

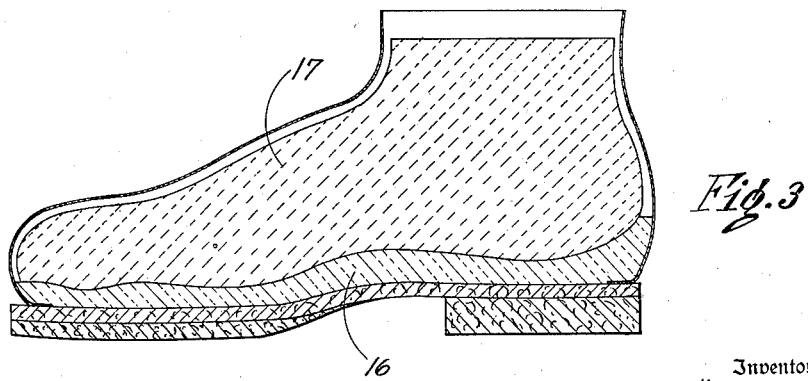
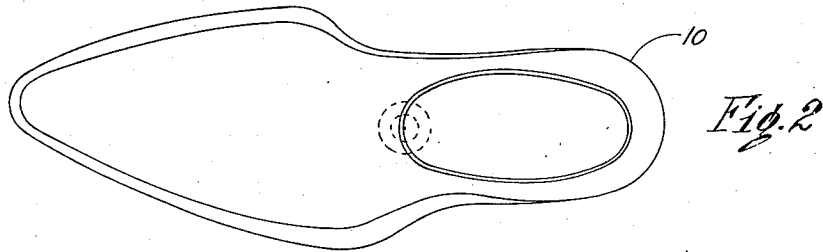
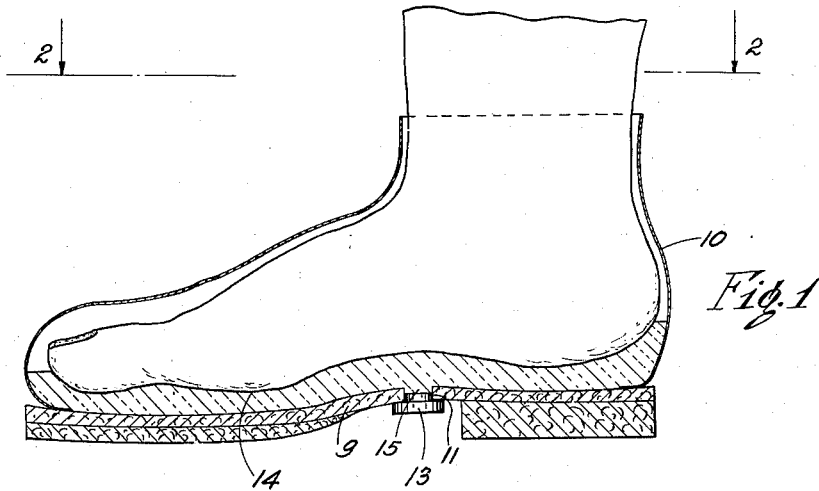
Nov. 15, 1938.

