G. S. ELLITHORPE.

HEEL LIFT.

APPLICATION FILED NOV. 12, 1917.

1,273,047. Patented July 16, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

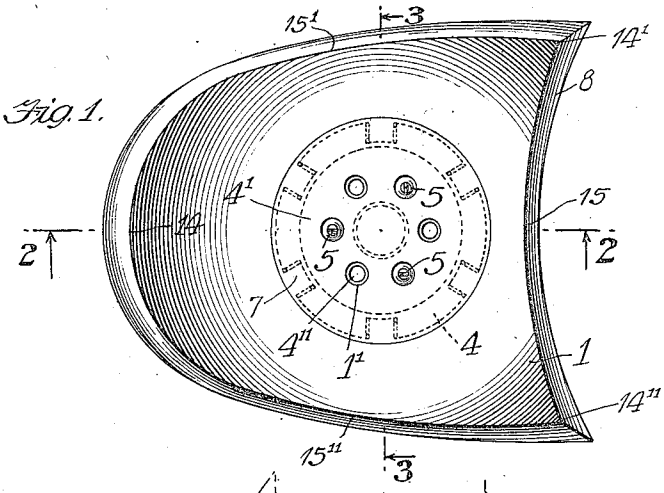


Fig. 2.

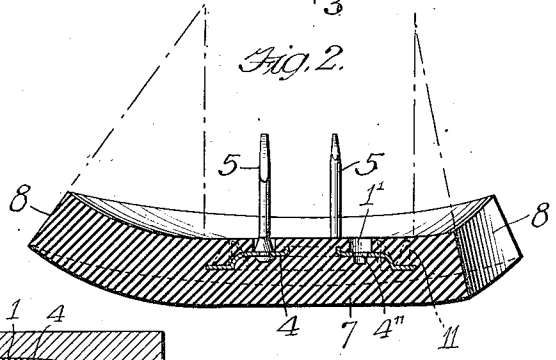


Fig. 16.

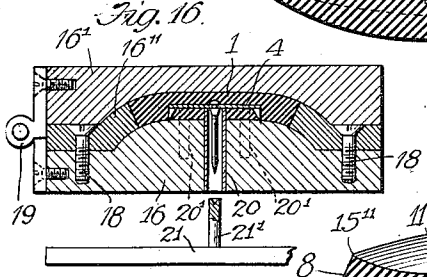


Fig. 3.

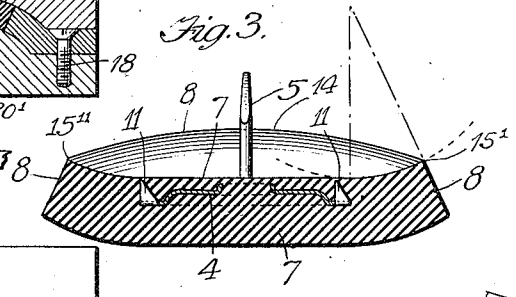


Fig. 17.

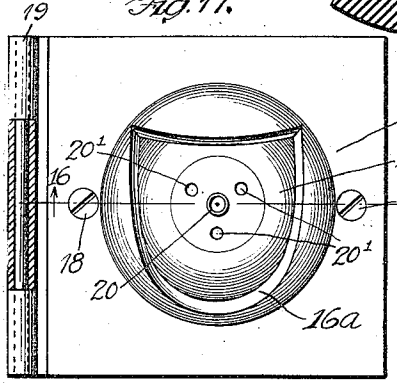


Fig. 4.

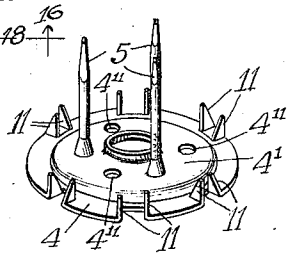


Fig. 5.

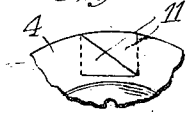
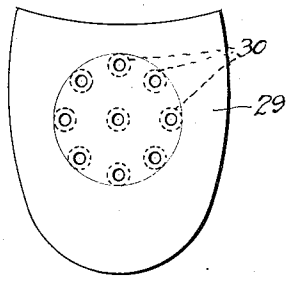


Fig. 18.



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2 SHEETS—SHEET 2.

Fig. 6.

