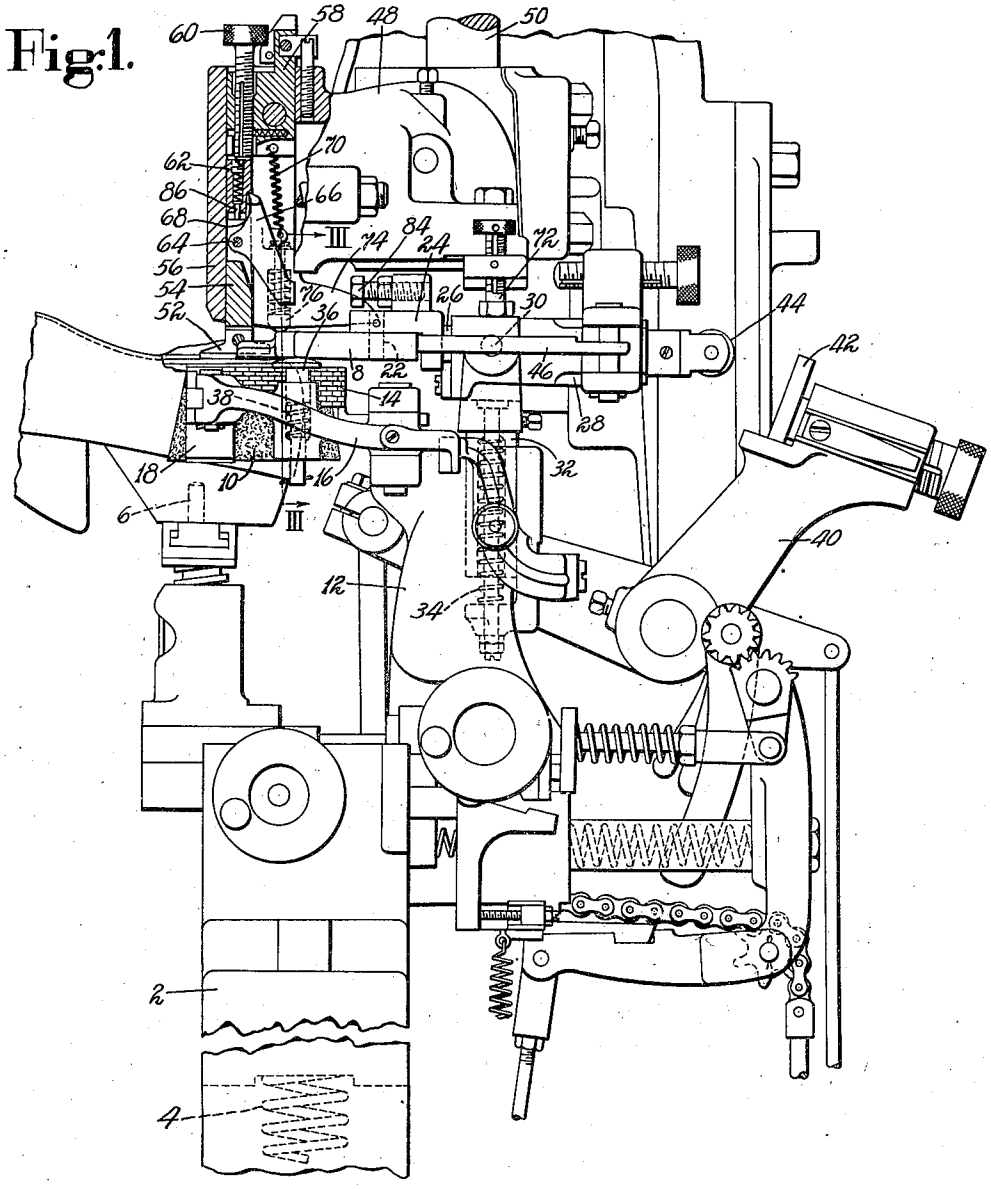
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LASTING MACHINE

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Fig. 1.



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Fig. 2.

