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J. SAMANN

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CONTAINER FOR VOLATILE SUBSTANCES

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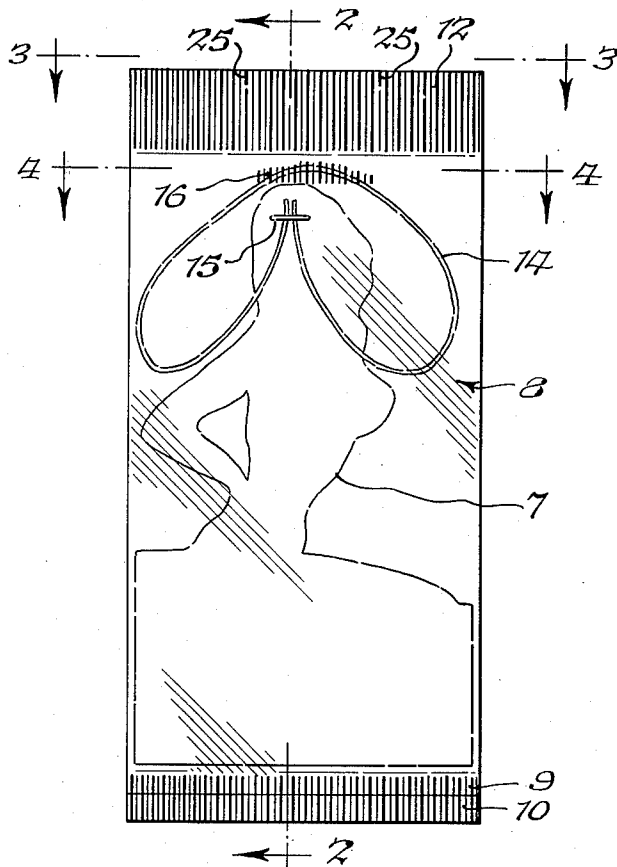


Fig. 1.

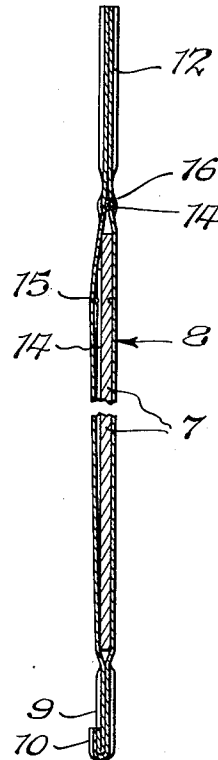


Fig. 2.

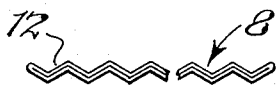


Fig. 3.

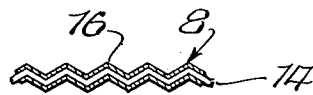


Fig. 4.

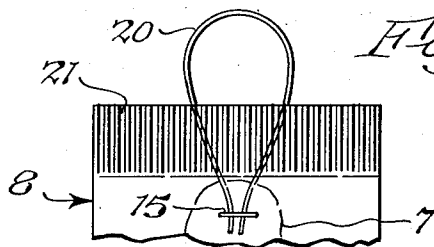


Fig. 5.

INVENTOR.
Julius Samann
BY
Parker, Pichner & Pinner,
Attorneys.

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CONTAINER FOR VOLATILE SUBSTANCES

Julius Samann, Zurich, Switzerland

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9 Claims. (Cl. 299—24)

This invention relates to envelopes or containers for volatile substances by means of which the volatilization of such substances is retarded or prevented while the same are transported and stored.

Certain substances, such as odor-destroying, air-perfuming substances, or substances employed for destroying insects are generally quite volatile and in order to transport and handle them and store them on the dealer's shelves, they must be enclosed in envelopes or containers which are hermetically sealed. It is also desirable at times to provide means for controlling or retarding the volatilization of such substances when such articles containing them are in use. Excellent and relatively inexpensive means are available from which envelopes may be produced in which the volatile substances or articles impregnated with the same may be hermetically sealed. It is generally desirable to provide the articles with cords by means of which they may be suspended when in use. Since the substances are sometimes of an oily or sticky nature, or hard to remove from the hands, it is very desirable that these cords, or at least parts of the same, be kept out of contact with the articles and be readily accessible upon opening the envelope or container so that the person using the articles may reach the cord without coming in contact with the volatile substance.

