May 11, 1954

W. REED

2,677,904

CUSHION SHOE WITH PNEUMATIC SOLE

Filed Jan. 9, 1953

Fig. 1

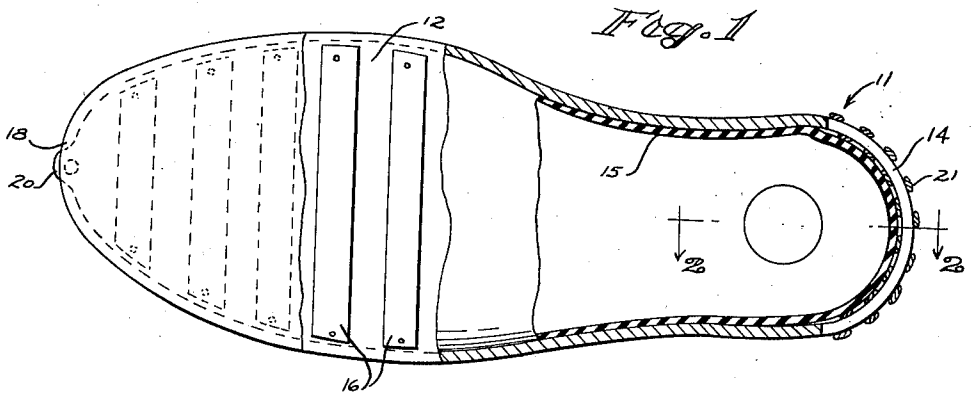
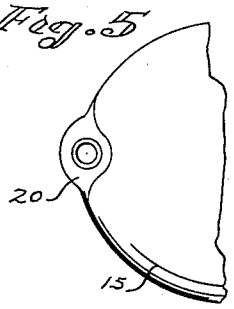


Fig. 5



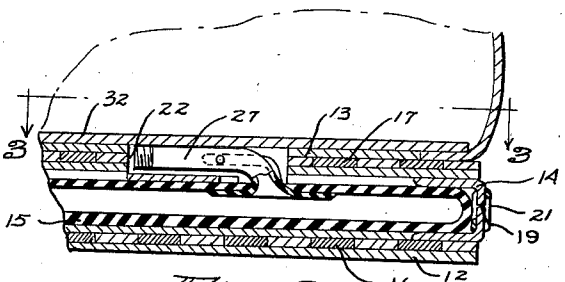
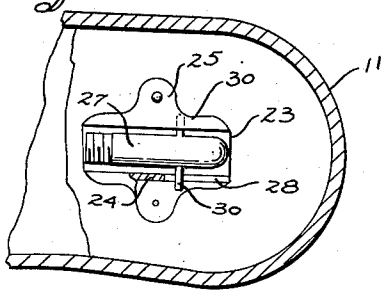


Fig. 2

Fig. 3



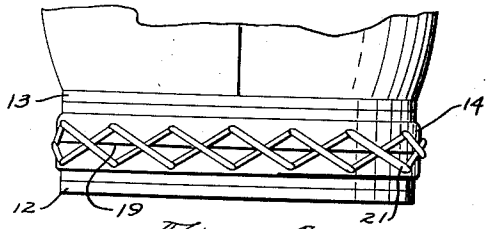


Fig. 4

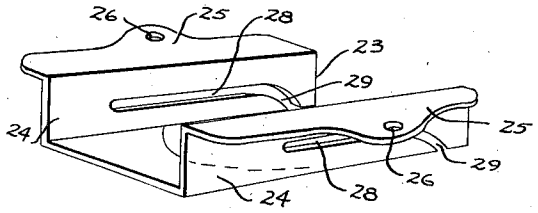


Fig. 6

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CUSHION SHOE WITH PNEUMATIC SOLE

Willie Reed, Memphis, Tenn.

Application January 9, 1953, Serial No. 330,538

2 Claims. (Cl. 36—29)

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This invention relates to footwear, and more particularly to an improved pneumatic cushioned structure for a shoe.

The main object of the invention is to provide a novel and improved cushioned shoe which is simple in construction, which involves inexpensive components, and which provides a resilient cushioning effect for a shoe without substantially increasing its bulk.

A further object of the invention is to provide an improved pneumatically cushioned shoe which is sturdy in construction, which is comfortable to wear, and which retains all of the desired properties of shoes of standard construction while at the same time providing a high degree of cushioning action for the feet.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a bottom plan view, partially in cross section, of an improved shoe sole construction according to the present invention.

Figure 2 is an enlarged vertical cross sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a horizontal cross sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a fragmentary end elevational view of the heel portion and a portion of the back of the shoe adjacent to said heel portion, as illustrated in Figures 1 and 2.

Figure 5 is a fragmentary plan view of the forward portion of the inflatable cushion element employed in the improved shoe of Figures 1 to 4.

