

and adjustable along the same, and having a pivoted arm V, provided with a last toe-support N, substantially as described. 5th. In a last-making-machine, the combination, with a last, and levers having friction pieces, of an under plate H, and a supporting-plate M for the levers, arranged on the under plate, and composed of an adjustable section, and a removable and replaceable section or sections, substantially as described. 6th. In a last-making-machine, the combination, with a vertically movable last, of a reciprocating arm f provided with an adjustable lever g h, for holding down said last, and a connecting rod C, and actuating-cam A connected to said arm f, substantially as described.

No. 31,856. Lifting Jack. (*Cric.*)

Pettibone, Mulliken and Company, Chicago, (assignees of Axel A' Strom, Austin), Ill., U.S., 1st August, 1889; 5 years.

Claim.—1st. In a lifting-jack, the combination, with the standard A, the lifting-bar B, the lifting and retaining clutches and the operating lever, of a heel l on the lifting-bar, and a chamber H along the back of the standard, confining and guiding the heel, substantially as and for the purpose set forth. 2nd. In a lifting-jack, the combination, with the standard having an expanded portion C, the lifting-bar B, the lifting and retaining clutches and the operating lever, of a hook f on the forward side of the collar of the lifting-clutch, and a hanger G pivotally connected at one end with the bifurcated end of the operating lever, and having a slot c at which it engages with the hook f, substantially as described. 3rd. In a lifting-jack having a standard A provided with an expanded portion C, a lifting-bar B, retaining and lifting clutches D and E, and an operating lever F fulcrumed in the standard and linked to the lifting-clutch, the combination, with the standard, of a guide-collar o, extending across and integral with the expanded portion C of the standard, substantially as described. 4th. A lifting-jack comprising in combination, a slotted standard A, having an expanded portion C containing a guide-collar o extending across and integral with it, recesses in the upper ends of the said expanded portion, an operating lever F fulcrumed in boxes rigid in the said recesses, a retaining-clutch D, a lifting-clutch E linked to the operating lever, a guide-chamber H on the rear side of the standard below the expanded portion thereof, and a lifting-bar B having a foot r, and a heel l extending into the chamber H, substantially as described.

No. 31,857. Reversible Ratchet Clutch Mechanism. (*Mécanisme de renversement d'embrayage à rochet.*)

William B. Turner, New York, N. Y., and Cornelius C. Beard, Boston, Mass., U.S., 1st August, 1889; 5 years.

Claim.—1st. In a reversible ratchet clutch mechanism, a shaft, a shell and a sleeve on the said shaft, combined with two sets of oppositely inclined teeth, and with pawls or latches to co-operate with the said teeth, substantially as described. 2nd. In a reversible ratchet clutch mechanism, a shaft, a shell and a sleeve on the said shaft, combined with two sets of oppositely inclined teeth, and with gravity pawls or latches to co-operate with the said teeth, substantially as described. 3rd. In a reversible ratchet clutch mechanism, a shaft and a sleeve provided with oppositely inclined teeth, as b, b', combined with a shell, and a series of pawls pivoted to said shell to co-operate with the said inclined teeth, substantially as described.

No. 31,858. Upright Boiler. (*Chaudière verticale.*)

The Watrous Engine Works Company, Branford, Ont., (assignee of Frederick L. Watrous, St. Paul, Minn., U.S.) 1st August, 1889; 5 years.

Claim.—1st. In an upright boiler, a water chamber inclosed around the upper end of the flues by the upper flue sheet and a diaphragm located a little below it, an overflow opening from said chamber above said flue sheet, whereby water is maintained constantly in contact with said flue sheet, and the upper ends of the flues, substantially as and for the purposes set forth. 2nd. In an upright boiler, the combination, with the upper flue sheet, of a diaphragm located a little below and enclosing therewith around the upper ends of the flues, a water space, a supply pipe opening into said chamber, and an eduction pipe leading out therefrom above said flue sheet, substantially as and for the purpose set forth. 3rd. In an upright boiler, a water chamber around the upper ends of the flues formed by a double head consisting of the upper flue sheet, and a diaphragm located a little below it, a water supply pipe leading into said chamber, a stand pipe opening at its lower end into and extending above said chamber, and an eduction pipe leading out of said stand pipe above the upper flue sheet into the lower part of the boiler, substantially as and for the purpose set forth. 4th. In an upright boiler, the combination, with a water chamber around the upper end of the flues formed by a double head consisting of the upper flue sheet, and a diaphragm located a little below it, a water supply pipe leading into said chamber, a stand pipe opening at its lower end into and extending above said chamber, and an eduction pipe leading out of said stand pipe above the upper flue sheet into the lower part of the boiler, of a series of radial tubes secured to the fire box, said tubes opening into and communicating with the water space in the boiler where they are secured to the fire box, the opposite end of each tube being closed and a dividing plate placed internally in each of said radial tubes, as and for the purposes set forth.

No. 31,859. Rotary Motor Actuated by Elastic Fluid Pressure and Applicable also as Pump. (*Moteur rotatif actionné par la pression d'un fluide élastique et pouvant aussi servir de pompe.*)

Edward Towlson and William T. Sturgess, Norwich, Eng., 1st August, 1889; 5 years.

