

May 28, 1963

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3,090,980

APPARATUS FOR SHAPING AND LASTING THE HEEL END OF SHOES

Filed Oct. 3, 1962

2 Sheets-Sheet 1

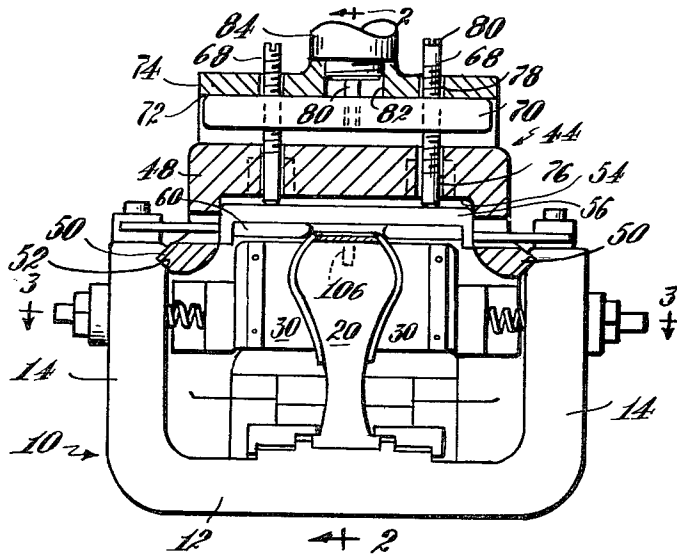


Fig. 1

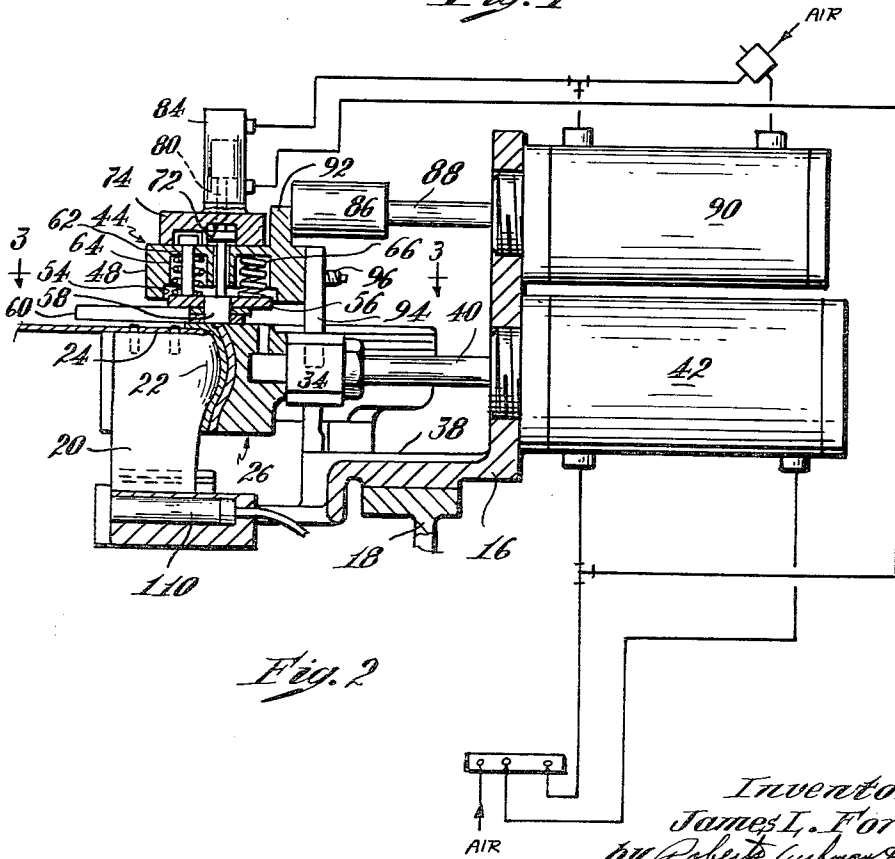


Fig. 2

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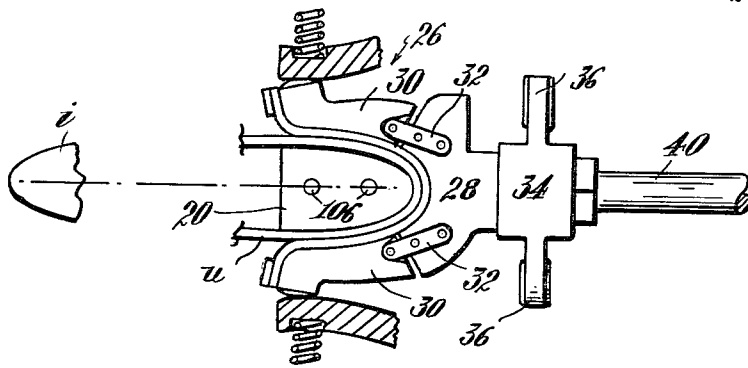


