

July 26, 1960

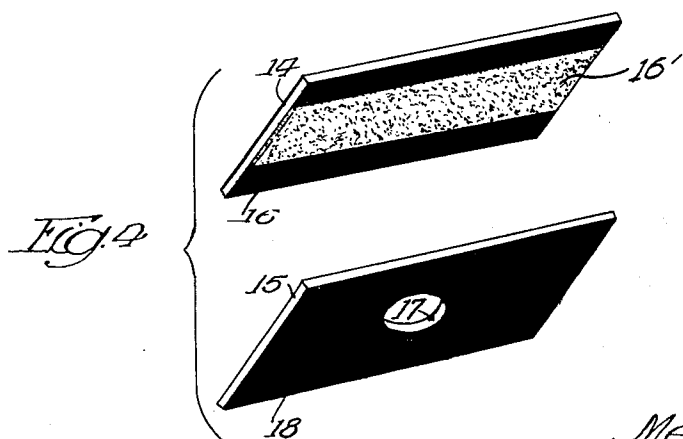
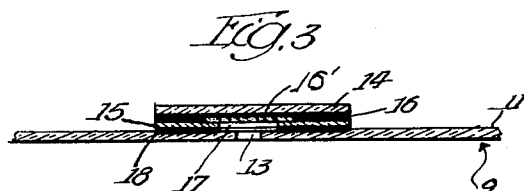
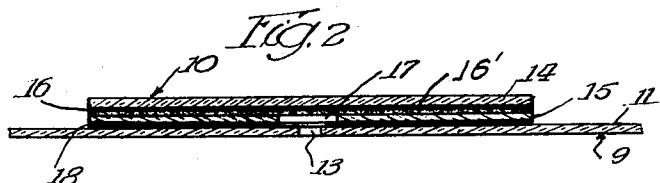
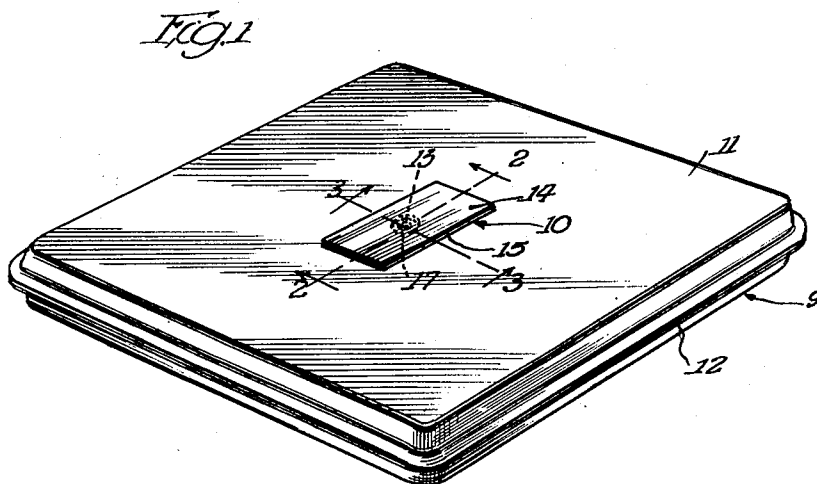
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2,946,502

