to a point at the front of the shoe, substantially as and for the purposes described. 2nd. In a nailless horse shoe, the combination of a toe pillar, provided with a spring at its inner base, with a tread stud recessed into the hoof placed immediately behind the said pillar to effect the locking of the shoe upon the hoof, substantially as described. 3rd. In a nailless horse shoe, the construction of the tightening band in three or more pivoted pieces, and with corrugations for elasticity, to admit of better adaptation of the band to the surface of the hoof and ease in removal, substantially as described. 4th. In a nailless horse shoe, the construction of the pillar, with a fork at its upper end, and a prong, between which latter may be bent over the band to secure it in place, substantially as described. 5th. In a nailless horse shoe, the construction by stamping of hooks F with or without protecting ridge, stamped from the solid metal of the shoe, substantially as described.

No. 32,232. Air Compressor.

(*Machine de compression pour l'air.*)

Henry C. Sergeant, New York, N.Y.. U.S., 9th September, 1889; 5 years.

Claim.—1st. The combination, in an air compressor, of two single-acting cylinders of unequal caliber, arranged in line with each other, and having a valve-controlled communication between their outer ends for the passage of air from the larger to the smaller one, and discharge valves at the outer end of the smaller cylinder, and two pistons connected together and fitting said cylinders, substantially as and for the purpose herein described. 2nd. The combination, in an air compressor, of two single-acting cylinders of unequal caliber arranged in line with each other, and having heads at their outer ends, an inlet valve to the outer end of the large cylinder, a valve-controlled communication between the outer ends of the two cylinders, discharge valves at the outer end of the smaller cylinder, the pistons connected together and fitted to the said cylinders, a stuffing box in the outer head of the larger cylinder, and a rod common to both pistons passing through said stuffing box, substantially as herein described. 3rd. The combination, in an air compressor, of two single-acting cylinders of unequal caliber, arranged in line with each other and having heads at their outer ends, and an air-passage or conduit to form communication between said ends, two pistons connecting together and fitting said cylinders, an inlet valve in the larger piston, discharge valves between the outer end of the larger cylinder, and the said passage or conduit, inlet valves to the smaller cylinder between the said cylinder and said passage or conduit, and discharge valves at the outer end of the smaller cylinder, substantially as herein described. 4th. The combination, in an air compressor, of two single-acting cylinders of unequal caliber arranged in line with each other, being in free intercommunication with each other, and with the atmosphere at their inner or adjacent ends, and having heads at their outer ends, a passage or conduit between the said heads, a discharge valve in the head of the larger cylinder between the cylinder and said passage or conduit, an inlet-valve, the head of the smaller cylinder between the said cylinder and said passage or conduits, two connected pistons fitted to said cylinders, an inlet-valve in larger piston opening towards the outer end of its cylinders, and discharge valves in the head of the said cylinders, substantially as herein described.

No. 32,233. Elevated Railway.

(*Chemin de fer aérien.*)

Lorenzo J. Cody, Sault Ste. Marie, Mich., U.S., 9th September, 1889; 5 years.

Claim.—1st. In an elevated rail-way, a two-rail road-way having each rail independently adjustably supported above the road-way, substantially as described. 2nd. In an elevated rail-way, the combination of the following elements: The two rows of posts A on opposite sides of the road-way, the bracketing devices E secured on the top thereof, the rail-supporting girders F secured to the inner ends of the bracketing devices, the rails G independently adjustably supported, and the overhead cross trusses provided with the hangers H supporting the bracketing devices, substantially as described. 3rd. In an elevated railway, the combination, of the following elements: the two rows of posts on opposite sides of the road-way, the bracketing devices E vertically adjustably secured on top thereof, the bearings E1 laterally adjustably secured to the ends of the bracketing devices, the rail-supporting girders F secured thereto, the track-rails G supported thereto, the over-head cross-trusses, and the hangers H from said cross trusses adjustably supporting the ends of the bracketing devices, substantially as described. 4th. In an elevated railway, the combination of the following elements: the posts A on opposite sides of the road-way, the brackets E provided with fittings E1 adjustably clamped to the posts, the inwardly curved or inclined extensions N on the top of the posts, the hangers H secured to said extensions, the cross-trusses connected to the upper ends of said hangers, the fittings I adjustably connecting the lower ends of the hangers to the ends of brackets, and the bearings J adjustably secured to said fittings, and having bolting flanges to which rail-supporting girders F are bolted, substantially as described. 5th. In an elevated rail-way, the combination of the following elements: the posts A provided with the base B bolted to the foundation *c*, the brackets E provided with fittings E1 adjustably clamped to the posts, the curved extensions N on the posts, the hangers extended from said extension, the fittings adjustably securing said hangers to said extensions, the cross-trusses vertically adjustably secured to the hangers, the fittings adjustably connecting the hangers and brackets, the bearings laterally adjustably supported by the bracketing devices, and the rail-supporting girders secured to such bearings, substantially as described.

