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APPARATUS FOR TURNING IN TOE AND HEEL CAPS FOR FOOTWEAR

Filed Aug. 31, 1935

2 Sheets-Sheet 1

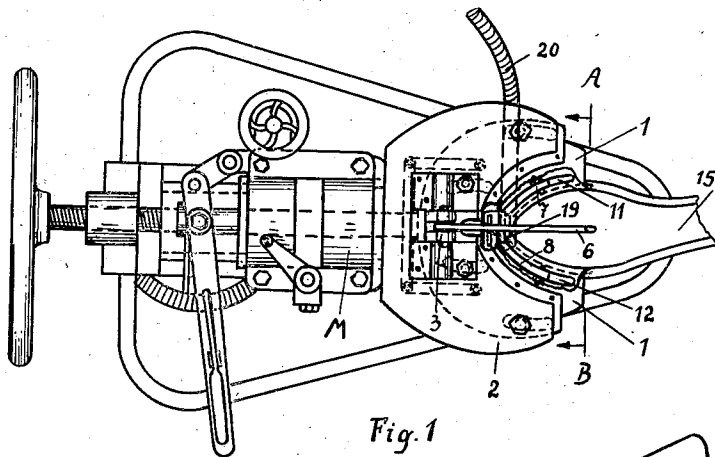


Fig. 1

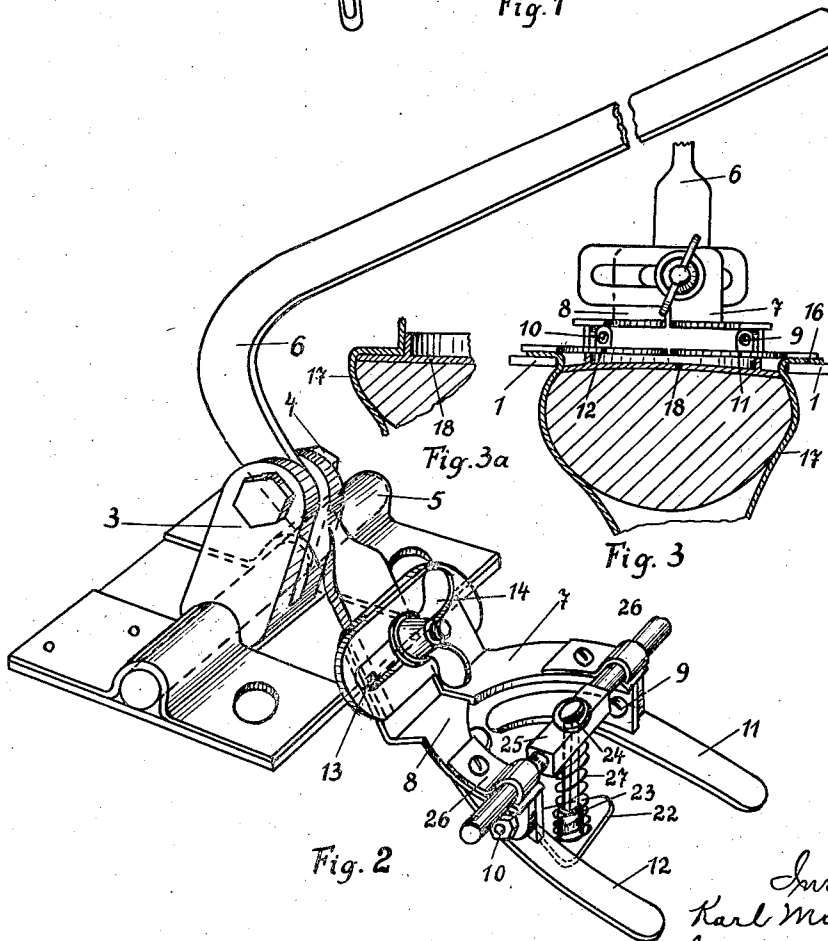


Fig. 3a

Fig. 3

Fig. 2

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2 Sheets-Sheet 2

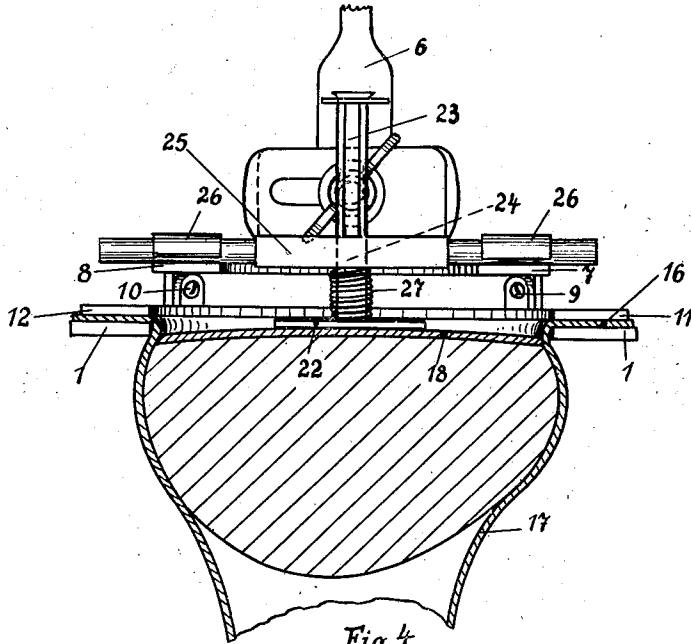


Fig. 4

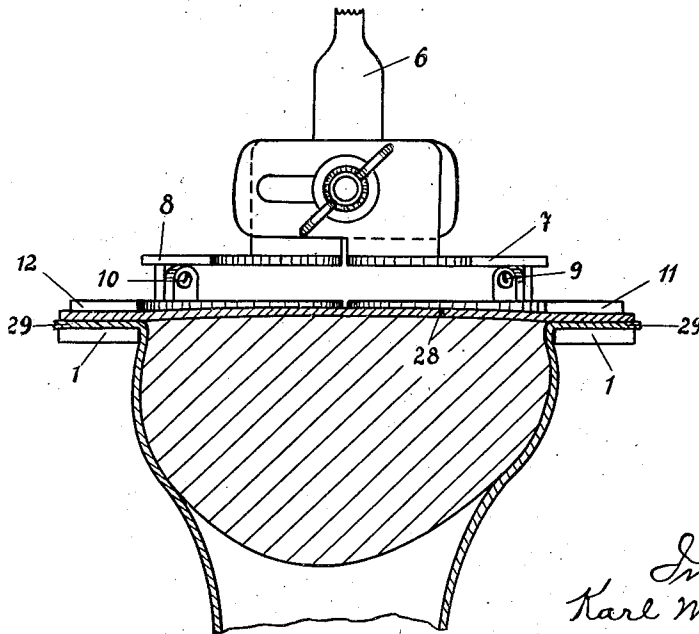


Fig. 5

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UNITED STATES PATENT OFFICE

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APPARATUS FOR TURNING IN TOE AND HEEL CAPS FOR FOOTWEAR

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Application August 31, 1935, Serial No. 38,848
In Germany July 12, 1935

3 Claims. (Cl. 12—107)

Heretofore, the turning-in of toe and heel caps in footwear has usually been performed by drawing the upper leather over the last and placing it in a turning-over or lasting machine, drawing the leather projecting beyond the last, over the insole on the last, by means of the wipers and then attaching the turned-over portion to the insole by means of an adhesive and tacks, or the like.

In so doing, however, the inconvenience often arises that in turning-in the upper leather on the last, or on the insole laid thereon, creases are formed, in the upper leather, which can then be removed only with difficulty, if at all.

The present process obviates this inconvenience. Whilst the turning-in is performed in the known manner, the edge of the upper leather projecting beyond the last is folded back over the wipers, before they are moved away over the edge of the last, and said edge is then fixed in that position on the wipers by a special presser. On closing the wipers the said presser is then gradually lifted in accordance with the advance of the wipers, so that the edge of the upper leather projecting beyond the last and lying on the wipers is only gradually released and turned over on to the insole. Since, with this method of working there is no surplus leather in advance of the wipers, but only just so much of the upper as is continuously turned over and ironed down on the insole by the wipers, creases cannot occur.

