Feb. 21, 1950 W. G. GREENAN 2,498,037

LAST FOR USE IN THE MANUFACTURE OF SAFETY SHOES

Original Filed April 1, 1948

Fig. 1

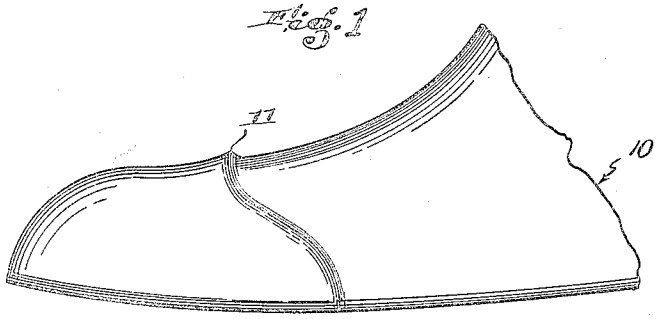


Fig. 2

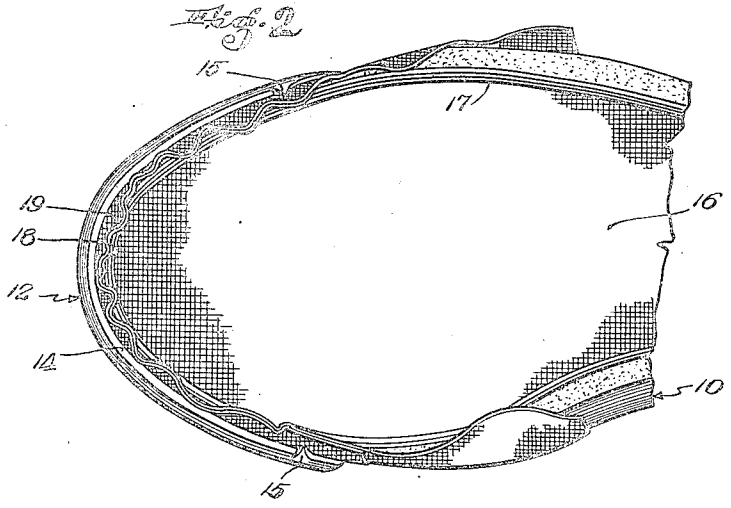
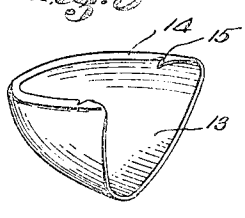


Fig. 3



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LAST FOR USE IN THE MANUFACTURE OF SAFETY SHOES

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Original application April 1, 1948, Serial No. 18,459, now Patent No. 2,457,463, dated December 28, 1948. Divided and this application December 11, 1948, Serial No. 64,756

3 Claims. (Cl. 12—133)

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This invention comprises a new and improved last for use in making safety shoes, that is to say, shoes having a metal box toe protecting the toes of the wearer against danger of crushing from heavy metal objects falling thereon.

Safety shoes as heretofore constructed have presented the awkward appearance of heavy work shoes and have usually included a tip employed to conceal the additional thickness in the upper caused by the metal box. By employing the last of my invention it is possible for the first time to make safety shoes in plain toe or wing tip style and in general to improve the style, fit and appearance of safety shoes.

I have discovered that these desirable results may be secured by placing a metal toe box upon the toe of a last having a transverse ridge extending approximately across its tip line with the rear arched edge of the box disposed in front of the ridge on the last and then lasting the leather tip on the upper smoothly over the metal box. The ridge provided in the last is formed by the addition of wood to the last so that the ridge projects somewhat above the normal contour of the last and by an amount sufficient to compensate for the thickness of the metal box and if desired the additional thickness of an inner lining which in some cases includes a plastic box. When the leather tip of the upper is lasted it presents a smooth streamline exterior surface even in a plain toe oxford made with a full vamp. The vamp flows over the edge of the box without receiving any perceptible impression from the metal concealed therein.

Going more into detail the shoemaking process may include the steps of placing a lining and also a plastic toe box upon the toe end of the last, then placing a metal toe box over the plastic box with its rear edge disposed wholly in front of the ridge on the last, padding the outer surface of the metal toe box and finally lasting the leather tip of the upper smoothly over the assembled parts. The inner lining and plastic box insulate the metal of the metal box from the toes of the wearer, they supply material which guards the toes of the wearer from the metal of the toe box in case of erosion and they form a bite pad extending beyond the rear end of the metal box and thus increase the comfort of the shoe in wear, whereas it has been necessary heretofore to employ a vamp cut-off and to abut this carefully against the rear edge of the steel box. This is no longer necessary as already explained and a plain toe vamp may be employed with entire satisfaction.

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My invention comprises the novel last herein shown as employed in carrying out the process above outlined. This is shown as provided with a transverse ridge which may extend across the toe of the last in proximity to its tip line or may extend in a sinuous curve corresponding generally to the outline of a wing tip. Preferably the ridge is convex in form, being formed by convex surfaces meeting in a common vertex and projecting beyond or above the normal contour of the last.

