Aug. 29, 1944. V. P. WILLIAMS 2,357,281

SHOE HEEL

Filed Dec. 2, 1943

Fig. 1.



Fig. 2.

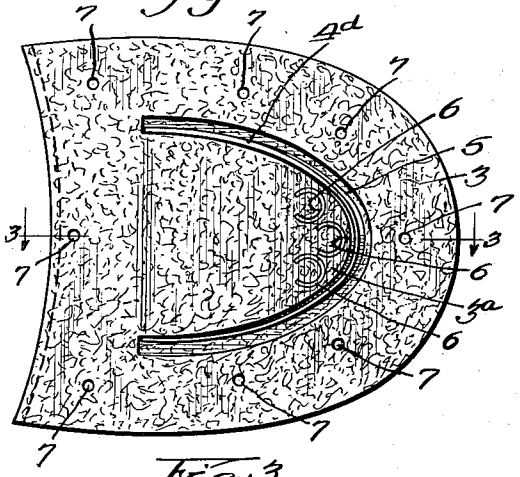


Fig. 3.

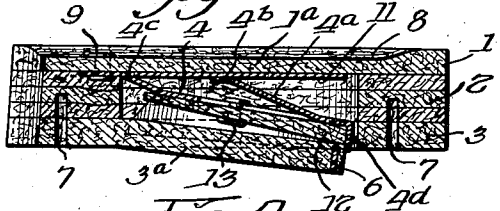


Fig. 4.

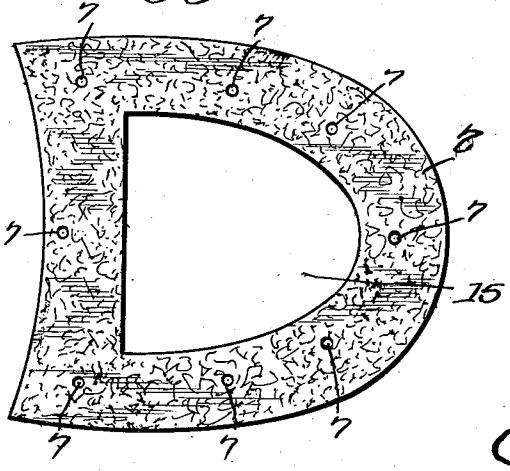


Fig. 5.

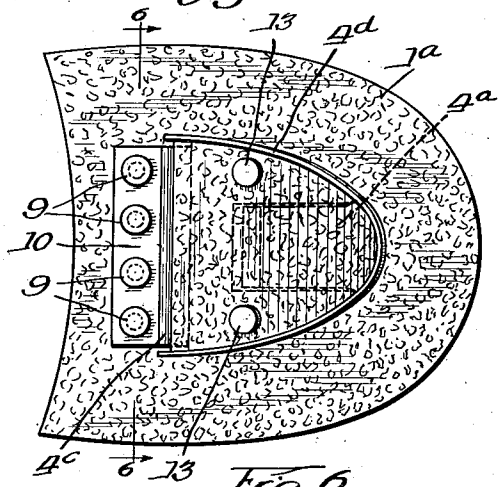


Fig. 6.

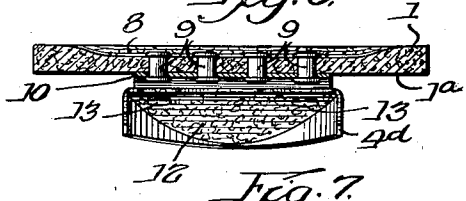


Fig. 7.

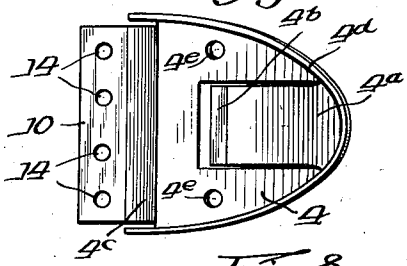
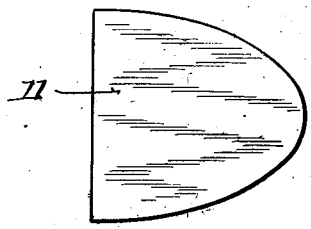


Fig. 8.



