J. F. REID.

LASTING MACHINE.

APPLICATION FILED JAN. 28, 1909.

1,006,006.

Patented Oct. 17, 1911.

3 SHEETS—SHEET 1.

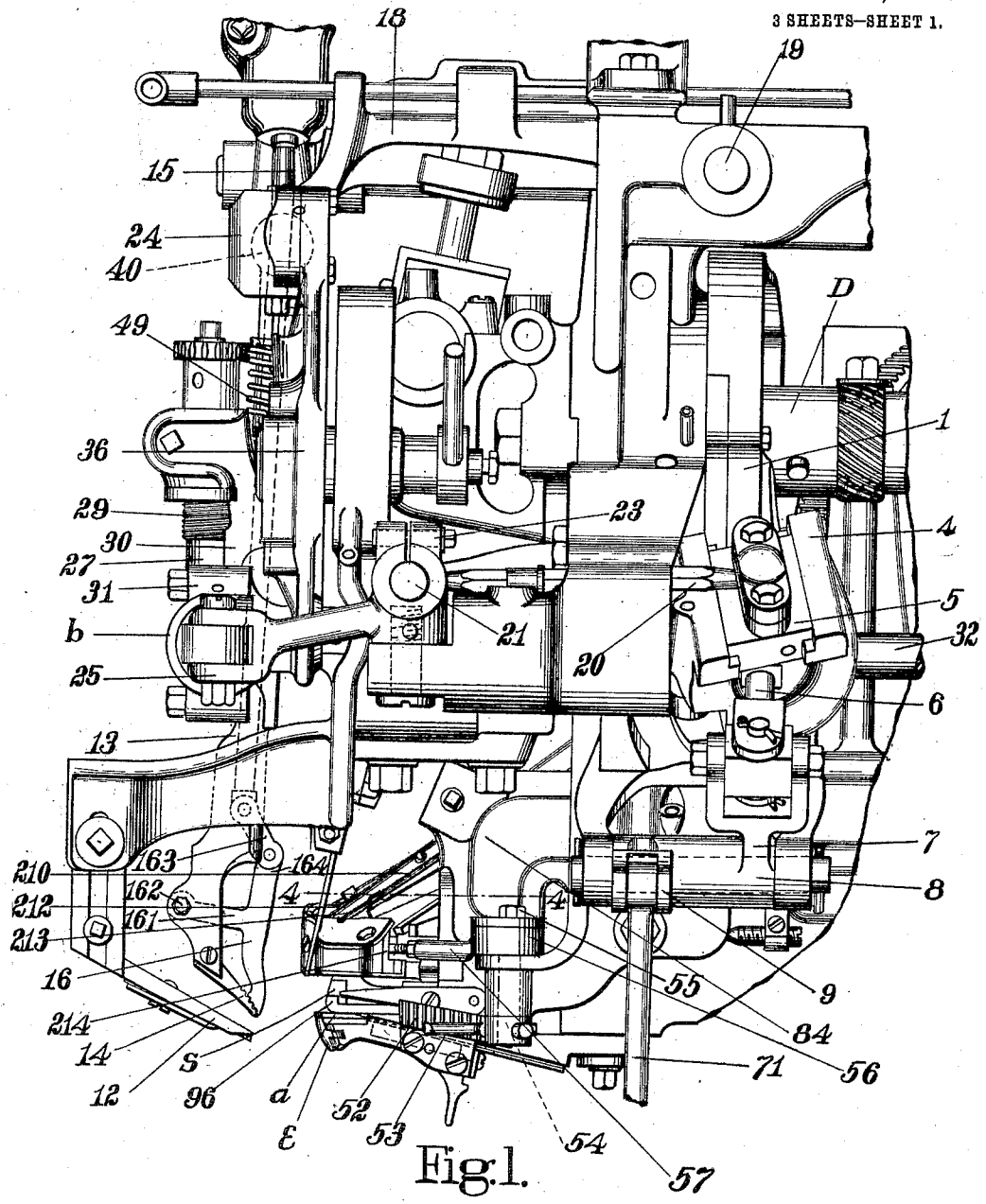

Fig. 1.

