Feb. 12, 1952 S. WALLACE 2,585,289

CHEMICAL CONTAINER AND PACKAGE

Filed Oct. 22, 1945 2 SHEETS—SHEET 1

Fig. 1.

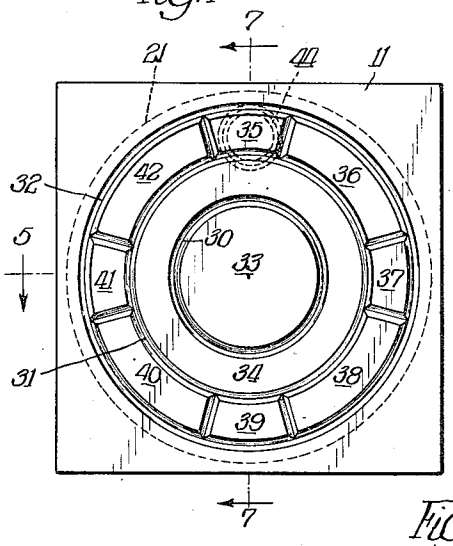


Fig. 2.

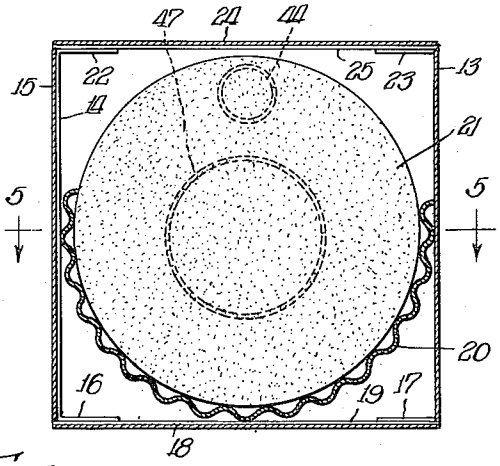


Fig. 3.

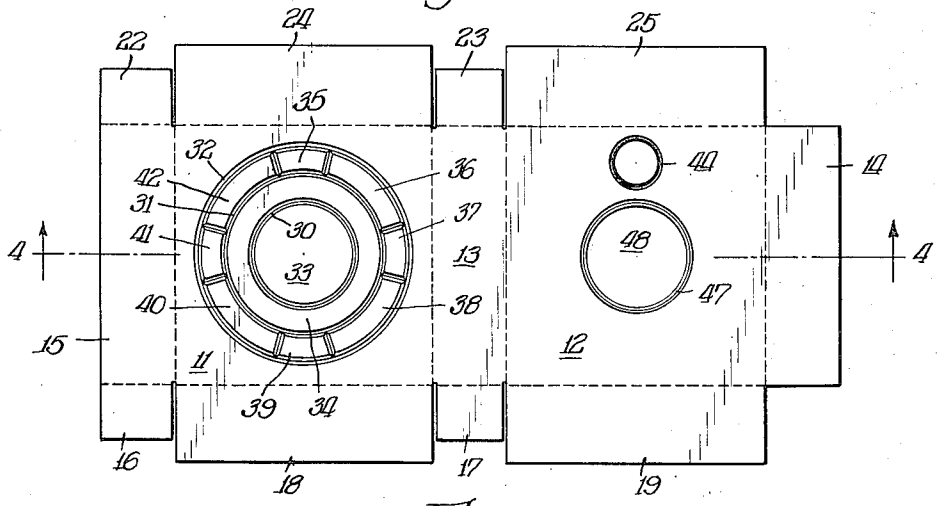
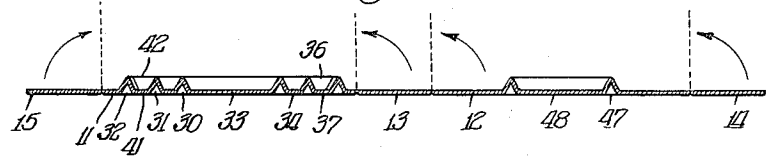


Fig. 4.



