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S. P. THOMPSON ET AL

3,302,856

CONTAINERS

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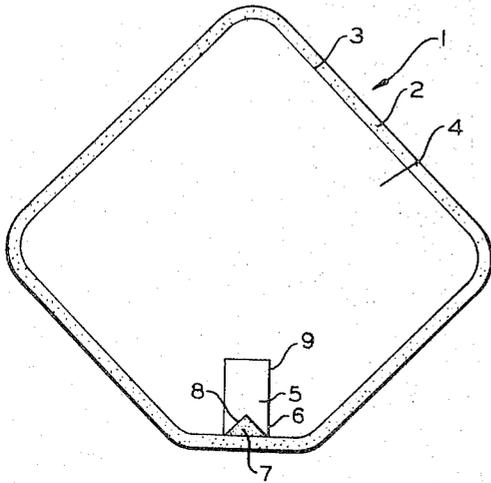


FIG. 1

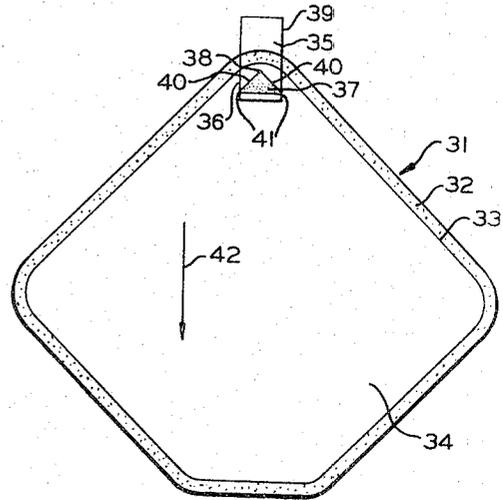


FIG. 3

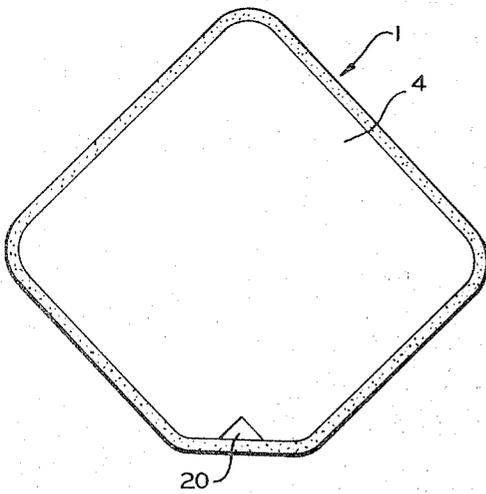


FIG. 2

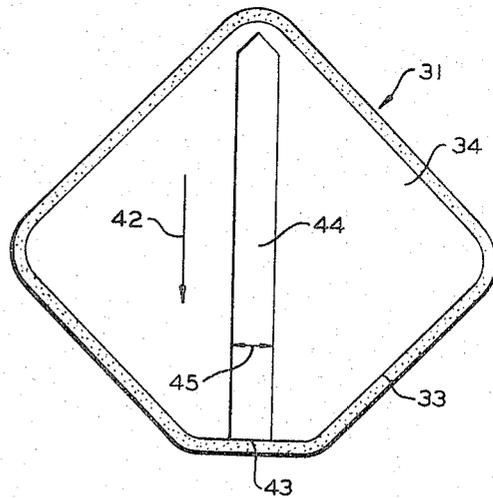


FIG. 4

INVENTORS

S. P. THOMPSON
R. J. MARTINOVICH

BY

Young and Quigg
ATTORNEYS

1

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CONTAINERS

Stanley P. Thompson and Robert J. Martinovich, Bartlesville, Okla., assignors to Phillips Petroleum Company, a corporation of Delaware

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This invention relates to plastic film covers for containers and the covered container itself.

Heretofore, external tear tapes have been utilized as a means for opening plastic packages. These tear tapes are elongated strips of plastic heat sealed to the plastic container along the full length of the opening desired after the tear tape has been removed. Thus, these tear tapes involve the use of a significant length of plastic and a large amount of heat sealing depending upon the length and size desired for the opening after removal of the tear tape.

It has now been found that openings in plastic film covers can be achieved by the use of a tear tab which has a significantly shorter length than the tear tapes above described and which requires only a very limited area of sealing of the tear tab to the cover as compared to that required by the tear tapes described above. The plastic film cover of this invention employs at least one short tear tab having one end sealed to the plastic film cover and the other end left free. The limited tear initiating area of sealing between the tear tab and the film cover is of a configuration such that it is pointed at the spot at which tearing of the film will first be initiated when the free end of the tab is pulled towards the sealed end. The length of the tear tab need be no more than that necessary to provide a free gripping end and to cover the limited tear initiating area of sealing. Thus, the length is substantially less than the prior art tear tape which extends for the full length of the desired opening because the tear tab of this invention extends only far enough to effect an incipient tear in the cover material, the final opening being formed from a tear propagated in the cover material itself by continued pulling on the tear tab.

