

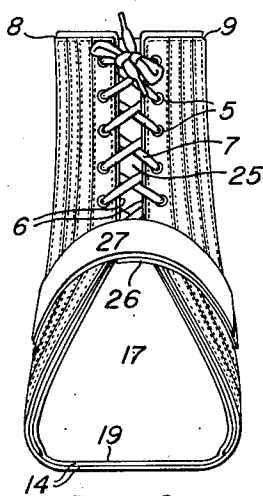
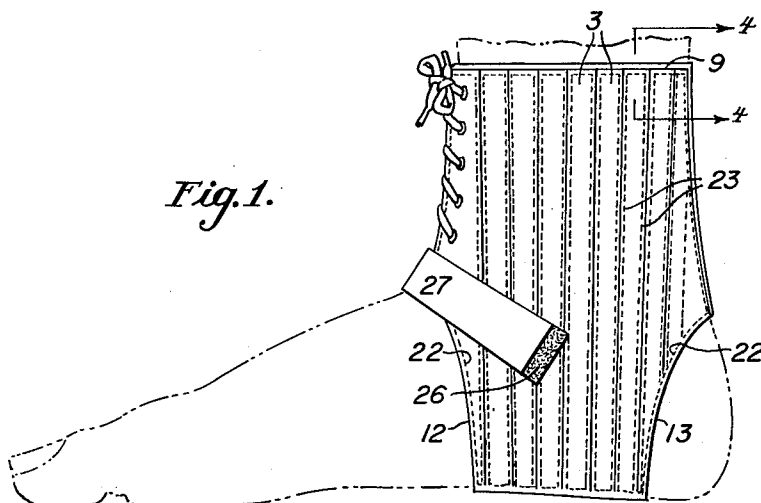
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ANKLE SUPPORTER

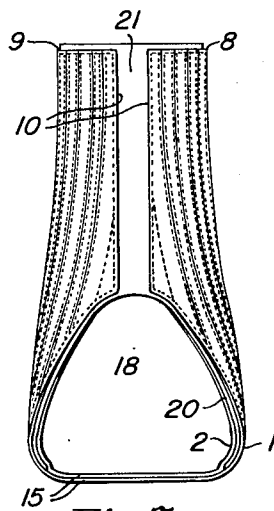
3,028,861

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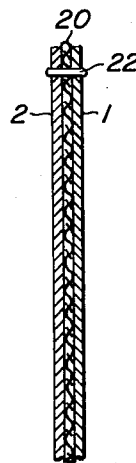
*Fig. 1.*



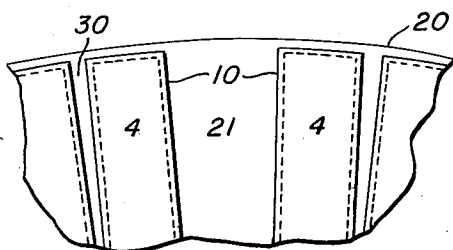
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Fig. 5.*

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## ANKLE SUPPORTER

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2 Claims. (Cl. 128-166)

My invention relates to ankle supporters primarily for those engaging in relatively strenuous physical activity, such as baseball players, skiers and the like whose ankles are frequently subjected to unusual stresses but who for maximum comfort and agility must retain complete freedom of movement of the ankle in all normal directions and within normal amplitudes.

Elastic bandages for the ankles of athletes have been in more or less common use but are objectionable primarily in that they exert constricting pressure on the ankle at all times if fitted tightly enough to be effective against unusual strains and are not adjustable in size so as to permit exact fitting, while laced and hence adjustable leather ankle supporters embodying vertical metallic or other stiffeners which have been used are extremely uncomfortable when laced tightly enough to be effective for their intended purpose and being inelastic severely restrict the requisite freedom for normal activity.

It is therefore the principal object of my invention to provide an adjustable and yieldable ankle supporter of novel construction offering resistance to abnormal ankle movements but relatively ineffective to hamper or impair normal ones.

