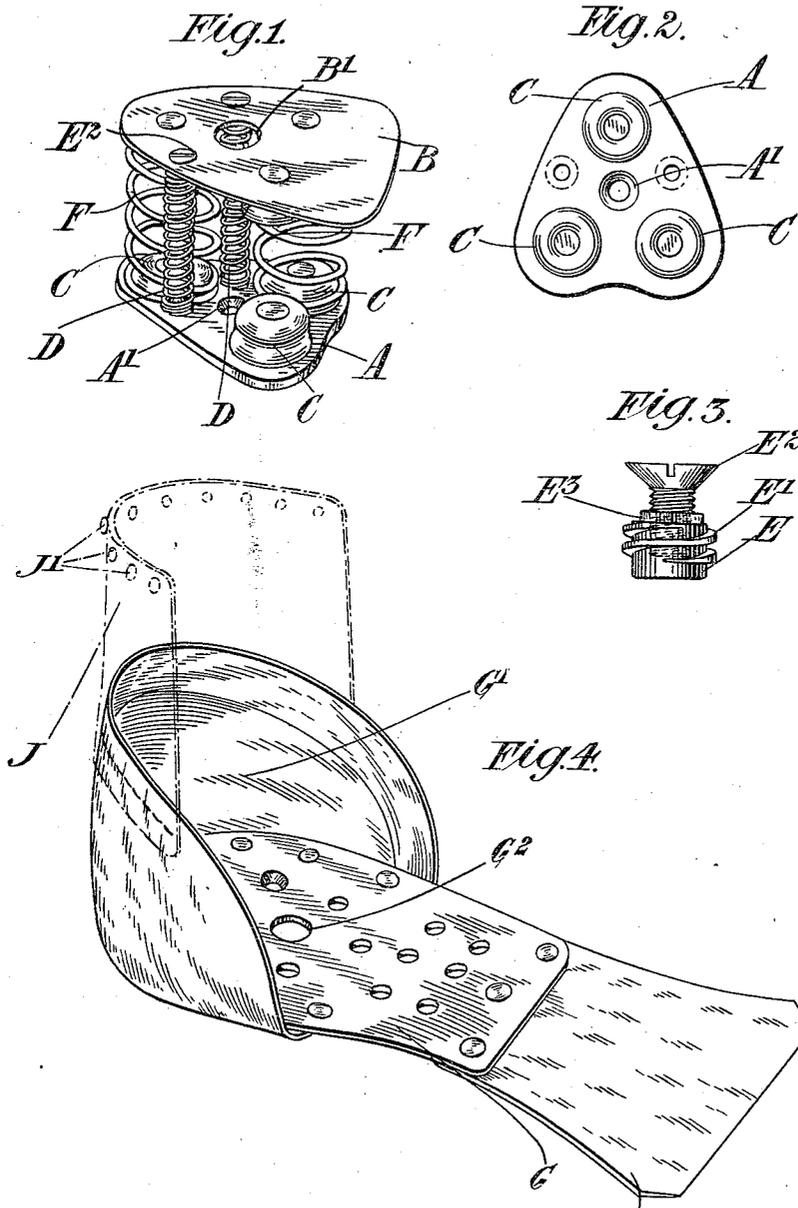


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 INTERNAL SPRING HEEL SEAT.  
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Patented July 16, 1918.



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# UNITED STATES PATENT OFFICE.

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INTERNAL SPRING HEEL-SEAT.

1,272,490.

Specification of Letters Patent. Patented July 16, 1918.

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*To all whom it may concern:*

Be it known that I, HUON ARTHUR MATEAR, a subject of the King of England, residing at Liverpool, in England, have invented certain new and useful Improvements in Internal Spring Heel-Seats, of which the following is a specification.

This invention relates to internal spring heel-seats for use in boots or shoes, of the kind which comprises one or more resilient compression members between the wearer's heel and an inner part of the boot or shoe.

Many such devices have been proposed but difficulty has been found in providing a construction which shall permit rapidity of adjustment of the strength of the springy action to the weight or habit of the wearer. Other difficulties have arisen in connection with the tendency for chafing to be set up between the wearer's foot and the boot, particularly the counter of the boot and the part immediately above it.