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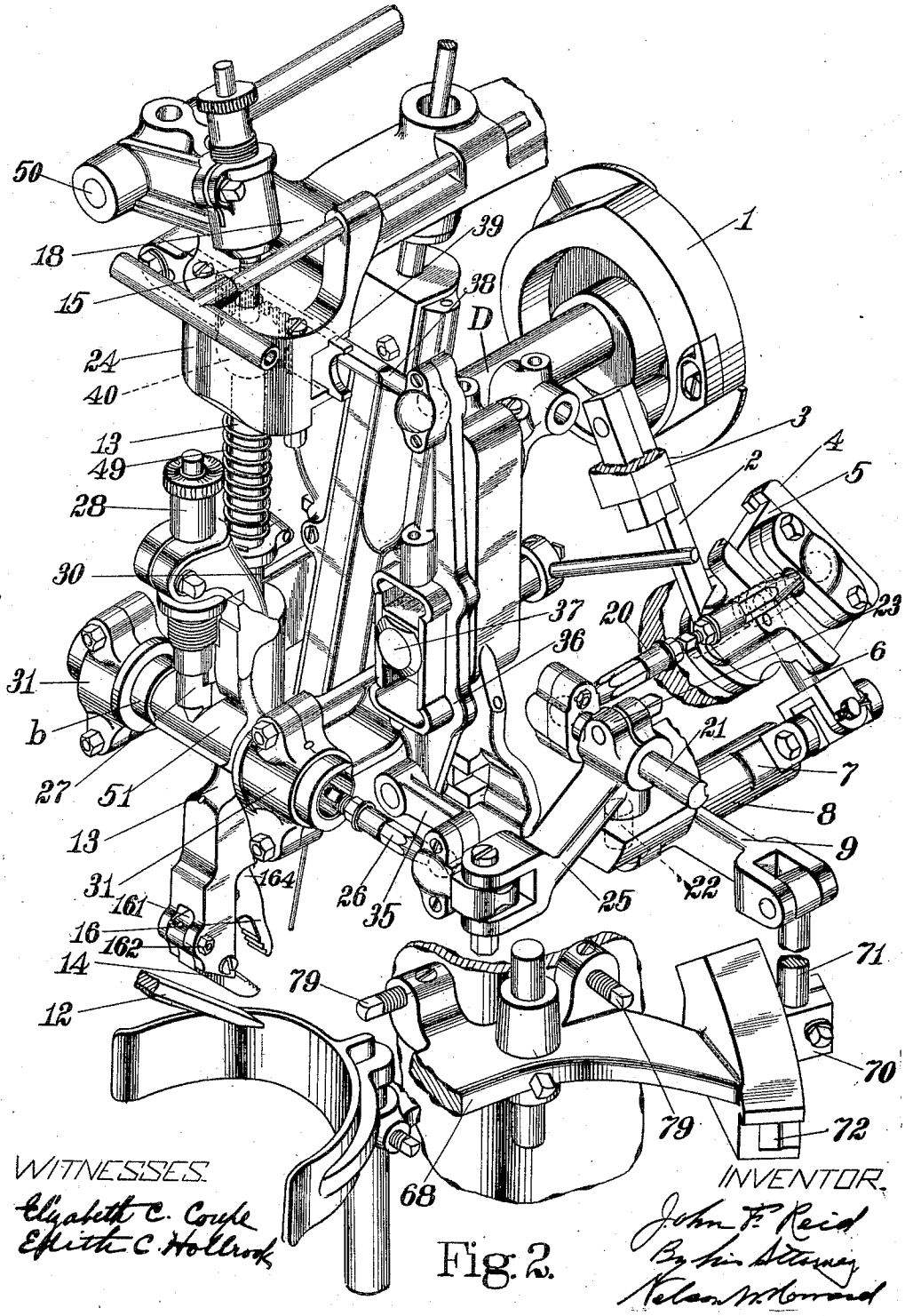

Fig. 2.

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3 SHEETS—SHEET 3.

