

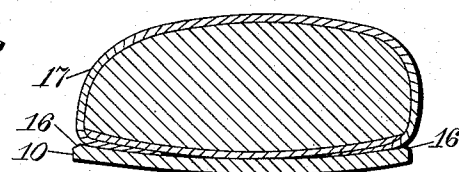
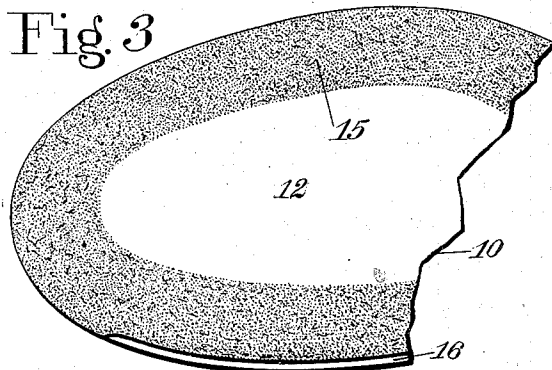
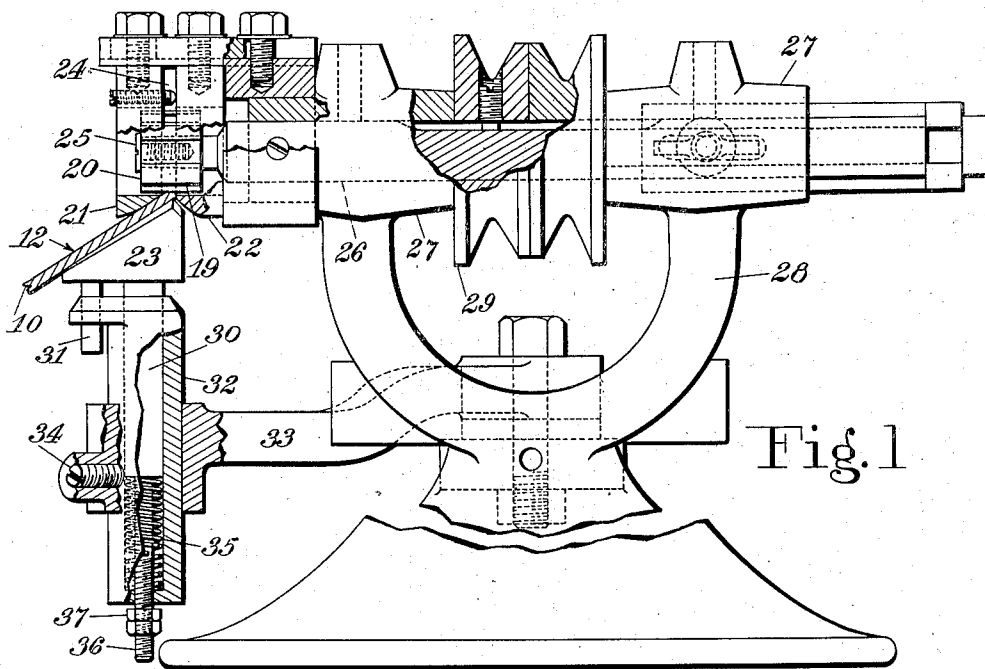
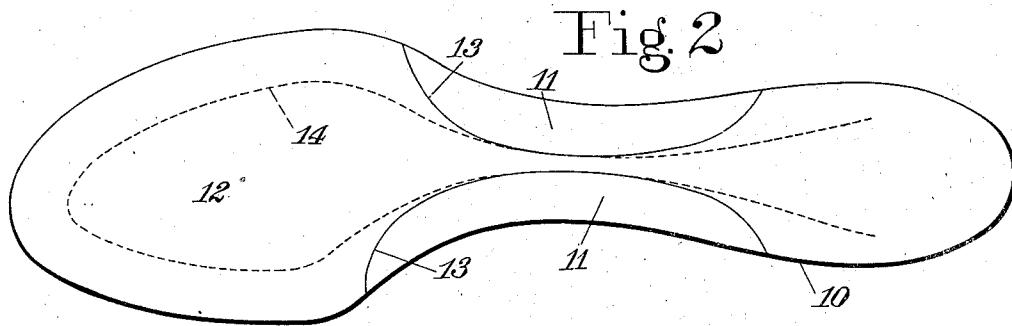
Feb. 26, 1935.

