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RESILIENT HEEL CONSTRUCTION

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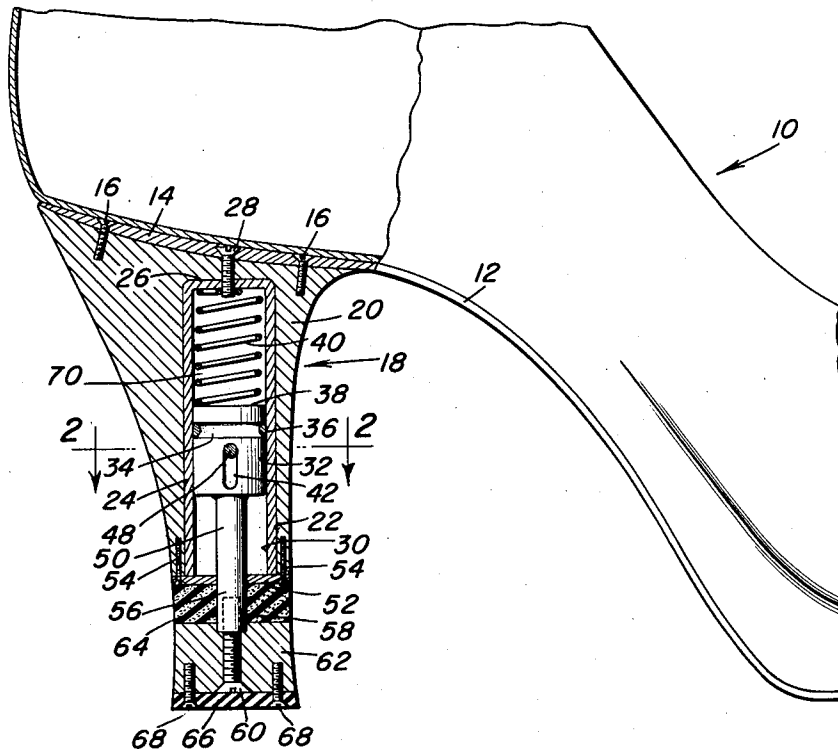
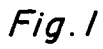


Fig. 3

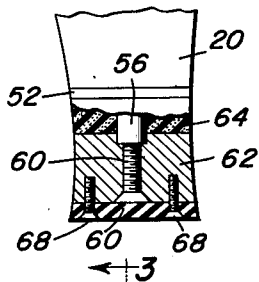


Fig. 2

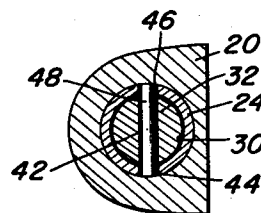
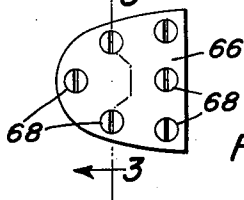


Fig. 4



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RESILIENT HEEL CONSTRUCTION

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3 Claims. (Cl. 36—35)

This invention relates generally to shoe heel constructions and is more particularly concerned with a shock absorbing heel particularly related to women's "spike" or "high heeled" shoes.

A more specific object of invention is to provide a shock absorbing "high heel" for women's shoes including a spring urged reciprocating piston supported in a longitudinal piston casing element disposed in alignment with the longitudinal axis of a woman's high heel whereby placement of weight on the heel results in compression of a shock absorbing spring, compression of a resilient lost motion material, and compression of air by the reciprocating piston in the piston casing element resulting in the absorption of shock to the bone structure of a person wearing shoes incorporating such heels.

Another object of invention in conformance with that set forth above is to provide a shock absorbing "high heel" construction for women's heels which is readily and economically manufactured, easily installed, and highly efficient and satisfactory for the purpose intended.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter 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 side elevational view with portions broken away and in section showing the novel shock absorbing "high heel" construction;

Figure 2 is a sectional view taken substantially on line 2—2 of Figure 1;

Figure 3 is a sectional view taken substantially on line 3—3 of Figure 4; and

Figure 4 is a bottom plan view of the heel "lift" portion.

Indicated generally at 10 is a woman's shoe said shoe incorporating an arch support portion 12 of steel, or any other suitable material, said arch support portion extending beneath the heel of the shoe at 14 and incorporating suitable apertured portions for receiving fasteners 16 of any suitable character which are utilized to secure a shock absorbing shoe heel indicated generally at 18, said heel being constructed of a cast metal, wood, or any other suitable material.

