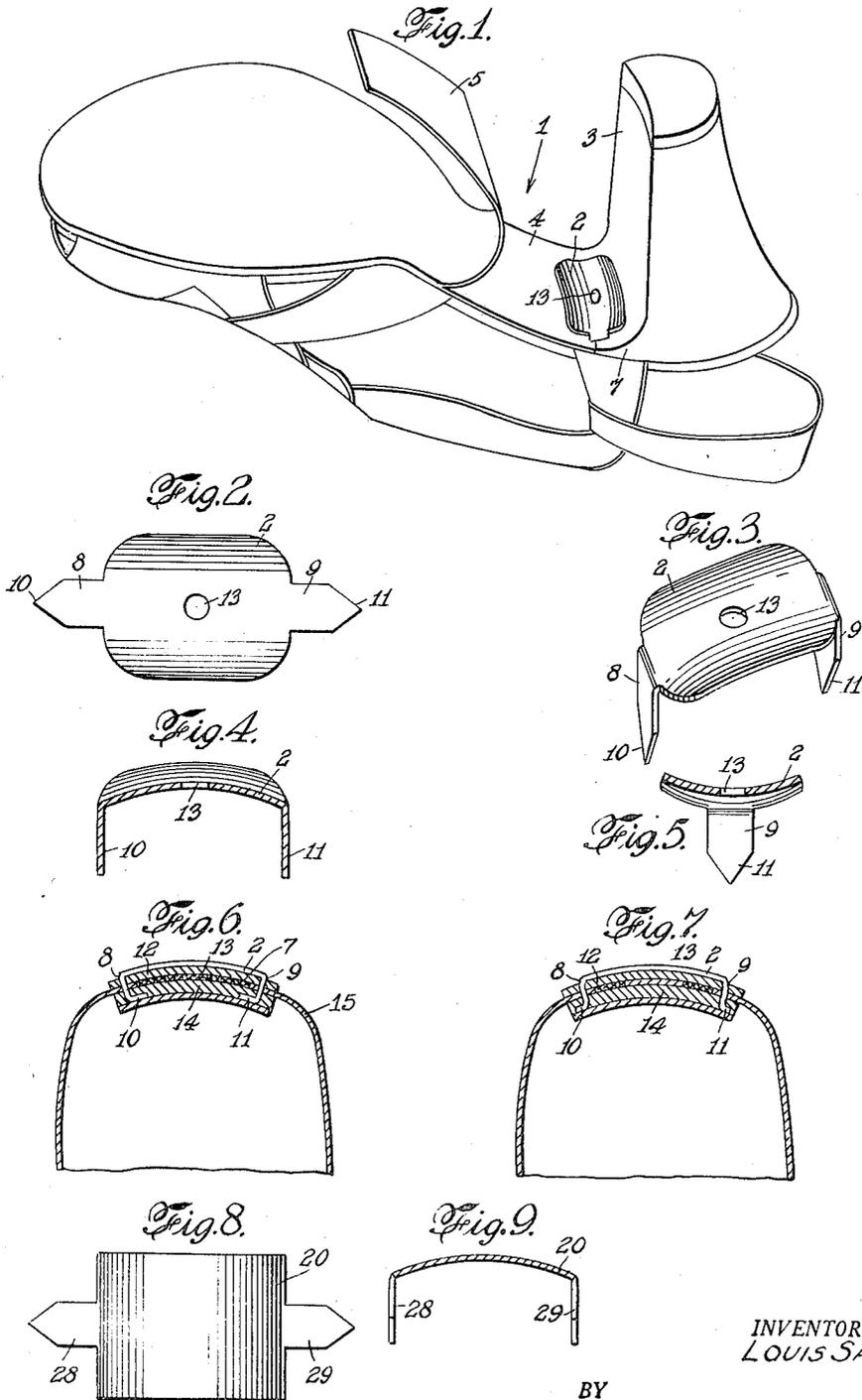


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HEEL STIFFENING PLATE

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HEEL STIFFENING PLATE

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This invention relates to the art of shoemaking and particularly to a method of and a shoe construction in which the junction between the heel and the sole is reinforced.

