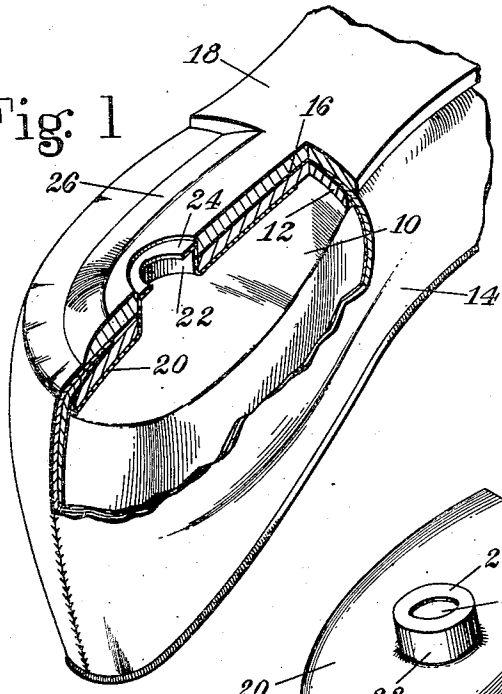
Oct. 20, 1936. C. C. BLAKE 2,057,703

HEEL FASTENING AND METHOD OF ATTACHING HEELS

Filed Oct. 2, 1934

Fig. 1



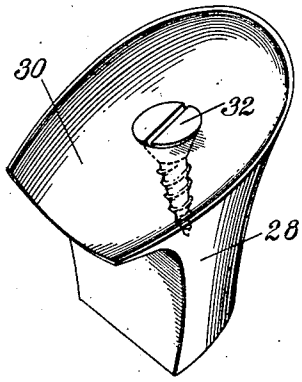
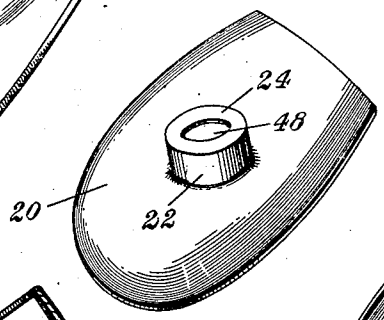


Fig. 3

Fig. 2



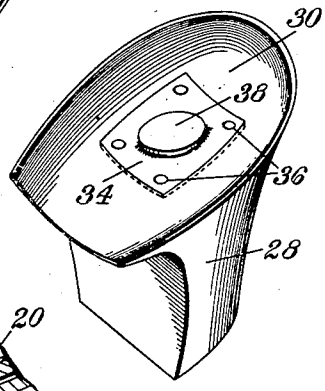


Fig. 4

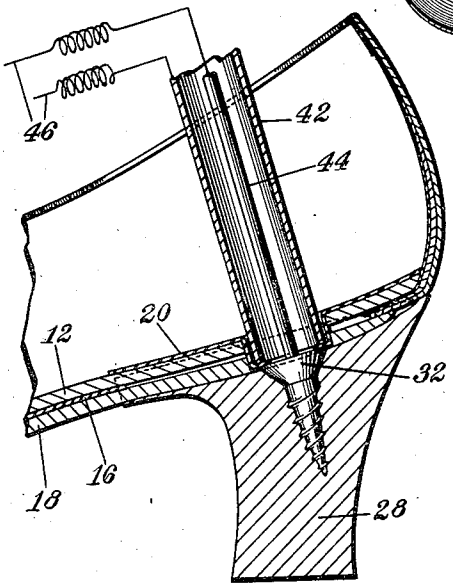


Fig. 5

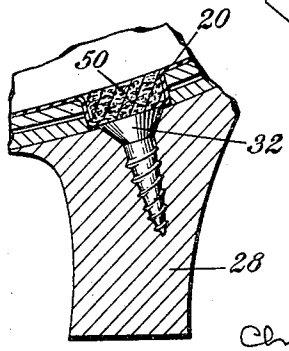


Fig. 6

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HEEL FASTENING AND METHOD OF ATTACHING HEELS

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Application October 2, 1934, Serial No. 746,549

5 Claims. (Cl. 12—147)

This invention relates to heel attaching and is particularly concerned with the provision of a novel method of heel attaching which will eliminate the driving of the nails or screws usually employed in attaching heels to shoes.

It is an object of the invention to provide a very strong and secure attachment of a heel to a shoe by a simple operation which can be performed speedily and without the difficulties which are encountered in the driving of nails and screws through the heel seat of a shoe into a heel.

With the foregoing in view, the invention provides a novel method of attaching a heel to a shoe by welding. For example, both the heel and the heel seat of the shoe may be provided with elements presenting exposed metallic surfaces which are pressed into contact with each other when the heel is applied to the shoe, whereupon such metallic surfaces may be instantaneously welded together by passing a suitable amount of electric current through the joint to produce a resistance weld by which the heel is permanently and inseparably secured to the shoe.

In the illustrated example of the invention, the metallic element in the heel seat of the shoe is shown as consisting of a plate seated upon the inner face of the insole and having a tubular portion extending through the insole and outsole, the outer end of said tubular portion being flanged inwardly so that it presents an exposed annular metallic surface approximately at the surface of the heel seat to which the heel is to be applied. The metallic element in the heel may, for example, consist of an ordinary flat headed screw inserted in the attaching face of the heel and driven to such a depth that when the heel is pressed tightly upon the shoe the head of the screw will be forced into contact with the annular flange mentioned above. With this arrangement an annular weld between the flange and the screw head will provide a very strong heel attachment.

