

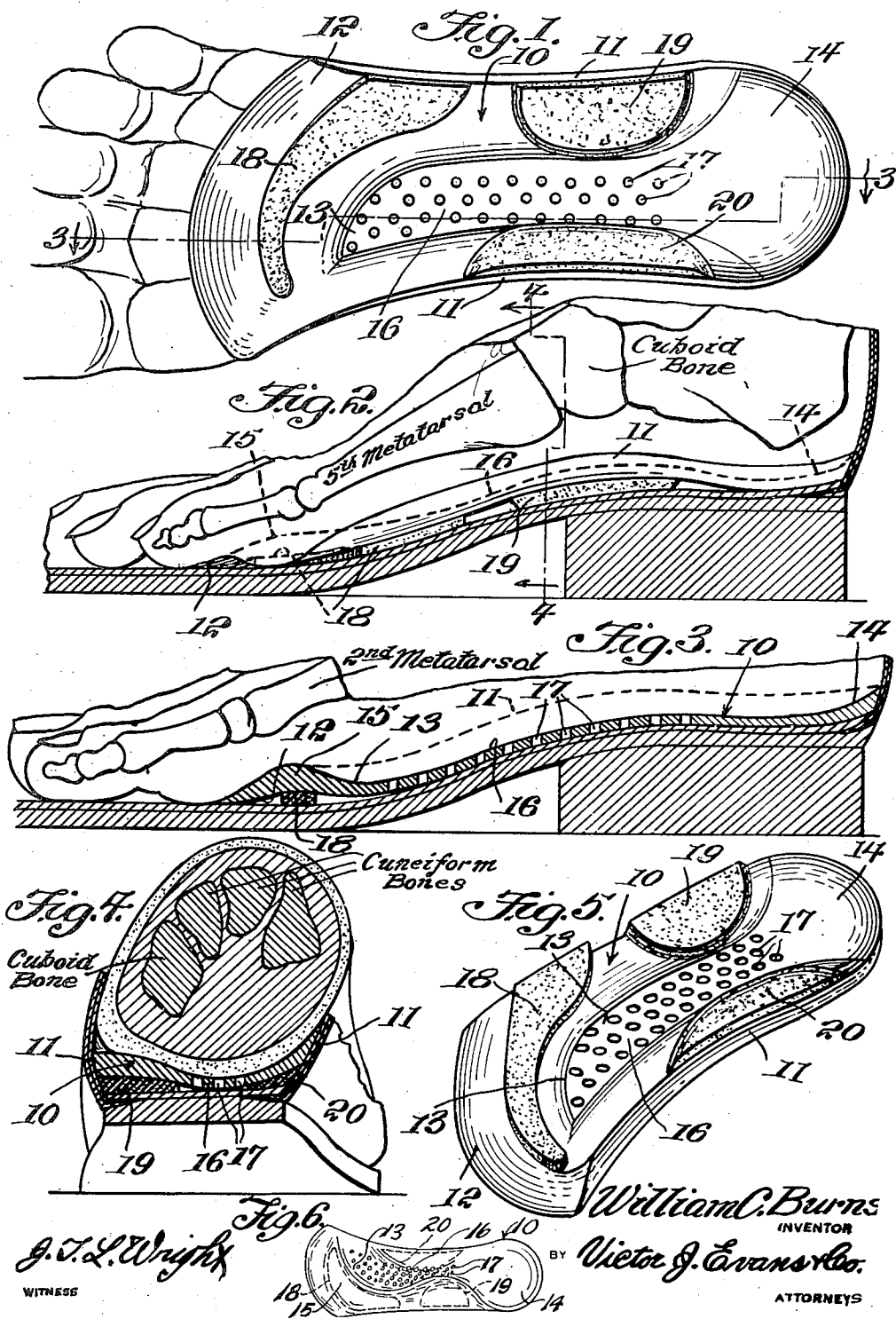
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CUBOID-METATARSAL ARCH SUPPORT

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CUBOID-METATARSAL ARCH SUPPORT

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2 Claims. (Cl. 36-71)

This invention relates to supports for the cuboid and metatarsal bones and is designed to be worn within a shoe for the purpose of strengthening the muscles on the outside of the foot underneath the cuboid and fifth metatarsal bones, the present invention being an improvement upon the support disclosed in Patent No. 1,728,780 granted to me September 17, 1929.

The primary object of the present invention is to provide a support having a pad preferably of soft rubber extending across the support and increasing in width from back of the first metatarsal or big toe to the fifth metatarsal or small toe joint where it attains its greatest width whereby the pad carries more weight under the fifth metatarsal than it does under the first metatarsal.

A further object is to provide a device of this character in which a pair of soft rubber or like pads are disposed underneath the cuboid and the internal cuneiform bone, the former pad being of greater thickness than the latter pad to carry more weight than the latter, the latter pad being a non-weight carrying pad and functioning merely to prevent the foot from pronating or turning inwardly.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming part of this specification,

Figure 1 is a bottom plan view of a support constructed in accordance with the invention, a portion of a foot being shown to illustrate the position of the support.

Figure 2 is a vertical sectional view through the shoe with the support shown therein in side elevation, and a portion of a foot being illustrated to show the position of the metatarsal and the cuboid pads.

Figure 3 is a longitudinal sectional view taken on the line 3-3 of Figure 1 showing the perforations for weakening the support along the longitudinal center line to permit the support conforming readily to the shape of the foot.

Figure 4 is a cross sectional view taken on the line 4-4 of Figure 2, and showing the position of the cuboid and the internal cuneiform pads,

Figure 5 is a perspective view of the support constructed in accordance with the invention.

