April 12, 1932. O. SCHLAPPIG 1,853,748

TREADING SURFACE FOR FOOTGEAR

Filed Feb. 10, 1930 2 Sheets-Sheet 1

Fig. 1.

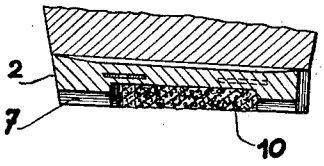


Fig. 2.

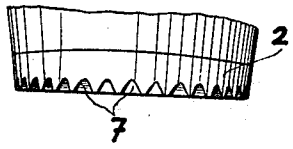
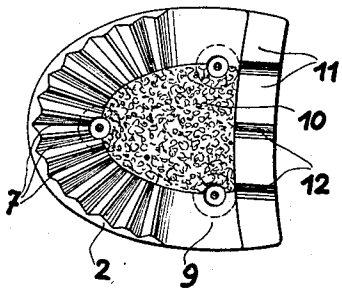


Fig. 3.



INVENTOR.
Otto Schlappig
BY Paul B. Schilling
ATTORNEYS.

April 12, 1932. O. SCHLAPPIG 1,853,748

TREADING SURFACE FOR FOOTGEAR

Filed Feb. 10, 1930 2 Sheets-Sheet 2

Fig. 4.

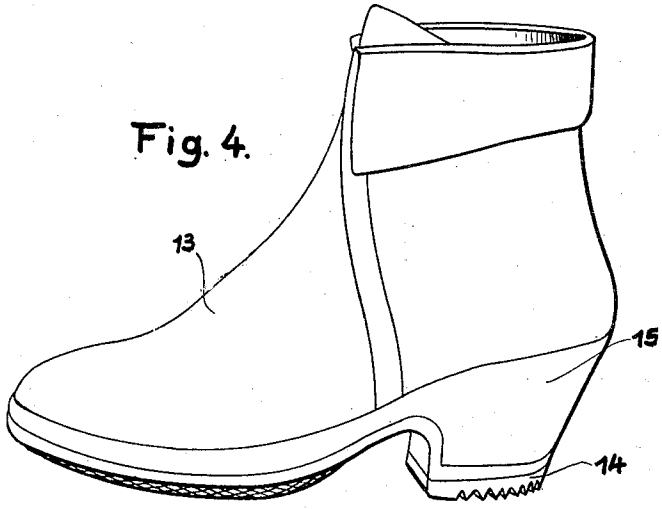


Fig. 5.

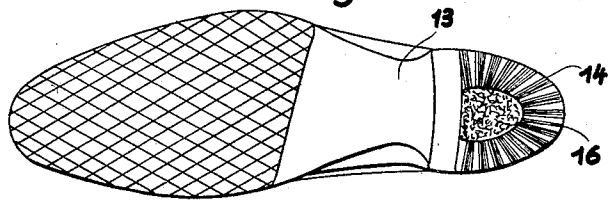


Fig. 6.

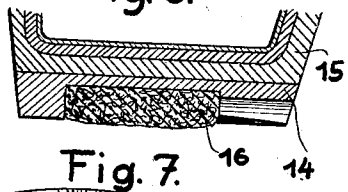


Fig. 8.

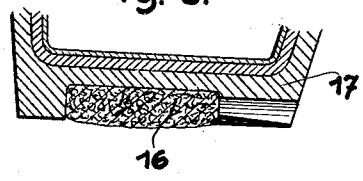
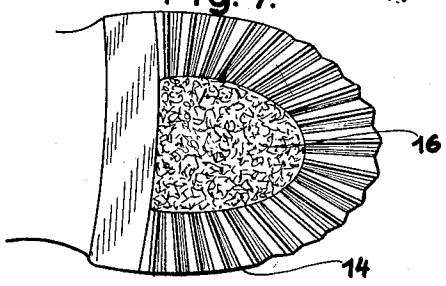


Fig. 7.



INVENTOR.
Otto Schlappig
BY Paul E. Wilkins
ATTORNEYS.

