

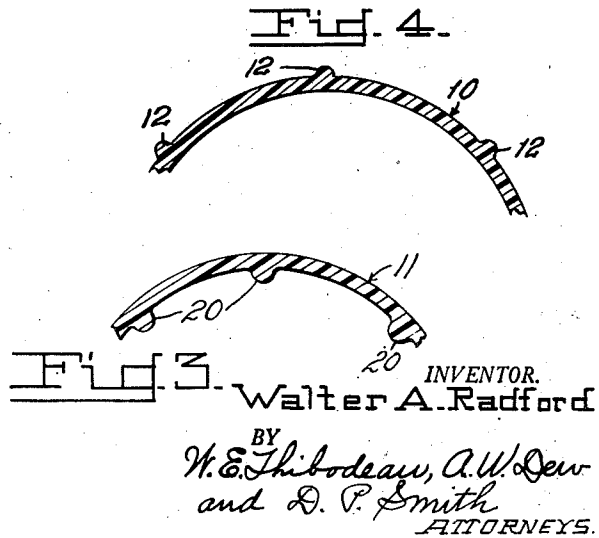
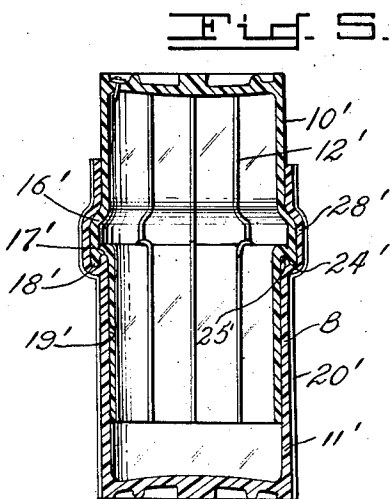
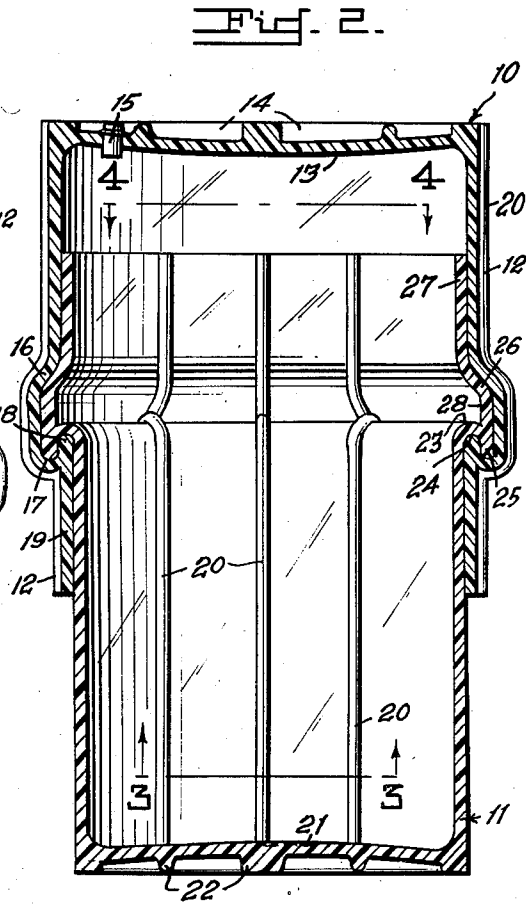
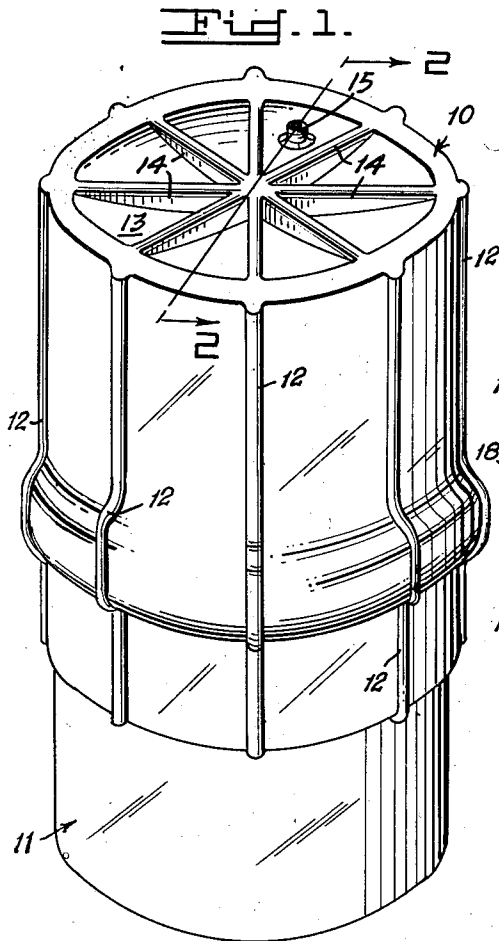
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SELF-SEALING PRESSURIZED REINFORCED PLASTICS CONTAINER

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1

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SELF-SEALING PRESSURIZED REINFORCED PLASTICS CONTAINER

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7 Claims. (Cl. 220—5)

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This invention may be used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates generally to containers and more particularly to a closure structure which may be tightly sealed at all times to thereby preserve the contents thereof. In this connection the container is of such character that a pressure seal may be obtained.

