

A. BATES.
LASTING MACHINE.
APPLICATION FILED MAR. 13, 1911.

1,020,474.

Patented Mar. 19, 1912.

2 SHEETS—SHEET 1.

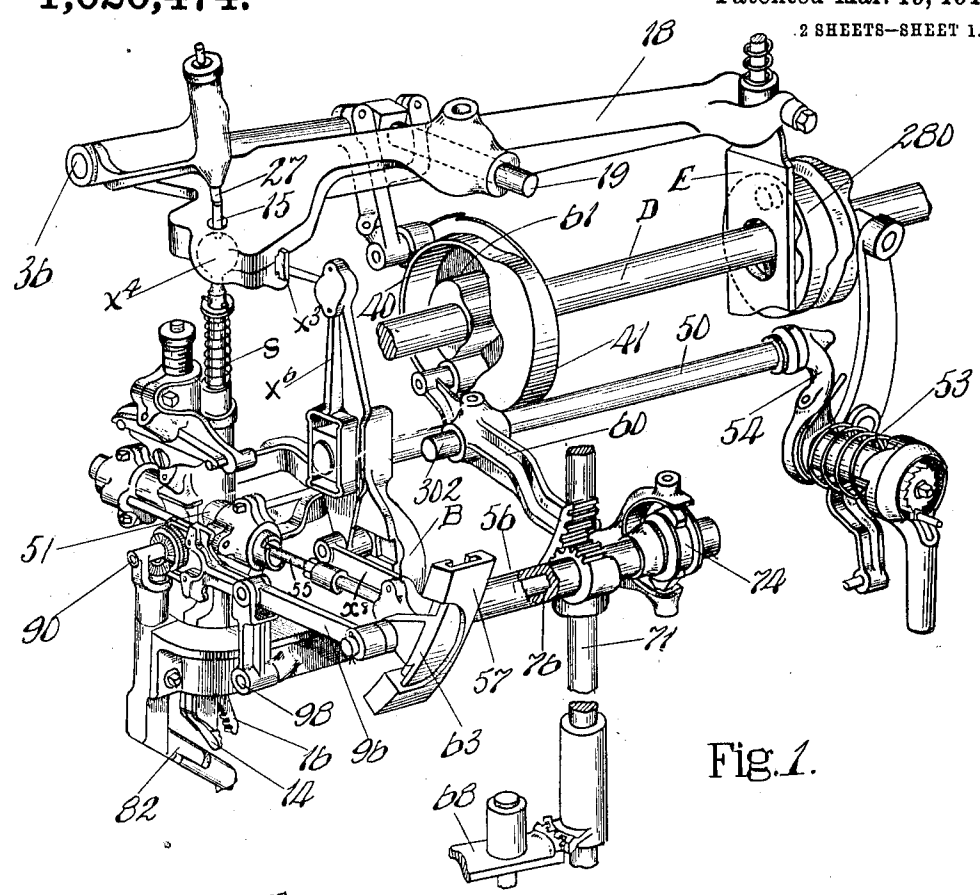


Fig. 1.

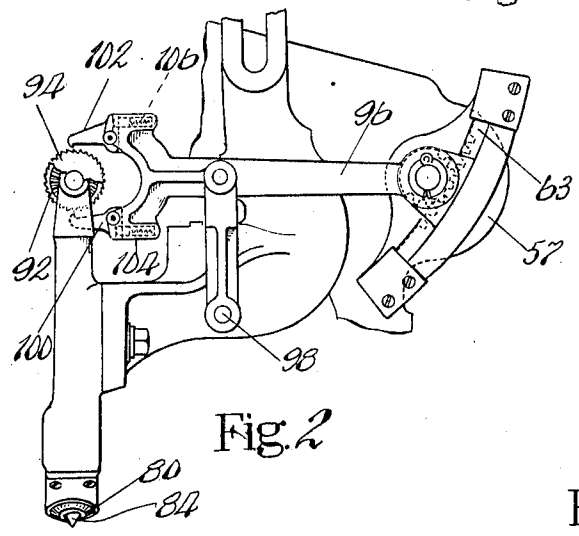


Fig. 2.

