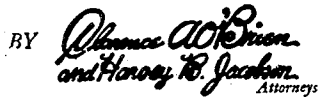


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CUSHIONED HEEL CONSTRUCTION

Carl A. Windle, Los Angeles, Calif.

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10 Claims. (Cl. 36—38)

This invention comprises a novel and useful cushioned heel construction and more particularly relates to a shock absorbing heel particularly applicable to women's "spike" or "high" heeled shoes, and constitutes an improvement over the subject matter disclosed in my co-pending applications Serial Nos. 572,153, filed March 16, 1956, now Patent No. 2,807,100, issued September 24, 1957, and 635,736, filed January 23, 1957.

The general object of this invention is to provide a shock absorbing or cushioning heel construction especially adapted for use with high heel constructions such as those of women shoes, cowboy boots and the like. In general, this object is attained by a heel construction having a cylindrical bore in the lower end thereof receiving a vertically slidable piston or plunger having adjustable cushioning means for resiliently urging the plunger downwardly, together with a novel heel cap mounting construction at the lower end of the plunger.

A more specific object of the invention is to provide a cushioned heel construction in accordance with the preceding object wherein the vertically resiliently reciprocable plunger carrying the heel cap has a highly effective journaling and guiding action of the plunger; an improved adjusting means for the resilient cushioning spring; together with a novel sealing construction preventing the ingress of water or other material between the plunger and its cylindrical bore; and an improved construction for securing the heel cap to the bottom of the plunger.

A still further and more specific object of the invention is to provide a cushioned heel construction in accordance with the preceding objects in which convenient access means is provided in the bottom shoe at the heel portion thereof for obtaining access to the cushioning spring for adjusting the tension of the same; and to provide cushioning and silencing means for reducing any noise of operation of the cushioning construction.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully herein after described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a view in vertical section through a portion of the shoe heel incorporating therein the novel cushioning construction of this invention;

Figure 2 is a fragmentary side elevational view from the right side of Figure 1 showing the lower end of the heel and of the cushioning plunger and heel cap mounted thereon;

Figure 3 is an exploded perspective view of the plunger and its adjustable cushioning means;

Figure 4 is a horizontal sectional view taken substantially upon the plane indicated by the section line 4—4 of Figure 1; and

Figure 5 is a horizontal sectional view taken substantially upon the plane indicated by the section line 5—5 of Figure 1.

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Referring first to Figure 1 it will be seen that a portion of the shoe 10 has been illustrated to which is secured a high heel 12 and incorporation therein the cushioned heel construction of this invention.

The heel 12 may be of any suitable material, comprising a body member which extends downwardly and is downwardly convergent and tapering to provide a vertically elongated body 14. Opening upwardly from the lower end of the body is a central bore or passage 16 in which is slidably received the plunger 18 as set forth hereinafter. The upper end of the body is hollow, providing a chamber 20 in which extends an upstanding cylindrical sleeve or projection 22 having an internally threaded bore 24 at its upper end in which is received a combined closure plug and spring adjusting means 26. The upper end of the body is provided with a top wall 28 which is contoured to fit the bottom surface of the heel seat of the shoe, this top wall being preferably provided with a plurality of upstanding internally threaded tubular bosses 30 adapted to receive fastening screws 32 extending through the heel portion of the sole of the shoe whereby the heel may be secured thereto.

In the top wall 28 of the body of the heel there is provided an access opening 34 which in turn is covered by a closure plate 36, access to which may be had from the interior of the shoe for a purpose to become subsequently apparent.

At its lower end, and upon the breast portion thereof the heel portion 14 is provided with a vertically extending slot 40 opening upwardly from the lower end thereof for a purpose to be subsequently set forth. As will be apparent from Figure 1, the upstanding sleeve 22 has an internal diameter or bore 42 which is somewhat greater than that of the bore 16 to thus provide an annular shoulder 44 therebetween.

From a comparison of Figures 3 and 4 it will be apparent that the plunger 18 and the bore 16 are U-shaped rather than circular in cross-section, the plunger having a generally flat wall 46 complementary to the corresponding portion of the bore 16 whereby rotation of the plunger there is prevented. It will be observed that the vertical edges where the flat portion 46 joins the curved portion of the plunger side wall are rounded as at 48 in order to reduce friction and any tendency of the plunger to bind in its bore during reciprocation of the plunger therein.

At its upper end plunger 18 is provided with internally threaded bore 50 which receives the externally threaded depending extension 52 of a plate 54. The latter has upwardly projecting cylindrical boss 56 which constitutes a retainer and a guide for the lower end of the compression spring 58 whose upper end is received against the lower side of the plug 26 and is guided upon the cylindrical depending extension or boss 60 thereon. Preferably the plug 26 upon its top surface is provided with a kerf or notch 62 for engagement by a screw-driver extended through the opening 34 when the flap 36 is raised whereby the compression or tension upon the spring 58 may be regulated.

As will be apparent from Figure 1, a gasket or resilient ring 64 is inserted beneath the plate 54 and the shoulder 44 previously mentioned in order to cushion or diminish the sound produced by the vibration of the plate 54 in the sleeve 22.

