

United States Patent

Rosen

[15] 3,686,777

[45] Aug. 29, 1972

[54] SHOE CONSTRUCTION

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[22] Filed: **Nov. 23, 1970**

[21] Appl. No.: **91,703**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 716,172,
March 26, 1968, Pat. No. 3,541,708, which is a
continuation-in-part of Ser. No. 612,003, Jan.
26, 1967, Pat. No. 3,404,468.

[52] U.S. Cl. **36/2.5 B**

[51] Int. Cl. **A43b 00/00**

[58] Field of Search..... **36/2.5 R, 2.5 B**

[56]

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[57]

ABSTRACT

A footwear construction incorporating widthwise adjustability in at least a part of the shoe to enable one shoe to be fitted to feet of different widths.

14 Claims, 4 Drawing Figures

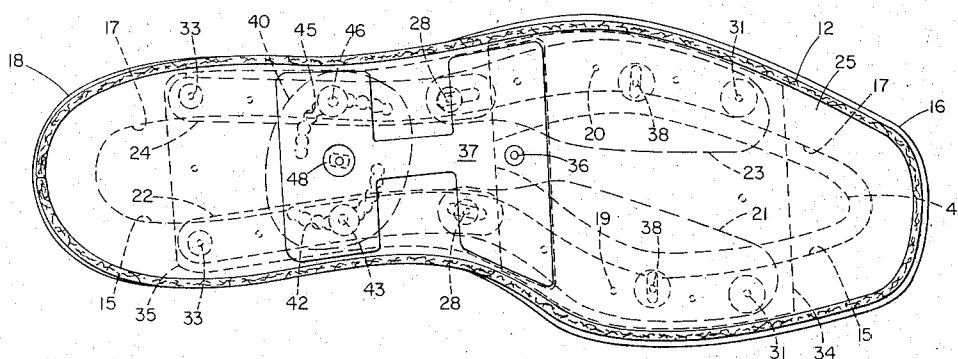


FIG 1

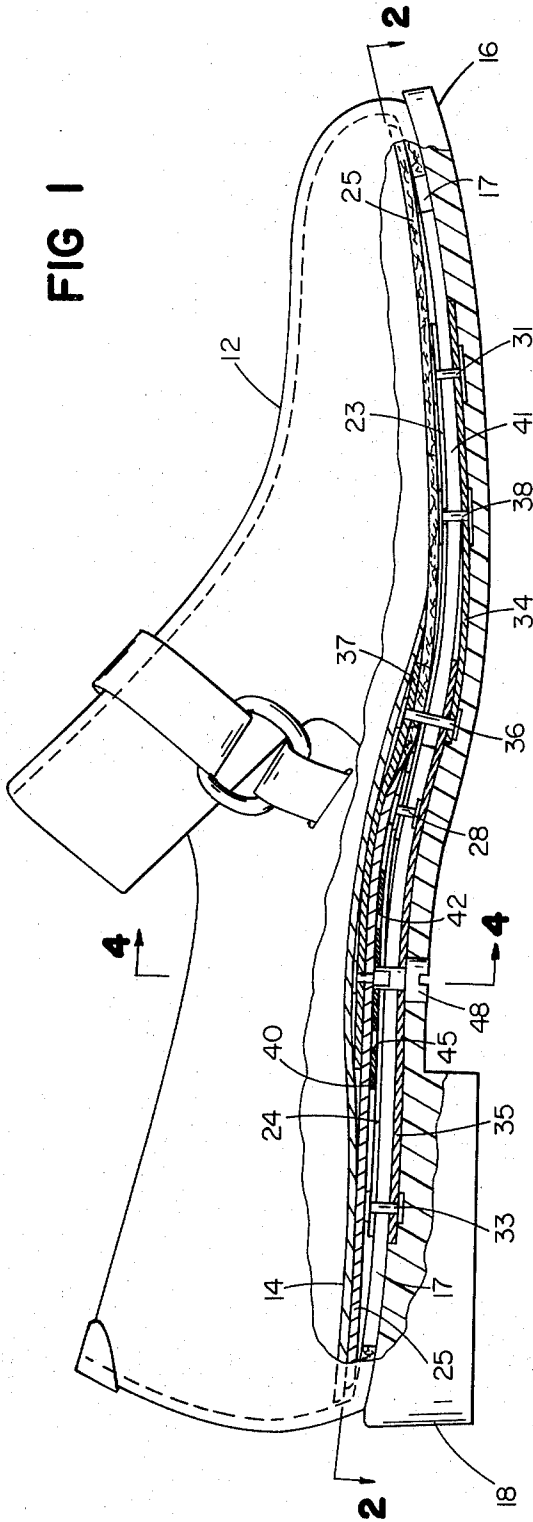


FIG 2

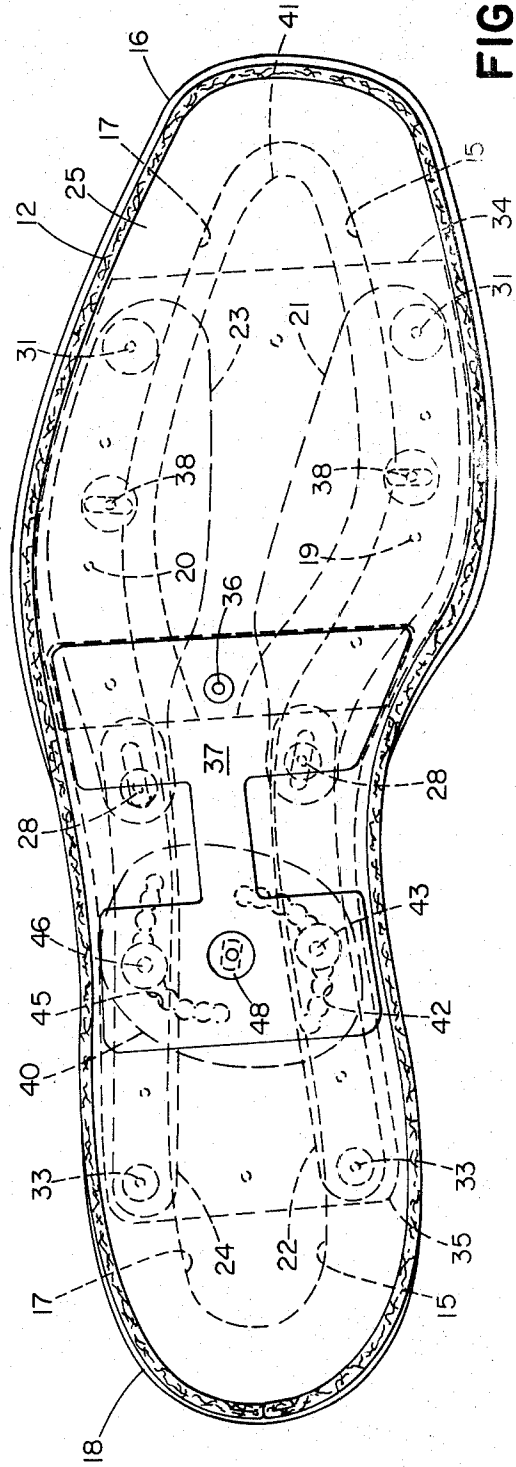
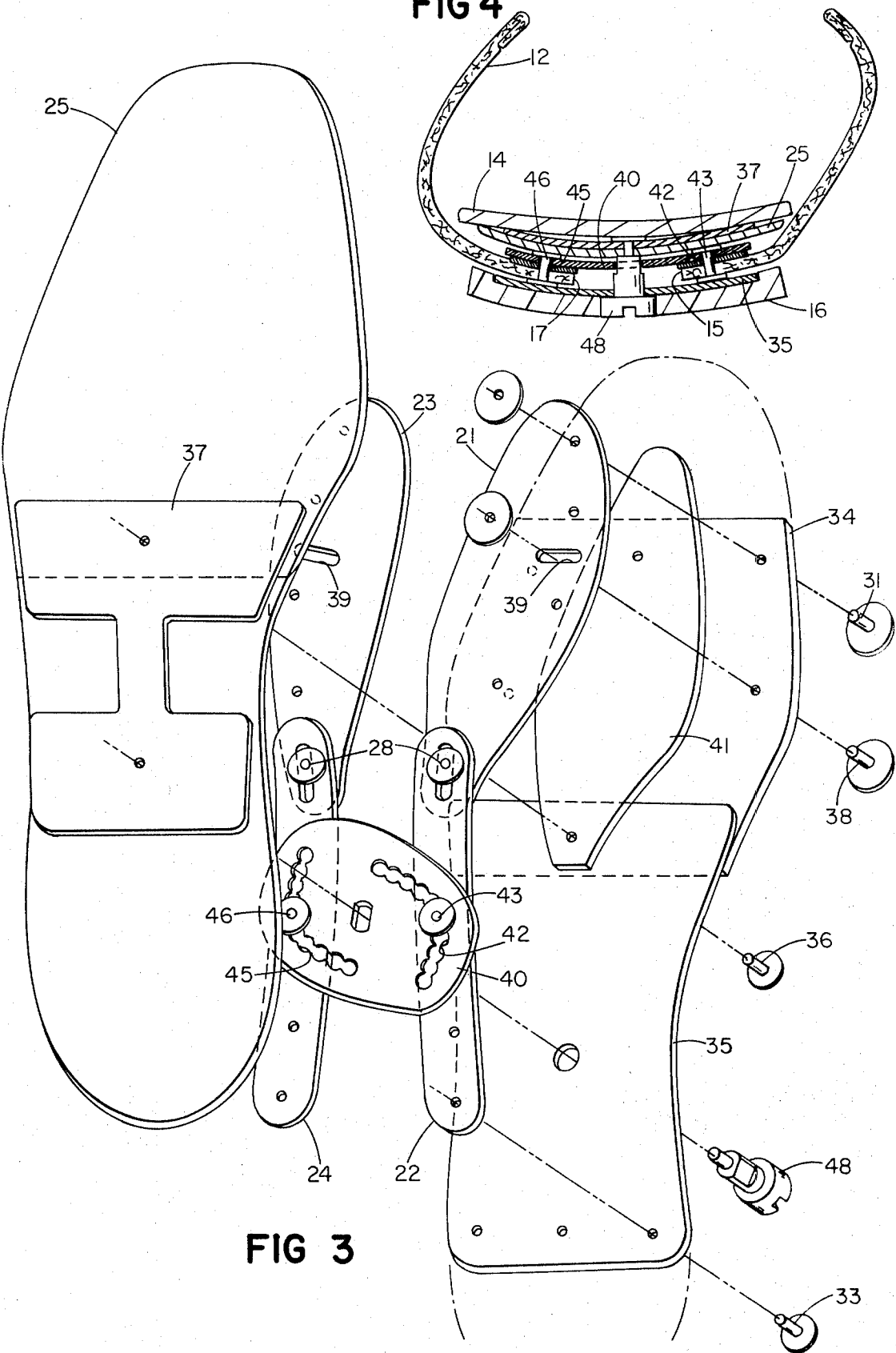


