Sept. 24, 1957 C. A. SHEPPARD 2,807,102

ARCH SUPPORTING SHOE INSERT

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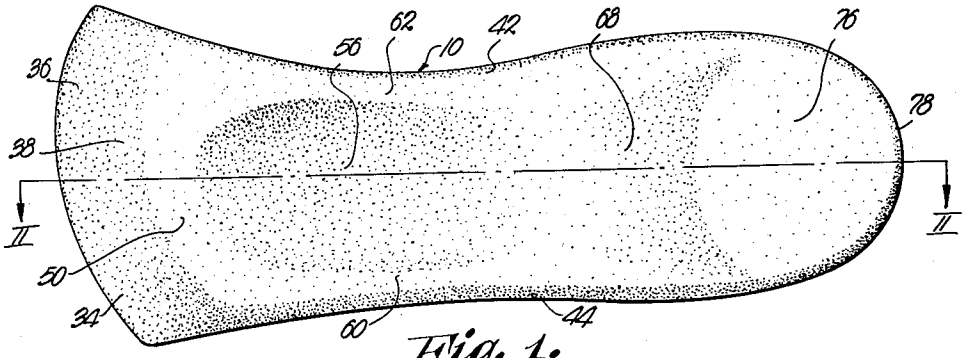


Fig. 1.

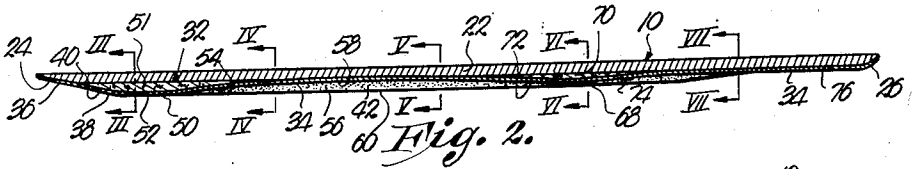


Fig. 2.



Fig. 3.

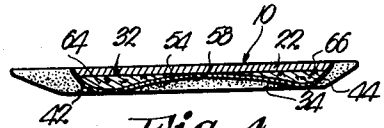


Fig. 4.

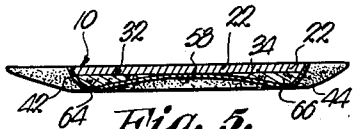


Fig. 5.

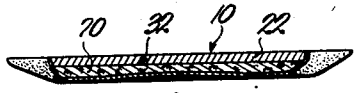


Fig. 6.

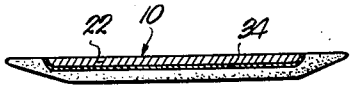


Fig. 7.

Fig. 8.

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ARCH SUPPORTING SHOE INSERT

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2 Claims. (Cl. 36—71)

This invention relates to the field of therapeutic inserts for shoes and, more particularly, to an improved type of arch supporting insert especially adapted to prevent forward elongation of the foot of a person wearing a shoe heaving such insert therein.

It has long been known to chiropodists that one of the most frequent sources of foot trouble arises from the forward elongation of a foot within a shoe. This problem is particularly acute with respect to women's high heel type shoes in which the natural tendency of the foot bones and muscles, when disposed as they are in such a shoe, is for the anterior parts of the foot to move forwardly relative to the posterior parts thereof, thereby elongating thte foot unnaturally in a manner causing both much discomfort and ultimately many serious foot ailments.

Accordingly, it is the primary object of this invention to provide a therapeutic insert for shoes which includes contoured parts adapted to support the various portions of a wearer's foot in thier natural positions, thereby preventing such undesired elongation of the foot as has heretofore troubled many persons.

Another important object of the invention is to provide such an insert which may be simply, inexpensively and precisely formed from an elongated element of soft leather having a contoured body of resilient material, such as cork, affixed thereto in predetermined disposition.

