

May 7, 1963

K. V. HARDMAN
TWO PART PACKAGE

3,088,586

Filed July 26, 1961

2 Sheets-Sheet 1

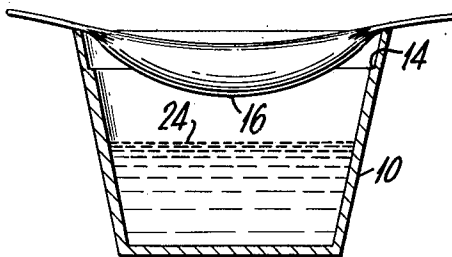
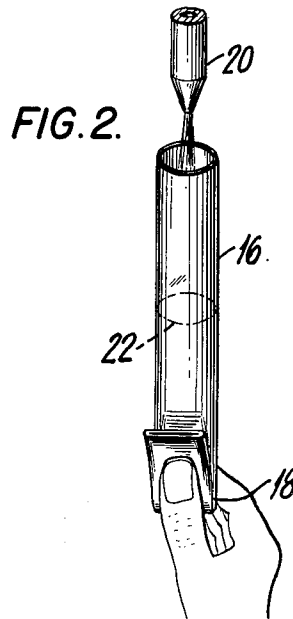
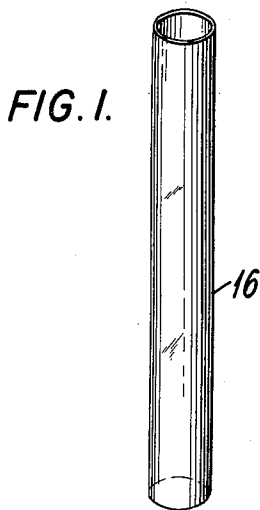


FIG. 3.

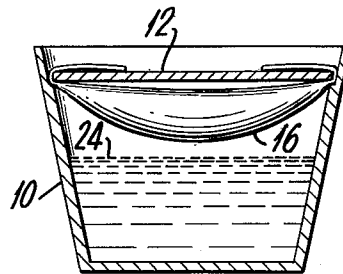
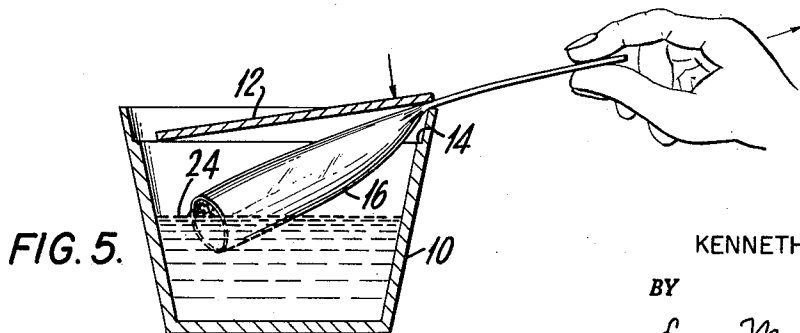


FIG. 4.



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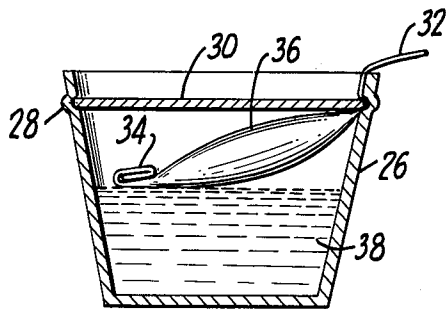


FIG. 6.

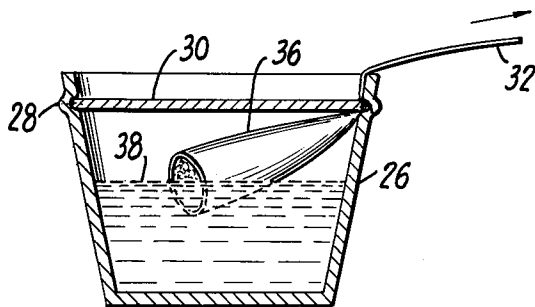


FIG. 7.

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3 Claims. (Cl. 206—47)

This invention relates to a container for separately packaging two parts of a composition of the type in which the separate parts are mixed by the consumer just prior to use.

Briefly stated the structure of the present invention comprises an outer container with a separate removable flexible container positioned therein and a removable closure is provided for securing the inner flexible container in the package. The inner flexible container is collapsible and open on at least one end thereof and at least one end portion of the inner flexible container is secured in position on the exterior of the outer container. The two parts of the composition are each separately packaged in the inner and outer container.

An example of such a two part composition is the well known conventional epoxy resins. The base resin is a liquid which just prior to use is mixed with a specified amount of a liquid amine catalyst in order to cure and set the resin at room temperature. Another example is depolymerized rubber which as is well known is a flowable form of rubber. The liquid rubber is compounded with the known fillers, accelerators and the like and then a measured amount of catalyst is added by the consumer to cure and set the rubber. After stirring heat may be employed to accelerate the cure.