A further object is to provide an ankle supporter of the character aforesaid which is adapted to be worn partially under or within an ordinary "low" athletic or other outer shoe without materially increasing the apparent bulk of the wearer's ankle and which when worn with "high" shoes, such as those commonly attached to ice skates, comfortably and effectively supplements the supporting functions of the overlying shoe upper without appreciably impairing freedom for normal action of the ankle.

Another object is to provide an ankle supporter suitable for application to a weak or otherwise vulnerable ankle to reinforce it for athletic activity in lieu of the customary binding with adhesive tape or other relatively non-yielding bandaging material, whereby the desired support for weakened or injured tissues, ligaments and the like can be provided with enhanced comfort by means of a reusable readily removable article of apparel having a long service life.

Other objects, advantages and novel features of design, construction and arrangement comprehended by the invention are hereinafter more fully pointed out or will be apparent to those familiar with the art from the following description of a preferred form thereof as embodied in the supporter illustrated in the accompanying drawing in which:

FIG. 1 is a side elevation of the supporter in operative position on an ankle and foot indicated by broken lines;

FIG. 2 is a front elevation of the supporter alone;

FIG. 3 is a rear elevation thereof;

FIG. 4 is a greatly enlarged fragmentary section on line 4-4 in FIG. 1, and

FIG. 5 is a fragmentary development of the upper rear portion of the supporter extended to indicate its yieldability.

Referring now more particularly to the drawing, the ankle supporter illustrated comprises an outer ply 1 and inner lining 2, both desirably made of glove leather, approximately similar in size and shape and provided with series of substantially parallel spaced slits forming a plurality of complementary elongated outer flaps 3 and inner flaps 4 on either side of the supporter, lace receiving eyeleted holes 5 being respectively arranged in series adjacent

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the "front" edges 6 of the supporter for reception of a lace 7.

The leather blanks from which outer ply 1 and lining 2 are made have parallel straight edges which assist in forming the upper edges 8, 9 of the supporter surrounding the lower calf when the supporter is being worn, these edges of course being interrupted by the slits which define flaps 3, 4 as generally indicated in FIG. 1; the opposed edges of the blank adjoining said parallel straight edges are also generally parallel and in the formed-up supporter form its said front edges 6 and "rear" edges 10 of the outer ply and inner lining respectively, those of the latter not appearing separately for example in FIG. 3 because registering with the edges of the outer ply in that view. Between these front and rear edges the blanks are cut in suitable opposed generally similar concave curves 12, 13 and intermediate straight edges 14, 15 so that when formed up they define a front foot opening 17 and rear heel opening 18 respectively while the portions of the blank defined by the straight edges 14, 15 provide a web 19 subtending the instep when the supporter is being worn. The slits defining flaps 3, 4 terminate short of the edges 12, 13, 14, 15 of the blanks.

On each side of the supporter between the outer ply 1 and lining 2 is interposed a one-piece elastic fabric insert 20 which terminates just short of web 19 and of the lines of eyelets 5 but is otherwise substantially coextensive with the ply and lining and between their rear edges 10 provides a yieldable "bridge" 21 registering with the tendon of Achilles in the ankle when the supporter is being worn.

The several parts just described are secured together by stitching 22 adjacent all the blank edges above designated and also forming parallel seams 23 slightly inwardly from the edges of outer flaps 3 and inner flaps 4 which are thus united in embracing relation to the elastic fabric insert but in such manner that the latter can stretch between the seams joining adjacent pairs of the flaps.

A glove leather tongue 25 is attached to the inner lining by one of the seams 23 adjacent the front of the supporter where it will underlie lace 7 when the supporter is being worn and prevent the lace from chafing the ankle similarly to the functioning of the usual tongue more or less standard in laced shoes in which, however, it is usually secured to the shoe over the instep rather than at one side.