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1,992,213

METHOD OF PREPARING SOLES

Original Filed Jan. 28, 1931



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UNITED STATES PATENT OFFICE

1,992,213

METHOD OF PREPARING SOLES

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Original application January 28, 1931, Serial No.
511,809. Divided and this application Jan-
uary 5, 1933, Serial No. 650,323

8 Claims. (Cl. 12-146)

This invention relates to methods of preparing unattached soles for boots and shoes and is herein disclosed with particular reference to the preparation of leather outsoles to be attached with adhesive cement. The present application is filed as a division of my copending application for which Letters Patent No. 1,926,150 was granted me September 12, 1933.

Prior to this invention, it was common to prepare a leather outsole intended to be attached to a lasted shoe with adhesive cement by cutting it to substantially final configuration, reducing the thickness of the margins in the shank-portion by removing some of the stock from the attaching face thereof, roughening the margin of the attaching face in the forepart and the shank, applying adhesive cement of the pyroxylin type to this roughened margin, and abrading a narrow outer band of the cement-coated margin to remove cement therefrom, to the end that no cement would remain on the portion intended to project beyond the upper-crease of a shoe having such a sole attached thereto. In some cases an emery wheel has been used to remove the cement from the narrow outer band of the cement-coated surface, while in others rotary wire brushes have been used for that purpose, but neither of these methods of removal has been satisfactory since emery wheels and wire brushes cannot remove cement without scraping and tearing the fibers of the leather. Moreover, without suitable control, which has been lacking, they penetrate too deeply at some localities and not so deeply at others, with the result that the width and the surfaces of the bands thus treated have been noticeably uneven.

In view of the conditions above described, an object of the present invention is to provide improvements in methods of preparing cement-coated outsoles, to the end that cement may be removed from the margins of their attaching faces without producing fuzz and the outer boundaries of the remaining cement will be parallel to the perimeters of the soles.

Accordingly, in one aspect, the invention provides an improvement in methods of preparing soles for attachment to lasted shoes which consists in applying adhesive cement to the attaching face of an unattached sole, and thereafter simultaneously cutting away a narrow outer band of the margin of the attaching face to form a new cement-free face on the sole and relatively guiding the sole and the cutting element by the margin of said attaching face and by the perimeter thereof to insure uniform depth and width of the

cement-removing cut irrespective of variations in the thickness of the margin of the sole.

When the marginal cement-removing cut is a beveling cut every variation in the depth of the cut will produce a corresponding variation in the width of the cut. That is to say, wherever the cut is relatively deep it will also be relatively wide. Consequently, if a sole having relatively thin margins in the shank and a relatively thick margin in the forepart is subject to a beveling operation in which the beveling cut penetrates more deeply into the thicker portions than the thinner portions, the beveled band will be wider in the forepart than in the shank. This result would be objectionable not only from the standpoint of appearance, but also from that of attaching the sole to a shoe, for if too much cement is cut away in the forepart the bond of adhesion between the sole and upper of a shoe will be impaired and the upper-crease will not be as close or snug as it should be.

The problem of insuring uniform width and depth of the cement-removing cut irrespective of variations in the thickness of the sole-stock is due in part to the unevenness of the attaching face of a sole and in part to pliability of the thinner portions in contrast to the stiffness of thicker portions of a sole's margin. Nevertheless, in accordance with the present invention, this problem may be overcome by feeding the cement-coated margin of the attaching face of a sole past a cement-removing cutter, maintaining backing pressure against the margin of the opposite face of the sole at a point in register with the locality of the cement-removing cut, and at the same time guiding the margin of the attaching face and the perimeter of the sole in constant relation to the cutter. Under such conditions the backing pressure will reinforce or brace the thin and pliable portions of the margin, and the guidance of the margin by the attaching face and by the perimeter of the sole will insure uniform width and depth of the cement-removing cut.

Referring to the accompanying drawing,

Fig. 1 is an elevation partly in section of the right-hand side of a machine adapted to be used in performing one of the steps of the method herein set forth;

Fig. 2 is a plan view of the attaching face of a typical outsole at an intermediate stage of preparation in accordance with the method herein described;

Fig. 3 is a top plan view of the forepart of such a sole at a later stage of preparation, and

Fig. 4 is a cross-sectional view through the

forepart of a typical cement-lasted shoe provided with a cement-attached outsole that has been prepared in accordance with this invention.