It is another important object of this invention to provide such an insert wherein a contoured or raised portion is formed to present a saddle for supporting the forward part of the os calcis of the wearer's foot and wherein a second contoured or raised portion is disposed forwardly of the first mentioned raised portion to present a bar extending laterally and adapted for supporting the metatarsals of the wearer's foot slightly forwardly of the rear heads thereof to relieve the weight load on such metatarsal heads.

Still other important objects of the invention will be made clear or become apparent as the following description of the invention progresses.

In the accompanying drawing:

Fig. 1 is an inverted or bottom plan view of an insert made in accordance with this invention;

Fig. 2 is a longitudinal cross sectional view of the insert taken on line II—II of Fig. 1 and showing the same in its upright initial condition before emplacement of same in operative position within a shoe;

Figs. 3, 4, 5, 6 and 7 are transverse cross sectional views of the insert taken respectively on lines III—III, IV—IV, V—V, VI—VI and VII—VII of Fig. 2; and

Fig. 8 is a longitudinal cross sectional view of the insert showing the same in operative position in a fragmentarily depicted shoe, with certain of the major bones of the wearer's foot generally indicated in dotted lines.

Referring now to the drawing, the numeral **10** generally indicates a shoe insert made in accordance with the principles of this invention, it being understood that such inserts **10** can be prepared in various sizes and with

the various parts thereof being relatively spaced in such manner as to accommodate various sizes of human feet. The numeral **12** generally indicates a shoe, in the illustrated case, a woman's shoe, having an elongated foot supporting sole **14**, a foot covering **16** and a heel **18**.

In Fig. 8 the insert **10** is shown in operative position within the shoe **12**, and it will be noted that the insert extends from adjacent the rear end of sole **14** forwardly and in conformity with the sole **14** to a point on the latter slightly forwardly of the usual arched portion or shank **20** of sole **14**.

The insert **10** is formed of an initially flat, elongated, element **22** of relatively soft leather or the like having the general shape and configuration illustrated in Fig. 1. The ends of element **22** are skived or tapered as indicated at **24** on the forwardmost end of element **22** and as indicated at **26** on the rearmost end thereof. As will be clear from Fig. 8, the tapering **24** of the forwardmost end of element **22** permits the gradual divergence of the normally uppermost surface of element **22** with sole **14** when the insert **10** is in place within the shoe **12**. The lateral edges of element **22** are similarly skived or tapered as at **28** and **30**, the tapering of element **22** as at **26**, **28** and **30** adapting the insert **10** for fitting neatly within the shoe **12**.

The insert **10** shown for purposes of illustration is only adapted for use in the right shoe of a wearer, it being understood that in the inverted plan view of Fig. 1 the lowermost lateral edge of the insert therein depicted will be the one disposed to the right side of the wearer's foot when the insert **10** is in place within the shoe **12**.

Secured to the lowermost face of element **22** is a contoured body generally designated **32** of resilient material, preferably cork, adapted to be shaped and skived as hereinafter described. The body **32** may most conveniently be affixed to the lower face of element **22** by means of an adhesive, which it will be understood is provided therebetween. For the sake of neatness, the insert **10** also includes an outer covering **34** extending over the normally lower faces of element **22** and body **32**, such covering **34** preferably being of very thin leather, cloth or the like adapted to readily conform to the contouring of body **32**. Covering **34** is also preferably held in place upon element **22** by means of adhesive material understood to be provided therebetween, it being noted that such covering **34** is also preferably adhesively fastened to the body **32** and that, if desired, the covering **34** could be relied upon to hold the body **32** in place upon the element **22**.

The contouring or shaping of body **32** is of the essence of the invention and may be understood from reference to Fig. 1, considered in the light of the cross sectional views **2** to **7** inclusive. In the plan view of Fig. 1, it will be understood that the insert **10** is illustrated with the resilient, shaped body **32** covered by the covering **34**, but since such covering **34** conforms to the configuration of the body **32**, the contoured portions of the lower face of the overall insert **10** may be conveniently identified thereon.

