Dec. 21, 1937. L. A. LAURSEN 2,102,901

INSERT FOR RUBBER HEELS OR THE LIKE

Filed April 11, 1932

Fig. 1.

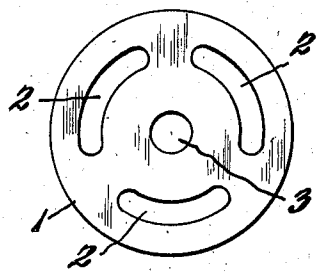


Fig. 2.

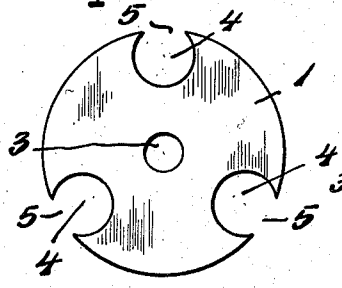


Fig. 3.

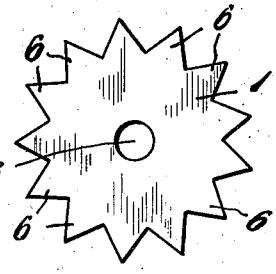


Fig. 5.

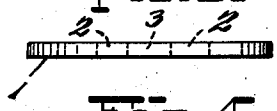


Fig. 6.

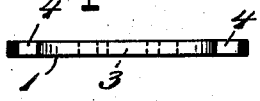


Fig. 7.

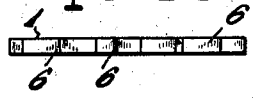


Fig. 4.

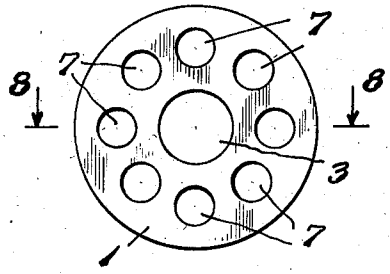


Fig. 9.

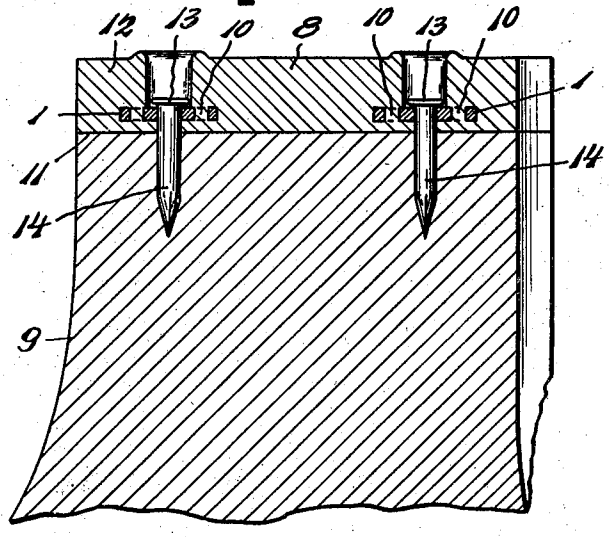


Fig. 8.

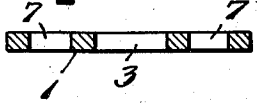
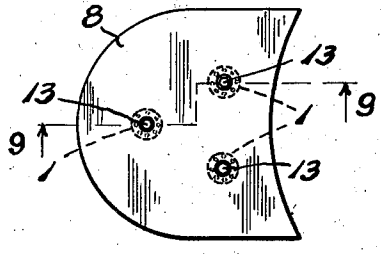


Fig. 10.



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UNITED STATES PATENT OFFICE

2,102,901

INSERT FOR RUBBER HEELS OR THE LIKE

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Application April 11, 1932, Serial No. 604,549

2 Claims. (Cl. 36—35)

As is well known, rubber heels for shoes are usually made preformed ready for attachment to the shoe by means of nails or equivalent fastening means driven through the heels into the shoes.

In the production of these heels, a rubber stock of desired composition for toughness and wear resisting properties is prepared, the heels being produced from a "biscuit" of this stock by subjecting the biscuit to pressure molding operation, wherein the mold employed is provided with a series of upstanding pins which, during the molding operation preform holes through the body of the heel being produced, by means of which holes, nails or other fastening devices may be inserted into the heel and driven into the shoe for attachment of the heel.