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Fig. 5

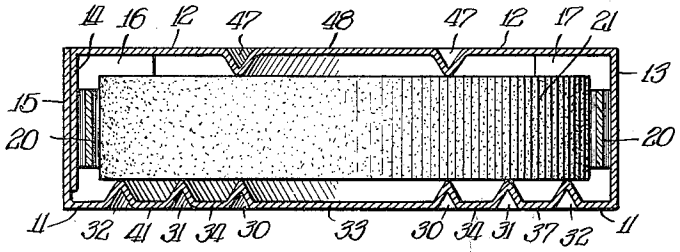


Fig. 6

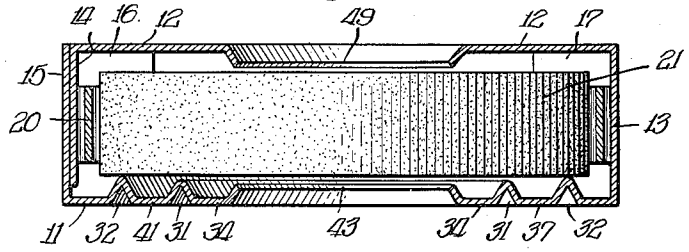
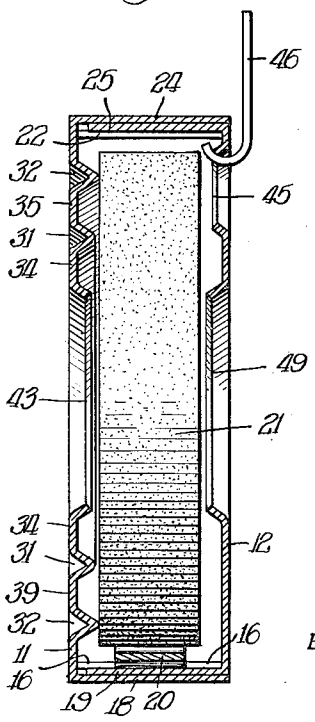


Fig. 7



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CHEMICAL CONTAINER AND PACKAGE

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8 Claims. (Cl. 21—109)

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This invention is concerned with the packaging of a volatilizable chemical material, for example, paradichlorobenzene, in a disposable, normally hermetically sealed container or carton which is provided with novel means adapted to form openings in its walls through which air can enter into the interior to volatilize the chemical material and to permit fumes to escape to the outside.

Chemical material such as paradichlorobenzene, mentioned above, is of granular structure and is compressed to form cakes of desired size and weight, which are marketed for numerous hygienic and sanitary uses. For example, such cakes may be used in household closets and the like for moth repellent and deodorizing purposes. The nature of the chemical material requires packaging of the cakes in protected manner to prevent volatilization prior to the actual use thereof.

The principal object of the invention is concerned with the provision of a carton or container, for packaging and for distributing chemical material of the class noted above, which is of utmost simplicity and can be manufactured at lower cost than cartons previously proposed for like purposes, and which at the same time furnishes greater possibilities for the efficient and economical use of the chemical material.

The manner in which this principal object and other objects and features of the invention are realized will appear from the detailed description which is rendered below with reference to the accompanying drawings. In these drawings,

Fig. 1 is a frontal elevational view of an embodiment of the new container or carton, forming a package containing a paradichlorobenzene cake;

Fig. 2 illustrates the new package with the front wall of the container removed to show the interior and the manner in which the cake is disposed therein;

Fig. 3 shows, on a smaller scale than Figs. 1 and 2, the blank of which the new carton or container is made;

Fig. 4 represents the blank in section, as seen along lines 4—4 in Fig. 3;

Fig. 5 is a somewhat enlarged section through the package, approximately along lines 5—5 in Figs. 1 and 2;

Fig. 6 illustrates a similarly enlarged section analogous to the sectional view in Fig. 5, showing one manner of using the package; and

Fig. 7 represents another manner of using the package, showing the carton on an enlarged scale

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and in section, taken approximately along lines 7—7 in Fig. 1.

The drawings are not to scale, diagrammatic throughout, and are intended for illustrative and descriptive purposes only. Like parts are indicated by like reference numerals throughout the drawings. Known details and elements will be described merely to the extent which is required for conveying an understanding of the invention.

The carton is made of a blank which may be shaped as shown in Figs. 3 and 4. The dotted lines in these figures represent the lines along which the blank is folded to form the container. The arrows in Fig. 4 indicate the directions in which the principal blank sections are folded. The blank may be made of any desirable and suitable material, depending on the nature of the chemical substance which is to be enclosed in the carton. Fibrous material, paper, cardboard and the like may be employed. The blank may be impregnated or treated as desired or necessary in accordance with the requirements of the chemical substance.

