Sept. 22, 1959 J. S. KAMBORIAN 2,904,801

AUXILIARY WIPER FOR TOE LASTING MACHINE

Filed April 18, 1956

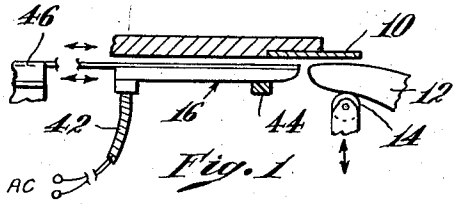

Fig. 1

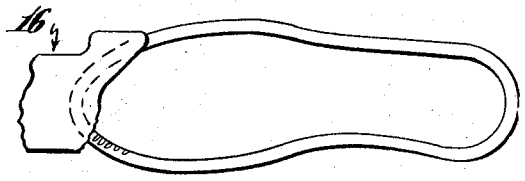

Fig. 7

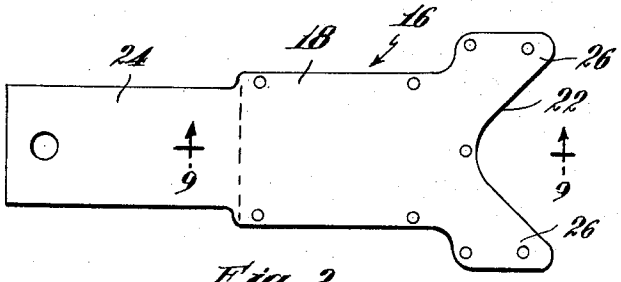

Fig. 2

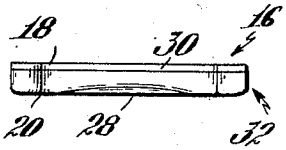

Fig. 4

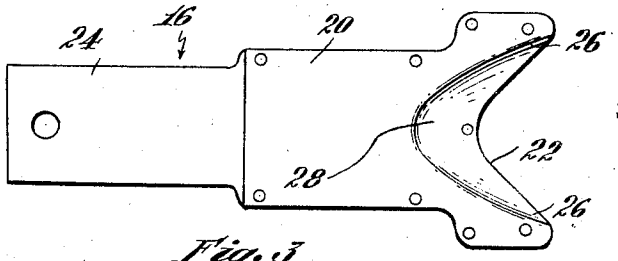

Fig. 3

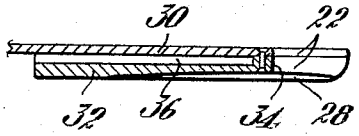

Fig. 9

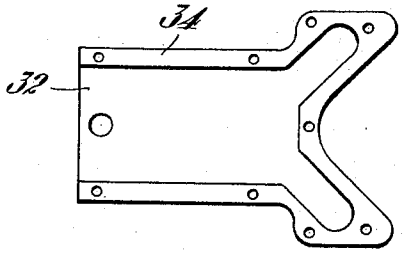

Fig. 8

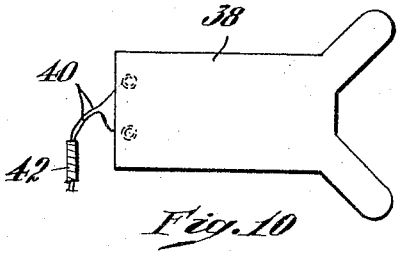

Fig. 10

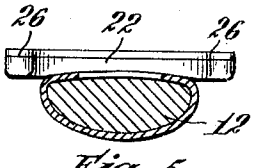

Fig. 5

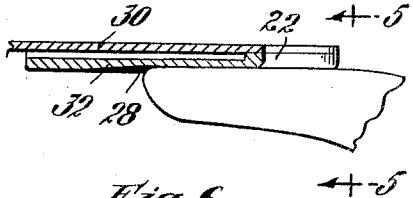

Fig. 6

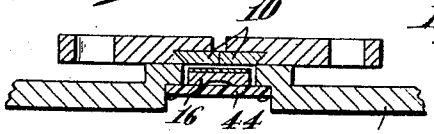

Fig. 11

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Attys

United States Patent Office 2,904,801 Patented Sept. 22, 1959

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AUXILIARY WIPER FOR TOE LASTING MACHINE

Jacob S. Kamborian, West Newton, Mass.

