

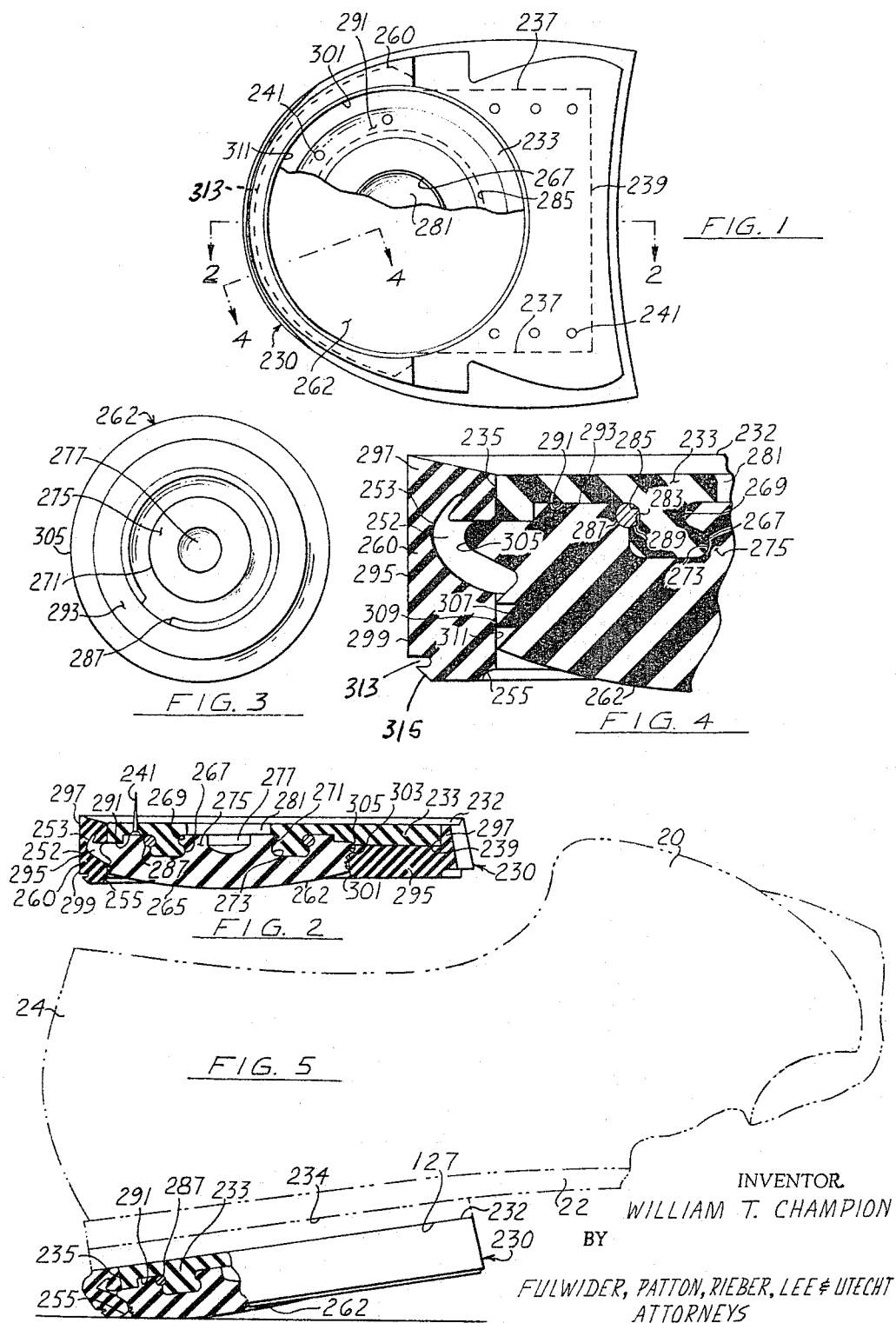
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W. T. CHAMPION

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HEEL

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HEEL

William T. Champion, 2333 Presidio Drive,
San Diego, Calif.

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The present invention relates to a heel for a shoe and more particularly to a heel having an impact portion and an arcuate shaped, downwardly extending, upwardly flexible and downwardly collapsible skirt-like portion, formed of resilient material, such as rubber, and disposed outwardly of and throughout at least a margin of the rear and an immediate part of one side of the impact portion.

