Nov. 3, 1964 J. LAUFBAHN 3,154,866

SHOE CONSTRUCTION WITH DETACHABLE COMPONENTS

Filed April 10, 1962 2 Sheets-Sheet 1

Fig. 1

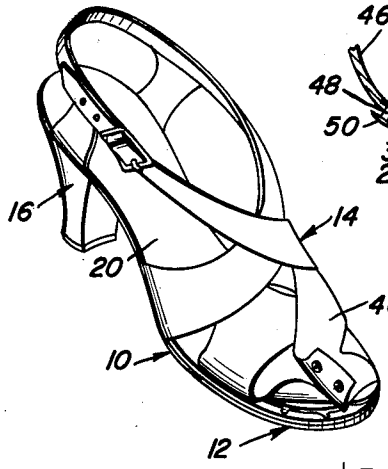


Fig. 3

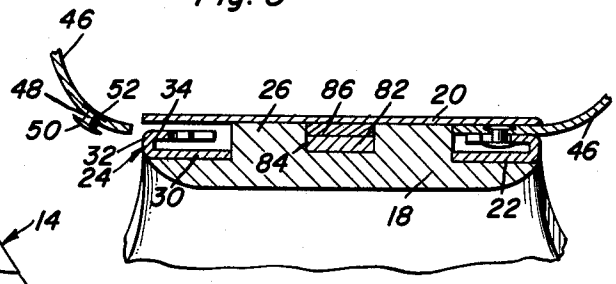


Fig. 2

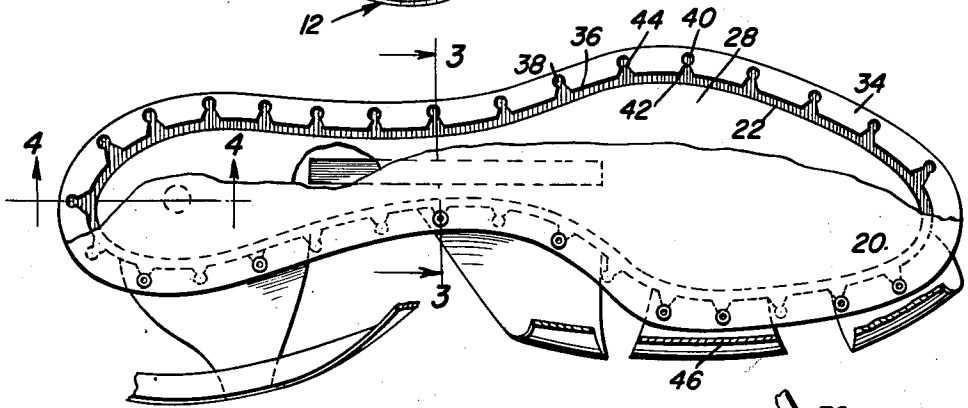


Fig. 5

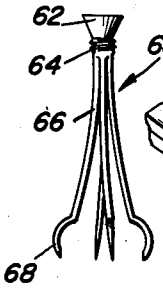


Fig. 6

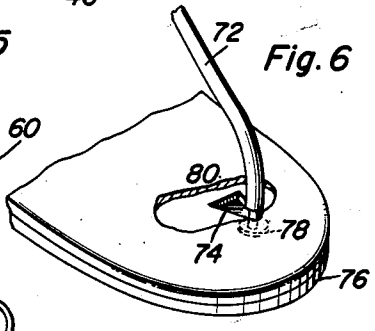
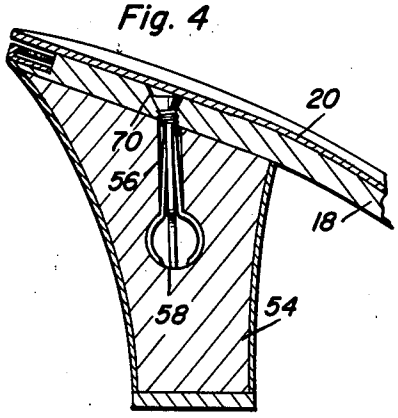


Fig. 4



Jennie Laufbahn

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Nov. 3, 1964 J. LAUFBAHN 3,154,866