A. FÖRSTER ET AL  
ORTHOPEDIC BOOT OR SHOE

2,136,815

Filed March 14, 1936

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

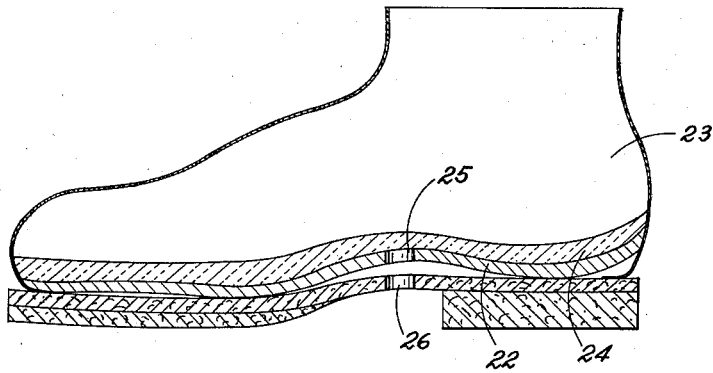


Fig. 5

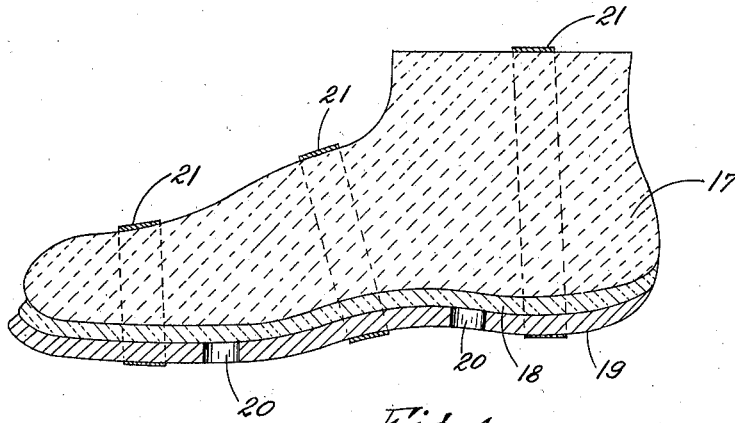


Fig. 4

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# UNITED STATES PATENT OFFICE

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## ORTHOPEDIC BOOT OR SHOE

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2 Claims. (Cl. 12—142)

This invention relates to the method of making orthopedic boots or shoes and more particularly to the method of manufacturing supports to be used in such boots or shoes.

5 According to the present invention, orthopedically correct arch supports are produced by first covering the inner sole of a patient's shoe with a plastic mass capable of receiving an impression of the bottom of the patient's foot. To  
10 obtain the desired results it is preferable to use an amount of plastic material in excess of the amount required to form the support and allowing such excess to be extruded through one or more vents or apertures extending through the  
15 sole of the shoe. When the plastic material has been placed in the shoe and the vents opened the patient then places his weight on the substance and an impression is taken. The excess material is thus forced through the vents or extruded  
20 from the mass until such time as only the amount required to make the insert remains in the shoe at which time the vents in the sole of the shoe are closed and the material permitted to become set or hardened.

25 It has been found that when an excess of plastic material is employed in making a support, in accordance with this invention, all the voids or spaces between the sole of the foot and inner sole of the shoe are completely filled with the plastic material. Furthermore, after the plastic material has become set the support consists of a firm  
30 and homogeneous mass. Where the support is to be left permanently in the shoe in which it has been formed, the plastic material extruded into the vents of the sole of the shoe form integral lugs therewith which secure and maintain the support  
35 in the desired position within the shoe and prevent relative movement thereof. However, where it is desirable to use the support in other shoes the lugs may be removed and the support used  
40 interchangeably in any number of shoes of the patient.

It has been found that this invention may be employed in conjunction with a last which corre-  
45 sponds exactly to the shape of a patient's foot and that such last may be employed in making an orthopedically correct inner sole for a shoe. This practice is carried out by first preparing a support as described above, placing said support  
50 in a shoe then filling the shoe with a hardening mass, such as "plaster of Paris", which does not become united with either the support or the shoe. This mass, when hardened, is then taken out of the shoe and may then be employed in  
55 making inner soles for shoes which will corre-

spond to the foot engaging portion of the support as heretofore described.

In the drawings accompanying and forming a part of this specification:—

Figure 1 is an elevational view partly in section 5 through the shoe of a patient with the foot inserted therein;

Figure 2 is a plan view taken on the line 2—2 of Fig. 1;

Figure 3 is a sectional elevation through a shoe 10 with a complete support inserted therein and filled with a hardening mass to make a last;

Figure 4 illustrates how the last may be employed to make an orthopedically correct support;

Figure 5 illustrates a way of improving an existing support according to this invention.