It is, therefore, one of the objects of this invention to provide an envelope or container for substances of this type which may be sealed or bonded at the ends thereof, and in which the cord is held by means of the sealing or bonding agent in a position to be readily accessible.

The impervious material of which the envelopes or containers are preferably made is quite difficult to tear, particularly at the parts thereof in which two layers of the sheet material are bonded or sealed together.

It is, therefore, another object of this invention to provide means adjacent to the cord whereby the sealed or bonded portion of the envelope may be readily opened so as to render the cord easily accessible.

Other objects and advantages will be apparent from the following description of one embodiment of the invention and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawings:

Fig. 1 is a face view of a container embodying this invention for storing and controlling the liberation of a volatile substance.

Fig. 2 is a fragmentary, sectional view thereof, on line 2—2, Fig. 1.

Fig. 3 is a fragmentary top plan view thereof, as seen approximately from line 3—3, Fig. 1.

Fig. 4 is a fragmentary sectional view thereof, taken approximately on line 4—4, Fig. 1.

Fig. 5 is a face view of the upper portion of a container or envelope of a modified form.

My improved container may be used in connection with volatile substances of any suitable or desired type which may be held by a suitable article from which they may be readily volatilized. In the particular construction shown

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by way of example, I have shown my invention applied to an air-deodorizing or perfuming substance of liquid or semi-liquid form, and an article of an absorbent nature which is impregnated with the substance to be volatilized.

For example, 7 represents an article made of suitable absorbent material, such for example as is employed in blotting or filter paper, but other porous materials may be employed for this purpose. The substance with which the article is impregnated or soaked may be a deodorizing substance, an air perfuming substance, an insect-repelling or destroying substance or any other volatile substance.

In order to sell an article of this type, it is, of course, very important that the same be contained in a suitable package which is as nearly impervious as possible to the volatile substance. For example, cellophane is very suitable for this purpose, and also has the advantage that it is transparent so that the article itself may readily be seen through the cellophane. Other materials, of course, may be used. In the particular construction shown, the article 7 is contained within an envelope 8 made of an impervious material, such for example as cellophane. This material may be in the form of a tube which can be flattened out to receive the article 7, and in order to seal the article in this envelope or tube, the opposite ends thereof are tightly closed by suitable sealing or bonding means by which the opposite layers of the envelope are secured together in an air-tight manner. 9 represents the bonding means at the bottom of the envelope or container which in the construction shown, is formed by applying heat to the end portion of the envelope in such a manner that the two layers of the envelope are secured, bonded or welded together. Of course, it is also possible to apply a suitable adhesive or cement to the inner face of the two layers of the envelope and thus secure them together. Generally the bonding of the two ends by means of heat is preferred, since it is more quickly applied and leaves no excess cement or adhesive on the exterior of the envelope which may cause the envelope to adhere to other envelopes or objects. It is also frequently desirable to turn over the lower end of the envelope as shown at 10 so as to form a very secure hermetic seal.

The upper end 12 of the envelope may also be securely bonded or sealed by means of heat. When bonding or welding two layers of cellophane or other plastic material to each other, the heat is generally applied by means of sealer bars having heated metal surfaces which are corrugated so as to produce a series of corrugations or undulations in the part of the object which is sealed.

The article 7, which is impregnated with a volatile substance, is provided with a cord 14 by means of which it may be suspended when removed or partly removed from the envelope. This cord may be in the form of a loop, the ends of which are secured to the article, for example, by means of a staple 15 of usual form. It is desirable that this cord be so arranged within the envelope that a portion thereof will be readily accessible when the envelope or container is opened so that a person may grasp the cord without soiling his fingers with the volatile substance. During ordinary shipment and handling of the articles, it is, of course, practically impossible to control the position of the cord within the envelope, and since in some instances the substance with which the article 7 is impregnated is of such nature that it is difficult to remove from the fingers, I have employed the sealing or bonding means to hold a part of the cord 14 in a position in which it is readily accessible. Under some conditions it is desirable that the cord shall not extend outwardly through the part of the envelope which is sealed or bonded. For example, with cotton cord or string a certain amount of the substance may pass to the exterior of the envelope through the string, which may act as a wick or which may make it impossible to seal

