

April 2, 1963

P. L. DE PESA

3,083,384

WIPERS FOR END LASTING MACHINES

Filed Nov. 10, 1961

6 Sheets-Sheet 1

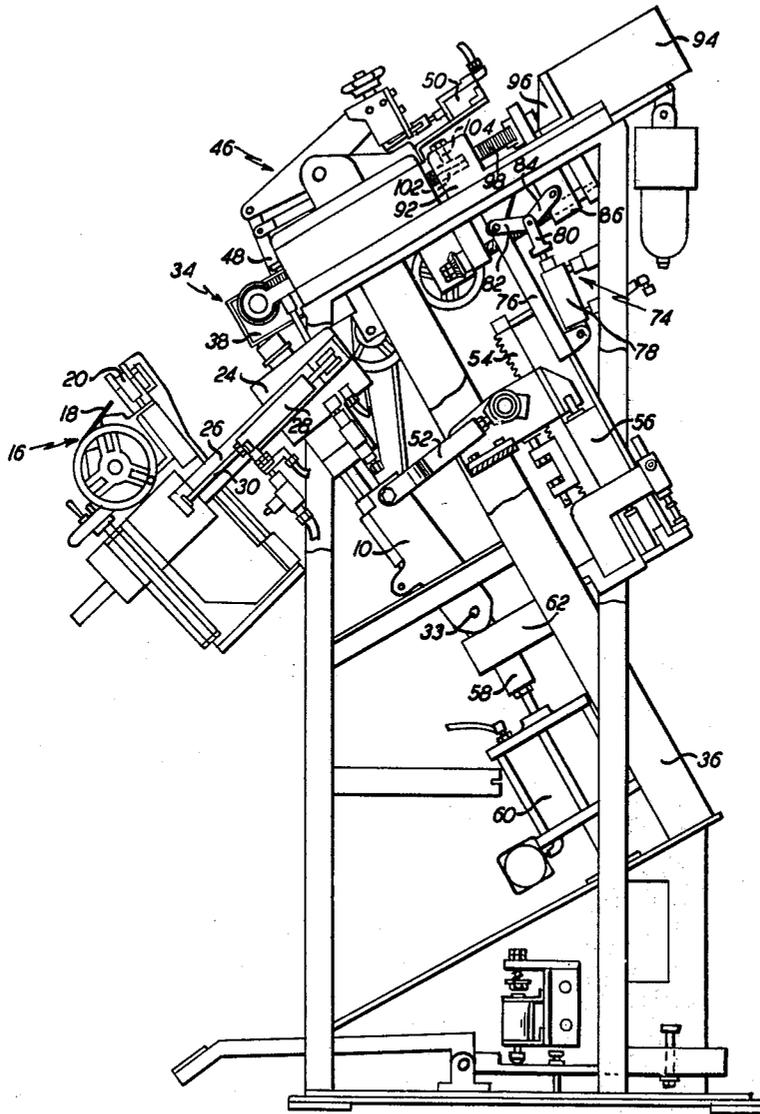


Fig. -1

