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PACKAGE FOR LIQUID COATING MATERIAL

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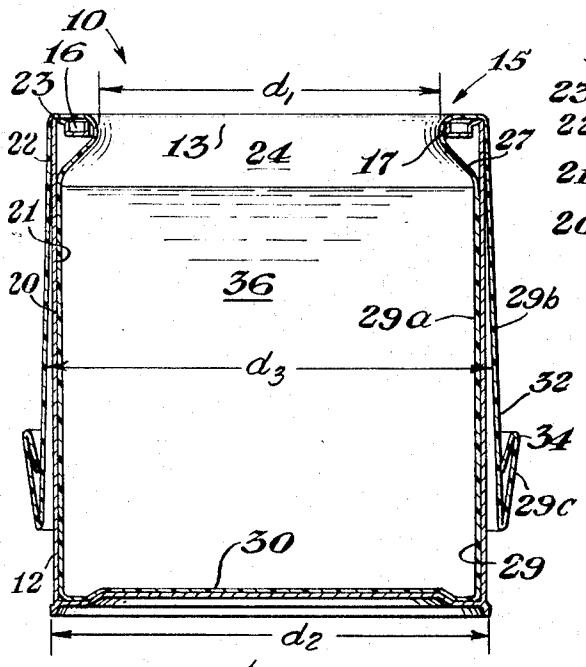