FIG 4



SHOE CONSTRUCTION

This application is a continuation-in-part of my application Ser. No. 716,172, filed Mar. 26, 1968, now U.S. Pat. No. 3,541,708, which was a continuation-in-part of my application Ser. No. 612,003, filed Jan. 26, 1967, now U.S. Pat. No. 3,404,468. It relates to footwear incorporating widthwise adjustability to provide a shoe which will comfortably and accurately fit any of a relatively wide range of widths.

As explained in said patents, it is a known fact that many foot difficulties are directly traceable to the wearing of shoes of improper width. However, since few buyers can afford shoes custom made to the exact dimensions of their feet, the best approach ideally with factory-made shoes would involve carefully measuring the feet, and fitting them with shoes of correct width having lace-to-toe uppers, which could easily be adjusted to compensate for variations between the two feet, as well as those due to different hosiery thickness, foot-swelling from fatigue or heat, and the stretch of the shoe with wear. The above approach is not commercially practical, however, since lace-to-toe styles have limited customer appeal in other than athletic and functional footwear.

In other categories including dress shoes and casuals, one finds style dictating the amount and type of width adjustment employed, varying from no adjustment whatsoever, as in loafers, pumps, boot and step-in types, to various degrees of width adjustment by laces, buckles and other means where such adjustment is normally of less longitudinal extent than that afforded by lace-to-toe designs.

While all of the aforementioned conventional width adjustment approaches compensate to varying degrees for modest girth variations between foot and shoe, usually only in the instep area, none of these compensates satisfactorily for the wider ranges encountered in attempting to make one shoe fit a relatively wide range of standard shoe widths. Despite the above limitations, acceptable fit would be obtained more often, were it not for the common practice of offering most popular priced footwear in one or two widths only. As a result, many customers tend to accept improper fit rather than shop for a better fit in those stores carrying wider size ranges, which are usually at higher prices. Additional fit problems arise from the tendency of salesmen to fit a shoe in anticipation of future stretch which may not actually occur, and also from mail-order sales, where poorly fitting shoes are often accepted to avoid the bother of returning them to the seller.

