-stake *F* having its upper end braced between the cross stay boards *c*, and horizontal board *A*, substantially as shown and specified.

No. 27,939. Waterproof Paint.

(*Peinture hydrofuge.*)

James Murray, Toronto, Ont., 5th November, 1887; 5 years.

Claim.—An improved waterproof paint, composed of petroleum, refuse of tar mixed with petroleum and resin oils, substantially in the manner and in the proportions herein specified.

No. 27,940. Valve Gear for Steam Engines.

(*Appareil de soupape pour machines à vapeur.*)

George S. Strong, New York, N. Y., U. S., 5th November, 1887; 5 years.

Claim.—1st. In a valve-gear for steam engines, the combination, with a fixed segment and a block adjustable thereon, of a radius-rod pivoted to said block, and eccentric *c* having its eccentric-lever fulcrumed to said radius-rod, and connected to the valve-rod, substantially as described. 2nd. In a valve-gear for steam engines, the combination, with a fixed segment and a block adjustable thereon, of a radius-rod pivoted to said block, the eccentric *c* having its eccentric-lever fulcrumed to said radius-rod, and two rock-arms which are connected together and one of which is connected to the eccentric-lever, and the other of which is connected to the valve-rod, substantially as described. 3rd. In a valve-gear for steam engines, the combination, with a single eccentric and its eccentric strap, of the two levers 20, 21, one of which is rigidly secured to said eccentric-strap, and the other of which is pivoted to said strap or to the rigid lever, and both of which are fulcrumed, so that each receives a compound motion, one part of said motion serving to cause the lap and lead of the valve, while the other part effects the opening of the valve in addition to the lead, substantially as described. 4th. In a valve-gear for steam engines, the combination, with the two fixed segments having blocks adjustable thereon, of the radius-rods 18, 19 pivoted to said blocks, the eccentric *c* having the rigid eccentric-lever 20 fulcrumed to one of said radius-rods, and the pivoted lever 21 fulcrumed to the other of said radius-rods, one of said levers being connected to the induction valve or valves, and the other to the exhaust valve or valves, substantially as described. 5th. In a valve-gear for steam engines, the combination, with the two fixed segments having blocks adjustable thereon, of the radius-rods 18, 19 pivoted to said blocks, the eccentric *c* having the rigid eccentric-lever 20 fulcrumed to one of said radius-rods, and the pivoted lever 21 fulcrumed to the other of said radius-rods, rock-arms 32, 36 which are connected together, and to one of said levers, and the induction valve or valves and rock-arms 33, 37 which are connected together, and to the other of said levers and the exhaust valve or valves, substantially as described. 6th. A valve-gear for locomotive engines, having its supporting frame-work carried by the axle-box of the engine, whereby the valve-gear partakes of the motion of the axle-box, and the relation of its parts is not disturbed by the movements of the main parts of the engine, substantially as described. 7th. In a valve-gear for locomotive engines, the combination, with the axle *C*, eccentric *c* and axle-box *w*, of the frame *d* mounted on the axle-box and supporting the various parts of the valve-gear, substantially as described.

No. 27,941. Heating Attachment for Lamp Chimneys. (*Fourneau-lampe.*)

Prentice Sargent, Boston, Mass., U.S., 5th November, 1887; 5 years.

Claim.—1st. The combination, with a lamp-chimney, of the heating-chamber *E*, the casing *B*, supporting-rods *f* and plate *F*, as and for the purpose set forth. 2nd. The combination of the heating-

chamber *E*, interior chamber *C*, annular supporting flange *D* resting upon the bottom of chamber *E* and the casing *B*, as shown and described.

No. 27,942. Barbed Wire Fencing.

(*Clôture en fil de fer barbelé.*)

Homer Utler, Cuba, N. Y., U.S., 5th November, 1887; 5 years.

Claim.—A wire fence comprising a body composed of two or more strands, a series of rotatable barbs disposed at intervals on said body, and stops to keep said barbs properly separated, each of said stops consisting of a short piece of metal interlaced with the strands, substantially as set forth.

No. 27,943. Jack for Pegging, Heeling and Finishing Boots and Shoes. (*Machine à cheville et finir les chaussures et poser les talons.*)

George Dorwart, Philadelphia, Penn., U. S., 5th November, 1887; 5 years.

