

Sept. 20, 1955

M. MIZRACH ET AL
LEAKPROOF INFLATABLE ARTICLES

2,718,014

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Fig. 1

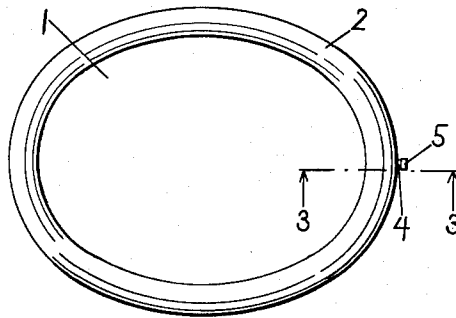


Fig. 2

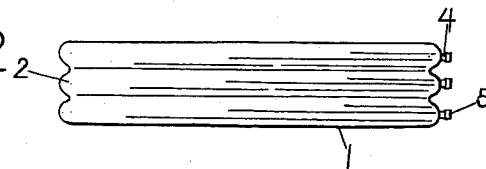


Fig. 3

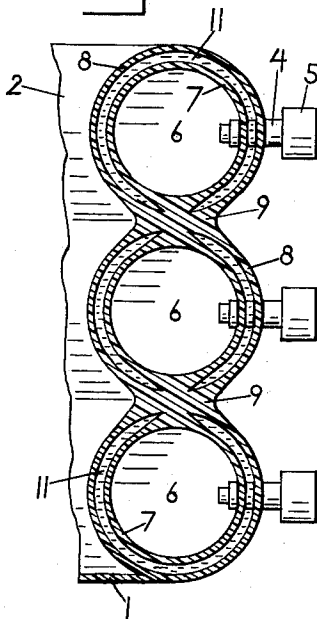


Fig. 4

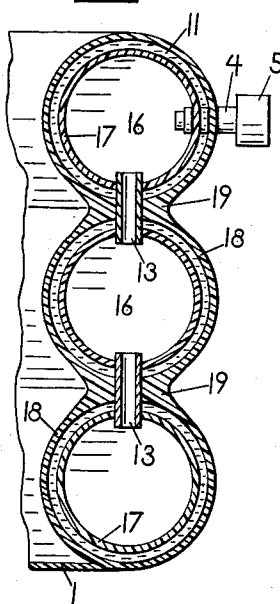
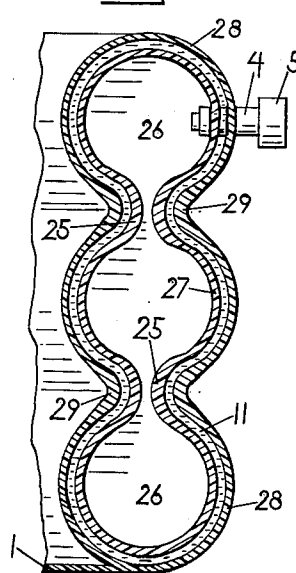


Fig. 5



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2,718,014

LEAKPROOF INFLATABLE ARTICLES

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2 Claims. (Cl. 4—177)

Our invention relates to collapsible and inflatable articles and may be particularly incorporated in wading pools for children.

An object of our invention is to protect wading pools or other inflated articles against leakage of air or of water or of both.

Other objects are to attain this protection by simple, automatic and reliable means, and to provide leak-proof inflatable articles that can be made of resiliently stretchable plastics.

Still other objects and advantages will appear from the following description of exemplifying embodiments of our invention, from the appended claims and from the accompanying drawing in which:

Fig. 1 shows a top view of a wading pool forming an exemplifying embodiment of our invention.

Fig. 2 shows a side view of the same embodiment.

Figs. 3, 4 and 5 show cross-sections of three different modifications of the embodiment shown in Figs. 1 and 2, these cross-sections being taken along the line 3—3 in Fig. 1 through a broken off portion of the wading pool, and being represented on a larger scale than Figs. 1 and 2, the thicknesses of the walls being exaggerated for the sake of clear representation.

The wading pool shown in the drawing has a flat bottom 1 and a circularly closed side 2 extending from the circumference of the bottom up and surrounding a space adapted for being filled with water. The outer shape of the side 2 is the same in all three modifications which differ only in the inner structure. In all three cases, the side comprises three ring-like compartments positioned over each other, connected with each other and, each, having a substantially circular cross-section and a doubled wall formed by an outer wall surrounding an inner wall. Instead of three compartments, there may be two or any other number of compartments.

One or more valves 4 pass through both walls of the side 2 and serve for inflating or deflating the compartments of the side. These valves may be of any known and suitable structure and have tubular air ducts tightly passing through the walls of the side 2. The outer opening of each valve 4 may be closed by a cap 5.