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SHOE HEEL

Villor P. Williams, Chicago, Ill.

Application December 2, 1943, Serial No. 512,589

11 Claims. (Cl. 36—38)

This invention relates to shoe heels and more particularly to a spring cushion heel. Its principal object being to provide cushioning means between a conventional leather heel and a spring sheet metal stamped into form, said spring member being connected at one end to one of the members, so that it will yield when the weight of the wearer of the shoe presses upon the thread member of the heel.

Another object of this invention is to incorporate into the heel of a shoe such yielding means that will cushion and absorb the jars and shocks to the spinal cord of the body incident to walking but particularly during long distance trips on foot when such spring heel is adapted on boots and shoes to military uses.

Another object of this invention relates to the use of this device as a shock absorbing heel when the pilot of a plane descends upon the ground and further provides a measure of protection against slipping with both elasticity and positiveness.

A still further object of this invention is to provide a self-contained and wholly detachable spring heel that can be attached to both new and old shoes within a few minutes and which requires a minimum of time and effort to have the tread lift removed and replaced by a new tread lift when it has become worn in use.

This and such other objects as may hereafter appear are attained by the novel construction and arrangement of component parts to be hereinafter specifically described and claimed.

Reference will now be had to the accompanying drawing forming a part of this specification, wherein:

Fig. 1 is a side elevation of the exterior of the normal spring heel with the tread lift projecting at an angle,

Fig. 2 is a bottom plan view of the tread showing the horseshoe slit that facilitates the free movement of the spring element in co-action with the tongue of the tread lift,

Fig. 3 is a section on line 3—3 of Fig. 2,

Fig. 4 is a plan view of centre members set between the base-member of the heel and the tread lift with a large opening provided therein for the free movement of the spring element,

Fig. 5 is a plan view of the base-member of the heel in conjunction with the spring element riveted thereon,

Fig. 6 is a section on line 6—6 of Fig. 5,

Fig. 7 is a plan view of the spring element,

Fig. 8 is a plan view of the back-up element set between the spring finger and the base-member as shown in Fig. 3.

Referring to the drawing there is illustrated a spring heel Fig. 1 formed of any suitable material such as metal, plastic, rubber or leather, said spring heel embodying base-member 1, to which the spring element is attached; it embodies centre member 2 that provides the required height to a shoe heel, and the tread lift 3 with its tongue 3*a* shown in its normal angular position, same being confined in part within the peripheral flange 4*d* of the spring element 4. Tread lift 3 shown in Fig. 2 is provided with a slit 5 shaped in the form of a horseshoe cut sufficiently wide to facilitate uninterrupted up and down movement of the flange 4*d* of the spring element 4 when the latter is depressed under the pressure of walking. Tongue 3*a* is formed out of the tread lift 3 as a result of the slit 5. The same is intended to be partly confined within the depth of the flange 4*d* and directly on top of the wedge filler 12 being cemented thereon or in some other manner securely fastened thereon, to prevent the edge of the tongue 3*a* from closing up slit 5 when the material of the tread member 3 gets wet or otherwise damaged. As shown in Fig. 3 flange 4*d* of the spring element 4 provides a protective wall within the slit 5 of the tread member 3. Tongue 3*a* of the tread member 3 is further provided with three steel plates 6 moon-shape-like or of any variety of shapes and directions, and may be of any desired number, securely fastened thereon to provent premature wear to the edge of the tongue 3*b* from continuous wear of the spring heel. The body portion of the tread lift 3 is provided with a plurality of nail receiving holes 7 as shown in Figs. 2 and 3 for securely fastening the heel to the rear of the outer sole of the shoe. In Figs. 3 and 6 the back part of the base-member 1 is scoured concave-like as at 8 in order to give it true alignment with the conventional convex surface of the rear outer sole of a shoe to which the heel is attached. In Fig. 3 spring element 4 is shown securely fastened to the bottom of the base-member 1 by means of either screws various fastenings but preferably rivets as shown at 9 in Figs. 5 and 6 for which purpose holes 14 are shown in Fig. 7. Struck out of the body portion of spring element 4 is a bowed spring finger or cushion element 4*a*. Said spring finger 4*a* has sliding contact 4*b* with the bottom 1*a* of the base-member 1. Peripheral flange 4*d* which is formed out of the body portion of spring element 4 is shaped to conform with the horseshoe