Fig. 2 illustrates a leather outsole 10 at an intermediate stage of preparation, the perimeter thereof having been cut to final configuration and the margins 11 of the shank having been reduced in thickness by cutting away portions of the attaching face 12 with wide but relatively shallow beveling cuts, the inner boundaries of which are indicated by the lines 13. The purpose in thus reducing the thickness of the margins of the shank-portion is to impart to a finished shoe an appearance of lightness in the shank thereof.

After the margins 11 have been reduced in thickness as above described, a sole intended to be attached to a lasted shoe with adhesive cement is coated on its attaching face 12 with cement of the pyroxylin type which is permitted to dry or harden before the sole undergoes any further operation. This coating of cement is restricted to a marginal area the inner boundary of which is represented by the dotted line 14. The cement thus applied is represented by stippling 15 in Fig. 3.

Before the sole is laid and while the coating of cement 15 is dry or hard it is desirable not only to remove all cement from that portion of the sole that will project from the upper-crease of the finished shoe but also to trim down the marginal extension of the attaching face sufficiently to enable the shield of an edge-trimming cutter to run in the crease. As illustrated in Fig. 3, the margin of the attaching face 12 has been beveled as represented at 16, this view representing an incomplete result of the beveling operation. It is to be understood that when this operation is completed the entire margin of the attaching face except the heel-seat portion may be beveled as represented at 16, although, if preferred, the range of the beveling operation may be confined to the forepart of the sole. Nevertheless, some manufacturers prefer to continue such trimming along both margins of the shank-portion nearly, if not quite, to the points at which the breast of the heel will lie.

It will be appreciated that the margins 11 of the shank-portion, in consequence of being reduced in thickness, will be relatively pliable compared with the stiffness of the relatively thick margin of the forepart, and that the new surfaces formed by reducing the shank-margins will not lie in the same plane as the other areas of the attaching face 12. These conditions create a problem with respect to cutting down the margin of the attaching face after the cement-applying step in such a way as to insure uniform width and depth of the cement-removing cut. Nevertheless, the present invention provides for insuring uniformity in both respects, to the end that cement that has been applied to the margin of the attaching face 12 will not be removed too far from the perimeter of the sole at any point but will be removed only from a relatively narrow outer band of uniform width. Moreover, in consequence of controlling the penetration of the cement-removing cut to a uniform depth below the cement-coated surface, the sole, after being attached to a shoe will not only have a uniform appearance around the upper surface of the marginal extension but the crease formed by the marginal extension and the upper 17 of the shoe will receive the shield of an edge-trimming cutter with substantially uniform conditions throughout the range of the cement-removing cut.

To obtain these results the invention provides for simultaneously cutting away a narrow outer band of the cement-coated margin of the attaching face of a sole to form a new face thereon, and relatively guiding the sole and the cutting element by the margin of the attaching face to insure uniform depth of the marginal cut irrespective of variations in the thickness of the sole. This procedure may be put into effect with various means, but for quantity production the apparatus hereinafter described has demonstrated its ability to produce results of excellent quality. This apparatus constitutes the subject-matter of my application Serial No. 511,809 hereinbefore mentioned and is not claimed in the present application.

The illustrated apparatus comprises a rotary cement-removing cutter 20 partially masked by a guide 21 arranged to run on the cement-coated margin of the attaching face of a sole, and partially masked by a guide 22 arranged to run on the perimeter of the sole. A spring-stressed support 23 is arranged to bear against the margin of the opposite face of the sole in register with the cement-removing locality and thereby maintain backing pressure by which the margin of the attaching face of the sole is pressed against the guiding member 21 and against the cutter 20. The work-engaging surfaces of the guiding members 21 and 22 are inclined to give a beveling effect to the cement-removing cut. Moreover, these members are spaced apart to provide a slot 24 through which a narrow outer band of the cement-coated margin of a sole may project to undergo the cutting action of the cutter 20. Although these guiding members are fixed they are preferably mounted with suitable provision for regulating the distance between them so that the width of the cement-coated band presented to the cutter may be regulated as desired. The cutter 20 is secured by a screw 25 to a rotary shaft 26 and is provided with a series of peripheral cutting edges 19. The shaft 26 is journaled in bearings 27 provided by a frame or stand 28. A pulley 29, keyed to the shaft, is adapted to receive rotation from a driving belt not shown.

