Jan. 31, 1967 M. CAMPAGNA 3,300,880

CASUAL TYPE SHOE WITH HEEL-SUPPORTING WEDGE

Filed May 27, 1964

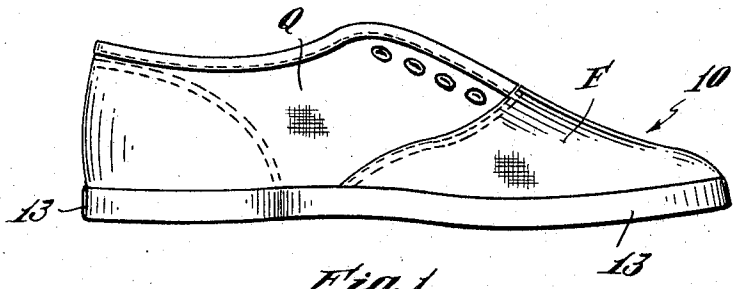

Fig. 1

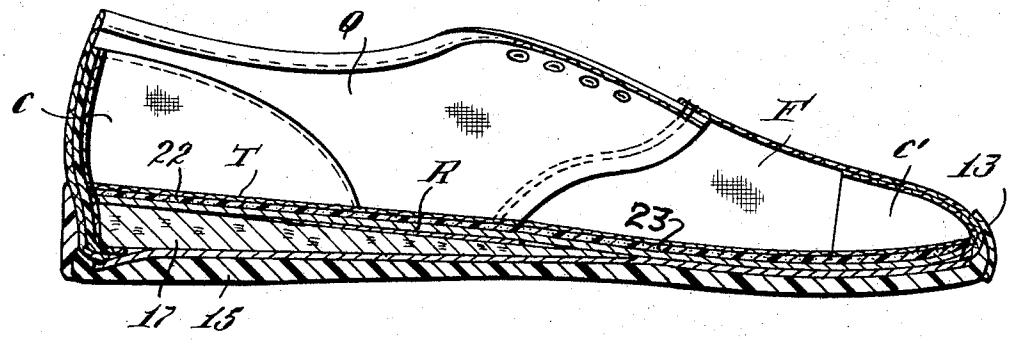

Fig. 2

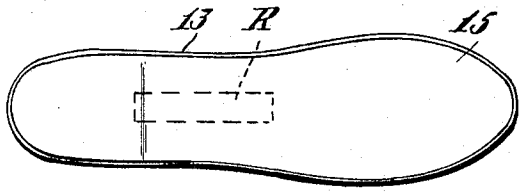

Fig. 3

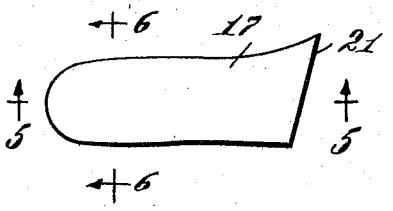

Fig. 4

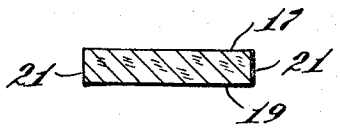

Fig. 6

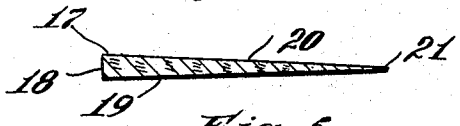

Fig. 5

INVENTOR.

Michael Campagna

BY

Robert Cushman & Grover

ATT'YS

United States Patent Office 3,300,880 Patented Jan. 31, 1967

3,300,880

CASUAL TYPE SHOE WITH HEEL-SUPPORTING WEDGE

Michael Campagna, Bristol, R.I., assignor to Marbill Company, Providence, R.I., a corporation of Rhode Island

Filed May 27, 1964, Ser. No. 370,529
4 Claims. (Cl. 36—2.5)

This invention pertains to footwear, more particularly to footwear of the so-called "casual type" wherein the shoe upper is usually of textile fabric, such as canvas, and the outer sole is usually of rubber, rubber compound or plastic, and more especially to a shoe substantially devoid of external heel but which comprises means, for example a wedge-shaped element, interposed between the upper surface of the rear portion of the outer sole and the undersurface of the rear portion of a flexible inner sole, and which functions to support the heel of a wearer's foot at an elevation higher than the forepart of the foot.

