UNITED STATES PATENT OFFICE

2,236,623

METHOD OF MANUFACTURING SHOES

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Original application July 6, 1939, Serial No. 282,983. Divided and this application April 12, 1940, Serial No. 359,928

10 Claims. (Cl. 12—149)

This invention relates to shoes and to methods for use in the manufacture thereof and it is illustrated herein with reference to shoes having short outsoles arranged to interengage with the heels on the shoes, the present application being a division of my concurring application Serial No. 282,985, filed July 6, 1939, and covering machines for cement attaching soles to shoes.

In shoes of the type referred to the heels are of the character disclosed in Letters Patent of the United States No. 2,121,712 granted June 21, 1938, on an application filed in the name of Fred C. Lovejoy. This type of heel is provided with a transverse groove or slot located adjacent to the upper edge of the breast of the heel and into which the rear portion of the short outside is inserted to provide a tight joint between the outside and heel, the heel being also provided at its upper end with a forwardly projecting lip which overlies the rear portion of the outside inwardly of its marginal portions and provides an additional reinforcement between the heel and outside. The outside extends only a short distance rearwardly of the heel breast line of the shoe and normally terminates in a straight rear edge face. The outside is preferably attached to the shoe bottom by cement and the heel is applied in a conventional manner by cement or fastenings or both, the rear end portion of the outside being first inserted in the transverse groove in the breast of the heel with the lip of the heel extending forwardly over the rear portion of the outside.

Considerable difficulty has been encountered heretofore in positioning short outsoles relatively to shoes preparatory to cement attaching the outsoles to the shoe bottoms because the rear portions of these outsoles are too short to permit them to be engaged and positioned on the pad of a sole attaching press by hand or by gaging means commonly employed in such presses.

An object of the present invention is to provide an improved method of making shoes having short outsoles in the practice of which the difficulties pointed out above will be eliminated. To this end and as herein illustrated, the invention provides an improved method in which a short outside is provided at its rear portion with a recess or depression which is engaged to maintain the outside in a predetermined position prior to its attachment to the shoe bottom, the recess being preferably located between or immediately of the opposite edge faces of the outside. As illustrated, the recess may comprise a prick punch hole or opening formed in the inner surface of the outside but not passing completely through the outside, or the recess may comprise an opening or notch formed in the rear edge face of the outside and located between the opposite edge faces thereof, this latter opening passing completely through the outside.

As illustrated, the method further comprises holding the rear end of the outside away from the shoe bottom to prevent the central portion thereof from becoming cement attached to the shoe bottom, thereby providing an opening or pocket for receiving the lip of the heel.

With the above and other aspects and features in view, the invention will now be described in detail with reference to the accompanying drawing and will thereafter be pointed out in the claims.

In the drawing:

Fig. 1 is a plan view of a short outside engaged by a positioning member or gage, the forward portion of the outside being broken away;

Fig. 2 is a side elevation of the outside and gage with the rear portions thereof sectioned on the line II—II of Fig. 1;

Fig. 3 is a transverse sectional view on the line III—III of Fig. 1;

Fig. 4 is a plan view similar to Fig. 1 illustrating a different manner of positioning a short outside, the forepart of the outside being omitted;

Fig. 5 is a local transverse sectional view on an enlarged scale of the gage shown in Fig. 4;

Fig. 6 is a front elevation view of the gage shown in Fig. 4 as viewed from the left in that figure; and

Fig. 7 is a plan view of the short outside and a shoe positioned and receiving pressure on the pad of a sole attaching press.

In accordance with the present invention, a short outside 10 is provided having an inner or flesh surface 12 and an outer or tread surface 14 (Fig. 2), and terminating in a straight edge face a short distance rearwardly of the heel breast line of a shoe, this position being indicated by the broken line A in Fig. 1. The outside is provided at the rear portion of its inner or flesh surface 12 with a recess or depression 16 (Figs. 2 and 3) which, as illustrated, is located between or inwardly of the opposite lateral edge faces of the outside. The recess 16 comprises a prick punch hole or opening which does not extend completely through the material of the outside but, as shown in Figs. 2 and 3, penetrates the latter somewhat less than half its thickness so that it does not show on the outer.
or tread surface 14 of the outsole. Moreover, the recess is preferably located intermediately or equidistant from the opposite lateral edge faces of the outsole or, in other words, substantially on the longitudinal median line of the outsole, as shown in Fig. 1. Although the recess 16 is located at the rear portion of the flesh side of the short outsole, it need not necessarily be located rearwardly of the position which corresponds to the heel breath line of a shoe, but may, if desired, be located on or forward of that position, as shown in Fig. 1.