The present invention provides a spring heel-seat of the type above defined, wherein the compression member or members is or are retained between a base and an upper plate which are connected together by resilient members in tension. The compression members are preferably three in number arranged one at the rear of the heel and the other two forward of the said rear member and equi-distant from it.

Preferably each compression member is in the form of a coil spring and the said base and upper plate are provided with opposing projections which enter the opposite open ends of the said spring.

The invention is further described with reference to the accompanying drawings in which—

Figure 1 is a perspective view of one form of spring-unit but with one of the compression members removed;

Fig. 2 is a plan of the base of the said unit;

Fig. 3 is an elevation to a larger scale than that of Fig. 2 of a detail; and

Fig. 4 is a perspective view of the heel-seat intended to be used in conjunction with the spring-unit of Fig. 1.

The spring-unit illustrated in Figs. 1 and 2 comprises a base plate A, whose shape is approximately triangular, but is seen more clearly in Fig. 2. An upper plate B is provided and upon each of the said two plates are three stud-like protuberances C which

may be provided in any convenient way, but which, in the example illustrated, are dished washers of aluminium riveted to the plate. One of the said protuberances is situated to the rear of the heel and the other two forward of it and equi-distant from it.

The upper plate B is secured to the lower plate by means of two coil springs D in tension and the ends of the two springs D are secured to their respective positions on the plates by means of plugs E, one of which is shown in Fig. 3. The plug is in the form of a short cylindrical piece of metal preferably brass formed at the gripping end with a portion of a screw-thread E<sup>1</sup>, such that the space between its threads is substantially equal to the diameter of the wire of which the springs D are formed. The stud is drilled and tapped to receive a screw E<sup>2</sup> by which the end carrying the thread E<sup>1</sup> is drawn toward the plate which carries it. The other end of the plug is inserted in the open end of the spring D and the end portion of the wire of the spring is introduced between the turns of the thread E<sup>1</sup> so that the extreme end of the wire lies between the upper end of the thread and the plate to which the plug is secured. This end of the wire is thus securely gripped and the plug supports the spring so that its tendency to break at the gripping point is reduced. This mode of attachment, further, greatly facilitates replacement of these springs. The top of the plug is squared as at E<sup>3</sup> and the hole in the plate is squared to receive it. This prevents the attachment working loose.

Three coil springs F, of which two only are shown in Fig. 1, are provided to carry the weight of the wearer.

Upon the spring-unit illustrated in Figs. 1-3 is mounted a heel-seat, seen in Fig. 4, and formed of a metal plate G having an upwardly extending shield G<sup>1</sup> for the heel of the wearer, which shield is preferably made of leather and carefully shaped to conform to a person's heel. The forward end of the plate G carries a leather or other flexible tab H to extend under the instep and tend to retain the heel-seat in position while leaving it freedom of movement under the action of the springs F.

Conveniently a lining, such as is indicated in chain-line at J, is provided to be permanently secured by its lower edge to the shield G<sup>1</sup> and arranged to be detachably secured in.

any convenient way, such as by hooks and eyes, or by snap-fasteners, as indicated at  $J^1$ , to the inside of the boot.

The heel of a boot intended to receive the spring heel-seat is recessed to receive the plate A, the recess being made of sufficient depth to leave only a portion of the spring-unit of Fig. 1 projecting above the level of the heel-seat proper of the boot. The amount of this projection is adjusted to the general convenience and may be of the order of  $\frac{1}{8}$  to  $\frac{1}{2}$  an inch. In order to vary this amount readily, leather pads are provided, of the shape of the plate A, for insertion in the hole in the heel beneath the plate A, as required. The plate A is perforated as at  $A^1$  to receive a fixing-screw and the upper plate B and the seat G are similarly perforated at  $B^1$  and  $G^2$  respectively to allow a screw-driver to be inserted and used for a screw in the hole  $A^1$ .

