

May 30, 1961

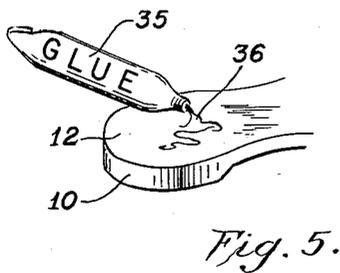
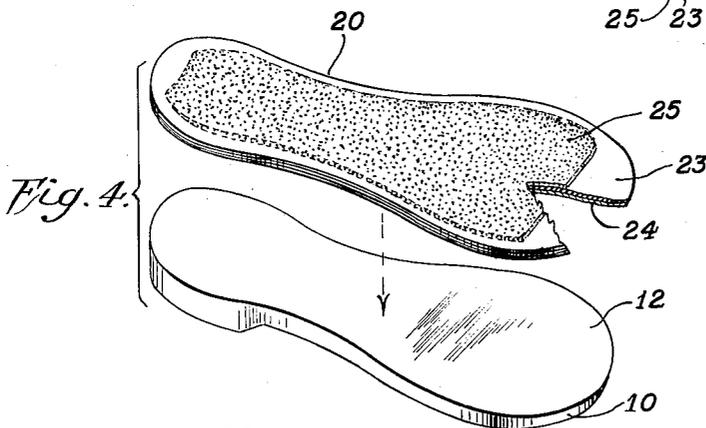
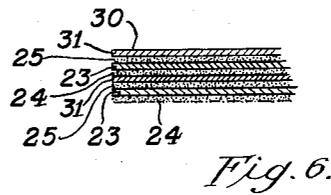
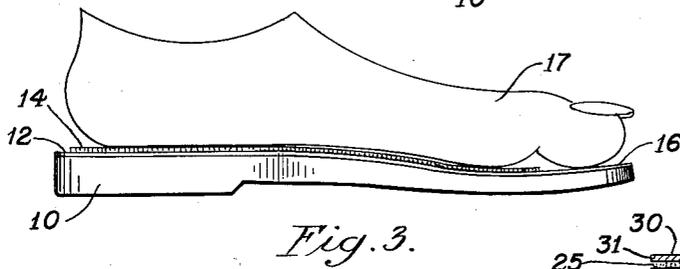
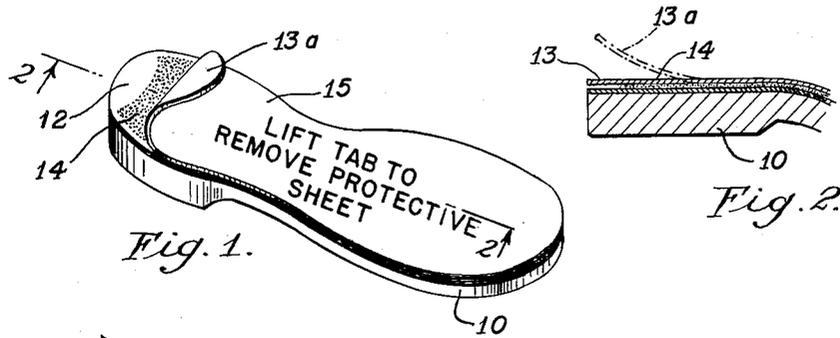
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2,985,970

SHOES AND MEANS OF ATTACHING THEM

Filed Nov. 25, 1957

2 Sheets-Sheet 1



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SHOES AND MEANS OF ATTACHING THEM

Filed Nov. 25, 1957

2 Sheets-Sheet 2

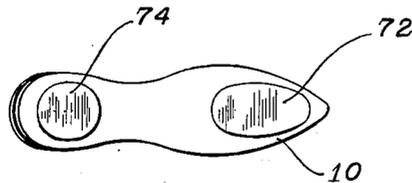


Fig. 7.

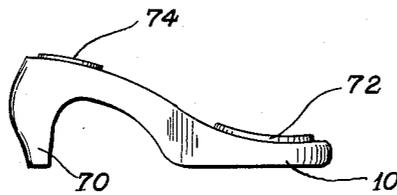


Fig. 8.

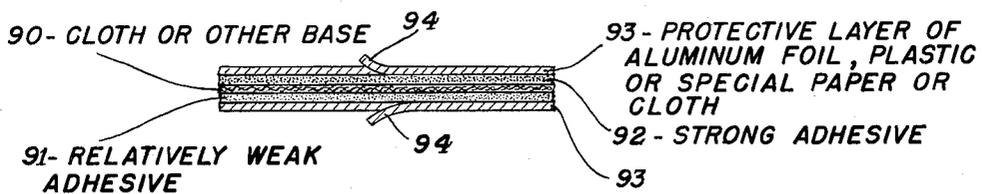


Fig. 9.

