

A. BATES.
LASTING MACHINE.
APPLICATION FILED JUNE 18, 1910.

1,029,840.

Patented June 18, 1912.

2 SHEETS-SHEET 1.

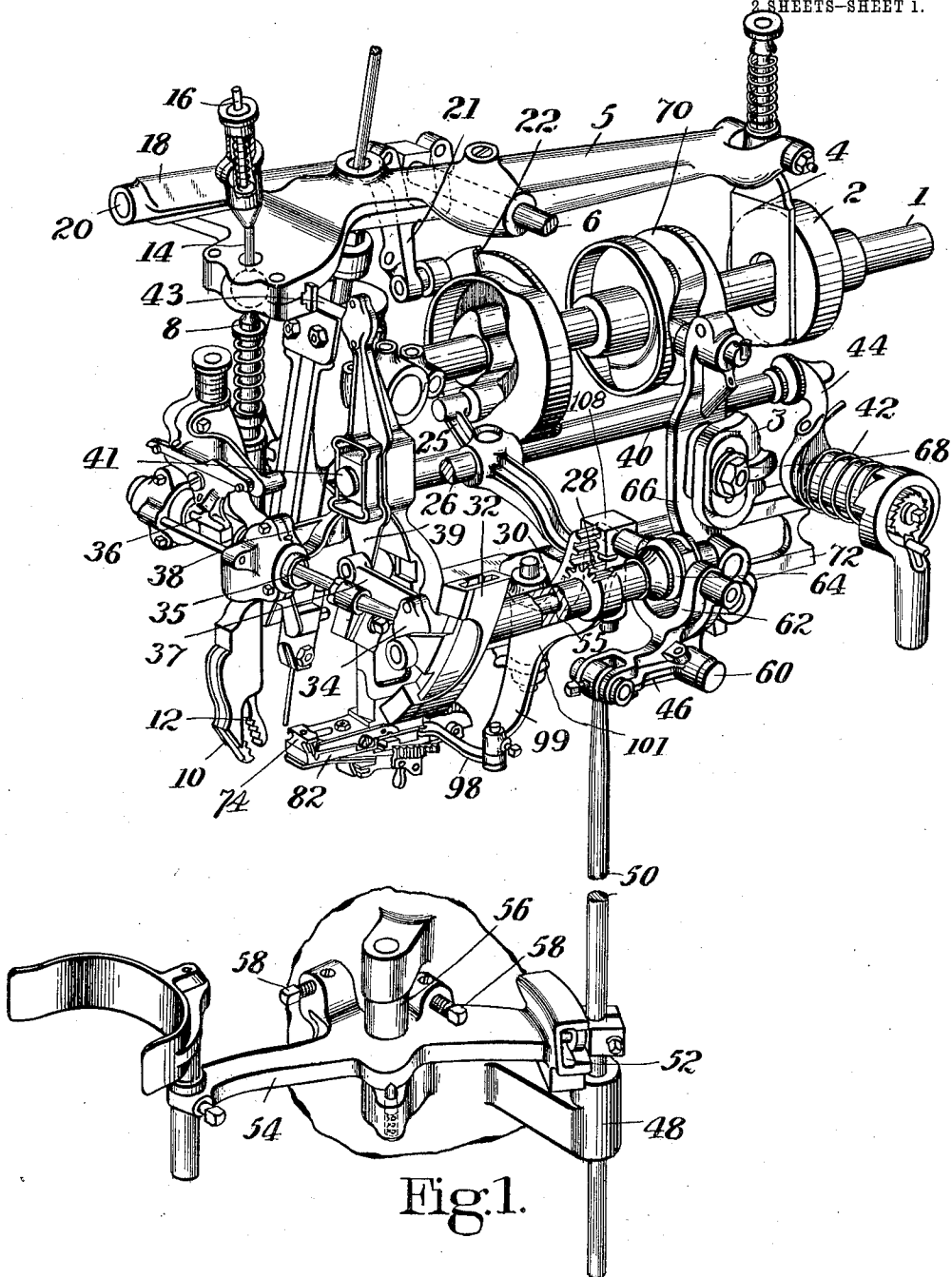


Fig. 1.

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2 SHEETS-SHEET 2.

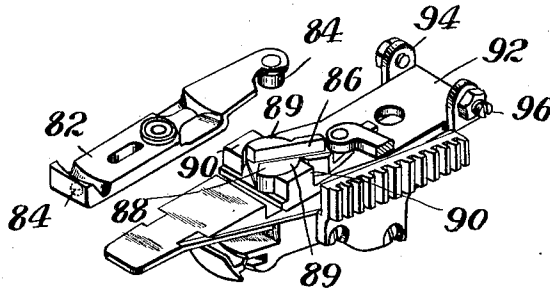


Fig. 3.