slit 5 of tread lift 3 and is uniform in width throughout said flange 4d. Said flange 4d extends upwardly through the horseshoe slit 5 when the spring heel is fully assembled as shown in Figs. 1 and 3. The broadened portion 10 of the spring element 4 is bent upward and backward to provide a spring-like action and to form an elastic fulcrum 4c as shown in Fig. 3 in addition to the co-action of the spring finger 4a when the wearer has the heel under compression. If the wearer of the shoes equipped with my spring heels is a light weighty person the spring finger 4a would suffice to absorb the shock, but in the case where the wearer is a heavy weighty person both the spring finger 4a and the bent up portion 10 would cooperate with each other of the combined co-actions to produce the necessary shock absorbing action. Holes shown in the body portion and designated as 4e of the spring element 4 shown in Fig. 7 are provided for the fasteners that properly secure in place wedge filler 12 same may be made of either rubber, plastic or leather. Wedge filler 12 shown in Fig. 3 may be made to be in thickness almost to the height of the flange 4d of the spring element 4. Its purpose being to provide a retaining support and to hold at an elevated angle tongue 3a same being securely fastened to the wedge filler 12. Back-up member 11 shown in Fig. 8 is attached beneath the sliding contact 4b of the spring finger 4a and it is held in place securely by the spring pressure of spring finger 4a bearing against the bottom 1a of the base-member 1 to prevent spring finger's sliding contact from biting or settling into the bottom 1a of the base-member 1. Said back-up member 11 cannot get away from its fixed position once base-member 1 and centre member 2 are glued together in the course of building the heel for its proper assembly. The large opening 15 in the centre member 2 as shown in Fig. 4 is intended to provide free up and down movement to the spring element 4, while the exterior of said centre member 2 provides the necessary height for the building up of the heel to the standard of requirements. Normally spring element 4 tends to force out tongue 3a to protrude at an angle same being at the rear portion of the heel. Thus as the wearer of the shoe walks tongue 3a is compressed to its full limit at each step against the resistance of the spring element 4 at 4a and 4c said tongue 3a returning to its normal angular position as the wearer lifts his foot off the ground. Flange 4d of the spring element 4 offers the added advantage in that it serves to ward off entrance of grit or dirt, etc., into the slit 5 of tread member 3.

While the term spring finger has been utilized it is within the intent of my invention to utilize one or more spring fingers that may separate from said body portion and which if found practical may be used thereto in any desired manner as by spot welding or riveting or by any method that may prove practical, which construction is deemed to be the mechanical equivalent of the struck out of one or more so-called spring fingers. The terms flange 4d or the spring element 4 shown formed out of the body portion of the spring element 4, it is the intent of my invention to utilize, if found practical, a detachable flange to said spring element 4 which may be secured thereto in any desired manner as by spot welding or riveting or by any method that may prove practical, which construction is deemed to be the mechanical equivalent of the formed flange normally integral with the body portion of the spring element itself. In actual use as the heel becomes worn, instead of replacing the entire heel section, all that would be required in this case would be the replacement of tread member 3. The pulling off of the tread member 3 by the shoemaker would not interfere with the connection of the upper two lifts 1 and 2 or spring element 4 provided of course if the wearer has not worn out the heel beyond repair of the centre member 2, in which case, a new heel would have to replace the one worn out.