No. 32,234. Force Pump. (*Pompe foulante.*)

James W. Anderson, Barrie, Ont., 9th September, 1889; 5 years.

Claim.—1st. The combination of the cylinders F, F, with the air chamber E, substantially as and for the purpose hereinbefore set forth. 2nd. The combination of the handle B, with the rods *c*, *c*, and the outside cylinders D, D, substantially as and for the purpose hereinbefore set forth. 3rd. The combination of the handle B, with the rods *c*, *c*, substantially as and for the purpose hereinbefore set forth. 4th. The combination of the cylinders F, F, with the cylinders D, D, substantially as and for the purpose hereinbefore set forth.

No. 32,235. Wind Engine. (*Moulin à vent.*)

Arthur S. Clark, Saline, Mich., U.S., 9th September, 1889; 5 years

Claim.—In a wind engine, the combination of the main wheel F, upper turn-table D, lower turn-table C, an inner tube, an outer tube, a sliding cam sleeve R and two lugs or rollers *i* and *j* respectively, substantially as described. 2nd. In a wind engine, the combination of the upper and lower turn-tables C, D, an outer tube N and inner tube P respectively, two lugs or rollers *i*, *j*, a cam sleeve R, a wedge-shaped cam *N* and lifter S, all arranged substantially as described.

No. 32,236. Step or Platform.

(*Marche pied ou plateforme.*)

Frank H. Stanwood, Englewood, Ill., U.S., 9th September, 1889; 5 years.

Claim.—1st. The reticulated or open-work step or platform, consisting of a support or hanger, a stiff frame secured to the support or hanger, and separate strips of sheet or like thin sharp-edged metal forming the tread, and arranged edgewise in and supported by said frame without being welded to or made integral therewith, substantially as specified. 2nd. The step or platform, consisting of thin metal strips bent alternately to either side of a straight line with their apices abutting, and with interlocking ribs *f* stamped therein at such apices, the strips being placed edgewise in a suitable surrounding frame, substantially as specified.

No. 32,237. Car Heater. (*Calorifère de char.*)

Thomas M. Morton, Baltimore, Md., U. S., 9th September, 1889; 5 years.

Claim.—1st. In a heater, such as described, the combination, with an outer metal box or chest, its interior forming an air chamber, and an air supply pipe communicating with said air chamber, of a steam chest located within the air chamber, and having a porous non-metallic block or slab arranged within said steam chest, substantially as shown and described, as and for the purpose set forth. 2nd. In a car heater, such as described, the steam pipes extending through the car and provided with a lining of non-metallic material, substantially as shown and described, as and for the purpose set forth. 3rd. In a car heater, the combination, with the heater, consisting of the outer chest E forming an air chamber, and air supply pipe O communicating with said air chamber, a steam chest F located within said air chamber, and having a porous non-metallic slab or block G arranged within said steam chest, of a perforated casing or trough K extending through the car, steam pipes L located within the casing K and communicating with the steam chest F, and suitable inlet and outlet steam pipes communicating with the steam chest F and steam pipe L, all constructed, arranged and operating substantially as shown and described. 4th. In a car heater, the combination, with the heaters arranged at diagonally opposite corners of the car, and consisting of the outer chests E forming air chambers, air supply pipes O communicating with said chambers, steam chests F located within said air chambers, and having porous non-metallic slabs or blocks G arranged within said steam chests, of perforated casings or troughs K extending along the sides of the car and communicating with the air chambers of the heaters, and provided with short branch pipes P extending toward the centre of the car, steam pipes L, provided with a lining of non-metallic material and located within the casings K and communicating with the steam chests F, and suitable inlet and outlet steam pipes communicating with the steam chests F and steam pipes L, all constructed, arranged and operating substantially as shown and described.

No. 32,238. Slat Fastener.

(*Assemblage des lames.*)

Miley B. Wesson, Forth Worth, Texas, U. S., 9th September, 1889; 5 years.

Claim.—1st. The combination, with a shutter, provided with pivoted slate, of a flat spring metal fastening plate provided with a slot for clearing the slat pivot, and projections upon its surface for engaging with the end of the slat, and having its rear end secured to the shutter frame, and its front end projecting beyond the plane of the shutter frame and forming a thumb piece for operating said spring-plate, substantially as set forth. 2nd. A slat fastener, consisting of a flat spring metal plate, provided with slot *d*, the lugs *d*1 at its rear end, the concave-convex projections upon its surface, and the thumb-piece *e* at its front end, substantially as and for the purpose set forth.

No. 32,239. Manufacture of Sleds.

(*Fabrication des traineaux.*)

Lyman B. Pickett and Daniel Sayre, Montrose, Penn., U. S., 10th September, 1889; 5 years.

Claim.—The runners A, constructed of metal tubing and provided with metal shoes and platform C, in combination with the knees B and cross-bar D secured to the tubular runners, substantially as and for the purpose herein set forth.