Fig. 3

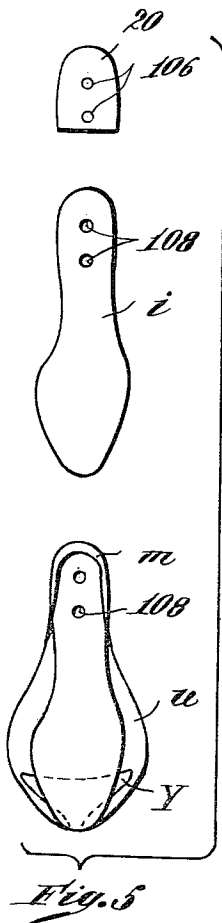


Fig. 5

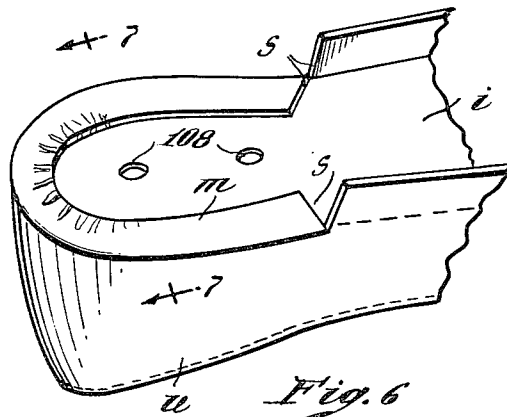


Fig. 6

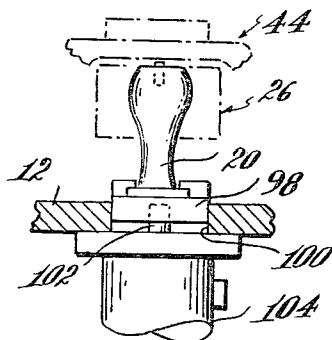


Fig. 4

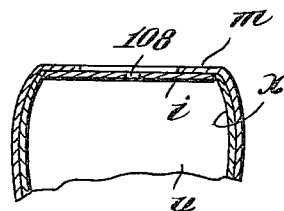


Fig. 7

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3,090,980

APPARATUS FOR SHAPING AND LASTING THE HEEL END OF SHOES

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19 Claims. (Cl. 12—12.5)

This invention relates to shoes and to an apparatus and method for making the same.

The principal objects of the invention are to control the relative position of an upper and insole while the upper is being shaped to the back part of a form and the margin is being wiped in over the insole and secured there, in such fashion that the median line of the upper will lie along the median line of the insole and hence the tip of the upper and the tip of the insole will coincide, an especially important factor in the manufacture of women's pointed toe shoes in order to insure symmetry at the toe; to provide for conforming and uniting of the heel seat flange to the insole more effectively; to eliminate retractive forces which tend to lessen the effectiveness of the shaping operation and to loosen the lasting margin; and to provide apparatus which is both efficient and simple for carrying out the foregoing objects.

As herein illustrated, the apparatus comprises a heel end form having a heel end and heel seat adapted to have an upper assembly drawn about the heel end with its lasting margin projecting from the heel end beyond the seat and with its median line coinciding with the median line of an insole disposed against the heel seat; articulated conforming means movable from a retracted position into engagement with the upper to conform the upper to the heel end of the form; a wiper movable from a retracted position parallel to the heel seat into engagement with the projecting margin to fold the margin against the insole; means yieldably urging the wiper toward the heel seat, during the wiping movement; means for effecting relative movement between the wiper and the heel seat following wiping to increase the pressure; means for effecting non-parallel relative movement of the wiper and form, prior to retraction of the wiper, to separate the wiper from the lasting margin, and means for then retracting the articulated conforming means and the wiper. Separation of the wiper from the lasting margin may be effected either by raising the wiper away from the heel seat or by lowering the form relative to the wiper. The positioning means is on the heel seat and is operable, by engagement with the heel end of the insole, to hold the latter with its longitudinal median line coinciding with the longitudinal median line of the heel seat. Preferably the positioning means comprise a pair of spaced pins fixed to the bottom of the form for engagement with openings formed in the heel end of the insole.

