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[54] **ARTICLE OF FOOTWEAR**

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[58] **Field of Search** 36/38

[56] **References Cited**

UNITED STATES PATENTS

1,088,328	2/1914	Cucinotta	36/38 X
2,383,877	8/1945	Miller	36/38
2,555,654	6/1951	Ostrom	36/38

FOREIGN PATENTS OR APPLICATIONS

926,391	4/1947	France	36/38
1,014,999	6/1952	France	36/38

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[57] **ABSTRACT**

A sole has a toe end and a heel end. A heel is located at the heel end and has one portion closer to and another portion farther from the toe end. A pivot connects the one portion with the sole so that the heel can pivot relative to the sole about a transverse axis extending parallel to the plane of the sole. One or more biasing springs are interposed between and bear upon the heel and the heel end of the sole, first to normally maintain the other portion of the heel spaced from the sole and to resiliently resist pivoting of the heel toward the sole. The opposite ends of the springs are connected to the heel and the sole, respectively.

7 Claims, 2 Drawing Figures

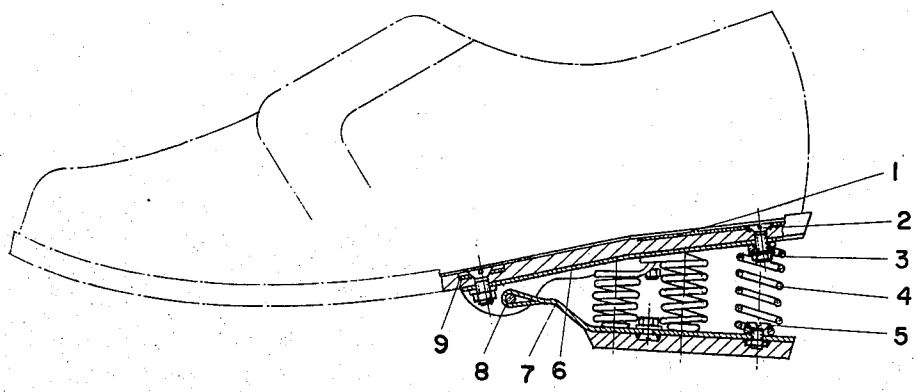


FIG.-1

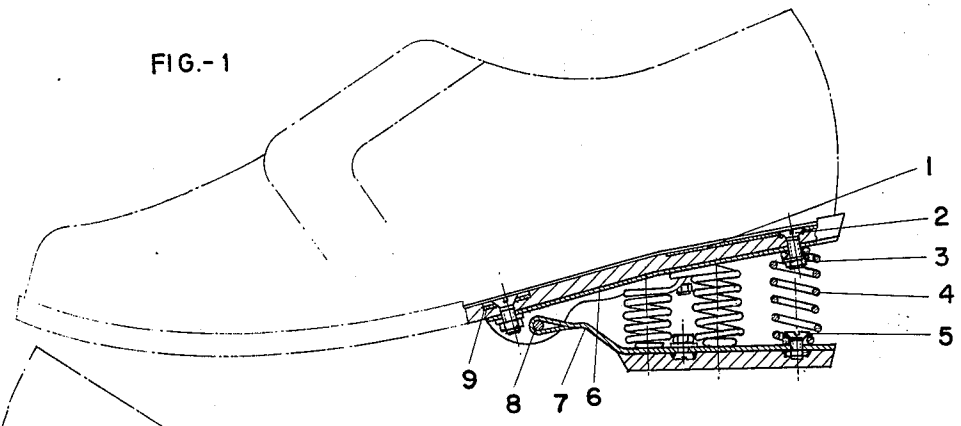
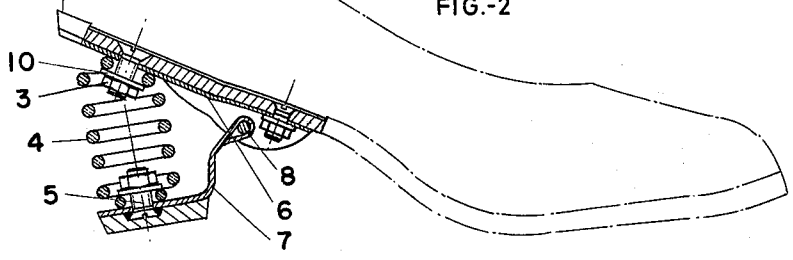


FIG.-2



ARTICLE OF FOOTWEAR

BACKGROUND OF THE INVENTION

The present invention relates generally to an article of footwear, and more particularly to an improved article of footwear having a spring-loaded heel.

Articles of footwear are known in a variety of types and styles which is too great to mention individually. Heretofore, however, to my knowledge articles of footwear having a spring-loaded heel have not been proposed in the art.

SUMMARY OF THE INVENTION

It is, accordingly, an object of the present invention to provide such an article of footwear having a spring-loaded heel.