In accordance with one aspect of the invention, the short outsole 16, provided with the prick punch recess as described, has the marginal portion of its inner or attaching surface 12 coated with cement, such as pyroxylin cement, and is mounted on the pad 18 (Fig. 7) of a cement sole attaching press or pad box, which may be of the type disclosed in Letters Patent of the United States No. 2,047,185 granted July 14, 1936 on an application filed in the name of Milton H. Ballard et al., preparatory to being cement attached to the bottom of a shoe S. As disclosed in the patent referred to, the sole attaching press is provided with forepart sole and shoe gages 22 and 22 for rearwardly positioning the foreparts of the shoe sole 10 and shoe S, and it is also provided with a substantially V-shaped shoe gage 24 having oppositely inclined surfaces for engaging the opposite side portions of the heel end of the shoe. In addition to the gages referred to, the sole attaching press or pad box is further provided with a sole gage 26 for the rear end of the outsole especially adapted to engage the opening or recess 16 in the outsole and arranged, in conjunction with the rear shoe gage 24, to position the rear ends of the outsole and shoe relatively to each other on the pad.

The rear sole gage 26 is mounted in a holder or carrier member 28 (Fig. 7) provided on the pad box, this member, as fully disclosed in the Ballard patent, being arranged for pivotal movement heightwise of the pad to move the rear sole gage into and out of operative position with respect to the pad and, when the rear portions of the shoe sole and outsole are to be positioned laterally of the pad, being further arranged for lateral shifting movement if necessary relatively to the shoe heel gage 24. Since the manner in which the forepart and heel gage mechanisms of the pad box operate is fully disclosed in the Ballard et al. patent, it will be unnecessary to go into further detail herein.

The rear sole gage 26 comprises a relatively long flat finger or tongue which may be composed of metal, such as spring steel, and is preferably about ½" thick and about 1" or 1½" wide. At its forward end the tongue 26 is rounded, as shown in Fig. 1, and it is beveled to a thin edge around its forward margin, as indicated by the reference numeral 30. The forward beveled portion of the gage or tongue is also curved transversely, as shown in Figs. 2 and 3, to give it a concave shape which is substantially complementary to the shape of the bottom of the heel portion of the shoe. Near its forward end the gage 26 is provided with a downwardly extending prick punch point or projection 32 which may be riveted or otherwise secured to the gage or, if desired, may be formed integrally therewith, this projection being adapted to engage the hole 16 in the rear portion of the outsole. Preferably, and as illustrated herein, a central portion of the forward end of the gage is cut away to leave an opening 34 forwardly of the projection 32 to reduce the weight of the gage and to facilitate its use by exposing the projection 32 and the hole in the outsole.

The cement on the margin of the outsole is activated as usual by a solvent and the outsole is placed grain side down on the pad 10 of the sole attaching press, as illustrated in Fig. 7. The rear sole gage 26 is swung into operative relation with the pad and the outsole is placed in a predetermined position on the pad. The projection 32 of the gage is moved into engagement with the recess 16 in the outsole with the forward portion of the gage overlying the central or intermediate portion of the rear end of the outsole, as shown in Figs. 1 and 2. As described in the Ballard et al. patent, the sole and shoe gages 20 and 22 are operated to engage or "find" the opposite lateral edge faces of the forepart of the outsole 10 in which position they automatically become locked so that shoe gages arrived thereby will be in a position to locate the forepart of the shoe properly with respect to the outsole. The shoe S with the cement on its bottom surface is next placed on the outsole and the forepart of the shoe is positioned relatively to the outsole by the locked forepart gages. The rear shoe gage 24 is then moved forwardly toward the shoe until the inclined surfaces thereon engage the opposite sides of the heel portion of the shoe after which, in a manner disclosed in the Ballard patent, the rear sole gage 26 may be shifted automatically whatever amount may be necessary properly to position the rear portion of the outsole relatively to the heel portion of the shoe.

