

Oct. 8, 1957

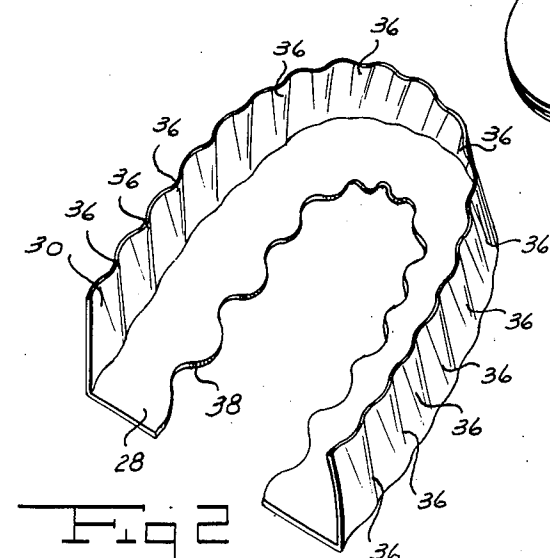
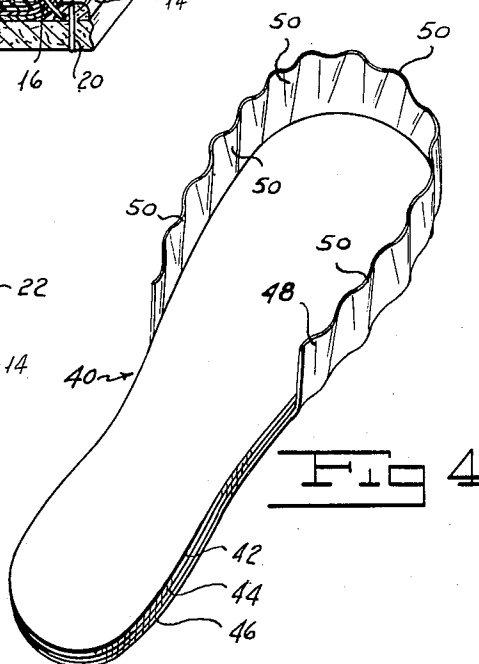
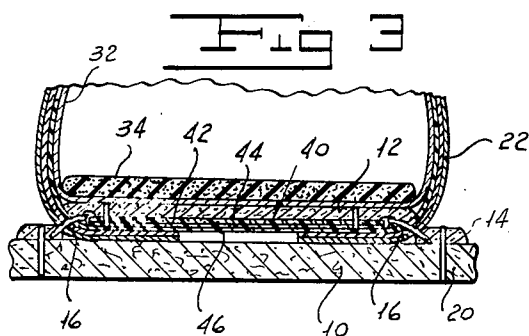
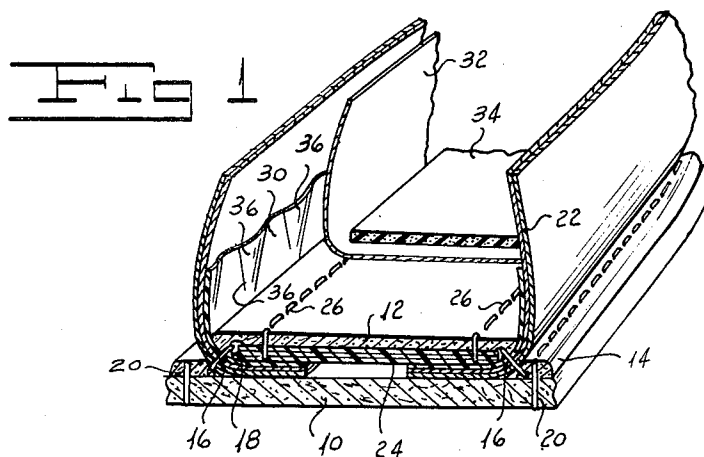
L. P. FRIEDER ET AL

2,808,664

PROTECTIVE VAMP

Filed May 26, 1955

2 Sheets-Sheet 1



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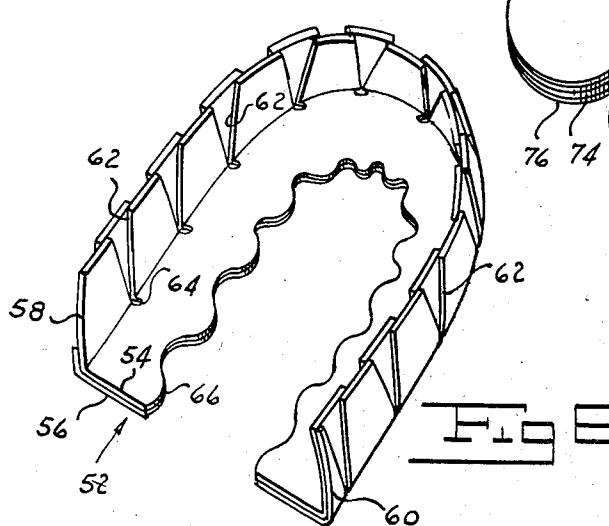
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2 Sheets-Sheet 2