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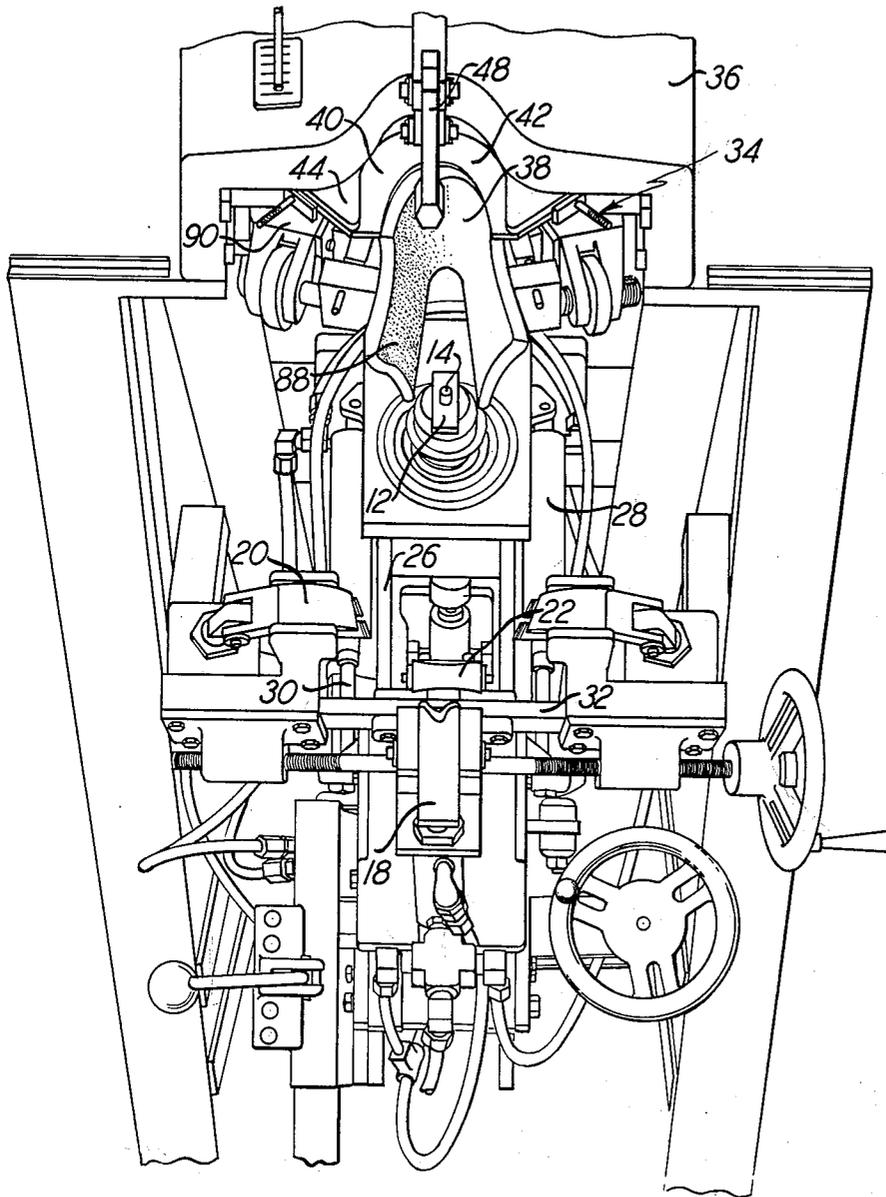


Fig. - 2

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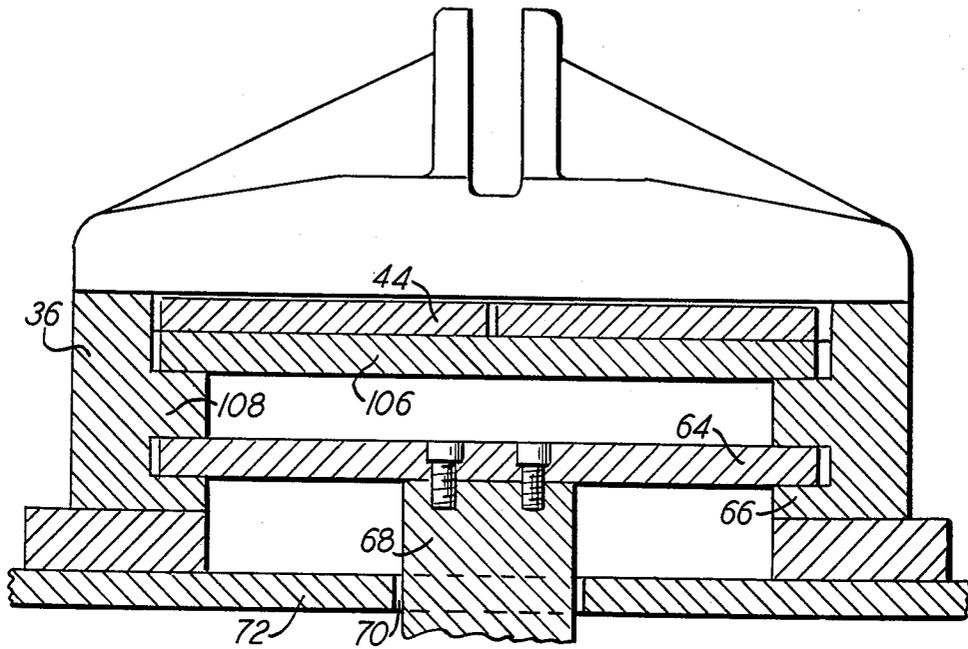


