Dec. 11, 1956 J. B. HELLE 2,773,317

ARTICLES OF FOOTWEAR

Filed July 13, 1954

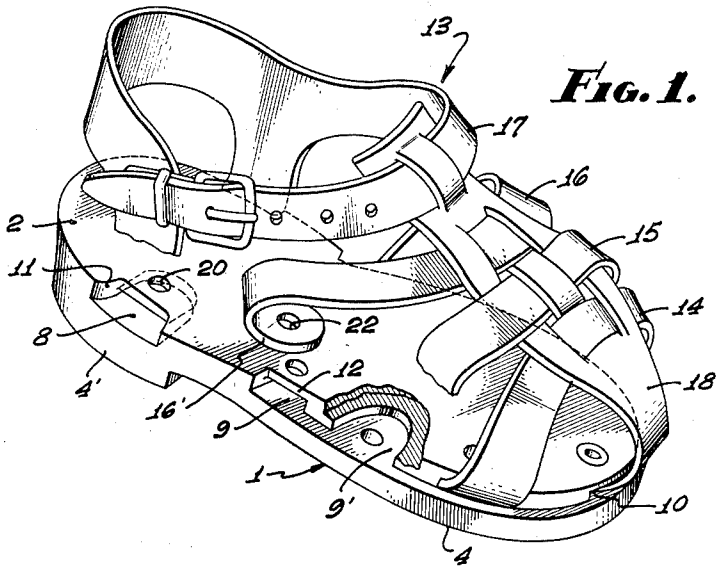

FIG. 1.

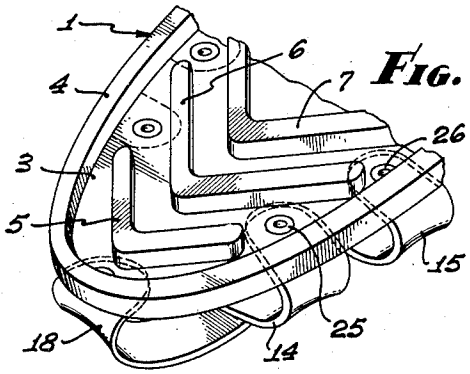

FIG. 2.

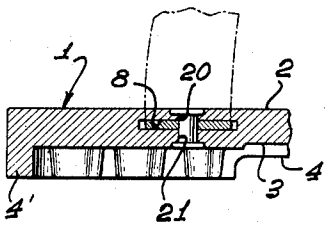

FIG. 3.

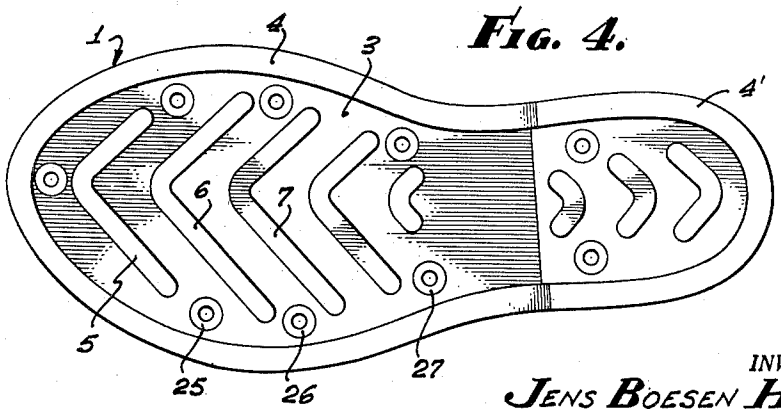

FIG. 4.

INVENTOR.
JENS BOESEN HELLE
BY
ATTORNEY.

United States Patent Office 2,773,317
Patented Dec. 11, 1956

2,773,317

ARTICLES OF FOOTWEAR

Jens Boesen Helle, Vedbaek, near Copenhagen, Denmark

Application July 13, 1954, Serial No. 443,081

5 Claims. (Cl. 36—11.5)

This invention relates to articles of footwear comprising a sole and foot retaining means thereon and more specially to footwear such as sandals or the like, although the invention is applicable to other kinds of footwear also.

Generally stated, the invention pertains to an article of footwear wherein the sole and insole are unitary, the edges of the sole being provided with recesses or pockets adapted to receive tongues extending from the upper or foot retaining means, such tongues being then connected to the sole. Preferably, all portions of the article of footwear, with the exception of the fastening means, are composed of a resilient, compliant, elastic material such as a resinous, thermoplastic or thermosetting composition, compounded rubber (natural or synthetic) or other suitable material.

An object of the present invention is to disclose and provide a simple, effective and inexpensive article of footwear made from a minimum of parts of resilient, resinous, thermoplastic or thermosetting organic composition, the resiliency of the material and the self-adjusting construction resulting in a comfortable and lightweight article capable of conforming to a greater range of variations in foot width and foot contour (for a given size) than footwear constructed in the usual manner.