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PROTECTIVE VAMP

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9 Claims. (Cl. 36—72)

Our invention relates to a protective vamp and more particularly to a protective vamp for a safety shoe which protects the foot of the wearer from injury from sharp objects penetrating the portion of the shoe vamp adjacent the edge of the shoe sole in front of the shoe ankle seam.

In the prior art safety shoes are provided with protective soles for protecting the foot of the wearer against injury from sharp objects penetrating the sole of the shoe. In one form of safety shoe the protection is afforded by a metal plate or the like formed as a part of the safety shoe sole. These metal plates are rigid and do not flex with the wearer's foot. They do not permit shoes to "breathe" properly. Alternately, protection is provided in safety shoes of the prior art by a softer, more flexible material than metal. When such a material is employed, the resulting shoe construction necessarily is bulky and awkward if the desired degree of protection is provided. In our copending application Serial No. 487,269, filed February 10, 1955, we disclose a safety inner sole which overcomes the disadvantages of safety soles of the prior art. As is pointed out in the copending application, this protective inner sole may be formed as a part of a safety shoe sole if desired.

In addition to the problem of protecting the wearer's foot from injury by objects penetrating a shoe sole, the further problem exists of protecting the wearer's foot against injury by objects cutting or penetrating the shoe vamp in the area just above the sole. This problem is especially important in the area along the edges of the shoe sole where cuts may occur when the wearer trips over sharp objects. In an attempt to solve this problem, protective soles in shoes of the prior art are extended in the plane of the sole out beyond the vamp of the safety shoe. This clumsy and cumbersome construction, however, gives rise to additional dangers of injury to the wearer as a result of falls from stumbling or similar accidents.

We have invented a protective vamp for a safety shoe which prevents injury to the foot of the wearer in the vamp area of the shoe around the shoe sole. Our protective vamp is light and flexible. It permits the shoe to breathe properly. It may be formed as a part of the shoe to give a compact, comfortable shoe construction.

One object of our invention is to provide a protective vamp for a safety shoe which protects the foot of the wearer in the area of the shoe vamp around and adjacent to the shoe sole.

Another object of our invention is to provide a protective vamp for a safety shoe which is light and flexible.

A further object of our invention is to provide a protective vamp for a safety shoe which may be formed as a part of the shoe in a compact and comfortable shoe construction.

Other and further objects of our invention will appear from the following description.

In general, our invention contemplates the provision of a safety shoe protective vamp formed from synthetic, resin-impregnated, fibrous material. We shape our pro-

5 tective vamp to conform with the shoe vamp or portion of the shoe above the sole and the welt in front of the ankle seam. We form our vamp with a base substantially parallel with the plane of the shoe sole and with a portion upstanding from the base and conforming with a portion of the shoe vamp. In one form of our invention corrugations on the upstanding portion of the protective vamp lend flexibility to the construction and ensure a smooth and snug fit of the protective vamp in the shoe. We may make our protective vamp independently and embody it in the shoe during manufacture. Alternately we may form our protective vamp from an extension of a laminate, or laminates, of our protective inner sole disclosed in our said copending application.

15 In a second embodiment of our invention the upstanding portion of the vamp includes at least a pair of laminates, each of which is formed with tapered notches terminating in arcuate apices in the base of the vamp. This embodiment of our invention may be independently formed and embodied in a safety shoe during manufacture or it may be made from extensions of laminates of our protective inner sole disclosed in our said copending application.

25 In the accompanying drawings which form part of the instant specification and which are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

30 Figure 1 is a fragmentary perspective view, with parts in section, of a safety shoe including one form of our protective vamp made independently and embodied in the shoe during manufacture.

Figure 2 is a perspective view of the form of our protective vamp shown in Figure 1 before it is embodied in a safety shoe.

35 Figure 3 is a fragmentary sectional view of a safety shoe including a form of our protective vamp similar to that shown in Figure 1 made from an extension of a laminate of a protective inner sole.

40 Figure 4 is a perspective view of a safety inner sole, one laminate of which is extended and shaped to form a protective vamp similar to that shown in Figure 1.

