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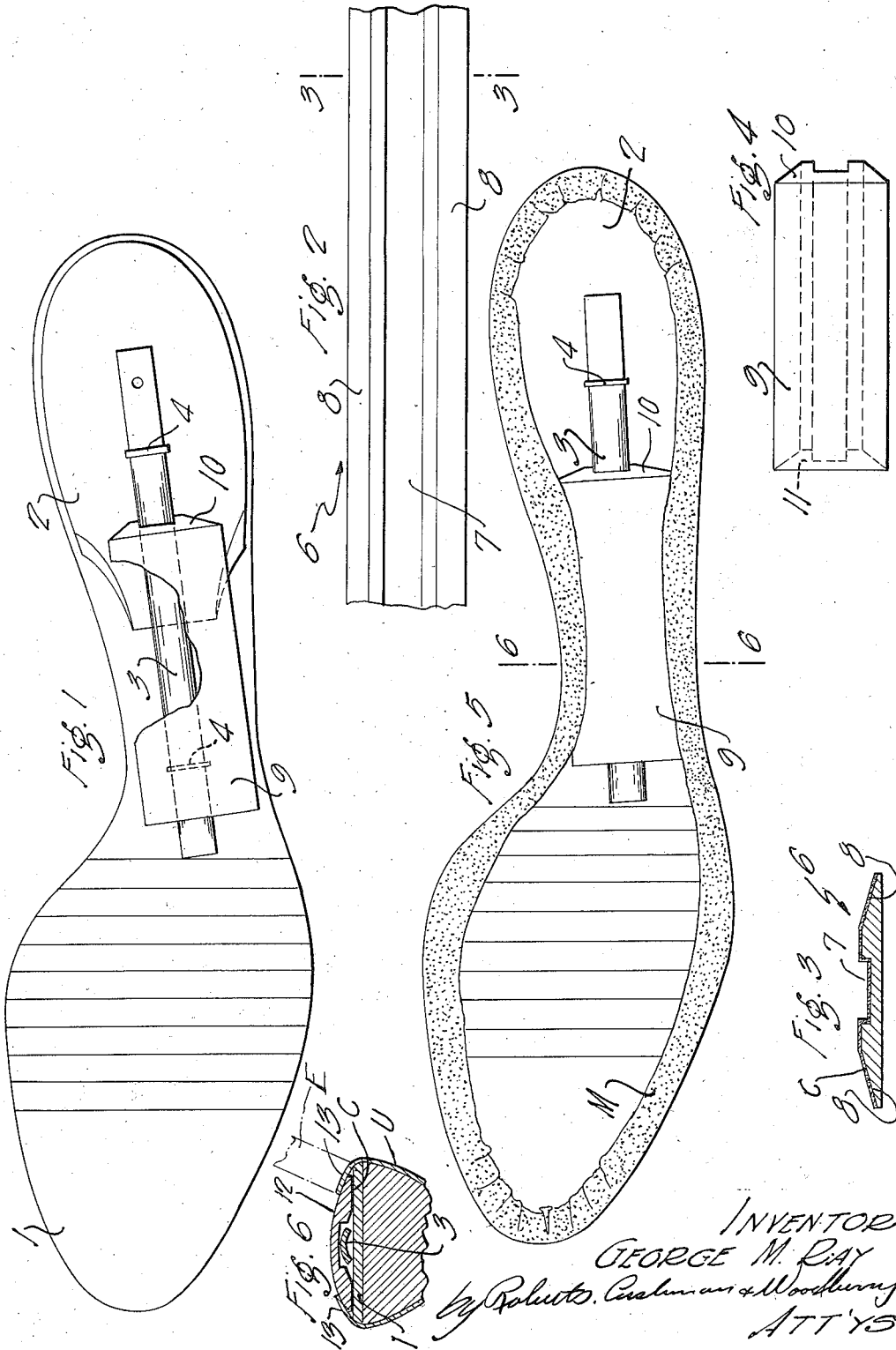
G. M. RAY