The invention will now be described in greater detail with reference to the accompanying drawings wherein:

FIG. 1 is a front elevation of a molding unit partly in section;

FIG. 2 is a vertical section taken on the line 2—2 of FIG. 1;

FIG. 3 is a fragmentary plan view of the apparatus, partly in section, taken on the line 3—3 of FIG. 2, with the wiping means omitted;

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FIG. 4 is a front elevation similar to FIG. 1, to smaller scale, showing an alternative form;

FIG. 5 shows, in succession, a form, an insole, and an upper together with an insole assembled on the form with the lasting margin at the heel end secured to the insole and with the tips of the upper and insole coinciding;

FIG. 6 is a perspective view of the heel end of an upper and insole assembly formed on the apparatus, showing the lasting margin notched at the breast line of the heel; and

FIG. 7 is a vertical section taken on the line 7—7 of FIG. 6.

The forming apparatus which illustrates the invention is of the type shown in the patents to Lauretti, Nos. 3,007,182, granted November 7, 1961 and 2,915,765, granted December 8, 1959. A single-forming unit is shown herein, however, there may be a plurality of such units, for example two of them arranged side-by-side, so that first one and then the other may be used, or a series mounted on a rotary structure, as shown in the aforesaid patents. For the purpose of this invention, a description of the construction and operation of one unit suffices, it being understood however, as mentioned above, that two or more units may be used in whatever fashion seems to be expedient.

Referring to FIGS. 1 and 2, the molding unit comprises a rigid box-like casting 10 having a bottom wall 12, spaced, parallel, upstanding walls 14—14 and a rear wall 16, the casting being fixed in an upright position on an appropriate support 18. The bottom wall of the casting, in the preferred form of the invention, rigidly supports a form 20, corresponding in shape to the heel end of a shoe, which has a heel end portion 22 and a heel seat portion 24.

A heel end conforming device 26 is mounted on the casting rearwardly of the form 20 for movement from a retracted position toward the heel end of the form 20 to wrap an upper about the heel end and to hold it there-against with its lasting margin projecting upwardly from the heel seat. The conforming device 26 (FIG. 3) comprises a rigid center part 28 and rigid side parts 30 hinged together by links 32 and supported for movement in a horizontal plane parallel to the heel seat of the form by a support 34 (FIG. 2) having transversely spaced legs 36—36 which slidably engage a flat bearing surface 38 at the bottom of the casting. A piston rod 40, connected to the rear side of the support 34 and extending rearwardly therefrom through the wall 16 into a cylinder 42 which is fixed to the wall 16, provides for effecting movement of the articulated conforming device 26 into and out of engagement with the form. The legs 36—36, as is pointed out in the Lauretti patents referred to above, hold the conforming device 26 in alignment with the form, preventing any twisting thereof during the application of pressure, and the cylinder 42 provides for applying a uniform pressure which is substantially non-yielding as distinguished from spring pressure.

A wiper assembly 44 (FIGS. 1 and 2) is mounted on the casting above the form 20 for movement in a plane parallel to the plane of the heel seat. The assembly (FIG. 1) comprises a rigid carrier plate 48, at the opposite edges of which are downwardly projecting, laterally extending flanges 50—50 slidably engaged with horizontally disposed recesses on the inside of the walls

14—14, near their upper edges, so that the carrier straddles the form 20. The carrier plate 48 has in its underside, between the flanges 50—50, a shallow recess 54 into which slidably fits a rigid plate 56 carrying a downwardly projecting pin 58. A pair of wiper blades 60—60, such as shown, for example, in the Lauretti patent, No. 3,007,182 (FIGS. 6 and 7), are pivotally mounted on the pin 58. Bolts 62, extending downwardly from the upper side of the plate 48 through enlarged openings 64 therein and threaded at their lower ends into the plate 56, hold the latter in the recess 54. Coiled springs 66, disposed within the enlarged openings 64 about the bolts and bearing upon the plate 56, press the wiper blades toward the upper surface of the center and side parts 28 and 30 of the heel end-forming device 26, holding them thereagainst while permitting rocking movement and sliding movement relative to the form.

The springs 66 apply a resilient yielding pressure to the wipers; however, to insure uniting the lasting margin to the insole, additional pressure is applied perpendicular to the plane of the heel seat, after the wipers have been moved into wiping position, by forcing the plate 56 downwardly. This is effected by a pair of screws 68 (FIGS. 1 and 2) threaded into a rigid bar 70, the latter being slidably disposed in a slot 72 in the underside of a block 74 resting on the plate 48 and secured thereto. The lower ends of the screws 68 extend downwardly through enlarged openings 76 into the recess 54 against the upper side of the plate 56 and their upper ends extend upwardly through enlarged openings 78 in the block 74 and are provided with slotted heads 80, by means of which the bit of a screw driver may be employed, to adjust them heightwise. A piston rod 80 is secured to the bar 70, midway between the screws 68—68 and extends upwardly through an opening 82 into a cylinder 84 fastened to the top of the block 74. By supplying a pressure fluid to the cylinder the piston rod may be moved to force the plate 56 and hence the wipers downwardly against the heel seat of the form when added pressure is desired, said additional pressure being relieved prior to retraction of the wipers thereby to avoid pulling the margin away from the insole.

