

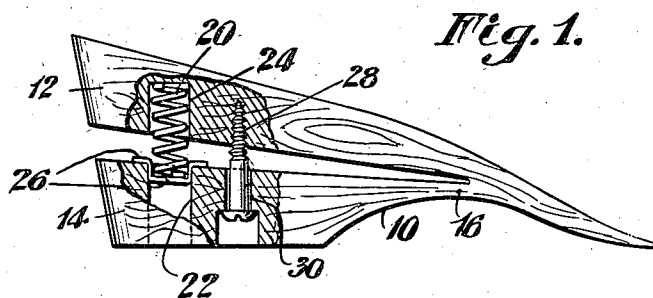
Aug. 28, 1945.

C. L. MILLER

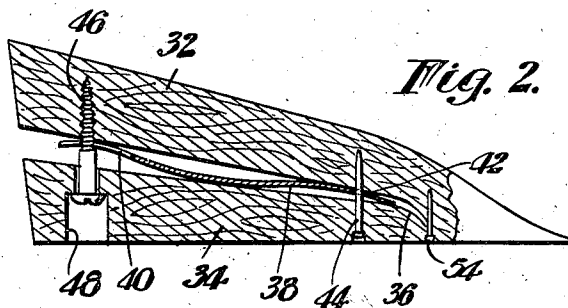
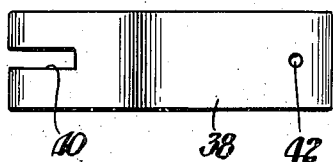
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SPRING WEDGE HEEL

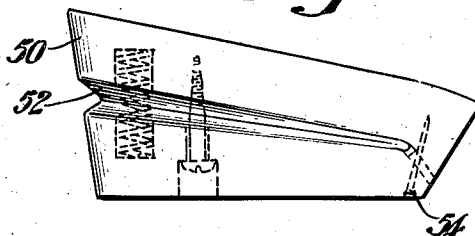
Filed Oct. 28, 1944



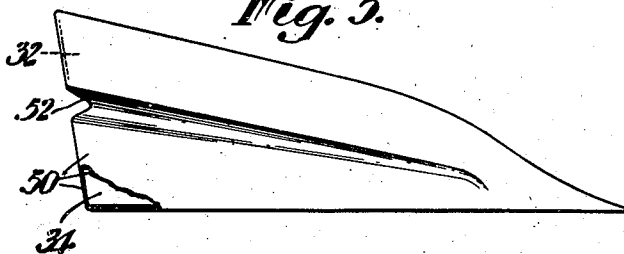
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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## SPRING WEDGE HEEL

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11 Claims. (Cl. 36—35)

This invention relates to improvements in wedge heels and more particularly to an improved resilient wedge heel.

Wedge heels commonly comprise a solid block of wood covered with leather, Celluloid or other covering material. Such heels are very stiff and rigid and have no resilience. Attempts have been made to manufacture wedge heels of semi-resilient materials in order to provide more walking comfort, but certain of these materials have not proved entirely satisfactory. Some of them will not stand prolonged or severe service. The use of rubber lifts on wedge heels to provide a certain amount of resilience is expensive, and for some types of heels, quite impracticable.

The primary object of the present invention is therefore to provide an improved wedge heel which is easy to manufacture and which is of resilient construction.

A further object of the invention is to provide a resilient heel which is inexpensive to manufacture and which has a good appearance.

An important feature of the present invention is the provision of a wedge heel having a construction adapted to give substantial resilience to the heel. A preferred form of resilient construction according to the invention, includes a wedge heel having spaced upper and lower portions between which a resilient member such as a spring is mounted under compression. The heel includes means for holding the member under compression and for limiting the spacing between the upper and lower sections of the heel.

In a preferred form of the heel, an important feature resides in the provision of a wedge heel having upper and lower sections connected integrally in the forward portion of the heel and arranged so that the said sections may be pivoted with respect to each other to a limited predetermined extent under action of a spring mounted to urge the sections apart, and thereby provide a resilient heel adapted to give a high degree of walking comfort.

Other features, objects and advantages of the heel construction of the present invention will be apparent to those skilled in the art from the following more detailed description thereof, taken in connection with the accompanying drawing in which:

Fig. 1 is a side elevational view, partly in broken section, of a wedge heel showing one form of the resilient construction of the present invention.

Fig. 2 is a view similar to that of Fig. 1 showing a modified form of spring arrangement for providing a resilient wedge heel.

Fig. 3 is a top view of the leaf spring shown in Fig. 2.

Fig. 4 is a side view of a short model wedge heel illustrating a covered heel having the resilient construction of the present invention.

Fig. 5 is a view similar to that of Fig. 4 showing a covered wedge heel of the flat seat type shown in Fig. 2.