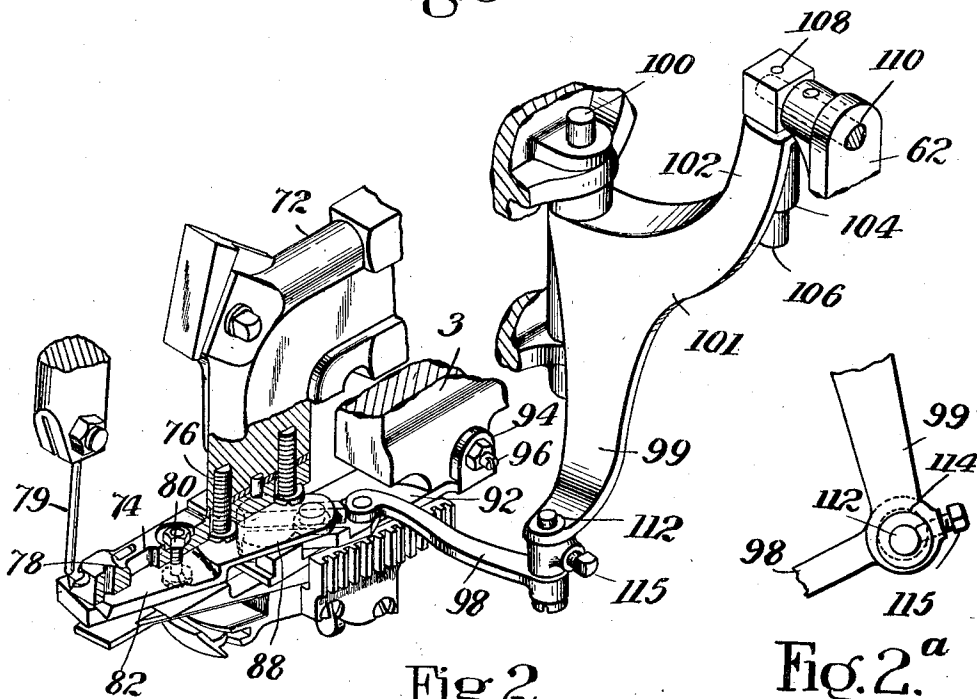


Fig. 2.

Fig. 2.^a

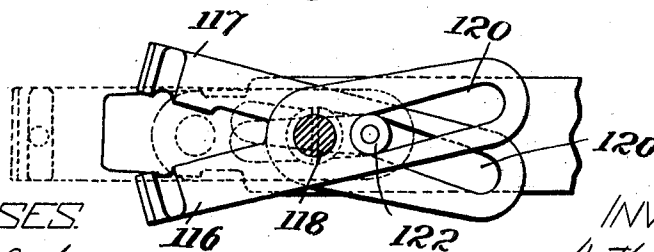


Fig. 4.

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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.

1,029,840.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed June 18, 1910. Serial No. 567,663.

To all whom it may concern:

Be it known that I, ARTHUR BATES, a subject of the King of England, residing at Leicester, Leicestershire, 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 more particularly to certain improvements in lasting machines of the type disclosed in United States Letters Patent No. 584,744, dated June 15, 1897. In the machine of said Letters Patent the upper is worked into lasted position by devices acting upon successive portions of the stock by repeated operations, such devices comprising pincers which are actuated to grip and pull the upper, and to lay it over upon the innersole, and a wiper which follows the movements of the pincers and wipes or presses the overlaid upper material smoothly upon the sole. The upper is secured in lasted position by tacks one of which is deposited in an aperture in the wiper by suitable devices prior to each advance movement of the wiper over the shoe, and at the completion of such movement the tack is driven through the lasted portion of the upper by a suitable driver. Machines of the type referred to are also provided with mechanism to impart to the pincers lateral movements, and axial turning movements, to plait the upper at those portions of the shoe where excessive fullness of the stock calls for such operation, the said mechanism being under the operator's control through devices which enable him to vary the direction and extent of, as well as to initiate, or entirely suspend the plaiting movements at will.

