

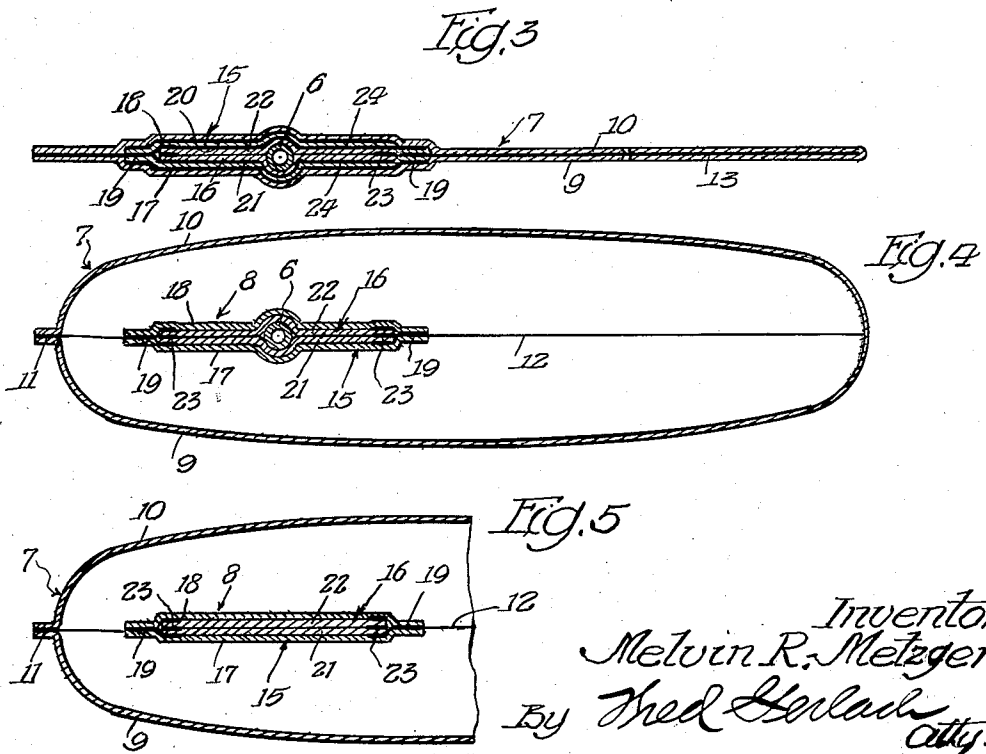
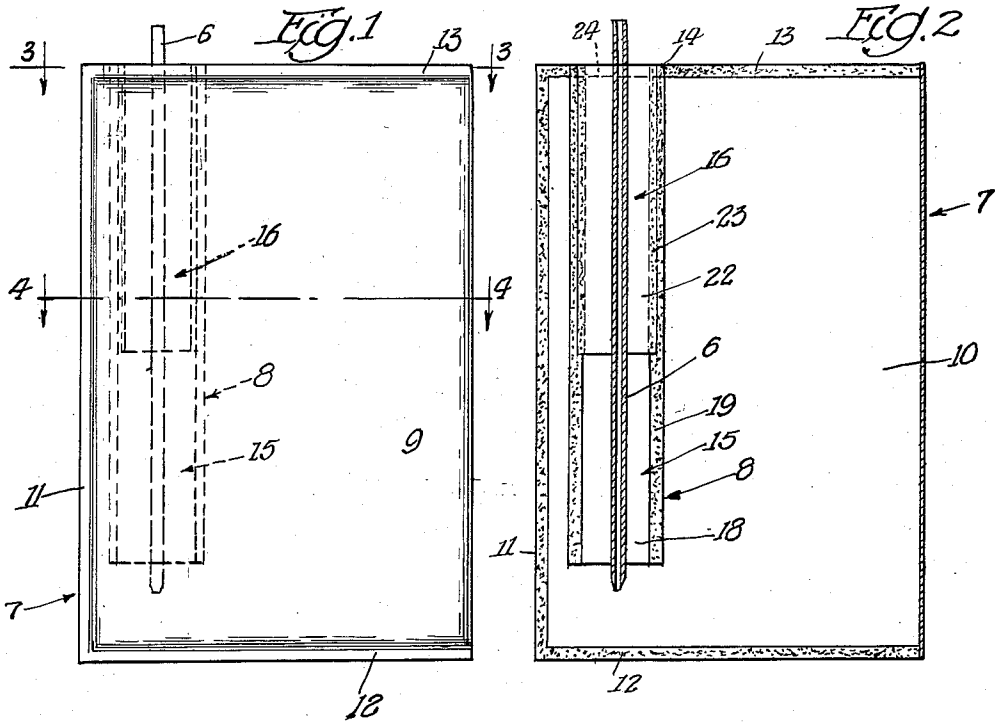
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VALVED CONTAINER