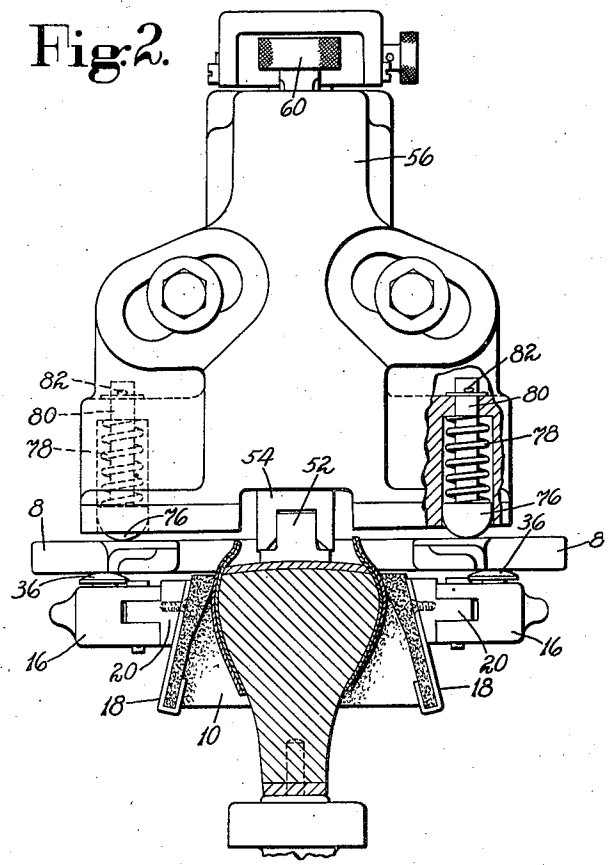


Fig. 3.

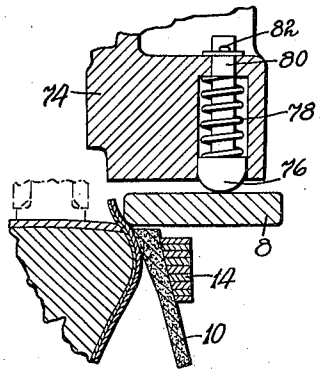


Fig. 4.

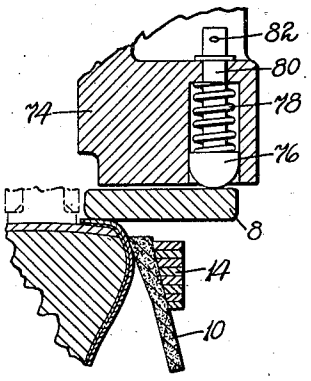
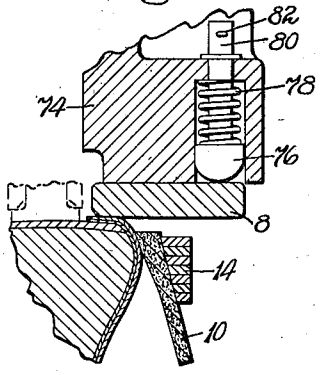


Fig. 5.



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UNITED STATES PATENT OFFICE

2,278,428

LASTING MACHINE

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Application March 12, 1941, Serial No. 382,969

8 Claims. (Cl. 12—12)

This invention relates to lasting machines, and is herein illustrated as applied to a machine organization of the same general character as disclosed in United States Letters Patent No. 1,843,232, granted on February 2, 1932 on an application of B. Jorgensen, but modified in certain respects as further disclosed in Letters Patent No. 1,979,269, granted on November 6, 1934 also on an application of B. Jorgensen. Such machines are commonly used for lasting tennis shoes or the like in which the uppers are secured to insoles by adhesion, and a particular object of the invention is to improve their operation on the heel ends of shoes. It is to be understood, however, that the invention is not limited to machines of that particular type or for operating on shoes of that particular character, and that in various novel aspects also it is not limited to heel-end lasting means.

A machine such as disclosed in the above-mentioned Letters Patent is provided with a work support which in the course of the operation of the machine is depressible with the last and shoe, against the resistance of a spring, by a presser foot engaging the heel end of the insole, this presser foot being normally held in fixed relation to a presser foot support which is movable downwardly with it. For lasting the heel end of the shoe there are provided wipers which by the action of the presser foot support are positioned relatively to the last and shoe heightwise thereof as determined by the engagement of the presser foot with the insole, the presser foot being adjustable relatively to its support to vary the position of the wipers. After the wipers have substantially completed their movements to wipe the margin of the upper inwardly over the insole the presser foot is released from its support, whereupon the spring controlling the work support forces the latter and the shoe up toward the wipers to increase the pressure of the wipers on the margin of the upper.