Fig. 1

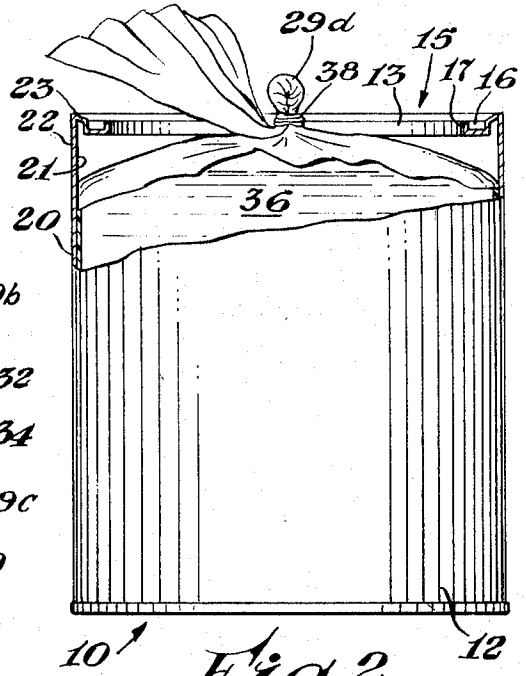


Fig. 2

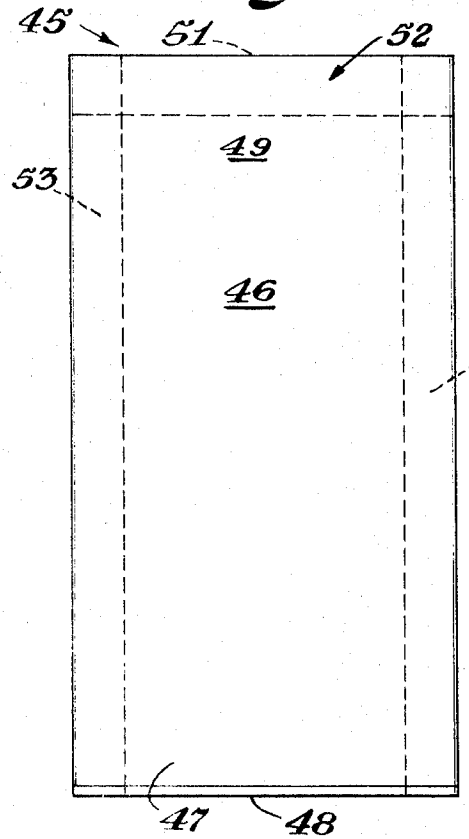


Fig. 4

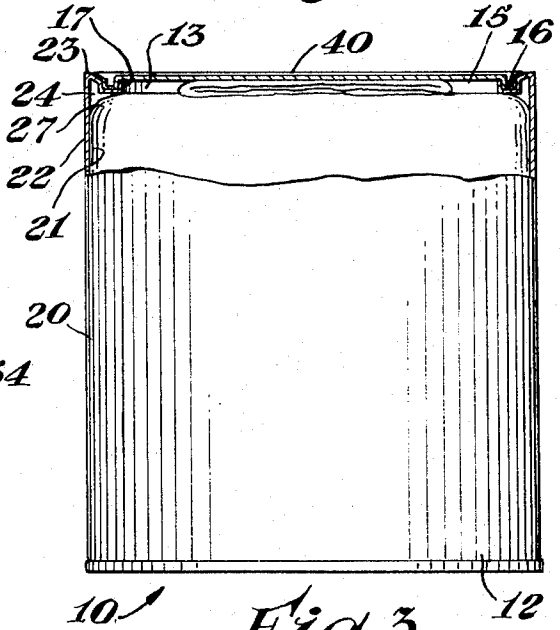


Fig. 3

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PACKAGE FOR LIQUID COATING MATERIAL

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5 Claims. (Cl. 206—46)

This invention relates an improved package and more particularly to a package containing liquid coating material such as paint and the like.

Much paint and like coating material is packaged in metal containers having a friction type closure, such containers are generally available in sizes which contain up to about a gallon. The containers or cans are fabricated from sheet metal into a generally cylindrical form, an opening is provided on one end of the cylinder which is approximately commensurate with the diameter thereof. One of the most common forms of closure utilizes a frictionally retained cover or closure which is adapted to engage an annular recess and a concentric annular land. Such a closure provides substantially air-tight sealing of the container and permits the contents to be maintained in usable condition for long periods of time. However, oftentimes it is desired to dispense the contents of the container in an incremental manner with relatively long periods of time between the removal of portions of the contents. In the case of most coating materials particularly those having adhesive characteristics and those which solidify and form a tenacious film such as paint, lacquer, rubber cement and the like, the closure of the container becomes partially coated if material is poured from the container and oftentimes becomes entirely coated when the material is being dispensed by means of a brush. Oftentimes portions of the contents drip down the exterior side walls of the container during use and obscure identification marks thereon. On resealing such a container of a hardening coating such as an oil base paint, that is a paint or coating material which hardens or cures by polymerizing, the cover or closure becomes sealed by means of residual paint lying in the annular groove which engages the closure. On opening the container after an extended period of storage, frequently there is a film formed on the surface of the liquid coating material and particles of solidified paint fall into the container when the hardened paint about the closure is being removed to permit reclosing the container after use. Thus prior to use, the contents of the container oftentimes must be filtered to remove undesired solids which would cause irregularities in a coating prepared employing the paint or would interfere with the operation of application devices such as paint sprayers, and the like. Further when such a container has been used for a coating material such as paint oftentimes it is impractical to employ the container for other purposes because of the difficulty in cleaning.

It is an object of this invention to provide an improved package containing paint, coating materials or the like.

Another object of this invention is to provide a package containing paint, or like material, which is particularly suitable for dispensing the contents without having the exterior of the package contaminated with the material being dispensed.

Another object of this invention is to provide a package containing paint, or the like, which reduces the tendency of the stored material to form a skin or film on the surface thereof, and provide a relatively clean reusab'e container when the contents have been removed therefrom.

These benefits and other advantages in accordance with the present invention are achieved in a package containing a liquid coating material which hardens on exposure to air. The package comprising a container, the container defining an opening, the opening having a dimension approaching the dimension of the container and a closure adapted to seal the opening in a manner to protect the contents from an atmosphere surrounding the container, the improvement which comprises a liner of a plastic film in the form of a bag, the bag formed of a plastic film which is impermeable to the contents of the container and has the general form of a tube closed at one end, the tube having a circumferential dimension greater than the circumferential dimension of the container in a plane generally parallel to the opening and of sufficient length so that the closed end of the tube when positioned against an inner wall of the container remote from the opening, the tube filled with sufficient liquid to cause it to conform to the configuration of the interior of the container that the open end of the tube may be folded outwardly and downwardly about the outer sides of the container thereby separating the contents from the internal and external surfaces of the container and the tube being releasably sealed about the contents.

Further features, benefits and advantages of the present invention will become more apparent from the following specification when taken in connection with the drawing wherein:

FIGURE 1, is a schematic sectional representation of an open package in accordance with the invention adapted to have the contents removed therefrom;

FIGURE 2, is a schematic representation to the container of FIGURE 1 being closed;

FIGURE 3, is a sectional schematic representation of a closed package having a friction retained closure in place on the container of FIGURE 2;

FIGURE 4, is a representation of a liner employed in FIGURES 1, 2, and 3.

