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R. L. MONDANO

3,410,300

VALVE

Filed Oct. 14, 1966

FIG 1

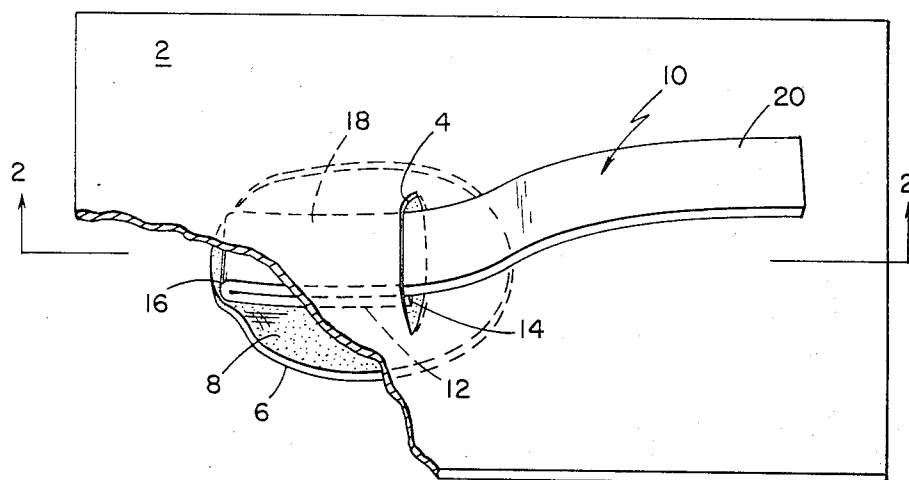


FIG 2

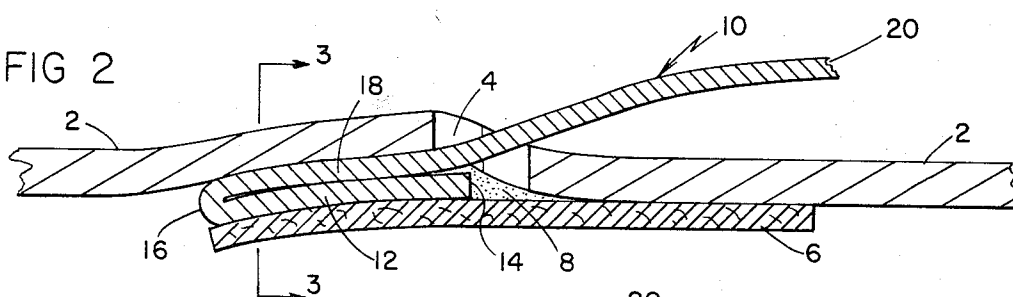


FIG 3

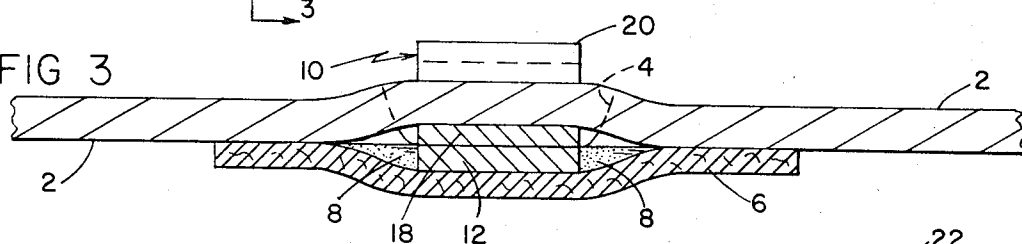


FIG 4

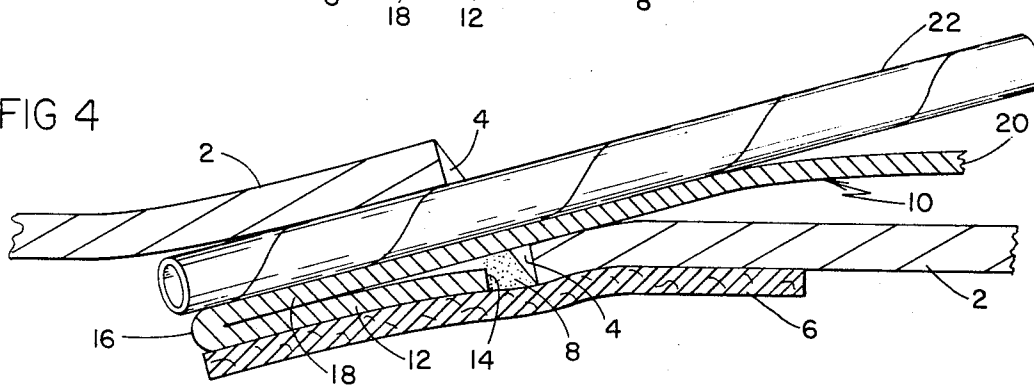
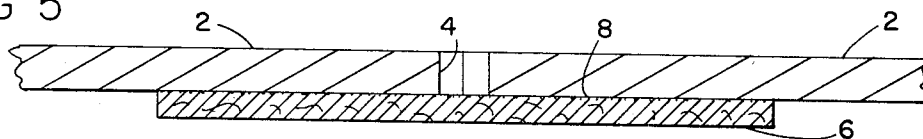


