March 25, 1941. N. E. TOUSLEY 2,236,278

ANTISKID FOOTWEAR TREAD

Filed March 9, 1939

Fig-1

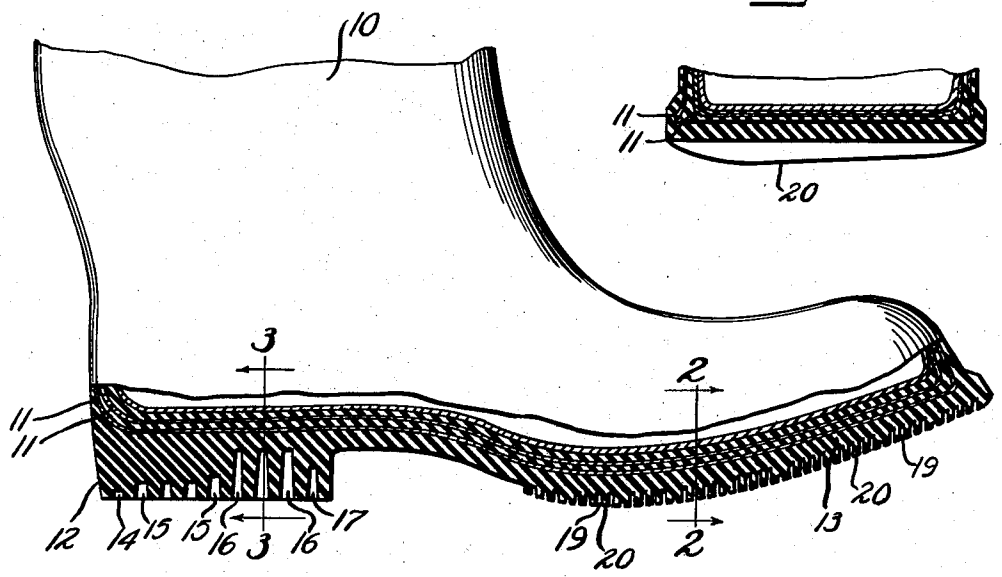


Fig-2

Fig-3

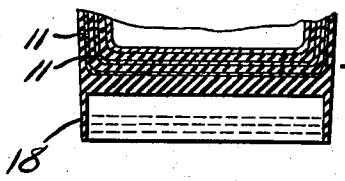
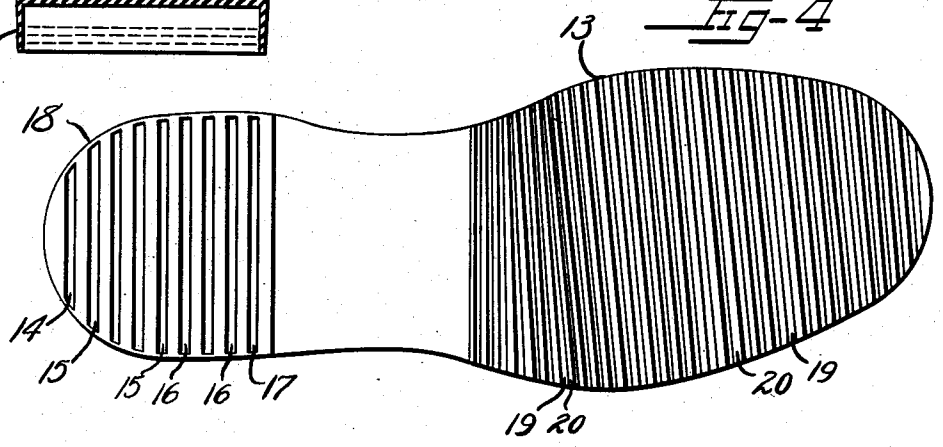


Fig-4



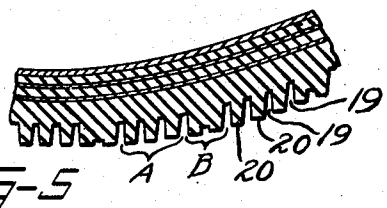


Fig-5

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ANTISKID FOOTWEAR TREAD

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Application March 9, 1939, Serial No. 260,753

6 Claims. (Cl. 36—59)

This invention relates to antiskid footwear treads and is useful in soles and heels independently as well as combined soles and heels, and the invention may be applied to treads built integrally with the footwear, as in the case of boots, or to treads formed separately for subsequent attachment to the footwear.