In the practice of the invention the welding step may be quickly and easily performed by applying one electrode of an electric circuit to the metallic element in the heel seat, inserting the other electrode of the circuit through the hole in the annular flange and applying it to the head of the screw in the attaching face of the heel, and passing through the circuit thus established an electric current sufficiently large to weld the screw head and the flange permanently together all the way around. This welding operation can be performed practically instantaneously without damage to any of the associated parts of the shoe and heel.

The foregoing and other features and advantages of the invention will be better understood and appreciated from the following detailed description of one manner of practicing the method, and the product resulting therefrom, in connection with the accompanying drawing, in which

Fig. 1 is a perspective view, partly in section, showing the heel end of a shoe prepared for the reception of a heel;

Fig. 2 is a perspective view of the plate, removed from the shoe;

Fig. 3 is a perspective view of a prepared heel;

Fig. 4 is a perspective view of a prepared heel of modified form;

Fig. 5 is a longitudinal sectional view illustrating the welding step in attaching the heel to the shoe; and

Fig. 6 is a fragmentary sectional view illustrating how the depression in the heel end of the shoe may be filled.

Referring now to the drawing, 10 indicates the heel portion of the last upon which has been made a shoe comprising an insole 12, a lined upper 14 lasted over the margin of the insole, a shank stiffener 16 and an outsole 18.

Associated with the heel end of the insole is a stiff metallic plate 20, the contour of which preferably corresponds to that of the heel seat of the shoe. The plate 20 is shown as having a cylindrical tubular portion 22, provided at its end with an inwardly turned flange 24 the surface of which is approximately flat. The insole 12 and outer sole 18 are provided with holes to receive the tube 22, which is of a length approximately equal to their combined thicknesses so that the surface of the flange 24 is approximately flush with the outer face of the heel seat, presenting an exposed annular metallic surface to which a metallic element in or upon the attaching face of the heel may be welded. As shown at 26 in Fig. 1, the heel end of the outer sole is fitted in the usual manner for the reception of a wood heel.

The heel 28, as illustrated in Fig. 3, is prepared for attachment by merely screwing into its attaching face 30 an ordinary flat headed screw 32 which is screwed in practically flush or until the exposed flat surface of its head is so positioned that when the heel is pressed tightly upon the heel seat of the shoe the head of the screw will be pressed into contact with the exposed metallic flange 24.

In Fig. 4 a modification is shown in which the metallic element associated with the heel consists of a plate 34 securely fastened to the heel 28, as by nails or screws 36, and having a boss 38 which presents a flat surface for contact with the flange 24.

In the process of attaching the heel to the shoe the heel is applied to the heel seat and pressed tightly into contact therewith, with the exposed metallic surfaces at the heel seat of the shoe and the attaching face of the heel in contact with each other. In this condition, they are ready for the welding operation, which is preferably performed electrically.

In Fig. 5, a pair of electrodes 42, 44 are indicated as connected to an electric circuit 46 to which current may be supplied from any suitable source. The electrode 44 may comprise a rod of small enough diameter to permit it to pass through the opening 48 in the flange 24 into contact with the head of the screw 32, without touching the flange and, consequently, without making electrical contact therewith. The second electrode 42 may be tubular in form and of such a size as to permit it to be passed down through the tube 22 and seated against the inner face of the flange 24.

With the parts arranged as shown in Fig. 5, a sufficiently heavy current is passed through the electric circuit, producing an annular resistance weld between the flange 24 and the head of the screw 32 practically instantaneously and attaching the heel permanently and securely to the shoe. The last may be removed from the shoe prior to attachment of the heel or the electrodes 42, 44 may be passed through a hole in the heel end of the last, if it is desired to keep the last in the shoe.

The plate 20 may be covered with the usual sock lining if desired and the tubular portion may be filled, as shown at 50, in order to provide a smooth surface for the heel of the wearer of the shoe.

It will be apparent that, inasmuch as the overlasted upper and counter materials and the margin of the insole around the heel seat are clamped tightly between the rim of the heel 28 and the plate 20, a permanently tight edge joint between the heel and the shoe are secured, and softening and deformation of the heel seat during wear of the shoe are prevented.

Having described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. The method of attaching a heel having a circular metallic element at its attaching face to a shoe having an annular metallic element at its heel seat face, which comprises applying the heel to the heel seat of the shoe with said elements in register, pressing said elements in contact with each other, applying one electrode of an electric circuit to the annular element in the heel seat, inserting the other electrode of the circuit through the hole in the annular element and applying it to the metallic element at the attaching face of the heel, and passing through the electric circuit a current sufficiently large to weld the metallic elements permanently together.

2. In a shoe, a heel seat comprising an insole, an outersole, a metallic plate seated upon the inner face of the insole and having a tubular portion extending through the insole and outersole, and a heel having a circular, headed, metallic fastener inserted in its attaching face in register with the tubular portion of said plate, the head of said fastener and the tubular portion of said plate being permanently welded together.

3. In a shoe, a heel seat comprising an innersole, an outsole, a metallic plate seated upon the insole and having a tubular portion, extending through the insole and outsole, the outer end of said tubular portion being flanged inwardly, and a heel having a headed screw inserted in its attaching face in register with the flange, the head of the screw being permanently welded to said flange.

4. The method of attaching a non-metallic heel to a shoe which consists in making an opening through the heel seat of the shoe, applying to the inner face of the insole a metallic plate having an extension which reaches through said opening to the outer surface of the heel seat, inserting a metallic fastening in the attaching face of a non-metallic heel, applying the heel to the heel seat of the shoe, and welding together the abutting surfaces of said extension and said fastening.

5. A shoe comprising an insole, an outersole, a metallic plate seated upon the inner face of the insole and having a portion extending through the insole and outersole, and a non-metallic heel having a screw inserted in its attaching face, the surface of the screw head and the surface of the extended portion of the plate being welded together.

CHARLES C. BLAKE.