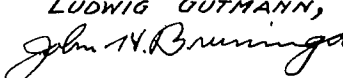
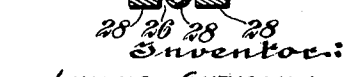
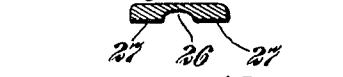
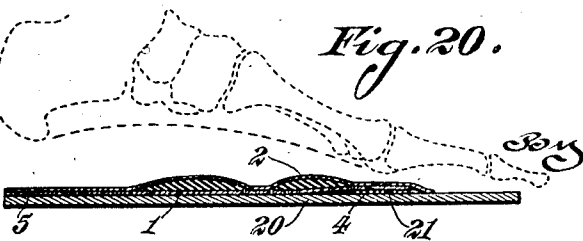
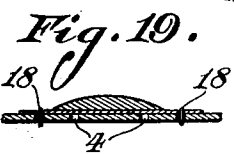
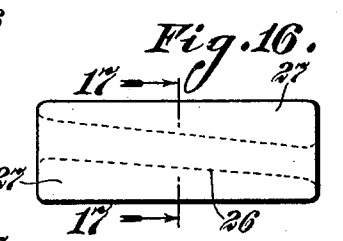
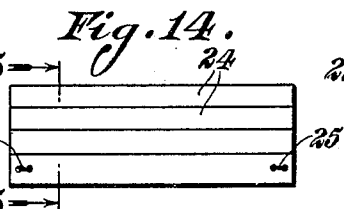
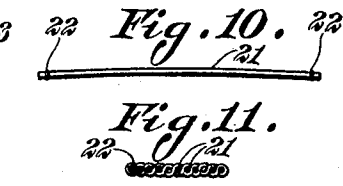
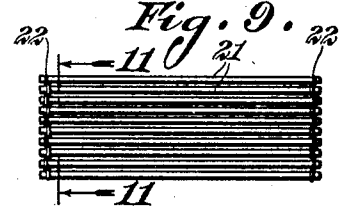
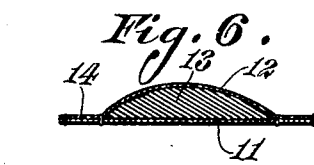
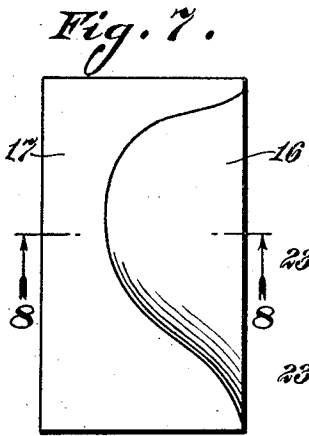
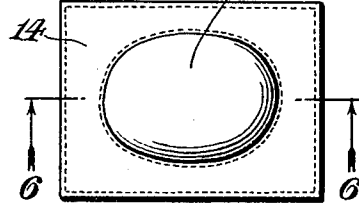
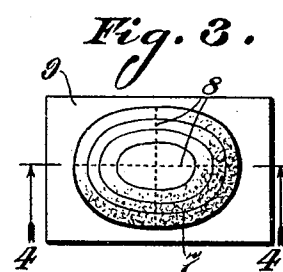
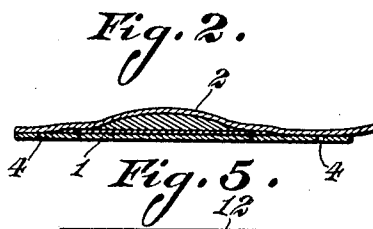
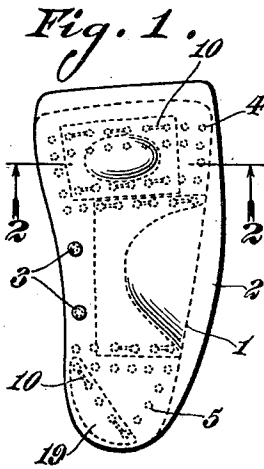


1,417,989.

Patented May 30, 1922.



