July 9, 1946. J. BROWNE 2,403,477

SHOE FOR DIVERS

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Fig. 1.

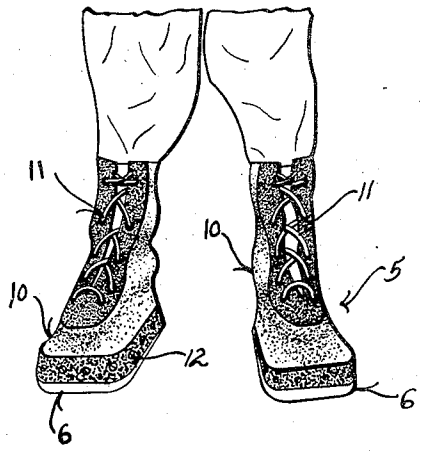

Fig. 2.

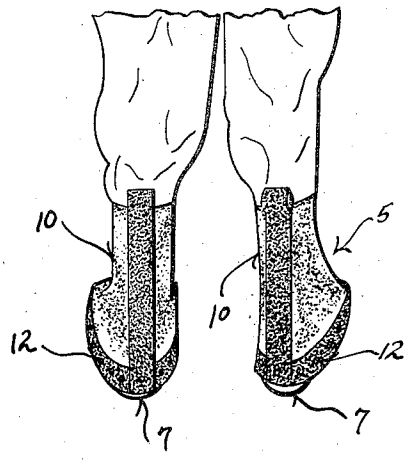

Fig. 3.

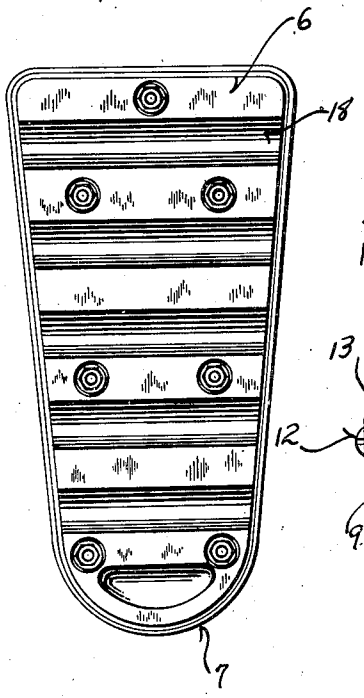

Fig. 4.

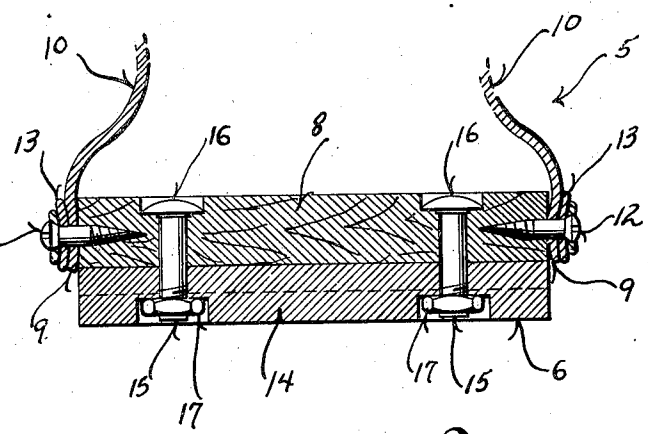

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Fig. 5.