45 Figure 5 is a fragmentary perspective view, with parts in section, of a safety shoe including a second embodiment of our protective vamp made independently and embodied in the shoe during manufacture.

Figure 6 is a perspective view of the embodiment of our protective vamp shown in Figure 5 before it is embodied in a safety shoe.

50 Figure 7 is a fragmentary sectional view of a safety shoe including an embodiment of our protective vamp similar to that shown in Figure 5 made from an extension of a laminate of a protective inner sole.

55 Figure 8 is a perspective view of a safety inner sole, a pair of laminates of which are extended and shaped to form a protective vamp similar to that shown in Figure 5.

60 More particularly referring now to Figures 1 and 2 of the drawings, a safety shoe provided with one form of our protective vamp includes an outsole 10, an insole 12, and a welt 14. Stitching 16 secures the welt 14 to a peripheral lip 18 formed on the underside of the insole 12. Stitching 20 secures the welt 14 to the outsole 10. From the foregoing description it will be appreciated that welt 14 serves to retain the insole 12 and outsole 10 in assembled relationship, as is conventional in shoe manufacture.

65 The safety shoe with which our protective vamp is used includes a shoe vamp 22 formed of a double thickness of leather or the like. As can be seen by reference to Figure 1, stitching 16 passes through the shoe vamp 22 to retain the vamp between welt 14 and the insole 12. We dispose a protective inner sole 24 of the type disclosed in our said copending application in the space between the

insole 12 and the outsole 10. Optionally, stitching 26 may be used to secure the protective inner sole 24 to insole 12. As is pointed out in our copending application, the protective inner sole 24 protects the wearer's foot from injury by sharp objects or the like which might penetrate the sole of an ordinary shoe. It will be appreciated, however, that the protection afforded by the inner sole 24 does not extend to the area of the vamp 22 around and adjacent to the periphery of the sole of the shoe. If the wearer tripped over a sharp blade or stepped on the edge of a blade so as to force it or a similar sharp object through the edge of the sole and the portion of the vamp adjacent the sole edge, a severe injury to his foot would be likely to result. This is the nature of injury against which our protective vamp guards the wearer's foot.

As can best be seen by reference to Figure 2, we form one embodiment of our protective vamp with a base 28 in the plane of the shoe sole. Base 28 extends around the periphery of the shoe sole in front of the ankle seam of the shoe. Our protective vamp also includes a portion 30 extending upwardly from base 28 and conforming with the shape of the shoe vamp 22. Referring again to Figure 1, we assemble our protective vamp with the shoe so that stitching 16 passes through the protective vamp substantially along the line of juncture between base 28 and the upstanding portion 30. Stitching 16 serves to retain the protective vamp in its assembled position in the shoe. We secure a canvas liner 32 by means such as glue or the like over the inner surface of the shoe and over the portion 30 of the protective vamp. If desired, a sponge rubber cushion 34 may be glued over the inside of the sole. Referring again to Figure 2, we provide the upstanding portion 30 of our protective vamp with corrugations 36 tapering downwardly from the edge of the upstanding portion 30 to the base 28. Corrugations 36 permit portion 30 of the vamp to flex with the wearer's foot. For the same reason, we cut out the central portion of base 28 to leave a scalloped edge 38.

We form our protective vamp of synthetic, fibrous, resin-impregnated material. The vamp may, for example, be made of any suitable matted, felted, woven, knitted, or braided fibrous material. Preferably, we employ a mat of spun glass fibers, but we may use any other filaments, such as those of nylon. We impregnate the mat of fibers with a thermoplastic or thermosetting resinous material, such as, for example, polyethylene plastic, allyl plastic, polystyrene plastic, phenol formaldehyde, or urea formaldehyde resins. Preferably, we use a polyester resin. While we have shown this form of our protective vamp as including only a single thickness of fibrous, resin-impregnated material for purposes of simplicity in illustration, it will readily be understood that, if desired or necessary, we may use a number of thicknesses or laminates assembled in the manner described in our said copending application to form our protective vamp.