In one aspect of the present invention, the heel of the present invention includes an upper, horizontally extending section by which the heel is secured to a shoe. The underside of this section includes means forming an annular support. An annular impact section is rotatably supported by this means. The heel also includes a third section comprising an arcuately shaped, downwardly extending, outwardly flexible and downwardly collapsible skirt-like portion formed of resilient material, such as rubber, and this arcuately shaped portion is disposed outwardly of the rear of the annular section throughout at least the margin of the rear of and an immediate part of one side of the annular section. This third section also includes portions which extend forwardly of the arcuately shaped portion and on opposite sides of the horizontally extending section and the annular section.

The skirt-like portion is thicker at the bottom than at the top and this skirt-like portion extends inwardly and downwardly. Also the marginal edge of the skirt-like portion is recessed horizontally adjacent the bottom of the skirt-like portion.

The means forming the annular support on the underside of the upper, horizontally extending section is in the form of an annular, upwardly facing shoulder. The annular impact section is provided with an annular, downwardly facing shoulder. The latter section is formed of resilient material which can be collapsed sufficiently for insertion into place so that the downwardly facing shoulder thereof rests upon the upwardly facing shoulder of the upper horizontally extending section.

Other features and the advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred embodiment of the invention is illustrated.

In the drawing:

FIG. 1 is a bottom view of the improved heel, part of the annular section being broken away to show portions of the underside of the upper section more fully;

FIG. 2 is a sectional view taken along lines 2—2 of FIG. 1;

FIG. 3 is a top plan view of the annular section;

FIG. 4 is a fragmentary sectional view taken along lines 4—4 of FIG. 1, but on a larger scale; and

FIG. 5 is a view of the heel attached to a shoe, a fragment of the shoe being shown in dot and dash lines, also, part of the heel is shown in section, showing the positions of the parts as the heel strikes the walking surface.

Referring more in detail to the drawing, the rear portion of the shoe is shown at 20 by dot and dash lines, the shoe having an outsole 22, a counter 24 and a heel, shown generally at 230. The shoe so far described is of a man's shoe and is of standard construction, except for the improved heel.

The rear margin of the heel, like that of a standard heel is arcuately shaped as shown. The upper surface 232 of the heel 230, before being attached to the shoe, is concave as is more clearly shown in FIG. 2. After

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the heel is attached to the shoe, the entire upper surface 232 is flattened and lies parallelly with the underside 234 of the heel section of the outsole 22.

The composite heel 230 includes an upward horizontally extending section 233, formed of relatively hard rubber, the rear margin thereof 235 being semicircular in shape. The sides 237 extend forwardly from the semicircular portion as indicated by the dotted lines 237 in FIG. 1; the front of this section is indicated at 239. Nails or the like 241 are used for securing the section 233 onto the heel section 127 of the shoe.

The impact section of the heel is shown at 262. This section 262 is annular in shape and is removably supported by the horizontally extending section 233. The entire bottom 265 of section 262 is in the form of an arc having a common center.

The means for supporting the annular section 262 by the section 233 comprises annularly shaped upwardly facing shoulder 267 formed by a groove 269 in the section 233. A downwardly facing shoulder 271 is formed on the upper part by a groove 273 on the periphery of a hollow boss 275 in the center of section 262. This boss is provided with an open top recess 277. The section 262 is formed of relatively soft rubber compared with the rubber of section 233 and is of the type that is standard in rubber heels being manufactured and sold in the open market at this present time. The purpose of the recess is to permit inward flexing of the boss 275 so that the boss can be contracted and inserted in position whereby the shoulder 271 can be moved inwardly of the shoulder 267 on the section 233 at the time of inserting the annular section 262 in position.

The upper section 233 is provided with an axially disposed hole 281 which is arranged to receive the boss 275 as the boss is pushed upwardly into position. The upper horizontal section 233 is also provided with a second annular shoulder 283 which is formed concentrically with the shoulder 267 by a groove 285. This groove 285 receives a split ring 287 which provides a downwardly facing shoulder 289 which rests upon shoulder 283. This ring 287 is vulcanized on the annular impact section 262. The underside of the horizontally extending section 233 is provided with a groove 291 which is arranged concentrically with the axis of the annular section 262 and this groove 291 receives an annular ridge 293 on the top of section 262.