When the spring-unit of Fig. 1 has been secured in the recess in the heel, the seat G is placed upon it and, if the lining J is to be employed, this is stitched to the shield  $G^1$  and attached to the inside of the upper of the boot by the fastenings at  $J^1$ . Should it be desired to use a shock-absorber in several different pairs of boots, each pair may be provided with its spring-units and the seat G and parts carried by it removed from boot to boot as occasion requires. Alternatively, of course, each pair may be provided with its own seat G and the parts carried by it.

If desired the seat G may itself constitute the upper plate of the device so that the plate B will then be dispensed with and the parts attached to or carried by the plate B in Fig. 1 be then attached to or carried on the underside of the seat G.

The projections C may be formed as bosses stamped in the plate B. If the plate B is upturned at the rear sufficiently to need it, a tapered packing washer is placed around the rear boss C to give the spring a flat seating.

An important feature of the construction provided by this invention is the facility with which the strength of the spring action may be modified. To do this in the case of the spring-unit of Figs. 1-3 all that is necessary is to have a number of springs provided of uniform length and diameter but of different strengths. Thus three strengths of spring may be provided and considered as standards and are referred to as weak, strong and medium. For a heavy person or one requiring stiffness in the spring action, three strong springs will be necessary, but if these be found to be too stiff the plates A and B may readily be withdrawn slightly apart, as permitted by the tension springs D, and one or more of the strong springs F inserted may be taken out and replaced by weak or medium springs as may be found

convenient. So with a broken spring: ready replacement of a spring for any reason is provided by the arrangement of the tension members D and the projections C which engage the ends of the springs F.

If replacement springs F are not immediately obtainable, they, or the whole unit of Fig. 1, may be omitted for the time being, when the seat G will simply, as a false heel-seat, cover the hole in the heel.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a spring heel-seat the combination of a base, an upper plate, resilient means in tension connected both to the upper plate and to the base to draw these parts toward one another and a resilient compression member between the base and upper plate.

2. In a spring heel-seat the combination of a base, an upper plate, resilient means in tension connected both to the upper plate and to the base to draw these parts toward one another and a plurality of resilient compression members between the base and upper plate.

3. In a spring heel-seat the combination of a base, an upper plate, resilient means in tension connected both to the upper plate and to the base to draw these parts toward one another, and three resilient compression members between the base and upper plate arranged one at the rear of the heel and the other two forward of the said rearwardly placed one and equi-distant from it.

4. In a spring heel-seat the combination of a base provided with an upwardly directed protuberance, an upper plate provided with a downwardly directed protuberance opposed to that upon the base, resilient means in tension connected both to the upper plate and to the base to draw these parts toward one another and a compression coil spring having open ends whereof one encircles the said protuberance on the base and the other encircles the said protuberance on the upper plate in such a manner as to be readily detachable from the said protuberances.

5. In a spring heel-seat the combination of a base, an upper plate that is distinct from the plate upon which the wearer's heel rests, resilient means in tension connected both to the upper plate and to the base to draw these parts toward one another, and a resilient compression member between the base and upper plate.

6. In a spring heel-seat the combination of a base, an upper plate that is distinct from the plate upon which the wearer's heel rests and is provided with a loose false top for the wearer's heel, resilient means in tension connected both to the upper plate and to the base to draw these parts toward one another, and a resilient compression member between the base and upper plate.

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7. In a spring heel-seat the combination of a base, an upper plate that is distinct from the plate upon which the wearer's heel rests and is provided with a loose false top fitted with an upwardly extending shield for the rear of the wearer's heel, resilient means in tension connected both to the upper plate and to the base to draw these parts toward one another, and a resilient compression member between the base and upper plate. 15

8. In a spring heel-seat the combination of a base, an upper plate that is distinct from the plate upon which the wearer's heel

rests and is provided with a loose false top fitted with an upwardly extending shield for the rear of the wearer's heel terminating upwardly in a flexible lining with means to secure it detachably to the upper of the boot, resilient means in tension connected both to the upper plate and to the base to draw these parts toward one another, and a resilient compression member between the base and upper plate. 20

In testimony whereof I affix my signature.

HUON ARTHUR MATEAR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."