In the form of our invention shown in Figures 3 and 4, we form our protective vamp from one extended laminate of a protective inner sole of the type disclosed in our said copending application. Conveniently, the protective inner sole, indicated generally by the reference character 40, is sandwiched between the shoe insole 12 and outsole 10 with portions of the shoe vamp 22 extending thereunder. The protective inner sole 40 includes a number of laminations necessary to afford the required degree of protection for the wearer's foot. It may, for example, include a top laminate 42, a middle laminate 44, and a bottom laminate 46. We retain laminates 42, 44, and 46 in assembled condition in the manner disclosed in our said copending application. In order to form our protective vamp, we provide the portion of one of the inner sole laminates with an extension in the region of the shoe vamp. This extension may conveniently be formed on the bottom laminate 46 of the inner sole. This embodiment of our protective vamp has a base formed by the

portion of the inner sole underlying the shoe vamp. We shape the extending portion of the bottom laminate 46 to form an upstanding portion 48, as can readily be seen by reference to Figure 4. Corrugations 50 tapering from the upper edge of portion 48 downwardly toward the inner sole 40 ensure a snug and smooth fit of portion 48 in the shoe. As was the case with the form of our protective vamp shown in Figures 1 and 2, we dispose the protective vamp including portion 48 between the shoe vamp 22 and a canvas liner 32. The stitching 16 which secures the insole 12 to the welt 14 passes through the portion 48 of the protective vamp extending upwardly from the inner sole 40. If desired, a cushion 34 may also be used in this form of protective shoe. It is to be understood that while we have shown our protective vamp as being formed by an extension of the bottom laminate 46 of the inner sole 40, it may, if desired, be formed from any one of the other laminates. We may, if desired, employ more than a single laminate of the protective inner sole 40 to form our protective vamp. In any case, in this form of our invention, the protective vamp is formed of the same fibrous, resin-impregnated material of which the laminates of the protective sole are formed.

In the embodiment of our invention shown in Figures 5 and 6, we form our protective vamp with a base, indicated generally by the reference character 52, including a pair of laminates 54 and 56 of synthetic resin-impregnated, fibrous material. Laminates 54 and 56 include respective upstanding portions 58 and 60 conforming generally to the portion of the shoe vamp 22 adjacent base 52. The laminates 54 and 56 of this form of our invention may be formed of the same material of which the forms of our invention shown in Figures 1 to 4 are made. In order to provide flexibility for our protective vamp in this embodiment of our invention, we form each of the upstanding portions 58 and 60 with a plurality of notches 62, each tapering downwardly from the edge of a portion 58 or 60 to an arcuate apex 64 in the base 52. We stagger the notches 62 of portion 58 with respect to the notches 62 of portion 60 to ensure adequate protection to the wearer's foot while permitting the vamp to flex. We cut out the central portion of base 52 to form a scalloped edge 66 similar to edge 38 to give additional flexibility to the vamp.

Referring now to Figures 7 and 8, we form our protective vamp from a safety inner sole, indicated generally by the reference character 68, including, for example, four laminates 70, 72, 74, and 76 of fibrous, resin-impregnated material. We provide the portion of one of the laminates, which may conveniently be the bottom laminate 76, with an extension in the region of the shoe vamp. We shape this extension of laminate 76 to form an upstanding portion 78 on laminate 76. We form a second upstanding portion 80 from an extension of one of the other laminates, which may conveniently be the laminate 74, in the region of the vamp of the safety shoe. Notches 82 tapering downwardly from the respective edges of the portions 78 and 80 to arcuate apices 84 in the sole 68 make this form of our protective vamp flexible. As is readily apparent from an examination of Figure 8, we stagger the notches 82 of the portion 78 with respect to the notches 82 of the portion 80 to lend flexibility to this form of our vamp. As can be seen by reference to Figure 7, we dispose this form of our protective vamp between the shoe vamp 22 and a canvas liner 32. Stitching 16 which secures the shoe insole to the welt 14 passes through portions 78 and 80 of the protective vamp. In the forms of our invention shown in Figures 5 to 8, apices 64 and apices 84 relieve the respective planes of base 52 and laminates 74 and 76 to make these forms of our protective vamp flexible.

While we have shown the forms of our invention of Figures 5 to 8 as including only a pair of layers or laminates of resin-impregnated, fibrous material, it will be understood that additional layers may be used if desired. When additional layers are used, the tapered notches of

each of the respective layers are staggered with respect to the notches of all the other layers.

In use of the form of our invention shown in Figures 1 and 2, we form our protective vamp with a base 28 cut out to make a scalloped edge 38. Our vamp includes an upstanding portion 30 formed with tapered corrugations 36. The corrugations 36 ensure a smooth and snug fit of the protective vamp in the shoe. In addition, they permit the vamp to flex with the shoe. The scalloped edge formed in base 28 also permits the vamp to flex. While we have shown in Figure 1 our protective vamp as being employed in a shoe including one of our protective inner soles 24, it is to be understood that it may be employed independently of the inner sole, if desired. Our protective vamp protects the wearer's foot from injuries resulting from sharp objects cutting the edge of the shoe sole and the portion of the shoe vamp 22 extending upwardly from the sole.