It has been found that effective antiskid action may be provided in soles and heels by forming the faces thereof with transversely extending ribs by cutting or molding or otherwise forming grooves in the faces of such treads. Flexibility of such ribs is desirable for maximum skid resistance, but in somes cases it has been found that where the grooves have been of considerable depth and the ribs quite narrow that the ribs have been unstable, resulting in an uncomfortable feeling of wobbling to the wearer.

The chief objects of this invention are to avoid such disadvantages while nevertheless maintaining the non-skid advantages of the ribbed tread, to provide these results together with durability of construction and neatness of appearance, and to facilitate manufacture.

These and further objects will be apparent from the following description reference being had to the drawing, in which:

Fig. 1 is a side elevation with parts broken away and sectioned, of footwear of the boot type, made in accordance with and embodying the invention.

Fig. 2 is a section taken along the line 2—2 of Fig. 1.

Fig. 3 is a section taken along the line 3—3 of Fig. 1.

Fig. 4 is a bottom view of the footwear of Fig. 1.

Fig. 5 is a fragmentary section on an enlarged scale showing a portion of the sole of the boot of Fig. 1.

The invention is illustrated as applied to the tread of a boot, but it will be understood that the invention is applicable as well to treads of other types of footwear, and that it may be applied to heels and soles independently, or one-piece heels and soles, whether built into the footwear or manufactured separately.

Referring to the drawing, a boot 10 of rubber or other rubber-like material suitably reinforced, as by fabric layers 11, 11, has a tread including a heel 12 and a sole 13. The heel is formed with a plurality of transverse grooves 14, 15, 15, 16, 16 and 17 defining a series of ribs extending across the tread, which ribs are flexible and are effective to resist slipping on wet surfaces, the edges of the ribs being effective to penetrate water to secure a firm grip on the surface itself.

In accordance with the invention I form the grooves of varying depth as shown in Fig. 1, preferably graduated from the rear portion of the heel to the front thereof so that the rearmost grooves are shallowest and the grooves increase progressively in depth forwardly. The foremost groove 17 of the heel may be shallower than the grooves immediately preceding it because of its proximity to the breast of the heel for the sake of adequate stiffness in this region. The grooves may be closed at the side margins of the heel by a wall 18, which gives the appearance from the side of a solid heel, and provides additional edges for skid resistance, as well as additional stability to the heel, although the grooves may be left open at the side margins, if desired.

In the sole portion a series of transversely extending grooves 19, 19 are provided, and to the end of providing adequate stability of the sole and heel without substantially lessening the skid resistance of the ribs 20, 20, certain of the grooves are made shallower than other grooves so that the ribs at the shallower grooves will have increased stability. I have found that the desired objects can be attained by keeping most of the grooves deep and providing the shallower ribs only occasionally throughout the tread. In the illustrated embodiment each shallow groove is alternated with four deep grooves, so that the ribs are in successive groups of three flexible ribs indicated by the bracket A in Fig. 5, alternating with a stiffer group of two ribs indicated by the bracket B.