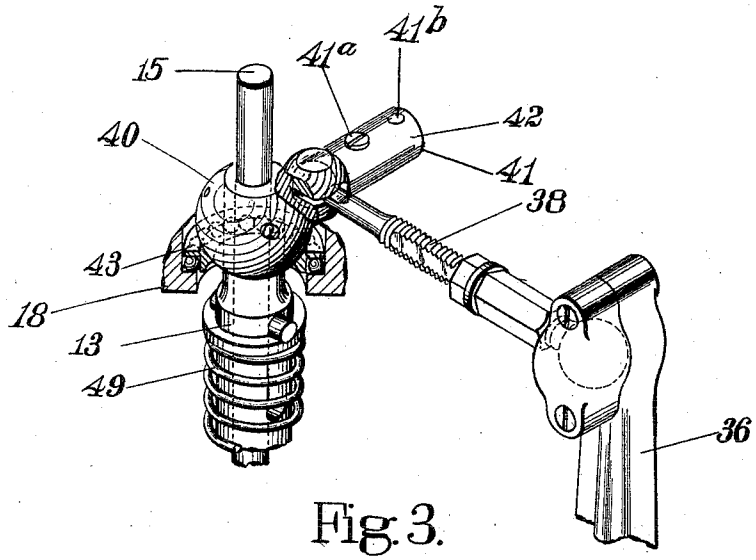

Fig. 3.

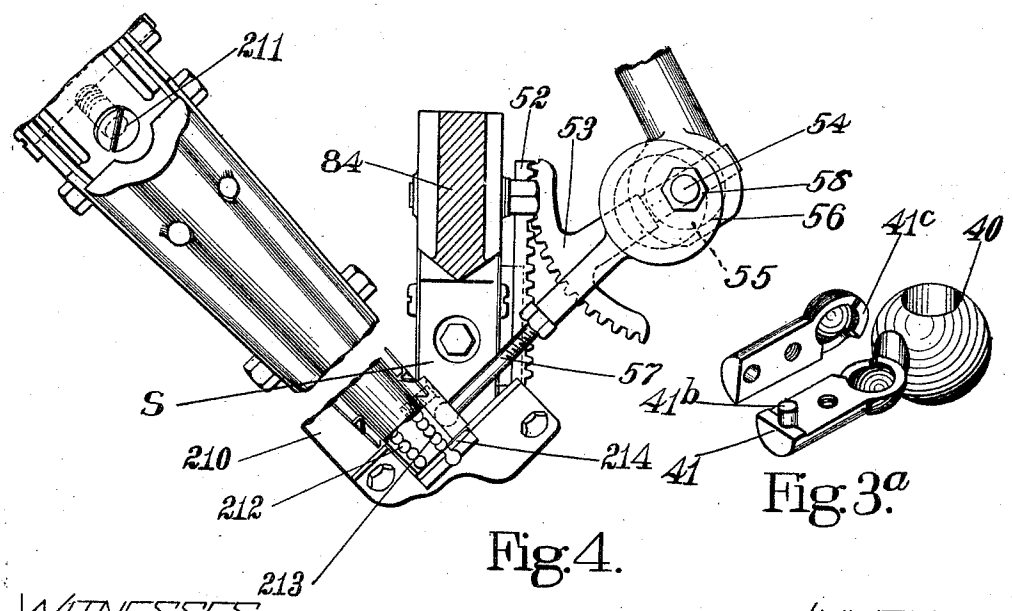

Fig. 3a

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN F. REID, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LASTING-MACHINE.

1,006,006. Specification of Letters Patent. Patented Oct. 17, 1911.

Application filed January 28, 1909. Serial No. 474,820.

To all whom it may concern:

Be it known that I, JOHN F. REID, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to lasting and tacking machines and has for its object to provide improved mechanism for working an upper over a last and fastening it.

The invention is shown as embodied in a machine of the type known as the hand method lasting machine for McKay work, an example of which is United States Letters Patent No. 423,922, granted March 25, 1890, on application of Gooding and Ladd.

A feature of this invention consists in novel mechanism for actuating the gripping devices to work the upper over the last and lay it in folds or plaits and there hold it while the fastening mechanism advances into position to insert a tack for securing the upper.

A further feature of this invention consists in novel means for presenting the tacks to be inserted. The novel mechanisms possess the advantages of simplicity and economy of construction and durability as well as special adaptation for the purposes for which they are devised.

These features and others, including certain details of construction and combinations of parts will appear in connection with the following description of the illustrated machine and will then be pointed out in the claims.

Figure 1 is a side elevation of so much of the machine shown in said patent as is needed to show this invention; Fig. 2 is a perspective of the grippers actuating mechanism; Fig. 3 is a perspective detail of parts designed to be used alternatively with similar parts shown in Figs. 1 and 2 for rotating the grippers; Fig. 3^a is a further detail; Fig. 4 is a plan in the plane of the line 4—4 of Fig. 1.