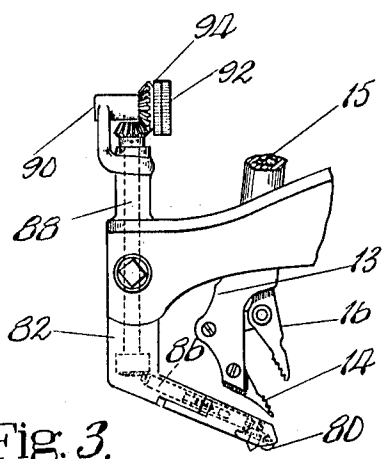


Fig. 3.

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2 SHEETS—SHEET 2.

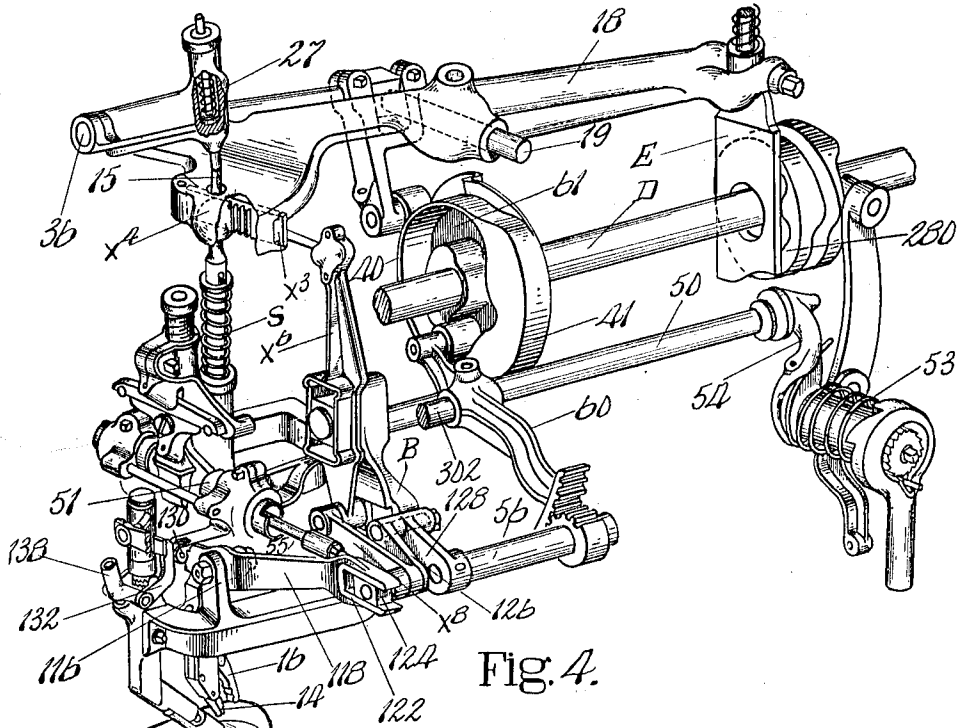


Fig. 4.

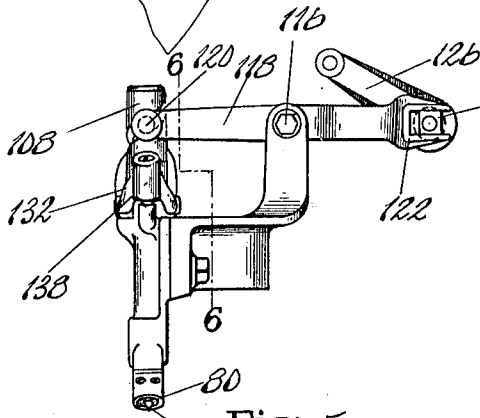


Fig. 5.

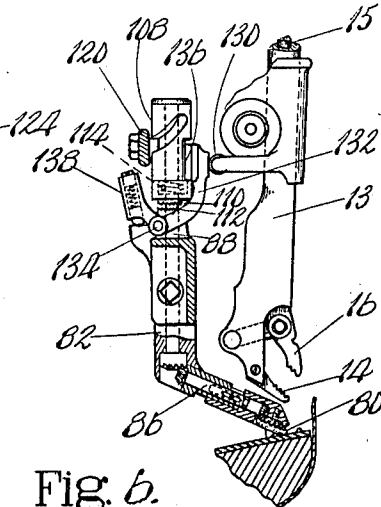


Fig. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE.