The construction of said patents provided a novel footwear applicable to many styles, and materials whereby one can adjust the width of a shoe particularly but not necessarily exclusively in the areas of ball, waist and instep to enable the shoe to provide a proper and accurate fit over a relatively broad range of widths. This adjustment can be made at the time of purchase, with later readjustability by the wearer as desired, such being accomplished in a unique manner whereby the width of the sole remains relatively fixed at pleasing and practical dimensions, while the upper itself is varied in girth by adjusting at least one of its lower margins transversely, such a margin or "lasting allowance" extending between an insole member such as a sock lining and the outsole of the shoe. This affords a wider

range of adjustment and a wider choice of materials, than do constructions limiting their adjustment solely to the shoe bottom.

It is a major object of the present invention to provide improvements in details of the construction of said patents, whereby highly useful adjustable shoe constructions are uniquely provided.

In the present invention, this is accomplished, in footwear having upper elements with lower marginal edges intumed transversely between the foot and sole element, by providing mean whereby at least a portion of such marginal edges have a limited degree of free transverse movement between said foot and sole elements. More specifically, the improved construction may provide, in a shoe having a backpart and a forepart including a toe portion, a mid portion beneath the ball of the foot and a shank area forward of the heel underlying the instep (hereinafter called the instep portion), a transversely extending outsole element underlying at least the forepart of the shoe, said outsole element extending continuously thereacross and extending longitudinally for at least said forepart of the shoe. In one aspect of the invention, the upper element has its longitudinally extending marginal edges, at least in the forepart of the shoe, intumed toward one another above the outsole element and below the insole element for free transverse movement between the insole and outsole elements and there is provided a relatively rigid shank element underlying said marginal edges, said shank element extending transversely across said sole element thereabove and extending longitudinally throughout the major extent of said instep portion and, preferably retaining element means overlying said marginal edges, said retaining element means extending transversely coextensively with said shank element and holding said marginal edges therebetween in close slidable contact. The margins may have transversely stiff but longitudinally flexible stiffener elements attached thereto, also clamped between said shank and retaining elements.

In another aspect of the present invention, adjustment means, including manually operable means, are connected to the margins and their stiffener elements between the toe portion and the backpart for adjustment, preferably by fixing a predetermined transverse spacing between the stiffener elements, preferably relatively proportional or even equal as to each stiffener element with respect to a central longitudinal axis of said sole element, so that the adjustment means is movably adjustable to a variety of said predetermined spacings to provide an increased or decreased transverse cross-sectional area throughout the mid portion of the shoe. The adjustment means comprises cam means including a manually rotatable cam slot element having a pair of opposite cam slots extending radially and circumferentially spirally outward and cam followers mounted on said opposite stiffener elements and received within said cam slots for moving said stiffener elements toward and away from one another upon rotation of said cam slot element.

For the purpose of more fully explaining further objects and features of the invention, reference is now made to the following detailed description of preferred embodiments of the invention, together with the accompanying drawings, wherein:

FIG. 1 is a side view, partly broken away and in section, of a shoe incorporating the present invention;

FIG. 2 is a sectional plan view of the shoe of FIG. 1, taken on the line 2—2 thereof;

FIG. 3 is an exploded view of elements of the shoe of FIGS. 1 and 2; and

FIG. 4 is a transverse section of the shoe of FIGS. 1 and 2 taken on the line 4—4 thereof.

Referring to the drawings, the widthwise adjustable footwear construction of the present invention will be described as embodied in a leather slip-on shoe, having a separate sock lining and an outer sole and a heel. The shoe upper element 12 has inturned margined edges 15,17, commonly called the lasting allowance, around its lower periphery. The insole element 14, commonly called the sock lining, overlies the inturned marginal edges 15,17 and the outsole 16 underlies said edges. A heel 18 is attached to the rear or heel portion of the outsole 16. The present invention, similar to that of U.S. Pat. No. 3,541,708, provides a shoe which in its external appearance can be made similar to many types of footwear styles and constructions, has constructional features which enable it to have predetermined widthwise adjustability for superior fit and comfort, but adds further features which enhance it utility.