VALVE-EQUIPPED CONTAINERS

Filed Nov. 10, 1954

2 Sheets-Sheet 1



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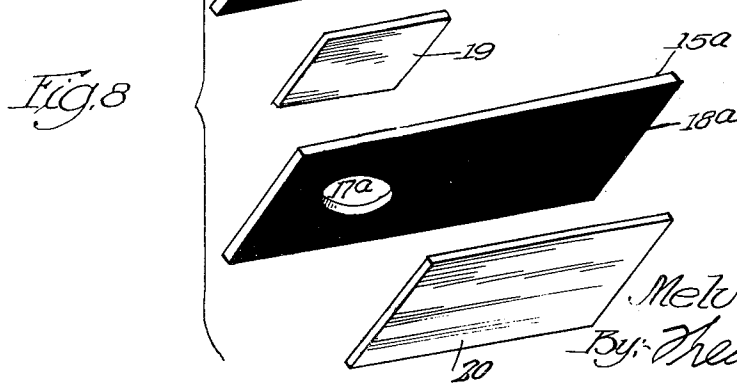
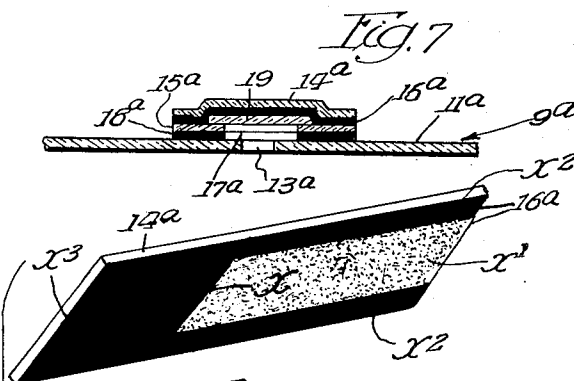
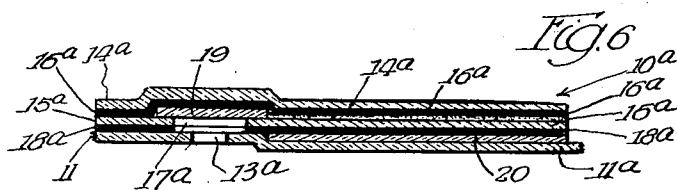
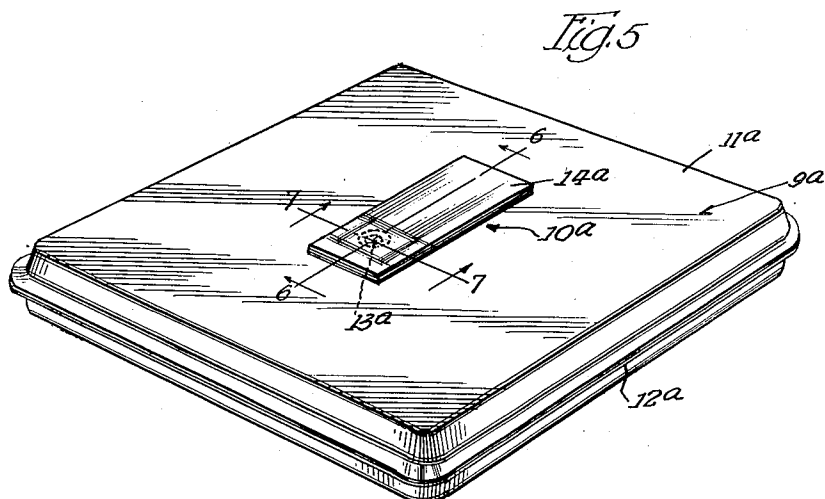
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2,946,502

VALVE-EQUIPPED CONTAINERS

Filed Nov. 10, 1954

2 Sheets-Sheet 2



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2,946,502

VALVE-EQUIPPED CONTAINERS

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3 Claims. (Cl. 229—62.5)

The present invention relates generally to valve-equipped containers. More particularly, the invention relates to that type of container which is designed primarily for use in merchandising a commodity and as its components or parts comprises: (1) a hollow body which is adapted to contain the commodity, is formed of flexible, fluid impervious, film-type material, and is closed throughout except for a small sized opening in one portion thereof; and (2) a normally flat, tube-like check valve which is positioned against the opening-equipped portion of the body, embodies two elongated, superposed, separately formed, coextensive members of comparatively thin, flexible, fluid impervious, film-type material, has the side margins of its members in opposed relation with one another and connected together, is provided in the member thereof that is nearer to the body with an opening in registering relation with the opening in the one portion of the body, has the opening defining portion of the member that is nearer to the body in opposed relation with, and connected to, the opening defining portion of the body, and is adapted when its members are spread apart to assume an open position wherein communication is established between the interior of the body and the ambient air and when its members are pressed together to assume a closed position wherein communication of the body interior and the ambient air is cut off.