The carrier 44, as previously related, is movable forwardly and rearwardly relative to the form. Forward movement is effected following forward movement of the conforming unit 26 by a ram 86 fastened to the forward end of a rod 88 which extends from a cylinder 90 fastened to the wall 16. The ram forces the carrier forwardly by engagement with a flange 92 projecting upwardly from its rear side. As previously pointed out, during such forward movement, the wiper blades are held engaged with the upper surfaces of the conforming means by the springs 66, so that, as they pass over the upwardly standing edges of the lasting margin, they yieldably press the latter into engagement with the heel seat and will yield with any variations in thickness of the lasting material. Retraction of the wipers after the additional pressure has been relieved is effected by a finger 94 (FIG. 2) fastened to the rear side of the carrier by a screw 96 with its lower end projecting downwardly behind the support 34, so that when the latter is retracted the carrier assembly will be retracted.

As shown in FIGS. 1 and 2, relief of the additional downward pressure on the wipers is effected by the motor device 84, following the attachment of the margin to the heel end of the insole, by releasing the pressure fluid from the cylinder of the motor device. Alternatively, as shown in FIG. 4, the form 20 may be secured to a block 98 slidable in an opening 100 in the bottom 12 of the casting 10 and fixed for vertical movement relative to the plane of the wipers to a piston rod 102 protruding from a cylinder 104, the latter being mounted on the underside of the casting. In FIG. 4, the end-forming device 26 and the wiper assembly 44 are shown in dotted lines relative to the form 20. In this arrangement, pressure fluid admitted to the cylinder 104 raises the form bodily relatively to

the wiper carrier thus increasing the pressure of the wipers on the lasting margin, while release of pressure from the cylinder 104 allows the form 20 to move downwardly to its normal position away from the wipers thus decreasing the pressure exerted by the wipers against the wiped-in margin of the upper so that when the wiper carrier is retracted the wipers do not tend to drag the inlasted margin of the upper away from the insole.

Of primary importance is the provision of means for aligning the upper U and insole I as shown in FIG. 5, so that the median line of one coincides with that of the other, both during the forming operation and during wiping and uniting of the heel seat flange to the insole, so that when the upper and insole are secured and are assembled on a last for fore-part lasting, the tip of the insole and the tip of the upper will coincide. This is effected herein by mounting a pair of rigid pins 106—106 on the heel seat of the form 20 at the median line thereof and by punching a corresponding pair of properly positioned holes 108—108 in the heel end of the insole. Thus, when the insole is mounted on the heel form 20 with the holes 108—108 impaled on the positioning pins 106—106, the insole is rigidly held in proper relation to the form without requiring any care or manipulation by the operator. Hence, when the upper is drawn onto the form and the tip of the toe is pulled into registration with the tip of the insole (FIG. 5), the upper is bound to be in correct position with respect to the insole. This relation is held during the heel end-forming and heel seat wiping operation merely by grasping the upper and holding its toe end properly positioned relatively to the tip of the rigidly held insole.

The heel end-forming may be accompanied and assisted by heating the heel end form 20 and to this end a heating element 110 (FIG. 2) is inserted in a suitable opening in the bottom wall of the casting close to the form so as to supply heat thereto by conduction.

The lasting margin at the heel seat is united to the insole by means of adhesive and this may be applied to the lasting margin prior to pulling the upper onto the form, that is, the lasting margin may be precoated or the adhesive may be applied just before the wipers are brought into engagement with the lasting margin with a suitable applicator. Preferably, to insure uniform seating of the lasting margin at the heel end, the margin is slashed or notched as shown at S (FIG. 6), so that the forward ends of the heel seat flange may be forced downwardly into engagement with the heel seat area of the insole and so that the pulling-over operations subsequently applied, for example with the assistance of pinchers, will not tend to pull the flange away at the heel seat. As illustrated in FIG. 7, when the margin is slashed as shown in FIG. 6 and the lasting margin wiped in and pressed down as related above, a very flat, compact and well-bounded structure is provided.

A lining and stiffener represented at X (FIG. 7) are provided at the heel end and a stiffener Y at the toe (FIG. 5). The lining and stiffener at the heel end are shown extending downwardly to the underside of the insole but not beneath it, however, it is to be understood that if expedient they may have margins coextensive with the upper material and be lasted-in with the upper material against the underside of the insole, in which case, they will be coated with a suitable adhesive.