Heretofore it has been suggested that such a heel-elevating element (which extends forwardly from the extreme rear end of the insole nearly to the ball of the foot) be of a material such as, during wear, to take and retain a surface configuration approximately conforming to that of the bottom of the individual wearer's foot, that is to say, forming a matrix to the bottom of the foot. Such an arrangement affords a high degree of comfort and from this standpoint has received widespread commendation from wearers. However, foot-supporting wedges, having the characteristics just above referred to, have heretofore been made, for example, of a material comprising jute fibers, with some added adhesive, compressed to the requisite density. However, as shoes of this general type are sometimes subjected to laundry treatment, and since the wedge of compressed jute absorbs water and tends to disintegrate under such treatment, requiring a long period of drying before the shoe may again be worn, wedges of such material, although providing the desired comfort to the wearer when new have not proven satisfactory for extended periods of use.

The principal object of the present invention is to provide a shoe of the above class comprising a foot-supporting wedge capable of conforming during wear to the contour of the bottom of the wearer's foot as above described, but which, at the same time, is durable even though subjected to repeated laundry treatments and is but slightly absorbent of water so that, after laundering, it may be dried quickly without difficulty and without substantial change in shape. A further object is to provide a novel wedge element for use in such a shoe, having the basic characteristics required of such a wedge element, and which will withstand the action of detergents in water solution and the severe agitation in such a solution, such as encountered in customary laundry treatment, without distintegration and without becoming saturated with water. A further object is to provide such a wedge element which is easily made and within a permissible price range.

Other and further objects and advantages of the invention will be pointed out in the following more detailed description and by reference to the accompanying drawings wherein:

FIG. 1 is a side elevation illustrative of a shoe embodying the present invention;

FIG. 2 is a longitudinal vertical section, to larger scale than FIG. 1, showing the interior construction of the shoe;

FIG. 3 is a bottom view of the shoe of FIG. 1;

FIG. 4 is a plan view of a heel-supporting wedge element which is shown in section in FIG. 2;

FIG. 5 is a vertical section on the line 5—5 of FIG. 4; and

FIG. 6 is a vertical section on the line 6—6 of FIG. 4.

Referring to the drawings, the numeral 10 designates a shoe of the casual type and exemplifies a shoe embodying the present invention. As shown, this shoe comprises an upper having the quarter portion Q and the forepart portion F, these parts customarily being of textile material, for example canvas of any desired color, although other materials, commonly used in shoe uppers, may be employed. As shown, the shoe has a foxing strip 13 extending about its periphery at its lower part and concealing the edge of the outersole 15 (FIG. 2). The foxing is usually of elastomeric material, for example either a rubber compound or plastic. As shown in FIG. 2, the shoe has an internal quarter stiffener or counter C which may, for example, be of heavy cotton duck and which may, if desired, have a coating or ply (not shown) of waterproof material at its exterior surface and which may or may not constitute a binder for bonding it to the outer ply of the quarter. At the toe portion of the shoe there may be provided a stiffener element C^1 of similar material.

As illustrated (FIG. 2), the shoe has an insole comprising an upper ply T of textile fabric, for example cotton duck; a layer 22 of foam material, for example sponge rubber or plastic; and a layer 23 which may, for example, be of rag stock, such as is customarily employed in the bottom structure of rubber or plastic footwear and which, in this case, serves as a foundation for the sponge layer to which it firmly adheres, thus preventing the sponge layer from spreading laterally, and imparting a certain degree of stiffness to the shoe bottom.

The outer sole 15 may be of a suitable plastic or rubber compound, such as is customarily employed in making waterproof footwear, the edge of this outer sole, as above described, being concealed by the foxing strip 13 which is firmly bonded to the edge of the outer sole and also with that part of the upper which it contacts. The foxing strip may be of a suitable elastomer, either natural or synthetic. A thin ply 16 of rag stock or other appropriate material overlies the outer sole 15 and is bonded to the latter throughout its entire extent, this ply or layer 16 bonding the inlasted lower margin of the upper, as well as the lower margins of the stiffeners C and C' to the outer sole.

