Jan. 30, 1968 J. SCHALLER 3,366,117

SHOE SOLE

Filed March 13, 1964

FIG. 1

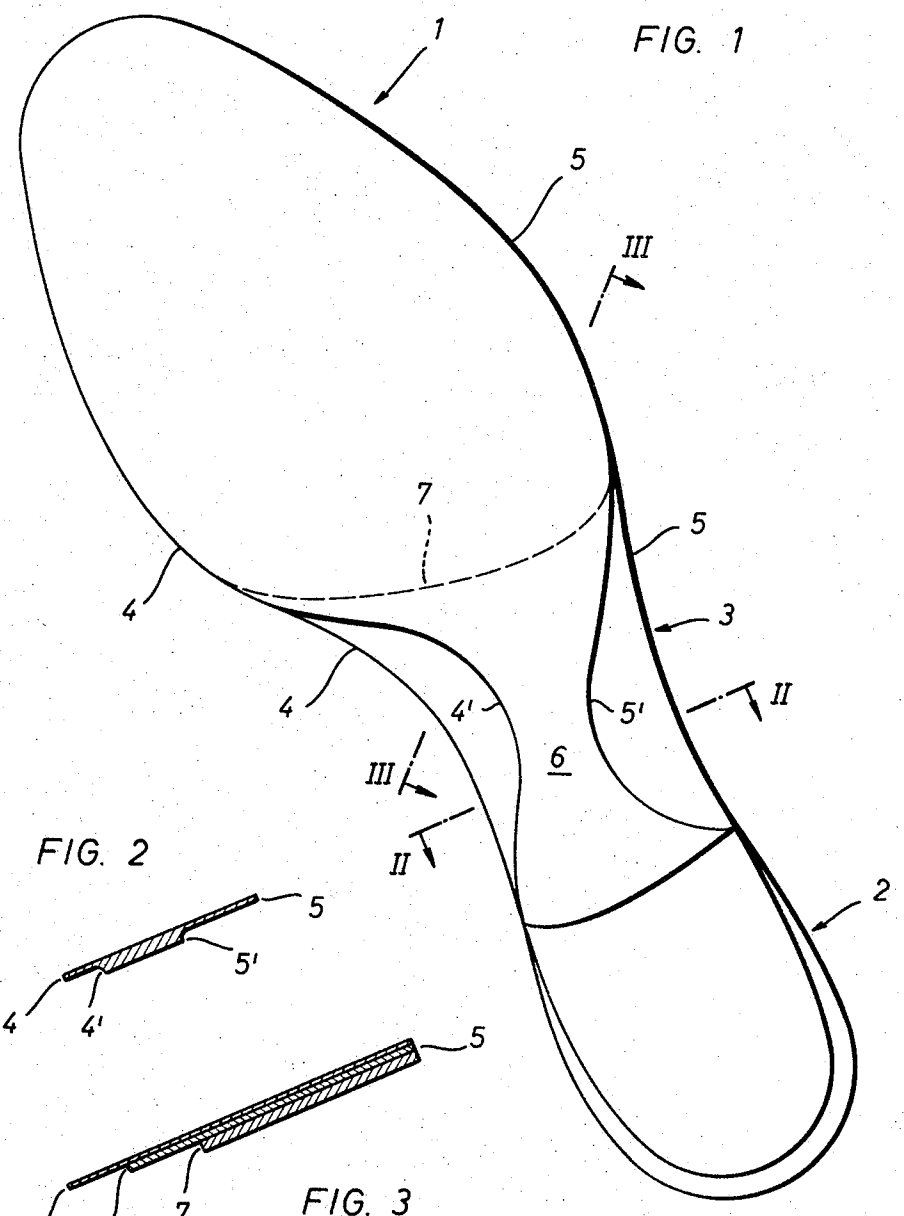

FIG. 2

FIG. 3

INVENTOR

Johannes Schaller

By: Dicke & Craig

ATTORNEYS

United States Patent Office 3,366,117
Patented Jan. 30, 1968

3,366,117

SHOE SOLE

Johannes Schaller, Kirschenweg 21, Lindenfels, Odenwald, Germany

Filed Mar. 13, 1964, Ser. No. 351,632
Claims priority, application Germany, Mar. 18, 1963, Sch 32,964
7 Claims. (Cl. 128—583)

The present invention relates to an outer shoe sole, either with or without a heel, which is designed so as to permit the front and rear parts thereof to be twisted relative to each other.