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SHOES AND MEANS OF ATTACHING THEM

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Filed Nov. 25, 1957, Ser. No. 698,465

3 Claims. (Cl. 36—11.5)

This invention relates to shoes and, more especially, to shoes that are adapted to be adhesively secured to the feet, and to means for securing such shoes to the feet.

In some cases, it is desirable to have a shoe that may be secured to the foot without any straps, laces, or other additional fastening elements, such as uppers which exert pressure on the upper part of the foot. It is therefore an object of the present invention to provide a shoe that is self securing to the foot and which is devoid of any additional fastening elements which exert pressure on the foot. This ability to dispense with pressure fastening elements and constrictive uppers is particularly useful in shoes for children; shoes made in accordance with my invention permit natural foot development and no chance for the production of abnormalities such as corns, bunions, crooked toes and ingrown toe nails, such as are produced by poorly fitting shoes. These advantages are also applicable to shoes for adults.

Another object of the present invention is to provide an article of footwear that is simple in construction, of extremely light weight, and very comfortable to the wearer.

An additional object of the present invention is to provide an article of footwear that can be manufactured in large quantities at relatively low cost and which can be subsequently coated with additional layers of adhesive for long periods of use.

Still another object of the present invention is to provide adhesive pads specially designed to attach shoes to the feet, and which are characterized by their simplicity of construction, excellent adhesion to the human foot and to stockings, and ready strippability from the shoe when replacement is necessary.

It is also an object of the present invention to produce shoes which can be attached to the human foot by the heel and sole alone, whereby the arch and toes can flex naturally to insure additional comfort to the wearer.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings which are supplied by way of example only, and not by way of limitation.

In the drawings:

Figure 1 is a perspective view of an article of footwear made in accordance with the present invention;

Figure 2 is a cross sectional view taken along line 2—2 of Figure 1;

Figure 3 is a side elevational view of the device in use;

Figure 4 is an exploded perspective view showing a modified form of the present invention;

Figure 5 is a perspective view showing a still further modified form of the present invention;

Figure 6 is a fragmentary cross sectional view of a plurality of adhesive pads used in accordance with the modification shown in Figure 4;

Figure 7 is a top plan view of further modification of my device, designed for maximum comfort to the wearer;

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Figure 8 is a side elevation of the device shown in Figure 7; and

Figure 9 is a cross section through an adhesive pad specially designed for the device of Figures 7 and 8.

According to my invention, I utilize a conventional complete shoe bottom, comprising an outer wearing surface and an inner smooth foot supporting surface, with a layer of pressure sensitive adhesive, on the inner smooth foot-supporting surface to adhere the shoe bottom to the foot.

Referring now to Figures 1 to 3 of the drawing, an article of footwear made in accordance with the present invention is shown to include a sole 10 that may be constructed of any desirable material, such as plastic, rubber, or leather. The top of the sole 10 is provided with a smooth contoured upper surface 12 that is adapted to receive a layer of cement 14. This layer 14 is applied to the surface 12 from a removable paper backing 15. In use, the paper backing is provided with the coating or layer of cement 14, such that the assembly is placed on top of the surface 12, pressure exerted thereon to secure the adhesive layer to the surface 12, whereupon the paper backing 15 is removed. The peripheral portions of the assembly are devoid of cement so that a tab 13 is provided to facilitate the removal of the paper. Thus, by pulling upwardly, the tab (shown in dotted lines at 13a) is operative to remove the entire protective sheet from the layer, thereby depositing the layer of cement 14 upon the sole. The adhesive layer does not extend into the toe area 16 of the sole, so as to permit complete freedom of movement of the toes, thereby increasing comfort to the wearer.

Referring now to Figures 4 and 6, the modified form of the present invention is shown wherein the adhesive device 20 includes a cloth layer or base 23, the lower side of which is coated with an adhesive layer 24 and the upper side of which is covered with an adhesive layer 25. This device is applied to the sole 10 by engaging the adhesive layer 24 with the upper surface 12 of the sole, whereupon the placing of the foot 17 upon the exposed adhesive surface 25 is operative to effect the securement of the sole 10 to the foot. These adhesive assemblies may be supplied in stacks, as shown in Figure 6, wherein a protective paper sheet 31 is disposed between adjacent adhesive assemblies 20, whereupon one assembly may be removed from the stack at a time for use.