FIG 5



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3,410,300
VALVE

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The present invention relates to valves and more particularly to an improved valve for permitting introduction of fluid into a container through an aperture therein and for retaining fluid in the container against escape through said aperture.

An object of the invention is to provide such a valve which is simple in construction and correspondingly inexpensive.

Another object of the invention is to provide such a valve which, while it is simple and inexpensive, is nevertheless reliable and foolproof in operation.

Another object of the invention is to provide such a valve which is easily installed in the container with which it is to be used.

A further object of the invention is to provide such a valve particularly useful with flexible-walled containers, e.g., inflatable bags having walls of a thin sheet flexible plastic material.

Further objects, features and advantages of the invention will become apparent from the following description of an illustrative embodiment thereof as applied to an inflatable container, in which description reference is made to the accompanying drawing, wherein

FIG. 1 is a perspective view, partly broken away, of a portion of a container having an aperture therein, showing the valve as initially installed and before the container is inflated;

FIG. 2 is a vertical sectional view, taken on line 2-2 of FIG. 1;

FIG. 3 is a vertical sectional view taken on line 3-3 of FIG. 2;

FIG. 4 is a sectional view similar to FIG. 2 but showing an inflating tube inserted through the container aperture and through the valve to inflate the container; and,

FIG. 5 is a sectional view similar to FIG. 2 but showing the condition of the valve after the container has been filled and with the valve closed.

In accordance with the invention the valve for a container having a wall with an aperture therein comprises a sealing member of sheet material, preferably flexible sheet material, having a coating of a pressure sensitive adhesive on one of its faces, and a strip of flexible sheet material having one face of a portion thereof adjacent one of its ends strippably adhered to a portion of said one face of said sealing member by said adhesive, the strip being adapted to be folded back upon itself so as to have a portion thereof adjacent said first mentioned portion lie in contact with the face of the strip which is opposite the face secured to the sealing member, the sealing member being adapted to be attached by said adhesive to the interior surface of the container wall adjacent the aperture with the other end of said strip extending outwardly of the container through the aperture and with at least part of said portions of said strip lying between the inner surface of the container wall and said portion of said sealing member and thereby preventing adhesion of said portion of the sealing member to the inner surface of the container wall, said strip being adapted to be removed through the aperture. Preferably the strip is arranged and disposed to have one of its ends underlie the aperture in the container and to have the portion of the strip which is adhered to said sealing member extend to an edge of the sealing member. The

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invention also includes a container having the valve installed therein.

Referring now to the drawing, FIGS. 1, 2 and 3 show the valve installed in a container having a wall 2 of a thin, electrically conductive flexible plastic material, the wall having therein a knife slit 4 providing the aperture therein. The valve includes a circular sealing disc 6, in this instance of flexible paper, having on its upper face a layer 8 of a pressure-sensitive adhesive which secures the disc 6 to the interior surface of the wall 2. A strip 10 of flexible sheet material, in this instance paper, has the lower face of its end portion 12 strippably adhered to the disc 6 by means of the adhesive layer 8, the free end 14 of the strip underlying the aperture 4 and the face of the strip which is adhered to the disc 6 extending approximately to the edge of the disc at 16, as shown. The strip 10 is folded back upon itself so that its portion 18, which is adjacent the end portion 12, overlies the portion 12 between the portion 12 and the adjacent interior surface of the container wall 2. From the portion 18, the strip 10 extends upwardly through the aperture 4 so that the outer free end 20 of the strip is disposed outside the container wall 2. This is the condition of the valve and container wall after the valve is initially installed and before fluid has been introduced into the container through the valve, for example to inflate the container. In FIG. 2 the container wall 2, which is thin and flexible, is shown as somewhat distorted by the presence of the valve and the passage of the strip 10 through the aperture 4, although such distortion need not necessarily be present. The thickness of the sealing disc 6, and of the strip 10, has been somewhat exaggerated in the drawings for purposes of illustration. An advantage of the valve of the invention is that the aperture in the container with which it is to be used may be of a simple and inexpensive form, e.g. in the case of a flexible material, a mere slit, such as can be formed by a simple knife cut.

