

P. W. PRATT.
RUBBER TREAD.

APPLICATION FILED OCT. 3, 1903.

NO MODEL.

Fig. 1.

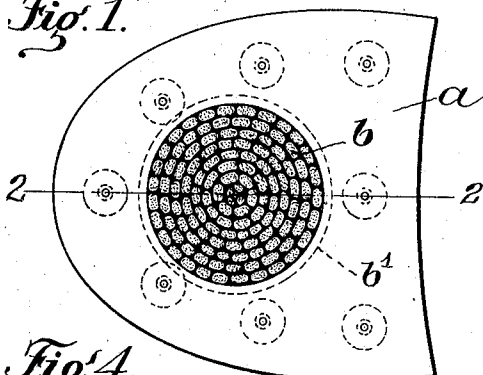


Fig. 2.

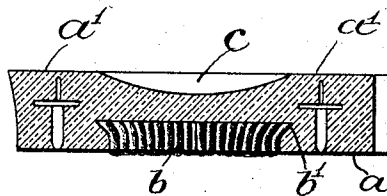


Fig. 4.

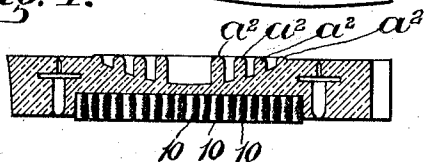


Fig. 3.

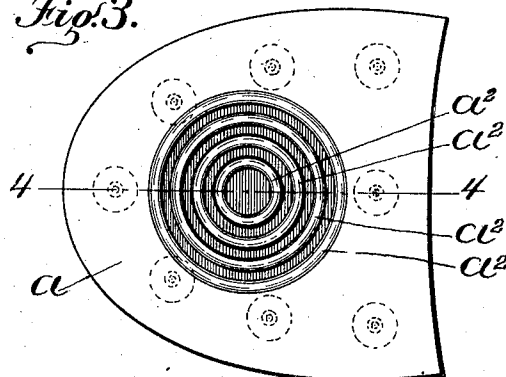


Fig. 5.

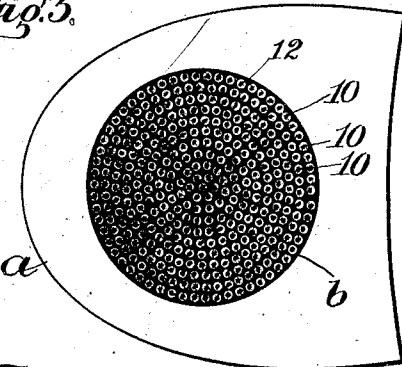


Fig. 6.

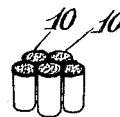


Fig. 7.

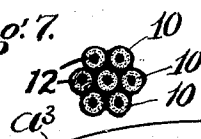


Fig. 8.

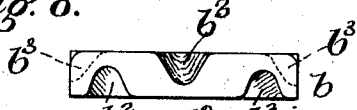


Fig. 10.

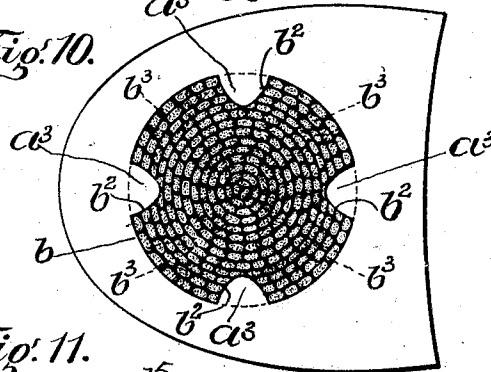


Fig. 9.

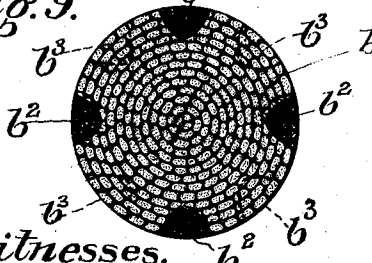
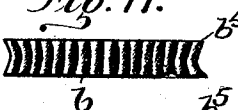


Fig. 11.



Witnesses.
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UNITED STATES PATENT OFFICE.

PHILIP W. PRATT, OF BOSTON, MASSACHUSETTS.

RUBBER TREAD.

SPECIFICATION forming part of Letters Patent No. 769,324, dated September 6, 1904.

Application filed October 3, 1903. Serial No. 175,633. (No model.)

To all whom it may concern:

Be it known that I, PHILIP W. PRATT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Rubber Treads, of which the following is a specification.

This invention relates to elastic tread or wear pieces intended chiefly for boot and shoe heels and soles and provided with relatively hard wear-resisting plugs embedded in the elastic body of the tread and constituting a part of the wearing-surface, all as shown in Letters Patent of the United States No. 695,298, dated March 11, 1902. In said patent the wear-resisting plug is shown as a strip of frictioned canvas or cloth closely wound into a coil, the convolutions of which are united by coatings of rubber applied to the sides of the strip. This plug is embedded in the central portion of the heel and covers a considerable area of the tread-surface. Owing to its relative hardness it has been found that the plug deprives the heel at the central portion of that degree of elasticity which is desirable. To obviate this difficulty, I increase the elasticity of the rubber body over the wear-resisting plug in such manner as to compensate for the relative hardness of said plug. I also provide certain improvements in the form of plug.