The grippers comprise a rigid jaw 14 and a pivoted jaw 16 which latter is formed with a lateral arm 161 located substantially midway between its upper and lower ends and extended through the holder for the jaw 14 where it is pivoted at the back thereof at 162. A link 163 forms a flexible connection between the upper arm 164 of the pivoted jaw and its actuator 15 which is a push rod. This link permits the jaw 16 to turn in an arc about the pivot 162. It will be observed that the link 163 forms one member of a toggle the other member of which is formed by the upper arm 164 of the jaw 16 together with the lateral arm 161. This second or lower member of the toggle has its fulcrum in the pivot 162 which is at one side of the line of pressure from the actuator 15 by which the toggle is operated to close and open the grippers. This gives a long and advantageously arranged leverage through which the jaw 16 is rocked toward the other jaw to grip the work and hold it while the shoe upper is being pulled. The jaws 14 and 16, which together with other parts that may correspond in general operation with the same parts shown in said patent, are indicated by the same reference numerals as are therein used. These jaws are mounted upon telescoping shanks 13 and 15, the latter of which has a ball head by which it is suspended from a socket block 24 on the front end of a vertically oscillating lever 18 fulcrumed at 19 and actuated by a suitable cam on the cam shaft D. The shank 15 extends above the lever 18 and is engaged by one arm of a rock-shaft 50 which also receives motion from a cam on said shaft to depress the shank 15 for closing the grippers which are herein opened by a spring 49 which acts upwardly on a pin projecting laterally from the shank 15 through a slot in the sleeve 13. The spring rests upon a guide 30 through which the shanks are vertically movable and which has also on its forward face a sleeve *b* open at its upper side and supported at its opposite ends in a yoke 31 on a rod 32 which receives motion from a cam on the shaft D and a spring to overdraw the upper after it has been pulled upwardly by the grippers. The grippers hold the upper until the advance thereon of the tack block S with its attached wiper 96 which receive their motion from the slide 84 also actuated from a cam on shaft D. The tack block receives tacks while in its retracted position shown in the drawings from a raceway 210 which is pivoted at 211 and mov-

able thereabout to bring either of its tack grooves 212 or 213 into position to permit the tack separator 214 to pick a long or a short tack and deliver it to the tack block. The relation and operation of these parts so far described will be well understood from the drawings and a fuller explanation may be had from the specification of said patent.

The mechanism for imparting to the grippers their additional movements for forming folds or plaits to take care of fullness in the marginal portion of the upper at the toe and other convex curved edge portions of the upper receives its motions from the cam block 1 on the shaft D which has a groove in its front side as appears in Fig. 2. This groove receives a roll on a connecting rod 2 guided in the frame as at 3 and connected to a rocker 4 pivoted to a fixed part of the frame and having a guideway in its upper face transverse to its axis of rocking motion and receiving a slide block 5 which can be positioned at either side of the axis of the rocker for transmitting motion in one or the other direction when the rocker is turned by the cam 1. The slide block is connected, for positioning it as just stated, by a rod 6 with one arm 7 of a rock-shaft 8, another arm 9 of which is connected by a rod 71 with a block 70 which is confined in an oblique guideway 72 in the knee lever 68, movement of which is limited adjustably in both directions by the stop screws 79. The slide block 5 is connected by an extensible ball-headed rod 20 with a ball on the end of a lengthwise adjustable arm 21 of a rock-shaft 22, a clamp 23 holding the arm 21 on the rock-shaft and permitting its shifting to vary the extent of the movement imparted from rocker 5 to said shaft. The rockshaft has a second arm or sweep 25 connected through suitable pivots with an extensible rod 26 leading to a plunger 51 that slides in the sleeve *b* and has in its upper face a V-shaped notch into which is received the V-shaped end of a spring plunger 27, the tension of which can be varied by the sleeve nut 28 threaded in a socket that projects forwardly from the gripper guide 30. The connection between the grippers and the plunger formed by the wedge-shaped head of the yielding plunger engaging the walls of the notch in the plunger 51 affords a very simple means of transmitting the thrust of the plunger yieldingly to the grippers for moving them laterally to plait the upper and restoring them always to a central position after each lateral movement. Another rod or link 35 transmits movement from the sweep arm 25 to a vertically disposed lever 36 fulcrumed at 37 and having a socket at its upper end to receive a ball on rod 38. This rod may be connected with a rack bar 39 which engages the toothed side of the ball head 40 of the gripper shank 13 for rotating the grippers while they are being moved laterally as just above described for forming folds or plaits in the pulled upper. Alternatively the ball head 40 may have an integral arm 41 projected rearwardly as shown in Figs. 3 and 3ª and formed to present one half of a socket for a ball on the end of the rod 38, the other half of the socket being formed on a cover plate 42 attached to arm 41 by a screw 41ª and a pin 41ᵇ, while a distance stop is provided at 41ᶜ to prevent the socket being closed too tightly upon ball on rod 38. The arm 38 may be made extensible, as shown, for angularly adjusting the grippers about the axis of their shanks. The lever 18 and the head block 24 may be formed with an annular race for balls to support a ring 43 upon which the ball head 40 directly rests for rendering more easy the rotation of the grippers.