One object of the invention is to provide a valve-equipped container which is an improvement on, and has certain inherent advantages over, previously designed containers of the same general type including that forming the subject matter of my co-pending patent application Serial No. 463,713, filed on October 21, 1954, now United States Patent No. 2,821,338, dated January 28, 1958, and is characterized by the fact that the normally flat tube-like check valve thereof is of simple and novel design, possesses high efficiency, and is capable of being produced or fabricated at a comparatively low cost.

Another object of the invention is to provide a valve-equipped container of the type under consideration in which the side margins of the members of the check valve are connected together by coatings of rubber-resin, permanently tacky, pressure sensitive adhesive, and the opening defining portion of the check valve member that is nearer to the body is connected to the opening defining portion of the body by way of a coating of similar adhesive. By connecting together the side margins of the members of the check valve by coatings of rubber-resin, permanently tacky, pressure sensitive adhesive, it is possible to form the two superposed check valve members of non-heat sealable film-type material, such for example, as cellophane. By connecting the opening defining portion of the check valve member that is nearer to the body to the opening defining portion of the body by way of a coating of rubber-resin, permanently tacky, pressure sensitive adhesive, it is possible to form the body of the container of non-heat sealable film-type material; and it is also possible when the check valve is disposed exteriorly

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of the body in connection with a so-called vacuum pack of the commodity in the body to pull the check valve out of connected relation with the body when it is desired to break the vacuum in the body in connection with removal of the commodity from the body.

Another object of the invention is to provide a valve-equipped container of the type and character last mentioned in which one of the check valve members is provided on the surface thereof that faces the other member with a coextensive coating of rubber-resin, permanently tacky, pressure sensitive adhesive, the side marginal portions of which coating form the adhesive coatings for connecting together the side margins of the two check valve members and the central portion of which coating is treated with talc or like inert non-adhesive material in order to render it non-adhesive to the end that it will not adhere to the central portion of said other valve member and hence permits the central portions of the two valve members to be spread apart or separated from one another in connection with the opening of the check valve.

A further object of the invention is to provide a valve-equipped container which is generally of new and improved construction and effectively and efficiently fulfills its intended purpose.

Other objects of the invention and the various advantages and characteristics of the present valve-equipped container will be apparent from 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 drawings which accompany and form 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 perspective of a valve-equipped container embodying one form of the invention;

Figures 2 and 3 are enlarged sections taken respectively on the lines 2—2 and 3—3 of Figure 1;

Figure 4 is a perspective view showing in separated relation the components or parts of the check valve of the container of Figures 1, 2 and 3;

Figure 5 is a perspective of a valve-equipped container embodying a modified form of the invention;

Figures 6 and 7 are enlarged sections taken respectively on the lines 6—6 and 7—7 of Figure 5; and

Figure 8 is a perspective view showing in separated relation the components or parts of the check valve of the container of Figures 5, 6 and 7.

The container which is shown in Figures 1 to 4, inclusive, of the drawings constitutes one form or embodiment of the invention. It is designed primarily for use in merchandising a commodity such as a perishable comestible and consists of but two parts, namely, a hollow body 9 and a check valve 10.

The body 9 is preferably formed of flexible, fluid impervious, "plastic" film, such, for example, as non-heat sealable cellophane and may be of any desired shape or configuration. As shown in the drawings, the body 9 consists of a rectangular upper member 11 and a separately formed rectangular lower member 12. The two members are the same in size and are arranged in superposed and registering relation. The four marginal portions of the upper body member 11 are arranged in face contact with the subjacent four marginal portions of the lower body member 12 and are suitably connected thereto so that the body is sealed except for the hereinafter described opening. It is contemplated that in fabricating the body 9, the upper and lower body members will be connected along only three of their marginal portions

in order that there will be a marginal opening through which the commodity to be merchandised may be inserted in the interior of the body. It is also contemplated that after the commodity is inserted into the body, the fourth marginal portions of the upper and lower body members will be connected together in order to close the body and fully enclose the commodity. The body 9 is closed throughout except for a small sized opening 13 in the upper body member 11. Such opening is located in the central portion of the body member and is preferably circular.