Accordingly, proceeding from front to rear of the insert **10**, the forwardmost portion **36** of the insert **10** is gradually tapered because of the conformity of covering **34** with the tapering **24** of element **22**. Immediately rearwardly of transverse portion **36** of insert **10** is another transverse portion **38** thereof which continues the taper of portion **36** by virtue of a forwardmost, convexly curved, tapered, forwardmost edge of body **32** disposed thereunder. The taper of insert portion **38** is continued rearwardly along the lateral margins of insert **10** as at **42** and **44** by virtue of the tapering of body **32** along its lateral edges as at **28** and **30**. It may be noted that the lateral edges of element **22** are also slightly tapered as at **46** and **48**. The lateral marginal tapers **42** and **44** of

insert 10 are therefore extended to and around the rear of the element 10, athough the body 32 itself does not extend that far rearwardly as will hereinafter be made clear.

The lateral portion of insert 10 next rearwardly of portion 38 thereof is designated 50 and is presented by the conformity of covering 34 to the raised contouring of body 32 as at 52, such raised or padded portion of body 32 being designated 51 in the drawing. Portion 50 has a convexly curved forwardmost edge defined by the tapered portion 38 and a concavely curved rearmost edge defined by the conformity of covering 34 with a skived or tapered away central portion 54 of body 32. Element 32 is so skived away at 54 as to present an elongated, substantially centrally disposed, concave portion 56 disposed rearwardly of portion 50. As will be most clear from Figs. 4 and 5, the element 32 is virtually completely skived away to expose a portion 58 of element 22 in direct contact with the underlying covering 34.

Concave portion 56 is generally elliptical in shape and has its longitudinal axis extending substantially longitudinally of insert 10, the forwardmost extremities of portion 56 defining the rearmost extremity of portion 50. At its lateral sides, concave portion 56 is tapered to longitudinally extending raised portions 60 and 62 which are raised and extend rearwardly from the lateral extremities of portion 50. More particularly, raised portions 60 and 62 are presented by the conformity of covering 34 with the thick or raised portions 64 and 66 of body 32 extending longitudinally of the insert 10 adjacent the lateral edges of the latter and defined on their outermost sides by the skiving of element 32 to present tapered portions 42 and 44 and on their innermost sides by the skiving of element 32 to present the concave central portion 56.

Rearwardly of portion 56 is a laterally extending raised portion 68 presented by the conformity of covering 34 with a raised or thick portion 70 of element 32. The forwardmost extremity of raised or pad portion 70 of element 32 is integral with the rearmost extremities of the longitudinal raised portion 64 and 66 and is further defined by the zones of joinder with portions 64 and 66 by the skiving or tapering thereof extending forwardly as at 72 to the central, concave portion 56. The rearmost extremity of portion 70 of body 32 is skived or tapered as at 74 and is concavely curved laterally of the insert 10.

A rearmost portion 76 of the insert 10 is essentially flat and is defined by the conformity of covering 34 with the rear portion of element 22 rearwardly of the posterior extremity of body 32. As previously noted, the rear extremity of element 22 is skived as at 26 to present a rearward taper 78 extending around the portion 76.

In view of the thin and flexible characteristics of covering 34 and the flexible characteristics of element 22, it will be clear that when the insert is placed in operative position in the shoe 12 and the weight of a wearer's foot imposed thereon, the uppermost face of the insert 10 will generally conform to the configuration of the contoured body 32 since parts of the element 22 overlying padded or raised portions of the body 32 will be held in raised condition while parts of the element 22 overlying concavities such as 56 of the body 32 will sink or be depressed by the weight of the foot thereon.

Referring particularly to Fig. 8, the toe bones of the foot of a wearer are indicated by the numeral 80, the numeral 82 indicates one of the metatarsals having a rearwardly disposed head portion 84, the numeral 86 indicates the cuboid and the numeral 88 indicates the os calcis having a forwardmost lower extremity 90.