The folding of the blank along the dotted lines shown in Figs. 3 and 4 results in the carton comprising the front wall 11, rear wall 12, side wall 13, and the opposite side wall at the left, as seen in Figs. 1 and 2, which is composed of the overlapping end strips 14—15 of the blank. These end strips are joined and suitably fastened together, for example, by gluing or stapling. The bottom of the structure, as shown in Figs. 1, 2 and 7, is composed of the flaps 16—17 which project from the end strip 15 and from the side wall strip 13, respectively, and of the strip-like members 18—19 which project from the blank portions forming the front wall 11 and the rear wall 12, respectively. These bottom members are likewise fastened together in a suitable manner, e. g., by stapling or by gluing.

The carton or container made of the blank as described above is now ready to receive the insert 20 which may be a waved or corrugated strip of a suitable and desirable material, e. g., cardboard, paper, etc., which may also be treated or impregnated as desired. This insert strip 20 is narrower than the container, as is particularly apparent from Figs. 5, 6 and 7. It furnishes a support for the cake of chemical material indicated at 21, and spaces the cake peripherally from the side and bottom walls of the container. If desired, the corrugated strip may extend circumferentially around the entire cake. It will be found, however, that a sectional support by means of a strip-like member such as the one shown at

20 is sufficient. The narrow strip-like insert holds the cake peripherally spaced from the inside of the side and bottom walls of the container by engagement with only a small part of its area, leaving a relatively large surface area free for exposure to the air admitted into the structure incident to the use thereof.

The container is closed, after the chemical cake 21 is placed into it as shown in Fig. 2, by folding inwardly the flaps 22—23 extending from the side wall sections 15 and 13 of the blank, and then folding over these flaps, the strip-like sections 24—25 projecting upwardly from the blank portions which form the front wall 11 and the rear wall 12, respectively. The sections forming in this manner the top closure may be fastened together, for example, by gluing or stapling, just like the sections which form the bottom of the structure.

The foregoing completes the general description of the new carton or package, except for the means which I have provided, namely, (1) means for holding the chemical cake and for spacing its opposite sides from the front and rear walls of the container; (2) means for selectively admitting air into the interior of the container when it is desired to volatilize the cake; (3) means for disposing the package at the place of use; and (4) means for sealing the package to the outside so as to preserve the chemical cake and to prevent volatilizing it during storage and prior to actual use thereof.

The means for holding the chemical cake 21 on one side and for spacing it from the inside of the front wall 11 of the container consists in the provision of a number of concentrically arranged ring-like projections or ridges which are formed by the pre-punched concentric circular depressions 30, 31 and 32. These projections or ridges project inwardly and engage the chemical cake on one side thereof, as shown in Fig. 5. A similar pre-punched depression 47 is provided in the rear wall 12, forming a ring-like inwardly extending ridge or projection for engagement with the other side of the chemical cake, thereby holding it with respect to the rear wall and spacing it from the inside of the rear wall, as shown in Fig. 5. These ridges or projections engage the chemical cake at spaced points and for only a relatively small part of its area. The larger part of its surface area is thus left free for exposure to the air which is admitted into the structure when it is desired to volatilize the cake so as to produce the intended deodorant or insecticidal fumes.

The means for selectively admitting air into the structure comprises the disk-like centrally disposed front wall portion 33 formed by the circular pre-punched depression 30; the ring-like intermediate front wall portion 34 formed by the pre-punched depression 31; and the outer ring-like front wall portion formed by the pre-punched circular depression 32, which surrounds the intermediate wall portion 34. Radially extending pre-punched depressions are provided in this outer ring-like wall portion, thus dividing it into a number of sectors as marked by numerals 35 to 42.

Any one of these front wall portions or members 33, 34 and 35 to 42 thus forms an individual knock-out area; that is, it can be ripped out and removed to form a so-called knock-out hole. For example, the central disk-like member or plate 33 may be removed by ripping it out from the circular depression 30, which will result in a knock-out hole centrally of the front wall of the

structure, as indicated in Figs. 6 and 7 by the numeral 43. Similarly, the ring-like intermediate member 34 may be removed by ripping it out from the pre-punched depression 31 to enlarge the central knock-out hole. In like manner the sectional members 35–42 may be selectively removed from the circular pre-punched depressions 31—32, to produce circularly disposed angularly spaced knock-out holes around the ring-like member 34. All of these members 35–42 may be removed to produce one large knock-out hole defined by the depression 32. These knock-out areas or members thus furnish the possibility to produce in the front wall 11 knock-out holes or air passages of variable size and in varying combinations.

