Nov. 19, 1940. W. N. BRAY 2,221,860

SHOE PART AND METHOD OF MAKING THE SAME

Filed Feb. 20, 1939

Fig.1

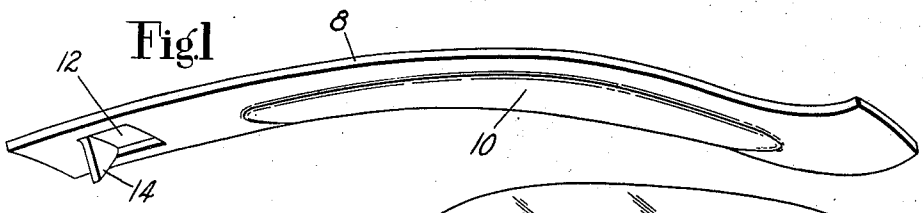


Fig.2

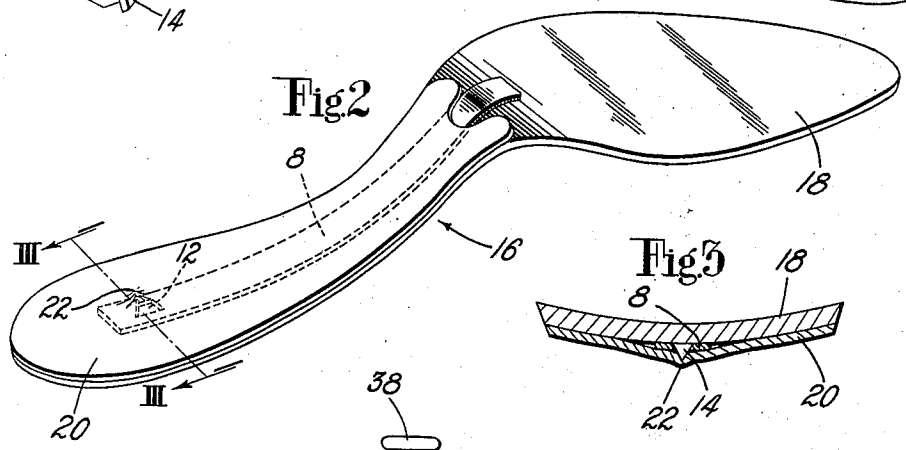


Fig.3

Fig.4

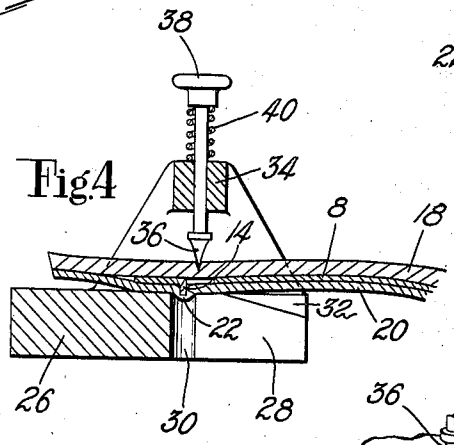


Fig.5

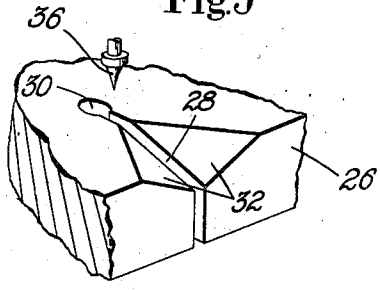
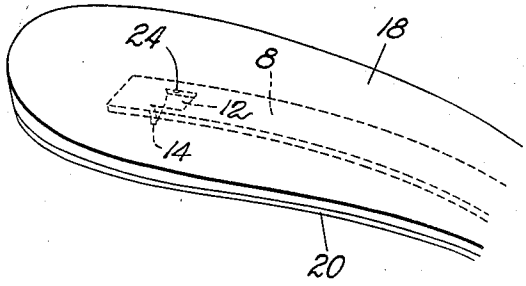


Fig.6



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Patented Nov. 19, 1940

2,221,860

UNITED STATES PATENT OFFICE

2,221,860

SHOE PART AND METHOD OF MAKING THE SAME

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Application February 20, 1939, Serial No. 257,448
In Great Britain March 9, 1938

6 Claims. (Cl. 12—146)

This invention relates to improvements in shoemaking and to improvements in shoe parts and apparatus for use therein.

