Aug. 9, 1938. D. R. BRADY 2,126,608

SHOE FITTING INDICATOR

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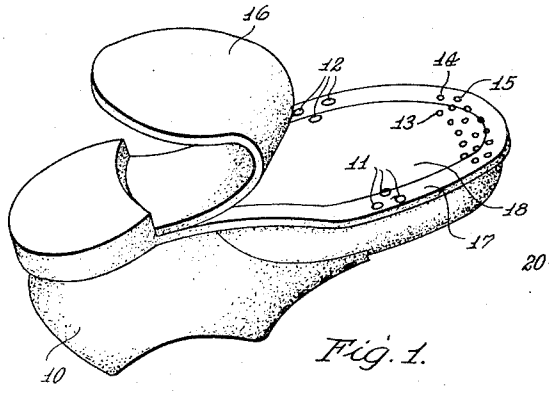



Fig. 1.

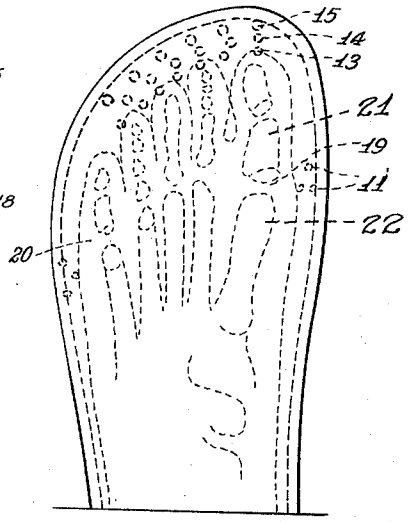



Fig. 2.

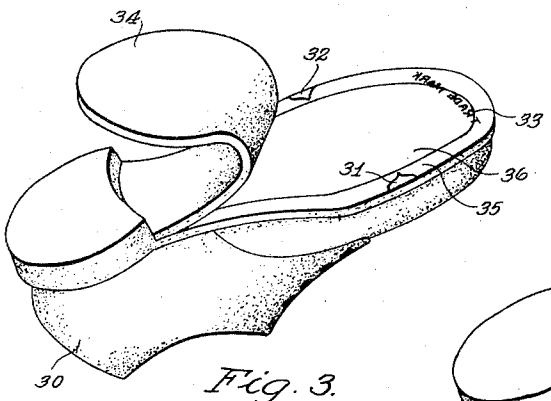



Fig. 3.

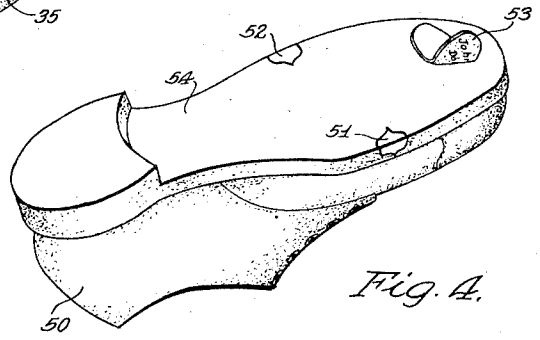



Fig. 4.

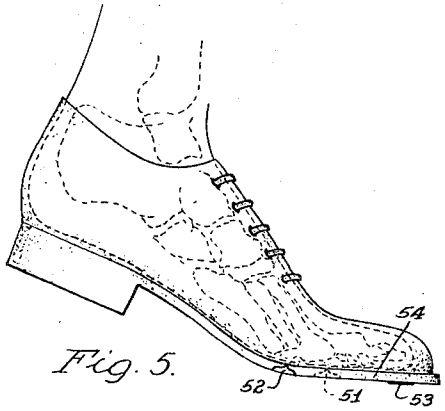



Fig. 5.

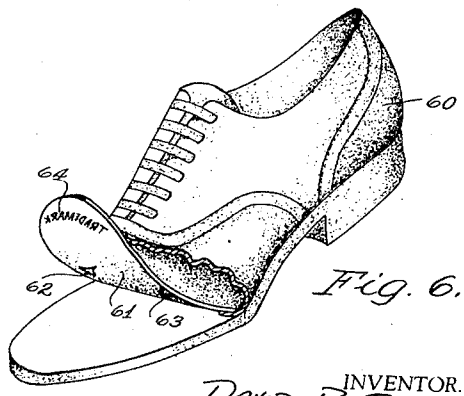



Fig. 6.