The outsole and shoe having been relatively positioned on the pad, pressure applying abutments 36, 38 (Fig. 7), arranged respectively to engage and apply pressure to the forepart and heel portions of the shoe, are moved into engagement with the shoe and are caused to press the shoe and sole forcibly against the pad to apply sole attaching pressure, the forepart gages 20, 22 and the gages 24, 26 remaining in operative engagement with the outsole and shoe during the pressure applying operation. Fig. 7 shows the shoe 5 and outsole 10 receiving pressure in the sole attaching press with the rear sole gage 26 and heel gage 24 located in operative position.

Since the forward portion of the sole gage 26 is shaped to correspond to the curvature of the shoe bottom, the gage does not interfere with the pressure applying operation. It will be noted, moreover, that the forward portion of the sole gage 26 overlaps the rear end of the outsole at the central portion thereof for a considerable distance forwardly of the heel breast line A. This overlapping portion of the gage separates this central portion of the rear end of the outsole from the shoe bottom so that it cannot become stuck thereto under the sole attaching pressure. Accordingly, the outsole 10 will not be cement attached to the shoe bottom at the central or intermediate portion of its rear end which is covered by the sole gage 26.

Another type of sole gage adapted for use in practising the method is illustrated in Figs. 4 to 8, inclusive. In accordance with this aspect of the method, a short outsole 44 is provided which extends only a short distance rearwardly of the heel breast line B of a shoe, and the rear edge face of the outsole has formed therein a recess 46 which is shown as a V-shaped notch or opening located rearwardly of the heel breast line B and between or intermediate of the opposite
lateral edge faces of the outsole. Preferably, the V-shaped notch 46 is located substantially on the longitudinal median line of the outsole so that it is equidistant from the opposite edges thereof and, as shown in Fig. 4, it extends completely through the thickness of the outsole.

The gage 48 is provided comprising a lower finger or tongue 50 which may be mounted in the gage holding member 28 of the pad box, the tongue having at its forward end an upstanding projection or pin 52 arranged to engage the V-shaped opening 46 in the outsole. The forward end of the tongue 50 is straight at opposite sides of the pin 52 and is provided at such portions with upstanding projections or prongs 54 which are pointed at their upper ends, as shown in Fig. 6. The gage 48 also includes an upper tongue 56 spaced above the tongue 50 a little more than the thickness of a normal outsole, the tongue 56 extending farther forwardly than the lower tongue 50 and having a rounded forward portion 58 which is curved transversely, as shown in Figs. 5 and 6, to correspond to the curvature at the heel portion of a shoe bottom. The pin 52, as illustrated, is longer than the space between the tongues 50 and 56 and the upper portion of the pin passes loosely through a hole 60 formed in the curved portion of the tongue 56. The pin 52 may be riveted or otherwise secured to the lower tongue 50, and the projections 54 are preferably integral with the tongue as illustrated but they could, of course, be separate members secured to the tongue in any usual or convenient manner.

In practising the method, the rear sole gage 48 is moved into operative relation with the pad 18, as described above, and the outsole 44 is placed in a predetermined position on the pad. The gage 48 is then moved until the V-shaped opening 46 is engaged by the pin 52. This locates the rear portion of the outsole in a predetermined position on the pad and the forepart gages 20, 22 may then be operated to engage or find the forepart of the outsole, after which they become locked to determine the position of the forepart of the shoe relatively to the outsole. It will be seen that when the pin 52 engages the opening or notch 46, the projections 54 will underlie the outer or tread surface of the outsole at points located rearwardly of the heel breast line B. Moreover, the concave portion 50 of the upper tongue 56 will overlap the central portion of the rear end of the outsole in the manner already described in connection with the sole gage 26.