SHOE CONSTRUCTION WITH DETACHABLE COMPONENTS

Filed April 10, 1962 2 Sheets-Sheet 2

Fig. 7

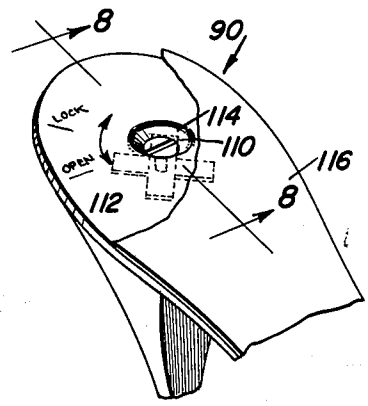


Fig. 8

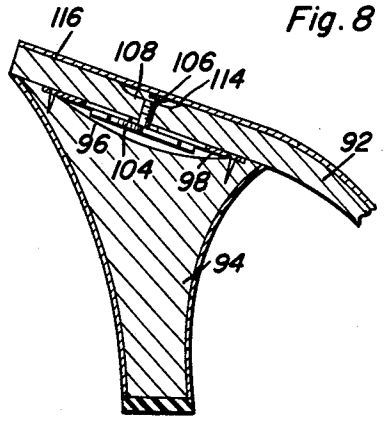


Fig. 10

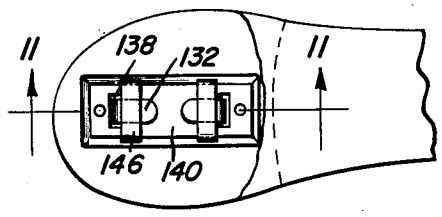


Fig. 11

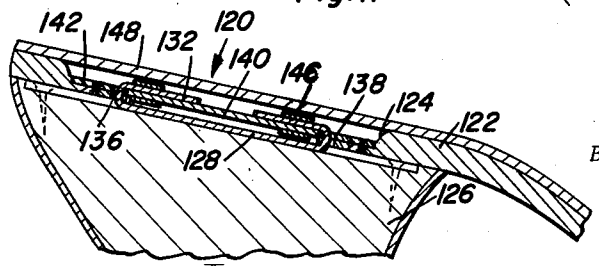


Fig. 9

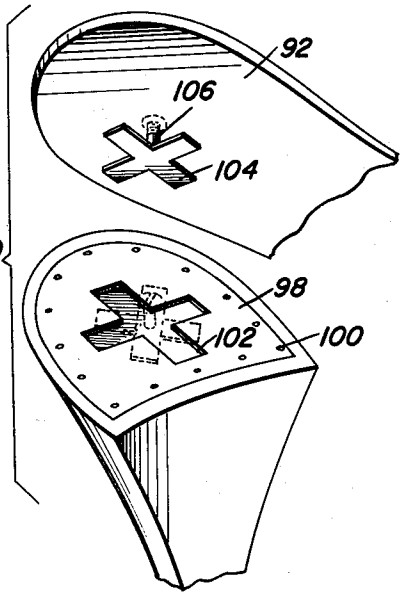
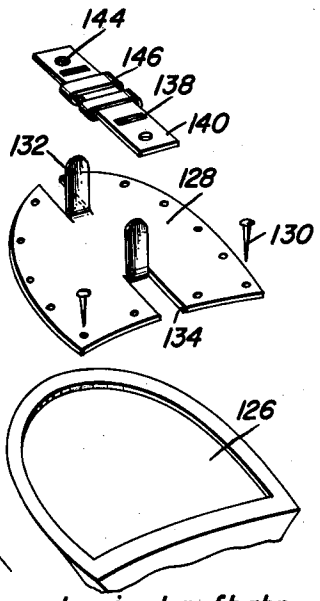


Fig. 12



Jennie Laufbahn

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

United States Patent Office

3,154,866

Patented Nov. 3, 1964

3,154,866

SHOE CONSTRUCTION WITH DETACHABLE COMPONENTS

Jennie Laufbahn, 2260 Bronx Park E., New York, N.Y., assignor of twenty-five percent each to Anne Blackstein and Charles Gass, both of Bronx, N.Y., and twenty-five percent to Louis Reiter, Brooklyn, N.Y.

