Dec. 13, 1932. A. MARSHALL 1,890,910

ARCH SUPPORT

Filed Feb. 12, 1932

Fig. 1

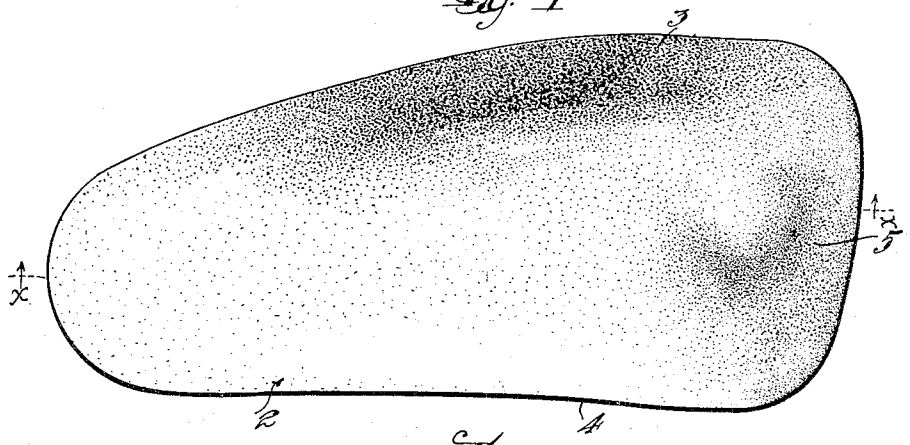


Fig. 2

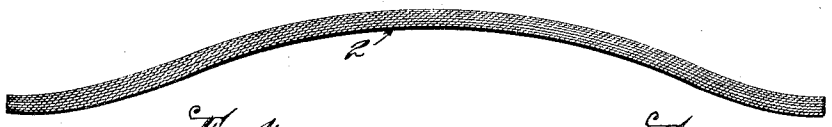


Fig. 4

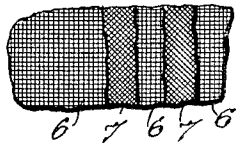


Fig. 5

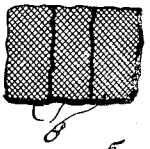
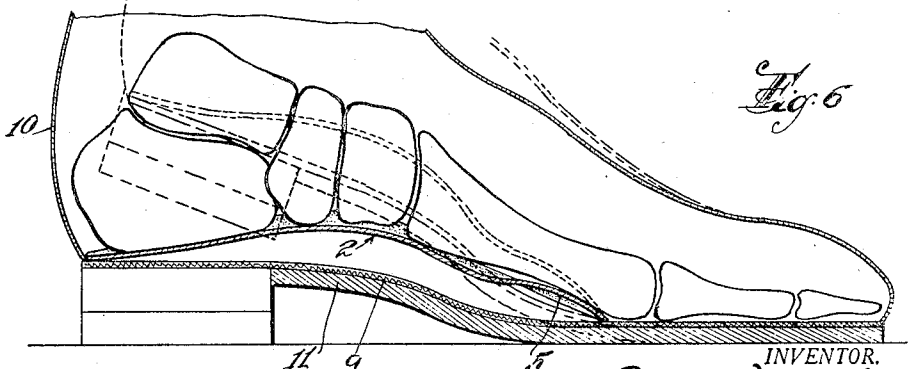


Fig. 3

Fig. 6



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UNITED STATES PATENT OFFICE

ADAM MARSHALL, OF NEWARK, NEW JERSEY

ARCH SUPPORT

Application filed February 12, 1932. Serial No. 592,480.

This invention relates generically to arch supports, but specifically to a structure of this kind that is formed of laminated fabric which is treated with a phenolic condensation cementing material or some other commercial form of synthetic resin, the said fabric being a standard article of manufacture prepared and used for articles of this kind or for any purpose where such fabric is desired.

A plurality of strips of the treated fabric are cut with dies, some being cut longitudinally, others cut transversely, while still others are cut on the bias and the complete number pressed together under heat and formed into a unitary article as shown. A greater or lesser number of strips may be used as per requirements in individual cases.

The invention is comprised in the structure, configuration and novel application of this article to orthopedic uses as will be hereinafter particularly pointed out and specifically claimed.

One object of this invention is to provide an article of this kind that is constructed of uniform thickness:—a desideratum of importance in massaging the arches of the foot by causing an even pressure thereon. This produces the necessary action on the bones to keep them in their normal positions or to gradually adjust said bones to their natural positions when they become misplaced from using improperly constructed shoes or from other causes.

Another object of this invention is the provision of means to stimulate the circulation of blood in the foot thereby aiding the user to correct and relieve cramps and other foot ailments caused from fallen or distorted arches.

Another object is to form a flexible bridge-plate adapted to rest on its extremities only, spanning the entire shank of shoe, thus causing continuous backward and forward stresses on the bridge-plate as the foot is raised and lowered in walking, and although these stresses are alternately reversed the article is virtually indestructible.

Another object is to provide an article of this kind that is adapted to conform to an individual foot regardless of the type, style or shape of the shoe and is not fastened in the shoe but is adapted for use only by the person for whom it is made.

Another object is the provision of a stiff, rigid and strong front edge to this article to give proper pressure to the metatarsal arch and bones thereof.

