

E. E. WINKLEY.
LASTING MACHINE.

APPLICATION FILED OCT. 21, 1909.

1,018,023.

Patented Feb. 20, 1912.

3 SHEETS—SHEET 1.

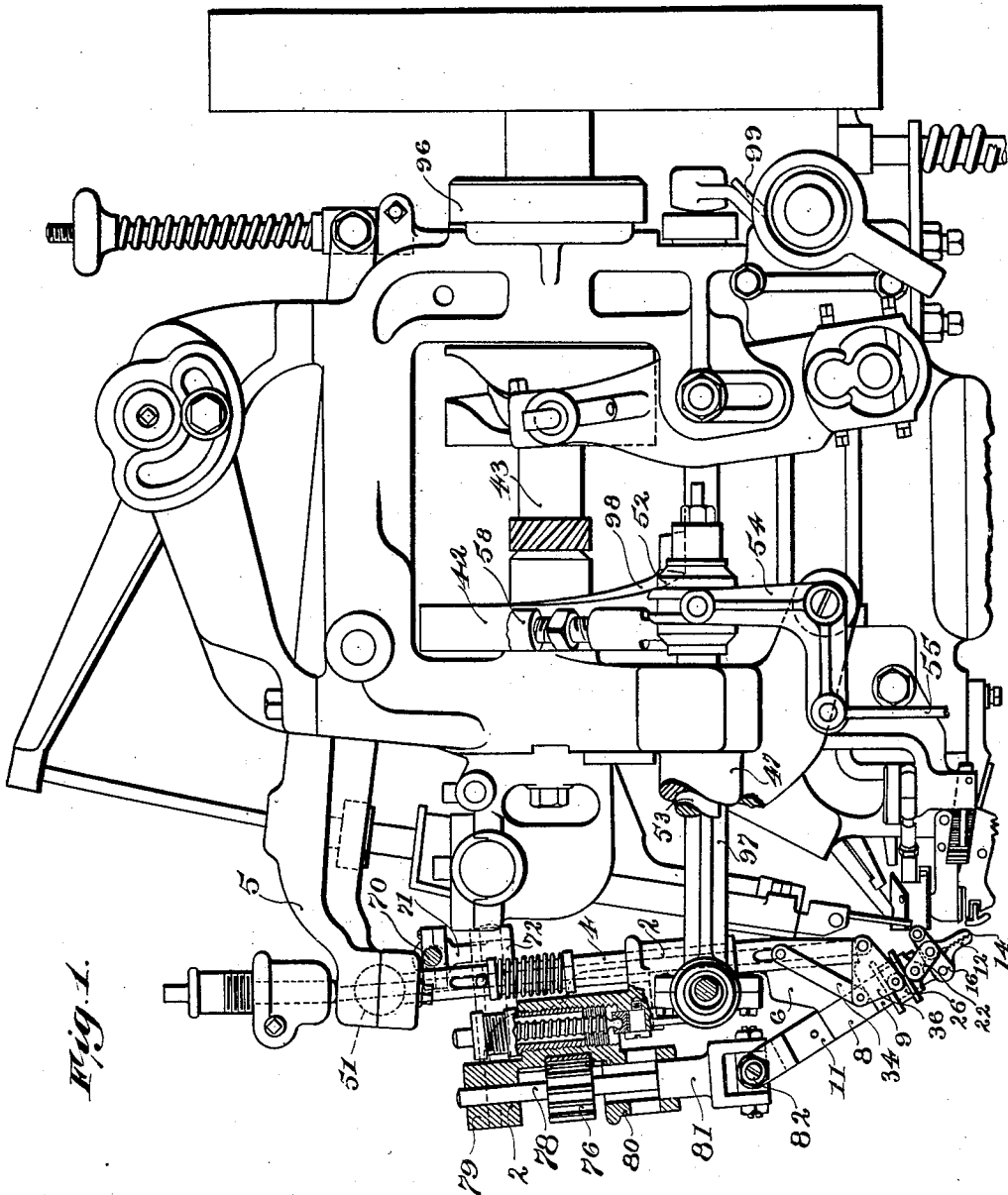


Fig. 1.