Filed Apr. 10, 1962, Ser. No. 186,401
12 Claims. (Cl. 36—2.5)

The present invention generally relates to a novel and improved shoe construction and more particularly to a shoe construction having detachable components such as the uppers and heel whereby such components may be interchanged with other components thereby enabling the appearance characteristics of the shoe to be altered by interchanging the components thereof with other components having different appearance characteristics.

Generally, a relatively large wardrobe of shoes must be retained by women in order that the appearance characteristics of their shoes be compatible with the remainder of their clothing. This requires a considerable expenditure and also presents a problem in properly storing the shoes when they are not being used. Accordingly, it is one of the essential features of the present invention to provide a shoe construction having detachable uppers which may be easily detached from the sole of the shoe so that other uppers having different appearance characteristics may be attached to the sole thus changing the appearance characteristics of the shoe and enabling the shoe to be adapted in appearance characteristics so that it is compatible with a particular article of wearing apparel. Also, it is a further essential feature of the present invention to provide a detachable heel construction whereby other heels may be connected to the sole for enabling the heel to be changed in appearance characteristics to not only be compatible with another garment or wearing apparel but also compatible with the uppers attached to the shoe.

Still another important object of the present invention is to provide a shoe construction in accordance with the preceding objects having a novel means for securely attaching the uppers and the heels but yet enabling easy removal and replacement of the components.

Another feature of the present invention resides in a novel manner of placing a metal shank in the portion of the sole which supports the arch region of the foot.

Still another important object of the present invention is to provide a shoe construction having detachable components in accordance with the preceding objects which enables the fastener means to be completely hidden and orientated in such a manner that a subtsantially completely smooth surface is provided for engagement with the foot whereby an inner sole placed in the shoe will completely eliminate any possible discomfort to the wearer of the shoe.

The present invention may be adapted to various types of shoes, sandals, slippers or any other type of footwear including a shoe of the type generally designated as a thong shoe which has a thong extending downwardly between certain of the adjacent toes on the foot of the wearer.

With all of the objects being accomplished, the structure of the present invention is still quite simple, easy to use, effective for its particular purposes and generally inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of a shoe having the novel structural features of the present invention incorporated therein, a portion of the upper being detached and turned back for illustrating the structure thereof;

FIGURE 2 is a top plan view of a shoe with portions thereof broken away illustrating the fastening strip;

FIGURE 3 is a transverse, sectional view taken upon a plane passing along section line 3—3 of FIGURE 2 illustrating details of the invention;

FIGURE 4 is a detailed sectional view along a plane passing along section line 4—4 of FIGURE 2 illustrating the mechanism for detachably mounting the heel;

FIGURE 5 is a side elevational view of the fastening element for securing the heel in place;

FIGURE 6 is a partial perspective view, with portions broken away, showing a thong type shoe;

FIGURE 7 is a fragmentary perspective view of a modified form of heel connection;

FIGURE 8 is a detailed sectional view taken along section line 8—8 of FIGURE 7;

FIGURE 9 is an exploded perspective view of FIGURE 7;

FIGURE 10 is a plan view of another form of heel connection;

FIGURE 11 is a sectional view taken generally along section line 11—11 of FIGURE 10; and

FIGURE 12 is an exploded perspective view of the construction of FIGURE 10.

Referring now specifically to the drawings, the numeral 10 generally designates the shoe of the present invention which generally includes a shoe sole 12 and an upper 14 together with a heel 16. The sole 12 includes an outer sole or outsole 18 and an inner sole 20. The outer sole 18 may be of any suitable configuration and construction and may be of any suitable material compatible with present day shoe construction. The outer sole may be of one-piece construction or may be laminated depending upon the desires of a particular manufacturer. Regardless of how the outer sole is constructed, it is provided with a peripheral recess 22 around the outer edge thereof. Mounted in the recess 22 is a fastening strip generally designated by numeral 24. The fastening strip has the outer edge thereof generally flush with the outer peripheral edge of the outer sole 18 and has the top surface thereof spaced slightly below the central portion 26 of the outer sole which has a planar surface 28 disposed in a plane above the upper edge portion of the strip 24.