The wedge heel shown in Fig. 1 of the drawing is of the style having a cut-out instep at 10, the major portion of the heel including an upper section 12 and a lower section 14 separated by a wedge-shaped approximately horizontal slot or saw-cut which extends into the heel to approximately the midportion of the instep 10. Heels of this type are made from wood and are shaped in the usual way to provide a wedge heel of the desired style. Thereafter the heel is provided with a substantially horizontal slot which may be made wedge-shaped by a single saw-cut and the subsequent spreading of the parts 12 and 14 at the rear, or by actually cutting a wedge shaped piece of wood from the heel. If the former procedure is used, it will of course be necessary to adjust the angle of the heel and the slope of the seat at a subsequent stage of the operation. In any case, the forward portion of the wedge-shaped slot is preferably cut with respect to the arch or bottom portion of the heel, so as to leave a relatively thin joining section at the point 16 which may be readily bent or sprung when the heel is in use. This narrow section may be one-eighth inch thick or slightly more, depending upon the type of wood or on the material used in making the heel.

The heel shown in Fig. 1 is made resilient by providing a coil spring 20 which is inserted through a hole 22 bored through the seat of the heel section 14 and which is also bored substantially into the upper section 12 to provide a recess or hole 24 for the spring 20. After the spring 20 is inserted through the hole 22 and seated in the top of the hole 24, a metal spring rest 26 is inserted under the spring 20 so that the spring 20 is held under compression between the upper and lower sections 12 and 14. The metal spring rest 26 is made from a straight piece of flat metal which is pressed to provide a cup or seat for the spring 20 and side flanges, which rest on the upper surfaces of the section 14 while the cup seats in the hole 22.

The heel sections 12 and 14 are held together with the spring 20 under considerable compression by means of a shouldered, round-headed countersunk screw 28 which is inserted through a shouldered hole 30 in the heel section 14 and

screwed into the upper section 12, as shown. The screw 28 is brought up sufficiently tight against the shoulder of the hole 30 to give the proper back line to the heel and to hold the spring 20 under compression. Screw 28 also limits the separation of the sections 12 and 14 while the heel is in use.

When it is desired to insert the spring 20 and the spring rest 26 into the heel, the screw 28 is turned out considerably so that the sections 12 and 14 may be spread to a substantial extent, thus facilitating the compressing of the spring 20 and insertion of the spring rest 26. A tool (not shown) may be used for compressing the spring 20 while the spring rest 26 is inserted. Such a tool preferably has a longitudinal slot sufficiently wide to receive the rest 26, and is provided with shoulders which engage the lower coil of the spring 20. This tool is inserted through the hole 22. The bottom of the spring is then compressed substantially into the hole 24, the rest 26 is slid along the upper surface of the section 14 and inserted under the spring through the slot in the tool. Upon removing the tool, the spring and rest will be properly seated in the hole 22 in the manner shown in Fig. 1. Instead of using a spring rest such as 26, the spring may be held under compression at approximately the position shown, by gluing a wooden block in the hole 22 below the spring or by compressing the spring to the desired position and driving a nail through the side of the heel across the hole 22 directly below the spring.

In Fig. 2 of the drawing, a modified form of spring construction is shown in connection with a flat seated wedge heel. In this view the heel comprises upper and lower sections, 32, 34, separated by a wedge-shaped slot which may be made in the manner described above in connection with Fig. 1, but which is provided with a downwardly curving forward section 36 which extends down to within approximately one-eighth inch of the seat of the heel, so as to provide a resilient relatively narrow bendable section similar to the section 16 in Fig. 1. In this form of the invention, the spring used between sections 32 and 34 comprises a leaf spring 38 shown in both Figs. 2 and 3, which has a rear central slot 40 and a forward central hole 42. The spring 38 is placed centrally in the heel between sections 32 and 34 with the bowed part of the spring resting on the section 34, and fastened therein by means of a nail 44 driven through the forward portion of section 34 and the hole 42. The opposite end of the spring 38 engages the under portion of the upper section 32 and is held in place by a countersunk screw 46, like screw 28, which is inserted through a shouldered hole 48 in the section 34 and screwed into the section 32. The screw 46 extends through the slot 40 in the spring 38 and is positioned so that the rear portion of the spring 38 can move with respect to the screw 46 and slide along the under surface of the section 32 as the section 32 moves up and down. This action will be readily understood since, as the bowed spring 38 is compressed, it becomes longer. The screw 46 not only serves to hold the spring 38 in place, but also serves to position the sections 32 and 34 with respect to each other and limit their separation by the action of the spring 38, which is originally mounted in the heel under considerable compression so as to give the desired resilience to the heel when in actual service. In all modifications the head of the screw moves down and up in the space provided, as the upper and lower sections of the heel are compressed and expanded.