In the modification shown in Fig. 3, each compartment has an inner air space 6 surrounded by an inner wall 7 and an outer wall 8. Between adjacent compartments, wall portions 9 are located which form integral extensions of the walls 8 of both adjacent compartments and which are reinforced, for example, by making the portions 9 thicker than the walls 8. The inner walls 7 form integrally united extensions of the same portions 9, and are spaced from the walls 8, except where they are connected with the portions 9.

The walls 7 and 8 are made of thin, highly and resiliently stretchable plastic material whereby they will expand under the influence of inner pressure and will collapse when no inner pressure exists. The portions 9 and the bottom 1 may be made of the same material.

The spaces between the walls 7 and 8 are filled with

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a congealable liquid 11 which closes automatically and instantly any hole or opening that may be made in these walls, for example, by accident or by childish mischief. Liquids of this type are well known and have been used in the inner tubes of automobile tires where the liquid fills a small portion of the inflated air space and is applied to the wall of the tube by centrifugal force. We have found that such a liquid can make a stationary inflated article leak-proof without centrifugal action if the liquid is confined and compressed between two expandable walls, that the simultaneous expansion of both walls and the compression of the liquid can be readily produced by inflation of the inner wall, and that it is of advantage if the inflated air space does not contain any liquid. We have further found that such a double walled article can be shaped to form a receptacle for water, and that the congealable liquid in the doubled wall will protect the receptacle against leakage both of air and of water.

In the modification described above, the inner and outer walls form one unitary body.

The second modification shown in Fig. 4 is similar to the first described modification and may have outer walls 18 which are substantially identical to the walls 8 and which are interconnected by re-inforced portions 19. The inner walls 17 do not extend from these portions, but form separate bodies positioned substantially concentrically within the walls 18. Thereby the congealable liquid surrounds the air spaces 16 at all sides.

Both in the first and in the second modification, the air spaces may be separated as exemplified by Fig. 3 or may communicate through channels as exemplified by Fig. 4. Such channels may be formed by tubes 13 which pass tightly through the inner walls of adjacent compartments and through the wall portion 19 between these compartments. In the case illustrated by Fig. 3, one valve 4 is provided for the inflation of each air space 6. In the case illustrated by Fig. 4, only one valve 4 is required and may serve to inflate all air spaces 16 simultaneously.

In the third modification shown in Fig. 5, the outer walls 28 of the compartments are connected by thicker wall portions 29 which surround narrow passages connecting adjacent compartments. The inner walls 27 are similarly connected by thicker portions 25 which are spaced from the portions 29 and surround narrow passages connecting the air spaces 26. The outer walls form one unitary body, and the inner walls form another unitary body. The air spaces communicate with each other, and also the liquid-filled spaces between the inner and outer walls communicate. Only one valve 4 is needed, and all compartments can be filled with liquid by one injection.

In each of the described cases, the manufacture of the article may be facilitated by making the same of several, suitably divided parts which then are united, for example by the application of heat and pressure, into the shown configuration in which the dividing lines do no more appear. The congealable liquid may be injected through the outer walls which are temporarily punctured for this purpose. After removal of the puncturing injector, the punctured holes disappear immediately, the same being sealed by the congealing liquid.

The re-inforced wall portions connecting the compartments are much less yielding than the other wall portions. Hence, when the air spaces are inflated, the resulting expansion of the walls is substantially limited to these other portions.

We desire it understood that our invention is not confined to the particular embodiments shown and described, the same being merely illustrative, and that our invention may be carried out in other ways within the scope of the

appended claims without departing from the spirit of our invention as it is obvious that the particular embodiments shown and described are only a few of the many that may be employed to attain the objects of our invention.

Having described the nature of our invention, what we claim and desire to protect by Letters Patent is:

1. An article of manufacture comprising a plurality of compartments, each having an outer and an inner wall surrounding an air space, both said walls being made of thin collapsible and resiliently stretchable plastic material and, between them, including another space, and a congealable liquid filling said other space whereby inflation of said air space presses said liquid against said outer wall and expands both walls, and channels connecting the air space of one compartment with that of another compartment whereby inflation of one compartment inflates also the other compartment, said channels forming integral extensions of said inner walls and being spaced from said outer walls whereby said spaces between said walls communicate.

2. An article of manufacture comprising a plurality of

compartments, each having an outer and an inner wall surrounding an air space, both said walls being made of thin collapsible and resiliently stretchable plastic material and, between them, including another space, and a congealable liquid filling said other spaces, said other spaces communicating with each other whereby inflation of said air spaces presses said liquid under uniform pressure against said outer walls and expands both walls of all compartments.

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