Application April 18, 1956, Serial No. 579,042

2 Claims. (Cl. 12—12.4)

This invention relates to toe lasting machines of the kind in which a last with an upper assembled thereon and fastened in place by lasting tacks is held by a support in a position to be operated on by a pair of wipers which are movable relative to the last to gather the lasting margin in about the toe and press it firmly down against the bottom. In accordance with usual practice the shoe support and wipers are initially manipulated to stress the lasting margin heightwise of the shoe and to gather it inwardly over the marginal edge of the toe. The gathering action of the wipers constricts the margin causing it to stand up from the bottom and while this edge stands erect adhesive is applied to the bottom and the inside of the margin whereupon the wipers are moved in further over the bottom to lay the adhesive coated margin down against the bottom. An object of this invention is to provide an auxiliary wiper to assist in pressing and compacting the gathered margin after it is initially gathered in and laid down by the primary wipers to hold it in intimate contact with the bottom during setting of the adhesive. Another object of the invention is to provide an auxiliary wiper which may be used in conjunction with the primary wipers and which may be interposed between the shoe bottom and the primary wipers without withdrawing the latter. Another object is to provide an auxiliary wiper constructed to take into account the spring of the shoe bottom so as to apply uniform pressure to the entire marginal edge of the bottom of the shoe at the toe and so that the wiping action may be attained without destructive attrition of the marginal material and without jamming or breaking of the operating parts. Another object is to provide an auxiliary wiper which may be heated continuously even while in motion.

As herein illustrated the supplemental wiper comprises a single blade having top and bottom surfaces, the latter being adapted to have contact with the bottom of the shoe, and a re-entrant opening at its forward edge which is in outline the converse of the profile of the bottom of a shoe at the toe. In the bottom surface of the blade extending from the edge of the re-entrant opening rearwardly there is a concave recess which corresponds in shape and area to the bottom of a shoe at the toe and which is deep enough to accommodate the spring of the bottom of the last at the toe plus the pleated thickness of the upper material. The forward end of the blade is hollow and contains a heating element from which extends a flexible cable so that the blade may continuously be heated while in motion. The rear end of the blade has a shank adapted to be connected to means for advancing and retracting it in use.

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

Fig. 1 is a fragmentary vertical section through the primary wiper blades of a toe lasting machine showing the auxiliary wiper in elevation beneath the primary wipers;

Fig. 2 is a plan view of the top of the auxiliary wiper;

Fig. 3 is a plan view of the bottom of the auxiliary wiper;

Fig. 4 is a transverse elevation of the right-hand end of the wiper as shown in Fig. 2;

Fig. 5 is a transverse vertical section of a shoe taken on the line 5—5 of Fig. 6 and showing the auxiliary wiper engaged with the bottom thereof;

Fig. 6 is a side view of a shoe in elevation showing the auxiliary wiper partly in longitudinal section and partly in elevation, advanced forwardly over the toe of the shoe;

Fig. 7 is a plan view of the auxiliary wiper advanced forwardly over the bottom of the shoe, a portion of the wiper being broken away to show the pleated margin;

Fig. 8 is a plan view of the bottom part of the wiper with the top removed;

Fig. 9 is a longitudinal section taken on the line 9—9 of Fig. 2;

Fig. 10 is a plan view of the heating element which is adapted to be placed within the hollow interior of the wiper; and

Fig. 11 is an enlarged transverse vertical section through the support for the primary wipers showing the primary wipers in section and the auxiliary wiper supported in spaced relation below them.