The cylinders 42, 90 and 84 are supplied with pressure fluid through conduits shown diagrammatically in FIG. 2. By means of suitable valves the cylinders are operated in sequence, first to advance the conforming assembly, then to advance the wiper assembly and, following movement of the wiper assembly into a position above the form, to press the wipers against the overlaid heel seat flange. Full pressure is maintained against the heel seat until the adhesive has time to set whereupon the flow of fluid pressure to the cylinders is reversed to release the additional pressure; retract the conforming assembly and retract the ram. Retraction of the conforming assembly retracts the

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wiper assembly. In the alternative form of the invention as illustrated in FIG. 4, wherein the wipers are fixed and the form is raised and lowered relative thereto, the sequence of operation is modified to the extent that before the forming assembly is retracted the form is lowered to its normal position.

According to the method of shoe making herein illustrated, an insole which has been pre-punched to provide the holes 103 is placed over the pins 106 on the form thus aligning its median line with the median line of the form. An upper, closed at its heel end, is then drawn about the heel end of the form, pulled forwardly thereon and shifted to right-or-left to bring the tip of the toe into coincidence with the tip of the insole. If the margin has been pre-coated, the forming and wiping operations follow immediately but, if not, adhesive is applied to the lasting margin or to the insole adjacent the edge whereupon the forming and wiping operations are performed. Heat may be employed to assist in activating the stiffener if a stiffener is employed, and/or to assist in setting the adhesive.

Having secured the heel end of the upper to the heel end of the insole so that the tips of the upper and insole coincide, the assembly is removed from the form and placed on a conventional last for the purpose of lasting the toe and sides. Because of the preceding conforming operation, the assembly will lie on the last with the tip of the insole coinciding with the tip of the last so that the lasting may be effected easily and accurately without having to secure the insole to the bottom of the last by means of tacks as is ordinarily necessary.

Because of the fact that the distance between the heel end of the upper and the breast line is substantially the same for a wide range of sizes, a form provided with the positioning pins, such as disclosed herein, can be used for as many as four full and half sizes without having to be changed.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. Shoe making apparatus of the kind in which the lasting margin of the heel end of an unlasted shoe upper is lasted-in and permanently secured by adhesive to an insole before the upper and insole are assembled with a last, and which comprises a stationary rigid form having a peripheral upper-shaping rear surface, of a shape complementary to that of the inner surface of the heel end portion of the upper of a shoe to be made, and a substantially flat, horizontal top face constituting a support for the heel-seat end of an insole, and wherein insole-positioning elements project upwardly from said top face of the form for cooperation with holes in the insole thereby to position the insole in exact predetermined relation to the form, and having wipers operative to wipe the adhesively coated lasting margin of an upper over and into adhering contact with the insole, in combination, a movable wiper carrier, means supporting and guiding said wiper carrier to move in a path substantially parallel to the plane of the flat top face of the form, said wiper carrier being movable forwardly from a normal, rearward, inoperative position in which it leaves the form unobstructed so as to permit assembly of an insole and upper with the form to a forward, operative position such that a portion, at least, of said wiper assembly is disposed directly above the flat top face of the form, means operative to apply pressure to the upper thereby to conform it to said peripheral surface of the form, means operative, subsequent to the application of such upper-conforming pressure, to advance the wiper carrier to said operative position above the form while concomitantly causing the wipers to wipe the lasting margin of the heel end of the upper in over the insole while applying resilient downward pressure to the wipers, means operative thereafter to apply positive downward force to the wipers for a

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predetermined interval of time, and means whereby the application of said positive downward force is terminated before the wiper carrier is restored to its normal position.

2. Shoe making apparatus according to claim 1, further characterized in having a fluid-pressure motor operative to apply positive downward force to the wipers subsequent to the performance of their inwiping operation.

3. Apparatus for use in the manufacture of shoes comprising a rigid form having a peripheral, upper-shaping surface of a shape complementary to that of the inner surface of the heel end portion of the upper of the shoe to be made, and a substantially flat top face constituting a support for the heel-seat end of an insole; articulated upper-conforming means slidable horizontally from a normal inoperative position, rearwardly of the form, forwardly into engagement with the heel end of an upper assembled with the form thereby to press the upper into contact with the upper-shaping peripheral surface of the form, a wiper assembly movable horizontally from a normal inoperative position, rearwardly of the form, forwardly into engagement with the lasting margin of said upper to wipe said margin over onto the heel end of an insole resting upon said top surface of the form, independent fluid-pressure motors operative, respectively, to advance the upper-conforming means and the wiper assembly, successively, into operative relation to the form, and another fluid-pressure motor operative to urge the wiper and said top surface of the form relatively toward each other, after completion of the wiping-in of the lasting margin, thereby to apply additional pressure to the margin, means for reducing said pressure prior to retraction of the wiper, and means operative thereafter to retract the articulated conforming means and the wiper.