In view of the fact that in use the heel is almost continuously subjected to severe distortional stresses which would cause the heel to become broken away from the attaching nails, it is necessary to provide the heels with reinforcing inserts or washers adjacent each hole through which an attaching nail is to be passed. These washers or inserts are of hard inflexible material, and are in the form of small discs provided with a central opening which enables each insert to be slipped over the pin of the mold to correspondingly register with the nail hole of the finished heel. Upon slipping these inserts over the mold pins, as has just been stated, the heel is completed by the addition of further quantities of rubber, the whole being then vulcanized while in the mold, the parts of the rubber integrally uniting and embedding the insert in its position in the body of the heel.

When the heel is attached to a shoe, the attaching nail passes through the central aperture of the insert, this being, as has already been stated, in registry with the preformed nail holes.

In the usual type of heel construction the wearing qualities of the heel are markedly reduced because of the fact that during vulcanization, imperfect adhesion between the insert and the rubber of the heel often results, so that under the influence of distortional stresses and pounding to which the heel is subjected when in use, this unison soon becomes destroyed, with the result that the insert in the rubber becomes loose within the heel and soon wears a cavity in its rubber matrix which causes the rubber heel to shift relatively to the shoe and become out of alignment therewith. Furthermore, this wearing action of the insert, which is usually in the form of a smooth round disc, rapidly causes the insert to readily pull out of the rubber owing to the fact that the insert is placed as close to the shoe engaging surface of the heel as it is practical to place it. However, in practice this position is usually about midway between the top and bottom surfaces of the heel, which causes a marked reduction in the otherwise available wearing surface of the heel; and the amount of this available wearing surface is still further reduced because of the thickness of the nail heads driven against the inserts in attaching the heel to the shoe.

Difficulties of this character are often experienced, particularly in the case of women's heels, because of the fact that only a comparatively thin body of rubber is used, the foundation of the heel being usually wood upon which the rubber heel is secured as a sort of rubber cap. The disadvantages arising from the sliding of this comparatively thin cap or heel part are so pronounced that it is very usual to apply merely a relatively thin sheet of rubber which is cut and trimmed to the desired heel configuration and secured in place by the desired number of nails; and it is found that a rubber heel portion formed and secured in this manner will remain in position much more satisfactorily than a preformed heel with metal inserts is found to do. Therefore, the advantages of the latter in requiring the use of only the usual few nails for attaching it become lost, and the likelihood of splitting the wooden heel base of the shoe is greatly increased by the increase in the number of nails required to be employed as the fastening devices when rubber sheet material is employed as the heel.

The present invention is based upon the discovery that if the hitherto smooth continuous surface of the inserts be interrupted by the provision of openings, in addition to the central opening extending through the inserts, there will be obtained, when the insert is vulcanized within the heel, a very strong interlock between the insert and the rubber of the heel. This interlock effectively prevents dislocation of the insert during wear with the elimination of the objectionable features mentioned above. No limitation or restriction of the shape of these apertures need be had, and the insert is employed in the usual way; but when the heel is vulcanized, a body or column of rubber enters the holes or recesses and integrally unites with the body of rubber on both sides of the insert. This interlocking prevents all possibility of the inserts becoming displaced unless there is actual destruction of the embedding rubber body. Therefore, the forma-

tion of the objectionable cavities mentioned above is prevented so that the inserts will not become loose and the heel will not come out of alignment with the shoe to which it is attached. Furthermore, because of the fact that the reinforcing insert is securely interlocked in position, it is possible to locate the insert much closer to the shoe engaging surface of the heel than has heretofore been feasible, which results in substantially increasing the effective thickness of the wearing area of the heel.

The invention may take a variety of forms as will be apparent from the accompanying drawing, in which several modifications of the insert are illustrated, and in each one of which forms the surface is provided with suitable openings through which, during vulcanization, the rubber will be forced to form the anchors which firmly retain the inserts in their positions.

In the drawing—

Figures 1, 2, 3, and 4 are each plan views of improved forms of inserts.