In FIGURE 1 there is depicted a schematic representation of an open package generally designated by the reference numeral **10**, the package **10** comprises in cooperative combination a generally cylindrical container **12** defining an opening **13**. The opening has a diameter d_1, which is similar to and approaching the magnitude of the diameter of the container d_2. The opening **13** is defined by a terminal or end portion **15** of the container **12**, the end portion of **15** of the container **12** has defined therein a closure receiving groove **16** and an adjacent closure engaging land **17**. The groove **16** and land **17** are concentric and have annular configurations. The container **12** has a generally cylindrical side portion **20** having an inner surface **21**, an outer surface **22**. The container defines a generally cylindrical cavity or space **24**. The end or top **15** is integral with the side wall **20** and joins the side wall forming the rim **23**; a flexible plastic liner **27** is disposed partially within the space **24**. The plastic liner **27** is so constructed and arranged so as to be capable of assuming a generally cylindrical configuration within the space **24** and has a diameter d_3 which is greater than d_2, the diameter of the container **12**. The liner **27** comprises a bottom portion **29**, a closed terminal portion **30** and an open end or open terminal portion **32**. The terminal portion **32** has a stiffened portion **34**. The body of the liner **29** forms an inner container engaging portion **29***a* and a portion **29***b* adapted to extend outwardly and downwardly for the opening **13** of the container **12** and extending toward the bottom **25** thereof. The portion **29***b* terminates adjacent the bottom of the container in a cuff **29***c* formed of the reinforced or stiffened terminal portion **34**. Disposed within a portion of **29***a* of the liner **29** is a hardenable coating liquid **36** such as, a paint or the like.

In FIGURE 2 there is schematically depicted the container **10** wherein the liner portion **29***b* and **29***c* of the liner **29** are positioned in such a manner that a portion of the liner **29** forms a closure **29***d* which is secured and

maintained in sealing relationship by a releasable retainer 38.

In FIGURE 3 the liner portions 29*b*, 29*c*, and 29*d* are folded in closely adjacent relationship and disposed internally within the space 24 of the metal body 12 and maintained therein by means of a friction closure 40 engaging the annular recess 16 and the annular land 17 in sealing engagement.

In FIGURE 4 there is shown one form of a liner 45 adapted for the practice of the invention. The liner 45 comprises a flexible plastic bag 46 having a first end 47 wherein opposed portions of the material forming the package are in sealing engagement to form a liquid tight closure 48 remotely disposed from the first end 47 is a second end 49, the end 49 defines an opening 51 which extends substantially the entire width of the liner. Adjacent the opening 51 the body 46 defines a stiffened or reinforced portion 52 formed by a second layer of plastic material which is utilized to prepare the liner 45. A pair of gussets 53 and 54 extend in a generally longitudinal manner which permits the liner 45 to be opened or inflated and conform to the generally cylindrical configuration of a container such as the container 12 of FIGURE 1.

The operation of the package of the present invention is described with reference to the figures wherein a paint can utilizing a friction sealing cover is employed. In preparing such a package as the package 10 a can or container such as the container 12 is selected which may have a configuration substantially in accordance with the well known friction sealed metal containers as are widely employed in commerce as containers for paint and coatings and are usually available in a variety of sizes up to about one gallon. The liner such as the liner 27 having the form of a plastic bag is prepared from a plastic film which is not permeable to or attacked by the paint or coating material to be packaged. Generally for most applications a very satisfactory liner is formed from polyethylene film having a thickness of from about one half to about five mils and beneficially from about one to about three mils. Such a liner generally should have a length of substantially greater than the height of the container to be lined and beneficially about twice the height of the container. The closed portion of the bag or liner such as the portion 30 of the liner 27 is positioned within the container and remote from the opening of the container. The liquid, such as paint, is added thereto in such a manner that it is separated from the inner walls of the container by the liner. The weight of the liquid material generally is sufficient to cause the liner to closely conform to the inner configuration of the container. The liner is then closed by gathering together the portion of the liner above the liquid level and forming a closure, such a closure is easily and readily accomplished by twisting the liner, folding the twisted portion back on itself by about 180° such as is illustrated in FIGURE 2 and releasably securing the closure by a resilient tensioning means such as an extensible rubber band. The remaining portion of the liner is folded within the space enclosed by the container and the opening of the container sealed by a conventional closure means to form the completed package.