As in said patent, the bottom of the usual shoe upper element 12, which conventionally extends transversely at least partly across the bottom of the forepart of the shoe and overlies the transversely relatively non-stretchable outsole 16, is provided around its lower periphery with inturned longitudinally extending marginal edges 15,17, which edges are free to be moved transversely, preferably by manually operable means, to a predetermined adjusted fixed position to vary the girth and hence the widthwise cross-sectional size of the shoe. One or more of the transversely relatively non-stretchable shoe insole elements, which in the art are variously called sock linings, tucks and midsoles, for example, overlies margins 15,17 and outsole 16 underlies them for their control as is hereinafter more fully described.

As shown in FIGS. 1 through 4, the bottom of the upper element 12 has inwardly turned, longitudinally extending side marginal edges 15,17, in the nature of "lasting allowances" which are confined between, but free of fixed connection, for at least part of their total length, to the insole and outsole elements for free transverse sliding movement of edges 15,17 therebetween, such insole elements include an overlying insole element 14 of the type usually referred to as a sock lining, cooperating with an underlying insole element 25, of the type usually referred to as a tuck, positioned above the shank element 35 to which it is attached. The shank element 35 is in turn attached to the sole element.

To aid in confining and controlling the position of said marginal edges, as well as to provide an improved shoe construction, the present construction includes a relatively rigid shank element 35 underlying said marginal edges, said shank element extending transversely across sole element 16 thereabove and extending longitudinally throughout the major extent of said instep portion. Also provided is a retaining element 37 overlying said marginal edges and said insole element 25, said retaining element extending transversely coextensively with shank element 35 and attached thereto by rivets

36, clamping said marginal edges therebetween. Shank element 35 may include a flexible extension 34 at its forward end which may be cemented or otherwise attached to outsole 16.

In the forepart of the shoe, adjacent the toe portion and extending rearwardly therefrom to adjacent the shank portion thereof, edges 15,17 are each provided with a pair of longitudinal stiffener members, forepart stiffener member 21 and midpart stiffener member 22 on edge 15 and forepart stiffener member 23 and midpart stiffener member 24 on edge 17, although only forepart stiffener members may be used if desired. Stiffener members 21, 22, 23 and 24 may be of thin spring steel and have the property of being flexible to forces which tend to bend them along their length, (as experienced in normal walking) while remaining relatively inflexible to transverse forces exerted in their own plane. Stiffeners 21 and 22 and stiffeners 23 and 24 are attached by suitable rivets 19 and 20 respectively to edges 15,17 and in turn are pivotally attached to the fixed shoe elements for transverse swinging movement at their fixed ends. Their transversely movable free ends are connected by rivets 28 loosely connecting the free ends of forepart and midpart stiffener members 21 and 22, and 23 and 24 for transverse sliding movement. The pivotal connection of the forward ends of forepart stiffener members 21 and 23 are by means of pivot rivets 31 which extend through shank extension 34 and that of the rearward end of midpart stiffener members 22 and 24 are by means of pivot rivets 33 which also serve to hold said stiffener members and upper edges down against outsole 16. Additional hold-down rivets 38, extending through slots 39 in said stiffener members may be used if desired, and a filler element 51 may be used to fill the area between marginal edges 15,17 and also to support from beneath the overlying portions of forepart stiffeners 21,23.

The desired predetermined fixed position within the available variation is established by manually operable means comprising a cam mechanism including a manually rotatable cam slot element 40 having a pair of opposite cam slots 42,45 extending radially and circumferentially spirally outward and provided with detents if desired. Cooperating with said slots are cam followers 43,46 mounted on opposite midpart stiffener members 22,24 and received within said cam slots for moving the stiffener elements toward and away from one another upon rotation of cam slot element 40. For rotating said cam slot element, a slotted knob 48 is mounted thereon and extends downwardly through shank element 35 and outsole 16 for ready access from the bottom of the shoe. If desired, access from above may also be provided.

In order to adjust the shoe width, shown in its intermediate width in FIGS. 1 through 4, it is only necessary to rotate knob 48 with a conventional screwdriver through an angle of up to about 120 degrees to fix the adjusted position of margins 15,17 as desired. In this regard, with the center of the cam slot element 40 fixed on the longitudinal central axis of the shoe as shown, it should be noted that the angular movement of each of margins 15,17 is relatively proportional and preferably equal, so that the widthwise adjustment of margins 15,17 is such that the shoe upper element 12 remains generally centered on its outsole 16, throughout the full

range of the adjustment, as is desirable for both appearance and function.

