W. M. LUDWIG.

ARCH SUPPORTER.

APPLICATION FILED AUG. 4, 1920.

1,389,767. Patented Sept. 6, 1921.

Fig. 1.

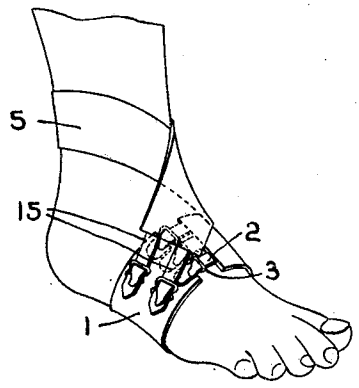


Fig. 2.

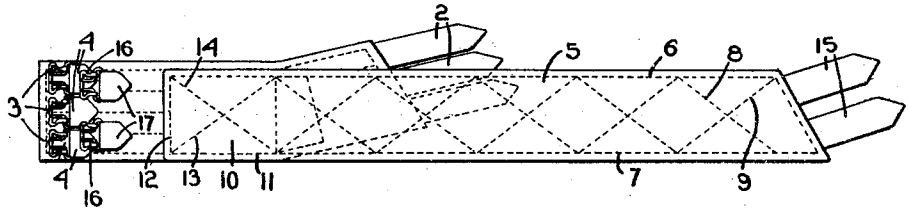


Fig. 3.

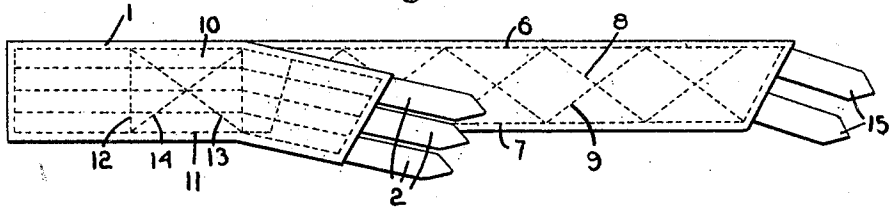
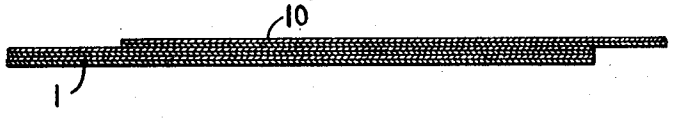


Fig. 4.



Inventor.
Walter M. Ludwig
by Heard Smith & Tennant.
Attys.

UNITED STATES PATENT OFFICE.

WALTER M. LUDWIG, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO FEDERAL ARCH-LIFT MANUFACTURING COMPANY, A CORPORATION OF MASSACHUSETTS.

ARCH-SUPPORTER.

1,389,767. Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed August 4, 1920. Serial No. 401,199.

To all whom it may concern:

Be it known that I, WALTER M. LUDWIG, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Arch-Supporters, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to improvements in arch supporters and the principal object thereof is to provide an arch supporter which will retain the displaced members of the fallen arch in normal position.

A further object of the invention is to provide an arch supporter which may be applied directly to the foot to retain the members of a fallen arch in normal position which may be worn beneath the stocking and thereby be hidden from view.

A further object of the invention is to provide an arch support of the character described which may be adjustable to cause the same properly to embrace the foot and to support the members of the foot in normal position.

Other objects and features of the invention will appear more fully from the accompanying description and drawings and will be pointed out in the annexed claims.

In the drawings—

Figure 1 is a view of a foot having an arch support embodying a preferred form of my invention applied thereto.

Fig. 2 is an under side plan view of a preferred form of arch supporter embodying my invention.

Fig. 3 is a top plan view of the same.

Fig. 4 is a detail longitudinal sectional view of a reinforced arch embracing section of the arch supporter showing the manner in which one end of the ankle embracing section is secured thereto.

The usual forms of support for a fallen arch comprises a reinforced member or plate which forms a part of the shoe or is placed within the shoe beneath the plantar arch of the foot to hold up the fallen arch in approximately normal position. Such support however instead of holding together the ends of the bones which have become more or less separated by the stretching of the ligaments of the arch tends to cause them to separate further and hold the members of the foot in unnatural positions.

The present invention contemplates the provision of an arch support which not only will raise the arch to its normal postion but will hold the ends of the bones of the foot which have been separated closely together and thus aid nature in restoring the foot to its normal condition.

The invention broadly stated comprises a bandage, having a section, preferably adjustable in length which embraces the arch and instep portion of the foot and a supporting section connected thereto which embraces the ankle. This ankle embracing section not only has the effect of supporting the arch and instep embracing portion but tends to draw the same rearwardly or toward the heel so that the bones and muscles of the foot are restored to their natural position and so retained in position that the arch will eventually be strengthened and restored to its normal condition.

A preferred embodiment of the invention illustrated in the accompanying drawing comprises an arch and instep embracing section 1 which preferably is formed of a plurality of superimposed plies of more or less loosely woven fabric which are secured together under tension by rows of stitching preferably running longitudinally of the bandage so that the elasticity of the fabric will not be destroyed or lessened by reason of the stitching which secures the plies together. Adjustable means are provided for securing the ends of this bandage together which as illustrated herein preferably comprises a plurality of tabs 2 of inelastic material which are secured to one end of the section of the bandage and coöperating buckles 3 secured by suitable holders 4 to the other end of said section. The supporting section 5 which is adapted to embrace the ankle of the foot desirably also comprises a series of plies of more or less loosely woven elastic, but rubberless fabric which are secured together by rows of stitching while the fabric is under tension. Preferably rows of stitching 6 and 7 extend longitudinally of said supporting section adjacent the edges thereof and ob-

liquely disposed transverse rows of stitching 8 and 9 traverse said section in a manner ordinarly known as quilting.