On the outside of the supporter adjacent the lower ends of front edges 6 separable relatively adjustable cooperative parts 26, 27 provide a supplementary strap affording additional support in this area. Preferably these parts are composed of the material commercially known as "Velcro" marketed by Creative Products, Inc., of Boston, Mass., consisting of, for example, a fabric pad 26 presenting on its outer face a plurality of minute interlaced plastic monofilament loops or bights and a strip 27 presenting on a cooperative face a plurality of minute plastic monofilament hooks adapted when pressed against the loops on pad 26 to engage them and hold the parts firmly but separably in any position in which they are brought together. The pad 26 is fixedly secured to the outer ply on one side of the supporter and an end only of strip 27 thereto on the other and usually for convenience of the wearer in such manner that the free end of strip 27 when engaged with pad 26 lies on that side of the supporter to the outside with relation to the wearer's body as a whole. In other words, in a supporter for the right ankle the pad is on the right side of the supporter, considered in the same sense, and on the left side of one for the left ankle. As their combined bulk is relatively negligible, however, so positioning them does not preclude wearing a supporter designed for the right ankle on the left one

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or vice versa and the arrangement suggested is therefore primarily intended to minimize the likelihood of the parts becoming separated inadvertently by interference of the opposite foot. For like considerations it is usually desirable to have tongue 25 sewed within the supporter on the side corresponding to the ankle on which it is to be worn, and thus preferably under looped pad 26.

Bridge 21 at the rear of the supporter when the latter is being worn affords an appreciable area in which lateral extension of the supporter may occur while between adjacent seams 23 securing adjacent flaps 3, 4 free portions 30 of the elastic fabric are also stretchable as indicated in FIG. 5. This figure, however, is merely exemplary of the stretchability of the supporter as a whole about the ankle to mold the supporter thereto for maintaining a snug fit while providing yielding lateral support for the ankle bones and ligaments at all points with the result my ankle supporter affords a complete range of motion for normal activity and restricts only those abnormal or excessive motions likely to cause injury or tissue damage in a healthy ankle or to aggravate the condition of an already injured one.

It will be evident the supporter illustrated and herein described may be worn either inside or over a stocking within an athletic or other shoe without discomfort and that it embodies to an enhanced degree many of the advantages of the athletic type shoe disclosed in my copending allowed application Serial No. 806,843, filed April 16, 1959, and now Patent No. 2,945,309, inasmuch as it affords a restricted yieldability of substantially parallel flaps confined on the sides of an article of foot wear, although in the present instance the supporter is designed to be worn with a shoe, whereas the shoe disclosed in said application has ankle supporting means unitarily incorporated in its construction.

It will be understood that while I have herein illustrated and described with considerable particularity the preferred embodiment of the invention I do not desire or intend thereby to be limited or confined in any way as changes and modifications in the form, construction, arrangement and relationship of the several elements and components of structure embodying the invention will readily occur to those skilled in the art and may be utilized if desired without departing from the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim and desire to protect by Letters Patent of the United States:

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1. An ankle supporter comprising substantially coextensive inner and outer plies of inelastic flexible material having parallel slits forming mutually registering flaps extending in the plies from the upper edges thereof substantially to portions adapted to underlie the instep of the wearer's foot, a unitary body of flexible elastic sheet material interposed between the plies and stitching securing the flaps of the inner ply respectively to the flaps of the outer ply in embracing relation to said elastic material, said stitching being inwardly spaced from the edges of the slits and the elastic material bridging the slits when in unstretched condition maintaining adjacent slit edges in mutual engagement and extending between spaced opposed rear edges of the plies, each of the latter having a series of holes adjacent its front edge for reception of lacing for holding said edges in predetermined relation and an adjustable strap comprising separable parts respectively secured to the supporter adjacent each said series of holes adapted to overlie that portion of the supporter proximate the upper front region of the wearer's instep.

2. An ankle supporter comprising substantially coextensive inner and outer plies of glove leather shaped to substantially surround the ankle and underlie the instep of the wearer with their front edges in spaced relation, the upper portion of each ply being slitted from its upper edge to form a series of flaps registering with those in the other ply, said slits terminating short of those areas of the plies designed to underlie the instep, a unitary sheet of elastic material interposed between the plies maintaining when in unstretched condition adjacent flaps in mutual edge-to-edge engagement, stitching attaching the mutually registering flaps thereto, lace-receiving eyelets proximate said front edges, a lacing cooperative therewith to draw said edges toward each other, and a strap attached at one end to the outer ply on one side of said edges adapted for extension across both said edges, and means attached to said ply on the other side of the edges for holding the strap at a desired tension.

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