

April 11, 1961

P. C. E. BRUN

2,979,268

COMBINATION PACKAGE AND DIFFUSION DEVICE

Filed Dec. 23, 1957

2 Sheets-Sheet 1

Fig. 1.

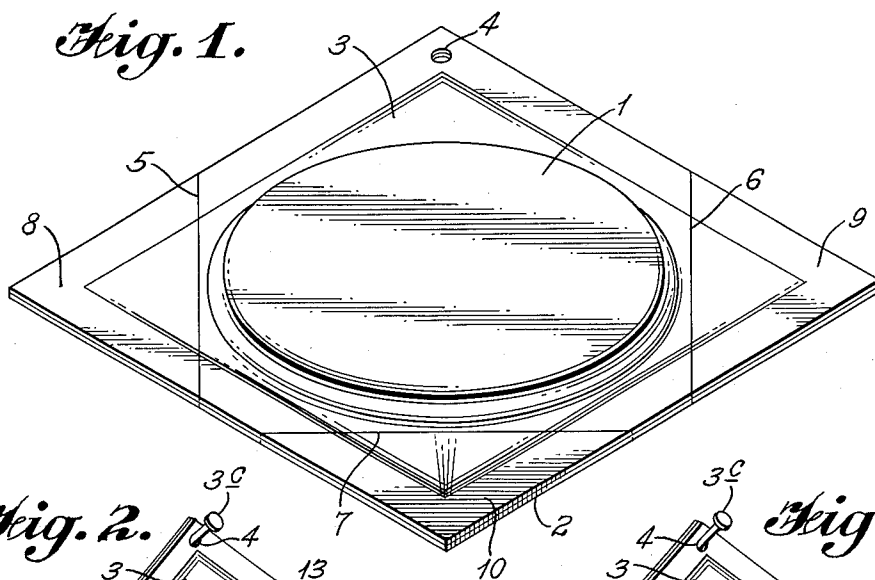


Fig. 2.

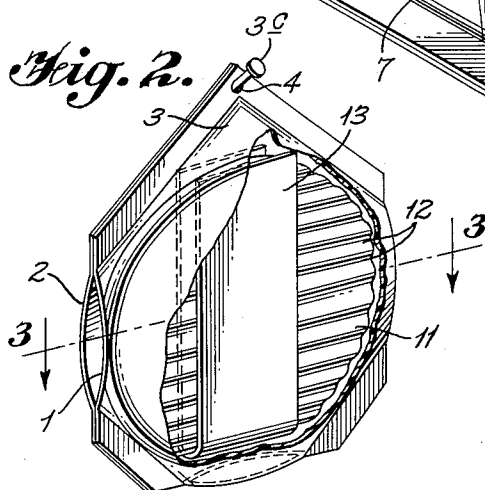


Fig. 5.

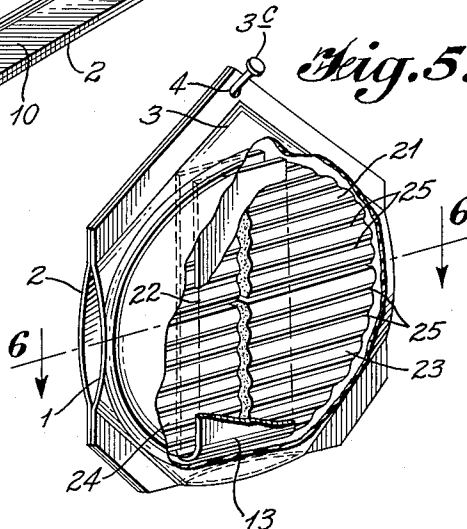
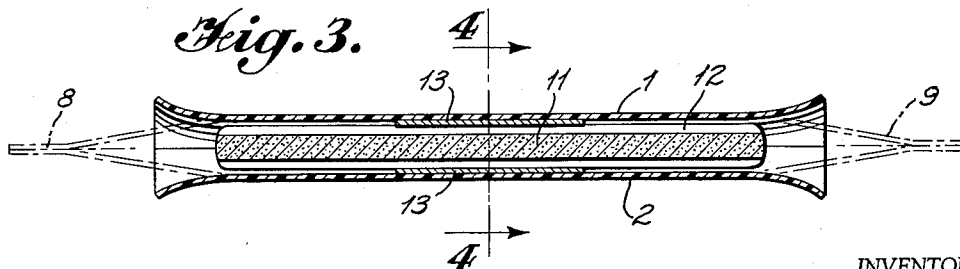


Fig. 3.