Patented Apr. 12, 1932 1,853,748

UNITED STATES PATENT OFFICE

OTTO SCHLAPPIG, OF DUSSELDORF, GERMANY

TREADING SURFACE FOR FOOTGEAR

Application filed February 10, 1930, Serial No. 427,372, and in Germany May 14, 1929.

This invention refers broadly to the construction and formation of rubber tread surfaces for footgear generally, and it is particularly intended to provide means of overcoming slipping tendencies on frozen or smooth and slippery roads, and to reduce or minimize soiling of the garments of the wearer by splashing in wet and rainy weather. It is well known that in rainy weather and on moist and dirty roads the mud and dirt adheres for a while to the soles and heels of the footgear and is raised and thrown about by the walking movement of the wearer, thereby causing stains and splashes which are particularly objectionable in the case of light-colored ladies' stockings and dresses. It has been suggested heretofore to counteract these difficulties by the use of soft, spongy rubber as a material for the tread surfaces of the soles and heels, but with such material there was the difficulty that walking and the engagement of the foot with the ground became very unsafe and difficult on account of the oscillatory movement of the soft surfaces. Moreover, the soft protecting layer is rapidly worn out, so that it must be frequently renewed without however, being absolutely reliable. These inconveniences are eliminated by my invention by the use of furrows, indentations or the like upon the treading surface and preferably combined with a portion of soft and absorbing rubber surrounded by such furrows or indentation, the entire device, if applied for instance to a heel, constituting one of the heel lifts or the top lift thereof or the heel itself. Preferably the furrows or indentations may be radially arranged and extend from the center part of the treading surface towards the edges thereof. They are of different depths, length and configuration and their depth may be equal to about half of the height of the heel or heel lift or of the sole. Within the marginal fluted or indented portion a patch of spongy absorbing rubber may be disposed.

The invention will be more fully described by reference to the accompanying drawings, showing exemplifications of the invention embodied in the construction of a heel in Figure 1 in vertical longitudinal section, in Figure 2 in side elevation and in Figure 3 in bottom plan view. Figure 4 illustrates a rubber boot provided with the heel according to this invention, which is shown in plan view in Figure 5. In Figures 6 and 7 the heel attachment of such shoes is shown on a somewhat enlarged scale, and Figure 8 is a vertical longitudinal section of another modification.

The marginal indentations 2 of the heel constitute the open ends of grooves, flutings or furrows 7 which extend in a substantially radial direction towards the center part of the heel surface. In connection with the flat portions 9 and 10 of the rim these furrows impart a very steady firm supporting surface for the foot of the wearer. With this embodiment additional not necessarily radial, but parallel, longitudinal furrows 12 may be provided on the heel breast side of the rim 11. The mounting of the heel upon the sole may be effected by a suitable adhesive or in any other suitable and approved manner, and in the case of a rubber boot or the like, the heel may be made integral with the boot by the usual moulding method. It may also be secured in position by means of a small top lift secured between the indented marginal portion or by similar small plates or the like. The outwardly exposed part of the central portion may contain spongy absorbent rubber secured in place by an adhesive, by melting of the rubber or otherwise. Inasmuch as the pressure in the walking operation is absorbed by the solid rim the rubber insert 10 is protected from premature wearing out. The new heels may be made of rubber, rubber substitutes, leather, leather residues or substitutes and of notched plates of suitable material.

In Figures 4 and 5 a rubber over-shoe or boot 13 is shown which is provided with the protecting heel 14 which is secured to the boot in any suitable manner, as for instance by vulcanization, by an adhesive or otherwise. Figures 6 and 7 are respectively vertical longitudinal section and bottom plan views, illustrating the means of attaching the improved heel or heel lift to an existing heel 15. A filling of sponge rubber 16 may be provided in this case likewise, but it should be understood

that this filling may be dispensed with and that the space between the curved marginal part may be occupied by a leather lift or the like.

In Figure 8 an exemplification is shown in which the heel 17 of a rubber boot constitutes the protective heel according to this invention.