Witnesses:

Onton A. Peck.

Warren G. Ogden

Inventor:

Ernest E. Winkley

By his Attorney

Phillips Kenner Smith

1,018,023.

3 SHEETS—SHEET 2.



Ruth A. Simonds 92

Warren G. Ogden

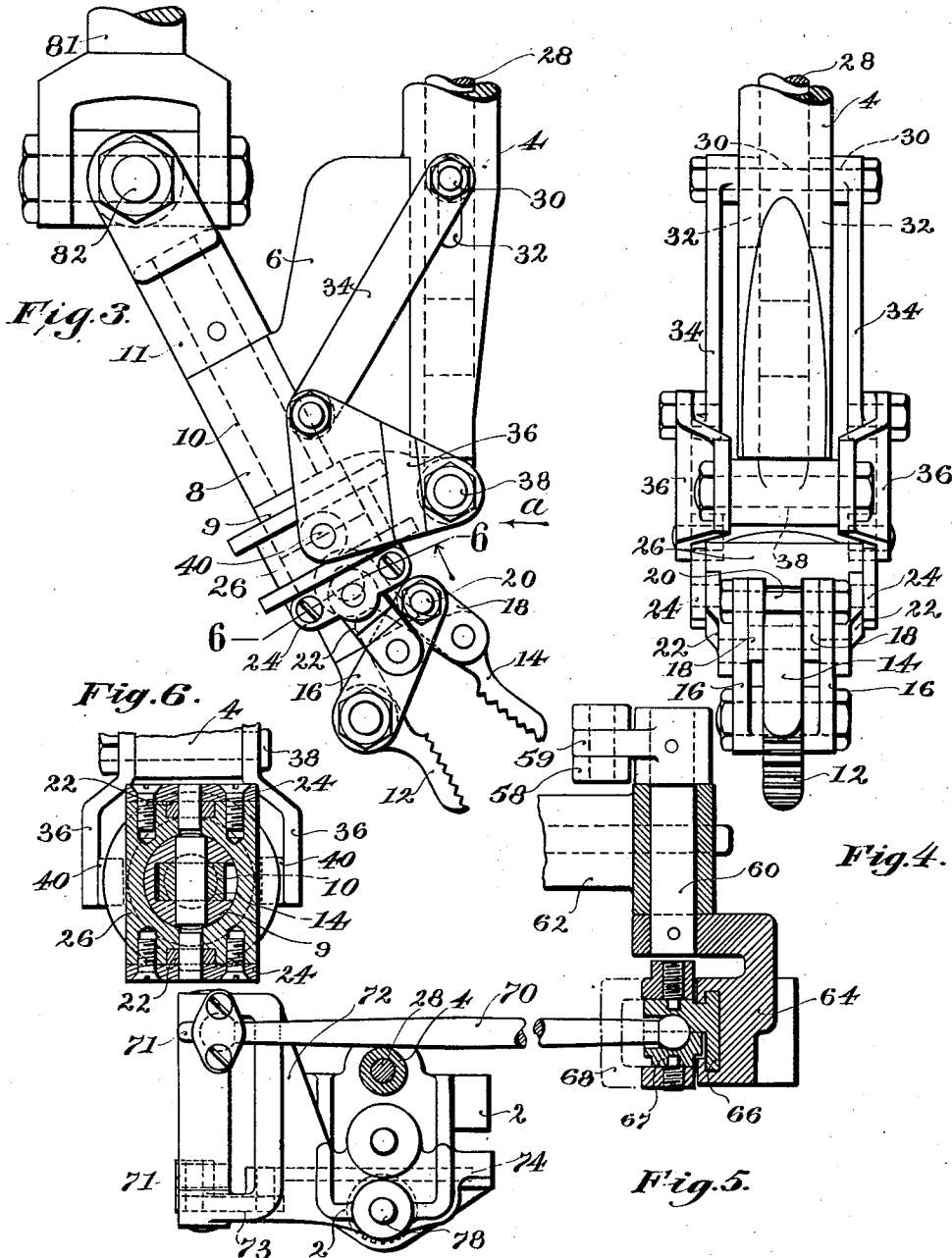
Erastus C. Winkley
by his Attorneys
Phillips, Van Curen & Hick

E. E. WINKLEY.
LASTING MACHINE.
APPLICATION FILED OCT. 21, 1909.

1,018,023.