ARTHUR BATES, OF LEICESTER, ENGLAND, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LASTING-MACHINE.

1,020,474.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed March 13, 1911. Serial No. 614,154.

To all whom it may concern:

Be it known that I, ARTHUR BATES, a subject of the King of England, residing at Leicester, in the county of Leicester, England, 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 machines and is particularly adapted for use in connection with lasting machines of the type described in United States Letters Patent No. 584,744, dated June 15, 1897.

Machines of the type referred to and commercially known as "hand method" lasting machines employ a single pair of lasting pincers, which at certain times during the lasting operation are given a plaiting action to crimp or plait the upper at certain parts in order to dispose of the fullness of the upper materials and so to last the upper without wrinkling or puckering. This is especially necessary at the toe where the upper stands out from the last angularly thereto. Commonly, this plaiting action comprises both lateral and turning or twisting movements of the pincers, the pincers thereby being operated in the most efficient manner to plait the pulled over margin of upper and lining with absolute smoothness.

For imparting the above described plaiting movements to the lasting pincers, cam actuated mechanism is provided. This pincer plaiting mechanism is normally inoperative and a controlling device, commonly a block mounted to slide in a segmental guideway, serves both to start and suspend the action of the pincer plaiting mechanism and also to determine, control and vary the extent or magnitude of the plaiting action. To this end, the block or controlling device is normally mounted centrally and midway of the guideway and the guideway which carries the block is formed on a lever or driver which is rocked continuously by a rock shaft actuated from a cam on the main shaft, the construction being such that whenever the block or controlling device is displaced from its central and inoperative position, the pincers are actuated through suitable connections with the controlling device to plait the upper and whenever the controlling device is returned

to its neutral position, the pincer plaiting action is stopped or suspended. The controlling device, as suggested above, also serves to control and vary the direction and extent of plaiting action and, to accomplish this result, it is adapted for movement either side of its central position, the direction and amount of its displacement from central position governing the direction and amplitude of the plaiting action of the pincers.

In order that the plaiting action may be initiated, controlled and varied at will, it is usual to provide a knee lever movable either side of its normal position and suitably connected with the block which controls the plaiting action, whereby the plaiting action can be effected and changed in direction and extent as desired by movement of the knee lever one way or the other.

In the practical use of the machine of the said prior Letters Patent, however, the shoe is manually held up to the pincers and the direction and extent of its feed past the pincers is controlled by the hands of the operator. Since both the direction of the plaiting and the extent or magnitude thereof should for the best results depend upon the extent and direction of the feed and should at all times be made to correspond therewith, to relieve the operator of the necessity of attending both to the feeding of the shoe past the pincers, and to the regulating of the pincer plaiting action in correspondence therewith is a principal object of this invention. With this object in view, broadly speaking, the present invention contemplates making these two actions automatically interdependent and, to this end, preferably, and as shown and hereinafter described in detail, the construction is such that the operator may by either feeding the work or causing the pincer plaiting mechanism to operate thereby cause the other action to occur in timed relation with and correspondingly in direction and extent to the first action.

Accordingly a preferred embodiment of this invention comprises provision in a lasting machine of the type above mentioned, of means whereby the feed of the work controls, or is controlled by the plaiting mechanism, and conveniently, a work feeding mechanism is provided in connection with the pincer plaiting mechanism, the two mechanisms being operatively connected to

gether in such a manner that the throwing into action of the plaiting mechanism and the throwing into action of the feeding mechanism occur simultaneously and so that thereafter any variation in the direction and extent of action of one will cause the direction and magnitude of the other action to be similarly varied.

Considered more in detail the invention as preferably embodied in the machine of the said prior Letters Patent comprises a rotatable wheel or work engaging member adapted to engage the bottom of the inverted shoe and operative connections between this wheel and the movable controlling device hereinbefore referred to.