Claim.—1st. The combination, with the hinged plate *B*, the plate *B* attached thereto and revoluble thereon, and the post *E* of the spring-actuated pivoted standard *H*, the adjustable toe-rest *H'* attached to said standard, and means substantially as described for actuating said standard. 2nd. The combination, with the hinged plate *B*, the plate *B* attached thereto and revoluble thereon, and the post *E* provided with an adjustable pin *E*, of the spring-actuated standard *H* pivoted to the plate *B*, provided with a head *h*, inclined downward in alignment with the said post, the toe-rest adjustably and detachably attached to said head, and means for elevating said standard, substantially as shown and described. 3rd. The combination, with the hinged plate *B*, the plate *B* attached thereto and revoluble therein, and the post *E* provided with an adjustable pin *E*, of the standard *H* pivoted to said plate *B* provided with an inwardly projecting arm *k* having a recess *h*, an inclined head *h* carrying an adjustable toe-rest *H'*, a spring *K* connecting said standard and post, the hoist rod *R*, and means for manipulating said rod and standard, substantially as shown and described. 4th. The combination, with the stand *A*, the plate *B* hinged to said stand provided with a lip *e*, and the spring catch *D* adapted to engage said lip of the plate *B*, attached to the aforesaid plate *B* and revoluble thereon, the post *E* provided with an adjustable pin *E*, the spring-actuated standard *H* pivoted to said revoluble plate *A* having an inclined head and carrying an adjustable toe-rest *H'*, and means for elevating said standard, substantially as herein shown and described. 5th. The combination, with the stand *A*, the plate *B* hinged to said stand provided with the lip *e*, and the spring catch *D* adapted to engage said lip of the plate *B* attached to and adapted to revolve upon the plate *B*, and post *E* attached to said revoluble plate *B* provided with an adjustable pin *E*, the standard *H* pivoted to the plate *B* opposite said post provided with the recesses, base arm *k*, and the downwardly inclined head *h*, the toe-rest *H'* adjustably secured to said head, the spring *K* uniting the said post and standard, and means for raising said standard, substantially as shown and described.

No. 27,944. Syphon Steam Pipe Heater.

(*Calorifère à vapeur.*)

George E. Dixon, Chicago, Ill., U.S., 5th November, 1887; 5 years.

Claim.—1st. In syphon steam pipe heaters, the loop pipes *A, B* two or more, each provided with a pipe *E, G, C* running transversely through them at their bottom ends, and the pipe at one side provided with the large live steam port *c*, and at the opposite side provided with the small lower port *a* for the return of the water of condensation through the steam supply pipe *w*, as specified. 2nd. The loops *A, B*, provided with the transverse pipes *E, G, C* at their lower ends, and the pipes *E, G, C* respectively at one end, provided with an annular tongue *b*, and at the other end with an annular groove *d*, and provided with webs *f, f'*, in combination with the clamping bolts *H*, as specified.

No. 27,945. Apparatus for Lighting Railway Cars. (*Appareil d'éclairage pour chars de chemins de fer.*)

Edward J. Frost, Philadelphia, Penn., U. S., 5th November, 1887; 5 years.

Claim.—1st. In combination with a railway car which is provided with an air-brake system, the following parts, combined and arranged substantially in the manner set forth, to wit: a storage reservoir communicating with the supply-pipe of the air-brake system, a pipe leading from said storage reservoir to a pressure-reducer, a pipe leading from said pressure-reducer to a carburetor situated in the car roof, a shell or envelope surrounding said carburetor, a lamp situated beneath said carburetor and supplied therefrom, and a chimney adapted to carry off the products of combustion from said lamp, said chimney communicating with the interior of said shell or envelope, whereby the whole or a portion of the products of combustion are caused to pass around the exterior of said carburetor. 2nd. The carburetor *J*, constructed substantially as described, with a spiral passageway containing a quantity of absorbent material, and having an inlet-pipe *I* and exit-pipe *L* arranged as described, a pipe *P* which connects said inlet and exit pipes, an inlet *N* for charging said carburetor, and a blow-off pipe *Q* arranged, substantially in the manner set forth, for discharging the surplus hydrocarbon within the same.

No. 27,946. Boiler Attachment.

(*Disposition aux chaudières à vapeur.*)

Edward F. Barber, Ionia, Mich., U.S., 5th November, 1887; 5 years.

Claim.—1st. In combination with a boiler and an ash-pan therefor, a valve communicating with the steam-space and the water-space of