Fig. - 3

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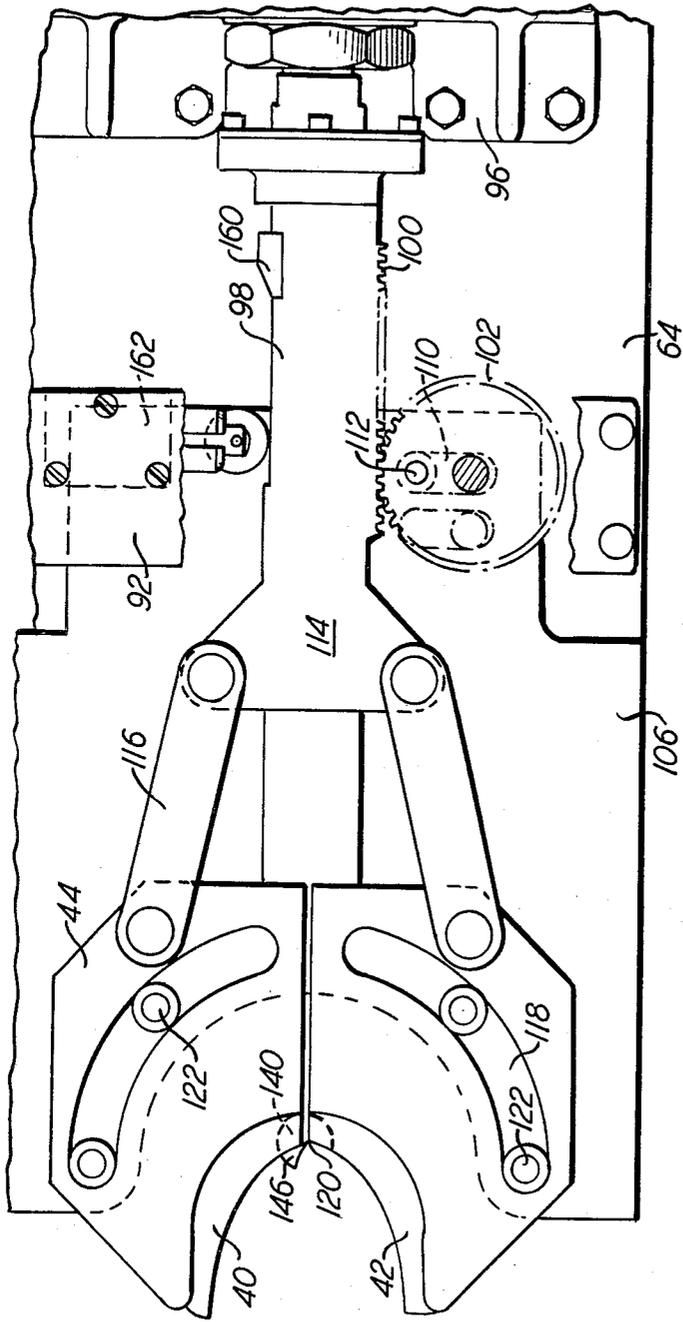