Two constructions or embodiments of the invention are herein shown, both having for their object the coupling up or connecting of the pincer plaiting mechanism with the rotatable work engaging member. In both forms the work engaging member is connected to the movable block which controls the action of the plaiting pincers and in both forms through their connection with this controlling device the two mechanisms are started and stopped, and their action is varied, determined and controlled by the movement of the controlling device. Moreover in both of the constructions shown for purposes of illustration, the action of the one mechanism is dependent on the action of the other mechanism, so that neither action can proceed without the occurrence of the other action. In one illustrated form of the invention however, the work engaging member and its associated parts constitute a work feeding mechanism, and movement of the movable block induced by shifting the knee lever and operating to start, stop or vary the direction and extent of the plaiting action, will at the same time start, stop or similarly vary the direction and extent of the feeding movement of the feed wheel so that the initiation, direction and extent of the feeding action depend upon the plaiting action. Furthermore the construction conveniently is such that the feeding movement will take place between each two successive plaiting operations, that is, during the return movement of the pincers to their initial position. In the other illustrated form, the rotary wheel similarly engages the shoe, but the manual feed of the work against the wheel rotates the wheel in one direction or another so that the wheel and its associated parts, together with the movable block constitute means for rendering the plaiting mechanism operative and the rotation of the wheel through the connections between the wheel and the movable block operates to set the block controlling device for governing the action of the plaiting mechanism.

The invention will now be described, as

applied to a lasting machine of the type illustrated in the specification of the above mentioned Letters Patent, but it is to be understood that this is merely by way of example, and not by way of limitation, for the invention in its broad aspect is not limited to use in this particular type of machine, nor is it limited to embodiment in either of the forms illustrated and described.

As above stated the present invention is shown as embodied in the machine of the said prior United States Letters Patent and reference should be had to the specification thereof for matters of construction and for details of description not fully entered into herein.

For convenience, parts herein shown which are like, or similar to parts in the specification of the said prior patent are generally indicated by like reference characters.

Referring to the drawings:—Figure 1 is an angular perspective in elevation of a part of the machine of the specification of the before mentioned Letters Patent with one embodiment of the present invention applied thereto; Fig. 2 is an elevation of the work feeding mechanism; Fig. 3 is a detail of a portion of the work feeding mechanism; Fig. 4 is an elevation similar to Fig. 1 and showing a modification of the invention; Fig. 5 is an elevation of the work engaging member and associated parts; and Fig. 6 is a detail in elevation of the work engaging member and associated parts partly in section as looked at from line 6—6 of Fig. 5.

The operating mechanism of the machine is supported in a frame work or head B mounted at the top end of a supporting column. Journaled in the head B is a shaft D, this shaft being the main driving shaft of the machine and having set upon it the cams and gears from which the principal operating parts of the machine receive their automatic movements. On the shaft D is a cam 280 connected by a slide E with a tipping updraw lever 18 fulcrumed at 19 and having the pincers suspended by a ball X⁴ from its front end. The pincers comprise a stationary jaw 14 fixed in the pincers carrier and a movable jaw 16. The pincers carrier comprises a casing or sleeve 13 through which extends a rod 15 having pivotally connected to it the movable jaw 16 and operating to close the jaw 16 for gripping the stock; the jaw 16 being reversely moved by the spring S. The rod 15 is engaged by a spring pressed plunger 27 on one arm of a rock shaft 36, the other arm of which has a roll in engagement with an edge cam face 40 on shaft D, whereby upon the revolution of shaft D and cam 40 at suitable times the pincers are caused to be closed and opened for gripping and releasing the upper. Be-

sides the opening and closing movements of the pincers thus effected, the pincer mechanism as a whole is at certain times raised and lowered through tipping movements of lever 18 induced by upward and downward movements of slide E actuated by cam 280 on shaft D, the upward movement of the pincer mechanism occurring after the pincers have tightly gripped the upper and serving to strain the upper vertically, while the ensuing downward movement of the pincers lowers them into position for placing the upper over the inner sole.

In addition to the opening and closing, upward and downward and overdraw movements of the pincers, the pincers are given plaiting movements at certain times, the plaiting movements consisting of lateral and turning movements by means of which the upper is folded, particularly at the toe of the shoe, to take care of the surplus in the margin of the upper which is laid over the curved edge of the last. The mechanism for giving the pincers the said lateral and turning or plaiting movements is actuated from the cam 61 and comprises a lever 60, supported by a pin 302, the inner face of lever 60 having a roll standing in the cam groove 61 and the outer end operating to actuate a rock shaft 56 on the front end of which is formed a rocker 57 (Fig. 1). The rocker 57 for convenience may be termed the driver for the pincer plaiting mechanism and forms a segmental guideway for a segment block 63, the block 63 being formed to slide in the said guideway 57 and being movable from and toward the center of the rocker 57.