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VALVED CONTAINER

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The present invention relates to containers. More particularly the invention relates to that type of container which is adapted to be filled with fluid or granular material by way of a filling nozzle, is formed entirely of fluid impervious, heat sealable, flexible "plastic" film, such, for example, as Pliofilm, cellophane, Koroseal or polyethylene, comprises a body in the form of coextensive side by side front and back members with the margins thereof connected together except at one point or location in order to form a mouth, and also comprises an open ended, normally flat tube which is disposed in the interior of the body, has one end thereof in heat sealed relation with the mouth defining portions of the front and back members, is adapted to have the filling nozzle extend lengthwise therethrough in connection with a container filling operation, and is further adapted after withdrawal of the nozzle at the conclusion of the filling operation to be so collapsed by the pressure of the material in the body that it serves as a check valve whereby egress of the material from the body is precluded until such time as the body is either ruptured or opened by re-insertion of the nozzle through the tube.

In practice it has been found that a container of the aforementioned type is subject to certain objections. In the first place it is necessary to make the check valve variety tube of comparatively thick "plastic" film in order to prevent it from being punctured when the filling nozzle is inserted through it in connection with filling of the container. If the tube is formed of comparatively thick "plastic" film it is comparatively stiff or semi-rigid and hence will not fully collapse and form a complete or fully effective hermetic seal after removing of the filling nozzle from it. In the second place, if the material with which the container is filled is viscous, like oil, or is sticky or adherent, like granulated sugar, withdrawal of the filling nozzle after a container filling operation sometimes results in a small portion of the material being deposited on the inner surface of the tube and hence precluding full collapsing of the tube by the pressure of the material in the container body.

The primary or principal object of this invention is to provide a container which obviates or eliminates the heretofore mentioned objections and is an improvement upon and has certain inherent advantages over previously designed containers of the type under consideration. Generally speaking the improved container is characterized by the fact that it includes a supple-

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mental tube which is disposed within the main check valve variety tube, has one end thereof heat sealed to the outer end of the main tube and is materially shorter than the main tube in order that its other end is spaced inwards of the inner end of the main tube. The supplemental tube is formed of comparatively thin "plastic" film and makes it possible to form the main tube of comparatively thin "plastic" material to the end that the two tubes will be highly flexible and hence readily collapse and form an effective hermetic seal after withdrawal of the filling nozzle. It also forms with the main tube a double check valve arrangement and, so far as its inner end is concerned, forms a scraper whereby any material which tends to cling or adhere to the filling nozzle is removed from the discharge end of the nozzle as the nozzle is withdrawn at the conclusion of a container filling operation.

Another object of the invention is to provide a container which is generally of new and improved construction, effectively and efficiently fulfills its intended purpose and is capable of being fabricated or produced at a comparatively low cost.

Other objects of the invention and the various advantages and characteristics of the present container will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a side elevation showing a container embodying the invention with a filling nozzle inserted through the main and supplemental tubes;

Figure 2 is a vertical section of the container illustrating in detail the arrangement and design of the composite tube arrangement which forms a double check valve for preventing egress of material from the container body after a container filling operation;

Figure 3 is an enlarged horizontal section taken on the line 3—3 of Figure 1 and showing in detail the manner in which the outer ends of the main and supplemental tubes and the mouth defining portions of the front and back members of the container body are in heat sealed relation;

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Figure 4 is an enlarged horizontal section taken on the line 4-4 of Figure 1 and illustrating the main and supplemental tubes while the filling nozzle is inserted therethrough for container filling purposes; and

Figure 5 is a fragmentary horizontal section showing the container after withdrawal of the filling nozzle from the composite check valve arrangement and illustrating the manner in which the main and supplemental tubes collapse so as to provide an effective and efficient hermetic seal for precluding egress from the container body of the material with which the container as a whole is filled.

The container which is shown in the drawing constitutes the preferred form or embodiment of the invention. It is adapted to be filled with fluid or granular material by way of a filling nozzle 6 and comprises a rectangular body 7 and a double check valve arrangement 8 within the body. The container, if filled with air, serves as a pillow or similar article and, if filled with liquid or granular material, constitutes a merchandising package.