The shoe is placed on the outsole 44 in the position determined by the gages 20, 22 and the heel portion of the shoe is engaged by the rear sole gage 24 after which the rear sole and shoe gages 48, 24 automatically shift whatever extent may be necessary in order to position the heel portion of the shoe relatively to the rear portion of the outsole. The pressure applying abutments 36 and 38 are moved into engagement with the shoe and pressure is applied to cement the outsole to the shoe bottom. Since the upstanding pin 52 engages only the open notch 46 in the rear edge face of the outsole, it will be seen that, while the pressure is being applied, there might be a tendency for the outsole to shift lengthwise away from the gage during the application of pressure or before sufficient pressure has been applied to clamp the outsole against the pad and prevent such movement. Lengthwise movement of the outsole is effectively prevented by the projections 54 which, during the first part of the pressure, are caused to penetrate the outer surface of the outsole and thus hold it against lengthwise movement until sufficient pressure has been applied to clamp the outsole against such movement. As the pressure increases the projections 54 penetrate into the material of the outsole but since these projections are located rearwardly of the heel breast line B, the indentations made thereby will not show in the finished shoe because this portion of the outsole will be concealed in the transverse groove in the breast of the heel. Furthermore, the V-shaped recess 46 is likewise located rearwardly of the heel breast line B so that it too will be concealed in the groove in the breast of the heel.

The overlapping portion 58 of the upper tongue 56 covers the cement on the rear portion of the outsole and separates it from the shoe bottom in the manner already described and thus prevents the central portion thereof from becoming attached to the shoe bottom, thereby providing an opening into which the forwardly projecting lip of the heel may be inserted when the heel is applied to the shoe.

It will be seen from the foregoing that an outsole which terminates a short distance rearwardly of the heel breast line of a shoe may be readily and accurately positioned relatively to a shoe bottom by the present method with the aid of the apparatus herein disclosed without disfiguring the rear portion of the outsole in a manner that will show in the finished shoe and mar its appearance. Moreover, the method provides a convenient way of cement attaching a short outsole to a shoe bottom while simultaneously providing an opening or pocket between the rear portions of the outsole and the shoe bottom for receiving the forwardly projecting lip of a heel which is adapted for use with such an outsole and is arranged to interengage with the outsole in the manner described.

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 making shoes which comprises providing an outsole which extends only a short distance rearwardly of the heel breast line of a shoe and has a recess in its rear portion located between the opposite edge faces of the outsole, maintaining said outsole in a predetermined position by engaging said recess, placing a shoe on the outsole and positioning the shoe relatively thereto, attaching the outsole to the shoe while maintaining the relative positions thereof, and during the attaching operation holding the central portion of the rear end of the outsole separated from the shoe bottom for a substantial distance beyond the recess both lengthwise and widthwise, thereby providing an opening between the rear portions of the outsole and shoe bottom for the reception of the lip of a Breastlock heel.

2. That improvement in methods of making shoes which comprises providing an outsole which terminates a short distance rearwardly of the heel breast line of a shoe and has a recess in its rear portion located adjacent to the heel breast line and between the opposite edge faces of the outsole, locating the outsole in a predetermined position and engaging said recess to maintain the
outsole in said position, placing a shoe on the outsole and positioning the shoe relatively thereto by engaging the opposite sides of the shoe, applying pressure to the outsole and shoe to cement attach the outsole to the shoe bottom, and during the attaching operation holding the central portion of the rear end of the outsole separated from the shoe bottom for a substantial distance beyond the recess both lengthwise and widthwise, thereby providing an opening between the rear portions of the outsole and shoe after the outsole is attached to the shoe for the reception of the lip of a Breastock heel.

3. That improvement in methods of making shoes which comprises providing an outsole which extends only a short distance rearwardly of the heel breast line of a shoe and has a recess in its rear portion located between the opposite edges thereof, locating the outsole in a predetermined position and holding it in that position by engaging said recess, placing a shoe on the outsole and positioning the shoe and outsole relatively to each other, applying pressure to the outsole and shoe to cement attach the outsole to the shoe bottom, and holding the central portion of the rear end of the outsole separated from the shoe bottom during the pressure applying operation, thereby providing an opening between said central portion and the shoe bottom, said opening extending substantial distances beyond said recess lengthwise and widthwise of the outsole.

4. That improvement in methods of making shoes which comprises providing an outsole which terminates a short distance rearwardly of the heel breast line of a shoe and has a recess in its rear portion which does not pass completely through the thickness of the outsole and is located between the opposite edges thereof, locating the outsole in a predetermined position and engaging said recess to hold the outsole in said position, placing a shoe on the outsole and positioning the shoe and outsole relatively to each other while the recess in the outsole is still engaged, and, while maintaining the outsole and shoe in their respective positions, applying pressure thereto to cement attach the outsole to the shoe bottom.