The segment block 63 has connections both with the means for moving the pincers laterally and with the means for rotating or turning the pincers and upon adjustment operates through these connections as a controlling device to start and stop the lateral and turning movements of the pincers as well as to govern and vary the direction and extent of the said pincers movements. To this end the block 63 is connected through a link X^8 to a lever X^9 the upper end of which is connected to a rack X^3 which engages teeth formed on the ball X^4 for rotating the pincers. To effect the lateral movements of the pincers, the pincers are arranged to extend downwardly through a guideway formed in an endwise movable block 51 which is supported in the forward end of a yoke on a sliding rod 50 and the sliding block 51 is connected through a rod 55 to the segment block 63, the construction being such that movements of block 51 one way and then the other as induced by movements of the controlling device 63 will operate through suitable connections, clearly shown and described in the said prior patent, to move the pincers laterally to carry the upper to one side and then reversely to

the other side of their vertical line of action. For overlaying the upper when the pincers have, through downward movement of the forward end of lever 18, been placed in their lowermost position as before stated, the sliding rod 50 has a roll for engaging a cam 41 on shaft D to move the pincers toward the machine, and the rear end of rod 50 is engaged by a lever 54 actuated by a spring 53 for moving the pincers from the machine to overlay the upper.

It should be observed that the pincer plaiting mechanism is normally inoperative, but is adapted to be thrown into operation by adjustment of block 63 from its central or neutral position in the segmental guideway 57, adjustment of the block 63 one side of its normal position directing the plaiting action one way and adjustment of block 63 the other side of its central position directing the plaiting action reversely, while the amount of plaiting action is, in each instance, controlled by the amount of movement of block 63 from its initial position. This adjustment of the controlling device 63 is effected by a shaft 76 located inside the rock shaft 56 (Fig. 1) and having a pin and oblique slot connection with a slide 74 adapted to be moved endwise of the shafts 56 and 76 by a vertical shaft 71 connected with a knee lever 68, the knee lever 68 being arranged for movement either side of its central position.

The parts above described may, as shown, be substantially the same in construction and operation as the similar parts of said prior patent and further detailed description thereof will therefore be omitted.

Referring now to Figs. 1 to 3 which show one convenient construction for rendering automatically interdependent the pincer plaiting movements and the feeding of the work past the pincers. In this construction a work feeding mechanism is operatively connected with the above described plaiting mechanism. The work feeding means comprises a feed wheel 80 rotatably carried at the lower end of an arm 82 fixed to the frame of the machine and projecting inwardly toward the pincers. The feed wheel 80 (Fig. 2) has its operating face toothed or corrugated for engaging the work without slipping and has at its center a projecting point 84 adapted to engage the insole at the toe portion so that the working face of the wheel may be maintained in proper position with relation to the sole to effect the feeding of the work. Journaled inside the projecting arm 82 is a shaft 86 (Fig. 3) having a bevel gear connection at its outer end with the wheel 80, and being connected at its other end by bevel gears to an upright shaft 88, the upright shaft 88 being in turn connected to a third short shaft 90 at right angles to shaft 88 by means of a third set of

bevel gears. This third shaft 90 has keyed to it two ratchet wheels 92, 94, the teeth of the ratchets being cut in opposite directions. In order that the feed wheel 80 may be adjusted in various directions its supporting arm 82 is made extensible, as shown in Fig. 3, and its driving shaft 86 is also made extensible by a pin and slot arrangement, the arm 82 and shaft 86 having substantially a telescopic joint.