An object of this invention is to provide retaining or attaching means for firmly connecting the upper or foot retaining portion to the sole.

Another object is to provide means which make it possible to attach the upper to the outsole in a simple and inexpensive manner.

A further object of this invention is to provide retaining or attaching means for connecting to the outsole an upper or foot retaining means including straps, the attaching means making it possible to obtain a firm connection of the straps to the outsole and simultaneously permit pivotal movement or oscillation with respect to the outsole without damage to either the outsole or upper. The strap means and upper can in this manner adjust itself to the form of the foot of the wearer without undue strain.

A still further object of the invention is to provide articles of footwear wherein an upper is attached to an outsole, the attaching means being protected from wear and being maintained out of contact with the ground, the outsole being provided with integral wearing ribs which impart long life to the sole and prevent skidding.

A still further object of the invention is to provide a sole adapted for articles of footwear having means for connecting an upper thereto and integral spaced ribs on the lower surface, the ribs varying in height so as to permit different portions of the top surface of the sole to lie in different planes when the faces of the ribs are in contact with a single plane or with the ground.

Other objects, uses and advantages of the invention will appear from the following description, reference being had to the appended drawings in which:

Fig. 1 is a perspective view partly in section of a sandal made in accordance with the present invention.

Fig. 2 is a perspective view of the front portion of the bottom of a sandal.

Fig. 3 is a vertical section taken through a heel portion of the sandal along a plane parallel to the axis of such sandal.

Fig. 4 is a plan view of the bottom of the integral outsole-insole of the shoe.

The sandal illustrated in the drawings is provided with an outsole generally indicated at 1, this outsole being made in one piece, as by molding from a plastic artificial substance such as an artificial resin, synthetic rubber, or the like. This outsole 1 is provided with a top surface 2 which constitutes the insole and a lower surface 3. This lower surface is provided with a plurality of spaced ribs integral with the sole, the ribs varying in height to permit different portions of the top surface 2 of the sole 1 to lie in different planes when the faces of the ribs are in contact with the ground. The lower surface 3 of the sole may, for example, be provided with a marginal rib 4, the heel portion 4' of such marginal rib being of greater height than at other portions of the sole so as to impart a higher elevation to the top surface of the sole in the region of the heel. A plurality of additional spaced ribs 5, 6, 7 and the like are carried by the lower surface of the sole and integral therewith, these ribs having downwardly directed faces capable of presenting wearing surfaces, imparting anti-slipping characteristics to the footwear and also providing locations or spaces for fastening means as will be described hereafter.

Horizontally disposed pockets or recesses are formed in the sole and extend inwardly from the side edges of the sole. Such recesses are indicated at 8, 9 and 10 and extend inwardly beneath the upper surface 2 of the sole 1, each of said recesses opening outwardly. A portion of the sole between the recess and the top surface 2 may be cut away as indicated at 11, 12 and the like.

In the embodiment illustrated, the upper generally indicated at 13 comprises interwoven straps such as the straps 14, 15, 16, 17 and 18 which can be made from synthetic plastics, rubber compositions, or the like. Terminal portions of the transverse straps 14, 15 and 16 extend into appropriate pockets or recesses formed in the sole; for example, terminal portion 16' will extend into recess 9; the end portion of strap 18 extends into recess 10; strap portion 17 is provided with a heel part and downwardly extending portions adapted to extend into recess 8.

The top of each recess can be cut away as indicated at 11 or the tops and intervening walls between a series of recesses or pockets can be cut away as indicated at 12 so as to form a shoulder along the edge of the sole 1, such shoulder being flush with the bottoms of adjacent recesses such as 9, 9', etc. The width of the shoulder is sufficient to accommodate the terminal portions or tongues of the straps 14—18; the width of the shoulder is preferably equal to or a little greater than the thickness of the straps and prevents the straps from extending materially beyond the margins of the sole.

The top and bottom walls of each of the recesses such as the recess 8 are provided with coaxial aligned apertures 20 and 21. The terminal portion or tongue of each of the straps may also be provided with an aperture such as, for example, the aperture 22 shown in the terminal portion of strap 16'. The entire upper (comprising the interwoven straps in the illustrated embodiment) is then attached to the unitary sole by inserting the terminal portions into corresponding recesses and applying suitable fastening means through the correlated apertures. Normally, rivets are employed as fastening means and such rivets may be of any desired type, for example, headed rivets, semi-tubular rivets, full tubular rivets (with or

without caps), bifurcated or split rivets (with or without caps) or compression rivets (combination of a solid and a deep drilled rivet).

At this time attention may be called to the fact that the various ribs such as **5**, **6**, **7** and the like are so placed on the lower surface of the sole **1** as to leave suitable spaces between the ribs to receive the lower heads of the connecting rivets. The spacing of the ribs and placement of the rivets is best shown in Fig. 4 wherein it will be noted that the rivets **25**, **26**, **27**, etc. engage the lower surface **3** of the sole **1** between the marginal rib **4** and the other ribs.