The shoe is supported bottom upward against the sole rest 12 which holds the last against displacement by the up-pull of the grippers. The shoe is also positioned laterally against the edge rest *e* while lasting the relatively difficult toe and heel portions where the pulling and tacking points are close together. This rest however is in the way while lasting the sides and shank portions of the shoe because of the contour of the side faces of the last. It is therefore arranged for sliding adjustment forwardly and backwardly as explained in United States Letters Patent No. 562,119 granted June 16, 1896, on application of George W. Carter and a thin blade *a* is used for guiding at the shank and sides as therein shown. The movement of the edge rest *e* is utilized for shifting the raceway to present to the separator 214 long tacks adapted to extend through and hold the relatively thick and plaited portions of upper material at the toe and heel while those parts of the shoe are being lasted and to present shorter tacks when the edge rest is back and the sides of the shoe are being lasted, where the upper materials are less thick and are placed under less tension. The connection from the edge rest to the raceway in accordance with this invention includes a rack bar 52 attached to the rest and engaging the toothed end portion of an arm 53 of a short vertical rockshaft 54 journaled in a bracket of the frame and provided with a head 55 eccentrically bored to receive the threaded upper end of the rockshaft and adjustably confined thereon by a nut 58. This eccentric head is covered and inclosed by a hood or cap 56 connected by a rod 57 with the side of the raceway. This connection has the advantage that it is economical to manufacture and durable and that by adjustment of the eccentric on the rockshaft accurate positioning of the raceway grooves with relation to the separator

can be effected which is a material advantage over a cam or the like which requires great precision in its formation. As the cap covers the eccentric it entirely excludes dust and dirt which insures ease of operation.

In the use of the machine the edge rest is brought forward to guide the shoe when the toe is to be lasted and thereby through the described connections shifts the raceway to cause long tacks to be presented to the separator. The grippers receive their usual pulling and overlaying movements and, the knee lever being shifted to place the slide 5 at one side of the axis of the rocker 4, motion is transmitted from the cam 1 to the rockshaft arm 21 and from thence to the rockshaft 22 in proportion to the effective length of that arm which can be varied by adjusting it in the clamp 23 according as extensive or short plaits may be desired in the upper. From the rockshaft motion is transmitted through the sweep arm 25 and connections to the plunger 51 and to the arm 42 of the ball head 40 of the gripper shank. The yielding plunger 25 transmits this motion through the coöperating inclined faces of the two plungers to the grippers which are thereby laterally moved while they are turned.

Having explained the nature of this invention and described a preferred construction embodying the same, I claim as new and desire to secure by Letters Patent of the United States:

1. A shoe making machine having in combination grippers, means for actuating the grippers to seize and pull the upper, and means for actuating the grippers to form plaits in the upper including a cam, a rocker, a link connecting the cam and the rocker, a block movable in the rocker transversely of its axis of motion and connections from the block to the grippers.

2. A shoe making machine having in combination grippers, means for actuating the grippers to seize and pull the upper, and means for actuating the grippers to form plaits in the upper including a cam, a rocker, a link connecting the cam and the rocker, a block movable in the rocker transversely of its axis of motion, a rock shaft, a connection from the block to said shaft and a connection from the rock shaft to the grippers.

3. A shoe making machine having in combination grippers, means for actuating the grippers to seize and pull the upper, and means for actuating the grippers to form plaits in the upper including a cam, a rocker, a link connecting the cam and the rocker, a block movable in the rocker transversely of its axis of motion and connections from the block to the grippers to move the grippers laterally, said connections being constructed and arranged for adjustment to vary the amplitude of movement transmitted for moving the grippers laterally.