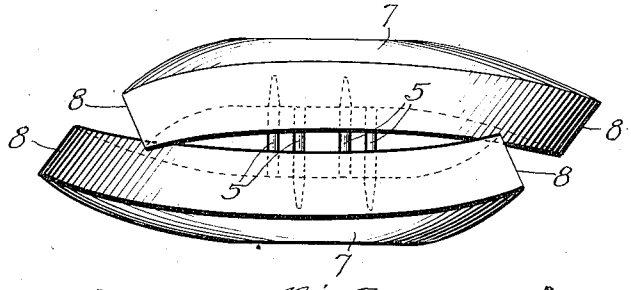


Fig. 7.

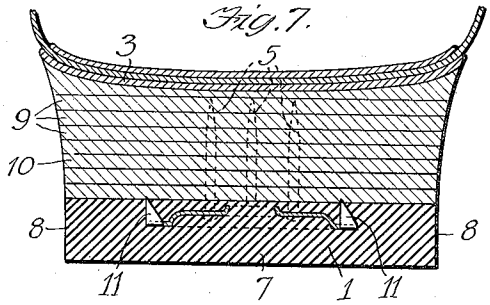


Fig. 13.

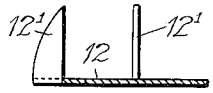


Fig. 15.

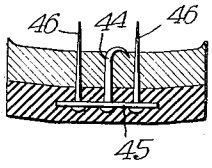


Fig. 14.

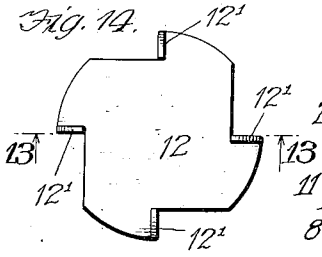


Fig. 8.

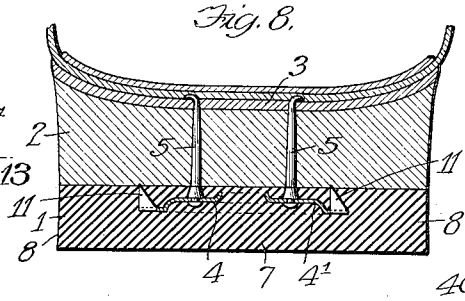


Fig. 10.

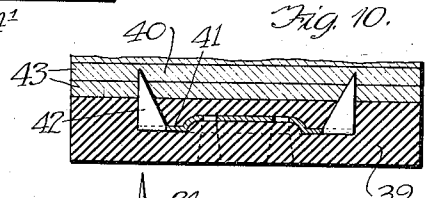
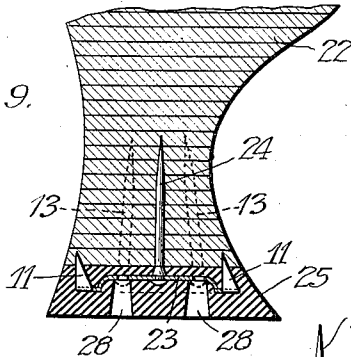


Fig. 9.



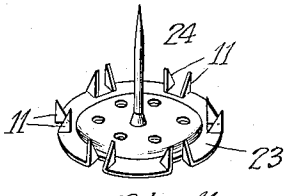
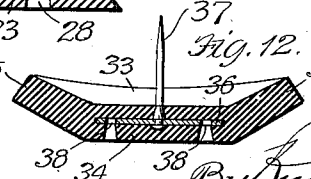


Fig. 11.

Fig. 12.



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UNITED STATES PATENT OFFICE.

GILBERT S. ELLITHORPE, OF CHICAGO, ILLINOIS.

HEEL-LIFT.

1,273,047. Specification of Letters Patent. Patented July 16, 1918.

Application filed November 12, 1917. Serial No. 201,517.

To all whom it may concern:

Be it known that I, GILBERT S. ELLITHORPE, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Heel-Lifts, of which the following is a specification.

This invention relates to heels and heel lifts for footwear, especially those embodying the feature of resilience, and more particularly to the shape of such heels or lifts and the means for attaching same to the shoe or other article of footwear.

