Aug. 21, 1945. A. C. FELLMAN 2,383,117

TREADED SHOE SOLE AND HEEL

Filed Dec. 18, 1942

Fig. 1

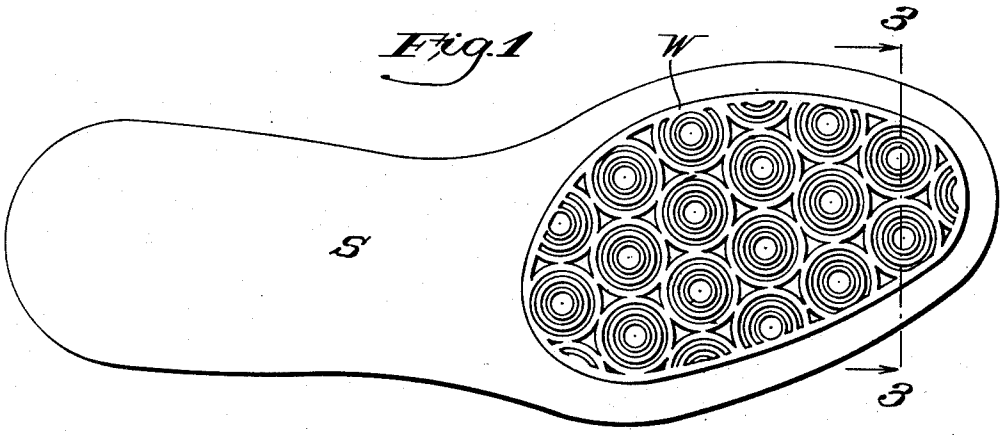


Fig. 2

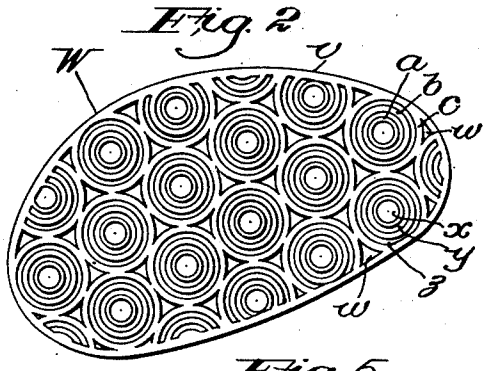


Fig. 3

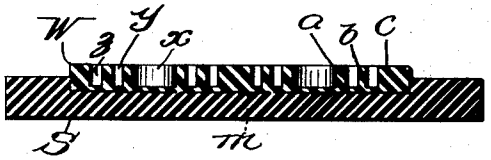


Fig. 4

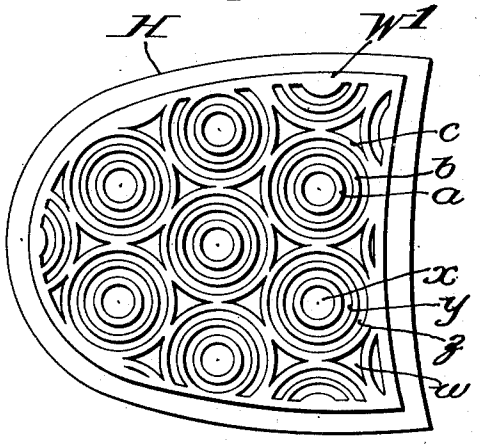


Fig. 5

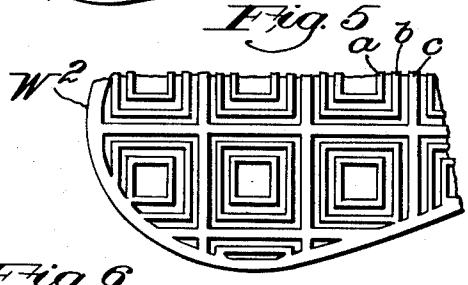
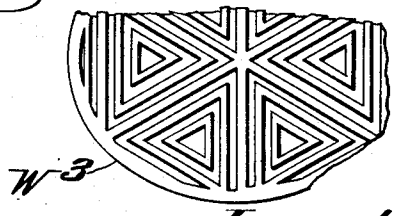


Fig. 6



Inventor

ABRAHAM C. FELLMAN

BY

Edgar H. Kent

ATTORNEY

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TREADED SHOE SOLE AND HEEL

Abraham C. Fellman, Norfolk, Va.

Application December 18, 1942, Serial No. 469,431

1 Claim. (Cl. 36—59)

My invention relates to shoe soles and heels. Its object is to provide a tread which will not slip on a smooth wet surface and is particularly adapted for use on shoes to be worn aboard ships, the decks of which are made slippery by water, which is sometimes greasy.