The fastening strip 24 includes a bottom flange 30 that engages the bottom of the recess 22 and is secured thereto in any suitable manner such as by bonding, stapling, nailing, stitching or the like. At the outer edge of the flange 30, there is an upstanding outer edge flange 32 and at the upper edge of the upstanding flange 32 is an inwardly extending flange 34 paralleling the flange 30 thus defining a generally U-shaped strip as illustrated in FIGURE 3 with the legs of the U-shaped strip being parallel and substantially horizontally disposed. As illustrated in FIGURES 2 and 3, the upper flange 34 is slightly shorter than the bottom flange 30 thus defining a peripheral space 36 between the flange 34 of the strip 24 and the inner edge of the recess 22 for a purpose described hereinafter.

The flange 34 of the fastener strip 24 is provided with a plurality of keyhole shaped notches 38 each of which includes a substantially circular inner portion 40 and diverging edge portions 42 communicating with the inner edge of the flange 34 and with a portion of the periphery of the opening 40 which defines less than one-half of the periphery of the opening 40 thus defining a restricted entrance throat 44 for the circular opening 40. As illus-

trated in FIGURE 2, the notches 38 are equally spaced peripherally of the sole 12 except that the toe portion thereof, the notches may be omitted since the toe portion of the uppers is usually omitted.

The uppers 14 include any suitable arrangement of flexible straps 46 constructed of any suitable material and of any suitable color and appearance characteristics. The bottom edge of the strap 46 is cut generally to conform to the periphery of the inner edge of the recess 22 and each strap 46 is provided with a pair of headed fasteners 48 which have a circular flange 50 on the outer surface thereof which is spaced from but disposed closely adjacent to the outer surface of the strap 46. The inner end of the fastener 48 is also provided with a circular flange 52 embedded or partially embedded in the material of the strap 46 thus defining a flush arrangement with the inner surface of the strap 46 as illustrated in FIGURE 3.

When the straps 46 are assembled with the soles, the outer ends 50 of the fasteners 48 are inserted into the area defined by the periphery of the recess 22 and the inner edge of the flange 34 in alignment with the notches 38. Thus, the dimension of the divergent surfaces 42 combined with the space 36 defined between the inner periphery of the recess 22 and the edge of the flange 34 provides sufficient room for passage of the headed or flanged end 50 of the fastener 48 after which the fastener 48 may be moved outwardly. The circular portion of the fastener 48 will snap through the restricted throat 44 and thus engage with the circular opening 40 so that force is necessary to move the fastener into or out of the notches 38. The thickness of the straps 46 is such that when it is orientated on top of the flange 34, the upper surface of the inner end portion of the straps 46 will be substantially flush with the upper surface of the sole as illustrated in FIGURE 3 thereby providing a flush surface for engagement by the inner sole 20.

The various components may be constructed of any suitable lightweight and long lasting materials. If desired, the entire sole may be constructed of a plastic and in this event, the fastening strip may become an integral part thereof. When it is desired to disassemble the uppers, it is only necessary to move the ends of the straps 46 inwardly thus disconnecting the fasteners after which other uppers may be assembled with the sole in an obvious manner.

The heel construction 16 is of any suitable construction and the main body of the heel is designated by reference numeral 54. The top face of the heel conforms with the bottom surface of the outer sole 18 in the conventional manner but the heel has a vertically extending recess 56 therein in the form of a bore terminating in an enlarged spherical recess 58 at the inner end of the bore 56 for receiving a fastener generally designated by the numeral 60. FIGURE 5 illustrates the construction of the fastener which includes a tapered head 62, a short threaded shank portion 64 and a plurality of longitudinally extending fingers or tines 66 terminating in a partial circular lower end 68. When the fingers 66 are in collapsed condition, they define substantially a cylindrical member generally conforming with the configuration of the bore 56. The circular portions 68 are sufficiently flexible that they may be compressed and passed downwardly through the bore 56 and then expand outwardly into the spherical recess 58 as illustrated in FIGURE 4 whereby the fingers are at all times maintained under tension so that the natural resiliency of the fingers will securely fasten the heel 16 to the sole 18. The threads 64 are engaged with the periphery of an opening 70 in the sole 18 for securely retaining the fastener in place and serving as an anchor for the fastener. Inasmuch as the lower ends of the fingers engaging the spherical surface serve to cam or urge the heel and sole towards each other, the top face of the heel will be snugly and securely engaged with the bottom surface of the outer sole at all times thereby providing a rigid and

secure connection between the heel and the sole and at the same time permitting removal of the heel for replacement thereof with other types of heels having different color characteristics, appearance characteristics, length or the like.