Heretofore resilient heels and heel lifts designed for use as heel attachments to take the place of the leather lifts, have usually been provided in the form of solid unitary rubber plates or disks of a shape corresponding generally to the heel of a shoe. Such lifts unless applied to the shoe in the course of manufacture, usually require that at least part of the original heel be removed. Usually, the attachment takes the place of only the lower portion of the heel, that is to say, only the lower layers or lifts of leather have to be removed to make way for the resilient attachment. Moreover, if the shoe has already been long in use, and especially if only a half heel is to be applied, it is then usually necessary to true up certain parts of the heel, particularly the edges, which may be worn away excessively. The edges of the attachment usually have to be trimmed to register with the regular heel. From the repairer's point of view, it is most desirable that the heel be of a character adapted to be applied to the shoe with as little time, operation, and labor as possible. The thicker attachments usually best answer this requirement. Resilient attachments of whole heel size have been used to some extent for replacing the original leather heels, but the cost of suitable rubber is so great that it is scarcely practical commercially to make such heels of sufficiently durable material. Half heel attachments of high grade material have heretofore proved to be most desirable, and hence the usual necessity of fitting the attachment to the regular shoe heel.

The main objects of this invention are to provide a compound or double lift heel attachment adapted for ready application to take the place of an entire shoe heel; to provide such a double lift efficient in the functions of resilient heels and composed of suitable materials economically disposed; to provide such an attachment inherently adapted to hug tightly against the shoe sole without the use of cement or other lateral fastening; to provide an improved form of resilient heel part or tread lift of the character described having a shape adapted for insuring a tight fit between the upper lift or the heel part of the shoe and the resilient attachment; to provide such a heel attachment having a central part the surface of which corresponds naturally to that part of the shoe to which it is to be applied, and the outer surrounding part of which on all sides is inclined or curved inwardly more than the corresponding part of the shoe or lift to which it is to be attached, thus producing a hugging lift preferably of concavo-convex shape adapted to fit snugly against the heel part of the shoe when the attachment is set in place and secured by centrally disposed fastening means; to provide a heel lift with a hollowed face adapted for forming in a mold which may be milled to shape on a suitable machine; to provide positively against any relative turning of the heel attachment and its fastening means; to provide for compact and safe nesting of the heel attachments in pairs with their brads concealed when assembled ready for storage or shipment; to provide in the body of the attachment an anchorage member having fastening brads or the like for engaging the shoe, and projecting wings or lugs adapted to support the member in a mold while the resilient material is being molded about such member; and to provide a heel lift embodying certain of the features herein set forth, adapted for use on the slender heels of ladies' shoes.

A further object of this invention is to provide certain improvements in the construction shown and described in my copending application, Serial No. 182,868, filed July 26, 1917, wherein certain features

herein shown and described are more broadly claimed.

Several illustrative embodiments of this invention are shown in the accompanying drawings, in which—

Figure 1 is a plan of the concave inner side of a heel attachment or tread lift.

Fig. 2 is a longitudinal section on the line 2—2 of Fig. 1.

Fig. 3 is a transverse section on the line 3—3 of Fig. 1.

Fig. 4 is a perspective view of the upper side of the metal anchorage member or fastening.

Fig. 5 is an enlarged fragmentary plan of one side of a fastening showing the relation of the complementary wings or lugs as they would appear if turned back to their initial position on the sheet metal stamping.

Fig. 6 is a side elevation of a pair of tread lift heel attachments nested together.

Fig. 7 is a transverse section of a shoe heel and resilient lift, such as shown in Figs. 1, 2, and 3 attached thereto.

Fig. 8 is a transverse section showing an embodiment of the invention in the form of a compound heel attached to the rear end of a shoe in place of the regular heel.

Fig. 9 is a section of a lady's heel with a resilient lift attached thereto.

Fig. 10 is a cross section of a heel showing a resilient lift attachment having a bradless form of fastening plate, the edge lugs of which extend upward sufficiently to engage the regular heel and in which the plate is also adapted for supplemental fastening by nails if desired.

Fig. 11 is a perspective view of the lady's heel fastener shown in Fig. 9.

Fig. 12 is a central cross-section of a conoidal form of lift provided with a wingless fastening having a central brad and provided with outer apertures for nails or the like.

Fig. 13 is a section on the line 13—13 of Fig. 14.

Fig. 14 is a plan of a relatively plain fastening having comparatively long wing lugs struck up on its edge.