Figure 6 is a perspective view of the channel-shaped valve retaining member employed in the shoe of Figures 1 to 4.

Referring to the drawings, the improved shoe is designated generally at 11 and includes an outer sole 12, an inner sole 13, and a flexible peripheral wall 14 connecting the margins of the outer sole 12 and inner sole 13. There is thus defined between the outer sole 12 and the inner sole 13 a compartment in which is disposed an inflatable bag or cushion 15 shaped to conform with the contour of the shoe, the cushion or bag 15 being formed of rubber or other suitable inflatable material. As shown in Figure 2, the inner and outer soles 12 and 13 may be of laminated construction and may be provided with the transverse reinforcing members 16 and 17 spaced longitudinally along the outer and inner soles, as shown in Figures 1 and 2, the reinforcing members 16 and 17 being of any suitable material, such as strip steel.

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The flexible peripheral wall 14 is formed with an aperture 18 at the toe end of the shoe and is slit transversely at the heel end thereof, as shown at 19, thereby providing means for inserting or removing the inflatable bladder 15. The bag 15 is integrally formed at its forward end with an apertured tab 20 which may be engaged by a suitable hook or other implement inserted through the aperture 18 to pull the inflatable bag 15 into the compartment defined between the inner sole 13 and the outer sole 12, the bag being inserted through the transverse slit 19 at the rear end of the shoe. The implement, which may be a hooked rod of wire or other suitable material is inserted through the aperture 18, is engaged with the apertured tab 20, and then the implement is pulled, pulling the inflatable bag or bladder 15 into the space between the inner sole 13 and the outer sole 12, after which the hooked implement may be disengaged from the tab 20. The rear portion of the flexible peripheral wall 14 is provided with suitable laces 21 traversing the slit 19 and detachably securing the edges of the slit together, as shown in Figure 4.

The inner sole 13 is formed with a longitudinally extending slot 22 in which is secured a channel-shaped rigid member of metal or the like, shown at 23, said channel-shaped member having the side walls 24, 24 disposed adjacent the side walls of the slot 22, and having the apertured top flanges 25, 25 which are received in suitable recesses formed in the top surface of the inner sole 13, said channel-shaped member being secured by means of suitable fasteners engaged through the apertures 26 of the flanges 25 and embedded in the inner sole 13. Designated at 27 is a valve member which is connected to the inflatable bag 15 and which is disposed in the channel-shaped member 23. As shown in Figure 6, the side flanges of the channel member 23 are formed with transversely aligned, longitudinally extending slots 28, 28 which have the downwardly curved end portions 29 opening at the bottom of the channel-shaped member. The valve 27 is formed with the outwardly projecting pin elements 30, 30 slidably engaging in the slots 28, 28.

When the inflatable bag 15 is inserted, in the manner above described, the valve 27 slips into the slot 22 and enters the channel-shaped member 23, the pins 30, 30 of the valve engaging in the curved portions 29, 29 of the respective slots 28, and eventually being moved into the straight, longitudinally extending portions of said slots, as the inflatable bag 15 is pulled to its final posi-

tion. The valve **27** may be rotated clockwise, as viewed in Figure 2, through a sufficient angle to permit the inflating implement to be engaged on the valve, and to permit the bag **15** to be filled with air. After the bag **15** has been inflated, the valve **27** may be released and returns to the horizontal position thereof shown in Figure 2. A suitable lining member **32** of leather or other flexible material is disposed over the inner sole **13** and covers the valve **27**, as illustrated in Figure 2.

While a specific embodiment of an improved cushioned shoe has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In a shoe, an outer sole, an inner sole, a flexible peripheral wall connecting the margins of said soles, whereby an inflatable compartment is defined between said soles, said wall being formed with an aperture at the toe end of the shoe and being slit transversely at the heel end thereof, lace means detachably securing the edges of the slit, an inflatable pneumatic cushion in said compartment, said inner sole being formed with a slot, an apertured tab at the forward end of said cushion, an elongated valve on said cushion received in said slot, and a lining member disposed on said inner sole overlying said valve.

2. In a shoe, an outer sole, an inner sole, a flexible peripheral wall connecting the margins of said soles, whereby an inflatable compartment is defined between said soles, said wall being formed with an aperture at the toe end of the shoe and being slit transversely at the heel end thereof, lace means detachably securing the edges of the slit, an inflatable pneumatic cushion positioned in said compartment, an apertured tab at the forward end of said cushion, said inner sole being formed with a slot, a channel-shaped rigid member secured longitudinally in said slot, the side walls of said rigid member being formed with transversely aligned, longitudinally extending, downwardly and rearwardly curved slots, an elongated valve on said cushion received in said channel-shaped member, respective projections on said valve slidably received in said last-named slots, and a lining member disposed on said inner sole overlying said valve.

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