A very important feature of the present invention consists in improved mechanism for wiping the upper into lasted position comprising a wiper which is so constructed and arranged for operation as to move in an inclined path relatively to the edge of the shoe. When a wiper which is caused to move over the shoe in this manner is used in a machine of the type referred to its wiping or smoothing action upon the stock will conform better than heretofore to

the direction of the plaits or folds produced at the toe of the shoe by the pincers when they are adjusted therefor, as described in said Letters Patent. Under one embodiment of the invention this result is secured by so mounting and actuating the wiper that it will be caused to swing laterally as it advances toward and recedes from the edge of the shoe, so that it wipes over the stock with a shearing action. The wiper may be conveniently supported for pivotal movement upon a carrying member which reciprocates the wiper, and be provided at a suitable point removed from its pivot with a projection which enters a guideway on a support rigid with the frame of the machine, the guideway being inclined to the path of movement of the wiper-carrying member. The arrangement of these parts is such that as the wiper is reciprocated toward and from the shoe the inclined guideway imparts a lateral movement thereto and causes it to swing about its pivotal support and wipe the leather along an inclined line whose direction and extent of inclination will be determined by the angle presented by said guideway to the path of movement of the wiper-carrying member. With the described arrangement of the guideway it will be seen that the wiper is not only actuated in a direction toward and from the margin of the shoe, but is also deflected laterally to one side or the other of said direction of movement.

Under another embodiment of the invention the wiper comprises two independent members that are arranged for simultaneous movement toward and from the shoe in a direction substantially normal to the edge of the sole, and also along convergent paths that are inclined to the line of said first movement, so as to wipe the upper inwardly from the edge of the sole, and at the same time in opposite directions along or substantially parallel with said edge. This embodiment of the invention is not herein claimed specifically but is to form the subject-matter of a divisional application.

In the embodiment referred to the wiper members are preferably crossed, and pivoted at an intermediate point to their carrier, and have their rear portions provided with guiding slots which are entered by a pin or projection rigid with the frame of

the machine. When the carrier moves inwardly toward the shoe and advances the wiper members over the edge of the sole the movement of the pin or projection along the guiding slots causes the wipers to approach each other in the manner of a pair of shears, and when the carrier moves away from the shoe a separating movement of the wipers is effected by the same means.

Another important feature of the invention consists in providing means for varying the direction and extent of the deflected movement of the wiper relatively to the edge of the sole, said means being under the control of the operator. Preferably this means comprises an arrangement of the guideway, heretofore referred to, whereby it may be positioned in line with the direction of movement of the wiper-carrier when there will be no deflection of the wiper, or may be inclined at varying angles thereto, or at either side of its central line, to cause the wiping movements to agree in extent of inclination, as well as in direction, with the plaits.

Still another feature of importance comprises the provision of an operative connection between the means for varying the extent and direction of the inclined movement of the wiper, and the means for rendering operative and controlling the mechanism which causes the pincers to form plaits or folds in the leather. This connection provides for such control of these parts that the lateral inclination or deflection of the wiper and the plaiting movement of the pincers can be adjusted in direction or varied in extent simultaneously by the operation of a single member. Conveniently this member may be a lever which is adapted to be actuated by the knee of the operator, or it may be any other suitable device for the purpose.

Other features of the invention, including important details of construction and combinations of parts will be hereinafter more particularly described and claimed.

In the drawings: Figure 1 is a perspective view of the principal operative parts of a lasting machine with one embodiment of the present invention applied thereto, the supporting pedestal and frame being omitted; Fig. 2 is a detail view, somewhat enlarged, showing in perspective a wiper and its actuating and controlling devices; Fig. 2^a is a detail view; Fig. 3 is a detail view of certain parts shown in Fig. 2; and Fig. 4 is a plan view illustrating a modification.

The main shaft 1 of the machine, which turns in suitable bearings in the frame, carries a cam block 2 which is provided with a cam groove or way to receive a roll on a slide 4 which is connected at its upper end to a rocking lever 5. This lever is fulcrumed at 6, and is connected at its forward end to the pincer bar 8, which is formed as a sleeve and carries at its lower end the jaw 10. The