FIGURE 6 illustrates an arrangement in which a thong 72 is employed and in this construction, a socket or recess 74 is formed in the top surface of the sole 76 and the bottom end of the thong 72 is provided with a circular flange or disk 78 which is received in the wider portion of the recess 74 which is undercut and formed into a keyhole configuration after which the circular plate or disk 78 may be moved forwardly and interlocked with the narrow end of keyhole slot or recess 74 thereby securely and detachably locking the thong to the sole 76. In this construction, the inner sole 80 will be provided with an aperture permitting passage of the lower end of the thong through the inner sole for engagement with the fastening recess in the sole 76.

Thus, there has been provided a shoe construction with a rigid strip orientated around the edge of the sole and disposed in a recess therein with the top of the strip being disposed slightly below the surface of the sole so that when the uppers are attached to the strip, the uppers and the sole will be substantially flush. The uppers have a projecting fastener for engagement with keyhole notches or slots formed in the strip thus enabling quick and easy detachment of the uppers. Also, the heel may be easily detached and interchanged with other heels and the fastener construction of the present invention enables it to be employed with various types of shoes including the thong type.

A metal shank 82 is disposed in a longitudinal recess 84 in the outer sole 18 and is retained therein by a filler 86 of any suitable material such as a hardenable material which enables flexibility of this area of the shoe but also provides adequate support for the arch portion of a foot. This metal strap or shank 82 is curved to conform with the sole and provides adequate support for this region of the shoe. Also, the strip is constructed of a material capable of bending during normal walking operation but still retaining its shape and structural characteristics when in a normal condition. Also, the strip may be omitted along the side edges of the arch supporting portion of the shoe since in many instances, the uppers have no straps or other materials in this area. This also would enable the shoe to flex in a completely normal manner during walking.

Referring now specifically to FIGURES 7–9 of the drawings, the numeral 90 generally designates another form of heel connection between the sole 92 and the heel 94 which has a recess 96 in the attaching face thereof. Connected to the attaching face of the heel is a plate 98 of metallic construction which may be secured to the heel by any suitable means such as a plurality of nails 100 or the like. The central portion of the plate 98 is provided with a slot 102 in the form of a cruciform which has four radially extending arms orientated in perpendicular relation to each other for receiving a similarly shaped projection 104 carried by a shank 106 extending through the sole 92. The shank 106 is threaded for a portion of its lentgh and the projection 104 is spaced slightly below the bottom surface of the heel 92 so that the radially extending arms of the cruciform projection 104 may be inserted through the slots and then rotated to a locked position. The upper end of the shank 106 is provided with a head 108 having a kerf or slot thereacross for receiving a suitable implement for turning the shank to lock the projection 104 to the plate 98. The kerf or slot is designated by numeral 110 and suitable indicia is provided on the top surface of the sole 92 as indicated by numeral 112 for indicating the open and locked position of the projection thus enabling the projection to be orientated properly for detaching the heel or locking the heel to the sole. The headed end of the

shank **106** may be received in a slight countersink or recess **114** so that the inner sole **116** provides a smooth interior surface for engagement by the heel portion of the foot. This type of interlocking support or connection between the heel and the sole provides a rigid connection and one which will effectively lock the heel in place.

FIGURES 10–12 illustrate another form of connecting means for the heel generally designated by numeral **120** in which the sole **122** has a recess **124** in the top surface thereof and the heel **126** has a plate **128** attached to the attaching face thereof by virtue of nails **130** or similar equivalent fasteners. The plate **128** has a pair of upwardly extending bendable tangs **132** struck out from the forward and rear edges of the plate thus leaving slots **134**. The tangs or lugs **132** extend upwardly through slots **136** formed in the sole **122** and also extend upwardly through slots **138** in a retaining bar **140**. The retaining bar **140** is attached to the sole by virtue of any suitable fastener such as a rivet type fastener **142** extending through apertures **144** in the outer ends of the retaining bar **140**. Slidable on the retaining bar **140** is a pair of loop shaped retainers **146** which slide over and retain the bendable tangs, lugs or tabs in superimposed relation to the retaining bar **140** after the tangs **132** are received in the slots **138** and bent inwardly toward each other in the position illustrated in FIGURES 10 and 11 thus forming retaining means for securing the heel in position on the sole. In this construction, the inner sole **148** also provides a smooth surface for engagement by the heel portion of the foot. The insole in the several forms of the invention may be attached to the outer sole in any suitable manner.