As regards the anti-splashing action of the new heel or heel-lift it may be pointed out that the heel will operate as follows. Upon engagement of the new heel with a wet surface the resilient teeth or furrows of the treading surface are compressed to form a continuous, smooth surface, while the water existing below the heel is forced outwards. The cavity or recess of the treading surface and the rubber filling thereof are likewise compressed so that the moisture contained in these parts and absorbed by the sponge rubber is forced outwards as a result of the very considerable compression and reduction of size of the filling. Upon raising the heel or treading surface the teeth, indentations or furrows are spring actingly returned to their initial position, and in this returning movement every tooth or tooth gap, or the projections and depressions operate in the manner of a diaphragm or membrane pump by sucking the liquid and the dirt particles adjoining the heel from the outside into the newly formed gaps and depressions. By the presence of the depression or cavity in the central portion and by the filling of sponge rubber or the like therein contained the sucking action of the teeth and projections is considerably increased, inasmuch as upon the raising of the heel the rubber insert will likewise expand, thereby producing a suction upon the liquid and absorbing and retaining the same. In view of the fact that the projections or teeth of the heel after having been restored to their initial position occupy at least twice the volume which they possess in the compressed condition, their absorbing and retaining qualities are obviously likewise correspondingly augmented. There is another important advantage resulting from the use of the new heel, inasmuch as when secured to the boot or shoe it produces a very pleasant, elastic and agreeable feeling in the walking operation. Furthermore, the heel according to the invention does not wear off as rapidly as the ordinary rubber heels, and it may, of course, be used as an ordinary heel or heel lift, in case it should not be made to serve as a protecting and splashing preventing device.

It should also be understood that the invention is not restricted to the particular embodiments herein shown and described by way of exemplification and illustration only, but it is susceptible of various further modifications and changes within the ambit of the claims hereunto appended.

I claim:—

1. A non-splashing footwear heel including a tread formed with a central depression from which a plurality of proximate ribs forming channels extend to the edge of the heel, said tread being sufficiently elastic to permit constriction of said channels into a substantially smooth flat surface by applied pressure, and a rubber sponge material retained in the central depression in said tread.

2. A non-splashing footwear heel having a central cavity and a plurality of ribs in spaced relation to each other radiating from the cavity to the edge of the heel, and an absorbent agent in the cavity, the outer surface of the said absorbent agent being on a plane of the outer edges of the ribs.

3. A rubber heel for footwear having a body of conventional semi-ovate form in plan and having a substantially central semi-ovate recess whereby the ground contacting portion of the heel forms a band of substantially uniform width having a nearly straight forward breast portion and arcuate side and rear portions, said rear portion being serrated to provide alternate grooves and ridges, the faces of the serrations being at acute angles to each other.

4. A rubber heel for footwear having a body of conventional semi-ovate form in plan and having a substantially central semi-ovate recess whereby the ground contacting portion of the heel forms a band of substantially uniform width having a nearly straight forward breast portion and arcuate side and rear portions, said rear portion being serrated to provide alternate grooves and ridges, the faces of the serrations being at acute angles to each other, and a filling of sponge rubber in said recess having its ground contacting surface flush with the ground contacting surface of the ridges.

5. A rubber heel for footwear having a body of conventional semi-ovate form in plan and having a substantially central semi-ovate recess whereby the ground contacting portion of the heel forms a band of substantially uniform width having a nearly straight forward breast portion and arcuate side and rear portions, said rear portion being serrated to provide alternate grooves and ridges, the faces of the serrations being at acute angles to each other, the forward breast portion having a flat substantially unbroken ground contacting surface and the serrations extending from one end of the forward breast portion to the other in the side and rear portions.

6. A rubber heel for footwear having a body of conventional semi-ovate form in plan and having a substantially central semi-ovate recess whereby the ground contacting portion of the heel forms a band of substantially uniform width having a nearly straight forward breast portion and arcuate side and

rear portions, said rear portion being serrated to provide alternate grooves and ridges, the faces of the serrations being at acute angles to each other, the forward breast portion having a flat substantially unbroken ground contacting surface and the serrations extending from one end of the forward breast portion to the other in the side and rear portions, and a filling of sponge rubber in said recess having its ground contacting surface flush with the ground contacting surface of the ridges.

In testimony whereof I affix my signature.

OTTO SCHLAPPIG.