When a portion of the contents is desired, the container closure is opened, the folded portion of the liner removed and the resilient sealing means detached therefrom. The liner is then folded outwardly and downwardly over the generally cylindrical wall thus the contents may be removed by pouring or advantageously by means of a brush. The contents of the can, which without the liner would partially fill the annular groove such as the groove 16 and drip over the outer surface of the container are separated by the liner. Beneficially the liner portion which extends outwardly and downwardly about the outer wall of the container is reversably folded to form a cuff or annular trough which retains material dripping down the liner when the user wipes excess paint from a brush. Oftentimes in order to achieve greater rigidity the portion of the liner forming the cuff optionally comprises a stiffened portion or a portion of two or more layers of the liner or another layer of a diverse material. When it is desired to close the container, the exterior portion of the liner is wiped free of excess paint or if an insignificant amount of drying has occurred the liner may be extended upwardly and any liquid material lying in the annular cuff portion will then run into the lower portion of the liner, the liner is then closed as hereinbefore described with a minimum quantity of air entrapped within the liner, the liner folded into the container and resealed. Usually on opening such a used can where paint, which adhered to the portion of the liner has dried presents no problem, the flexible plastic liner, particularly those prepared from polyolefins, such as, polyethylene and polypropylene have little or no tendency to adhere to the dried paint film. The dry paint is readily brushed away prior to opening the liner. The paint within the liner is without a skin or partially cured layer on the surface thereof and is readily usable with a brush or spray gun.

Containers such as paint cans in accordance with the present invention are readily shipped and subjected to rough useage, such as impacts and jolting without any tendency for the liner to rupture. One gallon cans filled with a conventional house paint and having a polyethylene liner, generally as illustrated in the accompanying drawing, successfully survive shipping and handling in excess of that normally received by paint containers without any indication of rupture of the liner. This is primarily due to the use of the liner which has a circumferential dimension or diameter greater than that of the container in which it is employed. Thus, when such a can is "full" that is, as the normal gas space therein, the liner is supported by the walls of the container and is not subjected to significant forces which would cause it to tear or rupture; generally, for oil and latex paints the polyolefin liners are desirable, however, other plastic liners may be employed such as, saran, polyvinylchloride, as well as, other liquid impermeable package film as is chemically resistant and impervious to the material being packaged. When the coating material is removed from the container the plastic liner is lifted out to leave a clean reusable container.

As is apparent from the foregoing specification, the present invention is capable of being embodied with various alterations and modifications which may differ particularly from those that have been described in the preceding specification and description. For this reason, it is to be fully understood that all of the foregoing is intended to be merely illustrative and is not to be construed or interpreted as being restrictive or otherwise limiting of the present invention, excepting as it is set forth and defined in the hereto appended claims.

I claim:

1. An improved package for liquid coating material comprising a container and a liner, the container having an opening, the opening having a dimension approaching the diameter of the container, a closure adapted to seal the opening in a manner to protect the contents from an atmosphere surrounding the container, the improvement which comprises a liner in the form of a bag formed of a plastic film which is impermeable to the coating liquid, the bag having a general form of a tube closed at one end; the tube having a circumferential diameter greater than the circumferential diameter of the container in a plane generally parallel to the opening of the container, the tube being of sufficient length so that the closed end of the tube is positioned against an inner wall of the container remote from the opening, the bag contains a quantity of coating liquid which on exposure to air forms a continuous protective film, said liquid approximates the volume of the container and provides a gas space suffi-

cient to permit therein expansion of the liquid without rupture of the bag or container or displacement of the closure, the tube having sufficient length that the open end thereof may be folded outwardly and downwardly about the major surface of the container, the tube being releasably sealed about the coating liquid at a location generally adjacent the upper surface of the liquid when the opening is uppermost and the remaining portion of the tube being folded over the releasably sealed portion of the tube and maintained in position by the closure and the plastic film bag has a stiffened portion disposed adjacent to its open end, the stiffened portion adapted to be folded upon itself and form an upwardly facing cuff disposed externally to the container when the package is open and the contents are being removed therefrom.

2. The package of claim 1 wherein the liquid coating composition is paint.

3. The package of claim 1 wherein the bag is of sufficient length to extend outwardly and downwardly from the closure of the container to the bottom of the container.

4. The container of claim 1 wherein the metal container has an annular groove and an annular land adapted to receive a friction fitted closure.

5. The package of claim 1 wherein the coating liquid is a latex paint.

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