In United States Letters Patent No. 2,065,463, granted December 22, 1936, on application of J. M. Whelton, there is described a reinforced insole unit comprising an insole and a reinforcing piece coextensive with the heel and shank portion of the insole, the insole and the reinforcing piece being secured together and having interposed between them a metallic shank stiffener suitably arched to conform to the longitudinal curvature of a last bottom. Such a unit may be made by coating with a suiatble adhesive those surfaces of a reinforcing piece and an insole which are to be placed in contact with each other and assembling these parts together with a shank stiffener in an assembling machine, such as that disclosed in United States Letters Patent No. 2,083,583, granted June 15, 1937, on application of J. M. Whelton (which machine imparts a preliminary molded shape to the unit), and thereafter finally molding the unit to the ultimately desired shape in a machine such as that described in United States Letters Patent No. 2,065,465, granted December 22, 1936, upon application of J. M. Whelton. Reinforced insole units of this type are now employed to a considerable extent by shoe manufacturers and have been found to enable shoes to be made which retain their shape to an exceptional degree throughout their life.

The present invention is particularly, though not exclusively, concerned with improving the rigidity and the permanence of construction of shoes embodying insole units such as those hereinbefore referred to and by way of example the invention will be herein described with reference to the manufacture of shoes including such units.

It has been found that the permanence of the structure of shoes embodying such units may be increased if a fastener is inserted through the component parts of the unit and is also secured in another part of the shoe, for instance, the outsole or the heel. For example, if after the heel has been attached to the shoe a screw be inserted through the heel seat of the insole, through an aperture in the shank stiffener, through the reinforcing piece and the outsole and into the heel the screw will serve permanently to hold these parts in the desired relationship and reduce any risk of the shank piece slipping from proper position during the life of the shoe. It will be apparent, however, that if a shank stiffener having a fastener-receiving aperture therein is included in a unit, such as the unit above referred to, the aperture in the shank stiffener will be covered at one side by the insole and at the other side by the reinforcing piece and it will be difficult to insert a fastener with any certainty that it will pass through the aperture in the metallic shank stiffener.

In accordance with one of its several features the present invention provides a method whereby such insole units as those above referred to may be made, including an apertured shank stiffener, and whereby a fastener can, in the manufacture of the shoe, be inserted through the unit with assurance that the fastener will pass through the aperture in the shank stiffener. Invention is also to be recognized as residing in an insole unit of novel construction.

The invention will be explained with reference to the accompanying drawing, in which:

Fig. 1 is a perspective view of an illustrative form of shank stiffener for use in the practice of the illustrative method;

Fig. 2 is a perspective view of the bottom of a reinforced insole unit comprising an insole and a reinforcing piece having between them the shank stiffener shown in Fig. 1;

Fig. 3 is a sectional view taken along the line III—III of Fig. 2, the unit being shown right-side-up;

Fig. 4 is a sectional view of a marking device for use in operating upon the insole unit shown in Figs. 2 and 3;

Fig. 5 is a perspective view of a portion of the work support in the apparatus shown in Fig. 4; and

Fig. 6 is a fragmentary perspective view showing the upper side of the rear portion of an insole unit as it appears after it has been marked by means of the apparatus shown in Fig. 4.