Patented Feb. 20, 1912.

3 SHEETS—SHEET 3..



Witnesses:

Onton A. Deck
Wm. G. Ogden

Inventor:

Erasmus E. Winkley
by his Attorneys
Philip Kaufman & Son

UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS.

LASTING-MACHINE.

1,018,023.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed October 21, 1909. Serial No. 523,770.

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Lasting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to lasting machines and more particularly to that type of lasting machine known as the "hand method" lasting machine.

When an upper is pulled over, it is ordinarily secured at the center of the tip of the toe and at each side of the forepart about at the ends of the tip line. When so secured, the fullness of the upper between the points where the fasteners are inserted bulges or bellies out and in lasting a shoe this portion of the upper is ordinarily taken care of by plaiting it over the insole. When the shoe is lasted by hand, or in what is known as the "bed" or "wiper" type of lasting machine, this plaiting of the fullness of the upper at the toe is accomplished by "wringing" the upper with a pair of hand lasting pincers. Wringing, consists in seizing the margin of the upper with the pincers in the usual way and while pulling, rotating the pincer jaws to the right or left by a twist of the wrist, this operation being repeated until all the fullness is taken care of. In wringing the upper a turning movement is imparted to the pincer jaws about an axis extending obliquely to the horizontal, or plane of the shoe bottom, and in the general direction of the pulling movement. It has been found in practice that a rotary or turning movement of the pincers about such an axis lays the margin of the upper snugly to the insole and produces the most effectual plaiting.

One object of the particular machine construction, herein described and illustrated, is to provide mechanical means for laying the fulled portion of the upper to the last as effectively as it can be done by hand.

In accordance with this object, one feature of the machine consists in the provision, in a machine of the general type specified which already in the mechanical operation of its pincers closely follows the updraw and overdraw movements used in hand lasting,

of mechanical means for imparting to the pincers, in addition, a turning movement for plaiting the fulled upper at the toe, similar in its action on the upper and in its effect to wringing by hand. In the preferred embodiment of this means, the pincer jaws are mounted with their gripping faces at an oblique angle to the horizontal and means is provided for rotating said jaws about an axis in the plane of said gripping faces or in a plane substantially parallel thereto. The turning movement thus takes place about an axis extending in the general direction of the overdraw movement as in hand lasting. The plaiting movement thus mechanically imparted to the upper is similar in all respects to the plaiting movement obtained by hand manipulation of the pincers.

The feature of the machine described in the preceding paragraph does not, however, form a part of the present invention and it is not claimed herein, the description as found in this application being merely for the purpose of providing a complete disclosure of the machine to which the present invention is preferably applied.

One object of the present invention is to provide pincer jaw closing and opening mechanism which, while operating to seize the stock in a positive and unyielding grip, nevertheless permits a free rotation of the pincers in plaiting the upper at the toe. In accordance with this object, one feature of the invention comprises a pair of pincer jaws which are pivoted together and are further connected, by means of an inverted toggle, at a point between the jaw pivot and jaw ends. Power is applied to the toggle by an actuator moving substantially parallel to the axis about which the pincers rotate, and also moving with the pincers in their rotation. As the toggle is opened and closed, it respectively opens and closes the pincer jaws, an actuation of the jaws being permitted whatever the position of the pincers.

In lasting some portions of the upper, for example at the ball of the shoe, it is frequently desirable to impart a turning or rotary movement to the pincers during their straight updraw and overdraw movements without imparting any side reach or lateral movement. This cannot be accomplished with the type of hand method lasting machines with which the inventor is familiar. Another object of the present invention,

therefore, is to provide a construction wherein the turning movement of the pincers is controlled independently of their lateral movement.