other pincer jaw 12 is connected to a rod 14 that extends upwardly through the sleeve 8 and is engaged at its upper end by a spring-pressed plunger 16 in a lever 18. The lever 18 is fulcrumed at 20 in the lever 5 and carries on its rear arm 21 a roll that rests upon an edge cam 22. The block having the edge cam 22 has also a cam groove in its front face to receive a roll on a lever 25, which is fulcrumed on a rod 26 and at its outer end carries a segmental rack whose teeth engage a pinion 28 on a sleeve shaft 30. This shaft is connected to a rocker 32 which carries a block 34 connected by the rod 35 with the cross head 36 by means of which the pincers are caused to move or swing laterally. A link 37 connects the said block 34 with a lever 39 which is fulcrumed through an adjustable block, to a pin 41 supported from the frame of the machine. The upper end of the lever 39 is connected through a rod 43 with a rack which meshes with a pinion fast on the upper part of the pincer bar 8, whereby to effect the axial turning movements of the pincers simultaneously with the lateral movements of the pincers in forming the plaits or folds, said parts being fully shown and described in the Letters Patent heretofore referred to. The cross head 36 is supported in a yoke 38 on the front end of a slide rod 40 which carries a roll that is engaged by the rear face of the cam 22. A spring 42, acting through a lever 44, holds the rod forward with the roll against the cam. A vertically reciprocating rod 50 which is guided in a boss 48 on a bracket supported from the frame of the machine, is pivotally connected at one end with an arm of a bell-crank lever 46, said rod carrying a roll which enters an inclined cam groove 52 at the inner end of a knee lever 54. The knee lever is fulcrumed at 56 on a pin carried by the machine frame, and is shown as having stop screws 58 which are threaded through bosses in the knee lever, and serve to adjustably limit its movement in opposite directions. The bell-crank lever 46 is fulcrumed at 60 to the main frame, and is shown as having one arm formed as a yoke 62 which embraces a collar 64 connected through an inclined slot and pin, or the like, with a shaft 55 located within the sleeve shaft 30. The connection between the collar and the shaft 55 is such that a movement of the collar endwise on the sleeve serves to turn the shaft through a small angle. The shaft 55 is connected at its front end with the block 34 through a rack and pinion, or the equivalent, whereby when the shaft is rotated in either direction, by sliding the collar 64 along the sleeve 30, the block will be adjusted in the rocker 32 from and toward the center of the rocker, and to either side thereof, for starting and stopping the lateral and turning movements of the pincers, and

for controlling the direction and extent of such movements.

The mechanism described above for lowering and raising the pincers, closing them, and swinging forwardly and backwardly, and for effecting their plaiting movements are fully described in the aforesaid Letters Patent, and of themselves form no part of the present invention. In the operation of these parts it is deemed sufficient to explain that the pincers with the jaws open are lowered by the cam 2 into position to seize the upper, closed by the cam 22, then uplifted by a further movement of the cam 2, and then moved forwardly over the shoe bottom by the spring 42. When the knee lever is set to adjust the block 34 in an eccentric position in the rocker 32 the pincers receive also lateral and twisting movements for plaiting the upper, the plaits being laid inclined in either direction from the median line of the shoe at the toe, or at the heel, according to the position into which the block 34 is moved by the knee lever.

A rocking lever 66 is fulcrumed at 68 to a bracket projecting from a rigid part of the frame 3. The upper end of the lever 66 carries a roll which operates in a cam groove formed in a cam block 70, which is fast on the driving shaft 1. The lower end of the lever 66 is connected with a slide bar 72 which is suitably guided for horizontal movement in the machine frame and at its forward end carries a wiper to coöperate with the pincers in working the upper into lasted position. In prior machines of this type, similar parts to those just described are shown, the wiper being rigidly carried at the forward end of the slide bar, and being provided with an aperture to receive a tack. In operation, the slide bar is reciprocated to carry the wiper back and forth by the cam 70, and when it reaches a suitable position in its rearward movement a tack is deposited from a raceway by suitable devices in the aperture of the wiper, the wiper is then carried forward in proper time relation to the operation of the pincers, wipes the overlaid upper onto the innersole, and a driver forces the tack carried by the wiper through said parts of the shoe to secure them together. According to the present invention the wiper is not fixed to the slide bar 72, by which it is operated in previous machines of this type in a straight line toward and from the edge of the shoe, but is movably supported by the bar and operated in such manner that it has other movements imparted to it, whereby it may wipe or press the upper in directions which will conform to the inclination of the folds or plaits in the upper at the toe or at the heel of the shoe, as will be now more particularly described.

The reciprocatory slide bar 72 has secured to its forward end a wiper carrier or support 74, and screws 76, which may pass through slots in the carrier and enter threaded openings in the slide bar, serve as a convenient means for providing an adjustable connection between said parts. The carrier 74 is shown as having a tack-receiving aperture 78, and at a suitable point preferably to the rear of its forward extremity is apertured to receive a stud or screw 80 from which the wiper 82 is pivotally supported at a point intermediate its ends. The wiper is shown as having a tack-receiving aperture which is so located as to register with the aperture 78 in the carrier 74 when the wiper occupies its central position, and is therefore in longitudinal alinement with the carrier. To the rear of its pivotal connection with the carrier the wiper may be provided with a pin carrying an anti-friction roll 84, which is arranged to enter a groove or slot formed in a pivoted guiding member 88. This member is shown as having cylindrical or arc-shaped portions 89 which rotate in similar curved guiding blocks 90, formed with or secured to a plate 92. This plate has upturned lugs 94 through which pass clamping screws 96, having set nuts thereon, for adjustably securing the plate to a rigid part of the frame 3. From this construction it will be seen that the guiding member 88 may be moved to position its slot 86 in line with the center of the plate 92, which corresponds with the direction in which the slide bar reciprocates, or said member may be turned to either side of said line so as to have the slot inclined to the right or to the left with reference to the direction of movement of the slide bar. With the slot arranged inclined, as shown for example in Fig. 2, as the slide bar is moved forward in the operation of the machine the wiper 82 will be turned on its pivot 80 by reason of the engagement of the roll 84 with the slot which will impart to the wiper a sidewise deflection or transverse movement, in addition to its forward movement, causing its active face to wipe the upper in an inclined direction relatively to the edge of the sole. Obviously the amount of transverse movement will vary with the angular displacement of the member 88, and the direction of the transverse movement toward one side or the other will be determined by the side to which the said member 88 is turned.