Referring to the drawing, the shank stiffener 8 (Fig. 1) consists of a narrow metallic strip the major portion of which is arched longitudinally to correspond to the desired last bottom curvature. As shown, the middle portion of the stiffener is arched transversely as indicated at 10 to give the stiffener greater rigidity. Formed in the rear or heel end portion of the stiffener is an aperture 12 through which a screw or other fastener may be passed as will be hereinafter described. The aperture 12 is herein shown as being substantially square in outline. In forming the aperture 12 part of the metal of the shank stiffener is removed but a triangular portion is left which is struck up substantially at right angles to the plane of the adjacent portion of

the stiffener to form a triangular prong 14 at the side of the stiffener which will be lowermost when the stiffener is in place in a shoe.

The shank stiffener 8 is utilized in the manufacture of a reinforced insole unit 16 (Fig. 2) of the general type described in Patent No. 2,065,463, hereinbefore referred to, which comprises, in addition to the shank stiffener, an insole 18 which may be made of leather, and a heel and shank reinforcing piece 20 which may advantageously be composed of fiberboard. In the manufacture of the unit, after the insole and the reinforcing piece have had cement or other suitable adhesive applied to them they are assembled in a machine like that described in the above-mentioned Patent No. 2,065,465. The prong 14 of the shank stiffener 8 is on the side of the stiffener which is adjacent to the reinforcing piece 20 and, as the parts are pressed together, the prong will sink into and partly penetrate the reinforcing piece 20 and, in addition, it will bulge the material of the reinforcing piece outwardly to form a well-defined elevation or protuberance 22 on the external lower surface of the reinforcing piece.

The protuberance 22 on the reinforcing piece 20 is used as a means from which to gage the location of a mark, for example the prick mark 24 (Fig. 6) in the upper surface of the insole 18 so that the mark will be in line with the center of the aperture 12 in the shank stiffener 8. The mark 24 may be made in the desired location on the insole with the aid of apparatus such as that illustrated in Figs. 4 and 5. This apparatus comprises a table or work support 26 having a channel 28 in its upper surface, the channel extending inwardly from the edge of the table and terminating in a recess 30 shaped to receive and closely confine the protuberance 22 on the reinforcing piece 20. The width of the channel 28 is slightly less than the diameter of the recess 30 except where, as indicated at 32, 32, the walls in the upper portion of the channel flare toward the surface of the table and away from the recess to facilitate the entrance of the protuberance into the narrow portion of the channel, which, as shown, may be in the form of a vertical slot extending entirely through the table, the surface of the table adjacent to the slot being hollowed out to provide the flaring channel walls above referred to. Also, as shown, the recess 30 may consist of a vertical bore extending through the table. The insole unit with the protuberance 22 on the surface of the reinforcing piece 20 is laid upon the table 26 with the protuberance against the table and with the longitudinal axis of the insole unit extending forwardly and rearwardly (i. e., parallel to the channel 28) and with the heel portion of the unit directed rearwardly. The operator will roughly position the protuberance 22 in the hollow formed by the flaring portion of the channel and thereafter he can readily by the sense of touch bring the protuberance 22 into the narrow bottom of the channel. He will then push the insole unit rearwardly until the protuberance 22 enters the recess 30. With practice the protuberance 22 can be registered with the recess 30 almost instantaneously. Mounted for movement in a fixed vertical bearing 34 above the table 26 is a pricker point or prick punch 36. The axis of movement of the pricker point 36 does not intersect the center of the recess 30 but is located a short distance forwardly thereof. The arrangement is such that when the protuberance 22 is positioned in the recess 30 and the pricker point 36 is pushed downwardly by the operator, by means of the knob 38, against the action of the spring 40, the pricker point makes a prick mark in the insole 18 which registers with the center of the aperture 12 in the shank stiffener 8. After the prick mark has been made in the insole the unit comprising the shank stiffener 8, the insole 18, and the reinforcing piece 20 may be used in the ordinary way in the manufacture of a shoe and when the heel is attached to the shoe a screw or other fastener will be inserted in the heel-seat portion of the insole at the locality accurately indicated by the prick mark. This procedure insures that the screw or other fastener will pass accurately through the aperture 12 in the shank stiffener 8 and advantageously the screw or other fastener will be of such length that it will pass not only through the insole 18, the shank stiffener 8, the reinforcing piece 20, and the outsole, but it will also enter the heel of the shoe firmly to maintain all the parts referred to permanently in proper relation to one another during the life of the shoe. If desired, in order to give a lead for the screw or other fastener, a hole may be drilled into the parts referred to prior to the insertion of the screw or other fastener, this hole being of course drilled from the locality indicated by the prick mark on the insole. If desired, however, the prick punch may be operated so as to make in the insole an indentation deep enough to give a lead for the screw or other fastener.