The machine with which the auriliary wiper illustrated herein is employed is the toe lasting machine shown and described in detail in U.S. Patent No. 2,668,967. In accordance with that patent a pair of wipers 10, only one of which is shown herein at Fig. 1, is supported for horizontal movement in a fixed plane with reference to a last 12 mounted on movable support means, a part of which is shown at 14, so that an upper assembled on the last and tacked thereto may be operated upon by relative movement of the wipers and the support means to stress the lasting margin heightwise of the shoe and to wipe it inwardly over the bottom. It is customary in the operation of this machine to elevate the last somewhat with respect to the plane of the wipers so that as they are advanced toward the toe of the shoe their leading edges engage the upper a little below the shoulder of the last and then to draw the last downwardly by lowering the support so as to exert an upward or heightwise movement which stresses the lasting margin upwardly. Concomitantly the wipers are moved inwardly over the shoulder to bend the lasting margin about the shoulder and to gather it inwardly against the marginal edge of the bottom of the last. The manipulations for effecting the stressing and gathering of the lasting margin may be accomplished in one operation or in several operations depending upon the skill of the operator until the degree of tautness and uniformity desired is attained. When this has been satisfactorily accomplished the constricted lasting margin usually stands upright in pleats from the bottom of the insole and at this time the operator with a small brush or the like applies hot adhesive to the insole and to the inside of the upstanding lasting margin. As quickly as this is done the primary wipers are moved forwardly to their full extent with the shoe bottom pressed upwardly against their undersides so as to fold the upstanding adhesive coated margin downwardly into contact with the bottom of the shoe. In accordance with this invention the compacting and pressing of the adhesive coated margin against the bottom of the shoe is augmented and improved by immediately bringing into operation an auxiliary wiper 16 (Fig. 1) which is moved forwardly between the shoe bottom and the primary wipers to apply increased pressure and optionally heat to the lasting margin. To accomplish this the shoe support most generally must be lowered somewhat away from the primary wipers to permit the auxiliary wiper to be forced forwardly between the shoe

bottom and the primary wipers. If desired the primary wipers may be withdrawn and the auxiliary wiper used independently thereof.

As herein shown the auxiliary wiper **16** (Figs. 2, 3 and 4) has a head of substantially rectangular shape with vertically spaced top and bottom walls or surfaces, **18** and **20**, a re-entrant opening **22** at its forward edge and a shank **24** extending rearwardly from its rear edge, the latter having a hole through it for receiving a driving pin by which the wiper is connected to means for moving it forwardly and rearwardly with respect to the shoe, as illustrated in more detail in my copending application Serial No. 720,681 filed Mar. 11, 1958. The re-entrant opening **22** is shaped so that its edge has a profile which is substantially the converse of the shape of the toe of a shoe. As thus constructed, as the wiper is moved forwardly across the previously laid down lasting margin the opposite sides **26—26** of the forward edge of the opening will move along the marginal edges of the shoe and in close contact therewith without being forced upwardly from the bottom by the spring of the last that is, the longitudinal and transverse convexity of the bottom of the last. Without so recessing the forward edge of the blade the convexity of the last and also the pile of pleated material at the margin would lift the blade away from the bottom of the shoe so that the opposite sides of the blade would not have contact with the margin, and hence would not apply pressure to the margin. To further enhance the application of pressure in a uniform manner and to provide especially for the upwardly bulging pile produced by the overlapping pleats the bottom side of the wiper has in it an upwardly extending recess **28** which commences at the edge of the re-entrant opening **22** and extends rearwardly therefrom for a distance which is approximately equal to the depth of the opening **22**. This recess **28** is transversely and longitudinally convex and is shaped to have an area corresponding substantially to the toe of the shoe so that as the wiper is moved forwardly to its fully operative position the recess **28** will accommodate not only the spring of the last but the excess folded lasting margin thus making it possible to keep the edges of the wiper in intimate contact with the marginal edges of the shoe and to effect the necessary pressing operation without unduly abrading the substance of the margin or damaging the operating parts of the machine.