This is attained in the known soles of this type as exemplified by applicant's German Patent No. 804,901, by shaping the shank area of the sole so that its outer and inner edges curve strongly inwardly toward each other and the narrowest part of the shank area then forms a narrow bridge between the front and rear parts of the sole. The shank area of the sole for a left shoe has then a substantially Z-shaped curvature and that for a right shoe a substantially S-shaped curvature, as seen in a plan view upon the bottom surface of the respective sole. Since the upper of the shoe projects from both sides inwardly beyond the edges of the curved shank area, the narrowest part of the shank area of the sole has a width which is even smaller than the narrowest part of the arch of the foot, as seen upon the bottom thereof. The parts of the upper which are drawn toward and into the constricted shank area of the sole are therefore fully exposed to the dirt on the ground and are quickly soiled, especially in bad weather, and consequently these parts are also subjected to stronger wear and quicker aging than all other parts of the upper. Despite these disadvantages, shoes with soles of this type are very desirable because of the flexibility of the shank area which permits the front and heel portions to be twisted relative to each other.

It is an object of the present invention to improve outer soles of the type as above described in such a manner that when shoes with such soles thereon are worn even in bad weather, these soles will protect the shank area of the uppers from being soiled from the ground, even though the flexibility of the shank area of these soles which permits the front and rear parts of the soles to be twisted relative to each other is substantially the same as that of the known soles of this type.

For attaining this object, the sole according to the invention is designed so that the upper surface of the shank area of the sole has a width substantially equal to the width of the arch of the foot on which the shoe carrying the sole is to be worn, while underneath this upper surface the outer and inner edges of the shank area are reduced in thickness and are recessed and curved inwardly toward each other so as to form an S-shaped or Z-shaped central part which has a relatively small width at its narrowest portion.

From the features of the sole according to the invention as above described it is evident that the central part of the shank area of the sole has a greater thickness than the two lateral parts. The smaller both of these thicknesses are, the better is the flexibility of the shank area which permits the front and rear parts of the sole to be twisted relative to each other.

The lateral parts of the shank area of the sole adjacent to the outer and inner edges thereof should therefore be very thin and their thickness may amount, for example, to no more than 1 mm. If the sole consists of rubber or the like, such thin parts may be easily produced. Insofar as the invention is concerned, however, it is immaterial whether the sole, either with or without a heel, is made of two layers which are secured to each other or of one

layer which is recessed at the shank area by reducing its thickness at both sides of its central portion by grinding or cutting, or whether the sole is molded in the desired shape as one integral element in one operation. The thickness of the central part of the shank area should also be relatively small and amount, for example, to 3 to 4 mm., and in any event it should not be greater than the thickness of the front part of the sole and also of the rear part if the latter is not molded integrally with a heel. If such a sole is made of two layers, the bottom layer, that is, the actual outer sole, may be made of leather, while the upper layer facing the bottom of the foot may be made of a more elastic material, for example, rubber, especially since this layer is usually covered by an insole which is also designed so as to permit its rear part to be easily twisted relative to its front part. The sole according to the invention may even be made of three layers, namely, of the two mentioned layers and an outer half sole which has a size in accordance with the part of the sole in front of the shank area.

The features and advantages of the invention will become more clearly apparent from the following detailed description thereof which is to be read with reference to the accompanying drawings, in which—

FIGURE 1 shows a plan view upon the lower side of a sole with a heel thereon;

FIGURE 2 shows a cross section which is taken along the line II—II of FIGURE 1; while

FIGURE 3 shows a cross section which is taken along the line III—III of FIGURE 1 when the front part of the sole is provided with a half-sole the rear end of which is indicated in FIGURE 1 by a dotted line.