The feeding means above described is adapted for rotation in either of two opposite directions according as one or the other of the ratchets 92, 94 is actuated. The means for moving the ratchets 92, 94 comprises a lever 96 pivoted to the frame of the machine (Figs. 1 and 2) at 98. At one of its ends the lever 96 is forked to embrace circumferentially the ratchet wheels 92, 94 and the two forks are provided with pawls or claws 100, 102 so located that when the lever 96 is rocked in one direction about its pivot 98 the claw 102 will engage with the top teeth of the ratchet 94, while when the lever 96 is rocked in the opposite direction the claw 100 will engage the bottom teeth of the ratchet 92. The claws 100, 102 are forced forward to engage the ratchet teeth by means of springs 104, 106, suitable stops being provided to limit the forward movements. At its other end the lever 96 is pivoted to the segment block 63. When, as before stated, the said block 63 is in its central position, as shown in Fig. 2, and the pincers have no plaiting action imparted to them, it will be seen that no feeding action is imparted to the feed wheel 80, the lever 96 being in its horizontal position and the claws 100, 102 being in engagement with neither of the ratchets 92, 94. When however the knee lever 68 is operated to move the block 63 to one side of its central position, for example upward, at once the plaiting mechanism will be thrown into action and the forked lever 96 by reason of the upward movement of block 63 will be rocked downwardly at its forked end so that its upper claw 102 will be lowered for engagement with ratchet 94. When during the rocking of the segmental guideway 57 its upper end is moved forward for effecting the forward plaiting movement, the lever 96 will be moved forward and the claw 102 will slip over the teeth of the ratchet 94, while during the return movement of the upper portion of the driver 57 to return the pincers to normal position the claw 102 will be pulled backward and caused to rotate the ratchet 94 and consequently through the connections described to rotate the feed wheel 80. Similarly if the knee lever 68 and block 63 are moved oppositely to start or change the plaiting action, the lower claw 100 will be made to engage in the same manner the ratchet 92 and the feed wheel will be oppo-

sitely rotated. The construction is such that in each case the direction of movement of wheel 80 corresponds to the direction of the plaiting action. Moreover the farther block 63 is moved from central position the more teeth the pawls or claws will slip over during their forward movement and the farther the feed wheel will be rotated for each operation. It will be seen therefore, that the operator merely by shifting the knee lever one way or the other varying distances not only determines and changes the direction and magnitude both of the plaiting action and of the feeding movement but the two actions will always be started and stopped simultaneously, and will always correspond in direction and extent. Moreover the rotation of the ratchets 92, 94 induced by the rocking of the lever 96 through the claws 100, 102 is timed to occur during the return movement of the pincers after the completion of the plaiting operation.

Figs. 4 to 6 illustrate another construction by which the pincer plaiting movements may be made to correspond with the feed of the work. In this construction, as in the construction above described, the pincer plaiting mechanism is normally inoperative and is adapted to be actuated upon movement of a movable block. The means for actuating and controlling the direction and extent of movement of that block in this construction comprise the rotary work engaging wheel 80 and its connections with the said block. The wheel 80 with its supporting arm and its driving shafts 86 and 88 may most conveniently be arranged as in the first construction, but the shaft 88 instead of being provided with connections to a third shaft has loosely mounted upon it a cam 108 (Fig. 6) having a spiral groove. The lower edge of the cam 108 is formed with teeth 110 which are adapted to engage similar teeth upon a collar 112 fixed to the shaft 88, and are normally forced into engagement with those teeth by means of a spring 114 so that cam 108 is normally clutched to shaft 88. Pivoted upon the frame of the machine at 116 (Figs. 4 and 5) is a lever 118 carrying at its outer end a cam roll 120 engaged by the spiral groove in the cam 108, and at its opposite and inner end the lever 118 is provided with jaws 122 which are adapted to engage either the block 63 in the guideway 57 above described or some equivalent.

Preferably, and as illustrated in Fig. 4, the jaws 122 engage a block 124 to which is pivoted a link 126, the other end of the link 126 being pivoted upon an arm 128 projecting from the rock shaft 56 which in the first construction carried the segmental guideway 57, the link 126 forming with the arm 128 what may conveniently be termed an inverted toggle. This block 124 is also connected

through rod 55 and link X^s to the plaiting mechanism and constitutes a sensitive and readily shiftable connection between the rest and the plaiting mechanism.