5 In accordance with this object, a further feature of the invention comprises separate trains of mechanisms for imparting lateral and turning movements to the pincers with
10 suitable provision for throwing these trains of mechanisms into operation independently. Preferably, a common actuator is employed for operating the trains of mechanisms controlling both the turning and lateral movements and the amplitude of these movements
15 may be varied independently by separate manually controllable means. Provision is also made for operating these trains of mechanisms simultaneously.

20 The features of the invention last described are not limited to use in a lasting machine of the type illustrated wherein the pincers are arranged to rotate about an axis substantially in the line of the overdraw movement, as they may readily be applied to other types of lasting machine using
25 differently constructed and arranged pincers.

30 These and other features of the invention, including certain details of construction and combinations of parts, will be further explained in the following description and then particularly pointed out in the appended claims.

35 The various features of the invention will best be understood from a description of the preferred embodiment thereof illustrated in the accompanying drawings, in which the invention has been shown for purposes of description as applied to the lasting machine exemplified by United States patents
40 to Ladd & McFeely, No. 584,744, and Ladd, No. 597,321.

45 In the drawings, Figure 1 is a side elevation of a hand method lasting machine of the type above specified with the improvements contemplated by the present invention applied thereto. A portion of the forward end of the old mechanism has been broken away to better show the new features of the machine and a part of the new features are shown in vertical section; Fig.
50 2 is a front elevation of the improvements which have been made upon the old type of hand method lasting machine; Fig. 3 is a detail, in side elevation, of the jaw closing mechanism, showing the jaws open; Fig. 4 is an elevation of the parts shown in Fig. 3 looking in the direction of the arrow *a*; Fig. 5
55 is a section on the line 5—5, Fig. 2; Fig. 6 is a section on the line 6—6, Fig. 3, with the pincer jaws rotated 90°; Fig. 7 is an elevation, in detail, of a connection between the pincer controlling rods, to be referred to; and Fig. 8 is a detail in section taken on the line 8—8 of Fig. 2.

65 In the illustrated embodiment of the in-

vention, 2 (Fig. 1) is a bracket similar in its function to the bracket shown in the Ladd & McFeely patent, hereinbefore referred to, as supporting the pincers which, by the mechanisms described in the patent, have imparted to them the movements necessary to place an upper in overworked position on a last, namely, the pulling or updraw movement, the outward or overdraw movement, and the sidewise or lateral movement, used with a rotary movement for plaiting the upper over the toe of the last. In the present invention instead of mounting the pincer bar directly in this bracket as in the patent, a sleeve 4, depending from the pincer lifting lever 5 and passing through the bracket, supports an auxiliary bracket 6 (Figs. 1 and 3), which in turn is provided with a carrier 8 for the pincers. The carrier 8 is constructed so that the pincers may be mounted therein at an oblique angle to the horizontal, the direction being upward and outward from the plane of the front of the machine and preferably in the general direction of the pull in overdrawing the upper. The pincer bar 10 is rotatably journaled within the carrier 8 being held from displacement by an enlargement 9 on its lower end and a sleeve 11 pinned to its upper end (Fig. 3).

70 The pincer jaws carried by the pincer bar 10 may be constructed in a variety of ways but, as herein shown, the lower jaw 12 is conveniently formed integral with the bar 10 and the upper jaw 14 is pivotally mounted upon the pincer bar (see Fig. 6). The lower jaw 12 has pivoted thereto, by their lower ends, a pair of links 16 which extend upwardly at each side of the jaw and which overlap a second pair of links 18 similarly mounted upon the upper jaw. The free ends of these links are pivotally connected by means of a pin 20 which extends across the pincer jaws and through all four links (Figs. 3 and 4). The relative proportions of the links 16 and 18 are such that when the jaws are closed the links are in alinement with each other (see Fig. 1). When the jaws are open, however, the links are at an angle to each other (see Fig. 3). The two pairs of links thus form two pairs of inverted toggles which are utilized to open and close the pincer jaws. In order to actuate the toggles each of the links 16 has pivoted thereto a rearwardly and upwardly extending link 22, which are also pivotally connected beneath plates 24 to the squared lower end of a spool-shaped sleeve 26 which is slidably mounted upon the lower enlarged end 9 of the pincer bar. By sliding this sleeve on the pincer bar it acts through the links 22 and serves to actuate the inverted toggles. In order to operate the toggle actuator 26, the plunger 28, which corresponds to the