The drawing illustrates a sole according to the invention which is intended for a left shoe. The front part of the new sole in indicated at **1**, the rear or heel part at **2**, and the shank area intermediate these parts at **3**. Within this shank area **3**, the inner and outer edges **4'** and **5'** of the bottom or tread surface of the sole are recessed relative to the inner and outer edges **4** and **5** of the upper surface thereof and they are curved strongly inwardly toward the central part **6** so that this bottom surface of the shank area **3** of a sole for a left shoe is substantially Z-shaped, while that of a sole for a right shoe is substantially S-shaped. The upper surface of the shank area **3** of the sole has such a curvature and width that the inner and outer edges **4** and **5** thereof correspond substantially to the outlines of the arch portion of the foot on which the shoe carrying this sole is to be worn, as seen in a plan view upon the bottom of the foot. The central part of the shank area **3** which is defined by the edges **4'** and **5'** has therefore a considerably greater thickness than the lateral parts which are defined by the edges **4** and **5**. The thickness of this central part should, however, be equal to or even slightly smaller, but never greater than the thickness of the front part **1** of the sole and it may amount, for example, to 3 to 4 mm., while the thickness of the lateral parts may be as little as, for example, 1 mm. In any event the thicknesses of the central and lateral parts of the shank area should be such that the rear part **2** may be easily twisted relative to the front part **1** of the sole.

Although the outer sole according to the invention may consist of one integral piece of material, as indicated in FIGURE 2, at least its shank area **3** may also be made of two layers of material which may be secured to each other, for example, by gluing. The outer sole may, however, also consist of three layers, as indicated in FIGURE 3. In this case, a half sole **8** which extends up to the dotted line **7** at the front end of the shank area **3** is secured upon the front part **1** of the sole. When the sole is made of a single piece of material, for example, of leather or rubber, the reduced lateral portions of the shank area **3**

may be attained by cutting or grinding or, if it consists of rubber, it may be molded in the desired shape in one operation.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of such embodiments, but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. An outer sole having front and rear parts and a shank portion intermediate said parts, said front and rear parts adapted to be twisted relative to each other about said shank portion, said shank portion having an upper surface portion of a width substantially equal to the width of the arch of the foot on which the shoe carrying the sole is to be worn, while the bottom surface portion of the shank portion is substantially narrower than said upper surface portion, the central part of the shank portion having a sharply-curved cross section and the thickness of said central part being not greater than the thickness of said front part and the thickness of said rear part of the outer sole.

2. An outer sole according to claim 1 wherein said front and rear parts and said shank portion are comprised in a single piece.

3. An outer sole according to claim 1, wherein said shank portion comprises two superposed layers, said upper surface portion being comprised in the uppermost of said two layers and said bottom surface portion being comprised in the lowermost of said two layers.

4. An outer sole according to claim 1 wherein said shank portion includes a plurality of superposed layers.

5. An outer sole according to claim 1 wherein said central part is Z-shaped in adaptation to a wearer's left foot.

6. An outer sole according to claim 1 wherein said central part is S-shaped in adaptation to a wearer's right foot.

7. An outer sole having front and rear parts and a shank portion intermediate said parts, said front and rear parts adapted to be twisted relative to each other about said shank portion, said shank portion comprising a plurality of superposed layers, the uppermost of said plurality of layers being of a width approximately twice the width of the lowermost of said plurality of superposed layers at the narrowest part of said lowermost layer, the central part of said shank portion having a sharply curved cross section and the thickness of said central part being not greater than the thickness of said front part and the thickness of said rear part of the outer sole.

References Cited

UNITED STATES PATENTS

1,728,536 9/1929 Gartner ---------- 128—590

FOREIGN PATENTS

804,901 5/1951 Germany.

RICHARD A. GAUDET, *Primary Examiner.*

ROBERT E. MORGAN, SIMON BRODER, *Examiners.*