In pursuance of this object, and of others which will become apparent hereafter, one feature of the invention resides, in an article of footwear, in a combination comprising a sole having a toe end and a heel end. A heel is located at the heel end and has one portion closer to and another portion farther from the toe end. Pivot means connects the one portion with the sole, so that the heel can pivot about a transverse axis extending parallel to the plane of the sole. Biasing means is interposed between and bears upon the heel end of the sole, so as to normally maintain the other portion spaced from the sole and to resiliently resist pivoting of the heel toward the sole. Connecting means connects the biasing means with the heel and the sole, respectively.

The advantages of the improved article of footwear are manifold. On the one hand, it provides a pleasant cushioning effect when a user walks.

Again, the novel article of footwear has been found to be an aid in preventing or at least retarding the development of varicose veins, especially in the case of pregnant wearers where the development of varicose veins is a particularly frequent and severe problem.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a vertical section through one embodiment of the invention; and

FIG. 2 is a view similar to FIG. 1, but through another embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring firstly to FIG. 1, which illustrates an article of footwear primarily intended for men who, as a rule, are heavier and therefore require greater support, and which article will be seen to have a sole provided with a toe end (at the left side of FIG. 1) and with a heel end (at the right side of FIG. 1). Placed upon the upper or inner side of the sole in the region of the heel end is a plate 1, and a screw 2 extends through the plate 1 and the sole, having its head counter sunk in the plate 1. The free end of the shank of the screw 2 extends down below the lower side of the sole where there is mounted a further plate 6. A nute 3 is threaded onto this free end.

A heel is provided, having the illustrated ground-engaging part and having a second part which is constituted by a plate 7 secured (as by bolting) to the ground-engaging part. That portion of the heel which is closer to the toe end of the sole is bent upwardly towards the sole as indicated at 7 and formed with a hollow extending transversely of the sole and through which a pivot pin 8 extends which is secured in lugs formed as part of the lower plate 6 and projecting downwardly as shown. Of course, instead of the pivot pin 8 it would be possible to use screws or the like to pivot the heel. A strengthening plate 9 can still be inserted into the sole and the illustrated screw is used to hold this strengthening plate 9 and the front end of the plate 6 against the sole.

In this embodiment there is utilized a plurality of helical compression springs 4, of which the one at the right-hand side of FIG. 1 will be seen to have one of its end convolutions secured to the screw 2 by means of the nut 3 threaded onto the same. At the other end of the right-hand spring 4 an end convolution is secured to the heel by means of the illustrated screw 5 the head of which engages the end convolution and which screw is threaded through the plate 7 into the heel. The other springs can be similarly secured. Their number may be selected at will, and they may be readily removable so that the number of springs can be decreased or increased as desired by a user in order to obtain the maximum comfort and, possibly, also a desired level of elevation.

FIG. 2 is reminiscent of FIG. 1 and is particularly directed to a ladies shoe. Like elements are identified by like reference numerals as in FIG. 1. It will be noted that the portion 7 is bent at a somewhat more pronounced angle to obtain the desired higher heel configuration for a ladies shoe, and that only a single spring 4 is utilized in this embodiment. Of course, it is conceivable to use more than one spring if desired. It will also be noted that reference numeral 10 identifies a washer which is held by the head of the screw 3 and serves to clamp the terminal convolution of the spring 4 against the plate 6. A similar washer is used in conjunction with the screw 5.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in an article of footwear, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. In an article of footwear, a combination comprising a sole having a toe end and a heel end; a heel located at said heel end and having one portion closer to and another portion farther from said toe end, said heel including a ground-engaging part having a surface facing said sole, and a plate part overlying said surface and having in the region of said one portion a bend extending towards said sole; pivot means connecting said bend with said sole, so that said heel can pivot about a transverse axis extending parallel to the plane of said sole; biasing means interposed between and bearing upon said heel and said heel end of said sole, so as to normally maintain said other portion spaced from said sole and to resiliently resist pivoting of the heel toward said sole; and connecting means connecting said biasing means with said heel and said sole, respectively.

2. A combination as defined in claim 1, wherein said biasing means comprises biasing spring means having end portions respectively located adjacent to said heel and said sole; and wherein said connecting means connects said end portions to said heel and said sole, respectively.

3. A combination as defined in claim 1, wherein said biasing means comprises biasing spring means having one portion connected with said sole, and another end portion connected with said plate part.

4. A combination as defined in claim 3, wherein said connecting means comprises screw means connecting said plate part with said ground-engaging part.

5. A combination as defined in claim 3, wherein said biasing spring means comprises a single biasing spring interposed between said sole and said other portion of said heel.

6. A combination as defined in claim 3, wherein said biasing spring means comprises a plurality of biasing springs at least one of which is closer to and at least one other of which is farther from said pivot means.

7. A combination as defined in claim 3, wherein said biasing spring means comprises helical compression spring means.

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