An object of the present invention is to provide a construction such that wipers, positioned relatively to a last and shoe in the manner above described, will operate with better results than heretofore when the upper materials of different shoes vary substantially in thickness. For the purpose in view, in the construction herein shown, the presser foot support is provided with spring-controlled plungers through which the position of the wipers is determined, these plungers being yieldingly movable with the wipers heightwise of the last in response to pressure of the margin of the upper on the wipers as the upper is wiped inwardly over the insole. Accordingly, the presser foot may be so adjusted that in operating on comparatively thin upper materials the wipers will apply to the margin of the upper sufficient pressure for the best results in wiping it inwardly over the insole, without any danger that the wipers will fail to operate satisfactorily because of too much resistance of the upper when the upper materials are substantially thicker. Notwithstanding such yielding control of the wipers in the wiping operation, adequate final pressure of the wipers on the margin of the upper is insured, upon release of the presser foot as heretofore, by reason of the fact that the presser foot support then acts positively to control the wipers as the work support is forced upwardly.

The above and other features of the invention, including various novel details of construction and combinations of parts, will now be more particularly described with reference to the accompanying drawings and thereafter pointed out in the claims.

In the drawings,

Fig. 1 is a view mainly in front elevation of a portion of a machine of the illustrated type with the present invention embodied therein, parts of the structure being broken away;

Fig. 2 shows in elevation a portion of the structure shown in Fig. 1 as viewed from the left of that figure, with parts broken away; and

Figs. 3, 4 and 5 are sectional views on the line III—III of Fig. 1, showing one of the wipers and parts associated therewith as they appear at different times in the lasting operation.

As disclosed especially in Letters Patent No. 1,979,269, a machine of the illustrated type is provided with a work support slide 2 vertically movable in guideways in the frame and depressible against the resistance of a spring 4, the slide carrying a last pin 6 arranged to enter the spindle hole in the heel end of the last. For lasting the heel end of the shoe there are provided a pair of wipers 8 and a flexible heel band 10, these parts being carried by a support 12 which is vertically movable with the work support slide 2 and is also movable lengthwise of the shoe relatively to the slide 2 to apply the heel band around the heel end of the shoe. The heel band comprises a flexible member of leather or other suitable material mounted on a chain-like carrier 14 connected at its opposite ends to levers 16 which are mounted on the support 12 for swinging movements laterally of the shoe. In the construction herein shown the heel band, as illus-

trated in Fig. 2, is of such shape as to flare outwardly from the shoe in a downward direction and to engage the upper only in a location comparatively near the edge of the insole, its opposite end portions being supported slidingly in stirrup-shaped metal clips 18 which are fastened to blocks 20 pivotally mounted on the ends of the levers 16. The wipers 8 are mounted for swinging movements about a pin 22 carried by the head 24 of a plunger 26 which is mounted for lengthwise movements and for turning movements in a holder 28. This holder is mounted by means of trunnions 30, only one of which is shown in Fig. 1, on the forked upper end of a plunger 32 which is movable vertically in a recess in the support 12 and is depressible against the resistance of a spring 34. The wipers are further supported directly on the upper ends of plungers 36 which are mounted in the levers 16 and are depressible against the resistance of springs 38. The wipers are advanced lengthwise of the shoe to wipe the margin of the upper inwardly over the insole by movement of the plunger 26 toward the left (Fig. 1) against the resistance of a spring (not shown), this movement of the plunger being effected by a bell-crank lever 40 provided with a plate 42 arranged to engage a roll 44 on the plunger. As the wipers are thus advanced they are closed inward laterally of the shoe through the action of links 46, as fully disclosed in Letters Patent No. 1,979,269, only one of these links being visible in the drawings.

Prior to the operation of the wipers 8 on the shoe the work support 2 with the last and shoe thereon, together with the heel band and the wipers, is moved downwardly against the resistance of the spring 4 relatively to toe-lasting means (not shown) with which the machine is provided. For this purpose the machine has a carrier 48 fast on a rod 50 mounted for turning movements and for vertical movements in bearings in the frame, the carrier supporting a presser foot 52 which by turning movement of the rod is swung into position over the heel end of the insole and by downward movement of the rod serves to depress the shoe and its support 2 together with the above-described heel-lasting means. The presser foot 52 is pivotally mounted on a slide 54 which is vertically movable in a guideway formed in a block 56 on the carrier 48, this block being part of the presser foot support. As fully disclosed in Letters Patent No. 1,979,269, the block 56, like the block 200 therein shown, is so mounted on the carrier 48 as to permit it to tip laterally of the shoe and thus to assume a position in this respect determined by the engagement of the presser foot 52 with the insole. Threaded in a block 58 which is mounted in fixed relation to the block 56 is a screw 60 between the lower end of which and the upper end of the slide 54 is another vertically movable slide 62. Pivotally mounted at 64 on the slide 54 is a latch 66 the upper end of which is arranged to engage a downwardly facing shoulder 68 on the slide 62 to determine the normal position of the slide 54 relatively to the slide 62. Connected to the latch 66 is a spring 70 which not only holds the latch normally in operative position, as illustrated in Fig. 1, but also acts through the latch to urge the slides 54 and 62 upwardly and maintains them, together with the presser foot 52, normally in a relation to the block 56 determined adjustably by the screw 60.