VARious other modifications, not herein specifically described, will be apparent to those skilled in the art. For example, although the shoe construction of the invention has been described with reference to a slip-on type of shoe, it will be understood by those skilled in the art that it may be used in many other type and styles of shoes capable of incorporating the needed elements. Such modifications are deemed to be within the spirit of the present invention and the scope of the appended claims.

What is claimed is:

1. In a shoe having a backpart and a forepart including a toe portion, a mid portion beneath the ball of the foot and an instep portion rearwardly of said mid portion and forward of the heel;

a transversely extending sole element underlying at least the entire forepart of the shoe, said sole element extending continuously thereacross and extending longitudinally for at least said entire forepart of the shoe

an upper element extending down toward the peripheral edge of the sole element with its longitudinally extending marginal edges at least in the forepart of the shoe intumed toward one another above said sole element and free of fixed connection to said sole element between the toe portion and said backpart of said shoe for free transverse movement relatively thereto

adjustment means connected between said intumed marginal edges of said upper element between said toe portion and said backpart, said upper element being connected to said sole element at least at said toe portion and said backpart;

a relatively rigid shank element underlying said marginal edges and said adjustment means, said shank element extending transversely across said sole element thereabove and extending longitudinally throughout the major extent of said instep portion

whereby said adjustment means is adjustable to provide a variable transverse cross-sectional area throughout the mid portion of said shoe.

2. In a shoe as claimed in claim 1 further including retaining element means overlying said marginal edges and said adjustment means, said retaining element means extending transversely coextensively with said shank element and holding said marginal edges therebetween in close slideable contact.

3. In a shoe as claimed in claim 1, wherein said shank element further includes a forwardly extending flexible extension attached to said sole element.

4. In a shoe as claimed in claim 1, wherein said adjustment means includes a manually rotatable cam slot element having a pair of opposite cam slots extending radially and circumferentially outward and cam followers mounted on said opposite marginal edges and received within said cam slots for moving said stiffener elements toward and away from one another upon rotation of said cam slot element.

5. In a shoe having a backpart and a forepart including a toe portion, a mid portion beneath the ball of the

foot and an instep portion rearwardly of said mid portion and forward of the heel;

a transversely extending sole element underlying at least the entire forepart of the shoe, said sole element extending continuously thereacross and extending longitudinally for at least said entire forepart of the shoe

an upper element extending down toward the peripheral edge of the sole element with its opposite longitudinally extending marginal edges at least in the forepart of the shoe intumed toward one another above said sole element and free of fixed connection to said sole element between the toe portion and said backpart of said shoe for free transverse movement relatively thereto, said opposite marginal edges having attached thereto stiffener elements and

adjustment means connected between said intumed marginal edges of said upper element between said toe portion and said backpart, said adjustment means including a manually rotatable cam slot element having a pair of opposite cam slots extending radially and circumferentially outward and cam followers mounted on said stiffener elements and received within said cam slots for moving said stiffener elements toward and away from one another upon rotation of said cam slot element.

6. In a shoe as claimed in claim 5, further including a relatively rigid shank element underlying said marginal edges and said adjustment element, said shank element extending transversely across said sole element thereabove and extending longitudinally throughout the major extent of said instep portion and

retaining element means overlying said marginal edges, stiffener elements and said adjustment element, said retaining element means extending transversely coextensively with said shank element and holding said marginal edges therebetween in close slideable contact.

7. In a shoe having upper and sole elements wherein at least one of the longitudinally extending marginal elements of the upper element is intumed above the sole element and is at least in part free of fixed stationary connection to the sole element to allow said margins a limited degree of relatively free transverse motion thereto, said marginal elements having attached thereto transversely stiff but longitudinally flexible stiffener elements, pivotally mounted at one end and

cam means including a manually rotatable cam slot element having a pair of opposite cam slots extending radially and circumferentially outward and cam followers mounted on said opposite stiffener elements and received within said cam slots for moving said stiffener elements toward and away from one another upon rotation of said cam slot element.