These and other features and characteristics of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof as illustrated in the accompanying drawings in which—

Fig. 1. is a view in elevation of the forepart of the last,

Fig. 2 is a fragmentary plan view showing the bottom of the lasted shoe, and

Fig. 3 is a view in perspective of a metal toe box.

The last 10 is complete in contour but provided with additional wood in the shape of a transverse ridge 11 extending from the bottom edge of the last on one side, across the forepart of the last in the vicinity of the tip line and to the bottom edge at the other side of the last. It may extend straight across the last or it may follow the undulating curve of the wing tip as shown in Fig. 1 in which the center of the ridge is considerably in advance of its rear ends. The ridge itself is formed by two concave surfaces converging to a common apex. In practice the ridge 11 may project about $\frac{1}{16}$'' beyond the normal contour of the last.

The metal toe box employed in the shoemaking process may be of any commercial construction. Such a metal box is illustrated in Fig. 4. It comprises a convex dome-shaped box portion 12 having an arched rear edge 13 and an inturned marginal flange 14. The rear edge 13 is herein shown as being substantially straight but its shape may be varied in accordance with the type of shoe in which the box is to be used. In some instances it will have a wing tip shape similar to that shown in Fig. 1.

The metal toe box herein shown is provided at each side of its inturned flange, adjacent to the rear corners of the box, with a barb 15. This may be made by cutting the flange 14 and bending the material thereof downwardly to form forwardly directed barbs. The purpose of these barbs, as will be apparent, is to prevent outward

displacement of the box when it has been once positioned in the toe of the shoe.

In carrying out the shoemaking process the lined upper is assembled upon the last and pulled over in the usual manner. An insole 16 has previously been tacked to the last bottom and if the shoe is to be of the Goodyear type, the insole will include a sewing rib 17 as shown in Fig. 2. The outer integuments of the upper are then turned back and the lining 18 is lasted smoothly over the toe of the last and the ridge 11. A plastic box 19 is then positioned smoothly upon the lining with its rear edge terminating in advance of the ridge 11. The lining and plastic box are superposed in continuous face-to-face engagement and their marginal portions are overlasted in pleats upon the toe end of the insole 16. The lining 18 is herein shown as secured to the rib of the insole by lasting staples 22. The plastic box may be of the solvent softening type or of the heat softening type, but in either case the box and the lining become bonded together and form a substantial protective ply lying next to the foot of the wearer in the toe of the shoe.

Now the metal box is pressed firmly upon the toe of the last enclosing the protective ply just described. The pleats of this ply are somewhat compacted by the metal box and the latter is held in place by the bite of the barbs 15 into the underlying material. The rear edge of the metal box 12 is located close to and in front of the ridge 11. The ridge 11 and the rear arched edge of the metal box conform to each other in curvature and the height of the ridge above the normal contour of the last is substantially equal to the combined thickness of the metal box 12 and the interior ply formed by the lining 18 and the plastic box 19.

It is generally advantageous to cover the metal box with a felt pad which also terminates in the vicinity of the ridge 11. This pad may be employed or not as preferred by the manufacturer.

Finally the outer leather integument of the upper, which has been turned back in the meantime, is restored to position and lasted in the usual manner over the padded metal box. In forming the toe portion of the shoe in the manner above explained the outer ply of the upper will be found to extend smoothly and with a very pleasing streamline effect over the metal box 12 and the parts assembled with it. As already intimated a plain toe shoe made with a full vamp in this manner presents a smooth appearance with no indication of the concealed metal box. Similarly, if the upper includes a tip, the vamp

cut-off may be located wherever it happens to come and no visible ridge is formed in the tip by the concealed metal box. This permits the employment of wing tips of any selected design.

The fact that the metal box is provided with the barbs 15 is of decided advantage in that it prevents the box from being accidentally twisted during the shoemaking process and so retains it in proper position to escape being struck by the needle in the welt sewing operation. Heretofore much annoyance has been caused by needle breakage due to slight angular displacement of the metal box.

While the last has been described as provided with a projecting rib formed from the wood of the last, it may in some cases be found convenient to form the ridge of metal, leather, or plastic composition and apply it to the contour of the last. In some cases it may also be desirable to depress or reduce the surface of the last in advance of the rib 17 to compensate for the thickness of the materials making up the box. Such construction would be within the scope of the present invention.

The present application is a division of my copending application Serial No. 18,459, filed April 1, 1948, now Letters Patent No. 2,457,463 dated Dec. 28, 1948, in which I have claimed the novel process of making safety shoes which is carried out with the assistance of the last herein claimed.

Having thus disclosed my invention and described in detail illustrative embodiments thereof, I claim as new and desire to secure by Letters Patent:

1. A last for use in the manufacture of safety shoes having a transverse ridge extending approximately across its tip line and projecting beyond the normal contour of the last.

2. A last for use in the manufacture of safety shoes having a projecting transverse ridge which extends across the toe of the last in proximity to its tip line in a sinuous curve corresponding generally to the outline of a wing tip.

3. A last for use in the manufacture of safety shoes having the conventional contour of a last with the addition of an outwardly projecting ridge extending from the last bottom on one side, upwardly and forwardly across the forepart of the last in the vicinity of the tip line and then rearwardly and downwardly to the last bottom on the other side of the last.

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No references cited.