Inventor:
LUDWIG GUTMANN,
John H. Brunning,
Attorney.

UNITED STATES PATENT OFFICE.

LUDWIG GUTMANN, OF ST. LOUIS, MISSOURI.

FOOT SUPPORT.

1,417,989.

Specification of Letters Patent. Patented May 30, 1922.

Application filed June 11, 1918. Serial No. 239,469.

To all whom it may concern:

Be it known that I, LUDWIG GUTMANN, a citizen of the United States, and residing at St. Louis, Missouri, have invented the new and useful Improvement in Foot Supports, of which the following is a specification.

This invention relates to foot supports, and as to some of its features, is an improvement on the subject-matter of application Serial Number 174,017, filed June 16, 1917.

The correct adjustment of a pad in a shoe is a difficult task, requiring experience, because a slight displacement from the correct position of only a small fraction of an inch may cause discomfort. It is comparatively easy to adjust the pad and its support or insole to the foot, but when the insole and pad are placed in the shoe, this position will not be found exactly correct, and this is so much more the case the less freedom the foot has in the shoe. This is for the reason that the muscles of the enclosed foot are not now free to spread in all directions, and the shape of the muscles present a different configuration, calling for a modification from the position found when the adjustment was made outside of the shoe, which latter condition is a first approximation or adjustment.

One of the objects of this invention, therefore, is to provide a foot support which is so constructed, and in which the pad is so attached and adapted for adjustment, that these adjustments can be made very readily, and which when secured in position will not be displaced.

Another object is to provide a pad adapted to conform to the shape of the foot under the pressure of the foot thereon.

Another object is to provide a foot support comprising a base, a pad thereon, and a cover adapted to conform to the shape of the foot and to the shape of the pad under the pressure of the foot.

A large amount of foot troubles are due to defective construction and manufacture of shoes. In all shoes the projection of the upper and lining over the insole will leave a space between the insole and the outsole; in the Goodyear welt shoe, this space is increased by the presence of the welt and the upstanding lip on the insole, to which the welt is attached. This space is usually filled with a somewhat plastic mass, such as cork composition, which will flow under the pressure of the foot and the heat of the body. Now the metatarsal bone heads lie on a some-

what diagonal line across the insole, and the area on the insole to which the pressure is transmitted is usually not over one square inch. The weight carried by these five metatarsal bone heads, and the pressure on the restricted area across the insole, varies in adults from fifty pounds, during ordinary walking, to as much as two hundred pounds when running or going up a flight of stairs. The result is, therefore, that the filling will not only flow, thereby causing an objectionable depression in the insole under the bone heads, which is liable to cause the transverse arch of the foot to be broken or impaired, but this will cause a wear of the outsole under these bone heads, with the result that the life of the sole is considerably shortened.

Another object, therefore, is to provide a distributor adapted to be placed on the insole under the metatarsal bone heads to support the same and transfer the weight to a large area of the insole.

Further objects will appear from the detail description taken in connection with the accompanying drawing, in which,

Figure 1 is a plan of a foot support embodying this invention;

Figure 2 is an enlarged section on the line 2—2, Figure 1;

Figure 3 is a plan of one form of pad;

Figure 4 is a section on the line 4—4, Figure 3;

Figure 5 is a plan of another form of pad;

Figure 6 is a section on the line 6—6, Figure 5;

Figure 7 is a plan of still another form of pad;

Figure 8 is a section on the line 8—8, Figure 7;

Figure 9 is a plan of one form of distributor embodying this invention;

Figure 10 is a side elevation of Figure 9;

Figure 11 is a section on the line 11—11, Figure 9;

Figure 12 is a plan of another form of distributor embodying this invention;

Figure 13 is a side elevation of Figure 12;

Figure 14 is a plan of still another form of distributor embodying this invention;

Figure 15 is a section on the line 15—15, Figure 14;

Figure 16 is a plan of still another form of distributor embodying this invention;

Figure 17 is a section on the line 17—17, Figure 16;

Figure 18 is a view similar to Figure 17,

but showing still another form of distributor embodying this invention;

Figure 19 is a section showing a method of attaching the pad to the base of the insole or support; and,

Figure 20 is a section showing the operation of the distributor.