Claim.—1st. In a rotary motor (or pump), the combination of two wheels or hubs mounted to rotate in unison in opposite directions, and

each provided with a single tooth or projection, a recess adjacent to said tooth or projection, and with fine pitched teeth extending nearly around its periphery, the teeth on one piston being in gear with those on the other piston, a casing constructed with a pair of connected chambers wherein said wheels or hubs rotate, and having an upper inlet passage, a valve chamber in connection therewith, a short port or passage connecting said valve chamber with the interior of said casing, and an outlet port and passage at its lower side, an expansion valve located within said valve chamber, self-adjusting packing carried by each of said teeth or projections, and adapted to bear against the interior of said casing, and self-adjusting packing located between the ends of said wheels or hubs and the adjacent ends of the casing, substantially as herein described for the purpose set forth. 2nd. In a rotary motor (or pump), the combination, of two wheels or hubs mounted upon shafts and arranged to rotate in opposite directions, and each provided with a single tooth or projection, a recess adjacent to said tooth or projection, and fine pitched teeth extending nearly around its periphery, the teeth on one wheel or hub being in gear with those on the other wheel or hub, a casing with chambers wherein said wheels or hubs rotate, and formed with upper inlet passage and lower outlet passage, packing carried by each tooth or projection and adapted to bear against the inner periphery, and ends of the casing packing located between the ends of said wheels or hubs and the adjacent ends of the casing, and toothed wheels mounted upon said shafts and arranged to cause said piston to rotate in unison, substantially as herein described. 3rd. In a rotary engine (or pump), the combination, of wheels of hubs 1, 2, each provided with a single tooth or projection 4, a recess 5 adjacent to said tooth or projection, and with fine pitched teeth 3 partly surrounding its periphery, the teeth on one wheel or hub being arranged to gear with those on the other wheel or hub and form a fluid-tight joint, a casing formed with chambers 7 wherein said pistons rotate in opposite directions, upper inlet passage for motive fluid, cylindrical valve chamber 15 in connection therewith, a short inlet port or passage 8 connecting said valve chamber with the interior of said casing, and a lower outlet passage, a cylindrical expansion valve 14 within said valve chamber, and self-adjusting packing to form a fluid-tight joint between the projection and the inner periphery of the casing, and between the wheels or hubs and adjacent ends of the casing, substantially as herein described. 4th. In a rotary engine (or pump), the combination of two wheels or hubs adapted to rotate together in unison, with a fluid-tight joint between them, and each provided with a single tooth or projection journaled therein at an angle with a radius line of the piston, and with a recess adjacent to said tooth or projection, and adapted to permit of the passage of the projection of an adjacent piston chambers, wherein said wheels or hubs rotate, and a spring or springs adapted to press the outer end of each of said teeth or projections into close contact with the internal surface of said chamber, substantially as herein described for the purpose specified.

No. 31,860. Machine for Securing Spokes in Wheel Hubs. (*Machine à assujétir les rais dans les moyeux.*)

William P. Bettendorf, Davenport, Iowa, U.S., 1st August, 1889; 5 years.

Claim.—1st. In a spoke fastening machine, a spoke holding clamp J₃, in combination with the pivoted header carrying arm C₁, the eccentric C₅, the rod C₄, connecting the eccentric and arm, and the yielding hub support B. 2nd. In a spoke fastening mechanism, the pivoted arm C₁ provided with a heading tool C to enter a hub, in combination with an eccentric C₅, and a connecting rod C₄ mounted at one end around the eccentric, and pivoted at the other end to the header carrying arm, as shown. 3rd. In a spoke fastening machine, in combination with a heading tool C to enter the hub, the hub sustaining device B, in combination with a supporting spring B₃ and a depressing lever B₅. 4th. In combination with the vibratory heading tool C, the hub support B, the vertically sliding head B₂ having a horizontal sliding connection with the support B, the spring C₈ to retract the support, the spring B₃ to lift the head, and the lever B₅ to depress the same. 5th. In combination with the connected clamp levers H, H₁, their operating pitman K, the reciprocating rod K₁ connected to the latter, its actuating cam L and the retracting spring. 6th. In a spoke fastening machine, the clamping levers H, H₁, their actuating pitman K, the reciprocating rod K₁, the lever K₂ for starting said rod, its actuating cam L, the cam driving clutch D₂ and the clutch controlling lever K₄ operated by the rod as shown, whereby the initial closing of the jaws is caused to set the cam in motion. 7th. In combination with the connected clamp levers H, H₁, their actuating pitman K, the reciprocating rod K₁ connected to the pitman and provided with a stud K₃, the rod retracting spring, the rod operating cam L, its driving clutch D₂ and the clutch operating lever K₄ provided with the opening having oblique edges, as described, to move the lever K₄ in both directions. 8th. In a machine for seating metallic spokes, the combination of a heading tool C₁ and its operating mechanism, a spoke clamp H, H₁ and a clamp operating cam L of irregular form, timed to release the spoke as soon as the heading tool completes its action.

No. 31,861. Flour Bolt. (*Blutoir.*)

William M. Lucas, Uhrichsville, Ohio, U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination of the outer casing, a reciprocating sieve, a cleaning frame below the sieve, the upper portion of which is between the side bars of the sieve and is guided in its vertical movements thereby, a bent shaft below the frame and the leather straps secured to the frame and to the sides of the casing. 2nd. The combination of a casing, a partition in one end of the casing, a reciprocating sieve, one end of which projects over the partition, a frame below the sieve, the upper portion of which is between the side bars of the sieve, and is guided in its vertical movement thereby, and a bent shaft, one end of which is journaled in the partition and the other end in the casing. 3rd. The combination of a reciprocating sieve, a cleaning frame below the sieve, the upper portion of which is between the side bars of the sieve, and is guided in its