The sealing disc 6 is adhesively secured to the inside surface of the wall 2 throughout the upper surface of the disc except where the portions 12 and 18 of the strip 10 prevent such adhesion.

When a fluid, such as air, is to be introduced into the container, a tube, such as the soda straw 22, is inserted through the aperture 4 above the strip 10, as shown in FIG. 4. The tube 22 passes freely into the inside of the container between the container wall 2 and the upper surface of the portion 18 of the strip 10, the sealing disc and the strip 10 readily yielding as may be needed to allow the tube to enter, the container wall 2 also yielding if it is sufficiently flexible. The fluid, such as air to inflate the container, is passed into the container through the tube 22.

When the container has been filled to the desired extent the tube 22 is withdrawn, the outside of the container wall 2 adjacent the aperture being pressed by hand to prevent any substantial escape of fluid through the aperture 4. The end 20 of the strip 10 is then pulled to remove the strip entirely from the container, the portion 18 sliding outwardly freely through the aperture 4 and the portion 12 of the strip being peeled from its contact with the upper surface of the disc 6. When the strip 10 has been removed, the portion of the adhesive layer 8 with which it was formerly in contact is exposed so as to adhesively engage the adjacent interior surface of the container wall 2, thus effecting a complete seal of the disc 6 to the interior surface of wall 2 surrounding the aperture. With flexible-walled containers, such sealing can be enhanced by appropriate hand manipulation of the container and valve. Interior fluid pressure within the container tends to maintain the seal and prevent escape

of fluid through the aperture 4. The container and valve is now in the condition illustrated in FIG. 5 with the aperture 4 sealed by the sealing disc 6.

It will be seen from the foregoing that the invention has provided a valve for fluid containers which is simple and inexpensive and yet easy to operate and reliable in use.

While one particular embodiment of the invention has been described in detail for purposes of illustration and disclosure of the invention, the invention is not confined thereto but includes all variations and modifications within the scope of the following claims.

I claim:

1. A valve for permitting introduction of fluid into a container through an aperture therein and for retaining fluid in the container against escape through said aperture, comprising a sealing member of sheet material, a coating of a pressure-sensitive adhesive one face of said sealing member, and a strip of flexible sheet material having a face of a portion thereof adjacent one of its ends strippably adhered to a portion of said one face of said sealing member by said adhesive, said strip being adapted to be folded back upon itself to have a portion thereof adjacent said first mentioned portion thereof lie in contact with the face of the strip opposite the face secured to said sealing member, said sealing member being adapted to be attached by said adhesive to the interior surface of the container adjacent said aperture with the other end of said strip extending outwardly through said aperture and with at least part of said portions of said strip lying between the inner surface of the container and said portion of said sealing member and thereby preventing adhesion of said portion of the sealing member to the inner surface of the container, said strip being adapted to be removed through said aperture.

2. The valve of claim 1 wherein said one end of said strip underlies said aperture and the portion of the strip adhered to said sealing member extends to an edge of said sealing member.

3. The valve of claim 1 wherein said sealing member is formed of a flexible sheet material.

4. The valve of claim 3 wherein said one end of said strip underlies said aperture and the portion of the strip adhered to said sealing member extends to an edge of said sealing member.

5. A container for fluid, comprising a container wall having an aperture therein, a sealing member of sheet

material, a coating of a pressure-sensitive adhesive on one face of said sealing member connecting said sealing member to the interior surface of said container wall adjacent said aperture, and a strip of flexible sheet material having a face of a portion thereof adjacent one end of the strip strippably adhered to a portion of said one face of said sealing member by said adhesive, said strip being folded back upon itself to have a portion thereof adjacent said first-mentioned portion thereof lie in contact with the face of the strip opposite the face secured to said sealing member, the other end of said strip extending outwardly through said aperture, at least part of said portions of said strip lying between the inner surface of the container wall and said portion of said sealing member and thereby preventing adhesion of said portion of the sealing member to the inner surface of the container wall, said strip being adapted to be removed through said aperture to permit said sealing member to be adhered to the inner surface of the container wall about said aperture to seal said aperture.

6. The container of claim 5 wherein said one end of said strip underlies said aperture and the portion of the strip adhered to said sealing member extends to an edge of said sealing member.

7. The container of claim 5 wherein said container wall comprises a flexible material.

8. The container of claim 5 wherein said sealing member is formed of a flexible sheet material.

9. The container of claim 8 wherein said container wall comprises a flexible material.

10. The container of claim 9 wherein said one end of said strip underlies said aperture and the portion of the strip adhered to said sealing member extends to an edge of said sealing member.

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