It is pointed out that any number of bendable tabs or tangs may be provided for example two as illustrated or four tabs may be used. Any type of locking interconnecting may be provided between the bendable tabs. If desired, rather than using the bendable tabs, tabs of a rigid nature may be employed with the tabs being hingedly connected to the plate carried by the attaching face of the heel.

In addition to the above, it is pointed out that the bore in the construction of the heel illustrated in FIGURE 4 may be filled with a self-sealing rubber or plastic material. Also, the self sealing rubber is placed on top of the sole at the heel portion and between the heel and sole to provide a seal, which will produce somewhat of a vacuum when the elements are assembled thus producing a solid connection between the components. The retaining bar **140** may be attached as illustrated or left free of the sole thus facilitating the manufacture of the heel assembly. When the sole is constructed of plastic it may be constructed in such a manner that the shank is actually molded into the sole during the molding procedure.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A shoe comprising a sole and an upper, a continuous strip mounted peripherally on the sole with the top of the strip being slightly below the top surface of the sole, said strip having longitudinally spaced inwardly opening notches therein communicating with the inner edge thereof, said upper including an inturned peripheral edge having depending headed fasteners for horizontal interlocking engagement with the edges of the notches in the strip thereby detachably securing the uppers to the sole, the upper surface of the inturned edge of the upper being substantially flush with the top surface of the sole.

2. The structure as defined in claim 1 wherein said sole includes a peripheral recess in the outer edge portion of the upper surface thereof, said strip being disposed in the recess with the inner edge thereof spaced from the inner periphery of the recess thereby defining a continuous space for reception of the headed fasteners on the uppers.

3. The structure as defined in claim 2 wherein the headed fasteners on the uppers are in the form of members having a circular cross-sectional configuration, said notches being substantially in the shape of a keyhole with a constructed entrance throat whereby a snapping engagement between the fasteners and the notches occurs for retaining them in a locked condition.

4. The structure as defined in claim 3 wherein said strip is in the form of a channel-shaped member having the lower flange thereof engaging the bottom of the recess in the sole and secured thereto, the upper flange of the U-shaped strip being slightly shorter than the lower flange thereby defining the space between the inner edge of the recess and the inner periphery of the upper flange of the strip for receiving the headed fasteners.

5. The structure as defined in claim 4 together with a heel assembly at the rear of the sole, said heel assembly including a heel having a vertical bore formed therein, and detachable fastening means extending through the sole into the bore for detachably securing the heel in place, said fastening means being visible and accessible only from the top surface of the sole.

6. The structure as defined in claim 5 wherein said fastening means for the heel includes an elongated member having a series of resilient fingers thereon with outwardly curved generally semi-circular lower ends, said heel having a spherical recess at the bottom of the bore for receiving the curved lower ends of the fingers and retaining them under spring tension for securing the heel in place.