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MANUFACTURE OF FOOTWEAR

Filed July 12, 1932

2 Sheets-Sheet 1



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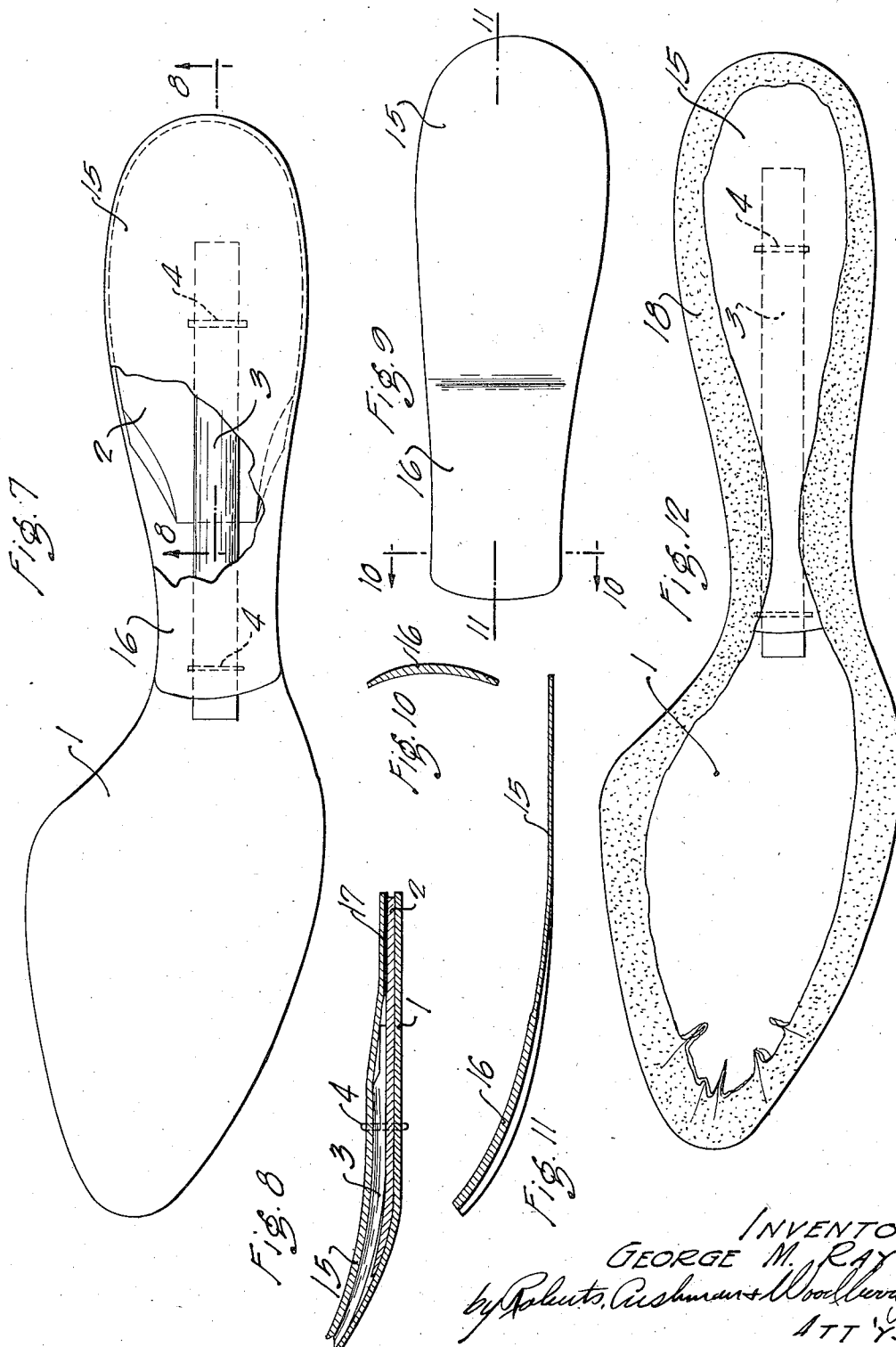
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## UNITED STATES PATENT OFFICE