In accordance with the present invention, there is arranged above the rear or heel portion of the outer sole a homogeneous foot-supporting wedge element 17 having a substantially vertical rear surface 18, as shown in FIG. 5; a substantially flat horizontal lower surface 19; and a forwardly and downwardly inclined upper surface 20 extending from the thick end of the member 17, with a straight slope, to a substantially feather edge at 21. As shown in FIG. 6, this wedge element is of approximately uniform thickness transversely at any selected section and is of a width and contour in plan such as to cover substantially the entire surface of the outer sole at the heel end of the shoe. As shown in FIG. 2, this foot-supporting element or wedge 17 extends from a point adjacent to the rear end of the outer sole 15, forwardly along the shank portion of the shoe and substantially to the ball portion of the shoe. However the length of this wedge element 17 may vary according to the style and design of the shoe, but in any event is of sufficient dimensions to support the wearer's heel in somewhat elevated position as compared with the level of the forepart portion of the wearer's foot, it being noted that the shoe, as here illustrated, is of a type which is devoid of any external heel.

The entire lower surface 19 of the wedge element 17 is firmly bonded to the outer sole 15 by the ply 16 which

is of a nature such as to bond these parts together, while the upper rear portion of the wedge element is bonded to the textile ply T of the insole by the layer **23** above described. At its forward portion, the upper surface of the wedge element is also bonded to the textile ply T of the insole by the layer **23**, but at the shank portion the wedge element **17** is free from the ply **23** and at this point there is interposed between the wedge element **17** and the insole a resilient shank stiffener member R, for example, of spring steel, designed to impart the desired degree of stiffness to the shank portion of the shoe.

The wedge element **17**, in order that it may perform its desired function, should be of a somewhat plastic nature, at least when the shoe is first worn, so that in response to the pressure of the wearer's foot the upper surface of the member **17** will automatically yield to the pressure of the foot and conform itself to the contours of the undersurface of the wearer's foot so as to become a matrix of the latter, but having once assumed this contour, to have insufficient resiliency to resume its original shape when the pressure is removed. The wedge element should likewise be but slightly absorbent of moisture and of sufficient mechanical strength to withstand the stresses to which it may be subjected during wear and if the shoe be exposed to conventional laundry treatment. Thus, according to the present invention, the wedge element **17** consists of or comprises cork board, either pure cork board (that is, containing no binder other than the natural gums and resins found in cork bark), or ground cork and an artificial binder, for example a natural or synthetic resin.

Pure cork board will withstand boiling in water for several hours without disintegration; it is very light in weight, for example approximately 10½ pounds per cubic foot; and it has a very low coefficient of heat conductivity. These characteristics make it ideal as an element of an article of footwear, especially one which may be subjected to laundry treatment. Since cork is cellular and to a certain degree plastic or moldable in response to pressure, it will compress under the weight of the foot and gradually form a matrix, the upper surface of the wedge thus becoming a permanent contour complemental to that of the bottom of the wearer's foot; whereas conventional, vulcanized solid rubber or sponge rubber, being resilient, will not assume such a permanent contour and throughout the wear of the shoe constantly opposes upward pressure to some portions of the bottom of the foot.

While the wedge element **17** might be made, for example, by shaping ground cork in a suitable molding press, it is most easily prepared by employing commercial cork board which is obtainable in elongate strips which, in transverse section, are wedge-shaped. From this material the desired shape of wedge, for example, as shown in FIG. 4, may be cut by means of a suitable die. Cork board in wedge-shaped strips, such as just referred to, may be obtained in various widths and with a more-or-less steep slope or angle of inclination and with the thicker edge of different depths. While the dimensions of the wedge element is to be employed, one designed for a No. to the particular size and style of shoe in which the wedge element is to be employed, one designd for a No. 8 man's shoe, for example, may be of a maximum length, measured along its horizontal surface, of approximately 5½ inches and of a maximum thickness or depth at its rear end of approximately ⅜ of an inch.

