

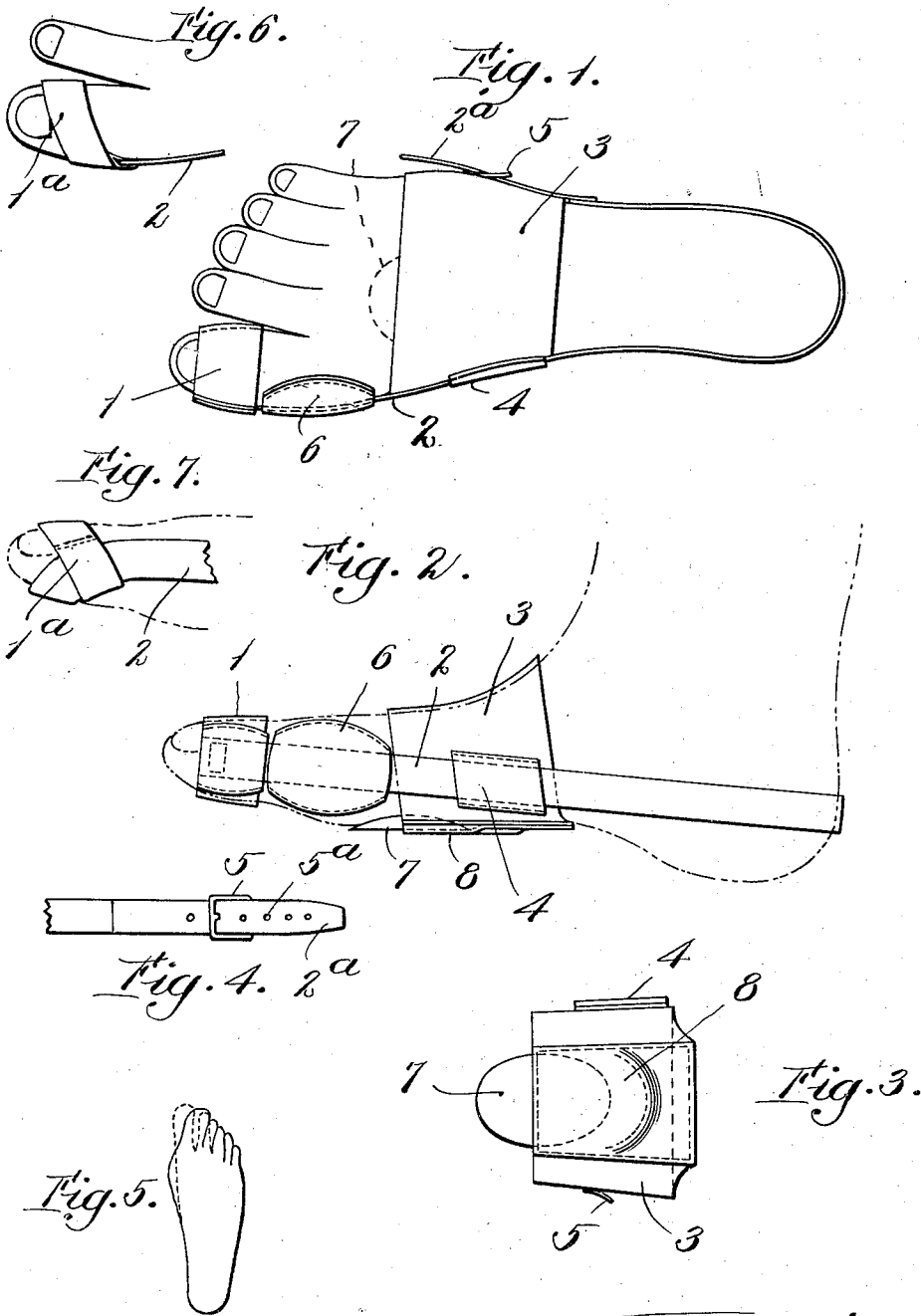
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CORRECTIVE APPLIANCE FOR FEET

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# UNITED STATES PATENT OFFICE

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## CORRECTIVE APPLIANCE FOR FEET

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This invention relates to orthopedic or corrective devices for the human foot, and is intended to correct posture of feet afflicted with bunions or enlarged great-toe joints, which deformation is usually attended with pronation of the anterior or transverse arch of the foot.

Enlargement of the great-toe joint or so-called bunions are caused, in part, by the forcing inward of the big toe due usually to wearing shoes that are too short or too narrow, and this squeezing together of the toes cramps the muscles of the forepart of the foot, usually producing pronation or flattening of the anterior arch that extends across this part of a normal foot, all resulting in producing unnatural and painful strains on the muscles not merely of the foot and leg, but even of the lumbar and dorsal portions of the trunk.

Various devices have been proposed for the correction of such displacement or distortion but no really efficacious device, capable of eliminating or correcting this trouble, has been produced.

In the present improvement means have been provided that may be worn in the shoe and yet act to restore the inturned great-toe to its normal position, while leaving the foot muscles free to function normally, and also providing a yielding and elastic support for the fallen transverse arch tending to restore the arch to normal posture. A characteristic feature of the invention resides in the employment of a sleeve-encircling the medial part of the toe to whose exterior side is secured a rearwardly extending pull-strap passing outside the enlarged joint or bunion, combined with means for preventing displacement of the pull-strap from its exterior relation to the joint and for anchoring its other end, whereby an outward pull is exerted on the great-toe to restore and retain the toe in normal straightened position.

These and other features of the invention will be particularly described in the following specification and will be defined in the claims annexed.