The spring-stressed work-support 23 is provided with a stem 30 and with a pin 31, the purpose of the pin being to prevent turning movement of the support about the axis of the stem. The stem and the pin are arranged to slide in individual sockets bored in a guiding sleeve 32 adjustably secured in a stationary arm 33 by a set-screw 34. A compression spring 35 arranged in the sleeve 32 tends normally to force the work-support toward the cutter and thus to maintain the backing pressure hereinbefore mentioned. Preferably, the stem 30 is provided with a screw-threaded extension 36 that projects below the lower end of the sleeve 32 and carries a nut 37 the purpose of which is to prevent the work-support from rising too high when it is not depressed by an article of work.

In using the described apparatus to perform the cement-removing step of the method herein described, the operator inserts the margin of a sole, attaching face uppermost, between the work-support 23 and the fixed guiding member 21 and slides the sole edgewise toward the cutter until its perimeter abuts the fixed guiding member 22. The operator feeds the sole manually and at the same time maintains its perimeter against the guiding member 22. While the cutting is in progress the work-support 23 not only braces the margin of the sole against the cutter, but also main-

tains the attaching face of the sole against the guiding member 21. Under these conditions the guiding members 21 and 22 cooperate to insure uniform width and depth of the cement-removing cut. As the cut progresses from a relatively thin portion of the margin of a sole to a relatively thick portion, the sole will depress the work-support 23 to a lower level, since the margin of the attaching face will be guided in constant relation to the cutter by the fixed guide 21. Conversely, when the beveling cut progresses from a relatively thick portion of the margin to a relatively thin portion, the work-support 23 will rise under the influence of the spring 35 and thus counteract the difference in thickness, with the result that the new face formed on the sole by the cutter will be uniform in width notwithstanding variations in the thickness of the perimeter of the sole.

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

1. That improvement in methods of preparing soles for attachment to lasted shoes which consists in applying adhesive cement to the attaching face of an unattached sole, and thereafter simultaneously cutting away a narrow outer band of the margin of the attaching face to form a new cement-free face on the sole and relatively guiding the sole and the cutting element by the margin of said attaching face and by the perimeter of the sole to insure uniform depth and width of the cement-removing cut irrespective of variations in the thickness of the sole.

2. That improvement in methods of preparing soles for attachment to lasted shoes which consists in applying adhesive cement to the attaching face of an unattached sole, and thereafter simultaneously cutting a narrow beveled face around said attaching face in the forepart and the shank and relatively guiding the sole and the cutting element by said attaching face and by the perimeter of the sole to insure uniform width and depth of the beveling cut irrespective of variations in the thickness of the sole.

3. That improvement in methods of preparing soles for attachment to lasted shoes, which consists in applying adhesive cement to the attaching face of an unattached sole, feeding the margin of said face past a cement-removing cutter, maintaining backing pressure against the margin of the other face of the sole at a point in register with the cement-removing locality, and guiding the perimeter of the sole and the margin of

said attaching face in constant relation to the cutter.

4. That improvement in methods of preparing soles for attachment to lasted shoes, which consists in applying adhesive cement to the attaching face of an unattached sole, feeding the margin of said face past a beveling cutter, maintaining backing pressure against the margin of the other face of the sole at a point in register with the beveling locality, and guiding the perimeter of the sole and the margin of the attaching face thereof in constant relation to the cutter.

5. That improvement in methods of preparing soles for attachment to lasted shoes, which consists in applying adhesive cement to the margin of the attaching face of an unattached sole thinner in the shank than in the forepart, and thereafter removing surplus cement by cutting away a relatively narrow outer band of said margin to a uniform depth of penetration along the shank and around the forepart before the sole is attached to a shoe.

6. That improvement in methods of preparing unattached soles for attachment to lasted shoes, which consists in applying adhesive cement to the margin of the attaching face of a sole thinner in the shank than in the forepart, and thereafter reducing the thickness of the perimeter of the sole in the forepart and along the shank and removing surplus cement from said margin by cutting a bevel of uniform width on the attaching face of those portions.

7. That improvement in methods of preparing unattached soles for attachment to lasted shoes, which consists in applying adhesive cement to the margin of the attaching face of a sole thinner in the shank than in the forepart, and thereafter removing cement from the outer band of said margin by cutting a bevel of uniform width and depth of penetration on the attaching face around the forepart and along the shank of the sole.

8. That improvement in methods of preparing unattached soles for attachment to lasted shoes, which consists in applying adhesive cement to the margin of the attaching face of an unattached sole thinner in the shank than in the forepart, and thereafter removing cement and a uniform quantity of the sole-stock from a narrow outer band of said margin by reducing the thickness of said band with a shaving cut of uniform width and penetration.

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