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## SHOE FITTING INDICATOR

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3 Claims. (Cl. 36—1)

This invention relates to the art of fitting shoes by radiographic and fluoroscopic means and has for one of its principal objects the provision of means that enable the customer to visually perceive that the shoes are fitted properly. An expert shoe fitter can tell by the feeling of the shoe on the foot whether it fits properly, but customers, who generally have little experience in the matter, are sometimes reluctant to believe that a strange-feeling new shoe is right. In fitting children's shoes, the final decision concerning the fit of the shoe usually rests with the parent, and it is desirable to completely satisfy the latter that the fit is correct. For this purpose there have been provided fluoroscopes adapted to receive the forward three quarters of a child's foot and to show, by X-rays and a fluoroscopic screen, the relation of the bones and outline of the foot to the outline of the shoe, both in plan and in elevation. Such a showing is fairly convincing, but often there is still a lingering doubt in the mind of the parent who cannot recognize the proper relation between the shadow of the bones and the outline of the foot and the outline of the shoe.

One of the principal objects of this invention is to provide suitable reference points on a shoe that will appear with the bones and the outline of the foot in the fluoroscope so that the parent can see that there is the proper relation between the shadows of reference points and the bones and be convinced that the shoe fits properly.

Another object of this invention is to provide means by which an inexperienced person can determine when a shoe becomes too short for a growing child's foot and needs to be replaced.

Another object of this invention is to provide a means whereby the shoe fitter may have a final visual check on his work.

Other objects of this invention will appear from the following description and the accompanying drawing referred to therein in which:

Figure 1 is a perspective view of a shoe embodying my invention, with the outsole turned back to reveal the structure.

Figure 2 is a view showing the appearance of the shoe shown in Figure 1 when it is properly fitted to a child's foot and is viewed by means of a fluoroscope.

Figure 3 is a view similar to Figure 1 but showing a modified form of my invention.

Figure 4 is a view similar to Figure 1 but showing a further modified form.

Figure 5 is an X-ray side view of the shoe shown in Figure 4 on a foot which it fits properly.

Figure 6 is a broken away perspective view showing a fourth embodiment of my invention.

One of the preferred forms of my invention, shown in Figure 1, comprises a shoe 10 with small indicating discs 11, 12, 13, 14 and 15 placed between the outsole 16 and the welt 17 and filler 18. The discs 11, 12, 13, 14, and 15 may be formed of any material, such as lead foil, which is relatively impervious to X-rays. Other materials, which are in some cases easier to fix in or on the shoe, are rubber containing a large quantity of lead, like the rubber in the rubber gloves worn by diagnosticians using X-rays, and the kind of ink, known as Finzi's ink, which is impervious to X-rays.

The indicating discs 11, 12, 13, 14 and 15 are arranged as shown in three groups. One group of discs 11 lies at the inner edge of the shoe and lies opposite the point at which should be located the lateral bulge in the outline of the boot at the joint 19 between the first metatarsal 22 and the first phalange 21 of the big toe. The second group of discs 12 is similarly located at the outer edge of the shoe and indicates the proper position of the lateral bulge at the corresponding joint 20 in the little toe. The third group of discs 13, 14 and 15 is arranged in three rows extending across the toe of the shoe to indicate where the ends of the toes should be. The first and third rows of discs 13 and 15 indicate the proper position of the toes for the shortest and longest feet respectively which can be properly fitted by the shoe. With this arrangement, shoes for children are selected of such a length that the toes of the child just reach the first row of discs 13 as shown in Figure 2. As the child grows, the foot lengthens and becomes too long to be properly fitted by the shoe. When this occurs, it is shown by the toes reaching the last row of discs 15, whereupon the shoes should be discarded and larger shoes fitted.

It will be seen from the drawing that these dots 11 and 12 are placed to indicate the relation of that part of the shoe to which they are attached to the fleshy part of the foot. It will be understood that the fleshy part of the foot opposite the ball of the foot and opposite the ball of the fifth metatarsal are the points where bunnions may occur and proper relation of the shoe with these points is more important than the relation of the shoe and bones. A correct fitting is determined by the length as indicated by the position of the toes, the positions of the inner and outer

longitudinal arches, the width as determined by the tarsal and metatarsal regions and the flare. The flare is indicated by the angularity of the median line of the shoe with a line joining the center of the fleshy part opposite the ball of the foot with the center of the fleshy part opposite the fifth metatarsal. These fleshy parts are indicated by the dots and if the dots indicate a fitting for one fleshy part but an improper fitting of the other then the flare is wrong. It will be seen that the longitudinal position of the flare line will be erroneous unless the position of the fleshy part of the toes is taken into consideration.