The ribbed tread, whether it be heel or sole or both, may be formed by molding, in which case variations from a truly transverse disposition of the ribs may be provided, including zig-zag, curved, and other forms. The tread may also be formed in any other suitable manner, as by cutting the grooves, or by extruding or otherwise forming a sheet of the grooved material and blanking the treads therefrom, the shallow grooves being disposed in the proper places. The grooves may extend entirely to the margins of the tread or they may be inclosed wholly or in part by a wall such as the wall of the heel 18. As shown in Fig. 2 it is preferred to taper off the ribs toward the side margins of the tread so as to lessen scuffing and breakdown of the ribs at such margins, and as shown in Fig. 2 the ribs may be formed with their maximum depth in a

zone of normally greatest wear, toward the outside of the foot.

The invention is applicable to footwear treads of many materials, including rubber and other rubber-like materials with or without fabric or other reinforcement or stiffening material, to treads of leather, fiber and other suitable materials.

The term "tread" as used in the specification and claims includes heels and soles independently and combined heels and soles.

Variations may be made without departing from the invention as it is defined in the following claims.

I claim:

1. A footwear tread having groups of ribs of flexible material in the face thereof separated by grooves, the ribs of alternate groups being separated by grooves of less depth and providing greater stability of the ribs of these groups than the ribs of the intervening groups, and said intervening groups having more ribs than said alternate groups.

2. A footwear tread comprising a body of resilient rubber-like material having a plurality of flexible generally transverse ribs on its tread face separated by grooves, the walls of said grooves terminating at the thread face abruptly to define sharp edges adapted to prevent skidding, some of said ribs being of simple form and of such depth as to be independently flexed under pressure to present said edges for scraping water from a wet supporting surface, and other ribs being of compound form having secondary ribs of less depth to provide stability of support.

3. A footwear tread comprising a body of resilient rubber-like material having a plurality of generally transverse ribs on its tread face separated by grooves, a plurality of spaced-apart groups of the ribs having relatively shallow grooves between the ribs thereof, and a plurality of groups of the ribs alternating with the first said groups having relatively deep grooves between the ribs thereof.

4. A footwear tread comprising a body of resilient rubber-like material having a plurality of flexible transverse ribs on its tread surface separated by grooves of substantial width providing increased flexibility to said tread in the direction of travel, the faces of said ribs defining said grooves being only slightly inclined to the normal to said tread surface so as to provide relatively sharp squeegee edges and being out of contact with each other so as to provide for free exit of water from a supporting surface, said ribs being arranged in adjacent sets separated in each set by at least one shallow groove to provide stability to the ribs against excessive flexing without increasing their ground contacting area and separated between sets by deeper grooves to provide longitudinal flexibility of the tread.

5. A footwear tread comprising a body of resilient rubber-like material having a plurality of flexible transverse ribs on its tread surface separated by grooves of substantial width providing increased flexibility to said tread in the direction of travel, the faces of said ribs defining said grooves being only slightly inclined to the normal to said tread surface so as to provide relatively sharp squeegee edges and being out of contact with each other so as to provide for free exit of water from a supporting surface, said ribs being arranged in adjacent sets separated in each set by at least one shallow groove to provide stability to the ribs against excessive flexing without increasing their ground contacting area and separated between sets by deeper grooves to provide longitudinal flexibility of the tread, said tread comprising heel and sole portions, said heel portion having deeper grooves near its breast than at its rearward portion to provide greater stiffness to said rearward portion.

6. A footwear tread comprising a body of resilient rubber-like material having a plurality of flexible transverse ribs on its tread surface separated by grooves of substantial width providing increased flexibility to said tread in the direction of travel, the faces of said ribs defining said grooves being only slightly inclined to the normal to said tread surface so as to provide relatively sharp squeegee edges and being out of contact with each other so as to provide for free exit of water from a supporting surface, said ribs being arranged in adjacent sets separated in each set by at least one shallow groove to provide stability to the ribs against excessive flexing without increasing their ground contacting area and separated between sets by deeper grooves to provide longitudinal flexibility of the tread, the grooves of said tread portion being closed at the sides of the tread by a substantial wall of rubber-like material to conceal said grooves and to provide resistance to lateral skidding.

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