In shoes with high heels, such as women's shoes, it is particularly desirable to utilize a strong construction in attaching the heel to the sole because the long moment arm presented by the high heel during twisting movements of the shoe tends to tear the heel loose from the sole. A shoe strongly constructed tends to act as a support to the ankle of the wearer and is more comfortable.

A heel retaining means for shoes suitable for use in a construction by which these ends may be attained has been disclosed and claimed in my United States Patent No. 2,237,317, issued April 8, 1941. In that patent a heel retaining plate is shown which is attached to the shoe by brads. This construction has been found to be generally satisfactory, but is subject to certain improvements by which a better construction is produced. In particular, it has been found that a stronger construction results from making the attaching means integral with the plate. Such improved construction also more readily lends itself to machine fabrication thus reducing the cost of the shoe.

An object of the present invention is to provide a shoe construction in which the heel is rigidly attached to the sole of the shoe. Another object of the invention is to provide an improved shoe construction incorporating the usual wooden heel generally known as a "Louis heel," in which the curved extending portion of the heel positioned under the shank of the shoe is more strongly reinforced. Still another object of the invention is to provide a shoe construction in which the reinforcement is concealed from view by the usual flap covering the breast of the heel. Another object is to provide a shoe construction which may be produced readily by machine methods. Another object of the invention is to provide a method of making a shoe and a shoe construction which is simple and effective.

In accordance with the invention these objects are accomplished by providing a method of and a shoe construction in which the heel and the shank portion of the shoe are integrally held together by having extending portions adapted to be forced into the sole of the shoe and clinched over firmly holding the parts together. This construction is advantageous, not only because it is more economical to produce but because of the improved structure resulting therefrom. The

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shoe is reinforced to a certain extent by the additional strength of the plate and to a further extent by the support given to the shank of the shoe by reason of its being clinched between the ends of the retaining plate. The plate transmits stresses from the heel through the plate to a more remote portion of the shank. The semi-flexible material of the plate permits sufficient "give" to assure comfort yet relieves the stress at the usual point of breakage. The devices heretofore used have not provided this effect by reason of the separate construction of the attaching means and plate.

Other objects and advantages of the invention will become apparent from the following description and from the accompanying drawing illustrating embodiments of the invention, in which:

Fig. 1 is a perspective view of a shoe in accordance with the invention.

Fig. 2 is a plan view of a reinforcing plate used in the shoe shown with the extensions on the ends thereof before the plate extensions have been bent into position.

Fig. 3 is a perspective view of the reinforcing plate as used in the shoe.

Fig. 4 is a longitudinal sectional view of the reinforcing plate shown in Fig. 3.

Fig. 5 is a cross sectional view of the reinforcing plate shown in Fig. 3.

Fig. 6 is a cross sectional view of the shoe shown in Fig. 1 with the ends of the reinforcing plate clinched inwardly.

Fig. 7 is a view corresponding to Fig. 6 with the ends of the reinforcing plate clinched outwardly.

Fig. 8 is a plan view of a modified form of reinforcing plate in accordance with the invention before the extensions have been bent into position.

Fig. 9 is a longitudinal sectional view of the modified reinforcing plate shown in Fig. 8 after the extensions have been bent into position.

Referring to the drawing there is shown a shoe 1, in accordance with the invention, with a retaining plate 2 integrally reinforcing the connection between a heel 3 and a shank portion 4 of the shoe. The reinforced construction is normally concealed from view by attaching a heel breast flap 5 in position.

The shoe is preliminarily formed in the usual manner, the usual "Louis" type heel having a forwardly curved extending portion 7 supporting the shank portion 4 of the shoe. The heel breast flap is left unattached and the sockcover is not inserted until later. The retaining plate 2 is formed of any suitable semi-flexible material such