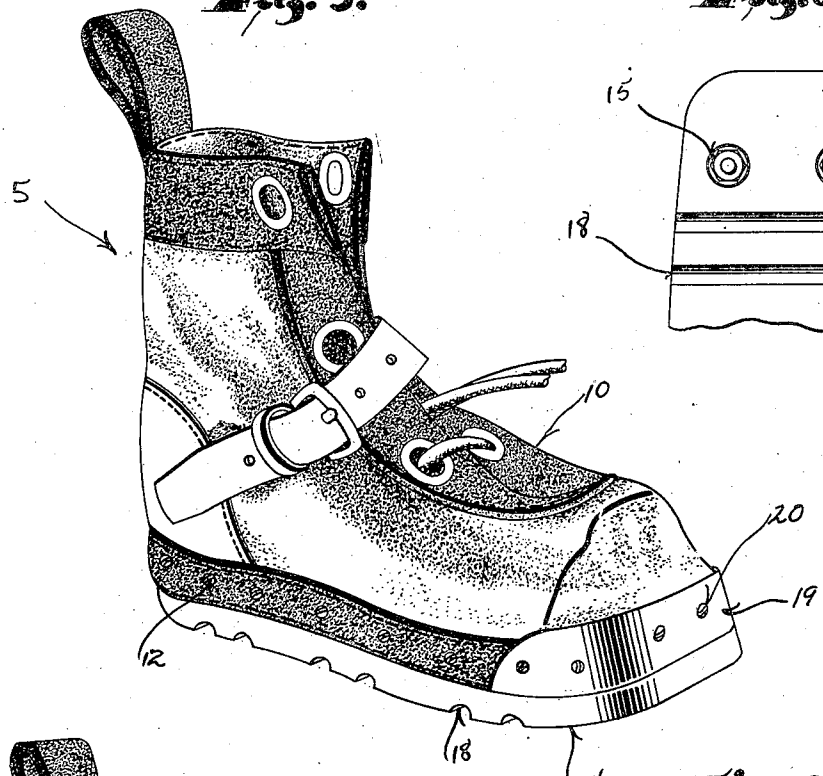


Fig. 6.

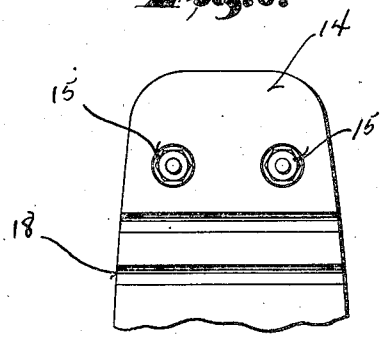


Fig. 7.

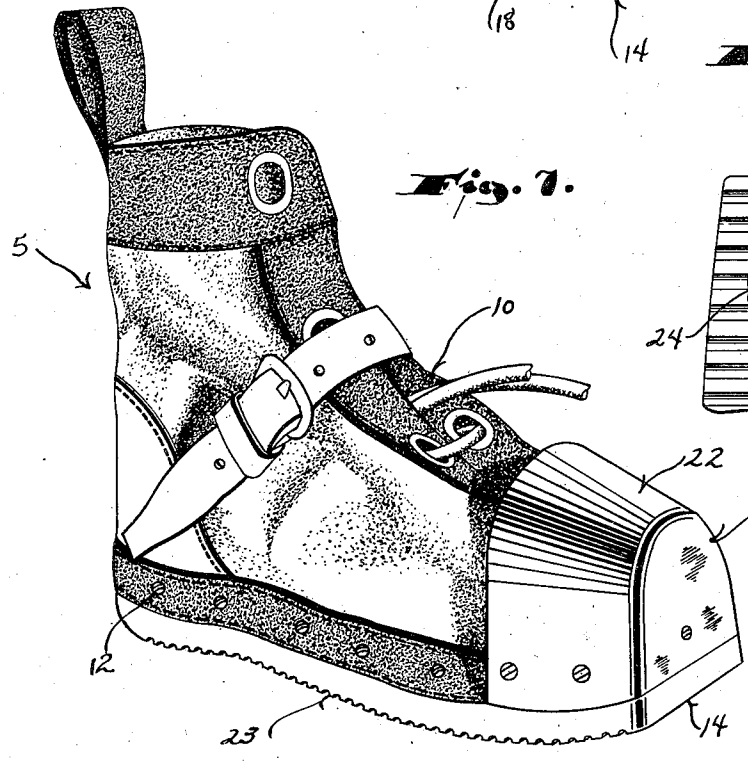
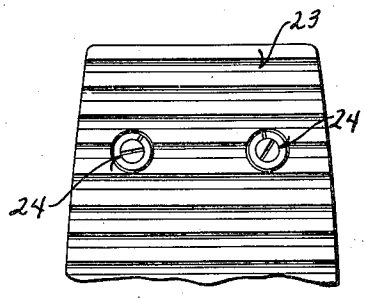


Fig. 8.