In the accompanying drawing, illustrating preferred embodiments of the invention:

Fig. 1 is a bottom plan view of a shoe sole having such a tread;

Fig. 2 is a bottom plan view of a tread;

Fig. 3 is an enlarged vertical cross-section on the line 3—3 of Fig. 1;

Fig. 4 is a bottom plan view of a heel having a tread thereon;

Figs. 5 and 6 are respectively fragmentary plan views of modified treads.

In Fig. 1, a base S, in the form of a sole, is provided on the under surface of its forepart with a tread W, underlying the ball of the foot. In Fig. 4 the base is in the form of a separate heel H, having a tread W1. The base S, Fig. 1, is shown without a heel, but may, of course, have a heel attached to or integral with it, which may be provided with a tread W1 shown in Fig. 4. The base is preferably of reclaimed rubber, but it may be of a leather or other suitable material.

The tread comprises a plurality of groups of narrow ribs of vulcanized gum rubber of a good quality which is soft and pliable. It is attached to the under surface of the base and preferably projects below that surface. The ribs of each group form similarly shaped closed concentric geometric figures.

In the tread W, shown in Figs. 1 to 3, and the tread W1, shown in Fig. 4, there are three such ribs forming concentric circles, in each group, an inner rib *a*, an intermediate rib *b* and an outer rib *c*. The ribs of each group form therebetween concentric grooves *y* and *z* and the inner rib *a* forms a small cup *x*. There are also, in the case of the circular ribs, hollows *w* bounded by the outer ribs of adjacent groups. The tread has a narrow edge *v*.

The ribs *a*, *b* and *c*, the edge *v* and the grooves *y* and *z* are preferably about ⅛ of an inch, between $\frac{1}{16}$ and $\frac{3}{16}$ of an inch in depth and the ribs and grooves are about $\frac{1}{16}$ between $\frac{1}{32}$ and $\frac{3}{32}$ of an inch wide.

The tread W is preferably inset into the under surface of the base to such distance that it projects below the under surface of the base preferably about $\frac{1}{16}$ of an inch, or between $\frac{1}{32}$ and ⅛ of an inch.

When the base, to which the treads are to be applied, is of a moldable vulcanizable material, such as reclaimed rubber, I may form and attach the treads in a single operation. I place a flat piece of new unvulcanized gum rubber of suitable dimensions, which is to form the tread W, in the proper location upon the bottom of a mold which has complementary projections and indentations for forming respectively the grooves and ribs of the tread. I place the piece of reclaimed rubber which is to form the base thereupon. By applying pressure and heat, as in vulcanizing, the tread is molded into the shape desired and the parts are pressed and vulcanized together and the tread is inset into the base as shown in Fig. 3.

If desired, the tread may be formed as a separate unit, as by molding and vulcanizing a piece of the gum rubber, which can then be attached to the base by vulcanizing or by cement. The base may have a suitably shaped recess to receive the tread when the tread is inset. When the tread is separately formed, it is provided with the back portion *m* which is cemented or otherwise attached to the base.

In the modified tread W2 of Fig. 5, the ribs and intervening grooves form concentric squares or rectangles and in the modified tread W3 of Fig. 6, the ribs and grooves form concentric triangles. These modified treads are otherwise the same as the treads W and W1 of Figs. 1 to 4 and may be made and applied in like manner.

Shoes provided with treaded soles of the invention take a remarkably strong grip on a wet slippery surface, such as a wet, greasy deck. This appears to be due in part to the fact that, when the wearer of the shoe steps on such a surface, the pressure of his weight forces the ribs of the tread through the film of moisture, pressing the moisture up into the grooves and cavities in the tread, and compresses the soft and pliable ribs against the comparatively dry surface beneath them.

In contrast to the soft pliable character of the gum rubber of which the tread is made, the material of the base portion of the sole or heel, whether of rubber, composition or leather, is comparatively hard and firm so as to resist deformation by pressure and to hold the stitches securely by which it is attached to the shoe upper.

While the strong grip of the treads is the main advantage of the soles and heels of my invention, they have also the advantages of being inexpensive to make and of requiring only a small amount of new gum rubber for their manufacture.

I claim:

A shoe sole of the character described including a flexible base portion having a depression therein and extending throughout the major portion thereof, and a resilient tread portion secured within and filling said depression and being of a substantial uniform thickness throughout so as to extend outwardly beyond the plane of the base portion, said tread portion having a non-slipping surface-engaging face formed to provide a rib extending circumferentially therearound, and a multiplicity of independent surface gripping areas completely filling the space defined by said circumferentially extending rib, each of said independent areas being composed of a series of spaced concentric ribs, the outermost rib of each of said independent areas being disposed in contacting relation with at least two of the outermost ribs of the adjacent independent surface gripping areas so as to provide a vacuum producing area of substantially triangular configuration therebetween, whereby to afford a planar non-slipping surface gripping tread portion having a plurality of vacuum producing areas of substantially uniform depth and distribution throughout substantially the entire area of said tread portion.

A. C. FELLMAN.