Adjacent its lower end the plunger 18 is provided with a circumferentially extending groove 66 in which is received a sealing ring 68. This ring resiliently engages the internal wall of the bore 16 and serves to prevent any ingress of water or other material into the lower end of the bore 16 or any escape of a lubricant which might be provided in the upper end of the bore for lubrication of

the plunger during reciprocating movement of the latter in the bore.

As will be apparent from a comparison of Figures 1 and 3, a heel cap holder in the form of a flat centrally apertured plate 70 of substantially the same cross-sectional area and contour of the plunger 18 is provided with an upstanding lip 72 slidable within a previously mentioned notch 40. As shown in Figure 1, this holder is adapted to be tightly secured to the lower end of the plunger by means of a fastening screw 74 extending through the aperture 76 in the cap holder and into an internally threaded bore 78 in the lower end of the plunger. Depending from the bottom surface of the holder 70 are a pair of knife-edge ridges or projections 80 adapted to press into the top surface of the heel cap 82 which is likewise apertured as at 84 to receive the fastening screw 78, and thereby prevent rotation of the heel cap.

It will be observed that the engagement of the upturned portion 72 on the heel cap holder with the flat side 46 of the plunger prevents relative rotation between the holder and the plunger, while the non-circular shape of the plunger and of the bore 16 likewise prevent rotation of the plunger. The depending ridges 80 in turn prevent rotation of the heel cap 82.

It will thus be apparent that there is provided a cushioning construction and which provision has been made for easy and accurate adjustment of the tension of the cushioning means; whereby the impact of moving parts therein has been cushioned to eliminate any noise therefrom; and whereby sealing means has been provided preventing ingress of foreign material into the operating parts of the construction and thereby increasing the life of the device.

Although the drawings and specification disclose a coil spring 58 as the preferred means for yieldingly urging the plunger 18 downwardly, it is to be understood that in some instances the use of other cushioning means such as a rubber plug may be advantageously employed as a substitute for the spring 58.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A cushioned heel construction comprising an elongated body having a chamber in its upper end and a bore connecting with said chamber and opening upon the bottom surface of said body, a plunger slidably mounted in said bore, resilient means engaging said plunger and yieldingly urging the latter downwardly in said bore, adjusting means in said chamber for regulating said resilient means, access means in said body affording access to said chamber and said adjusting means, a heel cap holder on the bottom end of said plunger disposed beneath said body, a heel cap on said holder, said body having an upwardly extending notch in a side wall thereof from its bottom surface, said holder having an upturned flange guidingly received in said notch.

2. The combination of claim 1 including a sealing means disposed between said plunger and bore adjacent

the lower end thereof for preventing the ingress of matter into said bore and the escape of lubricant therefrom.

3. The combination of claim 1 wherein said bore and plunger have complementary flat surfaces whereby to prevent relative rotation.

4. The combination of claim 1 including a sleeve in said chamber having a central opening of greater diameter than that of said bore and communicating with the latter, a laterally projecting plate on the upper end of said plunger slidable in said central opening and engageable with the bottom thereof for limiting downward movement of said plunger.

5. The combination of claim 1 including a sleeve in said chamber having a central opening of greater diameter than that of said bore and communicating with the latter, a laterally projecting plate on the upper end of said plunger slidable in said central opening and engageable with the bottom thereof for limiting downward movement of said plunger, said resilient means comprising a spring in said sleeve engaging said plate.

6. The combination of claim 1 including a sleeve in said chamber having a central opening of greater diameter than that of said bore and communicating with the latter, a laterally projecting plate on the upper end of said plunger slidable in said central opening and engageable with the bottom thereof for limiting downward movement of said plunger, said resilient means comprising a spring in said sleeve engaging said plate, said adjusting means comprising a plug threadedly engaging the upper end of said sleeve and engaging said spring.

7. The combination of claim 1 including a sleeve in said chamber having a central opening of greater diameter than that of said bore and communicating with the latter, a laterally projecting plate on the upper end of said plunger slidable in said central opening and engageable with the bottom thereof for limiting downward movement of said plunger, said resilient means comprising a spring in said sleeve engaging said plate, said adjusting means comprising a plug threadedly engaging the upper end of said sleeve and engaging said spring, said plate and said plug having projecting guide and retaining bosses received within the ends of said spring.

8. The combination of claim 1 including a sleeve in said chamber having a central opening of greater diameter than that of said bore and communicating with the latter, a laterally projecting plate on the upper end of said plunger slidable in said central opening and engageable with the bottom thereof for limiting downward movement of said plunger, said plate having a screw-threaded projection engaged in a screw threaded bore in the upper end of said plunger.

9. The combination of claim 1 including a sleeve in said chamber having a central opening of greater diameter than that of said bore and communicating with the latter, a laterally projecting plate on the upper end of said plunger slidable in said central opening and engageable with the bottom thereof for limiting downward movement of said plunger, a silencing gasket interposed in said sleeve between said plate and the bottom of said opening.

10. The combination of claim 1 wherein said holder has ridges depending from its bottom surface and engaging said heel cap for preventing relative rotation.

No references cited.