With the exception of the provision and introduction of the wedge element, as described, the shoe as herein described may be made according to any conventional shoe making methods, such as are known to those skilled in the art and which need no detailed explanation herein.

While one desirable embodiment of the invention has here been shown and described by way of example, it is to be understood that the invention is broadly inclusive of any and all modifications falling within the terms of the appended claims.

I claim:

1. In a shoe of that kind which comprises an outer sole of elastomeric material having a substantially flat tread surface, devoid of external heel, a flexible insole, an upper having a lower marginal portion which is permanently bonded to the outer sole, and a foot-supporting wedge element interposed between the rear portion of the outer sole and the rear portion of the inner sole, the wedge element tapering in thickness forwardly from its extreme rear end and terminating in a feather edge adjacent to the ball portion of the shoe, the inner sole comprising a plurality of superposed plies, one of which is of foam elastomer and the lower of which is permanently bonded to the upper surface of the thicker end portion of the wedge element; characterized in that the wedge element is homogeneous; substantially non-resilient; and of a material which is sufficiently plastic, when the shoe is new, automatically to yield to the downward pressure of the wearer's foot and to conform itself to the contour of the undersurface of the wearer's foot so as to become a matrix for the latter, but being insufficiently resilient to resume its initial shape when the pressure is relieved, the wedge element being slightly absorbent of water and of such mechanical strength as to withstand the stresses to which it may be subjected during wear or when exposed to conventional laundry treatment.

2. A shoe according to claim **1**, further characterized in that the inner sole comprises an upper ply of textile fabric, an intermediate ply of a foam elastomer, and a lower ply constituting a bond between the foam ply and the wedge element at the heel end portion of the shoe and which is of such character as to prevent lateral spreading of the foam ply, and which, at the forepart portion of the shoe, bonds the foam ply to the upper ply of the outer sole.

3. In a shoe of the kind which comprises an upper and an outer sole, the latter having a substantially flat tread surface devoid of an external heel, in combination, a heel-supporting wedge element disposed above the rear portion of the outer sole, the heel-supporting wedge element extending from a point adjacent to the rear end of the outer sole forwardly along the shank toward the ball portion and having a substantially horizontal lower surface, a substantially vertical rear end surface, and an upper surface which slopes downwardly and forwardly, and being homogeneous and of uniform thickness at any selected transverse section, further characterized in that the wedge element is substantially non-resilient, being of corkboard which is plastic to the extent that, when the shoe is first worn, the upper surface of the wedge element automatically conforms itself permanently to the contour of the bottom of the wearer's foot, and further characterized in that the wedge element is substantially non-absorbent of water and is capable of withstanding laundry treatment without disintegrating.

4. In a shoe of the kind which comprises an upper and an outer sole, the latter having a substantially flat tread surface devoid of an external heel, in combination, an inner sole comprising an upper ply of textile fabric, a ply of a sponge elastomer immediately below the upper ply, and a lower ply of rag stock adhesively bonded to the foam ply and which is operative to prevent lateral spreading of the foam ply, a heel wedge underlying the inner sole, said wedge having a downwardly and forwardly inclined upper surface and a substantially horizontal lower surface, a ply of rag stock underlying and adhesively united to the lower surface of the wedge and overlying the outer sole and adhesively bonded to the latter, the wedge being of pure corkboard and of such plasticity that, when the shoe is new, the upper surface of the wedge automatically and permanently conforms itself to the contour of the lower surface of the wearer's foot, being insufficiently resilient to resume its initial shape when the foot pressure is removed, thereby providing a permanent matrix for the reception of the bottom of the wearer's foot.

References Cited by the Examiner

UNITED STATES PATENTS

2,603,891	7/1952	Cohn	36—9
2,724,194	11/1955	Gustin	36—2.5
2,885,797	5/1959	Chrencik	36—2.5
3,107,443	10/1963	Binder et al.	36—2.5
3,145,487	8/1964	Cronin	36—9
3,169,326	2/1965	Butera	36—2.5

PATRICK D. LAWSON, *Primary Examiner.*