2,011,948

## MANUFACTURE OF FOOTWEAR

George M. Ray, Newton, Mass., assignor to Bancroft-Walker Company, Boston, Mass., a corporation of Massachusetts

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4 Claims. (Cl. 36—76)

This invention pertains to the manufacture of footwear, and relates more especially to an improved insole useful, for example, in making shoes in which the outer sole is permanently attached by means of cement. In my prior Patent No. 1,641,782, dated September 6, 1927, I have described a shoe comprising an insole blank which, before application to the last, is provided with a stiff metallic shank piece curved longitudinally to conform to the curvature of the shank of the last. This metallic shank piece is accurately positioned upon the insole blank and is permanently attached thereto by means of rivets or the like before the insole is assembled with the upper upon the last.

While the patented construction is highly desirable in the manufacture of shoes of the McKay sewed or Littleway stapled type, I find that it possesses certain disadvantages when used in the manufacture of the kind of shoe in which the outer sole is united to the shoe bottom by means of cement. In making the latter type of shoe, it is customary to grind or otherwise abrade the bottom material, or at least the marginal portion thereof, before application of the outer sole, so as to provide a level and fibrous surface adapted to furnish a secure anchorage for the sole-attaching cement.

This abrading operation can be carried out without substantial difficulty on shoes which have no metallic shank stiffener member, or wherein the shank stiffener is attached after the abrading operation is complete, and even upon shoes such as disclosed in my aforesaid patent, providing the shank portion of the shoe is of sufficient width. However, when shoes of the latter type have narrow shank portions, I find that the metallic shank piece projects so much higher than the marginal turned portion of the upper that the abrading wheel rides on the shank piece and does not contact with the marginal upper material enough to produce the desired results.

In accordance with the present invention, I avoid this difficulty by the use of a shield which preferably forms a permanent part of the composite insole structure, but which covers and conceals the metallic shank piece and whose opposite edge portions receive and support the intumed marginal edges of the shoe upper from the front end of the shoe shank rearwardly substantially to the heel end of the shoe. Thus the margin of the upper is properly exposed to the action of the abrading wheel. This shield member is preferably made of some fibrous material, for example, leather, leather board, fiber board,

or the like, having properties in general similar to those of the insole blank, its edge portions in effect constituting the exposed surface of the insole structure at the shank. Preferably this shield is assembled with and permanently secured to the other parts of the composite insole structure before the latter is mounted on the last, although I contemplate its application thereto at a later time in the process, and obviously other attaching means than cement may be employed.

In the accompanying drawings, wherein I have illustrated certain embodiments of the invention by way of example,

Fig. 1 is a plan view, partly broken away, illustrating a preferred embodiment of my improved composite insole;

Fig. 2 is a plan view of a length of material suitable for use in making the shield member of my improved insole;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a bottom plan view of a shield member ready for use in covering the shank stiffener piece;

Fig. 5 is a view of the bottom of a lasted shoe embodying my improved composite insole, showing the lasted-in margin of the upper at the shank portion as having been abraded for the reception of sole attaching adhesive;

Fig. 6 is a section on the line 6—6 of Fig. 5;

Fig. 7 is a bottom plan view of a composite insole constructed in accordance with another embodiment of the present invention, and with a part of the shield element broken away to exhibit the parts beneath it;

Fig. 8 is a fragmentary section substantially on the line 8—8 of Fig. 7;

Fig. 9 is a plan view of the shield member of Fig. 7 before assembly with the other parts of the insole;

Fig. 10 is a section on the line 10—10 of Fig. 9;

Fig. 11 is a section on the line 11—11 of Fig. 9; and

Fig. 12 is a view showing the appearance of the bottom of a lasted shoe embodying an insole of the type illustrated in Fig. 7, and showing the marginal portion of the shoe bottom abraded and ready for the reception of the outer sole.