Figure 6 is a top plan view, drawn to reduced scale, of the support showing the hump therein.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 10 designates the body of the support which is in the nature of a leather insole to be worn inside a shoe to occupy a position within the heel portion and to extend forwardly beyond the metatarsal bones of the foot. The edge of the insole is skived or beveled all around the margin of the insole, as shown at 11 in Figure 4, and the front marginal edge is beveled or skived at a more acute angle than the remainder of the insole, as shown at 12 in Figure 3. Furthermore, the support is reduced in thickness from a point in rear of the metatarsal bones, as shown at 13, to the heel portion 14 of the support to provide a hump 15 underneath the metatarsal bones, and to provide a thin highly flexible medial portion 16 of the support extending from the hump 15 to the marginal edge of the heel portion. This flexible portion is rendered still more flexible by perforations 17 formed therethrough so that the human foot may deform the support so that the longitudinal edges 11 will be elevated beyond the medial portion of the support by pressure of the foot and permit the support to conform to the curvature of the foot much in the same manner that an imprint of the foot in sand or other mashable medium will conform to the contour of the bottom of the foot. The skived or beveled front portion of the support is extremely flexible and is readily depressed by the pressure of the toes to conform to the contour of the foot in front of and below the metatarsal bones. The hump 15 extending transversely across the support underneath the metatarsal arch of the foot serves to support the weight of the foot and it will be observed that the hump is somewhat the shape of a crescent in outline and conforms to the curvature of the metatarsal arch in a horizontal plane. The hump is narrow underneath the second metatarsal bone, as shown in Figure 3, and gradually increases in width to the edge of the support underneath the fifth metatarsal bone, or little toe bone, as shown in Figure 2.

In further carrying out the invention a pad 18 of rubber or other yielding material is disposed on the underneath face of the support directly below the hump 15. The pad is of uniform thickness throughout and conforms in outline to the curvature of the crescent shaped hump. The pad

is comparatively narrow at the end portion which underlies the second metatarsal bone and gradually increases in width to the outer edge of the sole, the widest portion consequently being disposed underneath the fifth metatarsal bone. The pad 18 and the hump 15 coact in supporting the weight of the foot so that the toes are relieved of the pressure which usually causes metatarsal trouble. Since the width of the pad and the hump increases toward the outside of the foot, that is, toward a point underneath the fifth metatarsal bone, the pad and the hump carry more weight back of the fifth metatarsal bone where nature has provided more muscles than back of the first metatarsal bone where there are few weight supporting muscles.

In nature the heel of the human foot is intended to hold the foot from slipping but the weight is intended to be carried on the muscles in front of the heel under the cuboid bone. Accordingly in further carrying out the invention a pad 19 preferably formed of rubber or similar resilient material, is disposed on the underneath face of the support 10 to underlie the cuboid bone. The pad 19 is substantially semi-circular in outline and preferably is greater in thickness than the metatarsal arch supporting pad 18. As a result of this construction the heel of the foot is caused to sink in the heel portion of the support while the pad elevates the cuboid arch underneath the cuboid bone.

In further carrying out the invention a pad 20 of resilient material such as rubber is disposed on the underneath face of the support opposite the pad 19 and this pad is of less thickness than the pad 19 so that the weight of the cuboid arch will be supported upon the pad 19 rather than upon the pad 20. The primary purpose of the pad 20 is to prevent the foot from pronating or turning inwardly. The pads 19 and 20 coact in elevating the cuboid arch in front of the heel and thereby permit the heel to sink into the heel portion 14 of the support whereby the heel can perform the function intended by nature, that is, to hold the foot from slipping while at the same time the pads 18 and 19 support the weight on the outside of the foot where the weight supporting muscles are most abundant, the pad 18 performing the additional function of supporting the metatarsal arch back of the toes whereby the toes are relieved of weight bearing function as is intended by nature.

It will be particularly pointed out that the pad 20 does not carry weight because the pad is beveled to a feather edge from the outer edge to the inner edge whereas the pad 19 retains its full thickness except for a short bevel around its inner edge.

It will also be pointed out that the reason why the pad 18 carries more weight under the fourth and fifth metatarsals is because at this particular locality it is wider than under the first, second and third metatarsals.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. A cuboid-metatarsal arch support comprising, an insole, a crescent shaped pad increasing in width from end to end on the insole and having its wide edge disposed at the outer edge of the insole, said pad being adapted to elevate the metatarsal arch underneath the metatarsal bones, and coacting oppositely disposed pads on the rear portion of the insole having curved edges confronting each other and spaced from the longitudinal center line of the insole, said coacting pads being adapted to underlie the cuboid bone and internal cuneiform bone and simultaneously elevate the cuboid arch and prevent pronating of the foot.

2. A cuboid-metatarsal arch support comprising, an insole, a crescent shaped hump on the insole tapering in width from end to end and having the wide end disposed at the outer edge of the insole, a resilient pad on the hump conforming in outline to the outline of the hump, a substantially semi-circular resilient pad on the insole having its straight edge disposed on the outer edge of the insole, and an elongated pad having a curved edge confronting the curved edge of the first named pad and having a straight edge disposed on the inner edge of the insole, said pads being disposed opposite to each other near the rear end portion of the insole and being spaced from each other, the insole being perforated between the last named pads to increase flexibility of the insole, said last named pads being adapted to underlie the cuboid bone and the internal cuneiform bone and simultaneously elevate the cuboid arch and prevent pronating of the foot.

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