5 In operation the operator feeds the shoe past the pincers by hand, as in operating a machine of the said prior patent and the feed of the work bearing against the wheel 80 causes said wheel to be rotated, and the rotation of wheel 80 through shafts 86 and 10 88 causes cam 108 to be revolved. The revolution of cam 108 operates the roll 120 lying in the spiral groove of cam 108 to rock the outer end of lever 118 up or down. The op- 15 posite movement being given to the jaws carrying end of lever 118, the block 124 is moved up or down as the case may be. When in central position the center of block 124 coincides with the center of the rock 20 shaft 56 and, therefore, motion of the rock shaft imparts no motion to the plaiting pincers. When, however, block 124 is moved up or down from its neutral position its center no longer coincides with the center of 25 rock shaft 56, and consequently when rock shaft 56 moves, its projecting arm 128 and the link 126 also move and, as the block 124 is connected to the plaiting mechanism through the link X^s and rod 55, that mecha- 30 nism is operated as in the machine of the said prior patent to impart plaiting movements to the pincers. It will be apparent that by reason of this construction the initiation, direction and extent of the feed of 35 the work will determine and govern in correspondence therewith the starting, stopping, direction and magnitude of the plaiting action.

In order that after each plaiting operation and while the pincers are being returned 40 into position for another operation the spiral cam 108 may also be returned to normal position, a cam roll 130 (Fig. 6) is provided on a short arm depending from the pincer casing 13 and this roll 130 on the 45 backward and return movement of the pincers is brought into engagement with one end of a bifurcated lever 132 pivoted at 134 to the arm 82, the construction being 50 such that when thus operated the bifurcations of lever 132 by reason of ribs upon them engage and lift the toothed cam 108 from engagement with the teeth on the collar 112 of the shaft 88, and at the same time 55 a flat face 136 projecting from the upper end of the lever 132 abuts against a correspondingly shaped face upon the spiral cam 108 and operates to turn cam 108 to restore it to its mid-position. The lever 132 is provided at one end with a spring pressed plunger 138, the said plunger operating, when 60 permitted, to withdraw the face 136 from engagement with the cam 108 to permit the cam 108 to be again operated after having 65 been restored to its initial position.

The novel features of the form of the invention illustrated in Figs. 4 to 6 of the drawings in which the manual feed of the work controls the plaiting action, are not specifically claimed herein, these features 70 constituting the subject matter of a divisional application about to be filed.

Having now fully described my invention as preferably embodied in the illustrated constructions, what I claim as new, and de- 75 sire to secure by Letters Patent of the United States is:—

1. A lasting machine having, in combination, pincers, actuating mechanism for the pincers including means under control of 80 the operator for imparting upper plaiting movements thereto, and shoe feeding means arranged to be automatically controlled simultaneously with the plaiting means.

2. A lasting machine having, in combina- 85 tion, pincers, a shoe feeding device adapted for continuous engagement with the shoe, and actuating mechanism for the pincers, said mechanism including both means for imparting upper plaiting movements to said 90 pincers and also means for imparting feeding movements to said feeding device.

3. In a lasting machine, the combination of lasting pincers, actuating mechanism 95 therefor, including means for imparting plaiting movements to the pincers, a work feeding means adapted to be actuated to feed the shoe past the pincers and connections therefrom with the plaiting means arranged to cause the plaiting movement of 100 the pincers and the feeding movement of the work feeding means to be automatically interdependent.

4. A lasting machine having, in combination, pincers, actuating mechanism therefor 105 including means for imparting upper plaiting movements to the pincers, and shoe feeding means having direct operative connection with an element of the plaiting means.

5. A lasting machine, having the combina- 110 tion of lasting pincers, a shoe feeding member, a cam, and mechanism adapted to be actuated by the cam for operating said lasting pincers and said shoe feeding member, said mechanism comprising means 115 adapted to impart plaiting movements to the pincers and means adapted to impart feeding movement to the feeding member.

6. A lasting machine having, in combination, pincers, actuating mechanism therefor 120 including means for imparting upper plaiting movements to the pincers, means to vary the length of the plaiting movement, and shoe feeding means operatively arranged for the extent of the shoe feeding movement to 125 be controlled by the length of the plaiting movements.

7. A lasting machine, having in combination, pincers, actuating mechanism therefor 130 including means adapted to impart plaiting

movements to the pincers in different directions, a shoe feeding means, and connections therefrom with the plaiting means arranged to cause the direction of the feeding movement of the shoe feeding means to be controlled by the direction of the plaiting movement.

8. A lasting machine having, in combination, pincers, a shoe rest, operating means for the pincers, operating means for the shoe rest and connected devices controlled by the operator for causing the pincers to plait the upper and the rest to feed the shoe in the one or the other direction as desired.