Figures 5, 6, and 7 are edge views of the inserts shown in Figures 1, 2, and 3.

Figure 8 is a sectional view of the form shown in Figure 4, the view being on the line 8—8 of Figure 4.

Figure 9 is a sectional view through the heel of a woman's shoe, showing a rubber heel attached thereto, which heel incorporates an improved insert of this invention.

Figure 10 is a bottom view of the rubber heel of Figure 9, indicating the novel inserts in position.

Referring more particularly to the drawing, the form of insert of Figure 1, has, as will be apparent, the disc surface 1 provided with a plurality of elongated slots or passages 2 illustrated as being concentrically disposed around the central opening 3. The slots 2 of course extend completely through the disc surface.

In the form shown in Figure 2, the periphery of the disc 1 is shown as being provided with a plurality of cut-out portions or passages 4 of circular configuration which extend to the edge of the disc in such a manner that the cut-out portion of the edge as indicated at 5 is substantially less than the diameter of the circle.

In Figure 3 the periphery of the disc is cut out into a plurality of open notches or passages 6, which gives the insert more or less of a star-shaped configuration.

In Figure 4 a series of holes or passages 7 is provided.

As will be seen from Figure 9, which shows a heel 8 embracing one of the new forms of inserts applied to the heel 9 of a shoe, there is a body of rubber 10 completely passing through the apertures of the insert, integrally united with the body of rubber both above and below the insert, so that the insert will be interlocked firmly in position and will not yield under the influence of the distortional strains set up in the heel during wearing thereof. This means of course that the insert can be positioned much closer to the shoe engaging surface 11 of the heel than has heretofore been possible, with attendant increase of the wearing thickness 12 of the heel. The advantage obtained from this in the prolongation of the wear of the heel is very marked, and it will be apparent that it is considerable when it is recalled that in the present constructions of heel it is necessary to position the insert at approximately the mid plane of the heel, which, together with the space occupied by the head 13 of an attaching nail 14, lessens by more than half the amount of the wearing surface of the heel.

The interlocking body or column 10 of rubber effectively prevents all displacement of the insert from its position during the wearing of the heel, and therefore all tendency of the heel to slip relatively to the shoe, or to become disengaged from the insert, is avoided.

The effect of the openings in the form of Figures 1 and 4 will be apparent, but the form of Figure 2 wherein the periphery is provided with scallops of irregular shapes works equally well when the insert is vulcanized into the heel, the rubber above and below the insert becoming integrally united through the openings and greatly increasing the holding power and supporting action of the rubber beneath the insert. Because of this increase in supporting power of the rubber below the insert, it is possible to position the insert much closer to the shoe engaging surface of the heel than has heretofore been possible; and this is true in all of the illustrated forms.

It will be apparent that the invention includes any insert made out of suitable non-flexing material formed with holes or scallops between the nail hole and the outer periphery through which the rubber above and below the insert will become anchored or united in an integral manner during vulcanization of the heel; and the same result will be accomplished irrespectively of the shape of the insert.

While it will be understood that the invention is especially applicable to the manufacture of women's heels owing to the comparative thinness of the rubber composing the heel, the invention is not limited to women's heels.

While in Figure 2 the distance between the ends of the scalloped portions is shown to be less than the diameter of the circle forming the scallops, to better hold the insert in engagement with the anchor, this is also a limitation which is not indispensable to the satisfactory operation of this shape of insert, virtually the same result being obtainable with the star-shaped insert of Figure 3.

In all forms, the recesses are within the limits of the confines of the periphery of the insert.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is—

1. A rubber heel construction comprising the usual heel body, together with flat reinforcing inserts for the usual attaching means for attaching the heel to a shoe, the said inserts having the peripheral portions of the body of each formed with interlocking constricted recess anchoring portions, the rubber of the heel above and below the anchoring portions forming between the sides of the said portions integral interlocking anchors for securing the body of the insert against displacement from its position in the heel during wear.

2. A reinforcing insert for use in molded composition shoe heels comprising a flat sheet metal body having a nail receiving opening therein, said body having recesses spaced around the nail opening, said recesses having constricted openings extending outwardly through the outer edge of the body.

LAURITS A. LAURSEN.