The container body 7 consists of coextensive side by side front and back members 9 and 10 and is formed of fluid impervious, heat sealable, flexible "plastic" film, such, for example, as Pliofilm, cellophane, Koroseal or polyethylene. If desired, the body may be formed by centrally folding a single sheet of "plastic" film material so as to form the front and back members 9 and 10 with an integral connection between certain side margins thereof. The other side margins of the front and back members 9 and 10 are connected together by a heat seal 11 which extends throughout their length. The bottom margins of the front and back members are connected together by a heat seal 12 throughout their length and the top margins of the front and back members are connected together by a heat seal 13 which is continuous except at one point or location in order to form a mouth 14 for the container 7. Whereas the mouth 14 is shown in the drawing as being disposed adjacent the upper end of the heat seal 11 it is to be understood that the mouth may be disposed at any other point or location. Preferably the "plastic" film of which the front and back members of the body are formed is comparatively thin to the end that the body is flexible and hence capable of being readily filled. The thickness of the "plastic" film is, of course, determined by the use to which the container is put.

The double check valve arrangement 8 is disposed wholly within the interior of the container body 7 and consists of a main tube 15 and a supplemental tube 16 within the main tube. It permits the container body to be filled by way of the filling nozzle 6. Upon removal of the nozzle as hereinafter described it forms a seal whereby egress of the material in the container body is precluded. The main tube 15 is preferably formed of the same type fluid impervious, heat sealable, flexible "plastic" film as the container body. It is open ended and consists of coextensive side by side front and back members 17 and 18. Preferably the latter are formed separately from one another and have the side margins thereof connected together throughout their entire length by heat seals 19. As shown in Figures 1 and 2, the main tube of the double check valve arrangement 8 extends vertically and is located a small distance inwards of the heat seal 11 between certain side margins of the front and back members 9 and 10 of the container body 7. The upper end of the main tube 15 is connected by a heat seal

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20 to the marginal portions of the front and back members 9 and 10 that define the mouth 14. The lower end of the main tube 15 preferably terminates a small distance above the heat seal 19 between the bottom margins of the front and back members 9 and 10 of the container body. It is contemplated that in connection with a container filling operation the filling nozzle 6 will be inserted lengthwise through the main tube 15 as shown in Figure 1. After the nozzle is inserted completely through the main tube the material with which the container is to be filled is forced under pressure through the nozzle until it fills the interior of the container body to the proper or desired extent. After a container filling operation the filling nozzle is removed by sliding it out of the main tube 15. As soon as the main filling nozzle is slid out of the main tube the pressure of the material in the interior of the container body collapses the tube so that it precludes egress of the material until such time as the body 7 is either ruptured or opened by reinsertion of the nozzle through the main tube. It is contemplated that the "plastic" film of which the main tube front and back members 17 and 18 are formed will be comparatively thin so that the main tube is extremely flexible and hence readily collapsible by the material in the container body. The supplemental tube 16 of the double check valve arrangement 8 is disposed within the upper portion of the main tube 15. It is preferably formed of the same type of fluid impervious, heat sealable, flexible "plastic" film as the main tube and consists of coextensive side by side front and back members 21 and 22. The side margins of the front and back members 21 and 22 are connected together throughout their entire length by heat seals 23 and are interposed between, and are in heat sealed relation with, the upper portions of the side margins of the front and back members 17 and 18 of the main tube 15. The ends of the supplemental tube 16 are open. The upper end of the supplemental tube is coterminous with the upper end of the main tube 15 and is connected to the upper end of the main tube by a heat seal 24. The lower end of the supplemental tube 16 terminates at an appreciable distance above the lower end of the main tube 15. It is contemplated that the inner or supplemental tube 16 will be formed of comparatively thin "plastic" film in order that it is highly flexible and readily collapsible. The edge of the lower end of the supplemental tube is straight and, due to the thinness of the film of which the supplemental tube is formed, is comparatively sharp and forms a scraper whereby, when the filling nozzle is withdrawn after a container filling operation, any portion of the material which tends to stick or adhere to the discharge end of the nozzle is scraped away so that it cannot enter the supplemental tube and prevent full collapse of the latter.