The arrangement of the knock-out areas or holes shown in the front wall 11 may also be adopted for the rear wall 12. One or the other of the sectional knock-out areas 35–42 may then be used to provide a knock-out hole, such as indicated in Fig. 7 at 45, for the purpose of supporting the package incident to its use on a suitable hook or the like. The pre-punched depressions are shown of circular shape. It is clear, of course, that they may be of any other shape desired, e. g., square, rectangular or polygonal in accordance with any desired design.

The arrangement adopted for the rear wall 12 of the package, as shown in the drawings, comprises the centrally disposed knock-out area or member 48 formed by the pre-punched depression 47 and a small knock-out area formed by the pre-punched depression 44. The member 48 may be removed to provide the knock-out hole or air passage 49 indicated in Figs. 6 and 7.

The area defined in the rear wall 12 by the depression 44 may be removed to provide the knock-out hole 45 for supporting the package incident to the use thereof, on a suitable hanger, e. g., a hook indicated at 46. The area defined by the pre-punched depression 44 thus constitutes another means for disposing the chemical package in a closet or the like where it is to be used.

It will be apparent, however, that the package disclosed herein may also be effectively used by placing it, for example, on its face into the position in which it is shown in Fig. 6, after removal of some of the knock-out areas provided in the front wall. For example, the central disk-like member 33 may be removed for this purpose to provide the knock-out hole 43. Some of the sectional members, e. g., the members 35, 37, 39 and 41 or, alternatively, the members 36, 38, 40 and 42 may likewise be removed to provide corresponding knock-out holes distributed circularly around and spaced from the knock-out hole 43. The removal of these knock-out members relieves the tension in the front wall of the package and the wall therefore bulges or warps slightly outwardly, with the result that air can enter through the knock-out holes and pass around the cake and through the spaces formed peripherally of the cake by the corrugated strip 20, to the back thereof for escape through the knock-out hole 49 formed by the removal of the disk-like member 48.

One or all of several means may be provided for sealing the package to the outside to preserve the chemical cake during storage, i. e., to prevent volatilizing it prior to the actual use thereof.

A certain sealing effect may be obtained by impregnating or suitably treating the blank so as to furnish a relatively impervious and gas-tight structure. An additional sealing effect is, of

course, obtained by fastening the top and bottom closures as well as the side walls 14—15 together in desired and suitable manner. The entire container may also be wrapped in a sheet of gas- and moisture-proof material, for example, a sheet of cellulose acetate, and the seams of the sheet may be glued together. The preferred way of sealing the package is, however, to dip it into a sealing solution or to spray such solution or paint it over the entire container. The solution may be any one of numerous materials adapted for the purpose; it may be a waxy mixture, such as used in impregnating so-called wax paper, or a suitable lacquer or rosin, or a solution having an acetate base. The closed packages, each containing a chemical cake, are preferably suspended or supported on suitable wires or clamps and are moved through the sealing solution or through a passage into which the solution is sprayed from spray nozzles, and subsequently through a passage in which they are dried. The sealing material thus placed on the package forms a film which penetrates the fissures and seams, producing the desired substantially hermetic seal. It is understood, of course, that the selection of the proper sealing substance will depend on the character of the chemical cake. The sealing substance must be one that is neutral with respect to the cake and does not form a reaction that would be detrimental to the sealing function.

The new container is structurally simple and is easily manufactured at low cost. The packaging requires simple and more or less conventional manipulation of all parts. The same is true of the sealing steps outlined above, and particularly of the sealing by means of a sealing solution painted or sprayed on the package, or in which the package is immersed, as in a bath, and subsequently dried, stored and finally distributed for sale.

With all the simplicity concerning its manufacture and handling, the new package is of pleasing appearance and furnishes distinctly marked areas which may be employed for labels or for carrying such advertising or explanatory matter as may be desired. The new structure is well adapted to reduce the cost of manufacture and thereby the cost of labor and ultimately of the product. It also gives freedom to the designer because it imposes no limitations either with respect to size or shape. It may be made square as shown, or round, or polygonal as desired, for the packaging of chemical cakes of any desired size or shape.