as a thin plate of steel. The plate is generally rectangular in shape, the length of the plate being less than the width of the shank of the shoe to which it is to be attached. The width of the plate is determined by the amount of rigidity desired, the width being generally less than the length thereof. Extensions are formed on each end of the plate by providing narrow straight-edged portions 8 and 9 terminating in pointed ends 10 and 11 to provide a driving end for attaching the plate to the shoe. The plate 2 is shaped by bending extensions 8 and 9 approximately perpendicular to the plane of the main body of the plate. In some instances it may be desirable to have the driving ends point outwardly slightly, while in other instances it may be desirable to have the driving ends point inwardly slightly as will appear later in the description of the method of construction. The plate is curved to conform to the shape of the outer surface of the cross section of the shank 4 by longitudinally bending the ends of the plate towards the direction of the extensions as shown in Fig. 4. The plate is also preferably curved to conform to the shape of the outer surface of the longitudinal section of the junction of the heel and the shank by laterally bending the sides of the plate in the opposite direction as shown in Fig. 5. The corners of the plate are rounded off to enhance the appearance of the plate. A perforation or passage 13 is made approximately in the center of the plate to provide a passage for cement. The shape of the plate is such that, if desired, it may be cut and stamped to shape by the use of dies in one operation.

In constructing the shoe, as stated above, it is formed on the last in the usual manner, the last having a steel covering on the heel surface extending into the shank portion. Cement is then applied to the bottom surface of the shoe adjacent the junction of the heel and the shank. The retaining plate is then driven into position, the driving edges of the plate being inserted into the junction line of the heel and the shank so that the heel, particularly if made of wood, will not be split. In fitting the plate in place automatic machinery may be used to supply, place and drive the extensions into the sole of the shoe. The pointed ends of the plate pierce the sole and are clinched over against the steel surface of the last, forming an integral construction in which the parts are rigidly and tightly held together resulting in an even distribution of the stress occasioned by twisting the heel. Cement is then applied to the loose heel breast flap 5 which is then placed in position completing the construction. The passage 13 fills with cement firmly holding the heel breast flap 5 against the plate 2. Depending upon the particular design of the insole and the attachment of the upper to the midsole, it may be preferable in some cases to have the pointed ends 10 and 11 turned inwardly for clinching as shown in Fig. 6. In other instances it may be preferable to have the ends point outwardly as shown in Fig. 7. The direction of the clinch may be predetermined by the degree of initial bending given the extensions while forming the plate. Another method of directing the turning of the extensions is by forming the steel plate of the last with raised portions on the surface thereof to deflect the ends of the extensions either outwardly or inwardly during the clinching operation. As may be seen from the cross-sectional views Figs. 6 and 7 the plate 2 holds together the forwardly extending portion 7 of the heel 3, the outer sole

12, an inner sole 14, and edges 15 of the upper portion of the shoe. The extensions 10 and 11 being bent over to clamp the parts of the shoe integrally together to reinforce the heel junction with the heel seat of the shoe and to form a strong construction adapted to distribute abnormal stresses away from the junction of the heel and sole.

Another form of retaining plate is shown in Figs. 8 and 9. The plate 20 is formed as previously described, the extensions 28 and 29 are bent to the desired angle, and the plate curved to the outer surface of the cross section of the shank, no further curving of the plate being done. The plate will then be flat in cross section and curved in longitudinal section as shown in Fig. 9. This plate is advantageous for use with heels having a comparatively long and flat extending portion.

From the foregoing description it will be seen that the present invention provides a shoe construction in which the heel is rigidly attached to the sole of the shoe, the reinforcement is concealed from view by the usual heel flap and the method of construction readily lends itself to production by automatic machinery.

While the invention has been described and illustrated with reference to a specific embodiment thereof, it will be understood that other embodiments may be resorted to without departing from the invention. Therefore, the form of the invention set out above should be considered as illustrative and not as limiting the scope of the following claims.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. A plate for reinforcing the heel junction with the heel seat of a shoe comprising a thin member of semi-flexible material of less length than the width of the shank of the shoe to which it is to be attached and having at least one aperture therein for cement, the member curved upwardly along the longitudinal axis and curved downwardly along the lateral axis, and having extensions at the ends thereof turned upwardly for attaching the plate to the shoe, the extensions having pointed ends to reduce the pressure required to attach the plate to the shoe.

2. A plate for reinforcing the heel junction with the heel seat of a shoe comprising a thin member of semi-flexible material of less length than the width of the shank of the shoe to which it is attached and having at least one aperture therein for cement, the member shaped to conform to the portion of the shoe to which it is to be attached and having extensions on the ends thereof extending upwardly for attaching the plate to the shoe and adapted to be clinched over to hold the plate and the shoe in an integral unit.

LOUIS SABO.

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