With reference to Fig. 1 of the drawings, the method of producing arch supports for making orthopedically correct shoes, according to this invention, consists in first providing the sole 9  
20 of the shoe 10 with one or more vents or holes 11 which can be closed in any suitable manner, for example, with a cap screw 13. The inner surface of the sole of the shoe is then covered with  
25 a supply of suitable plastic material 14. This material is preferably a substance known in the trade as "Plastic wood" which may be worked in a plastic form at room temperatures but hardens readily when exposed to atmosphere and takes a  
30 permanent form. The patient may then put the shoe upon his foot and walk thereon or merely impress his weight thereon. The plastic substance being thus subjected to the weight of the body with the entire surface of the sole of the foot  
35 thereon, will thus be moulded or formed in bas-relief to the contours of the foot, the matrix so formed constituting the support for the foot when the material is hardened. The excess material is extruded through the vents 11. When the amount  
40 of plastic material has been reduced to the proper amount to adequately form the support, the vents are closed and the plastic material permitted to harden while the patient is wearing the shoe. This procedure insures that the gradually hard-  
45 ening mass will take the proper shape.

The support thus formed may be left in the shoe and is secured therein by the excess material which was extruded into the vents thereby forming the lugs 15 integral with the arch support. However, the support may be taken out  
50 and be used in any other shoe of the patient. In the latter case, the lugs which were formed by the extruded material are removed.

With reference to Figure 3 there is illustrated a method of forming lasts by means of which 55

orthopedically correct shoes may be made. In carrying out this procedure, a shoe is provided with a support 16 which has been made in accordance with the practice described in conjunction with Figure 1. The shoe is then filled with a plastic mass 17, such as "plaster of Paris", which will harden in a relatively short period of time. When the mass 16 becomes hard it is taken out of the shoe and the sole portions thereof will have the same configuration as the contour of the support.

As illustrated in Figure 4 the last 17 is provided with a layer of plastic material 18 along the bottom thereof and a form 19 is placed therealong, the latter having a plurality of vents 20 extending therethrough. The entire assembly is then strapped together by means of straps 21 and the plastic material 18 is caused to take the shape of the bottom of the last 17. Any excess material is permitted to be extruded through the holes or vents 20. When the plastic material 18 has hardened an arch support is provided which can be used in any shoe of the patient.

With reference to Figure 5 there is illustrated a method of improving an existing arch support according to this invention. The arch support 22 previously positioned within a shoe 23 is covered with an excess amount of plastic material as illustrated at 24. The support 22 is provided with a vent 25 in alignment with a vent 26 extending through the sole of the shoe 23. The patient puts on the shoe and walks with it for several hours so that the mass 24 assumes the proper shape before getting hard on the support 22. Any excess material is permitted to escape through the vents 25 and 26.

This method offers special advantages for changing imperfections in existing supports

which have been previously made by the physician on the basis of the bone and muscular construction of the foot. The distribution of the mass on the support shows the physician where corrections should be made.

Having thus described our invention so that those skilled in the art may understand the same, we have set forth what we desire to secure by Letters Patent in the appended claims.

We claim:

1. The method of manufacturing orthopedic boots or shoes which includes the steps of covering the inner sole of a shoe with a plastic mass capable of ready solidification, shaping the plastic mass to the contour of the sole of a human foot and impressing said contour therein by subjecting the plastic mass to said foot, walking upon the mass thus extruding excess portions thereof through vents extending through the soles of said shoes, then permitting the mass to harden in the form impressed thereon while in contact with said foot.

2. The method of manufacturing orthopedic boots or shoes which includes the steps of covering the inner sole of a shoe with a plastic mass capable of ready solidification, shaping the plastic mass to the contour of the sole of a human foot and impressing said contour therein by subjecting the plastic mass to said foot, walking upon the mass thus extruding excess portions thereof through vents extending through the soles of said shoes, interrupting the extrusion of plastic material through the vents, then permitting the mass to harden in the form impressed thereon while in contact with said foot.

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