Other types of springs and spring arrangements may be used to provide the resilient heel of the present invention. One or more coil springs 20 may be used in a single heel and the same is true of the leaf springs 38. Furthermore, the coil and leaf springs may be used together if desired. The leaf spring may be of specifically different form than that shown and may be mounted in the wooden heel by other means and in a different manner. Leaf springs have been mounted in heels by providing a hole in the rear portion of the spring through which a screw such as 46 is inserted, leaving the forward end of the spring to slide in the wedge-shaped slot as the spring is compressed. The forward end may slide between a pair of small nails driven through the seat of the heel on each side of the spring.

The wedge heel shown in Fig. 4 is of the short wedge-type and is provided with a resilient heel construction similar to that shown in Fig. 1, but is shown completely covered with a covering 50 such as leather. The view shows the finished heel with the cover slightly drawn in, in the form of a bellows fold 52 in the wedge-shaped slot. This form of heel may be made without the use of the spring rest 26 as used in Fig. 1, by actually separating the upper and lower sections of the heel, mounting the spring in recesses in the sections and nailing the forward portions of the heel together with two or more flat-headed nails 54. Such nails may also be used in the form of heel shown in Fig. 2 to strengthen the springy section between the seat and the section 36 of the slot.

Fig. 5 shows the heel of Fig. 2 covered like the heel of Fig. 4, with a leather covering 50. The leather bends in, in the wedge-shaped groove to give a similar bellows-fold appearance at 52. This result is obtained in the covering of the heels by releasing the screw which limits the separation of the upper and lower heel sections. The screw is released so as to give a relatively wide wedge-shaped slot which is considerably wider than the final form of the heel. Thereafter, the leather, which is wet, is stretched over the expanded heel and cemented on in the usual manner. After the heel covering is on, the heel sections are brought together by tightening up the limiting screw. The stretched leather over the groove therefore folds into the groove to form the bellows-like fold 52, as shown.

Various modifications may be made in the resulting heel construction, as exemplified in various figures of the drawing, since various types of springs or resilient members may be used, and they may be secured in the substantially horizontal slot or space between the heel sections in various ways. The preferred form of the invention, however, is the coil spring arrangement shown in Fig. 1. However, it is to be understood that various modifications are intended to be covered by the claims.

Having described the invention in its preferred form, what is claimed as new is:

1. A resilient wedge heel comprising upper and lower wood sections spaced substantially from each other throughout the back and a substantial proportion of the remainder of the heel, a spring mounted between said sections to urge them apart, and means for limiting the action of said spring and for restricting the separation of said sections to a predetermined maximum extent.

2. A wedge heel as defined by claim 1 in which said spring is a coil spring mounted under compression in recesses in said wood sections.

3. A wedge heel as defined by claim 1 in which said wood sections are separated by a wedge-shaped slot extending substantially horizontally from the back of the heel into the instep.

4. A wedge heel as defined by claim 1 in which said sections are separated by a wedge-shaped slot extending from the back portion of the heel into the instep section of the heel, and in which said spring is a coil spring mounted under compression between said wood sections.

5. A wedge heel as defined by claim 1 in which said spring is a leaf spring of substantial width and which is mounted under compression between said wood sections.

6. A resilient wedge heel comprising upper and lower wood sections spaced substantially from each other at the back portion of the heel and separated by a tapered slot which extends into the instep section of the heel, said wood sections being integrally connected in the instep section of the heel, a resilient member mounted between said sections to urge them apart, and means for limiting the spreading action of said member and for restricting separation of the back portion of said sections to a predetermined maximum extent.

7. A wedge heel as defined by claim 6 in which said resilient member is a coil spring mounted between said wood sections in the rear portion of the heel.

8. A wedge heel as defined by claim 6 in which said resilient member is a leaf spring of substantial width and length.

9. A resilient wedge heel comprising upper and lower wood sections spaced substantially from each other in the rear portion of the heel, said

sections being separated from each other by a tapering slot which extends into the instep section of the heel, a resilient member between said sections, said upper and lower wood sections being integrally connected to each other in the instep section of the heel, the forward end of said slot and said lower wood section being arranged with respect to the bottom of the heel so that the wood sections may be readily sprung toward each other by bending the wood of the lower portion of the heel at the forward end of the slot.

10. A resilient wedge heel comprising upper and lower rigid sections spaced substantially from each other throughout the back and a substantial portion of the remainder of the heel so that the sections are separated by a tapering slot which extends into the instep section of the heel, a resilient member mounted between said sections to urge them apart, means for limiting the action of said member and for restricting the separation of said sections to a predetermined maximum extent, and a cover for said heel tightly fitting over the side surfaces of said sections and being folded by a bellows-type fold in said slot.

11. A resilient wedge heel comprising an upper wooden section including the instep portion of the wedge heel and a lower wooden heel seat section spaced substantially from said upper section, a compressible resilient member mounted between said sections, means for holding said resilient member compressed between said sections and for limiting the spreading of said sections by said member to a predetermined maximum extent.

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