9. A lasting machine having, in combination, pincers, actuating mechanism therefor including means for imparting upper plaiting movements to the pincers, a shoe feeder, and connections therefrom with the plaiting means arranged to cause the feeding movement to agree in direction and extent with the plaiting movement.

10. A lasting machine, having, in combination, lasting pincers, actuating mechanism therefor including means for imparting upper plaiting movements to the pincers, a part adapted for movement to control the plaiting movement, and a shoe feeding means operatively arranged for having its feeding movement controlled by the said movable part.

11. A lasting machine, having, in combination, pincers, actuating mechanism therefor including means for imparting plaiting movements to the pincers, means under control of the operator for starting and suspending the plaiting movements of the pincers at will, and shoe feeding means operatively arranged for the feeding movement of the shoe feeding means to be started and suspended by movement of said pincer starting means.

12. A lasting machine having, in combination, pincers adapted for movement to plait the upper, and a work engaging member adapted for movement to feed the shoe past the pincers, actuating mechanism therefor comprising means for imparting plaiting movements to the pincers, and means for imparting feeding movements to the work engaging member, a controlling device operatively connected to both said means and a shiftable connection movable at will for operating said controlling device.

13. A lasting machine having, the combination of lasting pincers, actuating mechanism therefor including means for imparting upper plaiting movements to the pincers, a shoe bottom rest, and operative connections therefrom with the plaiting means arranged to cause said rest to advance the shoe alternately with the plaiting movement effected by the pincers.

14. A lasting machine having, in combination, pincers, actuating mechanism there-

for including means for imparting a lateral upper plaiting movement to the pincers, a shoe bottom rest, and connections therefrom with said means for causing said rest to feed the shoe laterally in the direction opposed to the lateral plaiting movement and during the return movement of the pincers to their gripping position after they have plaited the upper.

15. In a lasting machine, having lasting pincers and mechanism for imparting turning or twisting movements to the pincers, a shoe bottom rest, a continuously operative cam and suitable connections therefrom with said rest and said mechanism, said connections constructed and arranged for causing a feeding movement of said rest between each two successive twisting movements of the pincers.

16. A lasting machine having, in combination, pincers, means for actuating the pincers, a shoe rest comprising a shoe engaging point and a feed disk mounted to turn around the point in a plane oblique to the plane of the shoe bottom when the shoe is presented in operative relation to the pincers and said engaging point, and means for actuating the feed disk.

17. A lasting machine having, in combination, pincers, means for actuating the pincers, a shoe rest comprising a shoe engaging point, a shoe engaging disk mounted to turn about said point and arranged in a plane oblique to the plane of the shoe bottom whereby to engage the shoe by one edge of the disk only, and connections between said shoe engaging disk and the pincer actuating means.

18. A lasting machine having, in combination, pincers, actuating mechanism therefor including means for imparting upper plaiting movements to the pincers, a rotary shoe feeding device, and a pawl and ratchet connection between said device and an element of the plaiting means arranged to cause the pawl to intermittently turn the ratchet to feed the shoe.

19. A lasting machine having, in combination, pincers, actuating mechanism therefor including means for causing the pincers to plait the upper in either direction at the will of the operator, a shoe feeding device, oppositely faced ratchets connected with said device, and oppositely faced pawls connected with the plaiting means and arranged for adjustment with said means to change the direction of feed when the direction of plait is changed.

20. A lasting machine having, in combination, pincers, actuating mechanism therefor including means for imparting plaiting movements to the pincers, an extensible arm, a feed wheel rotatably mounted therein and means for rotating said wheel comprising a series of shafts one of which shafts is ex-

tensible, a ratchet on one of said shafts, a lever connected with said plaiting means and means carried by the lever for turning said ratchet.

- 5 21. A lasting machine having, in combination, pincers, actuating mechanism therefor including means for imparting plaiting movements to the pincers in different directions, and a shoe feeding member arranged
10 to be operated by mechanism comprising two oppositely faced ratchets connected with the feeding member, a lever connected

with the plaiting means, and means arranged to be operated by the lever for turning one ratchet at one time and another 15 ratchet at another time.

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

ARTHUR BATES.

Witnesses:

CLAUD BENNION,
ELEANOR PYWELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."