My invention therefore consists in the improvements, which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a bottom view of a rubber tread for heels embodying my invention. Fig. 2 represents a section on line 2 2 of Fig. 1. Fig. 3 represents a view of the upper side of a different form of rubber tread embodying my invention. Fig. 4 represents a section on line 4 4 of Fig. 3. Fig. 5 represents a view of the under side of a heel-shaped rubber tread, showing a different construction of the wear-resisting plug. Figs. 6 and 7 are enlarged details of the construction of plug shown in Fig. 5. Fig. 8 represents an edge view, and Fig. 9 a side view, of a differently-formed plug. Fig. 10 is a bottom view of a heel having a plug formed as shown in Figs. 8 and 9.

Fig. 11 represents an edge view of another form of plug.

The same reference characters indicate the same parts in all the figures.

I have illustrated my invention as applied to a rubber heel, although it is not limited to this particular device and may be applied to cushioned treads for other purposes.

In the drawings, *a* represents the body portion, which is composed of suitably elastic vulcanized rubber.

b represents the wear-resisting plug, which is embedded in the under surface of the body *a*, the under surface of the plug and the under surface of the body being substantially flush with each other and constituting the tread-surface. In the construction shown in Figs. 1 and 2 the plug *b* is composed of a strip of frictional textile fabric, preferably canvas, cut with its threads extending diagonally and coiled to form a cylindrical body or plug, as shown in the above-mentioned patent. The plug occupies the central portion of the tread-surface of the heel and extends partly but not entirely through the same, the elastic rubber portion being molded to cover the upper surface and periphery of the plug. The central portion of the body *a* is reduced to give greater elasticity at said central portion above the plug *b* than at the marginal portion, the object of this reduction being to compensate for the relative hardness and rigidity of the plug, and thus give the heel a substantially uniform yielding quality at all parts of its tread-surface. In reducing the central portion of the heel I prefer to form a cavity *c* in the upper surface of the heel, said cavity having a concave surface. The cavity *c* is surrounded by a flat portion *a'*, which is formed to fit closely against the part of the boot or shoe to which the heel is attached, so that a body of air will be confined between the central portion of the attached heel and the corresponding part of the bottom of the boot or shoe. The elasticity of the confined air supplements the reduced central portion of the heel in giving elasticity to the tread-surface. If desired, the bottom of the cavity *c* may be provided with upwardly-extend-

ing protuberances formed to bear upon the bottom of the boot or shoe, said protuberances cooperating with the confined air in forming a cushion above the plug *b*. In Figs. 3 and 4 I show said protuberances formed as concentric rings or ridges *a*², integral with the body *a* and separated by concentric air-spaces. It is obvious, however, that the protuberances *a*² may be posts or studs separated from each other, but integral with the body *a*.

In Figs. 4, 5, 6, and 7 I show the plug *b* as composed of a series of strands 10, each of which is composed of parallel fibers of textile material. Each strand is preferably coated with a rubber solution prepared for vulcanization before the strands are assembled, such solution causing the strands to adhere to each other and forming a bond of union between them, which bond is rendered permanent by vulcanization. The plug thus formed is a section cut from a rope composed of strands of indeterminate length prepared and secured to each other, as above stated, said rope being cut up into sections, each of which constitutes a plug *b*. The fibers of the strands may be slightly twisted or may be straight. In the plug thus formed the threads or fibers extend substantially at right angles with the tread-surface of the plug instead of diagonally thereto, as shown in the above-mentioned patent. There is therefore less liability of the detachment of the outer ends of the threads in the form of loose hanging ends than heretofore. To increase the permanence of the hold of the rubber body on the marginal portion of the plug, I prefer to form a lip or flange *b'*, surrounding the upper surface of the plug, said flange extending outwardly from the margin of the plug and being formed by compressing the plug before its vulcanization and while the plug is in a yielding condition. The flange is rendered permanent by vulcanization, and when the unvulcanized material of the body *a* is formed around the plug said material is interlocked with the flange, so that the plug is firmly anchored in the body.

In Figs. 8 and 9 I show a plug *b*, having a series of indentations *b*² formed in the marginal portion of one of its sides and a series of like indentations *b*³ formed in the marginal portion of the opposite side, the indentations

of one series alternating with those of the other. The indentations may be formed by compressing the portions of the plug where the indentations occur, before the rubber is vulcanized, the plug being therefore yielding and impressionable. When the plug is incorporated into the rubber body, portions of the latter constituting projections *a*² enter the indentations *b*² and *b*³ and confine the plug in place.

The strands 10 are preferably provided with cores or members 12, of lead, extending lengthwise of the strands. The ends of the lead members are exposed on the tread-surface and increase the frictional hold of the tread.

In Fig. 11 I show the wear-resisting plug provided with a peripheral groove, the sides of which form flanges or lips *b*⁵ *b*⁵ at both sides of the plug. These lips engage the rubber body which projects into the groove, so that the plug is firmly anchored in the body.

I claim—

1. A rubber tread comprising an elastic body and a wear-resisting plug occupying the central portion of the tread-surface of said body, the upper portion of the body being reduced above said plug, the said reduced portion and the plug being located relatively to each other to cause the reduced portion to compensate for the relative hardness of the plug.

2. A rubber tread comprising a wear-resisting tread-piece or plug, and an elastic body surrounding the margin of the plug and extending across one side of the same, said body having a tread-surface surrounding the tread-surface of the plug, one or more air-chambers in its upper portion above the plug, and an air-confining upper face surrounding the air chamber or chambers.

3. In a rubber tread, a wear-resisting plug composed of parallel strands extending substantially at right angles with the wearing-surface of the tread, said strands having longitudinally-extending members or cores of lead.

In testimony whereof I have affixed my signature in presence of two witnesses.

PHILIP W. PRATT.

Witnesses:

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E. BATCHELDER.