Today these materials are in demand for specialty jobs both in industrial plants and in the home where only a small quantity of the two part composition is required for the job at hand. Illustrations of these include the "potting" of electrical components where a coil of wire or the like is embedded in perhaps two or three ounces of cured depolymerized rubber or where five to ten pounds of cured epoxy resin may be employed in the home as an adhesive for flooring. The advantage of supplying the two part composition in a single package especially adapted for the particular job at hand can be readily appreciated.

For example in accordance with the present invention one component of the two part composition such as an uncatalyzed epoxy base resin is packaged in the outer container and the liquid amine catalyst is separately packaged in the inner collapsible container. Since one end portion of the inner container is positioned on the exterior of the outer container the user merely pulls on that end of the inner container to draw the inner container through the crack between the removable closure and outer container and as a result the inner container is stripped of its contents which are deposited in the base resin. Thereafter the cover is removed and the catalyst is stirred into the resin to cure and set it.

In this way the user is supplied with a complete package containing precisely measured amounts of the two components which insures uniform results and there is virtually no chance of the user coming into physical contact with the catalyst which is especially important where the catalyst is toxic or otherwise requires special precautions in handling and use.

Further details and advantages of the structure of the present invention may be readily understood by reference to the preferred forms of structure shown in the accompanying drawings in which:

FIG. 1 illustrates a preferred form of inner collapsible flexible container.

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FIG. 2 illustrates filling the inner container with one part of the composition.

FIG. 3 illustrates a preferred form of outer container with the inner container assembled on the open mouth thereof.

FIG. 4 illustrates the container in FIG. 3 with the removable closure in sealing position thereon.

FIG. 5 illustrates the way in which one of the components is added to the other so that the two may be mixed prior to use.

FIG. 6 illustrates another form of the container of FIG. 4.

FIG. 7 illustrates the way in which the two components are mixed in the package of FIG. 6.

Turning now to the preferred forms of structure shown in the drawings, **10** is the outer container and **12** is a removable closure member which as shown is in the form of a circular disc that frictionally engages the inner wall at the mouth of the outer container to seal the contents therein. Lip **14** on the inner wall of container **12** forms a seat for the removable closure member.

The inner collapsible flexible container is shown in FIG. 1 and as there shown it comprises a collapsible tube **16** open at both ends. The flexible tube may be most conveniently filled by bending one end over upon itself as at **18** and then the open end of the tube is held under nozzle **20** to receive a measured quantity of one of the two parts of the composition. In the case of epoxy resins, liquid amine catalyst **22** is packaged in the inner flexible container. A measured amount of base epoxy resin **24** is filled into the outer container **10** in conventional manner.

After the inner flexible container is filled with the measured amount of amine catalyst it is positioned over the rim of the outer container as shown in FIGURE 3. The weight of the liquid causes the flexible tube to bow as shown so that the liquid amine catalyst is positioned in the curved body portion of the tube. It will be understood that the collapsible tube **16** is only partially filled with the liquid amine catalyst so that opposite end portions of the tube are substantially free of amine catalyst so they may be positioned over the rim of the mouth of the container **10** without loss of liquid.

The removable closure **12** is then pressed firmly in place against lip **14** to close the outer container as well as the inner flexible tube. The inner flexible collapsible tube is preferably made of plastic film which is thin enough so that the removable cover will effectively close the package.

As previously described the inner container may be removed from the package without removing closure member **12** or if desired one side of the removable closure **14** may be lifted up as shown in FIG. 5 and then pressed against the inner flexible container and rim of the outer container. Thereafter the inner flexible container is pulled between the closure member and rim of the outer container as illustrated in FIG. 5. This strips the liquid amine catalyst from the inner flexible tube to deposit it within the outer container. The removable closure member and tube are then disposed of and if necessary the amine catalyst is mixed into the epoxy base resin as by means of a spatula, dowel or other stirring device (not shown). The catalyzed composition is now ready for use.

It will be understood that the user need not have any physical contact with the contents of the package and the resulting catalyzed base resin will have the desired proportion of catalyst.

As to the outer container **10**, the one shown in the drawing is made of cardboard and it is a conventional type container such as the well known cottage cheese cups or so called Lily cups. Lip **14** is not an essential feature

of the structure and any conventional frictional means may be employed for sealing the package and anchoring the closure in place. The outer container 10 with removable closure member may of course be made of metal, plastic or any desired material and various known frictional means may be employed for sealing the closure member in place such as those employed on conventional paint cans and the like. Frictional means are not required for sealing the closure member in place and any known conventional means may be employed provided of course that the closure member is pressed against the inner wall of the outer container or against the rim or outer surface thereof so that the pressure between the two members will squeeze shut and close the inner collapsible tube with a temporary seal.

The tube 16 shown in the drawings is a conventional thin wall plastic tube made of polyvinyl chloride film. Collapsible thin wall tubing is a well known article of commerce readily available on the market. Of course other plastic materials may be employed such as polyethylene, polypropylene, nylon, etc. The collapsible tube need not be made of plastic material but any collapsible form of tubing may be used. It is not necessary to use tubing for the inner container and any convenient form of container may be employed to gain the advantages of the present invention.