Fig. - 4

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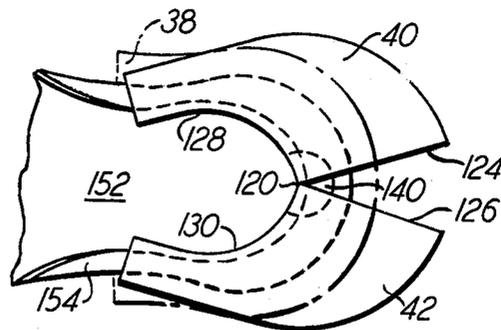
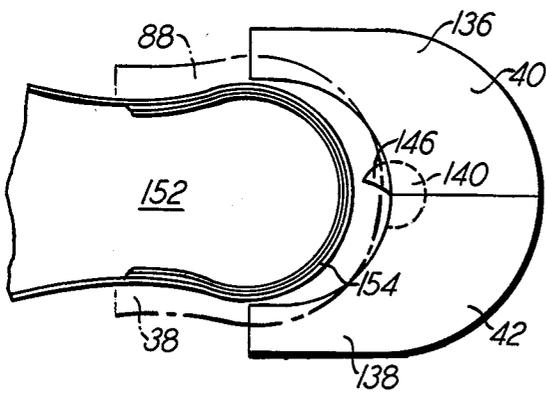
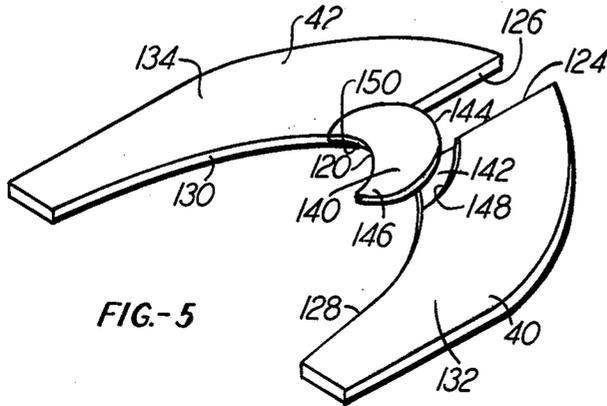
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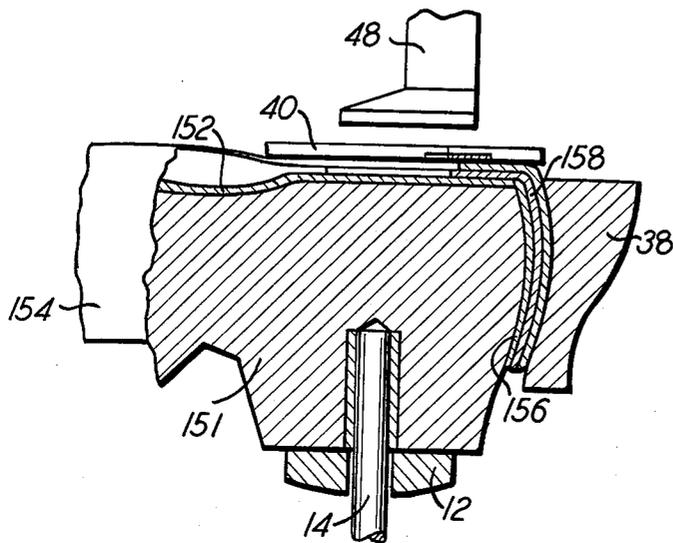


FIG.-8

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WIPERS FOR END LASTING MACHINES

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 7 Claims. (Cl. 12-12.5)

This invention relates to improved wipers for use in a shoe end lasting machine such as the heel seat lasting machine disclosed in pending application Serial No. 107,156, filed May 2, 1961.

End lasting wipers conventionally have flat coplanar undersurfaces and forwardly divergent front side surfaces adapted to embrace the end of a last having a shoe upper and insole thereon and have drive means for translating the wipers forwardly across the insole and swinging the front side surfaces toward each other to cause the divergent side surfaces to cross the last and wipe the lasting margin of the upper against the insole. However, during the inward movement of the front side surfaces, there is also outward movement of rear side surfaces of the wipers that are located rearwardly of the front side surfaces. The separation of the rear side surfaces creates a gap, and the portion of the wiped in margin that underlies this gap does not have pressure applied to it during the forward movement of the wipers and during the application of bedding pressure after the wipers have completed their forward movement.

This problem has been mitigated by covering the gap in all positions of the wipers. This has been done by providing a bridging element on one of the wipers that extends from its rear side surface past the rear side surface of the other wiper into a recess in the undersurface of the other wiper. The bridging element has a flat undersurface that is coplanar with the wiper undersurfaces and is so constructed that it, together with the wipers, completely covers the wiped in upper margin during the forward movement of the wipers and after the wipers have completed their forward movement.

Referring to the accompanying drawings:

FIG. 1 is a side elevation of the heel seat lasting machine;

FIG. 2 is a front elevation of the machine;

FIG. 3 is a detail in section of a part of the machine;

FIG. 4 is a plan view of the wiper drive means;

FIG. 5 is an exploded perspective view of the wipers;

FIG. 6 is a representation looking from above of the wipers and the shoe to be lasted with the wipers in their retracted position;

FIG. 7 is a view similar to FIG. 6 but showing the wipers in their forward position; and

FIG. 8 is a sectional side elevation of the machine parts at the completion of the wiping operation.