Another object is to provide an orthopedic foot arch corrector and automatic foot massager that is made of material that is a non-conductor of heat and therefore will not impair the blood circulation as will devices made of metal or other heat-conducting materials, and further,

To provide a corrector and massager constructed on anatomical lines which cause the foot to conform to the surface of the support, while the support must not conform to the inner sole of a shoe, and again

To provide an orthopedic foot arch corrector and automatic foot massager that is non-oxidizing, non-corrosive and non-metallic, designed to fit the plantar surface of the foot and correctly massage and adjust the arches of the foot to the normal and natural position.

The resilient or massaging action under the outer and inner longitudinal arches as well as under the metatarsal arch allows proper movements at the various joints.

Another object is to provide a resilient support for the outer longitudinal arch of the foot so that the foot is not rotated outwardly in walking and the shoe is worn straight.

Other objects and advantages will become apparent in the following specification which taken in connection with the accompanying drawing forms part of this application, of which,

Figure 1 is a top plan view of a preferred embodiment of the invention,

Figure 2 is a longitudinal section of same, to show more clearly the individual laminations before they are pressed into a unitary article,

Figure 3 is a longitudinal section on line *x*—*x* of Fig. 1, showing the corrector and massager in its normal position at line A and in a compressed position at the dotted lines thereunder,

Figures 4 and 5 show the laminations placed longitudinally, transversely and on the bias. This is the normal structure of the article, and

Figure 6 shows the article placed in a shoe and compressed in the lower part of the diagram as shown in the solid lines, while the upper dotted lines show the shoe raised as in the process of walking. The natural position of the bones is also shown.

Like numerals of reference indicate like parts in the several figures of the drawing, of which,

The numeral 2 indicates a foot arch corrector and massager rounding upwardly toward edges 3 and 4 and having a boss 5 formed adjacent the forward end thereof.

The embodiment shown is preferably constructed of various layers of unbleached muslin or other fabric treated as above described and pressed together as shown in Figures 4 and 5 where the numeral 6 indicates a strip cut longitudinally, 7 represents a strip cut transversely, while 8 shows another strip cut on the bias.

The boss 5 is formed in a position on the corrector and massager to conform with the second, third and fourth metatarsal bones and adjust them to their proper anatomical positions relative to the foot, while the upwardly rounding portions 3 and 4 tend to keep the foot in correct lateral relation to the support as well as acting to prevent the edges of said support from cutting the shoe.

It will be noted that this interchangeable orthopedic foot arch corrector and constant automatic foot massager is not an insole, neither is it the ordinary type of arch support insole that merely strengthens a portion of the shoe without the definite principle of correcting foot ailments independent of the shoe by massaging, stimulating blood circulation, building and strengthening the muscles, tendons and ligaments and forcing the bones of the foot back to their proper position. This corrector and massager is used for the inner and outer longitudinal arches and anterior transverse arch to bring relief to sufferers with one or all of the following foot ailments:—callouses, corns, bunions, hammer toe, cramped toes, club foot, rheumatic-like foot and leg pains, weak or fallen arch, swollen ankles, sore heels, flat foot, and excessive perspiration.

It should be further noted that this support 2 spans the insole 9 of the shoe 10, producing a massaging action on the bottom surface of the entire foot resting on the support thereby massaging the muscles, tendons and ligaments of the foot, strengthening them so that the arches are brought back to their normal and correct position.

Blood circulation is also stimulated diminishing perspiration and warming the feet. The resilient action thus obtained under the bone structure of the foot allows continuous and normal circulation at the various joints, a necessary factor not obtained if the support is rigid or lies on the shank of the shoe.

The spanning of the shank 11 of the shoe as shown also protects the shank from breaking down under pressure from the foot. This feature is not obtained with an insole which depends on the shank of the shoe for support. These features and advantages are clearly illustrated in Figure 6.

This invention may be constructed of any material and made any size deemed suitable for all the requirements of such an article, and while a preferred form is illustrated and described, it is desired to use any substitute or equivalent that lies within the scope and purview of the appended claims.

The foregoing disclosure is to be regarded as descriptive and illustrative only, and not as restrictive or limitative of the invention, of which obviously an embodiment may be constructed including many modifications without departing from the general scope herein indicated and denoted in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. An orthopedic arch support comprising a plurality of laminated strips of woven fabric impregnated with a phenol condensate, superimposed longitudinally, transversely and diagonally with respect to each other and made into a unit of uniform thickness under heat and pressure to form a front resting portion, a boss adjacent said front resting portion to stimulate circulation in the metatarsal region, a rear or heel resting portion, and a supporting resilient bridge intermediate said front and rear resting portions.

2. An arch support comprising a plurality of strips of unbleached woven fabric impregnated with a phenol condensate, laminated longitudinally, transversely and diagonally in alternate order and moulded into a unit of uniform thickness under heat and pressure to form a flexible bridge-plate adapted to rest on its front and rear extremities, a boss adjacent the front extremity to provide articulation of the metatarsal-phalangeal junction, and means to hold the foot in normal lateral position relative to the support.

3. An orthopedic arch support, comprising

ing a plurality of laminated strips of woven fabric impregnated with a phenol condensate and cut to predetermined sizes and superimposed longitudinally, transversely and diagonally with respect to each other in alternate order, said strips being formed into a unit of uniform thickness under heat and pressure, said unit being balanced at its front and back extremities to provide a resilient bridge intermediate said extremities.

This specification signed this 11th day of February, 1932.

ADAM MARSHALL.