Referring to the drawings, the numeral 1 designates an insole blank of any usual sheet material, such as leather, fiber board, or the like, and which is cut from the material to a shape substantially conforming to that of the bottom of the last upon which the shoe is to be lasted. I also provide a shank piece or stiffener 3 which is pref-

erably of the type disclosed in my Patent No. 1,641,782, above referred to, such stiffener being of steel or other suitably rigid material and curved longitudinally so as substantially to conform to the longitudinal curvature of the shank portion of the last. Preferably I also provide a sole stiffening member or tuck piece 2 which I prefer to make from sheet material relatively stiffer and harder than the insole blank 1 and which is shaped substantially to conform to the heel portion of said insole blank. Such a sole stiffening member is disclosed in my above-mentioned patent, and in assembling the parts is placed upon the rear part of the blank member 1 in substantial registry with the latter, and the metallic shank piece 3 is then so arranged that its rear part overlies the member 2, the parts then being permanently secured together, as for example by staples 4, or, if desired, by rivets, as shown in my patent referred to above.

In accordance with the preferred embodiment of my invention I utilize a previously prepared strip of appropriate material, for example, leather, for making my shank shielding member. Thus, as illustrated in Fig. 2, I may provide a strip 6 of indefinite length which may be prepared similarly to ordinary leather welting but which has a centrally arranged longitudinally extending groove 7 of a width and depth to accommodate the shank stiffener piece 3. Preferably this strip has its lateral margins beveled as indicated at 8 so as to provide a feather edge. If desired, the grooved and beveled face of the strip is coated with adhesive, for example, rubber cement C. Preferably the cement is of such a nature that it is not normally very sticky but will become adhesive when subjected to pressure or after treatment with a solvent. The strip 6 may be made of any desired length and may be coiled for convenience in handling. The adhesive may be applied to the entire strip, or may be applied to the individual shield members at any desired time before assembling with the other insole parts.

Having provided the strip 6, I next proceed to cut off suitable sections of the strip, as indicated at 9 in Fig. 4, for use as shield members. These sections 9 preferably are cut from the strip 6 so as to provide beveled edges 10 and 11 respectively at the opposite ends of the shield member. If desired, the length of the shield member 9 may be sufficient to extend from one end to the other of the shank stiffener piece 3 and it should extend at least throughout the narrowest portion of the insole shank, the width of the strip 6 approximating the width of the narrowest portion of the insole shank.

Having prepared the shield piece 9, it is now assembled with the parts 1, 2 and 3, as indicated in Fig. 1,—the opposed surfaces of the parts 9 and 1 having first been made adhesive as by the application of cement or solvent for cement previously applied. In many cases it may be sufficient to apply the solvent to the shield member 9 alone.

In assembling the parts the groove 7 receives the shank piece 3 while the thin lateral margins 8 of the shield member are pressed down into snug contact with the edge portions of the blank 1 so that the intervening cement C unites them securely. The shield member thus covers the shank piece and, as indicated in Fig. 6, its under surface 12 provides a smoothly rounded support onto which the lateral margins of the upper U are subsequently lasted. Since the transverse

curvature of this surface 12 is gradual, the lasted-in margins 13 of the upper U are freely exposed to the abrading wheel or other device employed in roughening the shoe bottom, so that they may be roughened with the same ease and certainty as other portions of the shoe bottom.

