May 14, 1935. H. METZ ET AL 2,001,069

ART OF TREATING SHOES

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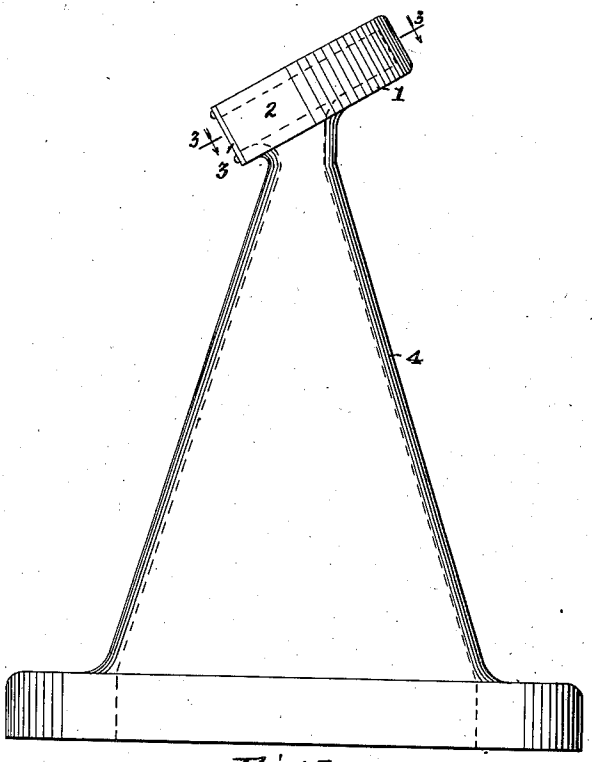

Fig. 1.

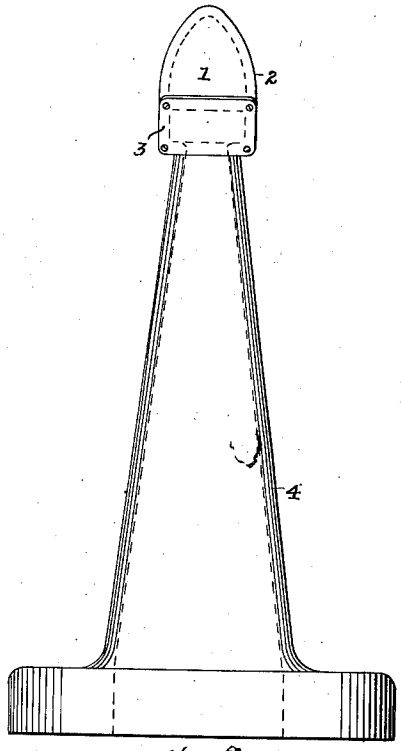

Fig. 2.

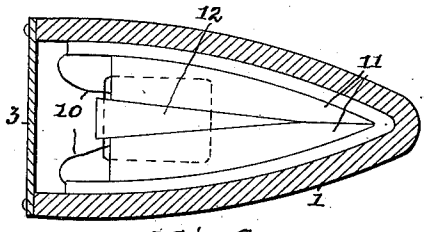

Fig. 3.

Fig. 5.

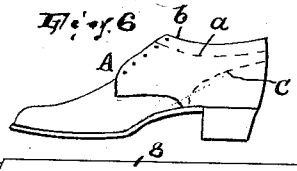

Fig. 6

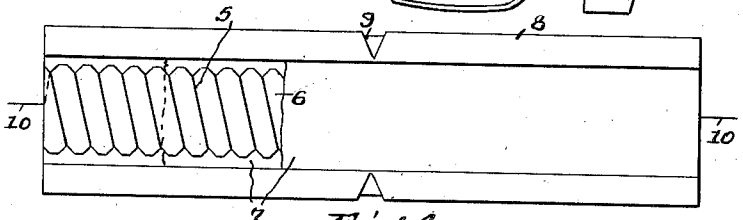

Fig. 4

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ART OF TREATING SHOES

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Application June 18, 1934, Serial No. 731,137