5. That improvement in methods of making shoes which comprises providing an outsole which terminates a short distance rearwardly of the heel breast line of a shoe and has a recess in its rear portion which does not extend completely through the outsole, said recess being located intermediate of the opposite edges of the outsole, locating said outsole in a predetermined position and engaging said recess to maintain it in such position, positioning a shoe relatively to the outsole while the latter is thus engaged, and, while maintaining the outsole and shoe in their proper relative positions, cement attaching the outsole to the shoe bottom.

6. That improvement in methods of making shoes which comprises providing an outsole which terminates in a straight edge face a short distance rearwardly of the heel breast line of a shoe and has an opening in its rear portion located approximately on the longitudinal median line of the outsole and not extending completely through the outsole, engaging said opening and maintaining the outsole in a predetermined position by such engagement, placing a shoe on the outsole and engaging the opposite sides of the shoe, relatively positioning the outsole and shoe by means of the engagements therewith, and applying pressure to the outsole and shoe while maintaining said engagements to cement attach the outsole to the shoe bottom.

7. That improvement in methods of making shoes which comprises providing an outsole which terminates in a straight edge face a short distance rearwardly of the heel breast line of a shoe and has a recess in said edge face located between the opposite lateral edges of the outsole, locating the outsole in a predetermined position and engaging said recess to maintain the outsole in said position, placing a shoe on the outsole and positioning the shoe and outsole relatively to each other, attaching the outsole to the shoe bottom while maintaining the relative positions of the outsole and shoe, and holding a portion of the rear end of the outsole separated from the shoe bottom during the attaching operation, thereby providing an opening between the rear portions of the outsole and shoe bottom.

8. That improvement in methods of making shoes which comprises providing an outsole which extends only a short distance rearwardly of the heel breast line of a shoe and has a recess formed in its rear edge face extending completely through the thickness of the outsole and located between the opposite lateral edges thereof, locating the outsole in a predetermined position and engaging said recess to maintain the outsole in said position, placing a shoe on the outsole and positioning the shoe relatively thereto by engaging the opposite sides of the shoe, applying pressure to the outsole and shoe while they are maintained in their proper relative positions by the engagements therewith to cement attach the outsole to the shoe bottom, and holding the central portion of the rear end of the outsole separated from the shoe bottom during the pressure applying operation, thereby providing an opening between said central portion of the outsole and the shoe bottom, said opening extending substantial distances forwardly and laterally of the recess in the rear edge face of the outsole.

9. That improvement in methods of making shoes which comprises providing an outsole which extends only a short distance rearwardly of the heel breast line of a shoe and has a recess in its rear portion located between the opposite lateral edges of the outsole, said outsole having the marginal portion of its inner surface coated with cement, locating the outsole in a predetermined position and engaging said recess to hold the outsole in said position, placing on the outsole a shoe having cement on its bottom surface and positioning the shoe and outsole relatively to each other by engaging the opposite sides of the shoe, holding the central portion of the rear end of the outsole separated from the shoe bottom for a substantial distance laterally and forwardly of the recess, and applying pressure to the outsole and shoe to cement attach the outsole to the shoe bottom while providing an opening between the shoe bottom and the central portion of the rear end of the outsole which is separated from said shoe bottom during the pressure applying operation.

10. That improvement in methods of making shoes which comprises providing an outsole which terminates in a straight edge face a short distance rearwardly of the heel breast line of a shoe and has a recess in its rear portion which does not pass completely through the thickness of the outsole and is located substantially on the longitudinal median line thereof, said outsole having the marginal portion of its inner surface coated with cement, locating the outsole in a
predetermined position and engaging said recess to maintain the outsole in said position, placing on the outsole a shoe having cement on its bottom surface, engaging the opposite sides of the shoe and relatively positioning the shoe and outsole by means of the engagements therewith, holding the central portion of the rear end of the outsole away from the shoe bottom by covering said portion, and applying pressure to the outsole and shoe to cement attach the outsole to the shoe bottom except at the covered portion of the outsole where an opening is provided between the outsole and the shoe bottom.

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