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UNITED STATES PATENT OFFICE

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SHOE FOR DIVERS

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Application January 8, 1945, Serial No. 571,769

5 Claims. (Cl. 36—2.5)

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This invention relates to diving equipment and refers particularly to shoes for divers, being a continuation in part of the copending application of John W. Browne (by legal change of name, Jack Browne), Serial No. 427,736, filed January 22, 1942.

A submerged diver moving along the bottom leans forward and walks on his toes, or more accurately, pushes himself along with his toes. It is important, therefore, that the diver's shoes be so designed and constructed as to afford maximum stability and comfort. To this end it is an object of this invention to provide a shoe specifically designed for use by divers, which has a sole shaped to provide increased stability against rocking as the diver pushes along on his toes and thus eliminate much of the strain on the ankle and foot which was characteristic of diver's shoes heretofore available.

More specifically it is an object of this invention to provide a shoe for divers having a square toe sufficiently wide to guard against a tendency for the shoe to rock as the diver maneuvers along a submerged surface.

As is well known, the shoes of divers are generally weighted, and heretofore it has been customary merely to provide loose weights which were strapped to the soles of the diver's shoes. Obviously, this expedient lacks stability, and it is therefore another object of this invention to provide a shoe which has a weighted tread or external sole portion rigidly secured to the actual sole of the shoe so as to entirely overcome the objectionable looseness heretofore experienced and to make possible the removal and substitution of different weight treads.

Another object of this invention is to provide a shoe of the character described having a comfortable snug fitting upper which by virtue of its novel construction is securable over the foot portion of the diver's dress without danger of having it cut into or seriously wear the dress.

Still another object of this invention is to provide a shoe for divers wherein the upper, formed of canvas or other suitable fabric, is readily removably secured to the sole to thus enable replacement of the upper when it becomes worn.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

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The accompanying drawings illustrate several complete examples of the physical embodiment of the invention constructed in accordance with the best modes so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a perspective front view of the shoes of this invention showing the manner in which they appear when in use;

Figure 2 is a perspective rear view thereof;

Figure 3 is a bottom view of one of the shoes;

Figure 4 is an enlarged cross sectional view through the sole of one of the shoes illustrating the manner in which the uppers and tread are secured thereto;

Figure 5 is a perspective view of a shoe of modified construction;

Figure 6 is a bottom view of the toe portion of the shoe shown in Figure 5;

Figure 7 is a perspective view illustrating another modified embodiment of the invention; and

Figure 8 is a bottom view of the toe portion of the shoe shown in Figure 7.

Referring now more particularly to the accompanying drawings, in which like numerals indicate like parts, the numeral 5 designates generally a shoe in which the sole 6 has substantially straight sides tapering outwardly from the heel 7 and a straight or square toe of substantial width.

The actual sole consists of a piece of wood 8 or other suitable material, of the desired shape set into the lower marginal edge portion 9 of the upper 10. The upper is preferably made of canvas and is laced up the front as at 11. While canvas is ideal for this purpose, any other suitable fabric or leather may be used, so where the term "fabric" is employed hereinafter it is understood as encompassing any such suitable material.

A plurality of screws 12 threaded into the sides of the wooden sole 8 readily removably secure the upper to a sole as clearly shown in Figure 4, a marginal binding strip 13 being provided over the edge of the upper to reinforce the same.