A second form of my invention, shown in Figure 3, comprises a shoe 30 with impervious indicators 31, 32 and 33 placed between the outsole 34 and the welt 35 and filler 36 as in the first described form of the invention. In this form, however, the indicators 31 and 32 at the sides of the shoe are single comparatively large pieces of foil, and the indicator for the ends of the toes comprises a row of letters spelling out the trade name of the shoe or the name of the manufacturer or supplier. In this embodiment, the bottom of the line of lettering corresponds to the first row of discs 13 in the embodiment illustrated in Figures 1 and 2 and indicates the proper position of the ends of the toes when the shoe is being selected for a child's growing foot. Similarly the top of the line of lettering corresponds to the last row of discs 15 and indicates when larger shoes are needed. All the letters should be arranged as shown so that they will correct when seen with the fluoroscope from above, as they will be when the fit of the shoe is being observed.

A third form of my invention, shown in Figure 4, is adapted to be placed on a shoe 50 after it is manufactured. In this form, the indicators 51, 52 and 53 are cemented to the outside of the sole 54 instead of being placed within the sole when the shoe is being made, as is the case with the two previously described forms of my invention. Each of the indicators 51 and 52 at the ball of the foot consists of a small piece of lead foil bent around the edge of the sole 54 at the proper point, one at each side of the shoe, and cemented in place.

With these indicators and a fluoroscope which allows the foot to be viewed from the side, the side view, shown in Figure 5, gives an excellent indication of the fit of the shoe. When the shoe is a proper fit and the heel is raised with the weight on the ball of the foot, the side indicators 51 and 52 should appear just below the joints in the ball of the foot, where the foot bends.

The indicator 53 for the ends of the toes consists in the name of the manufacturer, jobber, wholesaler, or retailer spelled out in letters of lead foil cemented to the bottom of the sole and covered by a label 55 of paper or other material. In applying these letters 53, it is convenient to cement them first in their proper relative positions to the back of the label 55 and then cement the label 55 and letters 53 to the shoe.

The side indicators 51 and 52 are also useful even in the absence of a fluoroscope because they are directly visible to the eye and because the part of them that extends up the edge of the sole can be seen when a person wearing the shoe is standing on that foot. This property enables a person unskilled in the fitting of shoes to see that, when the weight placed on the ball of the foot and the heel is raised, the joints in the ball of the foot, which is where the shoe will bend, are in line with the markers or indicators 51 and 52. After the shoe is fitted, the side markers 51 and 52 can be removed to restore the appearance of the shoe to normal.

The embodiment of my invention shown in Figure 6 is especially adapted for use in connection with a shoe 60 having a sock lining 61. In this embodiment, the indicating marks 62, 63 and 64 are cemented or imprinted on the bottom of the sock lining before the latter is placed in the shoe, and serve the same purpose as the markers or indicators in the shoes shown in Figures 1 and 3. Obviously the marks can be arranged in any desired pattern, such as those shown in the other embodiments, and other nonfunctional advertising matter can be imprinted with them.

What I claim is:

1. The combination of a shoe, including a sole, with hidden means secured to said sole and composed of X-ray absorbing material, said means comprising a row of letters extending across the toe, the bottom and top of said row of letters indicating the limits between which will lie the ends of the toes of a foot which the shoe fits properly.

2. The combination of a shoe and X-ray absorbing means secured to said shoe, one of said means being positioned immediately beneath that region of said shoe where the fleshy part of the contained foot laterally of the ball thereof must reside for proper fit, another of said means being positioned immediately beneath that region of said shoe where the fleshy part laterally of the center of the fifth metatarsal must reside for proper fit.

3. The combination of a shoe and X-ray absorbing means secured to said shoe, one of said means being positioned immediately beneath that region of said shoe where the fleshy part of the contained foot laterally of the ball thereof must reside for proper fit, another of said means being positioned immediately beneath that region of said shoe where the fleshy part laterally of the center of the fifth metatarsal must reside for proper fit, and X-ray absorbing means for indicating the position of the fleshy covering over the ends of the toes.

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