In the form of our invention shown in Figures 3 and 4, we form our protective vamp from one laminate of our protective inner sole disclosed in our said copending application. This form of our inner sole has a solid base formed by one of the inner sole laminates. It includes an upstanding portion 48 similar to the upstanding portion 30 of the form of our invention shown in Figures 1 and 2. The form of our invention shown in Figures 3 and 4 functions in a manner similar to that shown in Figures 1 and 2 to protect the wearer's foot from injury by sharp objects penetrating the portion of the shoe vamp 22 adjacent the shoe sole in front of the ankle seam of the shoe.

In use of the embodiment of our invention shown in Figures 5 and 6, we form our protective vamp from a pair of fibrous, resin-impregnated laminates 54 and 56 including respective upstanding portions 58 and 60. Staggered notches 62 terminating in apices 64 in the respective upstanding portions give flexibility to the vamp. The staggered arrangement of the notches ensures adequate protection for the foot of the wearer around the periphery of the vamp of the safety shoe.

We form the embodiment of our protective vamp shown in Figures 7 and 8 from a pair of laminates which may conveniently be the bottom two laminates 74 and 76 of a protective inner sole 68. The respective laminates 74 and 76 include tapered notches 82 which permit the protective vamp to flex. The notches 82 of the respective portions 78 and 80 are staggered to ensure adequate protection to the foot of the wearer.

It will be seen that we have accomplished the objects of our invention. We have provided a protective vamp for safety shoes which protects the foot of the wearer against injury from sharp objects which penetrate the shoe vamp 22 in the area adjacent the sole of the shoe. Our protective vamp is light and compact for the protection afforded thereby. We form our protective vamp with means permitting it to flex with the shoe with which it is used. Our protective vamp may be formed as a separate part of a shoe or it may be formed from a laminate of a protective inner sole such as is disclosed in our said copending application.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of our claims. It is further obvious that various changes may be made in details within the scope of our claims without departing from the spirit of our invention. It is therefore to be understood that our invention is not to be limited to the specific details shown and described.

Having thus described our invention, what we claim is:

1. A protective vamp for a safety shoe having a sole and a vamp including in combination a base consisting of plastic impregnated fibrous material and having a por-

tion extending upwardly from said base and conforming generally to the shape of said vamp, said upwardly extending portion consisting of the same material of which said base consists, said base being cut out to form a scalloped edge.

2. In a safety shoe inner sole having a number of laminates formed from synthetic resin-impregnated fibrous material, a protective vamp formed from an extension of one of said laminates, said protective vamp including a portion upstanding from said one of said laminates.

3. In a safety shoe inner sole as in claim 2 in which said upstanding portion is formed with corrugations tapering from the periphery of the upstanding portion to said one of said laminates.

4. In a shoe having an insole and an outsole and a vamp and a welt, a protective vamp including a base consisting of synthetic resin-impregnated fibrous material disposed between said insole and said outsole and having a portion upstanding from said base, said upstanding portion conforming generally to the shape of said vamp, said upstanding portion consisting of the same material which said base consists of.

5. A protective vamp for a safety shoe having a sole and a vamp including in combination a base formed of a pair of layers consisting of plastic-impregnated fibrous material, each of said layers including a portion extending upwardly from said base and conforming generally to the shape of said vamp.

6. A protective vamp for a safety shoe having a sole and a vamp including in combination a base formed of a pair of layers of plastic-impregnated fibrous material, each of said layers including a portion extending upwardly from said base and conforming generally to the shape of said vamp, each of said portions being formed with a plurality of tapered notches.

7. A protective vamp for a safety shoe having a sole and a vamp including in combination a base formed of a pair of layers of plastic-impregnated fibrous material, each of said layers including a portion extending upwardly from said base and conforming generally to the shape of said vamp, each of said upstanding portions being formed with a plurality of tapered notches terminating in respective arcuate apices disposed in the plane of the base.

8. A protective vamp for a safety shoe having a sole and a vamp including in combination a base formed of a pair of layers of plastic-impregnated fibrous material, each of said layers including a portion extending upwardly from said base and conforming generally to the shape of said vamp, each of said portions being formed with a plurality of tapered notches, the construction being such that the tapered notches of one of said upstanding portions are staggered with respect to the notches of the other of said upstanding portions.

9. A protective vamp for a safety shoe having a sole and a vamp including in combination a base formed of plastic impregnated fibrous material and having a portion extending upwardly from said base and conforming generally to the shape of said vamp, said upstanding portion being constructed with corrugations tapering from the periphery of said upstanding portion toward said base.

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