rod, or plunger, for closing the movable gripper jaw shown in the Letters Patent hereinbefore referred to, is utilized. In the present construction the plunger 28 is provided with a diametrically arranged pin 30 which projects from each side and through slots 32 formed in the plunger supporting sleeve 4. To the ends of the pin 30 are connected the upper ends of links 34, the lower ends of which are in turn connected to bell crank levers 36 mounted upon a pivot pin 38 fixed to the lower end of the sleeve 4. The bell cranks 36 are provided with rolls 40 which engage between the collars of the spool-shaped sleeve 26 (see Fig. 2).

In the operation of the machine, which is in all essentials similar to the operation described in the Ladd & McFeely patent hereinbefore referred to, the plunger 28 is moved downward through the sleeve 4 to close the pincer jaws. This operation causes the bell crank levers 36 to swing about their pivot 38 carrying with them the sliding actuator 26 which acts upon the links 16 of the inverted toggles connecting the pincer jaws moving these links downward about their pivot upon the pincer jaw 12, and causing the jaws to close, as shown in Fig. 1. It will be noted that, as illustrated, the toggles are mounted upon the jaws at a point intermediate the pivotal jaw connection to the pincer bar and their gripping faces. This, in addition to providing for an extremely simple method of actuation for the toggles, is also advantageous for another reason in connection with the rotation of the pincer jaws to be presently referred to. Obviously a single toggle could be employed but a pair is used to insure an even pressure, over the whole surface of the gripping faces, when the stock is seized.

A side reach or lateral movement is imparted to the lasting pincers by a train of mechanism which may be briefly described as follows: A suitable path cam, in a cam disk 42 (Figs. 1 and 2) mounted on the driving shaft 43, engages and oscillates a cam lever 44 fulcrumed on the machine frame and having at its free end a toothed segment 45 engaging a pinion 46 upon a hollow rock shaft 47 suitably journaled in the frame at the right hand side of the machine. At the forward end of the rock shaft 47 there is mounted a driving shoe 48 which is oscillated as the shaft is rocked, thereby imparting motion to a sliding block 49 carried by the shoe and connected by a link 50 to the bracket 2 through which the pincers pass. The pivotal point of the pincers in their lateral movement is at the ball joint 51 (Fig. 1) at the forward end of the updraw lever 5. The mechanism just described may be, and preferably is,

similar to the mechanism for performing the same function shown and described in the Letters Patent hereinbefore referred to.

The amplitude of the lateral movement imparted to the pincers is varied by shifting the position of the block 49 in the oscillating shoe 48. This is done by sliding the block 49 within the shoe 48 by a longitudinal movement of the sleeve 52 (Fig. 1) on the hollow shaft 47. This movement will cause a rocking of the solid shaft 53 located within the hollow shaft 47 and a consequent shifting of the block in its shoe through the connections, illustrated and described in the Letters Patent hereinbefore referred to. Movement is imparted to the sleeve 52 by means of a bell-crank 54 mounted upon a horizontal pivot on the machine frame and engaging the sleeve with its vertical arm. A rod 55 leading to a knee lever (not shown), similar to that shown in the United States patent to Stiggins No. 931,809, depends from the horizontal arm of the bell-crank lever. On moving the knee lever to the left or right of its central position, the rod 55 is moved in a direction to throw the block 49, respectively, above or below the center of the hollow rock shaft 47. The amount of movement imparted to the knee lever determines the amount of lateral movement imparted to the pincers by the oscillation of the shoe 48.