To effect the angular displacement of the guiding member 88 the latter, in the present embodiment of the invention, is shown as being connected by a link 98 with one arm 99 of a bell-crank lever 101, fulcrumed at 100 in brackets projecting from the frame of the machine, said lever being operated, through connections to be described, by the

mechanism that controls the plaiting movements of the pincers. As shown in Fig. 2, the lever 101 has an arm 102 that is provided with a bearing 104 in which a stud 106 is journaled, the said stud having a bearing 108 at its upper end which receives an extension of a stud 110 that forms a connection between one of the arms of the yoke 62 on the bell-crank 46 and the sliding collar 64. The studs 106 and 110 are arranged with their axes at right angles and are capable of sliding in their respective bearings so as to compensate for the curved paths in which the lever 101 and the yoke 62 move.

It will be seen that as the bell-crank lever 46 is rocked about its pivot 60 through the action of the knee lever the bell-crank will, through the connections described, cause the lever 101 to turn about its fulcrum 100 and consequently the link 98 to be moved to adjust the angle of the guiding member 88 and thereby cause the transverse or sidewise deflection of the wiper in the next movement of the slide bar 72, while at the same time the bell-crank 46 effects the plaiting movements of the pincers by sliding the collar 64 along the sleeve-shaft 30. The direction to which the wiper is deflected will depend upon the movement of the mechanism for effecting the plaiting operation, and the extent to which the wiper is deflected in either direction may be varied by a greater or lesser movement of the knee lever, it being obvious that any alteration of the lateral movement of the wiper due to this means, will effect a corresponding alteration in the plaiting movement of the pincers. In order to provide for an adjustment of the extent of angular movement of the wiper relative to the plaiting movements of the pincers an adjustable connection may be provided between the link 98 and the arm 99 of the lever 101. As herein shown, a stud 112, connected pivotally with the arm 99, has an eccentric portion 114 to which the link 98 is pivoted. The stud 112 can be rotated, and then secured in different positions of adjustment by a set screw 115, so as to impart more or less movement to the link and hence to the guiding member 88.

While the wiper is deflected to one side or the other of the longitudinal central line of the machine, when the guide member is properly positioned to effect such movement, it is necessary that at its most advanced position the wiper should present its tack-receiving aperture 84 in alinement with the aperture 78 in the carrier and also in alinement with the driver 79 in order that the tack may then be driven into the stock. To this end the pivotal axis of the guide 88 is arranged coincident with the center line of the plate 92 while the guiding slot 86 extends outward and to the rear of said axis.

The inclination of the wiper will therefore be greatest when the wiper is in its extreme rear position, and as the wiper advances toward the shoe its lateral deflection or inclination will decrease gradually as the roll 84 approaches the end of its forward stroke, said roll at such time being in line with the axis of the pivoted guiding member and the wiper as a whole occupying a central position where its aperture 84 is in alinement with the aperture 78 and also with the driver 79.

In the modification shown in Fig. 4 the wiper comprises two independent, movable sections, which are so constructed and arranged for operation that when they occupy a retracted position said sections are extended laterally from the center line of the wiper-carrying slide bar, or actuator, and have their acting edges and faces inclined relatively to said line, but as said sections are advanced toward the shoe they are caused to approach each other and wipe the stock laterally along convergent paths that meet at said center line. In this construction, the wiper sections comprise the two bars 116 and 117, which are crossed similar to a pair of shears, and supported by a single pivot 118 which may be sustained from a carrier such as that indicated by the numeral 74, in Fig. 2, to be reciprocated horizontally by the slide bar, or by any suitable member having movement to carry the wipers toward and from the shoe. To the rear of the pivotal connection 118 the wiper bars are provided with slots 120, which receive a pin or roll 122 which is fixed rigidly to a part of the machine frame. When the slide bar is advanced in the operation of the machine the slots 120 will slide over the pin or roll 122 and cause the wiper sections to close together as they are advanced, the construction, as well as the operation of these parts, corresponding somewhat to those of a pair of shears. In this embodiment it is contemplated that the carrier or support for the wiper sections may be adjustably secured to the slide bar as in the preferred construction, and in that case the pin or roll 122 will be adjustably fastened to the stationary part of the frame which supports it.