The heel wipers 8 are positioned initially by the spring 34 and the spring plungers 36 in a higher plane relatively to the shoe than their wiping plane, and as the carrier 48 is moved downwardly to carry the presser foot 52 into engagement with the insole, the wipers are depressed thereby to a position determined by the engagement of the presser foot with the insole. For this purpose the carrier is provided as heretofore with a screw 72 arranged to engage the top of the forked upper end of the plunger 32 to move the plunger downwardly, and the block 56 is formed with arms 74 arranged to extend respectively over the different wipers for depressing them and also determining their positions with respect to movement about the axis of the trunnions 30. In the construction herein shown, however, the arms 74, in thus depressing the wipers, are not arranged actually to engage them as heretofore, but act thereon through plungers 76 which are vertically movable in recesses in the arms and are urged in downward directions by springs 78 which are stronger than the previously mentioned springs 38. The plungers have stems 80 extending upwardly through portions of the arms 74 and provided with pins 82 which limit their downward movements under the influence of the springs. It will thus be seen that while the wipers are definitely positioned heightwise of the shoe as determined by the engagement of the presser foot 52 with the insole prior to the wiping operation, the wipers and the plungers 76 may be forced upward against the resistance of the springs 78 in response to pressure of the margin of the upper on the wipers as the upper is wiped inwardly over the insole, as will be evident from a comparison of Figs. 3 and 4. The presser foot 52 may accordingly be so adjusted by the screw 60 that the wipers will wipe the margin of a comparatively thin upper inwardly over the insole with adequate pressure without any danger that the wipers will encounter too much resistance for satisfactory results in operating on substantially thicker upper materials, since in the latter case the wipers will simply be forced farther upward against the resistance of the springs 78 by the pressure of the upper thereon. Furthermore, the provision for such yielding control of the wipers satisfactorily compensates for such variations in the positioning of the wipers as may result from tendency of the presser foot 52 to compress more or less the substance of comparatively yieldable insoles such as are commonly used in the manufacture of tennis shoes. Substantially at the end of the wiping operation of the wipers 8 the latch 66 is operated by the plunger 26 as heretofore to disengage it from the shoulder 68 and thus to release the presser foot 52 and permit the spring 4 by its action on the work support 2 to force the shoe more firmly up against the wipers. In the construction herein shown the latch 66 is thus operated through a screw 84 which is carried by the head 24 of the plunger 26 and engages the lower end of the latch, this screw being adjustable to vary the time of release of the presser foot. Adequate final pressure of the wipers on the margin of the upper at this time is insured by reason of the fact that under the influence of the spring 4 the wipers are lifted until they are engaged positively by the lower faces of the arms 74 of the block 56, as illustrated in Fig. 5.

In the return of the parts to starting positions the slide 54 is moved downward relatively to the slide 62 by a spring-pressed pin 86 in the slide 62 to carry the upper end face of the latch 66 again to the level of the shoulder 68, whereupon

the spring 70 returns the latch to its operative position, as fully disclosed in Letters Patent No. 1,979,269.

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

1. In a lasting machine, the combination with a support for a last having an upper and an insole thereon, of wipers movable to wipe the margin of the upper inwardly over the insole around an end of the last and mounted also for movements heightwise of the last, and a wiper-positioning device supported independently of the wipers and arranged to engage the corresponding end portion of the insole to determine the position of the device relatively to the last heightwise of the last, said device being provided with spring means arranged to position the wipers heightwise of the last as determined by such engagement of the device with the insole prior to the wiping operation and yieldable to permit movement of the wipers heightwise of the last in response to pressure of the margin of the upper thereon as the upper is wiped inwardly over the insole.

2. In a lasting machine, the combination with a support for a last having an upper and an insole thereon, of wipers movable to wipe the margin of the upper inwardly over the insole around an end of the last and mounted also for movements heightwise of the last, and a wiper-positioning device provided with a presser foot arranged to engage the corresponding end portion of the insole and provided also with spring-controlled means for positioning the wipers heightwise of the last as determined by such engagement of the presser foot with the insole prior to the wiping operation, said spring-controlled means being yieldingly movable with the wipers heightwise of the last relatively to the presser foot in response to pressure of the margin of the upper on the wipers as the upper is wiped inwardly over the insole.