7. A shoe structure comprising a sole and an upper detachably connected thereto to enable interchangeability thereof, said sole including a flexible member having a flat upper surface provided with a peripheral recess extending continuously about the top corner edge thereof, a peripheral continuous retaining strip mounted in said recess, said retaining strip being of a channel-shaped cross-sectional configuration with the web thereof being disposed at the outer edge of the recess and generally flush with the peripheral edge of the sole, the lower flange of the channel-shaped member engaging the bottom of the recess and being secured thereto with the inner edge of the lower flange abutting the inner edge of the recess, the upper flange of the channel-shaped member being of less length than the lower flange and spaced from the lower flange with the inner periphery of the upper flange being spaced outwardly of the inner edge of the recess thereby defining a continuous face between the inner edge of the upper flange and the inner edge of the recess, the upper flange also being disposed slightly below the plane of the top surface of the sole, said upper flange of the channel-shaped member having a plurality of notches disposed therein, each of said notches opening to the inner edge of the top flange and including a partial circular inner area, a restricted throat and diverging edges extending from the throat to the inner edge of the top flange, said upper including an inturned peripheral edge having a plurality of fastener studs mounted thereon in depending relation when the inturned edge of the upper is disposed in overlying relation to the top flange of the retainer, said studs being of cross sectional circular configuration with the head thereof being relatively flat for insertion downwardly between the inner edge of the top flange and the inner edge of the recess whereupon the head may then be positioned under the top flange and between the top flange and the bottom flange of the channel-shaped member, the circular cross-sectional configuration of the stud enabling the stud to pass through the constricted entrance throat of each of the notches thereby snapping into the notches for securing the upper to the retainer, the thickness of the

upper being substantially the same as the space between the top surface of the upper flange of the retainer and the top surface of the sole whereby the top surface of the sole and the inner surface of the inturned end portion of the upper will be substantially flush to provide a smooth surface to the foot of the wearer, the outer surface of the inturned edge portions of the upper lying snugly against the top surface of the top flange of the retainer thereby concealing the fastening means for the upper so that the detachable fastening assembly will not be visible from exteriorly of the shoe.

8. The structure as defined in claim 7 together with a heel disposed at the rear end of the sole and depending therefrom, fastening means detachably interconnecting the heel and the rear end of the sole, said fastening means including a plate attached to the attaching face of the heel, retaining means on the sole for interlocking engagement with the plate, said retaining means being visible and operable only from the top surface of the sole,

9. The structure as defined in claim 8 wherein said retaining plate includes a slot, said retaining means including a projection rotatably mounted on the sole for movement through the slot after which rotation of the projection in relation to the slot will interlock the heel and sole, said projection including an operating shank extending through the sole and being accessible from the top surface thereof.

10. The structure as defined in claim 8 wherein said fastening means includes a plate mounted on the heel and having a pair of upwardly extending bendable tabs thereon, a locking plate carried by the sole and including a pair of slots therein for receiving the bendable tabs whereby the tabs may be bent towards each other into engagement with the top surface of the locking plate, and means on the locking plate retaining the bendable tab against the top surface thereof for interlocking the heel and sole.

11. The structure as defined in claim 7 together with a heel at the rear of the sole, said heel including a vertical bore therein terminating in an enlarged peripheral recess, a fastening member extending downwardly through

the sole and including a plurality of resilient fingers, each finger terminating in an outwardly curved lower end portion generally semi-circular in configuration whereby the lower ends of the plurality of fingers will form substantially an expandible spherical ball for reception in the recess whereby the resiliency of the fingers will securely retain the heel on the sole but enable detachment thereof for interchangeability when desired.

12. An article of manufacture comprising an elongated sole member of flexible material having a central portion and marginal edge, said sole member including peripheral recess means disposed at said marginal edge thereof, said recess means being defined by a continuous retainer strip having an inner and outer edge and an upper surface, said strip including notch means extending outwardly from and communicating with the inner edge thereof, said central portion of the sole member being disposed above the plane of the upper surface of the retainer strip thereby defining a peripheral shoulder spaced concentrically inwardly from the inner edge of the retainer strip thus forming a peripheral space communicating with the notch means.

References Cited in the file of this patent

UNITED STATES PATENTS

487,312	Wise	Dec. 6, 1892
570,830	Vandervoort	Nov. 3, 1896
1,330,731	Walters et al.	Feb. 10, 1920
1,347,422	Vanblom	July 20, 1920
1,497,852	Hopper	June 17, 1924
1,554,883	Sahlin	Sept. 22, 1925
2,153,968	Loufbahn	Apr. 11, 1939
2,367,232	Marx	Jan. 16, 1945
2,368,314	Marx	Jan. 30, 1945
2,509,335	Dadisman	May 30, 1950
2,511,101	Clarke	June 13, 1950
2,760,279	Jones et al.	Aug. 28, 1956
2,761,224	Gardiner	Sept. 4, 1956
2,928,191	Meltzer	Mar. 15, 1960
2,943,404	Sultan	July 5, 1960