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2 Sheets-Sheet 2

Fig. 4.

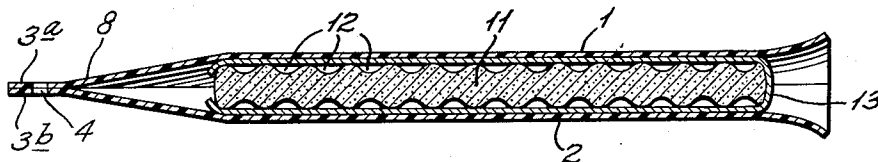


Fig. 6.

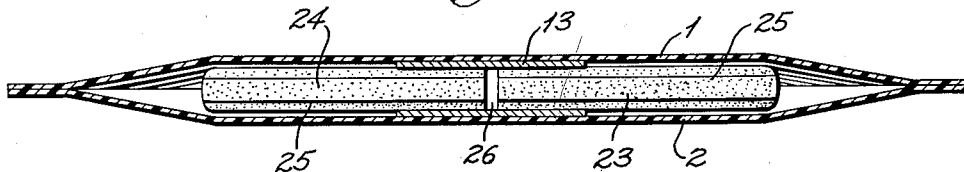


Fig. 7.

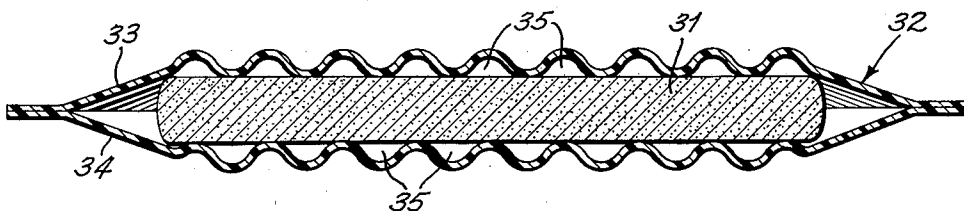
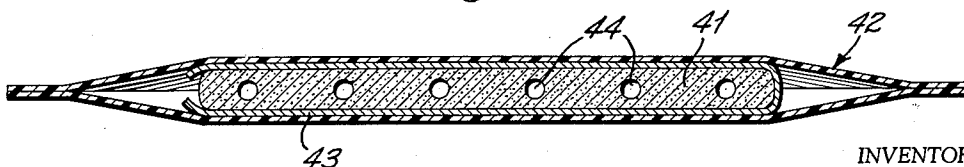


Fig. 8.



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2,979,268

COMBINATION PACKAGE AND DIFFUSION DEVICE

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10 Claims. (Cl. 239—55)

The present invention relates to improvements in the packaging of products intended to be diffused into the atmosphere. More particularly, the present invention relates to a package which may be employed as a means for diffusing deodorant material or perfume into the surrounding air.

The products used to purify, deodorize or perfume the atmosphere or to destroy or repel insects are frequently in the form of blocks, pellets or tablets of solid or pasty consistency, packaged in hermetic containers which are opened only at the time of use.

The containers most currently used are either boxes, bottles or similar more or less rigid but relatively expensive containers, in which the product is left after they are opened, so that the active component or components may evaporate or sublimate into the atmosphere, or else thin, less costly but temporary envelopes from which the product is then transferred onto a special support or diffuser by the ultimate user.

It would, of course, be desirable to have containers which, while inexpensive, can successively serve effectively to protect the product while it is not in use and then act as a support therefor when the active component or components are to be diffused in the atmosphere.

The problem has proven difficult of solution in practice. It is necessary not only that the package or container be inexpensive, not subject to attack by components which may be corrosive, perfectly tight until the product is placed in use, and impermeable to liquids which may in certain cases exude from the products or be formed by condensation of vapors, but furthermore that once partially opened for contact of the products with the atmosphere, such container shall permit the evaporation or sublimation at a rate which is neither too slow nor too fast; in other words, that these phenomena shall take place at a rate which is predetermined by the manufacturer.

The object of the present invention is in particular to meet these desiderata and, more particularly, to make it possible to diffuse into the atmosphere at a predetermined rate active substances capable of producing the most diverse effects, for instance, exert a purifying, disinfecting, deodorizing, perfuming, insecticidal or insectifugal action or else permit the absorption of fumes, humidity, etc., these active substances being originally part of a consistent mass contained in a tight package or container of moderate price.

It is another object of the invention to provide a novel package having means to enable the package to be used

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as a container and as a means for diffusing a wide variety of materials.