The primary object of my invention is to provide a container which may be tightly sealed at all times to prevent the entrance thereto of deleterious ambient atmosphere or moisture.

A further object of my invention is to provide a container which will provide a tight seal regardless of temperature conditions such as may cause differential expansions and contractions of the container material without the use of adhesives or metallic closure components.

A still further object of my invention is to provide a container which will have, by the use of interior pressure, sufficient rigidity and strength to protect the contents thereof from the impacts of handling and shipping and the compressions of stacking and storage with a minimum of container wall thickness and strength thus saving a maximum of tare weight.

Another object of my invention is to provide a tightly sealed container which may closely follow the contours of the contents therein and thus occupy a minimum of space.

Yet another object of my invention is the provision of a sealable container which may be made by low or high pressure molding techniques; transfer or compression molding or by any other method of plastic fabrication as may be most economical or desirable for the particular application.

Other features of the invention will hereinafter appear in the progress of the disclosure and as recited in the appended claims.

Accompanying this specification are drawings showing a preferred form of the invention wherein:

Figure 1 is a view in perspective showing a container in accordance with my invention.

Figure 2 is a longitudinal sectional view of the container of Figure 1 taken on lines 2—2.

Figure 3 is a sectional view taken on lines 3—3 of Figure 2 and looking in the direction of the arrows.

Figure 4 is a sectional view taken on lines 4—4 of Figure 2 and looking in the direction of the arrows.

In the drawing an embodiment of my invention has been illustrated as a general cylindrical form although it will be obvious that the concept is applicable to containers of any cross-section for instance, oval, semi-oval or rectangular.

Referring now to Figure 1 wherein reference character 10 represents the cap or upper part of my novel container which is adapted to fit in telescoping relation with the body or lower part 11. The cap is generally cup-shaped and is provided with external longitudinal lands

2

12 radially spaced in accordance with the degree or type of rigidity required. The top 13 of the cap is formed to be generally convex on the internal face thereof as can best be seen in Figure 2 and has lands 14 formed integral therewith radiating outwardly from the center in a spoked wheel arrangement generally as shown. The lands 14 are of decreasing height as they approach the rim of the top to conform to the arcuate surface thereof. A valve 15 is molded or otherwise firmly affixed into the top for a purpose that will presently be explained.

The side wall of the cap is constructed to flare outwardly to form a blister as at 16 and is then bent inwardly and back upon itself to form an annular recess 17 which terminates in an upturned peripheral rim 18. The cap terminates in a skirt portion 19 extending downwardly from annular rim 18.

The body or lower portion 11 of my container is patterned generally as a cup and is provided with internal longitudinally extending lands 20 radially spaced one from the other in accordance with the degree of stiffening required for the particular application. The bottom 21 of the body is constructed to be generally convex on the internal face thereof, as shown in Figure 2, and has lands 22 formed integral therewith and radiating outwardly from a hub in the center in a spoked wheel arrangement similar to the beforedescribed top member. The lands 22 are of decreasing height (not shown) as they approach the rim of the bottom to conform to the bowed surface thereof.

The side wall of the bottom is constructed to extend outwardly as seen at 23 and is bent out and back upon itself to form an annular recess 24 terminating in a down turned peripheral rim 25 substantially as shown. The side wall extends upwardly from the peripheral rim for a short distance to form a bead 26 and then is faired inwardly at 26 and terminates in a skirt 27.

When it is desired to use the container the body portion is firmly held or placed upon a solid surface and skirt portion 19 of the cap is slid telescopically over skirt portion 27 of the body, is urged expansively over the annular bead 28 until the upturned rim 18 rides over the turned down rim 25 and snaps down beyond it whereby skirt portion 19 embraces body portion 11. The rim 18 is brought into snug fitting engagement with recess 24 and rim 25 is brought into snug fitting engagement with recess 17 by urging the parts apart either by hand or applying a pressure higher than ambient, to the interior of the container through valve 15.

It will be noted that the line of mutual engagement between the two recesses and the two rims form an S in cross section thereby insuring the sealability of the organization upon an increase of internal pressure.

The blister formed on the cap and the bead formed on the body are not necessarily present in the finished product of my invention and are shown in exaggerated detail in the drawing to better illustrate to the bending of the walls to shape the several interlocking recesses and rims.

If it is desired to utilize the invention in vacuum packed containers it is only necessary to interchange the direction of the respective rims and recesses as shown in Fig. 5, whereby the pressure differential in tending to now force the cap and body toward each other again urges the rims and recesses into snug fitting engagement. Referring to Fig. 5 it is seen that the body 11' has an upwardly opening annular recess 24' formed between rim 25' and blister 28' which is the reverse of the body rim and recess as seen in Fig. 2. The cap 10' has a downwardly opening annular recess 17' formed in the cap bead 16' between cap rim 18' and the cap skirt 19', also the reverse of Fig. 2. Reinforcement for the side walls is provided by external longitudinal lands 20' on body 11' and internal longitudinal lands 12' on the cap 10'.