It will be understood that the body 32 is most advantageously formed from an initially flat piece of cork or the like of uniform thickness skived away as required to present the desired configuration previously described.

The insert 10 may be held within the shoe 12 in the general position shown in Fig. 8 by any suitable means such as adhesive securement of the covering 34 to the upper face of sole 14, although the shaping of insert 10 is such that it will normally be retained in proper operative disposition simply by the weight of the wearer's foot and without direct attachment of the insert 10 to the sole 14.

The functioning of the various portions of the insert 10 which make possible the advantageous results attained with the invention are briefly as follows. The raised portion 68 presents a padded saddle extending laterally of the insert 10 supporting the os calcis 88 at its forward extremity, the curvature of taper 74 being such as to generally conform to the extremity 90 of os calcis 88, this cupping the main weight bearing heel part 92 of the os calcis, which rests upon that part of element 22 overlying portion 76 of insert 10. Portion 68, accordingly, prevents forward movement of the os calcis 88 relative to the insert 10 and, therefore, the sole 14 of shoe 12.

The more forwardly disposed portion 50 of insert 10, which is also raised or padded, presents a raised contouring of the element 22 extending laterally of the insert 10 at a longitudinal position thereon providing a supporting bar for the metatarsals 82 forwardly of the rear heads 84 thereof, the latter being accommodated by the concave portion 58 rearwardly of raised portion 50 and to which the latter is tapered as above described. This latter construction not only supports the metatarsals against forward slippage relative to the insert 10, and therefore elongation of the wearer's foot, but also disposes the heads 84 of metatarsals 82 in the concavely depressible part of element 22 overlying portion 58 so as to remove the weight load therefrom. This feature of the insert 10 is extremely effective in alleviating conditions such as planter callous and metatarsalgia. It may be further noted that the arched portions 20 of soles 14 are often provided, especially in women's shoes, with metal reinforcing (not shown), the advantage of providing the mentioned depressible or spacing zone of insert 10 corresponding with concave portion 56 thereof being obvious from the protection of the metatarsal heads 84 accomplished thereby. Such portion 56 of insert 10 thus shields the foot from the normally high point of the shoe 12 disposed at the arched part 20 of sole 14 and prevents unnecessary and troublesome pressure on the long plantar ligament. The raised portions 50, 60, 62 and 68 surrounding such concave portion 56 cooperate to give full support to the foot surrounding such concave portion 56 where the foot is to be protected from the pressure of the shoe 12 therebeneath.

It is also significant that the longitudinal extension of the portions 60 and 62 along the lateral margins of a substantial length of the insert 10 give considerably better support and more comfort than is provided in various shoe inserts utilizing one or more abruptly occurring, laterally extending raised or padded portions. It should also be pointed out that the support for the forwardmost portion 90 of the os calcis 88 provided by the insert portion 68, together with the support for the metatarsals 82 provided by the insert portion 50, not only effectively prevent elongation of the foot but also maintain the foot in its proper position within the shoe 12 thereby preventing toe pressure and arch strain which would otherwise occur.

It will be obvious to those skilled in the art that many minor modifications and changes could be made from the exact details of construction shown and described for purposes of illustration without materially departing from the true spirit or intention of this invention. Accordingly, it will be understood that the invention should be deemed limited only by the scope of the appended claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A therapeutic insert adapted to be secured in a shoe

comprising a flat, flexible element disposed beneath the foot of the wearer of the shoe, and a resilient contoured body of substantially uniform maximum thickness secured to the undersurface of the element, said body extending from a front convex edge immediately to the rear of the forward metatarsal heads to a concave rear edge immediately to the rear of the cuboid, and said body having an elliptical opening intermediate said edges exposing the undersurface of said element in an area underlying the metatarsal shafts.

2. In an insert as set forth in claim 1, wherein said body is provided with lateral edges underlying the side margins of the element and extending between said front and rear edges of the body, said body being sloped from the periphery of said opening to zones of maximum thickness adjacent said front, rear and lateral edges of the body.

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