As aforesaid, the wipers of the instant invention may be used in a heel seat lasting machine such as that shown in pending application Serial No. 107,156, filed May 2, 1961. The machine comprises a post 10 to the upper end of which is secured a last supporting plate 12 and a last pin 14 (FIG. 2). An upper tensioning unit 16 is mounted on the post 10. The unit 16 comprises a front pincers 18, two side pincers 20 and a toe rest 22. A block 24 is swingably mounted on the post 10 for oscillation about the axis of the post. The block has rails 26 connected thereto and extending forwardly thereof on which the unit 16 is slidably mounted for movement toward and away from the post 10. A pair of air actuated motors 28 are pivoted to the rails 26 and have piston rods 30 connected to the unit 16 to effect movement of the unit 16 along the rails 24. The pincers 18 and 20 are mounted on a bar 32, and an air actuated motor (not shown) is connected to the bar 32 to effect

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upward and downward movement of the pincers 18 and 20 with respect to the rails 26.

The post 10 and the upper tensioning unit 16 carried thereby are swingably mounted on a pivot 33 for bodily movement toward and away from a heel seat lasting unit 34 mounted in the frame 36 of the machine. The unit 34 comprises a U-shaped heel clamping pad 38 made of flexible material such as leather and wipers 40 and 42 mounted in wiper cams 44. A hold-down unit 46 is mounted on the frame above the unit 34. The unit 46 comprises a hold-down foot 48 that is normally located with its bottom slightly below the bottoms of the wipers and which is elevated from its normal position upon actuation of an air operated motor 50.

The post 10 is pivotally connected to a pitman 52 which in turn is operatively connected to a rack 54 whereby reciprocation of the rack by an air actuated motor 56 effects movement of the post 10 and the upper tensioning unit 16 carried thereby toward and away from the heel seat lasting unit 34 and the hold-down unit 46. The pivot 33 is located at the end of the piston rod 58 of an air actuated motor 60, the piston rod being guided in a bearing 62 mounted on the frame 36 of the machine.

The heel seat lasting unit 34 is supported on a main slide plate 64 that is slidably mounted for forward and rearward movement on gibs 66 in the frame 36 (FIG. 3). A block 68 is secured to the plate 64 and is slidable in a slot 70 formed in a table 72, which table forms a part of the frame 36. A floating actuator 74 is secured to the block 68. The actuator 74 comprises a bar 76 depending from and rigid with the block 68. An air operated motor 78 is pivoted to the bar 76 and has a piston rod 80 extending upwardly therefrom. A pair of toggle links 82 and 84 are pivoted at their adjoining ends to the piston rod 80 and are respectively pivoted at their opposite ends to the bar 76 and to a block 86 that is located in a fixed position in the machine. Actuation of the motor 78 to open or close the toggle linkage formed by the members 80, 82 and 84 will cause the main slide plate 64 and the members carried thereby to move forwardly or rearwardly in the frame.

The legs 88 of the clamping pad 38 are connected to levers 90 (FIG. 2), and the levers form part of a driving mechanism (not shown) mounted on the main slide plate 64 for moving the pad 38 forwardly and the pad legs 88 toward each other to clamp the heel portion of a shoe upper against a shoe last as described below.

A bridge 92 is anchored at its ends to the main slide plate 64 and extends thereover (FIG. 4). An air operated motor 94 (FIG. 1) is secured to a rib 96 at the rear of the main slide plate 64. The piston rod 98 of the motor 94 has a rack 100 thereon that is in mesh with a gear 102 rotatably mounted beneath the bridge 92 on a pin 104 fixed in the bridge. A wiper supporting slide plate 106 is slidably supported on gibs 108 in the frame 36. The plate 106 has a slot 110 extending transversely to the rack 100 which receives an eccentrically mounted crank pin 112 depending from the gear 102. The piston rod 98 has an enlargement 114 to which are pivoted the ends of links 116. The opposite ends of the links 116 are pivoted to the wiper cams 44 which mount the wipers 40 and 42. The wiper cams 44 have curved cam slots 118 with a center of curvature at the point or vertex where the wipers diverge from each other, indicated by the numeral 120. The wiper cams rest on the plate 106, and the plate 106 has rollers 122 extending upwardly therefrom into the cam slots 118.