The shock absorbing heel includes a body member 20 having a longitudinally extending downwardly opening bore portion 22 accommodating therein a piston casing 24 including a top portion 26 suitably apertured for receiving a fastening element 28, of any suitable character therein for retaining said piston casing 24 in a fixed position within the bore portion 22 of the body member. The piston casing 24 includes an internal piston bore portion 30 reciprocally supporting therein a piston 32 having an annular groove 34 extending therearound for receiving a suitable seal such as the O ring 36, and upon upward reciprocation of the piston 32 toward the top member 26 of the piston casing results in the compression of air and a cushioning or shock absorbing effect will be attained as will subsequently become apparent. Inter-

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posed between the top member 26 and the top portion 38 of the piston 32 is a compression spring 40 which tends to urge the piston 32 to an "at rest" position when the weight of the wearer of the shoes is removed from the heel portion.

The piston 32 includes a diametrical slot 42, see Figure 2, and the piston casing 24 includes a pair of diametrically opposed apertures 44 and 46 extending therethrough and securing therein a transverse pin element 48 reciprocally received in the slot 42. The piston 32 includes an integral downwardly extending rod element 50. The pin 48 in the apertures 44 and 46 provide for limited relative movement between the piston 32 and the casing 24. A centrally apertured and suitably conformed guide plate element 52 is secured on the lower end portion of the body member 20 by means of suitable fastening elements 54 and is centrally apertured to reciprocally receive through the rod element 50 including a lower end portion 56 extending out of the body member 20 and beyond the plate 52 and being internally recessed and threaded at 58 for accommodating therein a suitable fastening element 60 which is utilized to secure a suitably shaped heel portion 62 in spaced relationship from the lower end portion of the body member. A readily compressible and suitably conformed material 64 is circumposed about the lower end portion 56 of the rod element and extends between the plate 52 and the top of the heel portion 62. The heel portion 62 may be of any suitable material such as aluminum, etc., and a suitable "lift" element of leather, rubber or metal indicated at 66 may be secured to the heel portion 62 by means of suitable fastening elements 68.

Thus when weight is placed on the heel, the body member 20 moves downwardly compressing the spring 40, compressing the compressible material 64 which may be a suitable sponge, rubber, etc., and moving downwardly the piston casing 24 resulting in a compression of air in the piston chamber portion indicated at 70 which is between the top member 26 of the piston casing and the piston 32, the three aforementioned instrumentalities providing a shock absorbing for the user of the shoes when the pressure of the user's weight is placed on the heel, and when the shoe is lifted the spring 40 and the compressible material 64 return the heel to the "at rest" position whereby the piston is moved to the position shown in Figure 1. The connection between the pin 48 which extends through the slot 42 in the piston 32 being secured in the apertures 44 and 46 of the piston cylinder casing 24 as seen in Figure 2, prevents the rotation of the heel portion 62 relative to the body member 20.

Various positional directional terms such as "top," "lower," etc., are utilized herein to have only a relative connotation to aid in describing the device and are not intended to require any particular orientation with respect to any external elements.

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. In a shock absorbing heel, a tapering, downwardly convergent, vertically elongated body member including a downwardly opening longitudinal axial bore portion therein, a downwardly opening piston casing snugly fitted and secured in the bore portion of said body member and reinforcing the same, a piston element reciprocally supported in said piston casing, an annular seal disposed around the circumference of said piston for fluid tight

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engagement with the piston casing, a compression spring interposed in the casing between the piston and an upper end closed portion of the casing, the open lower end of the piston casing being coterminous with the open lower end of the bore, a rod element secured to the piston opposite the portion engaged by said spring, a connection between said piston, piston casing and rod element for preventing rotation of said rod about its longitudinal axis in said piston casing, the rod element including a lower end portion extending out of the body member, a heel portion secured on the lower end portion of said rod element in spaced relation from the lower end of the body member, and a compressible material surrounding the lower end portion of said rod element and interposed between the lower end of the body member and said heel portion, the closed upper ends of the bore and of the piston casing terminating in close proximity to the top surface of said body member, a fastener extending from said top surface into fastening engagement with said closed upper end of said piston casing.

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2. In a shock absorbing heel as set forth in claim 1 wherein said body member includes a horizontal plate element secured on the lower end portion of the body member and extending around the rod element for maintaining said rod element in longitudinal alignment with the piston casing.

3. The combination of claim 1 including a screw extending through a bore in said heel portion and threadedly engaging said rod for mounting said heel thereon.

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