It may also be noted that the terminal portions of the straps or tongues are slightly smaller than the recesses or pockets so that a certain amount of pivotal motion may take place and the tongues may pivot upon their rivets within the recess thereby permitting the entire upper from which the tongues extend to move slightly and adjust itself to the form and contour of the wearer's foot. Inasmuch as the lower ends or caps of the rivets are in a different plane than the wearing surfaces of the ribs **4**, **5**, **6**, etc., the rivets are protected from direct contact with the ground and will not wear away.

It is to be noted that the spacing of the ribs on the lower surface of the sole not only provides zones in which the rivets or fastening devices can be placed but also imparts resilience to the top portion of the sole, the relatively thin sole between the ribs being capable of flexing and cushioning the weight of the wearer. It will be understood that the upper, relatively smooth surface **2** of the sole constitutes an insole which is an integral, irremovably associated part of the sole itself. When U-shaped or V-shaped ribs are employed, their edges offer good resistance against skidding both longitudinally and in a transverse direction.

Although a particular embodiment of the invention has been described, it will be apparent to those skilled in the art that numerous modifications and variations may be made. The upper may be constructed in any desired manner and be provided with tongues capable of extending into the preformed or molded recesses. Furthermore, it is not necessary to preform the holes or apertures such as **20**, **22** and the like since certain types of fastening devices can be punched through the imperforate wall portions of the sole and tongue. All changes coming within the scope of the appended claims are embraced thereby.

I claim:

1. An article of footwear comprising: a unitary outsole and foot retaining means thereon; said unitary outsole comprising a bottom surface, a top surface and side faces; said bottom surface being provided with ribs integral with said outsole and spaces between these ribs; said outsole being further provided with a number of recesses extending between said top surface and said bottom surface, and opening at said side faces; said foot retaining means including strap means for connecting with said outsole, each of said strap means having a terminal portion inserted in one of said recesses and fastened to said outsole by means of a rivet; said rivet having an upper head and a lower head and penetrating said outsole from said top surface to said bottom surface thereof through the recess and through the terminal portion inserted therein, said lower head of each of said rivets being positioned in a space between two of said ribs.

2. An article of footwear as stated in claim 1, wherein the bottom surface of said outsole is provided with a marginal rib and a number of middle ribs integral with the outsole, said marginal rib being spaced from said middle ribs; said lower heads of at least some of said ribets being positioned within the space between said marginal rib and said middle ribs.

3. An article of footwear comprising: a unitary sole portion having a virtually smooth upper surface upon which a foot of a wearer may rest; a bottom surface and side edges; horizontally disposed recesses formed in the sole and extending inwardly from the side edges of the sole; a plurality of spaced ribs carried by the lower surface of the sole and integral therewith, said ribs varying in height to permit different portions of the top surface of the sole to lie in different planes when the faces of the ribs are in contact with a single plane; and a foot retaining upper including downwardly extending tongues, said tongues being received in said recesses; and a tubular fastening means extending through the sole, each of said recesses and the tongues contained therein, said tubular fastening means including an upper head and a lower cap, said lower cap being in contact with the lower surface of the sole in a zone between ribs.

4. An article as stated in claim 3 wherein each tongue is slightly smaller than the recess in which it is positioned, each of said tongues being adapted to pivotally move in its recess around the tubular fastening element.

5. An article of footwear comprising: a preformed, one-piece combination outsole and insole made of an organic, thermoplastic material and having a top surface adapted to contact the foot of the wearer, a bottom surface and side faces; a marginal rib carried by the bottom surface of the sole adjacent the side edges, said bottom surface also carrying a plurality of spaced ribs integral with said combination sole and extending at angles to the axis of said sole, said ribs terminating at points spaced from the marginal rib of said sole; said combination sole being further provided with a number of recesses extending between said top surface and bottom surface and opening at said side faces; and a preformed foot retaining means made of an organic, thermoplastic material and provided with a plurality of tongues, each of said tongues being inserted into one of said recesses; and a headed fastening means extending through said combination sole and through each of said tongues in said recesses to hold said foot retaining means on said combination sole, the headed fastening means terminating in spaces between said marginal rib and angularly extending ribs.

References Cited in the file of this patent

UNITED STATES PATENTS

583,641	Brown	June 1, 1897
1,823,445	Goldstone	Sept. 15, 1931
2,071,431	Riddell	Feb. 23, 1937
2,110,521	Davis	Mar. 8, 1938
2,153,968	Loufbahn	Apr. 11, 1939
2,167,035	Westheimer	July 25, 1939
2,193,943	Shea	Mar. 19, 1940
2,298,227	Pinkerton et al.	Oct. 6, 1942
2,307,727	Hubbard	Jan. 5, 1943
2,367,232	Marx	Jan. 16, 1945
2,595,643	Dougherty	May 6, 1952

FOREIGN PATENTS

668,945	France	July 23, 1929
145,928	Austria	May 25, 1936