When it is desired to fill the container the filling nozzle 6 is inserted through the main and supplemental tubes 15 and 16 until the lower discharge end thereof projects beyond the lower end of the main tube. Thereafter the material with which the container is to be filled is flowed under pressure through the nozzle until it fills the interior of the container body to the desired extent. After filling of the container the nozzle is withdrawn. Upon withdrawal of the nozzle the material within the container body, due to its weight or pressure, collapses the two tubes to the end that they form a double check

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valve whereby the interior of the body of the container is hermetically sealed. In connection with withdrawal of the nozzle any of the material that tends to stick to the discharge end of the nozzle is scraped by the bottom edges of the front and back members 21 and 22 of the supplemental tube. By way of the scraping action of the lower end of the supplemental tube there is no tendency for any of the material to lodge within the supplemental tube and preclude the latter from fully collapsing and thus effectively preventing egress of material from the interior of the container body. When it is desired to empty the container the body 7 may be ruptured or torn, or, if the material with which the container is filled is fluid, the material may be removed by reinserting the nozzle 6 through the two tubes constituting the double check valve arrangement so as to vent to atmosphere the interior of the container body.

The herein described container effectively and efficiently fulfills its intended purpose and this is directly attributable to the fact that the check valve arrangement consists of the main and supplemental tubes 15 and 16. It is capable of being produced at a comparatively low cost and is durable. By reason of the fact that the check valve arrangement 8 includes the supplemental tube 16 the arrangement as a whole is so reinforced that although highly flexible for ease of collapsing it is not likely to be punctured with insertion of the filling nozzle through it.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. As a new article of manufacture, a container adapted to be filled with fluid or granular material by way of a filling nozzle, and comprising a hollow body formed of flexible, fluid impervious, film type material and closed throughout except for a small sized mouth in one portion thereof, and a check valve arrangement consisting of an open ended main tube formed of flexible, fluid impervious, heat sealable, "plastic" film, disposed within the body, embodying coextensive side by side front and back members with heat sealed side margins, and having one end thereof connected to the mouth defining portion of the body, and in addition an open ended supplemental tube formed of thin, flexible, fluid impervious, heat sealable, "plastic" film, disposed within the main tube, embodying coextensive side by side front and back members with the side margins thereof heat sealed together, and having one end thereof heat sealed to said one end of the main tube, said check valve arrangement being adapted to have the filling nozzle extend lengthwise through its two tubes in connection with filling of the container with the filling material and being further adapted upon removal of the nozzle to have said two tubes collapse by the pressure of the filling material

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in the body interior and form a double check valve for preventing egress of the filling material from the body interior, the other end of the supplemental tube terminating inwards of the other end of the main tube and having a straight edge which, due to the thinness of the film of which the supplemental tube is formed, is comparatively sharp and forms a scraper whereby in connection with removal of the filling nozzle from the check valve arrangement removal is effected of any filling material that tends to stick or adhere to the discharge end of the nozzle.

2. As a new article of manufacture, a container adapted to be filled with fluid or granular material by way of a filling nozzle, and comprising a hollow body formed of flexible, fluid impervious, heat sealable, "plastic" film and embodying a pair of coextensive side by side front and back members with the margins thereof connected together except at one location in order to form a small sized mouth, and a check valve arrangement consisting of an open ended main tube formed of thin, flexible, fluid impervious, heat sealable, "plastic" film, disposed wholly within the body, embodying coextensive side by side front and back members with heat sealed side margins, and having one end thereof heat sealed to the mouth defining portions of the front and back members of the body, and in addition an open ended supplemental tube formed of thin, flexible, fluid impervious, heat sealable, "plastic" film, disposed within the main tube, embodying coextensive side by side front and back members with the side margins thereof heat sealed together and also heat sealed to portions of the side margins of the front and back members of the main tube, and having one end thereof connected to, and in heat sealed relation with, said one end of the main tube, said check valve arrangement being adapted to have the filling nozzle extend lengthwise through its two tubes in connection with filling of the container with the filling material and being further adapted upon removal of the nozzle to have said two tubes collapse by the pressure of the filling material in the body interior and form a double check valve for preventing egress of the filling material from the body interior, the other end of the supplemental tube terminating an appreciable distance inwards of the other end of the main tube and having a straight edge which, due to the thinness of the film of which the supplemental tube is formed, is comparatively sharp and forms a scraper whereby in connection with removal of the filling nozzle from the check valve arrangement removal is effected of any filling material that tends to stick or adhere to the discharge end of the nozzle.

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