It is thought that the operation of the several features above described, as well as their advantages, will be apparent without further description. The wiper, as in former machines of this same general character, is so actuated in time relation to the operation of the pincers that when the upper has been seized by the pincers, uplifted to stretch the leather in true conformity with the last, and moved inwardly to lay the upper upon the innersole, the wiper is advanced and wipes smoothly the overlaid stock into its final lasted position and the driver descends and forces into the stock

the tack which was carried forward by the wiper. An especial feature of advantage of the present invention lies in the fact that a single wiper is employed throughout the entire operation, which may be so arranged as to wipe the stock directly over and at right angles to the edge of the sole at those parts of the shoe where by reason of lack of fullness in the leather it is practicable for the pincers to operate without lateral or twisting movements, but which also has capacity for adjustment to wipe the stock in obliquely, and at varying angles and directions to the sole edge, at such parts of the shoe, as for instance at the toe, where increased fullness of the stock demands the formation of plaits and the pincers are given the necessary movements to produce such plaits. It is to be understood, however, that while a wiper which has capacity for adjustment to move in laterally deflected or oblique paths in the manner herein described is useful in the operation of forming plaits or folds in connection with pincers whose movements are such as those described herein, the invention is not in any sense limited to the use of such wiper with pincer mechanism for it will be obvious to those skilled in the art that wipers having such capacities for movement will have many advantages in lasting machines that work the upper into lasted position, without the use of pincers.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A machine of the class described having means for working into lasted position successive portions of an upper by repeated operations and comprising a wiper and continuously reciprocating actuating means to carry the wiper bodily toward and from the edge of a shoe and to cause the wiper to move in a path inclined laterally with relation to the median vertical plane of the machine.

2. A step-by-step type of lasting machine having, in combination, a wiper, a continuously reciprocating carrier to move the wiper bodily toward and from a shoe and means to cause the wiper to move in a direction inclined laterally with relation to the median vertical plane of the machine.

3. A machine of the class described having means for working into lasted position successive portions of an upper by repeated operations and comprising a continuously reciprocating wiper, and means to move the wiper bodily toward and from a shoe and to cause it to swing as it approaches and recedes from the shoe.

4. A machine of the class described having means for working into lasted position successive portions of an upper by repeated operations and comprising a continuously

reciprocating carrier, a wiper supported for bodily movement therewith, and means to cause the wiper to swing laterally during the reciprocatory movements of the carrier.

5. A machine of the class described having means for working into lasted position successive portions of an upper by repeated operations and comprising a continuously reciprocating carrier, a wiper pivotally supported for bodily movement therewith, and means to cause the wiper to swing laterally during the reciprocatory movements of the carrier.

6. A machine of the class described having means for working into lasted position successive portions of an upper by repeated operations and comprising a reciprocating carrier, a wiper supported for movement thereon, an inclined guideway, and means on said wiper to cooperate with said guideway to effect a swinging movement of the wiper.

7. A machine of the class described having, in combination, a wiper, and means for effecting movements of the wiper toward and from a shoe in paths inclined laterally to degrees which can be varied.

8. A machine of the class described having, in combination, a wiper, and means for moving the wiper toward and from a shoe and adapted for adjustment to cause the movement to take place at varying inclinations to the edge of the shoe.

9. A machine of the class described having, in combination, a wiper movable across the shoe edge into and out of shoe engaging position during each complete operation of the machine, and means which can be adjusted for causing the wiper to approach a shoe in a direction inclined to either side of a line drawn normal to the sole edge.

10. A machine of the class described having, in combination, a wiper, means for moving the wiper bodily toward and from a shoe, and means which can be rendered operative or inoperative for causing the wiper to swing laterally with reference to such direction of movement.

11. A machine of the class described having, in combination, a wiper, means for moving the wiper across the shoe edge into and out of shoe engaging position during each complete operation of the machine, and means which can be adjusted for causing the wiper to swing laterally with reference to either side of the path of said first movement.

12. A machine of the class described having, in combination, a reciprocating carrier, a wiper supported for movement thereon, and means which can be adjusted for causing the wiper to swing varying distances and from either side of the carrier alternatively to vary the direction and extent of inclination of the movement of said wiper over a shoe.