A typical embodiment of the apparatus suitable for carrying out the process is illustrated in the accompanying drawings in which Figure 1 is a plan of a bed lasting machine with a presser according to the invention; Figure 2 shows the presser in perspective and on a larger scale; Figure 3 is a section on a larger scale on the line A—B Figure 1, and represents the moulding of the edge of the upper leather in the Goodyear process; Figure 3a is a fragmentary sectional view and shows the creaseless application, according to the invention, of the edge of the upper leather to the edge and lip of the insole; Figure 4 shows, on a still larger scale, the same section when the McKay process is employed, and Figure 5 is a similar view to Figure 4 showing the process applied to the manufacture of stitch down shoes.

Any bed lasting machine can be used for carrying out the process. According to the invention, a machine of this kind M, however, is provided above the wipers 1, and above their guide plate 2, with a rockable presser 3, which presser consists of a bell-crank lever 6, adapted to pivot at

4 and 5 and carrying on its rear end two cheek-piece holders 7 and 8, on which are mounted two cheekpieces 11 and 12 adapted to pivot on screwbolts 9 and 10. Each of the said holders 7 and 8 has a longitudinal slot 13, so that their relative spacing can be adjusted, and they can be secured in the desired position by means of a clamping nut 14 on a screw.

In carrying out the process, the shoe 15 drawn over the last in the usual manner is placed in the machine M, whereupon the said wipers 1 are closed so as to grip the upper leather firmly. The foremost tack is then taken out and the edge 16 of the upper 17, projecting beyond the last is turned back over the wipers (Figures 3 and 4) and held in that position by the said presser 3 by the pressure of the cheekpieces 11 or 12 on the overturned edge of the upper leather.