The check valve 10 of the container of Figures 1 to 4, inclusive, is located on top of the central portion of the upper member 11 of the body 9 and consists of a pair of elongated superposed coextensive members 14 and 15. The upper valve member is designated by the reference numeral 14 and the lower valve member is designated by the reference numeral 15. The two valve members are comparatively thin, and are preferably formed of non-heat sealable cellophane or any similar flexible, fluid impervious, "plastic" film. It is contemplated that if the body 9 of the container is formed of non-heat sealable cellophane or the outer surface of the body is formed of a coating of non-heat sealable cellophane, the upper and lower valve members 14 and 15 will, for cheapness of construction, be formed also of non-heat sealable cellophane. The upper valve member 14 is provided on its inner or bottom surface with a complete or coextensive coating 16 of any standard or conventional rubber-resin, permanently tacky, pressure sensitive adhesive. The side margins of the coating 16 are pressed firmly against the side margins of the lower valve member 15 in order adhesively to connect together the side margins of the two valve members. The central or intermediate portion 16' of the coating 16 is treated with talc or any similar inert non-adhesive material in order to render it non-adhesive to the end that it will not adhere to the central portion of the lower valve member 15 and hence permits the central portions of the two valve members to be spread apart or separated from one another in connection with the hereinafter described opening of the check valve. In fabricating the check valve, the talc is applied to the central portion of the coating 16 before the two valve members are placed in superposed relation. After placing the valve members in such relation, the side margins of the upper valve member 14 are pressed firmly against the side margins of the lower valve member 15. This results in the side margins of the two valve members becoming adhesively connected together. The talc by which the central portion of the coating 16 is rendered non-adhesive is preferably applied so that it extends throughout the entire area of the central portion of the coating i.e., to the end edges of the upper valve member 14, as best shown in Fig. 4 of the drawings. By having the talc extend throughout the entire area of the central portion of the coating, the check valve as a whole will have both ends thereof open to the ambient air when the two valve members are spread apart or separated in connection with opening of the valve 10. The lower member 15 of the check valve 10 rests on, and fits flatly against, the central portion of the top surface of the upper body member 11 and is provided in its central portion with a circular opening 17. The latter is preferably of slightly greater diameter than the circular opening 13 in the central portion of the upper member 11 of the body 9. It is in registering relation with the opening 13 and with the latter serves to establish communication between the interior of the check valve 10 and the interior of the body 9. The bottom surface of the lower valve member 15 is provided with a coextensive coating 18 of any standard or conventional rubber-resin, permanently tacky, pressure sensitive adhesive. The coating 18 serves adhesively to connect the lower valve member 15 to the subjacent portion of the upper body member 11.

The check valve 10 is adapted when its upper and lower members 14 and 15 are separated or spread apart to assume an open position wherein it establishes communication between the interior of the body and the air or atmosphere around the valve. It is also adapted when the central portions of its members are pressed firmly together to assume a closed position wherein it cuts off communication between the interior of the body and the ambient air. When a vacuum or subatmospheric pressure is formed in the interior of the container 9, the check valve 10 automatically assumes its closed position and prevents outside or ambient air from flowing into the body via the openings 17 and 13. The check valve when positioned exteriorly of the body 9 lends itself to a so-called vacuum pack. In forming such a pack, the container after the commodity has been inserted into the body 9 is placed in a vacuum chamber (not shown). When a vacuum is created in the chamber the check valve automatically assumes its aforementioned open position with the result that the air from flowing into the body is evacuated. After the desired vacuum is created within the body of the container, the vacuum in the chamber is released. Upon release of such vacuum the pressure of the air surrounding the check valve causes the check valve automatically to assume its closed position wherein as previously pointed out, the central portions of the upper and lower valve members 14 and 15 are for all intents and purposes pressed together or in sealed relation. When it is desired to release the vacuum in the interior of the body, the check valve is either opened by inserting an elongated spreading element between the central portions of the upper and lower members or it is pulled bodily away from the body 9 in order to expose the small sized opening 13 in the central portion of the upper body member 11. As soon as the valve is opened or pulled away from the body, air is permitted to enter the interior of the container body via the opening 13. In practice it has been found that it is advantageous to use the container in connection with a so-called vacuum pack directly after it has been fabricated. The reason for this is that the talc by which the central portion 16' of the coating 16 is rendered non-adhesive remains only temporarily on the bottom surface of the central portion of the coating. After a substantial length of time, there is a marked tendency for the talc to migrate into the central portion of the coating and thus leave certain portions of the bottom surface of the central portion of the coating adhesive. The adhesive areas which are left in connection with migration of the talc serve firmly to hold the central portions of the two valve members in their sealed position and thus assure an air tight seal so far as the check valve as a whole is concerned.