Thus, it has been found that if the above sealed area between the tab and the cover is oriented so that the free end of the tab must be pulled in a direction parallel to the orientation direction of the film cover, the tear initiated at the sealed area will propagate across the cover to where the cover is sealed to the container thereby forming an elongated opening in the cover similar to that achieved by the prior art but with a length of tear tab and area of sealing between the tab and the cover which is significantly less than that required by the prior art to effect a similar opening.

This invention further relates to a covered container which has an opening therein which opening is covered by one of the plastic film covers described above.

Accordingly, it is an object of this invention to provide a new and improved plastic film cover. It is another object of this invention to provide a container having a new and improved plastic film cover.

Other aspects, objects and the several advantages of the invention will be apparent to those skilled in the art from the description, the drawing, and the appended claims.

FIGURE 1 is a top view of a container employing a plastic film cover of this invention.

FIGURE 2 is a top view of the container of FIGURE 1 after removal of the tear tab.

FIGURE 3 is a top view of a container employing another plastic film cover of this invention.

FIGURE 4 is a top view of the container of FIGURE 3 after removal of the tear tab.

Referring to FIGURE 1, a container 1 having a flange 2 and an opening in the top thereof defined by line 3 is

2

covered by a plastic film cover 4. The plastic film cover has on one corner thereof a tear tab 5 which has one end 6 sealed or otherwise intimately attached to cover 4 in triangular area 7. Apex 8 of sealed area 7 points towards free end 9 of tab 5. Thus, when free end 9 is pulled towards sealed end 6 the stress of such pulling is concentrated at apex 8 and a tear is initially formed at this spot in cover 4 which tear then propagates along both sides of triangular area 7 to edge 3 of the container. Sealed area 7 can be of any desired configuration the primary requirement being that the area be pointed at the spot at which tearing of cover 4 will first be initiated when the free end of the tab is pulled in the direction of the sealed area. Sealing of the tab to the cover can be effected in any conventional manner such as by heat sealing, gluing, and the like.

The embodiment of this invention shown in FIGURE 1 has a significant advantage in that an opening of a desired shape or configuration can be formed merely by altering the shape of the sealed area 7.

FIGURE 2 shows container 1 of FIGURE 1 after tab 5 has been completely removed thereby leaving a triangular opening 20 in cover 4 through which the contents of container 1 can be removed. The configuration of opening 20 will vary in accordance with the configuration of the sealed area 7 of FIGURE 1.

FIGURE 3 discloses a container 31 having a flange 32 and an opening in the top thereof defined by edge 33. The opening is covered by a plastic film cover 34 which has attached thereto a tear tab 35 having one end 36 sealed or otherwise intimately attached to cover 34 at triangular area 37. Apex 38 of triangular area 37 points towards free end 39 of tab 35 so that when free end 39 is pulled towards sealed end 37 the tear in cover 34 will be initiated at the spot of apex 38. The tearing will then propagate along either side 40, 40 of the triangle until it reaches ends 41, 41 of the base of the triangle opposite apex 38. Plastic film cover 34 is oriented in a conventional manner, i.e. has a grain in the direction of arrow 42. Thus, when the tear reaches points 41, 41 of area 37 it will propagate parallel to the orientation direction 42 as long as free end 39 is pulled in a direction substantially parallel to the direction of orientation 42 of cover 34. As with area 7 of FIGURE 1 the configuration of area 37 can be any desired configuration, the requirement being that it is pointed at the spot at which tearing of cover 34 will first be initiated when free end 39 is pulled in the direction of sealed end 36. Here also sealing the area 37 can be achieved by any conventional means which will form an intimate area of contact of the desired configuration between end 36 and cover 34. Although the orientation direction for cover 34 as shown by arrow 42 is in the direction in which free end 39 is to be pulled, it is to be understood that the direction of orientation can be opposite to that of arrow 42, the requirement of this invention being that the direction in which free end 39 is pulled is towards sealed end 36 and parallel to a direction of orientation of cover 34.

FIGURE 4 shows container 31 after tab 35 has been pulled to the full extent possible, i.e. to area 43 of edge 33 thereby leaving an opening 44 in cover 34 which is substantially longer in length and larger in area than the length of tab 35 and area of sealed area 37. It should be noted that sealed area 37 and therefore width 45 of opening 44 can be made any size desired depending upon the size of the opening required in order to allow the removal of the contents of container 31.

The plastic film cover of this invention can be applied to similar or different plastic containers or other types of containers of different materials so long as the cover can be firmly attached to the container. The plastic can

be of any desired size or shape and therefore cover any size or shape of opening in a container.

The plastic film cover can be made of any plastic that can be formed into a film and can be torn and, in the case of the embodiment of FIGURE 3, can be oriented in a single direction and will propagate a tear parallel to that direction of orientation.