Referring to the accompanying drawing, and more particularly to Figures 1 and 2, the foot support comprises an insole consisting of a base 1 and a cover 2 connected together at one edge in any suitable manner, as by rivets 3. The cover projects some distance beyond the base at its front end and one side, as shown. The base may be of leather, canvas or any other suitable material, having a sufficient body to form a firm support for the pad, as hereinafter described. This base is provided with two series of perforations, one series of perforations 4 being located near the front of the insole, while the other series 5 is located near the heel of the insole. The series 4 extend transversely across the insole in the form of a rectangle, while the series 5 are positioned to form a triangle. The cover is constructed of a soft pliable material, such as soft leather taken from the grain side of the hide, so as to be pliable enough to conform to the pad, as hereinafter described.

One form of pad is shown in Figures 3 and 4. It comprises a base 6 of canvas, fabric or the like, having mounted thereon, a body 7. This body comprises a yielding structure having a viscid impregnation. A suitable material for the body is woven or knitted fabric which, in the form of layers, is stitched together, as shown at 8, to conform proximately to the shape of the pad desired. This body is then treated by dipping the same in a viscid impregnating compound, such as paraffine, ozocerite and kindred waxes, beeswax, rosin, other tree gums, used either singly or in combination. The base 6 extends beyond the body so as to form a perforable flange 9, whereby this pad may be secured to the insole.

The pad is placed on the base 1 and is secured in position in any suitable manner, such for instance as by stitches 10 passing through the flange 9, and the perforations in the base. When the cover is laid over this pad, and the pad placed in the shoe, the pressure of the foot on the pad, through the cover, together with the heat of the body, will cause this pad to conform to the shape of the foot, while the cover itself, on account of being soft and pliable, will conform to the shape of the pad. The pad will thus be in correct relation with respect to the foot. It will, of course, be understood that this pad has been properly placed on the base prior to being finally positioned.

Figures 5 and 6 show another embodiment

of this invention. In this construction the pad comprises an envelope consisting of a bottom piece 11, and a top piece 12, stitched or secured together in any suitable manner, so as to retain the body 13 in position, and so as to form a flange 14. The body 13 may be of any suitable material, such as soft porous rubber. The envelope is preferably constructed of a fabric, so as to provide a perforable flange, whereby the pad may be secured in position as heretofore described, by stitches or the like passing through the flange and threaded through the perforations in the base of the insole.

Figures 7 and 8 show still another embodiment of this invention. In this construction a base 15 of fabric or any other suitable material, has cemented or vulcanized thereon, a pad body 16 which may be of any suitable material, such as soft rubber, and so as to provide a perforable flange 17. This pad may be secured in position as shown in Figure 1, by stitches passing through the flange and threaded through the perforations in the base of the insole. This form of pad may be secured by the stitches passing through a row of perforations of each set 4 and 5.

In Figure 19 the pad is secured in position by wire staples 18 passing through the perforable flange and threaded through the perforations in the base of the insole. These wire staples may be of the form used in applying tags to clothing.

The set of perforations 5, in addition to performing the function as securing a pad, such as shown in Figures 7 and 8, may also serve to secure a wedge-shaped pad 19, Figure 1, this pad being secured in position by stitches or staples passing through the pad flange, and through one of the lines of perforations being arranged angularly on the base of the heel. It will be noted that there are two angular lines of perforations, so that the pad may be positioned in either angular position on the base.