The valve-equipped container of Figures 1 to 4, inclusive, effectively and efficiently fulfills its intended purpose and due to the simple design or construction of its check valve may be produced at a comparatively low cost. Because of the particular design of the check valve, the latter may be formed of strips of so-called "Scotch" tape.

The container which is shown in Figures 5 to 8, inclusive, of the drawings constitutes another or modified form of the invention. It serves the same purpose and operates in the same manner as the container of Figures 1 to 4, inclusive, and consists of a hollow body 9a and a check valve 10a.

The body 9a is the same as the body 9 of the container of Figures 1 to 4, inclusive, and consists of a rectangular upper member 11a and a rectangular lower member 12a. The two members are the same in size and are arranged in superposed and registering relation. They are formed of cellophane or any other flexible, fluid impervious, non-heat sealable, "plastic" film and have the marginal portions thereof so suitably connected together that they are in sealed relation. The body 9a

is closed throughout except for a small sized circular opening 13a in the central portion of its upper member 11a.

The check valve 10a of the container of Figures 5 to 8, inclusive, is located on top of the central portion of the upper member 11a of the body 9a and comprises an elongated upper member 14a and an elongated lower member 15a. It is similar to the check valve of the container of Figures 1 to 4, inclusive, except that it comprises in addition to the upper and lower members a comparatively small rectangular strip 19 and an elongated strip 20. The upper and lower valve members 14a and 15a are formed of comparatively thin cellophane or any other similar flexible, fluid impervious, non-heat sealable, "plastic" film. The upper valve member 14a is rectangular and embodies on its inner or bottom surface a coextensive coating 16a of conventional rubber-resin, permanently tacky, pressure sensitive adhesive. The portion of the coating 16a that is between the side margins of the coating and extends between one end edge of the upper valve member 14a and an imaginary transverse line x which is disposed an appreciable distance inwards of the other end edge of the upper valve member 14a is treated with talc or any other similar inert non-adhesive material in order to render it non-adhesive. As a result of the talc treatment of the coating 16a, such coating has an intermediate non-adhesive zone x¹ and a surrounding U-shaped adhesive zone consisting of spaced apart parallel side parts x² and a comparatively wide crosspart x³ between certain ends of the side parts x². The lower valve member 15a is the same in size as, and is in registering relation with the upper valve member 14a and has, in the end portion thereof that underlies the central portion of the crosspart x³ of the U-shaped adhesive zone of the coating 16a a circular opening 17a. The latter is preferably of slightly greater diameter than the circular opening 13a in the central portion of the upper body member 11a. It is in registering relation with the opening 13a and with the latter serves to establish communication between the interior of the check valve 10a and the interior of the body 9a. The side parts x² of the U-shaped adhesive zone of the coating 16a are pressed firmly against the side margins of the lower valve member 15a in order adhesively to connect the side margins of the upper and lower valve members 14a and 15a. The outer end portion of the crosspart x³ of the U-shaped adhesive zone of the coating 16a is pressed firmly against the subjacent end margin of the lower valve member 15a in order adhesively to connect certain of the end margins of the upper and lower valve members 14a and 15a. The other end margins of the upper and lower valve members are disconnected or free due to the non-adhesive nature of the outer end of the intermediate non-adhesive zone x¹ of the coating 16a.