Additional objects and advantages of the present invention will become apparent from a detailed consideration of the following description.

One feature of the invention resides in the combination of a consistent mass containing one or more active substances in an envelope which hermetically encloses it, with the provision of air circulation channels in the space between opposite or spaced portions of the inner surface of the envelope so that upon opening said envelope at predetermined portions thereof for use, the two ends of said channels are readily placed in communication with the atmosphere, and thus permit an effective circulation of air in contact with the mass within the envelope.

The envelope may in particular be a package of plastic or paper, which is naturally air-tight or made so; preference is given to a relatively flat bag, so that it will contain a mass in the form of a tablet, with its periphery extending beyond the enclosed mass so that it is merely necessary to tear off or cut off a portion of this periphery along one or more lines marked on the bag in order to produce one or more openings permitting access of atmospheric air to the channels through passages of predetermined cross-section.

The vent channels may be defined either by depressions provided on the surface of the mass comprising the active substances, or by depressions provided on the inner surface of the envelope itself, or the channels may pass through the inside of the mass of active substance. These different arrangements of channels may also be combined as and if desired.

It is particularly desirable to rib the surface of the mass of active substance; the grooves between adjacent ribs then serve the two-fold purpose of forming vent channels and increasing the area of active substance exposed to the air.

The envelope may be provided with means for attachment to a wall, such as a hook, a corner perforation to slip over a nail, a strip of adhesive which may be of the pressure-sensitive variety, etc.

When the mass of active substance is a paste or a gel or when for any reason there may take place within the envelope any sweating or condensation of liquid which might drop and possibly cause spots upon opening, an absorbent plug can be arranged within the envelope, for instance, a sheet of blotting paper or a sponge, in order to retain the liquid.

The following description, read in conjunction with the accompanying drawing given by way of illustration and not of limitation, will make clear a preferred manner of practicing the invention.

Fig. 1 is a perspective view of a package made in accordance with the invention.

Fig. 2 is a perspective view showing the package broken open, in position of use.

Fig. 3 is a cross-section taken along lines 3—3 of Fig. 2.

Fig. 4 is a cross-section taken along lines 4—4 of Fig. 3.

Fig. 5 is a perspective view of a second embodiment of the invention.

Fig. 6 is a cross-section taken along lines 6—6 of Fig. 5.

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Fig. 7 is a cross-sectional view of another embodiment of the invention.

Fig. 8 is a cross-sectional view of another embodiment of the invention.

The envelope or package corresponding to the example selected for illustration in Figs. 1-4 comprises a bag having a substantially rectangular shape. It is composed of two sheets 1 and 2, sealed at their edges so as to leave a free space between the central portions of their inner faces. The sheets 1 and 2 may be of any flexible plastic material; if desired being provided with an inner lining adapted to increase the tightness or to protect against attack by the contents of the envelope.

In a corner 3 of the package, the sealed edges 3a and 3b of the sheets 1 and 2 are provided with a perforation 4, for hanging the bag, for instance, from a nail 3c (Figs. 2 and 5). On one of the sheets, for example sheet 1, lines 5, 6, 7 are marked or scored at three other corners 8, 9, 10 between the sides adjacent these corners at a sufficient distance from the corresponding apices of the bag so that the central portions of the lines are above the free space between the inner faces of the sheets 1 and 2 so that upon cutting or tearing the envelope along one or more of these lines, and thus removing one or more corners, this free space is thereby placed in direct communication with the atmosphere.

Within the bag, in the above defined free space, there is contained a mass or tablet 11 of active substance which is of sufficient consistency so that it will not escape either en masse or in pieces through the openings made by removing the corners of the bag, and which consists entirely or in part of one or more active substances capable of diffusing into the atmosphere as a result of evaporation and/or sublimation, this if desired being favored by the formation of azeotropes depending upon the choice of active substance or substances. The tablet may be solid, pasty, gelatinous, or have any other suitable consistency.

Between the inner faces of the sheets 1 and 2 and the outer faces of the tablet 11, there are provided channels which, in the embodiment shown in Figs. 1-4 take the form of troughs or depressions 12 provided in the tablet itself. These depressions are linear grooves extending from the edge of the tablet facing the corner 8 (cf. Fig. 1) to the edge facing the corner 9. Due to these grooves or depressions, the surface of the tablet exposed to the air is substantially increased; furthermore, air circulation which promotes or activates the passage of the active components into the atmosphere takes place more readily.