Fig. 15 shows a compound heel with the upper and lower lifts secured together before attachment to the shoe, the fastening plate being provided with a central brad for said purpose and with outer brads for attaching the heel to a shoe sole.

Fig. 16 is a section through a mold on the line 16 of Fig. 17, with a tread lift in place.

Fig. 17 is a plan of the mold with the top mold plate and heel removed.

Fig. 18 is a plan of a heel lift of the general shape above described, in which a plurality of washers are provided instead of a unitary fastening plate and being adapted for the application of nails.

In the embodiment shown in Fig. 8 the heel attachment is of compound structure, comprising a resilient lower lift member 1 and an upper lift member 2 preferably of molded or pressed material, which may be either non-yielding or resilient in character, said members 1 and 2 being attached directly to the rear end of the shoe sole 3 by means of the heel fastener 4. The arms or brads 5 of said fastener extend from the disk or body 4′ which is embedded in the resilient lower lift 1, through the upper lift 2, and into the shoe sole 3 where they are clenched.

The upper lift 2 may be made of any suitable material, as for instance fiber, leather or composition and formed to resemble an ordinary heel, the upper face being dished or concave to correspond substantially with the shape of the adjacent corresponding part of a shoe sole, and the under side being approximately flat.

The lower lift or tread member 1, which is also adapted for application directly to the regular heel of a shoe, as shown in Fig. 7, is in the form of a resilient member comprising a circular discoidal center part 7 and a peripheral flange or rim 8 naturally inclined or curved upwardly giving to the lift member as a whole a concavo-convex shape.

Referring further to the compound heel shown in Fig. 8, it is to be noted that the resilience of the bottom lift and the more or less yielding character of the upper lift cause the upper lift to spring upward slightly or exert a pressure at its edges under the influence of the lower lift, so as to fit snugly against the sole of the shoe. Because of this feature no cement is required for holding the edges and outer portion of the heel attachment tightly in place against the shoe. In case the upper lift is substantially rigid, as may occur in some instances, the upward pressure will be negligible and the abutting faces of the two lifts will lie substantially in a horizontal plane.

The said fastening or anchorage member 4 embodied in said lower lift comprises a discoidal plate, preferably a sheet metal stamping, having upwardly projecting brad means adapted for engaging either the sole of the shoe, as when a compound heel is used, or the upper lifts 9 of a leather heel 10 when a simple attachment is used, as shown in Figs. 8 and 7 respectively. In order to more securely hold the anchorage plate 4′ in place against relative turning with respect to the lower lift member, lugs or arms 11 are formed thereon. Said lugs may be formed in connection with the punching process and are turned upward.

Said lugs are disposed with their sides or planes in a substantially radial direction with respect to the normal axis of the plate. They may serve to support the plate in the mold as the rubber or other resilient material is molded about said plate. In some instances where desirable the said lugs may be somewhat sharply pointed and extend beyond the upper face of the heel lift and serve to assist in securing the attachment to the heel of the shoe, or may even be sufficient alone in some instances if suitably formed. (See Figs. 13 and 14.) Said lugs are preferably formed and arranged in pairs of complementary nature with their base edges in parallel relation, each representing half of a rectangle split diagonally, with the sides turned back away from each other on the edges which are most nearly radial.

If long brads are not desirable in any instance, the side wings may be so formed as to be highly efficient as retaining means, for which purpose single realtively long narrow lugs 12′ may be struck up on the edge of otherwise plain anchor plates 12, as shown in Figs. 13 and 14.

The invention contemplates a spheroidal, concavo-convex heel with flattened central areas on both sides whether it be provided with integral brads or not, as this shape of heel is within the contemplation of the invention viewed in certain aspects, irrespective of the means by which it is secured to the shoe.

Compactness of arrangement for storage and shipment, and safety and convenience in handling are features of great importance in devices of this kind. Hence in order that the simple heel attachments or lifts 1 may be nested together in pairs with the fastening means 5 suitably shielded or hidden, each fastening plate 4 is provided with apertures 4″ preferably arranged symmetrically in a circle concentric with the normal axis of said plate. The brads 5 are set securely in alternate apertures only so that when the plates are brought together face to face and front edge to back edge respectively, the brads of one plate will fit in the vacant apertures of the opposite plate. The yielding part of each lift is also provided with apertures 1′ in registry with the vacant apertures, so that when two complete lifts are brought together for nesting the brads of one attachment fit in the corresponding sockets or apertures of the opposite attachment. Owing to the U-form and normally spheroidal shape of the attachments they are adapted to nest most compactly when arranged to point in opposite directions, that is to say, with the rear edge of one lift disposed adjacent or opposite to the forward edge of the opposite lift. As thus nested the three high parts 14, 14′ and 14″ of one lift register with the three low parts 15, 15′ and 15″ of the opposite lift, and the flattish discoidal centers 7 lie nearly in mutual contact.