One end 10 of the supporting section which is adapted to embrace the ankle preferably underlies the arch portion of the arch and instep embracing section and is secured thereto by longitudinal and transverse lines of stitching 11 and 12 which leaves the end portion of the arch and instep embracing section free to be brought upwardly around the foot. Obliquely disposed lines of stitching 13 and 14 may also be provided to more firmly secure the supporting section to the arch and instep embracing section thus providing further reinforcement for the end portion of the arch and instep embracing section and also providing a thickened portion to rest upon the arch of the shoe. The other end of the supporting section which embraces the ankle is provided preferably with a plurality of tabs 15 which desirably are obliquely arranged relatively to the longitudinal axis of said section and are adapted to be engaged by suitable buckles 16 suitably secured by holders 17 to the upper face of the arch and instep embracing section. These buckles preferably are located beyond the buckles 3 of the arch and instep embracing section so that when the arch support is applied to the foot the supporting section will cross the upper instep of the foot and ankle diagonally as illustrated in Fig. 1.

It will be noted that when the arch support is applied to the foot as above indicated the supporting member which embraces the ankle extends around the tendon Achilles so that when the arch supporter is being worn the tension placed upon the tendon Achilles at each step tends to draw upon the supporting section and thereby to draw the arch and instep supporting section rearwardly as the weight of the body is placed upon the toe portion of the foot. Thus the arch support most effectively draws the displaced members of the foot together when the greater weight is placed upon the toe portion of the foot and releases the pressure as the weight is withdrawn from the toe portion of the foot and when the weight is fully withdrawn the supporter merely retains the members of the foot in normal position without imposing any undue strain upon them. By this construction the greatest degree of comfort is given to the wearer of the arch support at all times while the members of the foot are so retained in proper position that nature is enabled soon to restore the foot completely to its normal strength.

It will be understood that the embodiment of the invention disclosed herein is of an illustrative character and is not restricted and that various modifications in construction, material and arrangement of parts may be made within the spirit and scope of the following claims.

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

1. An arch support comprising a bandage of flexible material to embrace the arch and instep portion of the foot, means for adjusting said bandage and an adjustable supporting member connected to said bandage opposite the sides of the foot, and extending around the ankle to embrace the Achilles tendon.

2. An arch support comprising a bandage of flexible material to embrace the arch and instep portion of the foot, means for adjusting said bandage, and a supporting member so connected thereto at its ends as to extend around the ankle and embrace the Achilles tendon and overlap and cross upon the instep portion of the foot.

3. An arch support comprising a bandage of flexible material to embrace the arch and instep portion of the foot, means for adjusting said bandage, a supporting member so connected thereto at its ends as to extend around the ankle and embrace the Achilles tendon and overlap and cross the instep portion of the foot and means for adjusting the length of said supporting member.

4. An arch support comprising a bandage of flexible, elastic but rubberless, material, to embrace the arch and instep portion of the foot, means for adjusting said bandage, a supporting member connected to said bandage at its ends and having one end extending beneath the portion of the bandage which engages the inner and higher arch portion of the foot, said supporting member being so positioned as to extend around the ankle to embrace the Achilles tendon and to overlap and cross upon the upper instep portion of the foot.

5. An arch support comprising a bandage of flexible elastic material having a section adjustable in length to embrace the arch and instep portion of the foot and a section to embrace the ankle having one end secured to the under side of the arch embracing portion to reinforce the same and the other end having a plurality of tabs disposed obliquely to the longitudinal axis of said arch embracing section and coöperating buckles upon said arch embracing section whereby the supporting member may be caused to cross the instep of the foot.

6. An arch support comprising a bandage having an adjustable instep and arch embracing portion consisting of a plurality of superimposed plies of elastically woven rubberless fabric and an adjustable ankle-supporting section also of elastically woven rubberless fabric having its ends secured to said bandage opposite the sides of the foot and

extending around the ankle to embrace the Achilles tendon, the superimposed plies of fabric of both sections being secured together by rows of stitching applied when the fabric is under tension.

7. An arch support comprising a bandage having an instep and arch embracing portion consisting of a plurality of superimposed plies of elastically woven rubberless fabric and an ankle supporting section having one end underlying the end portion of the arch embracing section comprising a plurality of superimposed plies of fabric, the plies of fabric of both sections being secured together by rows of stitching applied when the fabric is under tension and adjustable means respectively for securing the ends of the arch and instep embracing portions together and the free end of the ankle embracing portion to the arch and instep embracing portion.

8. An arch support comprising a bandage of flexible material to embrace the arch and instep portion of the foot, a supporting member having one end connected to said bandage at the side of the foot and extending around the ankle to embrace the Achilles tendon and releasable means for securing the other end of said supporting member to cause said supporting member to cross upon the instep portion of the foot.

In testimony whereof, I have signed my name to this specification.

WALTER M. LUDWIG.