The lower member 15a of the check valve 10a is provided on the bottom surface thereof with a coextensive coating 18a of standard or conventional rubber-resin, permanently tacky, pressure sensitive adhesive. The portion of the coating 18a that surrounds the opening 17a in the lower valve member 15a is pressed firmly against the opening defining portion of the upper body member 11a in order adhesively to connect the check valve 10a to the upper member 11a of the container body 9a. The check valve 10a is adapted when its members are separated or spread apart to assume an open position wherein it establishes communication between the interior of the body 9a and the air or atmosphere around the valve. It is also adapted when its members are pressed together to assume a closed position wherein it cuts off communication between the interior of the body and the ambient air.

The rectangular strip 19 of the check valve 10a is disposed between the upper and lower valve members 14a and 15a and is of such size and so located that it extends completely across the circular opening 17a in the lower

valve member. It is of greater size than the said opening 17a and is formed of any thin, flexible, fluid impervious, "plastic" film, such, for example, as polyethylene, Saran or cellophane. The upper surface of the strip 19 is adhesively connected to the superjacent portion of the crosspart x³ of the U-shaped adhesive zone of the coating 16a of rubber-resin, permanently tacky, pressure sensitive adhesive. The strip 19 functions as an auxiliary flap type valve. When the check valve 10a is in its open position the strip 19 is slightly raised with respect to the circular opening 17a in the lower valve member 15a and when the check valve is in its aforementioned closed position the strip extends fully and tightly across the opening 17a and forms a closure or seal therefor.

The elongated strip 20 of the check valve 10a is formed of cellophane, polyethylene, Saran, Pliofilm or any other flexible, fluid impervious, film-type material and underlies, and is adhesively connected to, all portions of the adhesive coating 18a other than the portion that serves adhesively to connect the opening defining portion of the lower valve member 15a to the opening defining portion of the upper member 11a of the container body 9a. It is the same in width as the upper and lower valve members 14a and 15a and serves to separate what may be termed the tail end of the valve structure from the container body. By separating the tail end of the check valve from the container body, such end may be readily gripped in connection with pulling of the check valve away from the body when it is desired to break or release the vacuum in the body.

The valve-equipped container of Figures 5 to 8, inclusive, is capable of being produced at a comparatively low cost and possesses extremely high efficiency due to the fact that the check valve 10a thereof includes the strip 19 which as previously mentioned serves as an auxiliary flap type valve.

Whereas the two hereinbefore described containers have been illustrated as having the check valves thereof disposed exteriorly of the bodies, it is to be understood that the check valves may be disposed interiorly of the container bodies. In such case, the check valves, when in their closed position due to the pressure of whatever fluent material is in the container bodies, serve to prevent egress of the material from the bodies of the containers. It is also to be understood that the invention is not to be 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 consisting of a hollow body formed of fluid impervious material and closed throughout except for a small-sized opening in one portion thereof, and a normally flat, tube-like check valve positioned flatly against said one portion of the body, comprising two rectangular, superposed, separately formed, coextensive members of comparatively thin, flexible, fluid impervious, film-type material, arranged so that one of the members is directly adjacent to said one portion of the body and the other member is separated from the container body by the one member, provided in the one member at a location midway between the side margins of the one member and inwards of the two end edges of said one member with an opening in registry with the opening in said one portion of the body, having on the inner surface of said other member a truly coextensive coating of permanently tacky, pressure sensitive adhesive, and having the side margins of said coating pressed against, and in adhesively connected relation with, the side margins of the outer surface of said one member; said coating of permanently tacky, pressure sensitive adhesive on the inner surface of said other member having a continuous portion thereof that extends between the side margins of the coating and