In the accompanying drawings there is illustrated a practical and convenient embodi-

ment of the principles of this invention, in which:

Figure 1 is a plan view showing the outline of the foot with my improved corrective device properly applied thereto.

Figure 2 is a side elevation of the device applied to the foot whose outline is shown in dotted lines.

Figure 3 is a bottom plan view showing the pull-strap positioning and anchoring member comprising a band or elastic girdle encircling the waist portion of the foot.

Figure 4 is a detail view showing in side elevation an adjustable buckle and strap connection for anchoring the pull-strap in position.

Figure 5 is a diagrammatic view on a small scale showing the outline of a foot with an enlarged great-toe joint whose corrective position, produced by the wearing of this appliance, is indicated in dotted lines.

Figures 6 and 7 are detail views of a modified form.

In the practice of this invention, according to the form illustrated in the drawings, I provide a sleeve 1, of elastic or soft material adapted to fit around the medial portion of the great-toe. To the exterior side of this band is secured, by stitching or in any suitable manner, a pull-strap 2 which extends rearwardly, and in the form illustrated is of sufficient length to be passed around the heel of the foot to a suitable anchorage to be described. The pull-strap is made partly or wholly of elastic material so as to maintain it under tension after it is anchored in position.

As the pull-strap should pass around the outside of the enlarged joint it will have a greater or less tendency to slip away from its proper position. To retain the pull-strap in proper position, therefore, I provide guiding means which, in this case, comprises an open ended sleeve 4 which is stitched to a foot-encircling band or girdle 3, that is preferably made in part or entirely of elastic webbing, and which is drawn on over the toes to encircle the waist and instep portion of the foot. The sleeve pocket 4 may be made of soft leather stitched against the side of this band 3.

On the opposite or little toe side of the foot a thin flat buckle 5 is stitched or otherwise secured to the positioning band 3, the tongue 5<sup>a</sup> taking in to one of a longitudinal series of holes formed in the strap end 2<sup>a</sup> of the elastic or tensioning pull-strap. This provides means for adjusting the tension or pull of the strap, and any equivalent means for accomplishing this may be employed.

To protect the inflamed great-toe joint against chafing of the shoe, a small pad 6, of soft material in the form of a flat sleeve may be slipped over the pull-strap in front of the positioning band 3, this pad acting not only to protect the joint, but also to carry the pull-strap a little farther outside of the joint so as to aid in producing the desired outward pull against the toe, and may be made of any soft material suitable for the purpose.

The deformation of the toe is usually attended by the concomitant deformation of the anterior or transverse arch of the foot, and to aid in restoring the arch from its flattened to its normal arch position I provide the bottom of the foot-encircling band with an elastic compressible pad 7 of soft porous rubber. In order to permit proper positioning of the pad beneath the middle portion of the anterior arch, I make provision for adjusting the same since its accurate positioning is of great importance. If positioned to fall behind the arch it fails to function, and if positioned to fall forward it may cause discomfort and fail of its proper action.

In the present form of the appliance I provide the bottom portion of the band 3 with a shallow longitudinal pocket which is stitched or otherwise secured to the band so that the elastic arch-supporting pad may be inserted therein and positioned to the correct point lengthwise of the foot to afford a yielding support for the medial portion of the anterior arch. This construction not only allows the proper positioning of the arch-supporting pad for different feet, but allows its ready removal and replacement by a new pad when the rubber has become unduly compressed through wear.

The appliance may be worn at night after the shoe is removed, and it may also be worn in a shoe of appropriate size.

It will be observed that the arrangement is such as to secure an outward rather than a rearward pull against the great-toe, thereby restoring it to normal position, the correct position of the pull-strap being maintained by the guide-sleeve 4 on the band 3, while the tension may be adjusted through the adjustments of the strap end 2<sup>a</sup>, in relation to the anchoring member 5. The pull-strap passes through the flat, tubular sleeve pad 6, so that it may be stretched rearwardly without affecting the position of said pad which should be kept in place over the enlarged joint when it is used. The use of said pad is,

of course, optional. By straightening or drawing outward the great-toe the other toes are given a chance to expand, thus relieving them of the cramping action of the inflamed great-toe, while the device gives the muscles of the foot freedom to adjust themselves to proper normal position in which they are aided by the elastic arch-supporting pad adjustably positioned in the bottom of the foot-encircling band.

As shown in Figures 6 and 7, the toe encircling sleeve member, instead of being made as a separate piece to which the forward end of the pull strap 2 is attached by stitches or the like, may be made in the form of a slip-noose 1<sup>a</sup> integral with the elastic strap 2. This has the advantage of automatically adjusting itself to the size of the toe to which it is applied.

What I claim is:

1. A corrective appliance embracing a sleeve adapted to encircle the medial portion of the toe, an elastic pull-strap secured to the outer side of said sleeve, a band adapted to encircle the waist portion of the foot, said band being provided on one side with a guide member through which said strap is passed to retain the strap in position outside of the toe joint, and having on the opposite side means for anchoring the free end of the strap.

2. A corrective appliance embracing a toe-encircling sleeve, an elastic strap whose forward end is secured to the outer side of said sleeve, and is passed rearwardly outside of the toe joint and around the heel of the foot, strap-positioning and holding means comprising an elastic band adapted to encircle the foot to the rear of the toes and provided on one side with a guide member for the passage of the pull-strap, and on the opposite side with means for adjustably anchoring the free end of the pull-strap.

In witness whereof, I have subscribed the above specification.

FREDERICK GEORGE PAGE.