6 Claims. (Cl. 12—142)

Shoes built on standard lasts frequently fail to fit a particular person's foot because the foot dimensions depart from the usual or standard manufacturer's ratio of the dimensions in the shoe corresponding to that across the ball and those at the heel of the standard foot in that such particular foot is too narrow at the heel or it may be that at the back the heel of such foot projects abnormally, so that not only in either case does the top of the shoe counter fail to hug the heel portion of the foot and the shoe does not appear to be properly fitted to the foot but the shoe works up and down in walking and causes blistering and other irritation. So far as we know there has heretofore been suggested no way to overcome this fault except for the retail dealer to send the shoe to a specially equipped establishment where the top seam stitching of the counter is removed and restitching, with some gathering and a certain amount of puckering, is effected, such being an expensive and a time-wasting procedure and not in every case assuring perfect removal of the fault. One object of this invention is to provide for the reshaping by the dealer of a shoe faulty in this respect, to wit, while the customer is available and the fit attempted can be accurately effected, and so that the cost involved will be trifling and the shoe will bear no change in appearance whatever except in the way of improvement as to fit, nor any change in other than the top zone of the counter, the term "zone" being here used to mean that portion which parallels and immediately subjacently flanks the top edge of the counter, it being undesirable to alter the shape, for instance, of the usual counter-stiffener as being not only unnecessary to the accomplishment of our purpose but quite likely to cause such stiffener in changed form to set up irritation.

In accomplishing this object, having any heated preferably smooth element, or what we term an anvil, the shoe and this element are brought into contact with each other so that such contact is substantially confined to the mentioned zone, usually to such a localized portion thereof as requires special treatment (as at one or both sides, or the extreme back, of the counter, or each of these points, or in some instances the entire length of said zone), thereby effecting a shrinking in said zone of the leather, or it may of course be any other pliable heat-shrinkable material of which the counter is composed, such shrinking usually giving the vertical section of the shoe an inbent effect at the top, at the point treated, or it may be more or less all around with consequent general constriction of such top, or mouth of the shoe. Usually the contact will be accompanied by a wiping and hence smoothing action. The ordinary shoe includes a counter-lining, in which case we find it of the greatest importance to proceed as follows: First one ply (as the inner one or lining) is subjected to the contact of the heating element and then the other ply. The work is thus done progressively because we find that if it is attempted to shrink both plies at once the ply which is in contact with the heating element is likely to be burned or its tissues destructively affected before the shrinking appreciably affects the other ply. In this operation the ply which is not contacted by the heating element (as the outer ply) undergoes some puckering due to its failure to shrink or to shrink to the same extent as the other ply; and after the ply first treated has undergone sufficient shrinkage the puckers in the other ply are removed and a finish effected by the application of the heating element in contact therewith. We prefer in this progressive operation to shrink the inner ply first, since thereby obviously the work can be done with greater accuracy of fit.

Referring to the drawing,

Figs. 1 and 2 are side and front elevations, respectively, of the structure which includes the mentioned anvil;

Fig. 3 is a section on line **3—3**, Fig. 1;

Fig. 4 shows the heating unit before incorporation in the anvil;

Fig. 5 shows the anvil in plan and the manner of effecting contact between it and the shoe-counter; and

Fig. 6 is a side elevation of a shoe having the zone to be treated indicated as here bounded below by the dotted line *a*.

1 is a shell shaped generally like a domestic pressing iron, or tapered in one direction, its opposite converging faces **2** being somewhat convex, being its working or contact faces. Its wider end is open and provided with a removable cover **3**. It here forms the head of a pyramidal pedestal **4** whose base may rest on and if desired be secured to a table or other suitable support, the entire structure being of metal.

The anvil is internally heated, as by a wire coil **5** wound around an insulating strip **6** having notches at its opposite edges receiving the convolutions of the coil, the element formed by the strip and coil being arranged between insulating strips **7** and the whole enclosed in a container formed by an insulating strip **8** having its longi-

tudinal edges folded over upon strips **6** and **7**. The folds of the container are notched at **9** to permit bending the unit, whereupon upon such bending it is introduced into the anvil at its wider end with its own apex directed the same as the apex of the anvil, the terminals **10** of the coil being extended down into the pedestal and being adapted to be connected to the electric feed line. Two flat metal blocks **11** are inserted and arranged to bear against the extremities of the heating unit so as to leave a wedge-shaped space between them, whereupon a metal wedge **12** is forced into such space, thus holding said extremities of the unit in contact with the side walls of the anvil. The anvil is appreciably smaller than the space of the shoe at the counter.