With the wipers 40, 42 mounted in the machine in their retracted positions, they respectively have rear side

surfaces 124 and 126 that abut each other and divergent front side surfaces 128 and 130 that arc away from each other. The surfaces 128 and 130 are made similar to the heel of the last with which they coact. In addition, the wipers 40, 42 respectively have flat undersurfaces 132 and 134 located in a common plane and flat top surfaces 136 and 138 located in a common plane parallel to the plane of the wiper undersurfaces. The surfaces 124 and 128 and the surfaces 126 and 130 meet at the aforementioned vertex 120.

A bridging element 140 is secured in a recess in the undersurface 134 of the wiper 42 and is received in a recess 142 in the undersurface 132 of the wiper 40. The undersurface of the bridging element is flat and coplanar with the undersurface 134. The rear end 144 of the bridge is on an arc whose center of curvature lies at the vertex 120.

With the wipers in their retracted position, the end 144 starts at the front side surface 130 of the wiper 42, arcs rearwardly to intersect the rear side surface 126, then intersects the rear side surface 124 of the wiper 40, arcs forwardly in the recess 142 and terminates in a lip 146 that extends forwardly of the front side surface 128. The rear end 148 of the recess 142 is also on an arc whose center of curvature is at the vertex 120 and is contiguous to the bridging element end 144 to accommodate the bridging element. The portion 150 of the front end of the bridging element 140 that lies within the wiper 42 is coextensive with the front side surface 130 of the wiper 42, and the remainder of the front end of the bridging element forms the front of the lip 146 and extends forwardly of the front side surface 128 of the wiper 40.

A last 151 is provided having an insole 152 mounted on its bottom and an upper 154 draped thereon. A liner 156 is secured to the heel of the upper to engage the heel of the last, and a counter 158 is located in the pocket formed between the upper and liner, the counter having the characteristics described in the aforementioned application Serial No. 107,156 and in pending application Serial No. 80,919, filed January 5, 1961. The last is placed bottom-up on the last supporting plate 12 with the pin 14 entering the conventional last pin hole in the last. The toe portions of the upper and last are supported on the toe roller 22, the toe of the upper margin is inserted between the jaws of the front pincers 18, the forepart portions of the upper margin are inserted between the jaws of the side pincers 20, and the pincers are actuated to cause their jaws to grip the upper margin. The motors 28 are now actuated to move the upper tensioning unit 16 and the pincers 18, 20 carried thereby forwardly to stretch the upper tightly about the heel of the last and tension-mold the counter to the shape of the heel of the last. The motor 56 is now actuated to swing the post 10 and the upper tensioning unit 16 carried thereby toward the heel seat lasting unit 34 to a position adjacent to but not in contact with the heel clamping pad 38 wherein the post 10 is substantially in alignment with the hold-down foot 48. The motor 60 is now actuated to raise the post to bring the insole 152 in engagement with the hold-down foot 48, after which the pincers 18 and 20 are raised upwardly in unison to apply an upward tension to the margin of the upper 154 at its toe and forepart portions to thereby stretch the upper tightly on the last and assemble it in proper position for the heel seat lasting operation. The motor 78 is now actuated to straighten the toggle links 82, 84 and thereby move the block 68 and the heel seat lasting unit 34 carried thereby from its normal, rearward, out-of-the-way position to a position adjacent the shoe and last. The driving mechanism for the heel clamping pad 38 is now actuated to cause the pad to move forwardly and the pad legs 88 to move inwardly thereby causing the pad to clamp the heel of the upper against the last as indicated in phantom in FIG. 6 and

compression mold the counter 158 to the shape of the last.