Under the influence of a vacuum within the container the body blister, recess and rim engage the cap bead, rim and recess respectively to form a seal between the cap and body. The cap and body skirts engage the side walls of the container in sealing relation also.

The materials used in my container should be gas tight, water and vapor resistant and semi-flexible. Many commercial plastics may be utilized in the fabrication but I do not wish to be expressly limited thereto as treated papers, waxes and metals may be found useful in various applications.

While I have described a specific embodiment of my invention it is obvious that various modifications therein, particularly in the construction and configuration of specific elements may be made without departing from my invention as defined in the appended claims.

I claim:

1. A self sealing pressurized container comprising in combination a resilient body open at its top and having its wall formed near its top with an outstanding bead defining a downwardly opening annular recess, a plurality of radially spaced longitudinal lands on the interior surface of said body, a plurality of radial lands on the bottom of said body, a resilient cap fitting over a part at least of said body and defining an outstanding blister terminating in an upturned peripheral rim fitting snugly into the said annular recess, skirt means forming the open end of said cap and body, a plurality of radially spaced longitudinal reinforcing lands on the external surface of said cap, a plurality of radial lands on the top of said cap and a valve in the said top of said cap to admit an inert gas under high pressure into the said container.

2. A self sealing pressure differential container comprising in combination, generally cup shaped resilient body and cap members telescopically interfitted, sealing means formed in the side walls of said members, said sealing means comprising a body recess and rim formed in the side wall of said body by an annular bead, said body recess and rim lying in a plane parallel with the container axis; cap rim and recess formed in the side wall of said cap by an annular blister, said cap rim and recess lying in a plane parallel with said axis cap and body skirt portions formed between the open end of said members and respective bead and blister, reinforcing lands integral with said cap and body side walls and skirts, said lands being formed on the interior surface of one said member and exterior surface of the other said member to provide an even uninterrupted surface between the overlying sealing skirts and wall portions of said cap and body members; valve means in the end wall of one said member whereby said pressure differential is established between the interior of said container and atmosphere, said sealing means adapted and arranged to cooperate in sealed relation under the influence of said pressure differential.

3. A self sealing pressure differential container as defined in claim 2 in which said sealing means are adapted and arranged to be interfitted in sealed relation under the influence of high pressure inert gas admitted to the interior of said container by said valve means.

4. A self sealing pressure differential container as defined in claim 2 in which said sealing means are adapted and arranged to be interfitted in sealed relation under the influence of a vacuum within the interior of said container.

5. A self sealing pressurized container comprising in combination generally cup shaped resilient body and cap members telescopically interfitted, sealing means formed in the side walls of said members, said body sealing means comprising an outstanding annular bead defining a first annular recess between the wall of said body and a bead rim, said bead rim lying in a plane parallel with the container axis, a body skirt between said bead and the open

end of said body, said cap sealing means comprising an outstanding blister defining a second recess between said blister and a blister rim, said blister rim lying in a plane parallel with said axis, a cap skirt between said blister and the open end of said cap; said cap sealing means adapted and arranged to receive said body sealing means in intimate sealed relation under the influence of an inert gas under high pressure within said container, valve means to admit said gas to the interior of said container and radially spaced reinforcing lands on the interior wall surface of said body and exterior wall surface of said cap.

6. A self sealing pressurized container comprising in combination generally cup shaped resilient body and cap members telescopically interfitted, sealing means formed integrally with the side walls of said members, said body sealing means comprising an outstanding annular bead defining a first downwardly opening annular recess and a bead rim, a body skirt extending outwardly of said bead forming the open end of said body; said cap sealing means comprising an outstanding annular blister defining a second upwardly opening annular recess and a blister rim, a cap skirt extending outwardly of said blister forming the open end of said cap; said blister, second recess and blister rim adapted and arranged to engage said bead, first recess, and bead rim in sealed interfitted relation and said cap and body skirts intimately engaging the respective cap and body walls under the influence of a high pressure inert gas admitted to the interior of said container; valve means to admit said gas to the interior of said container; radially spaced reinforcing lands on the interior wall surfaces of said body and exterior wall surface of said cap providing an even uninterrupted surface between the overlying skirt and wall portion of said members.

7. A self sealing vacuum container comprising in combination a generally cup shaped resilient body and cap members telescopically interfitted, sealing means formed integrally with the side walls of said members, said body sealing means comprising an outstanding annular blister defining a first upwardly opening annular recess and a blister rim, a body skirt forming the open end of said body; said cap sealing means comprising an outstanding annular bead defining a second downwardly opening annular recess and a bead rim, a cap skirt forming the open end of said cap; said blister, first recess and blister rim engaging said bead, second recess and bead rim in sealed interfitted relation and said cap and body skirts intimately engaging the respective cap and body walls under the influence of a vacuum in the interior of said container; valve means to allow evacuation of said container; radially spaced reinforcing lands on the exterior wall surfaces of said body member and interior wall surfaces of said cap member providing an even uninterrupted surface between the overlying skirt and wall portion of said members.

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