also extends between the opening in said one member and one end edge of said other member treated with inert, non-adhesive material so as to render it non-adhesive and thus permit spreading apart of the portions of the two members that are in direct opposite relation with the continuous treated portion of the aforesaid coating; said normally flat, tube-like check valve having on the surface of said one member that is directly adjacent to the body a truly coextensive coating of permanently tacky, pressure sensitive adhesive, having the portion of the last mentioned coating that extends around the opening in the one member in adhesively but releasably connected relation with the opening defining portion of the body, and being adapted when the portions of the two members that are in direct opposite relation with the continuous treated portion of the first mentioned coating are spread apart to assume an open position wherein communication is established between the interior of the body and the ambient air and when said portions of its members are pressed together to assume a closed position wherein communication of the body interior and said ambient air is cut off; each of the two aforesaid members of the check valve with its own coating of permanently tacky, pressure sensitive adhesive being formed originally of a strip of conventional "Scotch" type tape.

2. A container according to claim 1 and in which the body is adapted to have its interior vacuumized, the check valve is located exteriorly of the body, the opening in the one valve member is located adjacent to one end portion of the permanently tacky, pressure sensitive adhesive coating on the one valve member, and the check valve comprises, additionally, a separately formed, rectangular, imperforate, flexible strip which corresponds in shape and is adhesively connected to at least the other end portion of the coating of permanently tacky, pressure sensitive adhesive on the one member, and serves to prevent said other end portion of the last mentioned coating from adhering to the adjacent portion of the body to the end that the check valve as a whole embodies a free tail part which may be readily grasped in connection with pulling of the check valve out of connected relation with the body when it is desired to release the vacuum in the body as a preliminary to opening the body.

3. As a new article of manufacture, a container consisting of a hollow body formed of fluid impervious material and closed throughout except for a small-sized opening in one portion thereof, and a normally flat, tube-like check valve positioned flatly against said one portion of the body, comprising two rectangular, superposed, separately formed, coextensive members of comparatively thin, flexible, fluid impervious, film-type material, arranged so that one of the members is directly adjacent to said one portion of the body and the other member is separated from the container body by the one member, provided in the one member at a location between the side margins of the one member and inwards of the two end edges of said one member with an opening in

registry with the opening in said one portion of the body, having on the inner surface of said other member a truly coextensive coating of permanently tacky, pressure sensitive adhesive, and having the side margins of said coating pressed against, and in adhesively connected relation with, the side margins of the outer surface of said one member; said check valve also comprising a thin, imperforate strip of flexible, fluid impervious, film-type material and greater size than the opening in the one member, positioned between the two members and so that it extends fully across and outwards of said opening in the one member, having the surface thereof that is adjacent to the other member connected adhesively to the adjacent portion of the aforesaid coating on the inner surface of said other member, and forming an auxiliary flap-type valve; said coating of permanently tacky, pressure sensitive adhesive on said other member having a continuous portion thereof that extends between the side margins of the coating and also extends between and to an edge portion of the auxiliary flap-type valve and one end edge of said other member treated with inert, non-adhesive material so as to render it non-adhesive and thus permit spreading apart of the portions of the two members that are in direct opposite relation with the continuous treated portion of said coating; said normally flat, tube-like check valve having on the surface of said one member that is directly adjacent to the body a truly coextensive coating of permanently tacky, pressure sensitive adhesive, having the portion of the last mentioned coating that extends around the opening in the one member in adhesively but releasably connected relation with the opening defining portion of the body, and being adapted when the aforesaid portions of said members that are in direct opposite relation with the continuous treated portion of the first mentioned coating are spread apart to assume an open position wherein the auxiliary flap-type valve is spaced from the opening in said one member and results in establishment of communication between the interior of the body and the ambient air and when the last mentioned portions of its members are pressed together to assume a closed position wherein said auxiliary flap-type valve extends fully across and seals the opening in said one member and results in cut-off of communication between the body interior and the ambient air; each of the two check valve members with its own coating of permanently tacky, pressure sensitive adhesive being formed originally of a strip of conventional "Scotch" type tape.

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