The lower lift member is preferably formed by molding from rubber or a suitable resilient composition, the general method of arranging the mold parts and molding the material therein being substantially as ordinarily practised in the molding art. There are, however, certain features of the mold members which are peculiar to the requirements of the heel lifts of this invention.

Referring to Figs. 16 and 17 showing a mold adapted for making the tread lifts herein described, the block or plate 16 represents the convex faced part or bottom member of the mold, plate 16′ is the upper or concave faced member adapted to serve as a cover, and the middle plate 16″ is a spacing member which is apertured to provide a cavity 16ª corresponding to the shape of the lift to be molded. For convenience in operation the metal plate 16″ is fastened permanently to the plate 16, as by means of machine screws 18 and the cover member 16′ is turnably connected to the bottom plate 16 by means of hinge 19 of a form adapted to allow the top plate to operate properly for opening and closing during the molding operation. The lower plate 16 is provided with a central upwardly projecting hollow pin 20 upon which rests the middle part of the anchor plate 4, and which is adapted to receive and protect the central brad 24 when a fastening of the form shown in Fig. 11 is used. A plurality of shouldered pins 20′ are also set permanently in the lower plate 16, so as to support the outer part of the plate 4. The edge wings of the plate may rest upon the convex face of the plate 16. When lifts of the form shown in Fig. 1 are made, the shouldered pins 20′ are arranged so as to provide the necessary apertures in the molded material in registry with corresponding holes in the plate 4 for receiving the brads of the opposite lift when a pair of lifts having a row of brads are nested together. Each of the three plates 16, 16′ and 16″ may be formed to its spheroidal shape by turning in a suitable machine as understood in the metal turning art. When the middle plate has been suitably milled, the central aperture is formed therein corresponding to the shape of the tread member by cutting out the middle part in such manner as may be found most convenient, as by drilling, cutting and filing. When the tread members have been duly pressed and vulcanized, the top mold plate 16′ is raised and the tread lifts are removed by means of a suitable heel remover 21 hav-

ing studs 21′ arranged to enter the tubes 20 and push against the brads, it being understood that the molds are formed in gang arrangement so that a number of treads may be made at each operation, and may also be ejected by one movement of the plate 21 having a stud 21′ for each tube 20. As thus formed, it is apparent that the active mold faces correspond each to the surface of revolution of a line about an axis, and furthermore, that the contour lines of said surface as well as the corresponding surface of the molded lift, are all concentric with the normal axis of the mold face.

Referring to Fig. 9, representing the invention as applied to the heel 22 of a lady's shoe, the plate 23 such as shown in Fig. 11, is provided with a central brad 24 which, upon applying the heel, draws the resilient lift 25 flat against the shoe heel. Said brad 24 in conjunction with the wings or lugs 26 may be sufficient to hold the attachment securely, but if desired nails 13 represented by dotted lines may be applied through the outer tread apertures 28, part of said nails being inclined, if necessary, sufficiently to avoid piercing the sides of the heel.

In the embodiment shown in Fig. 18 the resilient lift 29 is provided with a plurality of washers 30 embedded therein, one or more of said washers being disposed centrally and the others being positioned outwardly therefrom. Said lift is apertured on the outer or lower side in registry with each of said washers to facilitate applying the nails or other fastening means adapted to coact therewith for securing the lift to the shoe, as will be fully understood in view of Fig. 9. In this instance (Fig. 18) the lift is applied by holding same in place on the shoe and then applying fastening means to the central washer or washers whereby the heel is flattened into shape, whereupon additional fasteners are driven through the outer washers.