The turning movement of the pincers is governed by a controlling device similar to that described for the lateral movement and is operated from the same actuating cam. The cam lever 44 is provided with a T-slotted segment 56 on its rear side, to be referred to again. The lower end of an adjustable link 58 is adjustably secured in this segment by means of a headed bolt 53 (Fig. 8) arranged with its head in the T-slot and its shank passed through an eye on the lower end of the link. The bolt is held in place by being threaded into a nut 55 which is constructed in any convenient and well known manner to provide for clamping and unclamping the bolt head to the segment. The link 58 is pivoted at its upper end to a crank 59 on the rear end of a short rock shaft 60 journaled at the upper end of a bracket 62 rising from the frame on the right hand side of the machine. The forward end of the rock shaft 60 has secured thereto a driving shoe 64 similar to the driving shoe 48 and similarly provided with a sliding block 66. This block has secured to it, by means of a cap plate 67, one end of a link 70 which extends across the front of the machine and is connected at its other end to the upper end of a lever 71 pivoted centrally in a support 72 at the upper right hand side of the casting forming the pincer bracket 2. The lower end of the lever 71 is connected by a

link 73 to a rack 74, sliding in a transverse guideway 75 in the front side of the casting forming the bracket 2, and engaging a pinion 76 pinned to a vertically arranged shaft 78 mounted for both rotary and vertical sliding movement in journals 79 and 80 also at the front side of the bracket 2 (see Fig. 1). The shaft 78 has pinned to it, at its lower end, a sleeve 81 and this sleeve is connected to the sleeve 11, on the upper end of the pincer rod 10, by means of a universal joint 82.

With the construction just described, assuming that the block 66 is in a position in its driving shoe 64 either above or below the center of the rock shaft 60, as the shoe is oscillated by the movement of the cam lever 44 the lever 71 will in turn be oscillated and the rack 74 will be reciprocated within its guideway, thus turning the pinion 76 and imparting a rotary movement to the pincer bar 10. In practice, the pincer jaws are rotated by means of the rack 74, first through approximately 45° , to place the pincers in proper position to seize the margin of the upper at one side of the center of the toe, and then back through approximately 135° so that at the end of the turning movement the faces of the pincer jaws are in a plane at approximately right angles to their position as shown in Figs. 1 and 3. This final, or plaiting, position of the pincers is shown in section in Fig. 6. Such a turning movement has been found to lay the fulled upper snugly to the insole. The amplitude of this movement to suit varying conditions may be controlled by varying the position of the block 66 in its shoe 64. This may be done by varying vertical movements of a rod 84, at the right of the machine, which is pivotally connected at 85 to a lever 86 mounted upon an auxiliary bracket 87. The lever 86 is in turn connected by a link 88 to the block 66 through a bail 68. The end of the lever 86 which is connected to the link 88 is provided with a roll which travels in a stationary curved guideway 89 conveniently mounted on the bracket 62. The other end of the lever 88 is connected to the auxiliary bracket 87 by means of a short link 90. The curved guideway, as will be readily understood by those skilled in the art, acts as a compensator, so that by an equal amount of movement in either direction of the rod 84 the block 66 shall be placed in symmetrical locations above and below the axis of the rock shaft 60 to insure an equal throw to the rack 74 in either direction. The link 90 permits the lever 86 to follow the movement of the lower end of the link 88 in the curved guideway 89. Vertical movements are imparted to the rod 84, to shift the position of the block 66 in its driving shoe, by means of a conveniently located hand lever 100 (Fig. 2). This lever 100 is removably pivoted at

63 on the bracket 62 and is provided with a slot 101 (dotted lines) through which is passed a headed pin 102 removably threaded into the rod 84. This form of connection, permitting loose play between the parts, is provided to take care of the angular movement of the lever 100. The lever moves between pins 103, on a smooth segment 104 depending in a convenient location from the auxiliary bracket 87, and is provided with a handle 105. The lever is maintained in varying vertical positions by means of the usual friction washer at the pivot 63. The lever just described may be, and preferably is the same as the lever "e" illustrated and described in the patent to French & Meyer No. 563,471, July 7, 1896, (see Figs. 1 and 2) which performs a similar function in an outsole sewing machine. It is, of course, desirable that the hand of the operative be removed from the work for the shortest space of time possible. The construction and arrangement described by which the lever 100 is held in any position of adjustment permits the lever to be moved from one position to another by means of a sharp blow, merely, and thus a minimum amount of time is consumed in changing the position of the block 66 in its shoe 64. The pins 103 perform the same function as the pins on the plate "7" of the Patent No. 563,471, they being so located that when the lever engages either, under the blow given it by the operative, the desired amount of turning movement, to the right or left, is imparted to the pincers.

