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A. J. DENK

2,299,009

CUSHIONED HEEL

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Fig. 1.

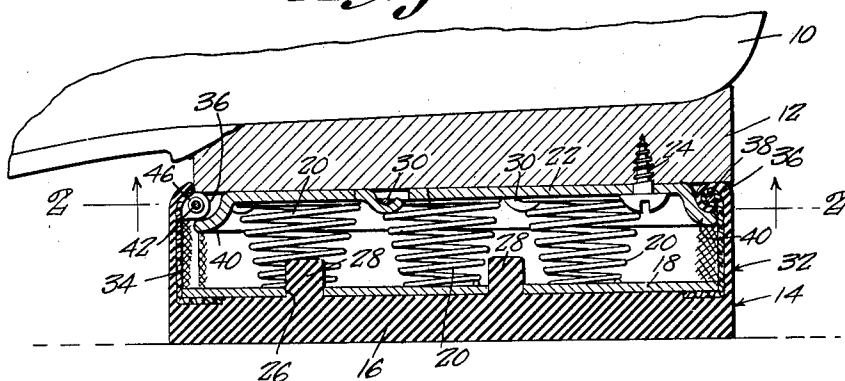


Fig. 2.

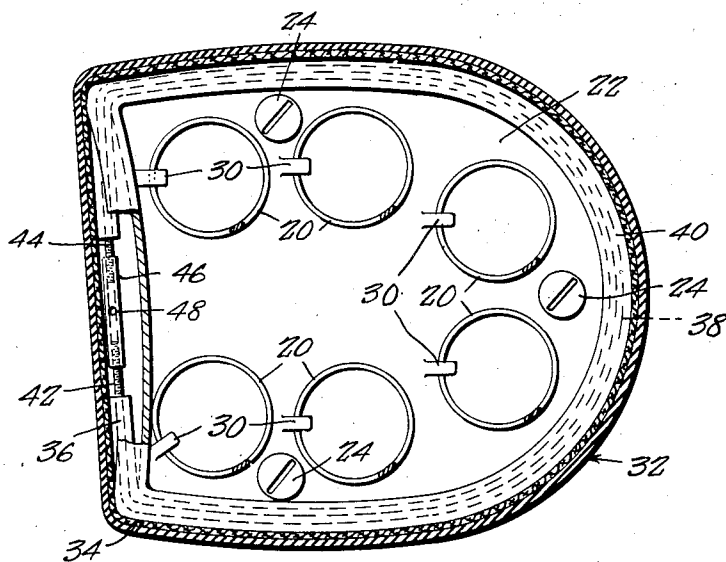
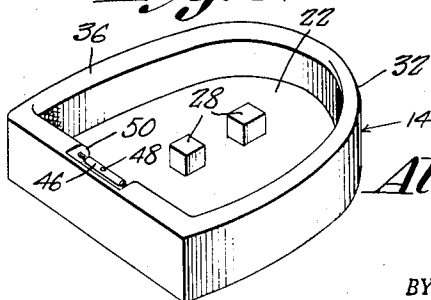


Fig. 3.



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UNITED STATES PATENT OFFICE

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CUSHIONED HEEL

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Application August 9, 1941, Serial No. 406,194

5 Claims. (Cl. 36—36)

My invention relates to shoes, and has among its objects and advantages the provision of an improved cushioned heel.

In the accompanying drawing:

Figure 1 is a longitudinal sectional view of a heel in accordance with my invention;

Figure 2 is a sectional view taken substantially along the line 2—2 of Figure 1; and

Figure 3 is a perspective view of the heel detached from the shoe.

In the embodiment selected for illustration, a fragment 10 of a conventional shoe is illustrated together with the usual leather heel section 12 to which the usual rubber heel is nailed or otherwise secured. To the heel section 12 is attached my cushioned heel 14.

The cushioned heel 14 comprises a rubber heel portion 16 against the inner face of which is positioned a metallic plate 18 constituting a rest for the smaller ends of a series of cone springs 20. The larger ends of the cone springs 20 abut a metallic plate 22 secured to the heel portion 12 by screws 24. A plurality of openings 26 is provided in the metallic plate 18 for the reception of snubbers 28 formed integrally with the rubber heel portion 16. Ears 30 are struck from the plate 22 and bent around the first convolution in the cone springs 20 to hold the springs in relatively spaced positions on the plate 22 so as to maintain proper distribution of the springs.

A thin wall 32 is formed integrally with the heel portion 16, which wall is reinforced by fabric 34 secured to the inner face of the wall. Thus the outer face of the wall is of the same material and appearance as the heel section 16. The upper edge of the wall 32 is formed to provide a tubular bead 36 through which a wire 38 is threaded. The bead lies adjacent the leather heel portion 12 and constitutes a securing means for the rubber heel portion.