4. Apparatus for use in the manufacture of shoes comprising a vertically movable rigid form having a peripheral upper-shaping surface of a shape complementary to that of the inner surface of the heel end portion of the upper of the shoe to be made, and a substantially flat, horizontal top face constituting a support for the heel-seat end of an insole, an articulated upper-conforming assembly mounted for horizontal movement from a normal retracted position into engagement with the heel end of an upper assembled with the form thereby to conform the upper to the peripheral upper-shaping surface of the form, a wiper assembly including relatively movable wipers, said latter assembly being bodily movable horizontally, from a normal retracted position to a position directly above the form, thereby to engage the wipers with the lasted margin of an upper assembled with the form and to wipe said lasting margin over onto the heel portion of an insole resting upon said top surface of the form, means whereby, after the inwiping operation is complete, force is applied to the wipers such as to press the lasting margin into intimate engagement with the insole, means whereby the application of said force to the wipers is terminated prior to retraction of the wiper assembly, and means operative thereafter to retract both the articulated upper-conforming means and the wiper assembly.

5. Apparatus according to claim 4, further characterized in having means for moving the entire form vertically relatively to the wipers for applying pressure to the wipers subsequent to the inwiping operation and for terminating the application of said pressure before retraction of the wiper assembly.

6. Apparatus for use in the manufacture of shoes comprising a stationary, rigid form having a peripheral upper-shaping surface of a shape complementary to that of the inner surface of the heel end portion of the upper of the shoe to be made, and which has a substantially flat top face constituting a support for the heel-seat end of an insole, positioning means projecting from said top surface of the form engageable with the insole to hold the latter in exact predetermined relation to the form, an articulated upper-conforming assembly supported for bodily movement toward and from said upper-shaping surface of

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the form, fluid motor means operatively connected to the articulated conforming assembly for moving the latter, a wiper assembly, including wiper elements, supported to move from a normal retracted position toward the form while keeping the wiper elements in a plane parallel to the top face of the form, fluid motor means for moving the wiper assembly, means on the wiper assembly yieldably pressing the wiper elements toward the top face of the form during the inwiping of the margin of the upper thereby to force the margin of the upper into contact with the insole, fluid motor means for relatively moving the wiper elements and the top face of the form, thereby to separate the wiper elements from the wiped-in upper, and control means operable to effect operation of the several fluid motor means, in sequence, so as to advance the articulated upper-conforming assembly, then to advance the wiper assembly, and then to separate the wiping elements from the top face of the form, and means operable, by retraction of the articulated upper-conforming assembly, to retract the wiper assembly.

7. Apparatus for use in the manufacture of shoes comprising a stationary, rigid form having a peripheral upper-shaping rear surface of a shape complementary to that of the inner surface of the heel end portion of the upper of a shoe to be made and a substantially flat top face constituting a support for the heel seat end of an insole, insole-positioning means projecting from said top face of the form and which is engageable with an insole to hold the latter in exact predetermined relation to the form, an articulated upper-conforming assembly having a plane surface parallel to said top face of the form and which is supported for movement toward and from the upper-shaping peripheral surface of the form, a wiper assembly, including a wiping element, slidably supported on said plane surface of the articulated upper-conforming assembly, the wiping element being in a plane parallel to said plane surface, the wiping assembly comprising means yieldably urging the wiping element toward said plane surface, said wiping assembly being movable relatively to the articulated upper-conforming assembly, fluid motor means for advancing the articulated upper-conforming assembly toward the upper-shaping surface of the form while the wiping assembly remains in normal retracted position, fluid motor means operative thereafter to move the wiping assembly along said plane surface of the upper-conforming assembly to a position such that it is above the top face of the form while the upper-conforming assembly remains in its advanced position; characterized in having fluid motor means operable, so relatively to move the form and wiper assembly, as to separate the wiper element from the wiped-in margin of the upper after the completion of the inwiping operation, control means for effecting operation of the several fluid motor means, in sequence, thereby first to advance the articulated conforming assembly, then to advance the wiper assembly, then to separate the wiper element from the wiped-in margin of the upper, and then to retract the articulated conforming assembly, and means operable, in response to retraction of the articulated conforming assembly, to restore the wiper assembly to its retracted normal position.