This spring heel will also prove invaluable if attached to shoes worn by parachutists. Its advantages are such to greatly increase the physical benefits over any other type of heel either rigid or elastic. Despite its outstanding advantages its cost of manufacture is slightly higher over any other type heel.

Various changes may be made in details of construction without departing from the spirit and scope of the invention as defined in the claims.

I claim:

1. In a heel for shoes, the combination with a heel of a spring metal plate provided in part with outwardly projecting flange, the front end of said spring plate securely fastened to the adjacent member, and one or more spring fingers projecting inwardly beneath the surface of the same and depending therefrom.

2. In a heel for shoes, the combination with a heel of a spring metal plate provided in part with outwardly projecting flange, the front end of said spring plate securely fastened to the adjacent member, one or more spring fingers projecting inwardly beneath the surface of the same and depending therefrom, a broadened portion of its front end bent-up in the form of a spring fulcrum to permit upward and downward movement of said spring plate.

3. An improved spring attachment for the purpose specified, comprising the spring heel plate, the latter provided in part with outwardly projecting flange, the front end of said spring plate securely fastened to the adjacent member, one or more spring fingers projecting inwardly beneath the surface of the same and depending therefrom, and means for fastening the broadened portion of said spring plate to the coacting element.

4. The combination with a spring heel for shoes, comprising a spring heel plate, the latter provided in part with outwardly projecting flange, the front end of said spring plate securely fastened to the adjacent member, one or more spring fingers projecting inwardly beneath the surface of the same and depending therefrom, means for fastening the broadened portion of said spring plate to the coacting element, a filler element mounted within the flanged portion of the spring metal plate, means on said spring plate to securely hold in place the filler element.

5. The combination with a spring heel for shoes as set forth in claim 4, a gouge or base member provided with fastening means across its width at the breast to securely hold in place a coacting element.

6. The combination with a spring heel for shoes as set forth in claim 4, a gouge or base member provided with fastening means across its width at the breast to securely hold in place a coacting element, a back-up or wear element mounted beneath the spring metal plate.

7. The combination with a spring heel for shoes as set forth in claim 4, a gouge or base mem-

ber provided with fastening means across its width at the breast to securely hold in place a coacting element, a back-up or wear element mounted beneath the spring metal plate, and a centre filler member provided with a large opening seated on the adjacent element.

8. The combination with a spring heel for shoes as set forth in claim 4, a gouge or base member provided with fastening means across its width at the breast to securely hold in place a coacting element, a back-up or wear element mounted beneath the spring metal plate, a centre filler member provided with a large opening seated on the adjacent element, and a top lift member formed with an oval slit to coact in guiding relation with the edge of said flange of the spring metal plate.

9. The combination with a spring heel for shoes as set forth in claim 4, a gouge or base member provided with fastening means across its width at the breast to securely hold in place a coacting element, a back-up or wear element mounted beneath the spring metal plate, a centre filler member provided with a large opening seated on the adjacent element, a top lift member formed with an oval slit to coact in guiding relation with the edge of said flange of the spring metal plate, a tongue cut through the top lift member and seated on the filler member, the latter being mounted within the confine of the spring metal plate for the purpose of holding the tongue of the top lift member to project at the proper angle, whereby to afford yielding movement of the spring metal plate in cooperation with the tongue of the top lift member.

10. The combination with a spring heel for shoes as set forth in claims 4 and 9, the tongue of the top lift member being provided with some variety, shapes and number of steel plates.

11. The combination with a spring heel for shoes as set forth in claims 4 and 9, the tongue of the top lift member being provided with some variety, shapes and number of steel plates, and fastenings of the top lift member to the connecting elements, a connection between the central portion of said spring plate and the central portion of the heel coacting to hold the spring plate and its connecting element in proper position, and to hold the spring plate with its rear end spaced from the rear end portion of the recess, but freely movable toward and from the same.

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