As herein illustrated, the wiper is comprised of an upper flat plate **30**, the forward edge of which is profiled to provide the re-entrant opening **22** and a lower plate **32** having a right angle wall **34** at its forward edge and side edges. The forward portion of the wall **34** is profiled to correspond to the re-entrant opening **22** in the top plate. The bottom plate **32** is fastened to the top plate by means of suitable bolts or screws (Fig. 9) and provides a hollow chamber **36** within which may be placed a heating element **38**, such as shown in Fig. 10. This element may comprise a resistance member faced with electrical insulation, placed within the chamber, and provided with a pair of electrical conductors **40**, which conveniently may pass from the blade through a flexible cable **42** to a source of power thus to maintain a constant supply of heat to the movable wiper.

The wiper is used, as previously outlined, after the preliminary wiping operation by the primary wipers so as to augment the pressure on the bottom of the shoe after the lasting margin has been laid down with adhesive applied between it and the insole and to improve the uniformity of the pressure applied in spite of the uneven character of the bottom of the shoe caused both by the spring of the last and by the folded and pleated lasting margin which produce a very pronounced lump or mound at the bottom of the shoe. As previously indicated the auxiliary wiper may be used in conjunction with the primary wipers or independently thereof. While the auxiliary wiper may be used cold, preferably it is heated, for the reason that an application of heat serves to take the fight out of the leather thus causing it to lay down with less resistance, and to be pressed into intimate contact with the bottom. The heat also serves to increase the rate of volatilization of the solvent constituents of the adhesive thereby shortening the time of set.

The auxiliary wiper **16**, as shown in Figs. 1 and 11, is supported at its forward end on a transversely extending block **44** of heat insulating material fastened to the underside of a support **48** on which the primary wipers slide. The top side of the auxiliary wiper is spaced from the underside of the primary wipers, the lateral edges are spaced from the contiguous portions of the machine frame and the rear end of the wiper is connected by its shank **24** to a driving bar **46**, which in turn is connected to a driving member, as will be seen by reference to my copending application. Thus the wiper has very little contact with the metal parts of the machine and hence there is very little opportunity for the heat to leak away by conduction so that the wiper stays at its maximum temperature fairly constantly throughout its operation.

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. A supplemental wiper for a toe lasting machine comprising a flat plate having a re-entrant opening at its forward edge and a rearwardly extending shank containing an aperture, a second flat plate having a re-entrant opening at its forward edge corresponding to that of the first flat plate and a right angle wall rising from it which follows its re-entrant edge and its sides, means fastening said second plate to the first plate with the wall interposed between the two to provide a hollow space between the plates for reception of a heating element, said second plate also having in its bottom surface an upwardly concave recess corresponding in outline and area to the bottom of a shoe at the toe and said concave recess being deep enough to accommodate the spring of the bottom of the last at the toe, plus the thickness of the pleated marginal material load down on it.

2. A supplemental wiper for a toe lasting machine comprising spaced parallel top and bottom walls held in spaced relation by an intermediate wall situated substantially perpendicular to the planes of the top and bottom walls and forming therewith a hollow body adapted to receive a heating element, said top and bottom walls having reentrant smoothly curved openings at their forward edges and said intermediate wall following the curvature of the re-entrant openings of the top and bottom walls, a shank extending rearwardly from one of the walls for connection to a driving member, and the bottom wall having in its bottom surface an upwardly concave recess corresponding in outline and area to the bottom of a shoe at the toe, said recess being symmetrically disposed about the re-entrant opening and being at least as deep as the spring of the bottom of the last at the toe.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,904,801 September 22, 1959

Jacob S. Kamborian

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 46, for "load" read -- laid --.

Signed and sealed this 12th day of April 1960.

(SEAL)
Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents