April 8, 1930. D. B. CROPP 1,753,284

HEEL FOR SHOES

Filed Nov. 21, 1927

Fig. 1.

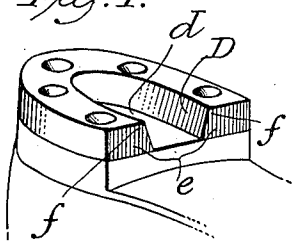


Fig. 2.

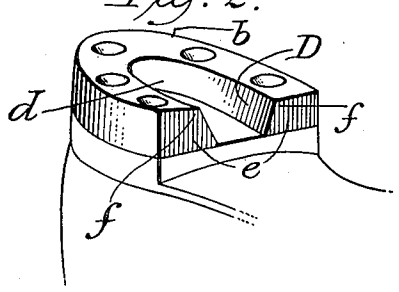


Fig. 3.

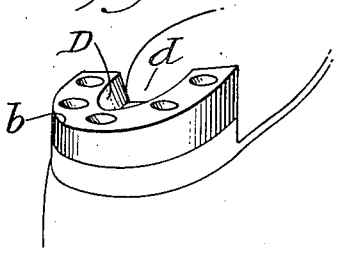


Fig. 6.

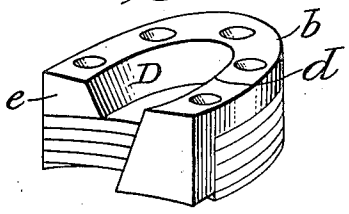


Fig. 4.

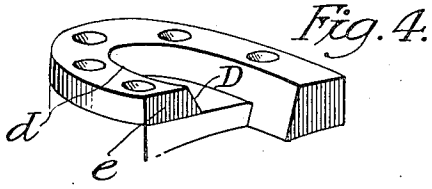


Fig. 7.

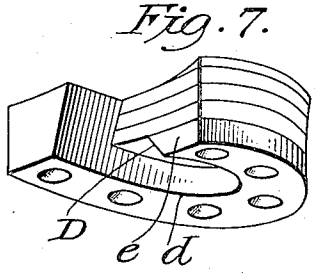
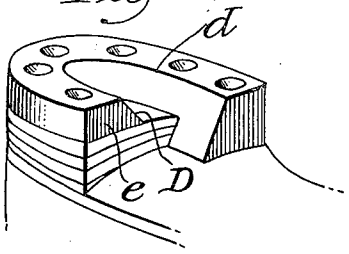


Fig. 5.



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36. BOOTS, SHOES & LEGGINS.

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UNITED STATES PATENT OFFICE

DAVID BERTRAM CROPP, OF NEW YORK, N. Y.

HEEL FOR SHOES

Application filed November 21, 1927. Serial No. 234,841.

The invention relates to heels of rubber, or other resilient, noise absorbing materials, to be attached to the shoes of men, women and children, as a complete heel, or for such portion of the heel as may be desired.

The object of the invention is to provide a simple, convenient, easily attached heel, pleasing in appearance, lighter in weight, employing less material in its construction and therefore effecting some economy in costs, and by its lesser weight, relieving the skeleton of the wearer of a portion of the strain which weight attached to the heels of shoes entails, and by its peculiar construction and shape improving the efficiency, resiliency, and lasting qualities of the heel and of the shoe to which it is attached.

An object in increasing the resiliency, achieved principally by the removal of the core of the heel by means of a drafted cut out, is to multiply the shock absorbing qualities of the heel so that in walking, the constant jars and concussions upon the skeleton, the cartilages, the spinal cord, the brain and nerve centres of the wearer are lessened and the consequent unfavorable actions of gravitation upon the upright human skeleton are reduced to a minimum. By its peculiar construction also to lessen the rebounding qualities so common in ordinary solid rubber heels, and further to provide certain features of a corrective nature tending to improve the posture and stride of the wearer, notably to overcome a tendency, well nigh universal, to walk to a greater extent on the outer surface of the heel and shoe than on the inner surface causing the heel and the shoe to wear thin more readily upon the outer surface and thus incline the upper part of the shoe to run over, destroying the shape of the heel and the shoe and shortening the life of both. By its peculiar construction and shape to provide an effective means of supporting the arch of the foot, at a point where it is found that support can be most effectively applied. By its peculiar construction also to provide an inner as well as an outer rim for expansion, permitting increased compressibility and resiliency and by enabling the heel to compress evenly over its entire surface cause it to wear down equally on all rims and corners with the result that its life and lasting qualities are prolonged.

The invention which is simple, will be clearly understood from the description and claims following, reference being had to the accompanying drawings, wherein

Figure 1 is a perspective view of my compressible heel applied to the heel-part of a shoe.

Figures 2 and 3 are perspective views of another form of my heel applied to the heel-part of a shoe, said views looking at the front and the rear, respectively.

Figures 4, 5, 6 and 7 are perspective views of other forms of my heel applied to the heel-part of a shoe, illustrating forms of the compressible heel wherein one end part is extended and enlarged with respect to the other end part of the heel.

My heel is of skeleton formation, with the central part or core cut out or omitted forming a substantially open U-shaped member, for the purposes of securing increased compressibility or resiliency and to attain economy of manufacture by effecting a saving in the quantity of material employed in the production of the heel.