In the embodiment shown in Figs. 13 and 14 the fastening plate instead of being provided with brads of the character shown in the middle of Fig. 11 is formed with a plurality of individual wings or lugs 12′ as above mentioned corresponding somewhat to the peripheral lugs shown in Fig. 4, but much longer and relatively slender so as to serve more effectively as a lift fastening in the absence of brads or nails. Resilient lifts equipped with this form of fastening may also be apertured on their inner sides to receive the points of the said projecting lugs to facilitate nesting, substantially in the manner shown in Fig. 6 and as will be understood in view thereof.

When the invention is embodied in the form of whole heels of the compound character shown, (Fig. 8) it is preferable that the upper lift, even through it may be of inferior material, should also be somewhat yielding or resilient in order that it may respond somewhat to the upward pressure of the peripheral part of the lower lift and thereby fit snugly against the corresponding part of the shoe sole 3. Being thus urged yieldingly into tight fitting relation with the shoe, the upper lift maintains a sufficiently tight fit entirely without the use of cement or other edge fastening means such as usually required heretofore. By obviating the necessity of using cement, this invention renders the substitution of resilient heels in place of regular heels much more convenient than heretofore, and enables the application of such heels easily and quickly by the wearer or others and without skilled labor.

In the embodiment shown in Fig. 12 the tread lift 33 comprises a flattish middle part 34 and a conoidal rim part 35. The fastening comprises a plain plate 36 provided with a central brad 37 and having nail holes 38 near its edge.

In the embodiment of Fig. 10 the tread lift 39 is secured to the regular heel 40 by a fastener 41 similar to that of Fig. 11, except that the central brad is omitted and the lugs 42 are long enough to engage the leather lifts 43.

The compound heels will usually be provided with the parts separate, but in the embodiment of Fig. 15 the compound lift is held together by a central brad 44 on the plate 45 and the outer brads 46 are adapted to secure the heel to the shoe as will be understood. These compound heels may be nested in substantially the same manner and relation (though not actually shown) as the tread lifts of Fig. 6.

The peripheral sides of the tread lifts are preferably so formed that when sprung into shape in their flat position, when applied to a shoe the sides will be substantially vertical as shown in Fig. 7. In order that this may occur, it is preferable that the sides of the lift be inclined somewhat as shown in Figs. 1 and 2. This inclination is preferably such that the lines radiating from the center of curvature of the lift and passing through the edges thereof will coincide with the said peripheral sides. Such inclination of the sides, however, is not essential to the construction but tends to effect a saving of material, it being understood that in practically all cases the edges of the lift have to be trimmed more or less when applied to the heel.

It is to be understood that the flat middle part, though preferably approaching a true circle in shape, may depart therefrom

somewhat and may be, for instance, elliptical or oval, and is in any case, surrounded by the upwardly inclined marginal part.

It is to be noted that in Figs. 1, 2, 3, 6, and 15, the tread lift comprises a body of resilient material in the general shape of a segment of a spheroid, and that said lift is more or less depressed, or in other words, flattened or indented at its center with respact to the general shape.

Although but a certain few specific embodiments of this invention are herein shown and described, it is to be understood that numerous details of the constructions shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. A heel attachment, comprising a body part and attaching means embodied in the central part thereof, said means having upwardly projecting brads and said body part having a plurality of apertures adapted to receive the brads of a similar heel attachment when two of the devices are placed face to face.

2. Fastening means for heel attachments adapted to nest together, each comprising a disk-like body member having a series of apertures, certain of said apertures being provided with brads, and other unoccupied apertures being located and arranged to receive the brads of another attachment nested therewith.

3. Fastening means for heel attachments, comprising a disk-like sheet metal body having a series of peripheral notches, the sides of which are turned upward and adapted to serve as lugs of blade-like character, said lugs being disposed in planes respectively which are substantially radial with respect to the center of said body.

4. A tread lift fastening, comprising a discoidal punching having a diagonal cut in its edge and a second cut substantially parallel with said edge and disposed inwardly thereof and terminating at the inner end of the first mentioned cut, and the complementary triangular parts being turned up on their integral bases to a mutually parallel position.

5. A heel lift, comprising a body of resilient material having conoidally disposed marginal portions, and having a flattish part within said marginal portions, and fastening means embedded in the body of the lift within said flattish part located and arranged to exert a substantially equal pressure coextensive with said part.

Signed at Chicago this 8th day of November, 1917.

GILBERT S. ELLITHORPE.