The zone which lies between the dotted line *a* in Fig. 6 and the top margin *b* of the counter of a shoe A and which extends from the front around the back of the counter and back to the front is the zone hereinbefore mentioned to which the treatment is applied. This zone lies above the counter-stiffener, whose upper margin is shown by the dotted line *c*.

Assume that the counter does not hug the foot at one side. The operator, inverting the shoe and causing it to cap the heated anvil, brings that side wall of the counter which is defective against one side **2** of the anvil, but so that the contact with such wall, to wit, with the counter lining, will be within the indicated zone. Unless it is a quite limited area of such zone which requires treatment, by movement of his hand *d* he causes the shoe to wipe against the anvil to spread the heating action and at the same time smooth out any wrinkles that tend to form. The effect of this operation is to shrink the region of the lining in said zone, such shrinking manifesting itself as a shortening of the counter in said zone lengthwise thereof, with some inbending thereof at the top as viewed in section, so that the top of the counter will now hug the side of the wearer's foot. This shrinking of the lining may and usually does produce more or less puckering of the outer ply of the counter. So having thus treated the lining to the proper degree the shoe is withdrawn from the anvil and replaced in contact therewith with now the outside of the counter presented to the anvil and preferably with a wiping of the shoe over the anvil to cause shrinking of the outer ply and a smoothing out of any wrinkles that may tend to form, the operation being again performed so that the shrinking occurring in the outer ply will be within the said zone.

The region to be treated may in each instance be previously wetted, if required, to effect the desired shrinkage.

In case the heel of the wearer is of the protruding type, or, in other words, in case the extreme back of the shoe does not in side elevation have such curvature as to prevent the shoe slipping up and down at the heel, the operations above described may be effected in the said zone at the back of the shoe, the effect being to curve inward the top back counter.

The invention in its broadest aspect insofar as the method involved is concerned, contemplates applying heat to a region in a zone of limited width and paralleling and substantially immediately subjacent to the top margin of a shoe-counter of pliable heat-shrinkable material and thereby shrinking said region, wherefore in such aspect it is not material that the counter be more than one ply or have a stiffener.

Of course the invention is applicable to shoes having super-uppers, or what are known as high shoes or boots.

Having thus fully described our invention what we claim is:

1. The method of treating a shoe having a pluri-ply counter of pliable heat-shrinkable material which consists in applying heat to an exposed surface of one ply in a region of the counter in a zone of limited width and paralleling and substantially immediately subjacent to the top margin of the counter and thereby shrinking said region and thereupon applying heat to an exposed surface of another ply in a region substantially coinciding with the first region and thereby effecting shrinkage in the second region.

2. The method of treating a shoe having a pluri-ply counter of pliable heat-shrinkable material which consists in subjecting to pressure and simultaneously heating an exposed surface of one ply in a region of the counter in a zone of limited width and paralleling and substantially immediately subjacent to the top margin of the counter and thereby shrinking said region and thereupon subjecting to pressure and simultaneously heating an exposed surface of another ply in a region substantially coinciding with the first region and thereby effecting shrinkage in the second region.

3. The method of treating a shoe having a pluri-ply counter of pliable heat-shrinkable material which consists in applying heat to the inner ply in a region of the counter in a zone of limited width and paralleling and substantially immediately subjacent to the top margin of the counter and thereby shrinking said region and thereupon applying heat to the outer ply in a region substantially coinciding with the first region and thereby effecting shrinkage in the second region.

4. The method of treating a shoe having a pluri-ply counter of pliable heat-shrinkable material which consists in subjecting to pressure and simultaneously heating the inner ply in a region of the counter in a zone of limited width and paralleling and substantially immediately subjacent to the top margin of the counter and thereby shrinking said region and thereupon subjecting to pressure and simultaneously heating the outer play in a region substantially coinciding with the first region and thereby effecting shrinkage in the second region.

5. The method of treating a shoe having a pluri-ply counter of pliable heat-shrinkable material which consists in applying pressure progressively of and to a narrow region of the counter paralleling and substantially immediately subjacent to the top margin of the counter and while such pressure is being applied applying heat first to one ply and then to the other only in said region.

6. The method of treating a shoe having a pluri-ply counter of pliable heat-shrinkable material which consists in applying pressure progressively of and to a narrow region of the counter paralleling and substantially immediately subjacent to the top margin of the counter and while such pressure is being applied applying heat first to the inner ply and then to the outer ply only in said region.

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