In the preferred form of structure shown both of the ends of the tube are open. This expedites the filling of the tube and no heat sealing equipment is necessary for sealing the tube after it is filled since the removable closure member tightly seals the tube against loss of contents. If desired one end of the tube may be permanently heat sealed in known manner and in such case the contents of the tube are added to the base material by pulling on the sealed end of the tube to draw the open end through the outer container.

While I have described a preferred form of structure in connection with the packaging of a two part liquid composition wherein the parts chemically react it is understood that such chemical reaction is not necessary. It will be further understood that the utility of the package of my invention is not restricted to liquids and it may be used in packaging other materials.

Another form of the package of the present invention is illustrated in FIGS. 6 and 7. As there shown outer container 26 consists of the usual reinforced paper type of container having a bead 28 positioned in the side wall thereof. Bead 28 provides an annular groove in the inner wall of the outer container 26 which is adapted to receive and secure the removable cover member 30 in position for closing the outer container.

In this form of invention only one end portion of the inner collapsible container 32 is positioned on the exterior of the closed package, thereby forming a pull tab or the like. The inner collapsible container 32 shown in the drawings is a conventional thin wall polyvinyl chloride tube which is open at both ends. Surprisingly enough it has now been discovered that when one end of the tube is folded over upon itself as at 34 the folding is effective for closing the open end of the tube with a temporary seal. As a result the folded end of the tube may be positioned within the outer container 26 as shown in the drawing and in our experience the liquid 36 remained in place in the tube and there was no leakage through the folded portion.

As previously described the two components of the composition are mixed by pulling on the end portion of the tube positioned outside the package to draw the inner container out between the removable cover and outer container in order to strip the liquid from the inner container and deposit it in component 38 positioned inside the outer container. The removable closure member 30 is then removed and if necessary the components are mixed by agitation.

While one end portion of the inner container is folded

over as shown in FIGS. 6 and 7 it will be understood that if desired the end may be rolled up upon itself or otherwise doubled over or folded in order to close the tube and retain the contents therein until ready for use. However, whatever the arrangement, whether there be one or two ends extending out of the outer container, there must be only a temporary seal within the outer container on one end of the inner container which will be forced open by stripping the contents from the inner container.

It will also be understood that it is intended to cover all changes and modifications of the preferred embodiment of the invention herein chosen for the purpose of illustration which do not constitute departures from the spirit and scope of the invention.

What I claim is:

1. A container for separately storing the parts of a composition comprising

(a) an open ended outer container with the first part of the composition stored therein,

(b) a closure member covering the open end of the outer container to prevent loss of the first part of the composition therethrough,

(c) a collapsible inner container, with the second part of the composition stored therein,

(d) said collapsible inner container having at least two end portions which are substantially free of the second part of the composition,

(e) said at least two end portions slidably extending out of the outer container through the opening therein between the closure and the outer container so that the collapsible inner container can be grasped from the outside of the outer container and pulled out of the outer container between the closure and the outer container to permit the stripping of the second part of the composition from the inner container,

(f) said at least two end portions having only a temporary seal within the outer container which is formed by the pressure of one portion of the wall of the collapsible container upon another portion of the wall of the collapsible container, which seal is openable by stripping the second part of the composition from the collapsible inner container, whereby the second part of the composition may be stripped from the collapsible container and mixed with the first part of the composition without removing the parts of the composition from the outer container.

2. A container for separately storing the parts of a composition comprising

(a) an open ended outer container with the first part of the composition stored therein,

(b) a closure member covering the open end of the outer container to prevent loss of the first part of the composition therethrough,

(c) a collapsible inner container, with the second part of the composition stored therein,

(d) said collapsible inner container having at least two end portions which are substantially free of the second part of the composition,

(e) said at least two end portions slidably extending out of the outer container through the opening therein between the closure and the outer container so that the collapsible inner container can be grasped from the outside of the outer container and pulled out of the outer container between the closure and the outer container to permit the stripping of the second part of the composition from the inner container,

(f) one of said end portions of the inner container being permanently sealed shut and the second end portion being sealed only temporarily which temporary seal is openable by stripping the second part of the composition from the collapsible inner con-

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tainer, whereby the second part of the composition may be stripped from the collapsible container and mixed with the first part of the composition without removing the parts of the composition from the outer container.

3. A container for separately storing the parts of a composition comprising
- (a) an outer container with the first part of the composition stored therein,
 - (b) a seal for the outer container to prevent the loss of the first part of the composition,
 - (c) a collapsible inner tube, with the second part of the composition therein, positioned within the outer container,
 - (d) said collapsible inner tube having two end portions which are substantially free of the second part of the composition,
 - (e) the first of said two end portions extending out of the outer container through the seal to form a pull tab by which the tube can be grasped from the outside of the outer container and pulled through the seal to permit stripping of the second part of the composition from the tube,

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(f) the second end portion being folded upon itself to form an openable double fold seal within the outer container which seal is openable by pulling the tube through the outer container seal by means of the pull tab to deposit the second part of the composition into the first part of the composition, whereby the second part of the composition may be stripped from the collapsible inner tube and mixed with the first part of the composition without removing the parts of the composition from the outer container.

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