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S. SAUL

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FILLING TUBE FOR INFLATABLE BODIES

Filed Oct. 3, 1928

Fig. 1

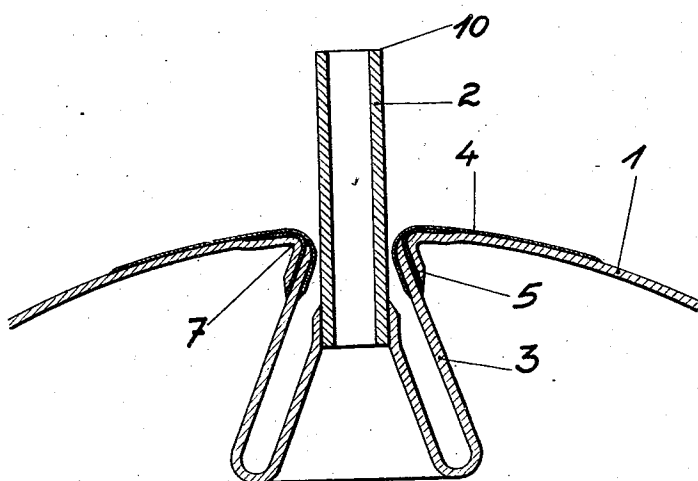
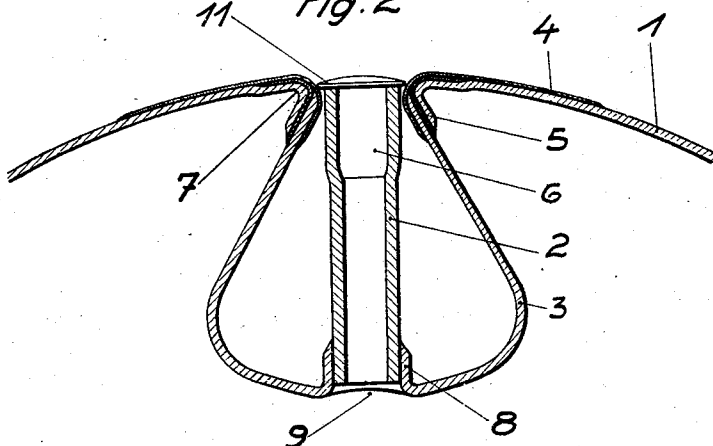


Fig. 2



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FILLING TUBE FOR INFLATABLE BODIES

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This invention relates to filling devices for inflatable bladders, the tube being inserted into an inner shell or bag contained within the bladder.

5 The known devices of this kind have the disadvantage that the insertion of the filling tube into the inner bag, which is either cylindrical or conical in shape, can only be accomplished with great difficulty as the tube
10 when pushed into the inner bag generally doubles up. This doubling up makes the operation both complicated and tedious and the life of the tube of short duration as the constant bending and doubling up is a source
15 of excessive wear. There is also the disadvantage in the known devices that the filling tube is sometimes pushed too deep into the inner bag so that it can be pulled out again only with great difficulty. By my invention
20 these disadvantages are avoided.

In my invention the inner hollow shell, into which the filling tube is inserted after the bladder has been inflated, has the shape
25 of a bulgy bag to the bottom of which the filling tube is securely attached. This bulgy bag may have the shape of a heart, a pear, a ball or other object, and has the tendency to retain its shape permanently so as to hold the tube in the position received when inserted.
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When the filling tube is withdrawn for refilling the bladder, the inner bag is distorted and an increased tension is set up in it
35 so that when the tube is released after the refilling the bag returns to its normal shape and draws the tube back into it. Because of the natural shape of the inner bag it is impossible for the tube to slip inside too
40 deeply, as the distorted bag expands only to its original length when the tube is released and holds the tube at a corresponding depth.

It is advantageous to have the tube of such a length that its outer rim is in the same
45 plane as, or in a slightly lower plane than, the outer shell of the bladder, when the tube is inserted and the inner bag is free from tension. In this way the shape of the bladder is maintained best.

50 In the accompanying drawing is shown,

by way of example, a practical application of my invention.

Fig. 1 is a cross sectional view of a part of a football bladder and the inner bag in distorted position with the filling tube with-
55 drawn.

Fig. 2 is a cross sectional view of a part of a football bladder and the inner bag in normal position with the filling tube in inserted
60 position.

The bladder 1 has a rim 7 at its opening which is turned inwardly. Inner bag 3 is attached to bladder 1 by rubber rings 4 and 5 in any suitable manner. Inner bag 3 in
65 Fig. 2 bulges out sideways considerably and assumes the shape of a heart. The lower end of the filling tube 2 is securely pasted to the turned-in portion 8 of the inner bag 3 forming opening 9. The length of the
70 filling tube is such that in inserted position (Fig. 2) its outer rim 10 is slightly below the opening in bladder 1. The opening of the tube 2 is closed in the usual manner by means of a stopper 6, of light metal, wood,
75 or rubber, having an overhanging rim 11.

When the bladder is to be filled, the filling tube 2 is pulled out from its normal position (Fig. 2), by grasping the rim of the stopper, to a position corresponding to that of Fig. 1, whereby inner bag 3 becomes distorted.
80 Then the tube is held firmly while the stopper 6 is removed, bladder 1 is filled with air through tube 2, and the stopper is replaced. Next the filling tube 2 is released and automatically snaps back into the bag 3 by the
85 return of the bag to its normal shape. In doing this the tube slides back into bag 3 so far that its outer rim 10 comes to rest slightly below the rim 7 of the opening of bladder 1 and the rim 11 of the stopper is even with
90 the surface of bladder 1 whereby the shape of the bladder is preserved.

The inner bag 3 might be provided with internal or external longitudinal ribs to increase the tension within the wall of the bag
95 when the tube 2 is pulled out.

Having thus described my invention, what I claim is:

In a device of the kind described, an elastic bladder having an aperture, an elastic bag
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within said bladder having a bulging shape
which it tends to retain, said inner bag hav-
ing an aperture and being attached to said
bladder so that said apertures coincide, a
5 filling tube normally within said bag, said
bag having a second aperture at which said
filling tube is attached to it, said bag being
distorted when said filling tube is withdrawn
therefrom and being capable of drawing said
10 filling tube back into it by assuming its nor-
mal shape when said filling tube is released.

The foregoing specification signed at
Cologne, Germany, this 22nd day of Septem-
ber, 1928.

15 SIEGFRIED SAUL.

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