13. A machine of the class described having, in combination, a reciprocating carrier, a wiper movably supported thereby, and means to cause the wiper to assume an inclined relation to the carrier on its rearward movement and to aline the wiper with said carrier in its forward movement.

14. A machine of the class described having, in combination, a reciprocating carrier having a tack-receiving aperture, a wiper movably supported by the carrier and having a tack-receiving aperture, and means to cause the wiper to swing laterally away from the carrier in its backward movement, and to swing laterally toward the carrier in its forward movement to aline said aperture.

15. A lasting machine having, in combination, a driver, a wiper provided with a tack-receiving aperture, and actuating mechanism to cause the wiper to move back and forth over the shoe in a path laterally inclined relatively to the transverse median plane of the machine, the parts being so constructed and arranged that said aperture is in line with the driver when the wiper reaches the limit of its forward movement.

16. A lasting machine having, in combination, a driver, a reciprocating carrier having a tack-receiving aperture, a wiper movably supported by the carrier and having a tack-receiving aperture, means to swing the wiper to one side of the carrier as the carrier moves rearwardly and to swing said wiper reversely as the carrier moves forwardly, said parts being so arranged that the tack-receiving apertures are in line with the driver when the carrier reaches its extreme forward limit of movement.

17. A lasting machine having, in combination, a carrier, a wiper supported for movement thereon, means to move the carrier toward and from a shoe, and controlling means arranged for adjustment to cause the wiper to approach the shoe in the line of movement of said carrier or in a direction inclined to said line.

18. A lasting machine having, in combination, a carrier, a wiper supported for movement thereon, means to move the carrier and the wiper toward and from a shoe, and controlling means arranged for adjustment to cause the wiper in said movement to approach the shoe in a direction inclined with reference to either side of the line of movement of the carrier.

19. A lasting machine having, in combination, a carrier, a wiper supported for movement thereon, means to move the carrier toward and from a shoe, and controlling means arranged for adjustment to cause the wiper to approach the shoe at varying oblique angles to the line of movement of the carrier.

20. A lasting machine having, in combination, a reciprocating carrier, a wiper piv-

otally supported thereby, a pivoted guide, means on the wiper to cooperate with said guide, and means for angularly adjusting the guide.

21. A lasting machine having, in combination, a reciprocating carrier, a wiper pivotally supported thereby, a pivoted guide, means on the wiper to cooperate with said guide, and means for adjusting the guide to aline it with the direction of movement of the carrier or to present it at varying angles to said direction of movement.

22. A lasting machine having, in combination, pincers, means for causing lateral swinging movements of the pincers to plait the upper, a wiper, means for causing it to wipe the upper in the direction of the plaits, and means for controlling the extent of said movements.

23. A lasting machine having, in combination, pincers, means for causing lateral swinging movements of the pincers to plait the upper, a wiper, means to cause it to move in the direction of the plaits, and a single device to control the extent of said movements.

24. A lasting machine having, in combination, pincers, means for causing lateral swinging movements of the pincers to plait the upper, a wiper, means to cause it to move in an inclined path, and a single device to control the direction and extent of the movements of said pincers and wiper.

25. A lasting machine having, in combination, pincers, means for imparting lateral movements to the pincers to plait the upper in either direction, a wiper, a carrier to which the wiper is connected and which has a reciprocatory movement in a predetermined path, additional means connected with the wiper for causing its travel to take place in a path inclined in accordance with the direction of the plaits, and means for initiating, directing, and suspending the plaiting movements of said pincers and wiper simultaneously.

26. A lasting machine having, in combination, pincers, mechanism for imparting lateral movements to the pincers to plait the upper, a wiper, means for controlling the movements of the wiper including a guideway arranged for angular adjustment, and a single device for controlling the plaiting mechanism and adjusting the position of said guideway.

27. A lasting machine having, in combination, pincers, mechanism for imparting lateral movements to the pincers to plait the upper, a wiper, means for controlling the movements of the wiper including a guideway arranged for angular adjustment, and means for positioning the guideway to cause the wiper to move in a direction perpendicular to the edge of the shoe when the plaiting mechanism is inoperative and to

cause the wiper to move in a direction inclined to said edge when said mechanism is operative.

28. A lasting machine having, in combination, pincers, mechanism for causing lateral swinging movements of the pincers to plait the upper, a wiper, means for causing it to move in an inclined path to wipe the upper in the direction of the plaits formed by said pincers, connections between said mechanism and means permitting simultaneous adjustment of the extent of said movements, and a device in said connections to vary the amount of the inclined movement imparted to the wiper relatively to the amount of swinging movement imparted to the pincers.