The composite heel includes a third section 295, the upper portion 297 of which completely surrounds the horizontally extending section 233 and the lower portion 299 thereof completely surrounds the annular impact section 262, it being provided with a circular opening 301 for that purpose. The upper part of this opening 301 is recessed outwardly to provide a shoulder 303. The periphery of the annular section 262 is provided with a circular bead 305, the underside of which forms a shoulder which rests upon the shoulder 303 and assists in retaining the annular section 262 in position. The periphery of the annular section 262 is provided with a series of circular, encompassing grooves 307 and the apices 309 formed by the grooves, are snugly embraced by the inner wall 311 of the portion 299 of section 295.

The section 295 is vulcanized to the horizontally extending section 233 at the time that the sections are cured.

The portion 299 is recessed outwardly as at 252 throughout a semicircular area thereof, namely, through the margin surrounding the rear and the opposite sides of the annular rotatable section 262 to form a skirt-like portion 260. This skirt-like portion is provided by the recessed section 252 which extends upwardly and outwardly and then upwardly and inwardly as at 253. As

is more clearly shown by the dotted lines in FIG. 1, the skirt-like portion terminates substantially midway between the front and rear of the rotating section 262.

While walking normally, the rear of the heel strikes the ground at an angle of approximately thirty degrees as is more clearly shown in FIG. 6 of my co-pending application Serial No. 249,571 filed January 3, 1963, now Patent No. 3,196,561, issued July 27, 1965. As is more clearly shown in FIG. 5, the skirt-like portion 260, being thin at the top, will flex outwardly and will collapse upwardly upon impact with the walking surface. This function is of very short duration and occurs approximately at the same time that the rear of the rotatable section 262 strikes the ground.

As in my aforementioned co-pending application, a salient feature of the present invention resides in the fact that the impact receiving section 262 of the shoe heel lies forwardly of the rear heel of the foot of the wearer, approximately directly below the lower apex of the calcaneus bone of the foot of the wearer. Since the width of the skirt permits upward collapsing thereof, the impact of the foot on the walking surface, while wearing the shoe, will simulate natural impact, namely that of walking barefooted, yet providing a resilient cushion between the calcaneus bone and walking surface through the resiliency of the weight bearing portion heel of the shoe.

In normal walking, there is a slight creeping motion forwardly as the heel strikes the ground, immediately after the skirt functions as a bumper, the skirt being flexible, will collapse downwardly and will remain stationary while the rest of the heel slides forwardly. Although the skirt-like portion functions as a bumper, there is practically no wearing on the exterior of this skirt-like portion, some wearing taking place along the inner periphery 255 of the skirt-like portion 260, as is more clearly shown in FIG. 5.

I have also discovered that by recessing the marginal edge of the skirt-like portion 260, as for example by the groove 313, and, by slanting the portion 315, located below the groove 313, inwardly, the extreme rear bottom of the skirt-like portion collapses more readily whereby the stress is moved forwardly to the front of the bottom of the skirt-like portion, resulting in substantially no wearing away of the extreme rear, bottom of the skirt-like portion, thus prolonging showing of wear of the heel.

As is well known, in normal walking, usually more stress is placed on the outer side of the heel than on the inner side. Let it be assumed that the upper part of the heel shown in FIG. 2 is the outer side of the heel. Inasmuch as much of the outer side of the heel is subjected to more stress than any other side, there will be a tendency to rotate the rotatable section 262 in a clockwise direction, due to the slight sliding tendency as the heel strikes the ground. However, at this time, the section 262, being pressed downwardly, will expand radially and simultaneously the inner periphery of the skirt-like portion is in abutting relationship with the periphery of the section 262. In this manner the rotatable section 262 is in binding and non-rotating relationship with the inner periphery of the skirt 260 and the complementing walls of the section 295 which encompasses the same. Nevertheless, the rotatable section 262 is biased toward movement in a clockwise direction, and therefore, as soon as the downward pressure on the section 262 is released, i.e., when the heel is being lifted, a minute creeping movement of the section 262 takes place in a clockwise direction. Normally the tendency for the greatest wear on the impact section of a heel takes place at the rear thereof, causing more wear there than other sections of the heel. But by virtue of the fact that the section 262 is mounted for rotation, wear takes place uniformly throughout the like areas of the underside of the rotatable section 262.