It will be, of course, understood that when the block 49 is in alinement with the axis of the shaft 47 and when the block 66 is in alinement with the axis of the shaft 60, although a continuous oscillatory movement is imparted to the cam lever 44 by its cam, and therefore to the shoes 48 and 64, no movement whatever is imparted to either of the links 50 or 70. There will, therefore, under these conditions be no lateral or turning movements imparted to the pincers. If it is desired to impart a turning movement alone to the pincers without any lateral movement, as when lasting the ball at times, the hand lever 100 connected to the rod 84 is moved in a direction to lift said rod either up or down thereby shifting the block 66 respectively above or below the axis of the rock shaft 60 independently of any movement of the block 49. This position of the block 66 will cause the devices, for imparting a turning movement to the pincers to the right or left, to be thrown into operation. If it is desirable to impart both lateral and turning movements to the pincers, for instance, when lasting the toe, in addition to moving the hand lever 100 connected to the rod 84 the knee lever connected to the rod 55 is also moved. A movement of the knee

lever shifts the block 49 in its shoe 48 and causes the devices, for swinging the pincer carrying bracket 2 laterally about the ball and socket joint 51 in the updraw lever 5 as a center, to be thrown into operation. The hand and knee levers are, of course, preferably operated simultaneously when, with this construction, both lateral and turning movements are to be imparted to the pincers.

Some manufacturers deem it unnecessary to make use of the turning movement of the pincers without the lateral movement and, therefore, the hand lever 100 for operating the rod 84 may be omitted and the machine provided with a connection between the rods 84 and 55, such as is shown in Fig. 7. This connection comprises a split sleeve 92 clamped to the rod 55 and provided with a projection 93 having a universal joint connection 94 with the lower forked end 84^a of the rod 84. With such a construction if the knee lever is moved in a direction to raise or lower the rod 55, the rod 84 is also raised and lowered with it and the devices for imparting both lateral and turning movements to the pincers are simultaneously thrown into operation. When a connection between the rods 55 and 84 is used, the connection between the rod 84 and the link 86 should be in the form of a universal joint as the movement of the bell-crank lever 54, to which the upper end of the rod 55 is connected, swings this rod slightly forward or back, which movement imparts a slight movement in the same direction to the rod 84.

Before the machine is set in operation, adjustments are made in the usual way to determine the desired initial or starting position of the pincers and with the machine of the present invention a further adjustment is made of the lower end of the link 58 in its segment groove 56 on the cam lever 44. This adjustment determines the greatest throw that can be imparted from the cam to the driving shoe 64. The amount of this throw is determined by the fullness of the upper on the class of shoes to be operated upon as, obviously, a scant upper will not permit the pincers to turn through as great an angle as will a full upper. By means of this adjustment a proper proportion between the lateral and turning movements of the pincers for all kinds of uppers is provided.

In its operation the machine is substantially similar to the machine described in the Letters Patent hereinbefore referred to. An updraw movement is imparted to the pincers by means of the lever 5 which is actuated by a cam in the cam disk 96 (Fig. 1). An overdraw movement is imparted to the pincers by means of the longitudinally movable rock-shaft 97 actuated by the com-

bined action of a cam 98 on the rear face of the cam disk 42 and a spring 99 (Fig. 1). The actuation of the pincers for lateral and turning movements has already been described. After the pincers have been closed upon the stock in the manner described, the upward movement of the updraw lever 5 causes the sleeve 4 to rise through the bracket 2 carrying with it the pincer supporting bracket 6. The shaft 78, on which the pinion 76 is mounted, slides vertically within its guides 79 and 80 in the bracket 2, moving also, vertically relatively to its actuating rack 74. The vertical movement of the pinion 76 is, however, never sufficient to cause it to become disengaged from its rack. In the overdraw movement imparted by movement of the shaft 97 the bracket 2, with all the parts which it supports, is moved forward about the ball and socket joint 51 as a center. The ball and socket joints at the ends of the connecting links 50 and 70 permit the bracket 2 to move relatively to the pincer actuating shoes 48 and 64 which are mounted upon the frame of the machine.