Preferred plastics include those prepared from 1-olefins containing from 2 to 8 carbon atoms per molecule. Preferred 1-olefins are at least one of those selected from the group consisting of ethylene, propylene, 1-butene and 1-pentene. It should be noted that polymers of this invention can be homopolymers, a single monomer or mixtures of two or more monomers. A still more preferred polymer is polypropylene or a high density polyethylene since such materials tend to tear more readily than some other materials such as low density polyethylene. The high density polyethylenes preferably have a density of from 0.935 and higher. The density of the polypropylene is not presently material. The thickness of the plastic film cover need be that which will allow relatively easy tearing thereof and will generally vary from about 0.4 mil to about 10 mils, preferably from about 0.5 mil to about 3 mils.

The formation of oriented film, e.g. film having a grain substantially parallel to the longitudinal axis thereof, is well known in the art and can be formed by conventional methods. Generally, some orientation is achieved during extrusion forming of the film in which case the direction of orientation will be parallel to the direction of extrusion and therefore the longitudinal axis of the film formed. Another method of orienting a plastic film which can be employed per se or subsequent to extrusion of the film involves stretching same in a specific direction, e.g. parallel to the longitudinal axis of the film, in order to orient same in that direction. A full and complete disclosure of such a method of orientation is set forth in U.S. 2,943,356 issued to Rasmussen on July 5, 1960, and in U.S. 2,367,173.

Although the tear tab can be made of any type of material that can be intimately bonded to the plastic film cover, it is preferably formed of the same or a similar type of plastic from which the plastic film cover to which it is to be attached is made.

Example

A hollow, open-topped container made of polyethylene having a density of 0.960 was covered by a film of uniaxially oriented polyethylene having a density of 0.950 and a thickness of 1½ mils. The polyethylene film was heat sealed to a flange around the edge of the open-topped part of the container. The polyethylene film cover has attached thereto at one corner of the container a tear tab of polyethylene 4 mils thick having a density of 0.960 about 1 inch long and about ¼ inch wide. One end of the tear tab was heat sealed to the polyethylene film cover in a manner such that the heat seal formed was of a triangular configuration having the apex of the triangle pointing towards the free end of the tear tab. The polyethylene tear tab was sealed to the polyethylene film cover in a manner such that when the free end was pulled towards the sealed end the direction of movement was parallel to the orientation grain of the polyethylene film cover. When the free end was pulled towards the sealed end and such pulling was continued across the film to where same was sealed to the flange of the container, a strip of the polyethylene film cover having a uniform width equal to that of the base of the triangle of the heat sealed portion was removed.

Reasonable variations and modifications are possible within the scope of this disclosure without departing from the spirit and scope thereof.

We claim:

1. A plastic film cover comprising an unperforated oriented plastic film for covering at least one container opening, at least one plastic tear tab having one end intimately attached at approximately the edge of said film and the other end free to be grasped, the area of contact between said tear tab and said film being of an area substantially smaller than the desired torn area for said plastic when opened and being of such a configuration that it is pointed at the spot at which tearing of the film will first be initiated when the free end of said tab is pulled in the direction of said pointed part of said contact area, the orientation of said free end of said plastic tear tab relative to said pointed area of said attached end and said film being such that the free end of said tab must be pulled in a direction substantially parallel to the orientation direction of said film, the outer edges of the area of contact between said tear tab and said film being unperforated and therefore allowing said plastic film to remain unperforated until the cover is opened.

2. The plastic film cover of claim 1 wherein said plastic is a polymer composed of at least one 1-olefin containing from 2 to 8 carbon atoms per molecule and said contact area is triangular in configuration.

3. A polyethylene film cover comprising an unperforated uniaxially oriented polyethylene film, a polyethylene tear tab having one end heat sealed to said plastic film and the other end free to be grasped, the area of heat sealing being in the shape of a triangle and being oriented so that the apex of the triangle is pointed substantially in a direction towards said free end, said area of heat sealing being further oriented relative to said apex so that the tear initially formed in said film at said apex of the triangle flares out to the width of the triangle base opposite said apex when said free end is pulled toward said sealed end and then upon further pulling of said free end in substantially the same direction propagates across said film substantially parallel to the direction of orientation of said film, the outer edges of the area of contact between said tear tab and said film being unperforated and therefore allowing said plastic film to remain unperforated until the cover is opened.

4. A covered container comprising a container having an opening therein, an unperforated plastic oriented film covering at least said opening and attached to said container, at least one tear tab having one end intimately attached to said film and the other end free, the area of contact between said tear tab and said film being pointed at the spot at which tearing of the film is first initiated when the free end of said tab is pulled in the direction of said contact area, the orientation of said free end of said tear tab relative to said attached end and said film further being such that the free end of said tab must be pulled in the direction parallel to the orientation direction of said film, the outer edges of the area of contact between said tear tab and said film being unperforated and therefore allowing said plastic film to remain unperforated until the cover is opened.

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JOSEPH R. LECLAIR, *Primary Examiner.*

DAVIS T. MOORHEAD, *Examiner.*