In the alternative construction illustrated in Figs. 7 to 12, I provide a shield member 15 preferably made from sheet material, for example, fiber board, and of a shape to conform substantially to that of the rear part of the blank 1, the shield as here shown being of such length as to extend from the forward part of the shank portion of the member 1 to its extreme rear or heel end. The shank end 16 of the part 15 preferably is curved both transversely and longitudinally, as indicated in Figs. 10 and 11, respectively, the transverse curvature permitting this shield member to be placed over the shank piece 3, as indicated in Fig. 7, with its lateral edges in substantial contact with the edges of the blank 1, while the longitudinal curvature permits this shield to follow the longitudinal curvature of the shank piece 3. Preferably the rear portion of the member 15 is substantially flat in order to lie closely in contact with the rear part of the sole stiffening member.

The blank 1, the sole stiffening member 2, and the shank piece 3 may first be assembled and permanently united by the staples 4 or equivalent means, as above described, and then after placing the shield 15 over the member 2 and in registry with the rear part of the blank 1, the shield may be secured permanently in position, as for example by the use of cement, indicated at 17 in Fig. 8. However, other modes of attaching this shield may be employed, and if desired, the same fastener elements may be used for securing all of the parts in permanent union.

The composite insole thus provided, whether of the kind shown in Figs. 1 or 7, is now employed in making shoes in the same way as insoles of ordinary construction;—for example, the insole is mounted upon the bottom of the last and secured in place by tacks, the upper is pulled over the last, and the margin M of the upper is lasted in over the bottom face of the insole. After the lasting operation is complete the marginal portion of the shoe bottom is subjected to a grinding or other abrading device E (Fig. 6), so as to level it and provide a fibrous surface, as indicated at M in Fig. 5 or at 18 in Fig. 2, it being understood that as much or as little of the bottom surface may be abraded as is requisite, thereby to form a good anchorage for the outer sole attaching cement.

When in the appended claims I refer to one part of the shoe as "beneath" another, I have reference to the relative arrangement of the parts when the shoe is right side up in the position of use.

While I have herein disclosed certain desirable embodiments of the invention by way of example, I wish it to be understood that changes in size, shape, and relative proportion of parts, as well as the substitution of equivalent materials and equivalent arrangements, may be made without departing from the spirit of the invention.

I claim:

1. A strip of sheet material of indefinite length for use in the preparation of shields for the shank stiffener pieces of insoles, said strip comprising a length of flexible material of a width approximating the width of the narrowest part of the

insole shank, said length of material having a longitudinally extending groove designed to receive a shank stiffener piece, and having beveled lateral edges coated with an adhesive for attaching it to the insole.

2. A strip of sheet material of indefinite length for use in the preparation of shields for stiffener shank pieces of insoles, said strip comprising a length of leather of a substantially uniform width approximating that of the narrow portion of the insole shank and having a longitudinal centrally disposed groove designed to receive a shank stiffener piece, said strip having beveled edges and having its grooved side coated with adhesive for attaching it to the insole.

3. A composite insole for shoes comprising a normally flexible insole blank substantially conforming in shape to a last bottom, a stiffening piece shaped substantially like the heel portion of the blank and disposed in registry with and at the under side of the blank, a shield of fibrous material substantially flat at its rear part and curved both longitudinally and transversely at its forward part, said shield extending from the forepart of the shank portion of the blank substantially to the rear end of the latter and having its lateral edges substantially in registry with

the edge of the blank, the rear part of the shield being disposed beneath the stiffener, a stiff longitudinally curved shank piece having its forward part interposed between said blank and shield and its rear part interposed between the shield and stiffener, and fastening means permanently uniting the shank piece, stiffener and shield to the blank.

4. A composite insole for shoes comprising a blank shaped to conform substantially to a last bottom, a stiffening piece shaped substantially like the heel portion of the blank and disposed in registry with and at the under side of the blank, a shield extending from the forward part of the shank portion of the blank rearwardly to the heel end of the latter, said shield being so shaped that its lateral edges substantially register with the edges of the blank, the rear part of said shield being disposed beneath the stiffener, a metallic shank piece having its forward part interposed between the blank and shield and its rear part interposed between the shield and stiffener, and fastener means permanently uniting the blank, stiffener, shield and shank piece.

GEORGE M. RAY.