As heretofore described, the toggle closing mechanism for the pincer jaws is mounted upon the jaws themselves, thus providing for a mounting of the toggle actuator on the pincer bar. This construction permits the toggle actuator to be operated by means mounted independently of the pincers, while still permitting a free rotation of the pincer jaws.

While it is preferred to employ the specific construction and arrangement of the parts shown and described, since this construction and arrangement is the simplest and most efficient embodiment of the invention which has yet been devised, it will be understood that this construction and arrangement is not essential except so far as it is specified in the claims, and may be varied or modified without departing from the broader features of the invention.

What is claimed as new, is:—

1. A lasting machine, having, in combination, a pincer bar provided with relatively movable pincer jaws, a toggle connecting the jaws, a toggle actuator for opening and closing the jaws, means for operating the actuator, and means for rotating the jaws and actuator relative to the actuator operating means, substantially as described.

2. A lasting machine, having, in combination, pincers having jaws adapted to close and open to seize and release the stock, means for rotating said pincers, and toggle means adapted to close and open the jaws mounted to rotate with the pincers, substantially as described.

3. A lasting machine, having, in combination, pincers adapted to close and open to seize and release the stock, means for rotat-

ing said pincers, toggle pincer closing and opening means mounted to rotate with the pincers, and provision for operating said toggle means mounted independently of the pincers, substantially as described.

4. A lasting machine, having, in combination, pincers, separate trains of mechanisms for imparting lateral and turning movements to said pincers, and provision for throwing said trains of mechanisms into operation independently, substantially as described.

5. A lasting machine, having, in combination, pincers, separate trains of mechanisms for imparting lateral and turning movements to said pincers, and means under control of the operator for throwing said trains of mechanisms into operation either simultaneously or independently, substantially as described.

6. A lasting machine, having, in combination, pincers, separate trains of mechanisms for imparting lateral and turning movements to said pincers, a common actuator for said trains of mechanisms, and means for varying the amplitude of the lateral and turning movements independently during the operation of the machine, substantially as described.

7. A lasting machine, having, in combination, pincers, an oscillatory shoe carrying a block operatively connected to the pincers for imparting a lateral movement thereto, a cam, a cam lever connecting the cam and shoe, a second oscillatory shoe carrying a block operatively connected to the pincers for imparting a turning movement thereto, and a connection between the cam lever and said second shoe, substantially as described.

8. A lasting machine, having, in combination, pincers, an oscillatory shoe carrying a block operatively connected to the pincers for imparting a lateral movement thereto, a cam, a cam lever connecting the cam and shoe, a second oscillatory shoe carrying a

block operatively connected to the pincers for imparting a turning movement thereto, a connection between the cam lever and second shoe, and independent devices for moving said blocks in their respective shoes to vary the movements imparted thereby to the pincers, substantially as described.

9. A lasting machine, having, in combination, pincers, separate trains of mechanisms for imparting lateral and turning movements to said pincers, provision for throwing said trains of mechanisms into operation independently, and means for varying the amplitude of the turning movement during the operation of the machine while the amplitude of the lateral movement remains constant, substantially as described.

10. A lasting machine, having, in combination, pincers, separate trains of mechanisms for imparting lateral and turning movements to said pincers, provision for throwing said trains of mechanisms into operation independently, and means for varying the amplitude of the lateral movement during the operation of the machine while the amplitude of the turning movement remains constant, substantially as described.

11. A lasting machine, having, in combination, pincers, separate trains of mechanisms for imparting lateral and turning movements to said pincers, a separate lever under the control of the operator to throw each of said trains of mechanism into operation, and adjustable devices in each of said trains connected to the levers for varying the amplitude of the lateral and turning movements imparted to the pincers by said trains of mechanisms, substantially as described.

ERASTUS E. WINKLEY.

Witnesses:

WARREN G. OGDEN,
RUTH A. SIMONDS.