3. In a lasting machine, the combination with a support for a last having an upper and an insole thereon, of wipers movable to wipe the margin of the upper inwardly over the insole around an end of the last and mounted also for movements heightwise of the last, and a wiper-positioning device provided with a presser foot arranged to engage the corresponding end portion of the insole and provided also with spring-controlled plungers arranged respectively to engage the different wipers and to position them heightwise of the last as determined by such engagement of the presser foot with the insole prior to the wiping operation, said plungers being yieldingly movable with the wipers heightwise of the last relatively to the presser foot in response to pressure of the margin of the upper on the wipers as the upper is wiped inwardly over the insole.

4. In a lasting machine, the combination with a support for a last having an upper and an insole thereon, of wipers movable to wipe the margin of the upper inwardly over the insole around an end of the last and mounted also for movements heightwise of the last, a presser foot arranged to engage the corresponding end portion of the insole, a block supporting said presser foot and relatively to which the presser foot is adjustable in directions heightwise of the last, and spring-controlled members supported by said block for positioning the wipers heightwise of the last as determined by the engagement of the presser foot with the insole prior to the wiping operation, said spring-controlled members being yieldingly movable with the wipers heightwise of the last relatively to the presser foot in response to pressure of the margin of the upper on the wipers as the upper is wiped inwardly over the insole.

5. In a lasting machine, the combination with a support for a last having an upper and an insole thereon, of wipers movable to wipe the margin of the upper inwardly over the insole around an end of the last and mounted also for movements heightwise of the last, and a wiper-positioning device arranged to engage the corresponding end portion of the insole to determine the position of the device relatively to the last heightwise of the last and provided with spring means arranged to position the wipers heightwise of the last as determined by such engagement of the device with the insole prior to the wiping operation and yieldable to permit movement of the wipers heightwise of the last in response to pressure of the margin of the upper thereon as the upper is wiped inwardly over the insole, said device having means for positively controlling the wipers to increase their pressure on the upper heightwise of the last after the yield of said spring means.

6. In a lasting machine, the combination with a support for a last having an upper and an insole thereon, of wipers movable to wipe the margin of the upper inwardly over the insole around an end of the last and mounted also for movements heightwise of the last, a presser foot arranged to engage the corresponding end portion of the insole, a support for said presser foot, means for preventing relative movement of the presser foot and its support heightwise of the last as the upper is wiped inwardly over the insole and for then releasing the presser foot to permit such relative movement, and spring means on said presser foot support arranged to position the wipers heightwise of the last as determined by the engagement of the presser foot with the insole prior to the wiping operation and yieldable to permit movement of the wipers heightwise of the last in response to pressure of the margin of the upper thereon as the upper is wiped inwardly over the insole, said presser foot support being arranged to act positively on the wipers to increase their pressure on the upper heightwise of the last upon release of the presser foot.

7. In a lasting machine, the combination with a support for a last having an upper and an insole thereon, of wipers movable to wipe the margin of the upper inwardly over the insole around an end of the last and mounted also for movements heightwise of the last, a presser foot arranged to engage the corresponding end portion of the insole, a support for said presser foot, means for preventing relative movement of the presser foot and its support heightwise of the last as the upper is wiped inwardly over the insole and for then releasing the presser foot to permit such relative movement, and spring-controlled plungers on said presser foot support arranged to engage the wipers and to position them heightwise of the last as determined by the engagement of the presser foot with the insole prior to the wiping operation and yieldable to permit movement of the wipers heightwise of the last in response to pressure of the margin of the upper thereon as the upper is wiped inwardly over the insole, said presser foot support being arranged to engage the wipers to increase their pressure

on the upper heightwise of the last upon release of the presser foot.

8. In a lasting machine, the combination with a support for a last having an upper and an insole thereon, of a spring against the resistance of which said support is depressible, a presser foot arranged to engage the heel end of the insole and movable to depress the last and its support, a presser foot support movable with the presser foot, wipers movable to wipe the margin of the heel end of the upper inwardly over the insole and mounted also for movements heightwise of the last, spring means on said presser foot support arranged to position the wipers heightwise of the last as determined by the engagement of the presser foot with the insole prior to the wiping operation and yieldable to permit movement of the wipers heightwise of the last in response to pressure of the margin of the upper thereon as the upper is wiped inwardly over the insole, and means for releasing the presser foot from its support to permit the shoe to be forced more firmly up against the wipers by the spring controlling the last support, said presser foot support being arranged to act positively on the wipers in opposition to said spring as the shoe is thus forced against the wipers.

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