A flange 40 is struck from the plate 22 and is curved to the contour of the bead 36, the latter being drawn tightly into the groove formed by the flange 40 and the leather heel portion 12 through tightening of the wire 38. In Figures 2 and 3, the ends of the wire 38 are respectively provided with right- and left-hand threads 42 and 44 for threaded connection with a turnbuckle 46 which is in the nature of a tube provided with internal threads. A transverse opening 48 is provided in the turnbuckle 46 for the reception of a pin to facilitate turning of the turnbuckle relatively to the threads 42 and 44. A portion of the bead 36 is cut away at 50 to provide accommodation for the turnbuckle 46 as well

as to lend accessibility to the threads 42 and 44. This cutout is preferably located at the shank end of the heel, and the wall spanning the cutout is sufficiently resilient to permit bending, as when the turnbuckle is being manipulated.

The perimeter of the rubber heel 16, particularly the outer face of the wall 32, terminates flush with the sides and rear faces of the leather heel 12, thus giving the cushioned heel the appearance of a conventional rubber heel. While the walls 32 are non-elastic, the walls flex easily as to accommodate the cushioning action of the heel structure, as when the springs 20 compress and extend as an incident to load variation transmitted thereto when walking.

The snubbers 28 are engageable by the plate 22 upon predetermined compression of the springs 20, and the cone springs provide the necessary spring action within a confined space. Thus the vertical dimension of the cushioned heel may be limited to reasonable limits at the same time embodying a necessary spring action. The rubber heel is effectively secured to the plate 22 through mere tightening of the wire 38. The perimeter of the plate 22, including the flange 40, is such as to bring the outer face of the rubber heel into proper relationship with the outer face of the leather heel 12.

Without further elaboration, the foregoing will so fully illustrate my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. In combination with a shoe heel portion, a cushioned heel comprising a plate secured to said heel portion, said plate having a margin shaped to provide a space between the margin and said heel portion, a heel section having a flexible wall provided with a bead lying in said space, means for drawing said bead into firm engagement with said margin and said heel portion, cone springs interposed between said plate and said heel section, said heel section and said wall comprising rubber, and fabric reinforcement secured to the inner face of said wall and embedded in said bead.

2. In combination with a shoe heel portion, a cushioned heel comprising a plate secured to said heel portion, said plate having a margin shaped to provide a space between the margin and said heel portion, a heel section having a flexible wall provided with a bead lying in said space, means for drawing said bead into firm engagement with said margin and said heel portion, cone springs interposed between said plate

and said heel section, said heel section comprising rubber, a rigid plate interposed between said cone springs and said heel section, said rigid plate being provided with perforations, and snubber elements formed integrally with said heel section and extending through said perforations for engagement by said first plate upon a predetermined degree of compression of the cone springs.

3. In combination with a shoe heel portion, a cushioned heel comprising a plate secured to said heel portion, said plate having a margin shaped to provide a space between the margin and said heel portion, a heel section having a flexible wall provided with a bead lying in said space, means for drawing said bead into firm engagement with said margin and said heel portion, cone springs interposed between said plate and said heel section, said heel section comprising rubber, a rigid plate interposed between said cone springs and said heel section, said rigid plate being provided with perforations, snubber elements formed integrally with said heel section and extending through said perforations for engagement by said first plate upon a predetermined degree of compression of the cone springs, said bead being of tubular formation, said means comprising a wire threaded through said bead and provided with right- and left-hand threads at its ends, and a turnbuckle threadedly engaging said threads for tightening the wire to draw said bead into position.

4. In combination with a shoe heel portion, a cushioned heel comprising a plate secured to said heel portion, said plate having a margin

5 shaped to provide a space between the margin and said heel portion, a heel section having a flexible wall provided with a bead lying in said space, means for drawing said bead into firm engagement with said margin and said heel portion, cone springs interposed between said plate and said heel section, said heel section comprising rubber, a rigid plate interposed between said cone springs and said heel section, said rigid plate being provided with perforations, snubber elements formed integrally with said heel section and extending through said perforations for engagement by said first plate upon a predetermined degree of compression of the cone springs, said bead being of tubular formation, said means comprising a wire threaded through said bead and provided with right- and left-hand threads at its ends, and a turnbuckle threadedly engaging said threads for tightening the wire to draw said bead into position, said bead having a cutout for accommodating the turnbuckle and the latter being located adjacent the shank portion of the shoe.

5. In combination with a shoe heel portion, a resilient heel having a flexible wall detachably connected with said shoe heel portion, a perforated rigid plate engaging said heel section inside said flexible wall, compression springs interposed between said plate and said heel portion, and resilient snubber elements attached to said heel section and extending through the perforations in said rigid plate to engage said heel portion upon predetermined compression of said springs.

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