A salient features of the invention in all the forms illustrated in the drawings is a drafted cut out, by which term it is meant to say that the usual solid middle part of ordinary heels is omitted, removed or cut out, in order to skeletonize the heel and to economize in the quantity of material used, and the "draft" is embodied in the form of a bevel on the inner surface of the skeletonized heel, the angle of inclination of said bevel resulting in a flare on the inner surface of the skeletonized heel for the performance of a new function in heels of the character under consideration. It is found that skeletonized heels when in service on boots and shoes show a tendency to become filled or packed with foreign substances, particularly with snow in inclement weather, and such accumulations within the hollow or open part of heels is disadvantageous, and accordingly my heel is constructed to dislodge such accumulations automatically. This desirable function is attained by the presence of

a bevel at D on the inner surface of the cut out heel, said bevel running from the inner or shoe-contacting face, to the outer or tread surface of the heel, and the angle of inclination of such inner (beveled) surface producing a desirable flare in the opening or space bounded by the skeletonized heel. The flaring shape of the inner surface, and the motion arising from the compressibility or resiliency of the heel in the act of walking, has the effect of dislodging substances which may have a tendency to accumulate within, or even to become packed in, the cored out middle part of the heel, and thus the improved form of skeletonized heel is self-clearing in its action, thereby precluding accumulated foreign substances from creating a tendency of the heel to slip on a pavement or other surface, especially in inclement weather.

The heel is molded or otherwise constructed of rubber or other materials, in various sizes and thicknesses, resembles on its outer surfaces and ordinary rubber heel. The centre or core of the heel (*d*), is removed by means of special patterns in moulding, or by cutting out thereafter, in such manner as to leave the centre of the heel open and hollow over the greatest possible area consistent with its shape and size and its proper attachment to the shoe. The shape of the drafted cut out or core, may be varied to meet a variety of needs determined largely by the size of the heel and the amount of material used in its construction. It is important, however, if fullest possible benefits of the cut out are to be obtained, that the cut out should extend through the front surface *e* of the heel (*d*), and that the cut out be so drafted, either in moulding or cutting, that the surface coming in contact with the ground will be wider than the surface attaching to the shoe and at such angles as will permit its proper moulding, and more especially as will cause it to discharge dirt, or other foreign matter which would otherwise tend to lodge in the cut out space thus provided. The cleaning qualities of the heel can be further accentuated and the non-skidding qualities improved, if the corners (*f*—*f*) on the inner rim of the heel are moulded or cut off at an acute angle.

The features of the increased resiliency, and diminished rebound and lighter weight can in part be obtained, even when the size of the heel is so small as not to permit the full use of the cut out as here shown, by altering the shape of the cut out, allowing it to but partially penetrate the front surface (*e*) as would be the case were a diamond shaped cut out employed, or where the front surface of the heel is not penetrated at all as would be the case where a circular cut out is employed, the increased resiliency, and diminished rebound arising principally from the fact that the removal of the core or cut out provides a double surface of expansion.

Another form of heel embodying my invention is shown in Figures 2 and 3 of the drawings, wherein the outer rim of the heel is so molded that it is somewhat thicker than the inner rim over a surface extending from the outside corner of the heel on its front surface, to an imaginary point (*b*) on the back of the heel. The purpose of this thickened outer rim is to level up the heel, and to combat a tendency of the shoe to wear thin on the outside surfaces, which condition when exaggerated, throws a damaging strain upon the muscles and ligaments, nerves and blood vessels of the foot and inner surfaces of the calf of the leg and in growing children contributes to the development of bow legs etc.

A further embodiment of the invention is illustrated in Figures 4 and 5 of the drawings, the heel there shown being provided with the arch support projection extending down over the front surface of the remainder of the heel and attached to the sole of the shoe in front of the heel, the length and depth of the forward projection can be varied to meet individual needs. Figure 5 emphasizes the draft given to the cut out to increase its cleaning qualities. Figure 6 shows the appearance of the heel when attached to a part leather heel with the cut out and the arch support projection and the raised or thickened out rim employed. Figure 7 shows the heel constructed as a complete heel to be attached directly to the shoe, and indicates the average length of the arch support projection beyond the front surface of the heel. When employed as a complete heel and made entirely of rubber, or materials other than leather, the depth of the cut out or cored portion of the heel can be varied and increased so as to enable the employment of the smallest possible amount of materials and effect the greatest saving in weight, allowing only a thin surface of rubber, beneath the core, for waterproofing the heel and for its attachment to the shoe.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In an article of foot wear, a skeletonized heel composed of compressible material and comprising an open U-shaped member conforming to the desired contour and provided with a free open space within the limits of said member, the inner surface of said open U-shaped member being beveled from the shoe-contacting face to the wear or tread surface, the surface of said bevel facing the wear or tread face of said heel and of such a pitch that the compression and expansion of the material of said member expels any accumulation of matter from within the open portion of said U-shaped member, and one end of said open U-shaped member being prolonged and extended beyond the other end of

said member to produce at one end of the heel an arch-supporting projection.

2. In an article of foot wear, a skeletonized heel composed of an open U-shaped member of resilient material, the inner surface of said U-shaped member being bevelled, the surface of said bevel facing the wear or tread face of said heel and of such a pitch that the compression and expansion of the material of said member expels any accumulation of matter from within the open portion of said U-shaped member, one end of said U-shaped member being longer and thinner than the other end, said longer and thinner end carrying integrally thereon an arch supporting lug.

Signed at New York, in the county of New York and State of New York, this 14th day of November, A. D. 1927.

DAVID BERTRAM CROPP.