At the completion of the clamping operation, the motor 94 is actuated to advance the piston rod 98, the rack 100 and the piston rod enlargement 114 to cause the wipers to move from the FIG. 6 position to the FIG. 7 position to wipe or fold the margin of the upper 154 and counter 158 down upon the insole 152, as indicated in FIGS. 7 and 8. The wiping pressure completes the molding of the counter and causes the counter, through adhesive on its surfaces, to bond the wiped-in margin of the upper to the insole. The forward movement of the piston rod 98, through the links 116, causes the front side surfaces 128, 130 to swing toward each other about the vertex 120 with the slots 118 swinging forwardly with respect to the rollers 122 and causes the surfaces 128, 130 to approach each other in their wiping movement across the bottom of the last. The forward movement of the piston rod 98, through the rack 100, the gear 102, the slot 110 and the pin 112 also causes the plate 106 to move forwardly thereby providing a forward, translatory movement of the wipers as well as in inward movement about the vertex 120. The portions of the wiper undersurfaces adjacent the vertex 120 cross the heel of the last along its median, and, during the inward swinging movement of the wipers, the lip 146 retreats within the recess 142, due to the concentricity of the bridge end 144 and the slots 118, so that at the completion of the forward wiper movement the forward end of the lip 146 is coextensive with the front side surface 128 of the wiper 40. The bridging element 140 thereby serves to cover the gap created by the separation of the rear side surfaces 124, 126 of the wipers 40, 42 so that all of the wiped in upper margin is covered by a uniplanar surface. The elimination of this gap and the provision of a substantially continuous planar surface bearing against the upper margin provides for a wiping operation that effectively flattens the upper margin against the insole during the wiping operation and during the application of bedding pressure described below. Since the slot 110 extends normal to the path of movement of the piston rod 98, the movement of the slot from the rightward position of FIG. 4 to the leftward position indicated in phantom causes the plate 106 initially to move forwardly almost as fast as the piston rod 98 and then to gradually slow down, until, towards the end of the stroke of the piston rod 98, the plate has substantially no forward movement. The result of this is that, initially, the wipers move forward with substantially no forward movement about the vertex 120, and at the end of the wiper stroke the wipers move toward each other about the vertex 120 with very little forward movement. This produces a wiping action where the force created by the wipers in moving across the edge of the insole 152 at any given point is substantially radial to the curvature of the insole at that point.

During the forward stroke of the piston rod 98 a lug 160 on the piston rod actuates a three way valve 162 which actuates the motor 50 to raise the hold-down foot 48 to the position indicated in FIG. 8. The motor 60 now applies upward pressure by the last directly against the wipers to provide an overwiping and bedding pressure between the wipers and the wiped in margin of the upper during the latter part of the wiper stroke and also after the termination of the wiper stroke.

This concludes the lasting operation. The pincers 18, 20 are now opened to release the toe and forepart portions of the upper margin, the pincers are lowered to their initial positions on the upper tensioning unit 16, the clamping pad 38 is returned to its retracted position in the heel seat lasting unit 34, the motor 78 is actuated to return the heel seat lasting unit to its initial out-of-the-way position, the motors 28 are actuated to return the upper tensioning unit 16 to its original position, the

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motor 60 is actuated to lower the post 10 to lower the shoe and last away from the wipers 40, 42, the motor 94 is actuated to retract the wipers, the motor 50 is actuated to lower the hold-down foot 48 to its initial position, and the motor 56 is actuated to swing the post 10 and the upper tensioning unit 16 carried thereby to its initial position.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications that fall within the scope of the appended claims. Terms such as "front," "forwardly" and "under" are merely indicative of the relative paths of movement and the positions of the machine parts and should be so construed.

I claim:

1. In an end lasting machine that includes: a shoe support for supporting a last having a shoe upper and insole mounted thereon; a pair of symmetrically disposed wipers, each wiper having a front side surface and a rear side surface located rearwardly of the front side surface, the front side surfaces being forwardly divergent to embrace the last and the rear side surfaces being in opposed relation; and means connected to the wipers to translate them forwardly across the insole and to concomitantly swing the front side surfaces toward each other and the rear side surfaces away from each other about a vertex located on the line of symmetry of the wipers no further rearwardly than the rear side surfaces to cause the front side surfaces to fold the lasting margin of the upper against the insole; the improvement comprising: a recess in a first one of said wipers; a bridging element on the second wiper extending from its rear side surface past the rear side surface of the first wiper into said recess with the rear end of the bridging element contiguous to the rear end of the recess, said bridging element end and recess end being located on an arc whose center of curvature lies at said vertex.

2. In an end lasting machine that includes: a shoe support for supporting a last having a shoe upper and insole mounted thereon; a pair of symmetrically disposed wipers, each wiper having a front side surface and a rear side surface located rearwardly of the front side surface, the front side surfaces being forwardly divergent to embrace the last and the rear side surfaces being in opposed relation; and means connected to the wipers to translate them forwardly across the insole from a retracted position to a forward position and to concomitantly swing the front side surfaces toward each other and the rear side surfaces away from each other to thereby cause the front side surfaces to fold the lasting margin of the upper against the insole; the improvement comprising: a bridging element in a first one of said wipers extending from its rear side surface past the rear side surface of the second wiper, the bridging element being so constructed that in the retracted position of the wipers it has a lip projecting forwardly of the front side surface of the second wiper and the lip retreats within the second wiper during the movement of the wipers from their retracted position to their forward position.

3. In an end lasting machine that includes: a shoe support for supporting a last having a shoe upper and insole mounted thereon; a pair of symmetrically disposed wipers, each wiper having a front side surface and a rear side surface located rearwardly of the front side surface, the front side surfaces being forwardly divergent to embrace the last and the rear side surfaces being in opposed relation; and means connected to the wipers to translate them forwardly across the insole and to concomitantly swing the front side surfaces toward each other and the rear side surfaces away from each other about a vertex located at the juncture of the front and rear side surfaces to cause the front side surfaces to fold the lasting margin of the upper against the insole; the improvement comprising: a recess in a first one

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of said wipers; a bridging element on the second wiper extending from its rear side surface past the rear side surface of the first wiper into the recess with the rear end of the bridging element contiguous to the rear end of the recess, said bridging element end and recess end being located on an arc whose center of curvature lies at said vertex.

4. In an end lasting machine that includes: a shoe support for supporting a last having a shoe upper and insole mounted thereon; a pair of symmetrically disposed wipers having flat coplanar undersurfaces, each wiper having a front side surface and a rear side surface located rearwardly of the front side surface, the front side surfaces being forwardly divergent to embrace the last and the rear side surfaces being in opposed relation; and means connected to the wipers to translate them forwardly across the insole and to concomitantly swing the front side surfaces toward each other and the rear side surfaces away from each other about a vertex located on the line of symmetry of the wipers no further rearwardly than the rear side surfaces to cause the front side surfaces to fold the lasting margin of the upper against the insole; the improvement comprising: a recess in the undersurface of a first one of said wipers; a bridging element on the second wiper, having an undersurface that is coplanar with the wiper undersurfaces, extending from the rear side surface of the second wiper past the rear side surface of the first wiper into said recess with the rear end of the bridging element contiguous to the rear end of the recess, said bridging element end and recess end being located on an arc whose center of curvature lies at said vertex.

5. In an end lasting machine that includes: a shoe support for supporting a last having a shoe upper and insole thereon; a pair of symmetrically disposed wipers having flat coplanar undersurfaces, each wiper having a front side surface and a rear side surface located rearwardly of the front side surface, the front side surfaces being forwardly divergent to embrace the last and the rear side surfaces being in opposed relation; and means connected to the wipers to translate them forwardly across the insole from a retracted position to a forward position and to concomitantly swing the front side surfaces toward each other and the rear side surfaces away from each other about a vertex located on the line of symmetry of the wipers no further rearwardly than the rear side surfaces to cause the front side surfaces to fold the lasting margin of the upper against the insole; the improvement comprising: a recess in the undersurface of a first one of said wipers; a bridging element on the second wiper, having an undersurface that is coplanar with the wiper undersurfaces, extending from the rear side surface of the second wiper past the rear side surface of the first wiper into said recess with the rear end of the bridging element being contiguous to the rear end of the recess, said bridging element end and recess end being located on an arc whose center of curvature lies at said vertex; and a lip on the bridging element that, in the retracted position of the wipers, projects forwardly of the front side surface of the first wiper.

6. The lasting machine according to claim 5 where said vertex is located at the juncture of the front side surfaces and rear side surfaces.

7. The lasting machine according to claim 6 wherein the front end of the bridging element is substantially coextensive with the front side surface of the second wiper and, in the forward position of the wipers, is substantially coextensive with the front side surface of the first wiper.

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