The new package also enables the user to employ the chemical as economically as desired or as generously as may be necessary. Small knock-out holes may be produced on each side of the package to provide restricted air passages and, accordingly, restricted ventilation for economical volatilization of the chemical cake, and large knock-out holes may likewise be produced to facilitate ventilation and speedier volatilization of the chemical. The package is not limited for use in any particular position, but may be disposed standing up, lying on its face, or may be supported on a desired hanger such as a hook or nail.

Paradichlorobenzene in the form of a cake has been mentioned as the chemical material used. This as well as different substances may, of course, be employed either in the form of cakes or in different form, including granular form held together by a perforate frame or netting and the like.

The pre-punched knock-out depression 44 (Figs. 1 and 2) for producing the knock-out opening 45 so as to provide means for supporting the package on a hook 46, as shown in Fig. 7, may be placed near or at one corner of the carton outside the peripheral edge of the chemical cake. The package may then be supported on an ordinary nail which projects inside of the package through the corresponding knock-out hole and out of contact with the chemical cake.

Changes may be made within the scope and spirit of the appended claims.

I claim:

1. A chemical package comprising a boxlike container for holding a volatilizable chemical material, pre-punched depressions formed in the front and rear walls of said container, said depressions forming inwardly projecting ridges for engagement with said chemical material so as to space such material from the inside of said front and rear container walls and also defining in said front and rear walls removable knockout portions of variable dimensions to provide upon selective removal thereof openings of variable size for selectively exposing variable areas of said chemical material to the outside atmosphere.

2. A container comprising a boxlike structure formed of a suitable blank, a striplike insert disposed in said container, a volatilizable chemical material in the form of a cake disposed in said container in pheripheral engagement with said striplike insert to space said cake peripherally from the side, top and bottom walls of said container, pre-punched depressions formed in the front and the rear walls of said container and forming projections which extend therefrom inwardly to form ridges in engagement with said cake so as to space said cake from said front and rear walls, said depressions defining knockout portions in said front and rear walls, respectively, which may be removed to provide holes for the passage of air to said chemical cake.

3. The structure and combination defined in claim 2, together with a film of gas-impervious impregnating material applied to said container and forming an integral structure therewith to seal it after inserting the chemical material therein so as to prevent volatilization of said cake prior to the removal of said knockout portions.

4. The structure and combination defined in claim 2, wherein a plurality of pre-punched depressions are concentrically provided on a wall of said container to form a plurality of concentric knockout portions therein.

5. In a normally exteriorly sealed container for holding a cake of volatilizable chemical material, a knockout member formed integral with a container wall and defined thereon by a pre-punched depresssion forming an inwardly projecting rib for engagement with said cake of chemical material for the purpose of spacing said cake from the corresponding container wall, said knockout member being separable from said container wall responsive to pressure exerted thereon to allow removal thereof in its entirety, along said prepunched depression, to form in said wall a permanent knockout hole through which ambient air is admitted into the interior of said container to volatilize the chemical material therein and to permit escape of fumes therefrom to the outside.

6. In a normally exteriorly sealed container for holding a volatilizable chemical material, a plurality of concentric depressions formed on a wall of said container forming inwardly projecting

ridges for engagement with said chemical material to space such material from the inside of said wall and forming on said wall a central disklike knockout portion and a plurality of annular knockout portions of progressively larger size surrounding said central disklike portion, and radially extending depressions formed in one of said annular knockout portions to form a plurality of auxiliary relatively small knockout portions therein, each knockout portion being removable to form by its removal a hole for admitting ambient air into said container to volatilize said chemical material therein.

7. A boxlike container for receiving a relatively solid volatilizable chemical material comprising a front wall, a rear wall and side walls, a depression being formed in each said front and said rear wall forming thereon an indentation which displaces the material of the corresponding wall to form an inwardly projecting ridge, the inwardly projecting ridges thus formed on said front and rear walls of said container serving the purpose of engaging the opposite sides of said chemical material disposed therein so as to space such sides from the inside of said front and rear walls, respectively, and means in said container for spacing said chemical material peripherally from the inside of the side walls thereof, said depressions defining in the respective front and rear walls

removable knockout portions for forming openings upon removal thereof to admit outside air into the interior of said container to volatilize said chemical material therein.

8. The container structure as set forth in claim 7 together with a coat of impregnating material formed on the outside thereof after inserting said volatilizable material therein to form thereon a protective moistureproof and gasproof film which seals said package to the outside atmoshpere.

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