In both of the aforementioned modifications, it is intended that the adhesive layers may be removed from the upper surface of the sole 10 after each use or after the effectiveness of the adhesive is lost. Generally, the adhesive can be stripped away from the shoe with little difficulty.

In Figure 5, a further modified form of the present invention is shown wherein a thin layer of liquid adhesive 36 is applied to the upper surface 12 of the sole 10 from a tube or suitable container 35, before each use. Thus, any desired quantity of adhesive may be applied to the sole, in selected areas, and according to the preference of the wearer.

The form of the invention shown in Figures 7 to 9 is specially designed for maximum comfort and is the preferred form of my invention. In this form of the device, the sole 10 is combined, if desired, with a heel 70, which may be a high heel as shown, or any other sort of heel. An adhesive pad 72 is applied to the area corresponding to the ball of the foot; a similar pad 74 is applied to the heel portion. The toe and arch areas are left bare, so that when the shoe is worn, these areas are left free to flex naturally. The pad used in the ball or metatarsal portion of the foot need not be a full pad; it need only be applied to the pressure points of the metatarsal area—i.e., the outside portions of the ball of the foot. How-

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ever, it is simpler to make a pad which covers the entire metatarsal area.

My heel and toe pads comprise a sheet of cloth or other sheet material 90, coated on the bottom with a relatively weak adhesive film 91 and on the top with a relatively strong adhesive film 92. Easily strippable protective barriers 93 are placed over the adhesive layers; these may be of metal foil, of thin plastic such as polyethylene or of a paper or cloth treated to strip easily from the adhesive mass. If desired, the protective layer may be made in two sections, overlapped, is shown at 94, to facilitate stripping. The adhesive masses are conventional rubber based or similar pressure sensitive adhesives. Preferably, both sides are of standard surgical tape adhesives, so that regardless of what mistakes are made in handling the pads, there will be no tendency to the development of dermatitis because of the use of an undesirable adhesive. The adhesive on the top side should be unusually strong, since it will hold the shoe to the foot and must adhere despite the presence of moisture due to sweating, and the strains due to flexing of the foot. On the other hand, the adhesive must not be so very tenacious that it will remove skin when it is stripped from the foot.

If this adhesive were used on the lower side of the pad, it would adhere too strongly to the upper sole to be readily strippable. Hence, the adhesive on the bottom side of the pads must be much weaker than the adhesive on the top side. Pressure sensitive adhesive is used because glues and cements which set up to give permanent bonds are undesirable for my purpose; ready strippability is essential.

In using the pads 72 and 74, the bottom protecting layers 93 are stripped, and the pads are adhered to the shoes. The top layers 93 are then stripped, and the foot pressed onto the shoe. The adhesive layers 92 hold the ball of the foot and the heel so firmly that perfect support is obtained. Ordinarily, the shoe may be worn a full day without difficulty. It will adhere to the foot even under considerable strain; shoes made in accordance with this invention have been worn satisfactorily in playing basketball, for example.

On removal of the shoes, it will be found that the adhesive strips cleanly from the foot, because of the layer of moisture formed on the foot. Thereafter the entire pads can be stripped cleanly from the shoe, because of the relative weakness of the adhesive 91, and be ready for a fresh application of adhesive pads.

It will be obvious that the particular forms of my in-

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vention illustrated herein can be modified without departing from the essence of my invention, which is described in the claim.

For example, it will be possible to provide very inexpensive shoes made from simple sheets of plastic such as vinyl resin, which will be disposable as desired for beach wear and the like. Furthermore, the freedom from the tyranny of the upper will permit wide latitude in design for high style shoes.

This application is a continuation in part of my application Serial No. 637,759, filed February 1, 1957, now abandoned.

I claim:

1. A sandal consisting of a sole extending along the entire foot of a wearer and of substantial thickness and rigidity, and free of upper structure capable of keeping the sandal attached to the foot during such wear, said sole having an outer wearing surface and an inner relatively smooth foot-supporting surface, and a multilayer adhesive device on the inner foot-supporting surface of said sole comprising a base for carrying adhesive attached on its lower side to the sole by a layer of relatively weak pressure sensitive adhesive, and carrying on its upper side a layer of stronger pressure sensitive adhesive, of sufficient strength to keep the sandal attached to the foot of a wearer during a normal day's wear.

2. The sandal of claim 1, in which the adhesive on the upper side of the said base is restricted to the metatarsal supporting area of the sandal and the heel, leaving the shank and toe portions of the sandal bare of adhesive.

3. A multilayer adhesive device as set forth in claim 1, comprising a pair of pads, one fitting the heel and the other the metatarsal area of a human foot.

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