The wipers are next closed in further, and the presser is gradually lifted in accordance with the advance of the wipers, so that the edge of the upper leather, lying on the wipers, is gradually turned over and pressed on to the insole 18. At this time, the edge of the upper leather can be secured to the insole, in known manner either by driving in tacks, or by the previous application of an adhesive to the insole, or the inner side of the upper leather.

According to the process set out in the specification of my co-pending application Serial No. 38,847 filed August 31, 1935, the upper leather can also be attached to the insole by the application of heat. When such a cap stiffening is employed as that described in the said specification, that is to say, one of felt, impregnated with a mixture of nitrocellulose and artificial resin, then, because such a steamed cap is extremely adhesive and absorbs only a small amount of solvent, said solvent can be expelled, during the bed lasting operation, by evaporation, so that the said operation is accompanied by an intimate cementing and union of the upper leather and the insole, without need for any further means of attachment or for coating the insole with adhesive.

Further, to enable this process to be carried out according to the invention the machine M is also provided below the wipers 1, with a nozzle 19, through which a current of hot air, supplied from any source by way of the flexible tube 20, may be directed against the wipers. This hot air heats the wipers in such a manner that, by their heat, after the upper leather and insole have been assembled, the solvent, which was absorbed by the cap stiffening, is volatilized from the joint out of which the impregnating medium of the cap

stiffening penetrated to the insole during the pressing operation, the desired union of the insole and upper leather being thus obtained, by adhesion, without the need for any further adhesive or tacks. At the same time, the cap itself, and especially the impressed edge is adequately hardened, so that the shoe, thus treated in accordance with the invention, can be put through the further working treatment at once.

Of course, if a firmer union be desired, use may also be made of insoles, the edges of which have been coated with an adhesive. A particular result also obtained is that, in the case of the Goodyear process, the secured edge of the upper leather lies, at a perfectly sharp angle and without creasing, in the space formed between the edge and lip of the insole (Figure 3a).

Instead of the wipers being heated by a current of hot air, they may of course, be heated in other ways, for example, be raised to the desired temperature by electrical means.

To prevent the insole from becoming detached from the wipers during the turning-in of the upper leather, an insole holder can also be provided, for example, either on the cheek-piece holders 7 and 8 of the presser 3, or on some other part of the machine. These insole holders may consist, for example, of a metal plate 22 (Figures 2 and 4) carrying a pin 23, which passes through a bore 24 in a crosshead 25, which is attached to the holders 7 and 8 by means of two screw clamps 26. A coiled spring 27 is also provided, between the crosshead 25 and the metal plate 22.

When, as already mentioned, the presser is pressed against the edge of the upper leather, the spring-pressed metal plate 22, which projects slightly downwards beyond the cheekpieces 11 and 12 encounters the insole and presses it firmly against the last. If, on the other hand, the presser be lifted gradually in accordance with the forward movement of the wipers, the metal plate 22, which is slidable in the bore 23, will, nevertheless, bear firmly against the tip of the insole until the wipers are closed and the presser can now be withdrawn completely.

When the spacing of the holders 7 and 8 is modified in order to adapt them to the size of the last which is used, the screw clamps 26 are loos-

ened, and tightened up again after the cheekpiece holders have been adjusted suitably.

Instead of using a one-piece plate 22, a plate comprising two or more parts can be used, adapted to close together by the movement of the wipers so as to avoid the latter.

The described improvement can be employed in the production of all kinds of footwear, for moulding and fixing both toe and heel caps, and also in the manufacture of stitch down shoes. In the former case the wipers are applied to the upper leather slightly below the upper edge of the last, the edge of the upper being then turned over on the wipers, and the cheeks 11 and 12 pressed against the edge of the upper. The wipers are then lifted, sliding along the upper, the cheeks again releasing only so much of the leather as corresponds with the upward movement of the wipers. After the wipers have reached the upper rim of the last (Figure 5) the cheeks are lifted, whereupon the insole or sole 28, the edge of which is coated with an adhesive, is applied to the edge of the upper 29, lying on the wipers 1, and the cheeks 11 and 12 are again lowered and subjected to pressure, thereby producing the desired union between the upper and the sole. In operating in this manner, the use of any stitching, staples and tacks for attaching the upper and sole together becomes superfluous.

I claim:—

1. In a bed lasting machine, wipers, a presser arranged above the wipers and comprising a pivoted lever, the rear end of which carries two relatively adjustable cheekpiece holders with pivotally mounted cheekpieces and means for pressing said cheekpieces against the edge of the upper leather during the fixing of the upper.

2. Apparatus as claimed in claim 1, and a holder for the tip of the insole, said holder comprising a presser plate provided with a guide pin, a crosshead adjustably attached to the cheek-piece holders, and means for yieldingly mounting the guide pin on said crosshead.

3. Apparatus according to claim 1 and means for heating the edges of the upper leather upon being wiped into final position.

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