8. Apparatus for use in the manufacture of shoes comprising a stationary, rigid form having a peripheral upper-shaping rear surface of a shape complementary to that of the inner surface of the heel end portion of the upper of a shoe to be made and a top face constituting a support for the heel end of an insole, insole-positioning means fixed relatively to the form and which is operative to position an insole in exact predetermined relation to the form, an upper-conforming assembly supported for movement from a retracted position to an advanced position wherein it is operative to conform the rear portion of the upper of a shoe to the upper-shaping surface of the form, said conforming assembly having a flat upper surface parallel to the top face of the form, a wiper as-

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sembly, including a wiper element, supported to slide along said flat surface of the conforming assembly for movement relatively thereto, means for resiliently urging the wiper element toward the plane of said flat surface, the flat surface of the conforming assembly providing support for the wiper assembly both in the retracted and advanced positions of the latter, the wiper assembly being movable from normal retracted position to an advanced position where it is above the top surface of the form; characterized in having means operable alternatively to cause the wiper element and the top face of the form relatively to approach or to retreat from each other, fluid motor means including a piston rod, operatively connected to the conforming assembly, to advance and retract the conforming assembly, fluid motor means, including a ram, for advancing the wiper assembly from retracted to operative position, and means operative, in sequence, to advance the conforming assembly, then to advance the wiper assembly, then to cause the wiper element and top face of the form relatively to retreat from each other, and then to retract the articulated conforming assembly and the wiper assembly.

9. Apparatus for use in the manufacture of shoes comprising a stationary, rigid form having a peripheral upper-shaping rear surface of a shape complementary to that of the inner surface of the heel end of the upper of a shoe to be made, and a top face constituting a support for the heel-seat end of an insole, insole-positioning elements fixed to the form and which are engageable with an insole thereby to position the insole in exact predetermined relation to the form, an articulated upper-conforming assembly supported for movement from a normal retracted position toward the upper-shaping surface of the form, said conforming assembly having a flat upper surface in a plane parallel to the top face of the form, a wiper assembly, including a wiper element, supported on said flat surface of the upper-conforming assembly for sliding movement relative to the latter, means resiliently urging the wiper element toward the plane of said flat surface, said flat surface providing support for the wiper assembly both in the retracted and advanced positions of the latter, the wiper assembly being movable along said surface from a normal retracted position to an advanced position where it is directly above the flat top surface of the form; characterized in having fluid motor means supporting the form for movement perpendicularly to the plane of the wiper element, said fluid motor means being operable to urge the top face of the form toward the wipers, following the wiping-in operation, thereby effectively to unite the margin of the upper to the insole, and said motor means being operable thereafter to restore the top face of the form to its initial position relatively to the wipers so as to release the pressure of the wipers on the wiped-in margin of the upper.

10. Apparatus of the kind wherein a stationary, rigid form provides support for an insole and an unlasted upper while the lasting margin of an unlasted upper is wiped-in over the insole, means for applying shaping pressure to the upper, and which comprises wipers and means for moving the wipers thereby to perform their intended inwiping function, spring means yieldably urging the wipers toward an insole supported by the form during the inwiping operation, and a fluid-pressure motor operative to apply unyielding force directly to the wipers, after completion of the inwiping operation, of an intensity substantially greater than that occasioned by the springs.

11. Apparatus of the kind wherein a rigid form provides a support for an insole and an unlasted upper while the lasting margin of an upper is wiped-in over the insole, means for applying pressure to the upper, wipers and means for moving the wipers thereby to perform their intended inwiping function, springs which resiliently urge the wipers toward an insole supported by the form during the inwiping operation, a fluid-pressure motor com-

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prising a piston and piston rod, and means operative to transmit motion from the piston rod directly to the wipers thereby unyieldingly to press the wipers against the inwiped margin of the upper with a pressure substantially exceeding that of the springs.

12. Shoe making apparatus of the kind in which the lasting margin of the heel end of an unlasted shoe upper is lasted in and permanently secured to an insole before the upper and insole are assembled with a last, and which comprises a stationary, rigid form having a peripheral upper-shaping surface of a shape complementary to that of the inner surface of the heel end portion of the upper of the shoe to be made, and a substantially flat top face constituting a support for the heel-seat end of an insole, in combination, upper-conforming means movable in a plane substantially parallel to said top face of the form, operative to apply pressure to the heel end of the upper thereby to conform it to the upper-shaping surface of the form, a wiper assembly movable in a plane substantially parallel to the top face of the form for wiping the lasting margin of the upper inwardly over an insole whose heel end portion is supported by the form, and a fluid-pressure motor comprising a cylinder, a piston therein, and a piston rod connected to the piston, and rigid means operative to transmit motion of the piston rod directly to the wipers thereby to force the wipers toward the insole with substantially unyielding pressure.

13. Apparatus of the kind which comprises a rigid form operative to support an insole and the heel end of an unlasted upper while the lasting margin at the heel end of the unlasted upper is wiped in over the insole, means for applying shaping pressure to the heel end portion of the upper, and wipers mounted upon a horizontally movable carrier which is normally in a retracted position thereby to leave the form unobstructed for the assembly therewith of an insole and unlasted upper, and comprising means for advancing the wiper carrier forwardly, in a path substantially parallel to the insole supporting surface of the form, to a position where it is directly above the form, means for actuating the wipers thereby to wipe in the margin of an upper over the heel end portion of an insole mounted on the form, and power-actuated means operative, at the completion of the inwiping operation, to move the form and wipers relatively toward each other thereby so to increase the pressure of the wipers against the inwiped margin of the upper as to insure intimate contact of said margin with the insole.

14. Apparatus according to claim 13, further characterized in having control means for said power-actuated means so constructed and arranged that the power-actuated means moves the form and wipers relatively away from each other before the wiper carrier is retracted from its advanced position.

15. Shoe making apparatus of the kind in which the lasting margin of the heel end of a shoe upper is lasted in and permanently secured to an insole, and which comprises a stationary, rigid form having a substantially flat top face constituting a support for the heel seat end of an insole and having wipers operative to wipe the lasting margin of an upper over and into contact with the insole, spring means yieldably urging the wipers against said lasting margin, a wiper carrier normally so positioned as to leave the form unobstructed thereby to permit assembly of an insole and upper with the form, and wherein the wiper carrier comprises a rigid housing, means guiding the housing to slide from a normal retracted position to an operative position where it is directly above the form, said housing having a cavity in its underside within which is arranged a vertically movable plate, means pivotally connecting wipers to said plate, and spring means constantly urging the plate downwardly; characterized in having a motor device mounted upon said housing, and means for transmitting force from the motor device to said plate whereby the wipers are caused to press the

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wiped-in margin of the upper into intimate contact with an insole supported by the form.

16. Apparatus according to claim 15, further characterized in that the motor device is a fluid-pressure motor including a cylinder, a piston therein, and a piston rod secured to the piston, a rigid bar arranged for vertical movement in a chamber in the wiper carrier housing, means for transmitting vertical motion of said bar to the plate to which the wipers are pivotally connected, and means connecting the piston rod to said bar whereby motion of the piston in the cylinder is transmitted to the wiper carrier plate.

17. Apparatus according to claim 15, wherein, for transmitting motion from the vertically movable bar to the vertically movable wiper-carrying plate, a pair of screw-threaded rods extend through threaded holes in the bar and have their lower ends contacting the upper surface of the wiper-carrying plate, said rods being vertically adjustable thereby to vary the amount of movement of the wiper-carrying plate in response to the motion of the piston in the cylinder.

18. Apparatus for use in the manufacture of shoes comprising a rigid, box-like frame having a bottom wall, spaced parallel side walls and a rear wall, a rigid form having a peripheral, upper-shaping rear surface of a contour complementary to that of the inner surface of the heel end portion of an unlasted shoe upper and having a substantially horizontal, flat upper face constituting a support for the heel end of an insole; upper-conforming means guided for movement forwardly along the bottom wall of the frame from a normal, rearward, inoperative position into operative engagement with the heel end of a shoe upper assembled with the form thereby to press the upper into contact with the upper-shaping peripheral surface of the form, a wiper assembly comprising a support comprising laterally spaced parts slidable in grooves in the respective side walls of the frame, the wiper assembly being normally disposed rearwardly of the form, wipers mounted upon said wiper support, the latter being movable forwardly to an operative position in which a portion, at least, of the wiper assembly is disposed directly above the form, fluid-pressure motors operative to advance the upper-conforming means and the wiper assembly forwardly from their retracted positions into operative position relatively to the form, and pressure-motor means operative to apply downward pressure to the wipers while the latter are in inwiping position.

19. Apparatus for use in the manufacture of shoes comprising a rigid, box-like frame having a bottom wall, spaced parallel side walls and a rear wall, a stationary rigid form having a peripheral, upper-shaping rear surface of a shape complementary to that of the inner surface of the heel end portion of the upper of a shoe to be made and a substantially flat horizontal top face constituting a support for the heel end of an insole, said form being mounted on the bottom wall of the frame, an upper-conforming device, comprising a support arranged to slide forwardly and rearwardly relatively to the form, means for moving said support comprising a pressure-fluid motor external to the frame and fixed relatively to the rear wall of the latter and comprising a piston and a piston rod, the latter passing through an opening in the rear wall of the frame and being operatively connected to said conforming device, a wiper assembly arranged to move in a plane parallel to the flat top face of the form, said assembly comprising a rigid supporting element, the latter having parts which slide in guides at the side walls of the frame and a pair of wipers mounted on said support, a pressure-fluid motor located rearwardly of the rear wall of the frame and fixedly secured to the latter, said pressure-fluid motor having a piston and piston rod, the latter passing through an opening in the rear wall of the frame and being operatively attached to the supporting element of the wiper assembly, and a pressure-fluid motor comprising a cylinder mounted upon the support-

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ing element of the wiper assembly and movable bodily with the latter and having a vertically movable piston and a piston rod whose lower end is so related to the wipers that, by the admission of pressure fluid to said last-named cylinder, downward force is applied to the wipers.

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