Removably secured to the underside of the wooden sole 8 is a tread 14 of lead or other suitable heavy metal. Like the sole 8, the tread has a square toe of substantial width. The tread is held in place by bolts 15, the heads 16 of which are countersunk into the inner face of the wooden sole 8 while the nuts 17 thereof are countersunk into the bottom of the tread. In this manner the tread may be removed and replaced with a

heavier one to increase the weight of the shoes. The bottom surface of the tread has transverse grooves 18 to provide increased traction.

Thus, as will be readily apparent, with the weight-providing tread firmly and rigidly secured to the sole of the shoe and with the toe of the shoe, at least its tread, square and of substantial width, considerably greater stability is afforded than has been possible with shoes heretofore supplied for use by divers.

The shoe illustrated in Figures 5 and 6 is essentially of the same construction as that hereinbefore described in that its upper 10 is secured by screws 12 to a sole of wood or other nonmetallic material and the tread 14 is removably secured in position in the same manner by bolts 15. An advantage of the shoe shown in Figure 5, however, not possessed by the shoe of Figures 1 and 2, is the provision of a toe guard 19 embracing the toe portion of the sole and secured in place by screws 20.

The shoe illustrated in Figures 7 and 8, like that shown in Figures 5 and 6, also follows the general design and construction heretofore described, but in this case the toe guard 21 has a hood 22 extending over the top of the toe, and the bottom surface of the heavy metal tread instead of having widely spaced grooves is corrugated as at 23. Also, instead of the bolts securing the treads in place, screws 24 are provided, the heads of which are countersunk into the tread as clearly shown in Figure 8.

From the foregoing description, taken in connection with the accompanying drawings, it will be readily apparent to those skilled in the art that this invention provides a shoe for divers having many advantages not possessed by the shoes heretofore available for this service.

For instance, one of the difficulties overcome by the shoe of this invention is the liability of having the shoe pulled off in mud. Another advantage is that the canvas uppers have a close comfortable fit without causing the creases in the foot portions of the diver's dress to cut into the diver's feet. In addition, wear on the foot portions of the dress is greatly reduced.

However, one of the most important advantages results from the stability which the novel shape and secure attachment of the weighted sole to the uppers provides.

What I claim as my invention is:

1. A shoe for a diver comprising an upper; a wooden sole to which the upper is secured; and a heavy metal tread fixed to the wooden sole.

2. A shoe for divers comprising: a wooden insole; an upper of flexible material adapted to readily conform to the shape of the diver's foot; means securing the lower marginal edge of the upper to the side edges of the insole; a heavy metal tread; and means securing the tread to the bottom of said insole, the toe of the tread being square and wide to offset the tendency of the foot of the diver to rock from side to side as he walks along a submerged surface.

3. A shoe for divers comprising: a nonmetallic sole; a fabric upper having the lower marginal edge thereof fitting over the side edges of the nonmetallic sole and secured thereto; and a heavy metal tread secured to said nonmetallic sole, the toe of at least the tread being square and wide to offset the tendency for the foot of the diver to rock from side to side as he walks along a submerged surface.

4. A shoe for divers comprising: a nonmetallic sole having a square toe of substantial width; a fabric upper having the lower marginal edge thereof fitting over the side edges of the nonmetallic sole; means for securing said lower marginal edge of the upper to the side edges of the nonmetallic sole; a heavy metal tread of a size and shape substantially conforming to the bottom of the nonmetallic sole; and means for readily removably securing said tread to the underside of the sole.

5. A shoe for divers comprising: a nonmetallic sole having a square toe of substantial width; a fabric supper having the lower marginal edge thereof fitting over the side edges of the nonmetallic sole; means for securing said lower marginal edge of the upper to the side edges of the nonmetallic sole; a heavy metal tread of a size and shape substantially conforming to the bottom of the nonmetallic sole; means for readily removably securing said tread to the underside of the sole; a toe guard fitted over the toe of the fabric upper and embracing the toe portion of the nonmetallic sole; and means passing through said toe guard and engaging in the nonmetallic sole for securing the toe guard in position.

JACK BROWNE.