Wear, however, does take place on the underside of section 262 through prolonged wearing of the shoe, but inasmuch as the wearing of the outer periphery of the skirt is substantially nil throughout this length wearing of the shoe, this skirt-like portion functions as a shroud for hiding the wear on the underside of the section 262.

In assembling the rotatable section 262 onto the heel to form the composite heel, the boss 275 is forced in position, the hole 281 in the horizontally extending section 233 provides for receiving the rubber of the boss as it is being pushed in position. After the bead or shoulder 271 of the boss is snapped beyond the bead or shoulder 267 of section 233, then pressure is applied to the more remote portion of the section 262 to cause the spring to snap in position in the groove 285 of section 233.

Normally, the heel should outlast the shoe but under certain circumstances it may be desirable to renew this section 262. This can be done by a suitable implement for removing the section 262 and then inserting a new section.

Under normal conditions, the shoulders on the various sections are sufficient for retaining section 262 in position although there may be a tendency to remove the same as for example in the event that the wearer steps on a nail or should the section 262 become frozen to the ground in the event that the wearer is standing stationary.

While the form of embodiment herein shown and described, constitutes preferred form, it is to be understood that other forms may be adopted falling within the scope of the claims that follow.

I claim:

1. An article of manufacture comprising a heel for a shoe, said heel having:

(A) An upper horizontally extending section through which section the entire heel is secured to a shoe, said section having:

(1) means forming an annular support on the underside thereof;

(B) an annular impact section rotatably supported by said means;

(C) and a third section including:

(1) an arcuately shaped, downwardly extending, outwardly flexible and downwardly collapsible skirt-like portion, said portion being formed of resilient material, such as rubber, and disposed outwardly of the second mentioned section throughout at least the margin of the rear and an immediate part of one side of the second mentioned section,

(2) and portions extending forwardly of the first mentioned portion and on opposite sides of the first and second mentioned sections, and second mentioned portions extending to the forward ends of the heel.

2. An article of manufacture as defined in claim 1 characterized in that the skirt-like portion is thicker at the bottom than at the top and in that the skirt-like portion extends inwardly and downwardly.

3. An article of manufacture as defined in claim 1, characterized in that the means forming the annular support of the first mentioned section includes an annular upwardly facing shoulder and the annular impact section includes an annular downwardly facing shoulder complementing and resting on the upwardly facing shoulder of the first mentioned section.

4. An article of manufacture as defined in claim 3, characterized in that the portion forming the shoulder of one of the first and second mentioned sections is formed of resilient material.

5. An article of manufacture as defined in claim 3, characterized in that the portion forming the shoulder of the third mentioned section is formed of resilient material.

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6. An article of manufacture as defined in claim 1, characterized in that the third mentioned section surrounds the second mentioned section.

7. An article of manufacture as defined in claim 1, characterized in that the third mentioned section surrounds the second mentioned section and further characterized in that the third mentioned section comprises an integral structure formed of like substance throughout.

8. An article of manufacture as defined in claim 1, characterized in that the second mentioned portion includes a downwardly facing shoulder adjacent the periphery thereof, and one of the first and third mentioned sections having an upwardly facing shoulder in supporting relationship with the downwardly facing shoulder on the second mentioned section.

9. An article of manufacture comprising a heel for a shoe, said heel having:

- (A) An upper horizontally extending section through which section the entire heel is secured to a shoe;
- (B) a forward weight bearing portion below said section;
- (C) an arcuately shaped rear impact portion below said section;
- (D) and an arcuately shaped downwardly extending, outwardly flexible and downwardly collapsible skirt-like portion, said skirt-like portion being of resilient

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material such as rubber and disposed outwardly of the impact portion throughout at least the margin of the rear and an immediate part of one side of said rear impact portion, the marginal edge of said skirt-like portion being recessed horizontally adjacent the bottom of the skirt-like portion.

10. An article of manufacture as defined in claim 9, characterized in that the recess is in the form of a horizontally extending groove.

11. An article of manufacture as defined in claim 9, characterized in that the outer edge of the skirt-like portion located below the recess slants inwardly.

12. An article of manufacture as defined in claim 9, characterized in that the recess is in the form of a horizontally extending groove and that the outer edge of the skirt-like portion located below the groove slants inwardly.

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FRANK J. COHEN, *Primary Examiner.*