Having 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 reinforced insole units which consists in providing a shank stiffener having a fastener-receiving aperture therein and having an attaching prong projecting from one side thereof, assembling an insole, a reinforcing piece and said shank stiffener with said stiffener and an adhesive medium between the insole and the reinforcing piece, molding said insole and said reinforcing piece to last bottom contour thereby securing said parts together by means of said adhesive medium and embedding said prong in that one of said parts toward which it projects thereby forming an outward protuberance upon said part, locating a marking tool adjacent to the other of said parts and in line with said aperture by gaging from said protuberance, and operating said tool to make a mark upon said last-mentioned part indicating the location of said aperture.

2. That improvement in methods of making reinforced insole units which consists in providing a shank stiffener having a fastener-receiving aperture therein and having an attaching prong projecting from one side thereof, assembling an insole and a reinforcing piece in face-to-face relation with said shank stiffener between them, said stiffener being disposed with said prong projecting toward said reinforcing piece and said insole and said reinforcing piece having their opposed sides coated with cement, and molding said insole and said reinforcing piece to last bottom contour thereby securing said parts together by means of said adhesive medium and causing said prong to form a protuberance on the outer side of said reinforcing piece in predetermined relation to said aperture for use in gaging the location of said aperture so that a fastener may be passed therethrough.

3. That improvement in methods of making reinforced insole units which consists in provid-

ing a shank stiffener having a fastener-receiving aperture therein and having an attaching prong projecting from one side thereof, assembling an insole and a reinforcing piece in face-to-face relation with said shank stiffener between them, said stiffener being disposed with said prong projecting toward said reinforcing piece and said insole and said reinforcing piece having their opposed sides coated with cement, molding said insole and said reinforcing piece to last bottom contour thereby securing said parts together by means of said adhesive medium and causing said prong to form a protuberance on the outer side of said reinforcing piece, locating a prick punch adjacent to the outer surface of said insole and in line with said aperture by gaging from said protuberance, and operating said punch to make a prick mark in said insole to indicate the location of said aperture.

4. An insole unit comprising an insole, a reinforcing piece secured to one side of the insole, a shank stiffener having a fastener-receiving aperture therein and having a single prong struck therefrom at a point closely adjacent to said aperture, said shank stiffener being interposed between the insole and the reinforcing piece and being entirely covered by said parts and said prong forming a protuberance in one of said parts for use in gaging the location of said aperture so that a fastener may be passed therethrough.

5. An insole unit comprising an insole, a reinforcing piece secured to one side of the insole, and a shank stiffener having a fastener-receiving aperture in its rear portion, said shank stiffener being interposed between the insole and the reinforcing piece and being entirely covered by said parts and one of said parts having an indentation therein indicating where a fastener should be inserted in order to pass through said aperture and giving a lead for said fastener.

6. An insole unit comprising an insole, a heel and shank reinforcing piece coextensive with the heel and shank portion of the insole and secured to the lower side of the latter, and a shank stiffener interposed between said parts, said stiffener having a fastener-receiving aperture in its rear portion, and said insole having a prick mark in its upper surface in line with the center of said aperture for gaging the point of entrance into the insole of a fastener to be passed centrally through said aperture.

WILLIAM NEIL BRAY.