In the embodiment shown in Figs. 1-4, namely that of a single series of grooves or depressions extending parallel to each other, the elimination of the corner 10 of the envelope is not strictly necessary for the efficacy of diffusion of the active substance.

In order to retain any condensation liquid in the package which may be formed during the storage or transportation or use thereof, an absorbent strip 13 is provided. This may consist of a strip of blotting paper. It may be positioned to lie adjacent both sides of the tablet 11 in one strip as shown.

Instead of a single tablet, there may be placed in the bag or envelope several flat pieces of active material which are sufficiently large so as not to escape through the openings resulting from the removal of the corners 8, 9, 10. Figs. 5 and 6 illustrate this arrangement, wherein four individual pie-shaped pieces 21, 22, 23 and 24 are positioned between the sheets 1 and 2. Reference numerals 25 denote troughs or depressions provided in the individual pieces to promote air circulation over the pieces. A vertical space 26 separates pieces 21 and 23 from 22 and 24 respectively. The bag or envelope shown in Figs. 5 and 6 is identical to that shown in Figs. 1-4; accordingly the same reference numerals have been employed in designating the bag portions.

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In the embodiment of the invention illustrated in Fig. 7, a flat surfaced tablet 31 is enclosed within an envelope 32, said envelope being made from sheets 33 and 34 which are corrugated along the central area thereof in contact with said tablet. By virtue of this corrugation there are provided spaces 35 between the tablet and the sheets through which air may circulate freely.

Figure 8 discloses a different embodiment of the invention wherein tablet 41 within envelope 42 and contacted on its surface by absorbent strip 43 is traversed by channels or passages 44. Air thus is free to circulate through said channels to cause the passage of the active components within the tablet into the atmosphere.

By way of still further detailed description of the nature of the materials that may be employed in a preferred embodiment of this invention, it is pointed out that if the active substance of the combination package and dispenser is to be a gel then this may conveniently take the form of a gel prepared as described in the Turner et al U.S. Patent No. 2,691,615. Moreover, the mass may include an active ingredient consisting of or comprising one or more insecticides or insect repellents such as dichlorodiphenyl-trichloroethane, hexachlorocyclohexane, phosphoric and thiophosphoric esters, urethanes and others well known in the art as such. Moreover, while various plastic materials may be employed for the envelope described herein, one particularly desirable material is a laminated product consisting of a suitable metal foil, such as aluminum foil, laminated between two layers of plastic materials one of which (the inner layer intended to be in contact with the active substance) may be polyethylene and the outer layer of which may be an acetylated cellulose such as cellulose acetate.

Various changes may be made in the details of the embodiments which has just been described; in particular by the substitution of equivalent technical means, without thereby departing from the scope of the invention.

What is claimed is:

1. A combination package and diffusing device comprising a mass containing volatilizable air-treating components, a bag-like casing of pliable vapor resistant material hermetically enveloping said mass and extending beyond at least some of the margins thereof to provide unoccupied overlap areas, means forming a plurality of channels traversing said mass and extending into said overlap areas, portions of said overlap areas adapted to be readily removed to break the seal of said casing and permit communication of the ends of said channels with the ambient atmosphere while retaining the body of said mass enveloped within the remaining casing.

2. A combination package and diffusing device as defined in claim 1 wherein the means forming a plurality of channels traversing said mass define said channels between the surface of said mass and the contiguous surface of the casing.

3. A combination package and diffusing device as defined in claim 2 wherein said channels constitute grooves formed in the surface of said mass.

4. A combination package and diffusing device as defined in claim 2 wherein said mass is of relatively flat configuration and said channels constitute parallel grooves formed in each of the opposed flat surfaces of said mass.

5. A combination package and diffusing device as defined in claim 2 wherein said channels are formed by corrugations in the casing enveloping said mass.

6. A combination package and diffusing device as defined in claim 1 wherein said channels are within the body of said mass.

7. A combination package and diffusing device as defined in claim 1 wherein the mass is substantially flat and possesses a shape different from the shape of said casing.

8. A combination package and diffusing device as defined in claim 1 wherein the casing is of essentially square contour with three corner portions thereof adapted to be

readily removed, and the fourth corner portion providing means for suspending the device in a hanging position.

9. A combination package and diffusing device as defined in claim 1 wherein there is disposed between at least some of the surface of the mass and a contiguous surface of said casing, a pad of absorbent material. 5

10. A combination package and diffusing device as defined in claim 4 wherein there is disposed an elongated absorbent pad extending around one edge and onto opposed flat surfaces of said mass in a direction perpendicularly to said parallel grooves. 10

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