4. A shoe making machine having in combination grippers, means for actuating the grippers to seize and pull the upper, and means for actuating the grippers to form plaits in the upper including a cam, a rocker, a link connecting the cam and the rocker, a block movable in the rocker transversely of its axis of motion, a rock shaft having an adjustable arm, connections from block to said arm, means for securing the arm in adjusted position to determine the amplitude of movement transmitted to the rock shaft and connections from the said shaft to the grippers.

5. A shoe making machine having in combination grippers, means for actuating the grippers to seize and pull the upper, and means for actuating the grippers to form plaits in the upper including a driving shaft, a rock shaft having two arms relatively adjustable to vary their effective lengths and having provision for securing the adjustable arm, connections from one of said arms to the driving shaft, and connections from the other arm to the grippers.

6. A lasting machine having in combination grippers, means for actuating the grippers to plait the upper including a reciprocating plunger, a spring pressed plunger, and coöperating inclined faces on said two plungers arranged to slide relatively against the pressure of said spring plunger to effect the plaiting movement yieldingly.

7. A lasting machine having in combination grippers, means for actuating the grippers to seize and pull the upper, and means for actuating the grippers laterally to plait the pulled upper including a reciprocating plunger having a V-shaped recess in its side, a gripper guide, a taper pointed pin in said guide fitting said recess in the plunger, a spring for holding the pin in said recess and means for adjusting said spring, all constructed and arranged to effect lateral movement of the grippers yieldingly in two directions.

8. A lasting machine having in combination grippers, means for actuating the grippers to seize and pull the upper, and means to rotate the grippers for plaiting the upper, including a driving shaft, a ball head on the gripper, an arm rigid with said head and projecting laterally therefrom and having a semispherical socket in it, a cap having a complemental socket and formed relatively to the arm to receive the ball head and arm of a link, and connections from the shafts to the arm including said link.

9. A lasting machine having in combination grippers to seize and pull an upper, a ball head on said grippers to permit freedom of movement thereof, an arm projecting from said ball head, an actuator for turning

the grippers, and a ball and socket connection between said arm and actuator.

10. A lasting machine having in combination grippers, means for actuating the grippers to seize and pull an upper, a ball formation on the grippers, an arm integral with said ball and provided with a socket, a cover for said socket removably secured to the arm, and actuating means including a ball arranged within said socket for turning the grippers to plait the upper.

11. A lasting machine having in combination grippers, means for actuating the grippers to seize and pull an upper, a ball formation on the grippers having an arm, a lever having a socket for the ball and from which the grippers are suspended, and means for actuating the grippers to plait the upper having a ball and socket connection with the arm that extends from the ball on the grippers.

12. In a grippers actuating mechanism, a gripper shank having a ball head 40 and an arm 41 having a portion of a socket formed in it, a cover plate 42 containing a complemental portion of the socket, means for securing the cover to the arm, a distance block between the cover and the arm, and actuating means for the grippers having a ball held within said socket in the arm and lever.

13. A lasting machine having in combination grippers, means for actuating the grippers to seize and pull the upper, and means to rotate the grippers for plaiting the upper, including a driving shaft, an arm projected laterally from the grippers, and connections from the driving shaft to said arm, including a rockshaft, and means permitting adjustment of one arm of the rockshaft to vary the amplitude of the movement transmitted to the grippers.

14. A lasting machine having in combination grippers to seize and pull an upper, a ball head on said grippers, a lever in which the grippers are suspended, said lever being formed with a ball race, a series of balls therein, an annular support resting thereon and having a concave face upon which the ball head of the grippers may rest, and means for imparting angular movements to the grippers about the center of said ball head.

15. A lasting machine having in combination grippers to seize and pull an upper, a ball head on said grippers, a lever in which the grippers are suspended, said lever being formed with a ball race, a series of balls therein, an annular support resting thereon and having a concave face upon which the ball head of the grippers may rest, means for swinging the grippers laterally, and an arm projected from said ball head, an actuator and a ball and socket joint between said actuator and arm for rotating the grippers.

16. A lasting machine having in combination grippers to seize and pull an upper, a ball head on said grippers, a lever in which the grippers are suspended, said lever being formed with a ball race, a series of balls therein, an annular support resting thereon and having a concave face upon which the ball head of the grippers may rest, and means for imparting plaiting movements to the grippers including means for laterally swinging the grippers and means connected with said ball head for rotating the grippers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. REID.

Witnesses:

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