Referring now to Figures 9 to 18 inclusive, and 20, arranged below the metatarsal bone heads, and on the usual insole 20 of the shoe, is a distributor. This distributor, as shown in Figures 9 to 13 inclusive, comprises a series of metallic wires or bars 21, secured together at their ends in the construction shown in Figures 9, 10 and 11, by wires 22, weaving these wires or bars together, and as shown in Figure 13, by clips 23 of channel form; pressed over the ends of the wires or bars. The distributor is slightly bow-shaped; as shown in Figures 10 and 13, so as to form a bridge transverse of the insole. This bridge, when placed on the insole of the shoe, directly underneath the metatarsal bone heads; as shown in Figure 20, forms a transmitting element for transmitting the

pressure to the extended area over and across the insole. The result is, therefore, that the pressure is transmitted over several times the area of the insole of the shoe as before, with the result that depression of the insole will be avoided, thereby getting a stable foundation which will not only avoid breaking of the arch, but also prolong the life of the outsole of the shoe. By making the distributor bow-shaped, it will have considerable spring and, therefore, form a yielding cushion which will not only insure comfort, but which will also transmit the load to the outside edges of the shoe where the welt is. This distributor can be covered in any suitable manner; thus in Figure 20, it is covered by the extension of the foot support 1—2, of Figure 1.

In the construction shown in Figures 14 and 15, the distributor comprises a series of slats 24, perforated to receive fastenings, such as thread or wire 25, so as to secure the slats together in overlapping relation. The slats may be constructed of any suitable material, such as wood, or even metal.

The distributor shown in Figures 16 and 17 is made of rubber, which is molded to provide a recess 26 and ribs 27, adapted to rest on the insole of the shoe. The recess 26 runs in a direction somewhat diagonally along the distributor, so as to place this recess directly underneath and along the line of the metatarsal bone heads. This forms a yielding cushion directly underneath the metatarsal bone heads, while the ribs transmit the weight and load to the insole. In the construction shown in Figure 18, the recess 26 has projecting therein a rib 28, which is perforated as shown at 29, so as to form a yielding air cushion along the lines of the metatarsal bone heads.

It will thus be seen that the invention accomplishes its objects. The foot support is not only so constructed as to permit rapid adjustment, but firm positioning of the pad therein, but this pad and the cover of the insole are adapted to shape themselves to the foot, under the pressure of the foot thereon, and under the heat of the body, so as to conform to the actual conditions for the curing of the defect. The distributor is constructed so as to support the metatarsal bone heads and transmit the weight and load over a large area, thereby not only securing permanence of the shoe form, and decreasing wear, but also preventing breaking of the arch.

It is obvious that various changes may be made in the details without departing from the spirit of this invention. It is, therefore, to be noted that this invention is not to be

limited to the specific construction shown and described.

Having thus described the invention, what is claimed is:

1. A foot support, comprising, a perforated base, and a perforable pad adapted to receive fastening means engaging the perforations on said base. 65

2. A foot support, comprising, a perforated base, and a pad on said base, said pad having a flange adapted to receive fastening means engaging the perforations on said base. 70

3. A foot support, comprising a base, and a series of pads on said base, said base having sets of perforations for the respective pads, adapted to receive fastening means to secure said pads on said base. 75

4. A foot support, comprising a base, a series of pads on said base, said base having sets of perforations for the respective pads, adapted to receive fastening means to secure said pads on said base, and a cover extending over and adapted to conform to said pads. 80

5. In a foot support, an arch-correcting pad having perforable means adapted to receive means independent of the pad for securing said pad in position. 90

6. In a foot support, an arch-correcting pad having a flange adapted to receive means for securing said pad in position.

7. In a foot support, an arch-correcting pad having a perforable attaching flange. 95

8. In a foot support, a pad having an envelope adapted to provide an attaching flange.

9. In a foot support, a pad having an envelope adapted to provide a perforable attaching flange. 100

10. In a foot support, a pad comprising a yielding body and a viscid impregnation, adapting the pad to conform to the shape of the foot. 105

11. In a foot support, a pad comprising a yielding fabric body and an impregnation viscid at the body temperature, adapting the pad to conform to the shape of the foot.

12. In a foot support, a pad comprising a laminated, yielding body and an impregnation viscid at the body temperature, adapting the pad to conform to the shape of the foot. 110

13. In a foot support, a pad comprising a yielding body and an impregnation viscid at the body temperature, adapting the pad to conform to the shape of the foot, and an attaching flange on said body. 115

In testimony whereof I affix my signature this 23d day of May, 1918. 120

LUDWIG GUTMANN.