8. In a shoe as claimed in claim 7, wherein said cam slots are provided with a plurality of detents.

9. In a shoe having a backpart and a forepart including a toe portion, a mid portion beneath the ball of the foot and an instep portion rearwardly of said mid portion and forward of the heel

a transversely extending sole element underlying at least the entire forepart of the shoe, said sole ele-

ment extending continuously thereacross and extending longitudinally for at least said entire forepart of the shoe

an upper element extending down toward the peripheral edge of the sole element with its longitudinally extending marginal edges at least in the forepart of the shoe intumed toward a one another above said sole element and free of fixed connection to said sole elements between the toe portion and said backpart of said shoe for free transverse sliding movement relatively thereto

said marginal edge shaving transversely stiff but longitudinally flexible stiffener elements attached thereto for transverse movement of said marginal edges relatively to said sole element with said stiffener elements being pivotally mounted at one end on said sole element leaving the other free end transversely movable with respect to said sole elements

adjustment means including manually operable means connected between said intumed marginal edges of said upper element between said toe portion and said backpart for fixing a transverse spacing between said marginal edges

a relatively rigid shank element underlying said marginal edges, said stiffener element and said adjustment means, said shank element extending transversely across said sole element thereabove and extending longitudinally throughout the major extent of said instep portion

retaining element means overlying said marginal edges, stiffener elements and said adjustment means, said retaining element means extending transversely coextensively with said shank element and holding said marginal edges therebetween in close slidable contact,

said adjustment means being movably adjustable to a variety of said spacings to provide an increased or decreased transverse cross-sectional area throughout the mid portion of said shoe.

10. In a shoe as claimed in claim 9 wherein said adjustment means includes a manually rotatable cam slot element having a pair of opposite cam slots extending radially and circumferentially outward and cam followers mounted on said opposite stiffener elements and received within said cam slots for moving said stiffener elements toward and away from one another upon rotation of said cam slot element.

11. In a shoe having a backpart and a forepart including a toe portion, a mid portion beneath the ball of the foot and an instep portion rearwardly of said mid portion and forward of the heel

a transversely extending sole element underlying at least the entire forepart of the shoe, said sole element extending continuously thereacross and extending longitudinally for at least said entire forepart of the shoe,

an upper element extending down toward the peripheral edge of the sole element with its longitudinally extending marginal edges at least in the forepart of the shoe intumed toward one another above said sole element for free transverse sliding movement relatively thereto

said marginal edges each having a pair of transversely stiff but longitudinally flexible stiffener elements

including a forepart stiffener element pivotally mounted at its forward end on said sole element and a mid part stiffener element pivotally mounted at its rear end on said sole element attached to said marginal edges for free transverse movement with said margins relatively to said sole element

cam adjustment means including a manually rotatable cam slot element having a pair of opposite cam slots extending radially and circumferentially outward and cam followers mounted on said opposite stiffener elements and received within said cam slots for moving said stiffener elements toward and away from one another upon rotation of said cam slot element

a relatively rigid shank element underlying said marginal edges, said stiffener elements and said adjustment means, said shank element extending transversely across said sole element thereabove and extending longitudinally throughout the major extent of said instep portion

retaining element means overlying said marginal edges, stiffener elements and said adjustment means, said retaining element means extending transversely coextensively with said shank element and holding said marginal edges therebetween in close slideable contact

whereby said adjustment means is movably adjustable to a variety of spacings to provide an increased or decreased transverse cross-sectional area throughout the mid portion of said shoe.

12. In a shoe as claimed in claim 11 wherein said forepart stiffening elements extend inwardly beyond said marginal edges.

13. In a shoe having a backpart and a forepart including a toe portion, a mid portion beneath the ball of the foot and an instep portion rearwardly of said mid portion and forward of the heel;

a transversely extending sole element underlying at least the entire fore part of the shoe, said sole element extending continuously thereacross and extending longitudinally for at least said entire forepart of the shoe

an upper element extending down toward the peripheral edge of the sole element with longitudinally extending lower marginal edges at least in the forepart of the shoe positioned above said sole element and free of fixed connection to one another between the toe portion and said backpart of said shoe for free transverse movement relatively to one another

a single manually operated adjustment element connected between said marginal edges of said upper element between said toe portion and said backpart, said upper element being connected to said sole element at least at said toe portion and said backpart;

whereby said adjustment element is adjustable to provide a variable transverse cross-sectional area throughout the mid portion of said shoe.

14. In a shoe having upper and sole elements wherein the lower longitudinally extending marginal elements of the upper element are positioned above the sole element and are at least in part free of fixed stationary connection to one another to allow said marginal elements a limited degree of relatively free transverse mo-

tion, said marginal elements having attached thereto transversely stiff but longitudinally flexible stiffener elements, pivotally mounted at one end and adjustment means including a single manually operable element for moving said stiffener elements 5 toward and away from one another.

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