29. A lasting machine having, in combination, pincers, means for causing lateral swinging movements of the pincers to plait the upper, a wiper, means to cause it to move in the direction of the plaits, and means for controlling the extent of the movement of the wiper.

30. A machine of the class described having, in combination, a tacker, means for reciprocating the tacker over the shoe bottom, a wiper arranged to partake of the reciprocating movement of the tacker and having an additional wiping movement during such reciprocations.

31. A machine of the class described having, in combination, a tacker, means for reciprocating the tacker over the shoe bottom, a wiper arranged to partake of the reciprocating movement of the tacker, and means for effecting an additional movement of the wiper angularly under the tacker during the advance of the tacker.

32. A machine of the class described having, in combination, a tacker, a wiper mounted under the tacker, means for swinging the wiper to do its work prior to the insertion of a tack and means for adjustably determining the limits of the wiper movements relatively to the tacker.

33. A machine of the class described having, in combination, a reciprocating tack block movable across the edge of a shoe and a wiper mounted on the lower side of the tack block and means for effecting a movement of the wiper over the shoe edge in a direction oblique to the direction of the tack block movement.

34. A machine of the class described having, in combination, a reciprocating tack block movable across the edge of a shoe and a wiper mounted on the lower side of the tack block, and means adapted to be rendered operative or inoperative to cause the wiper to rub over the edge of the shoe in a direction oblique to the direction of the tack block movement.

35. A machine of the class described having, in combination, a reciprocating tack

block movable across the edge of a shoe and a wiper mounted on the lower side of the tack block, and means for causing the wiper to follow paths of different degrees of obliquity in wiping over the edge of the shoe. 70

36. A machine of the class described having, in combination, a wiper movable across the shoe edge into and out of shoe engaging position during each complete operation of the machine and means which can be rendered operative or inoperative by the operator for causing said wiper to have a component of lateral movement during its forward stroke. 75

37. A machine of the class described having, in combination, a wiper movable across the shoe edge into and out of shoe engaging position during each complete operation of the machine and means which can be rendered operative or inoperative by the operator and can be adjusted for causing said wiper to have variable degrees of lateral movement during its advance. 80

38. A machine of the class described having, in combination, a wiper, automatically operating means to carry the wiper toward and from the edge of a shoe, and means adapted to be rendered operative or inoperative to give the wiper an additional movement. 85

39. A machine of the class described having, in combination, a wiper, automatically operating means to carry the wiper toward and from the edge of a shoe, and means under control of the operator to modify the direction of such movement. 90

40. A machine of the class described having, in combination, a gripper, mechanism to impart upper overdrawing and plaiting movements to the gripper, a wiper movable across the shoe edge into and out of shoe engaging position during each complete operation of the machine, and means to impart movements to the wiper corresponding to the movements of the gripper. 100

41. A machine for working successive portions of an upper over a last by repeated operations having, in combination, a wiper movable across the shoe edge into and out of shoe engaging position during each complete operation of the machine and actuating mechanisms to impart to the wiper different operative movements for different portions of the shoe. 105

42. A machine for working successive portions of an upper over a last by repeated operations having, in combination, a wiper and actuating mechanisms to impart to the wiper right line wiping movements or oblique wiping movements. 110

43. A machine for working successive portions of an upper over a last by repeated operations having, in combination, a wiper and actuating mechanisms to impart to the wiper its working movements, said mecha- 120

nism including a carrier adapted to move the wiper forwardly and backwardly across the edge of the shoe, and means adapted to be used optionally to cause said movements to take place in a direction inclined to the length of the shoe edge.

44. A machine for working successive portions of an upper over a last by repeated operations, having, in combination, a wiper and actuating mechanisms to impart to the wiper right line wiping movements or movements of a selected degree of obliquity with relation to the normal right line movement.

45. A machine for working successive portions of an upper over a last by repeated operations having, in combination, lasting instrumentalities and controlling means to cause said instrumentalities to have different movements appropriate for overworking the upper of different portions of a shoe, a wiper and actuating mechanism therefor connected with said controlling means to cause different wiping movements to be effected at different times.

46. A machine for working successive portions of an upper over a last by repeated operations having, in combination, grippers, controlling means to cause the grippers to have different movements appropriate for overworking different portions of the upper, a wiper, and actuating mechanism therefor arranged to effect a change in the operative movements of the wiper when the gripper movements are changed.

47. A lasting machine having, in combination, a wiper and actuating means adapted to be set for advancing and retracting the wiper over the last bottom in a path substantially perpendicular to the edge of the last or for advancing the wiper over the last bottom in a path oblique to the edge of the last.

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

ARTHUR BATES.

Witnesses:

ARTHUR ERNEST JERRAM,
KATHERINE PAXTON.