the envelope with sufficient tightness around the cord. If the cord is made of wire, it is impossible to form a hermetic seal completely around the wire by means of the usual heating bars. It is, therefore, necessary to have a part of the cord 14 held in place by means of the bonded part 12 of the envelope or container without extending through the same. In the particular construction shown, the bonding means includes a part 16 which is arranged below the main bonding part 12 and through which a part of the string or cord 14 extends. By means of this arrangement, the bonded portion 12 of the envelope may be very securely sealed without having the thickness of the cord or string interfere with the uniform pressing together of the opposite layers of the envelope and the separate bonding 16 may, if desired, be spaced from the upper bonding part 12 so that the cord or string will in no way interfere with the forming of a hermetic seal at the end 12 of the envelope. This upper part 12 is sealed by applying relatively heavy pressure to opposite faces of the envelope by means of hot sealer bars, and if the cord or string 14 is of such thickness or nature that it cannot be sealed into the portion 12, then, either before or after sealing the upper end of the envelope at the portion 12, the sealing bars may be brought together with somewhat less pressure and below the part 12 to form the other sealing or bonding part 16.

It is also possible to employ a thin but strong twine made of a thermoplastic substance or substances which can be passed entirely through the seal 12 without interfering with the making of this seal hermetically tight. For instance, cord made of nylon may be used for this purpose, since it is not materially changed by the temperature which is used for sealing cellophane. In this case, as shown in Fig. 5, a cord or string 20 applied to the article 7 passes through the sealed upper end 21 of the envelope. This construction has the advantage that the cord is very readily accessible and may also be used to facilitate the opening of the upper end of the envelope.

The sealed ends of cellophane envelopes are generally quite difficult to open unless cut in some manner. However, even a very small cut or nick in the sealed portion of the envelope greatly facilitates the opening of the same. I have, consequently, provided slight cuts or nicks 25 in one or more places at the upper seal 12, in portions thereof adjacent to the cord 14 so that the envelope can be easily opened to obtain access to the cord. It is sometimes necessary to employ a double walled pouch or envelope, since some substances pass through a single walled cellophane pouch or envelope, especially in hot weather. When such pouches are used, the small cuts or nicks in the sealed portion of the envelopes are quite necessary to enable the envelopes to be readily opened.

In the use of the device, after the envelope has been opened at the upper portion thereof and the cord is accessible, the article 7 is preferably pulled only partway out of the envelope, since generally the article contains sufficient volatile material so that only a part of the article need be exposed to the atmosphere for a number of days, and later it may be pulled out farther or entirely removed therefrom to permit the remainder of the volatile material to escape.

In order to facilitate the partial pulling of the article out of the envelope, the cuts 25 are preferably spaced apart to such an extent that when the part of the sealed end of the envelope between these cuts is removed, a part of the article 7 may readily extend out through the opening thus formed and the envelope will be retained in place on the article, and prevented from sliding downwardly on the article to expose all or more of it. In this manner the rate of evaporation of the volatile substance can be controlled.

The term "bonding means" is herein employed to include a bond formed by heat, as well as a bond formed by a suitable cement or adhesive.

It will be understood that various changes in the details, materials, and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention, as expressed in the appended claims.

I claim as my invention:

1. A device for controlled liberation of a volatile substance into the atmosphere, said device comprising an article containing said substance in condition to be liberated to the atmosphere, an envelope made of a material substantially impervious to said substance, bonding means for closing an end of said envelope by securing together opposite layers of the envelope to confine said article in the same, and a cord connected with said article and by means of which said article may be suspended, a part of said cord being arranged in position to be readily accessible at that part of said envelope which is closed by said bonding means, said bonding means extending about a part of said cord at said end of said envelope and holding the same against displacement therefrom, in a position for separation from said bonding means for use in suspending said article, said bonding means holding said envelope on said article when the same is partly removed from said envelope.

2. A device according to claim 1, in which said cord is confined entirely within said envelope by said bonding means.

3. A device according to claim 1, in which said cord extends through said bonding means to the exterior of the envelope, said bonding means extending about said cord to prevent escape of volatile parts of said substance from said envelope.

4. A device according to claim 1, in which said cord is in the form of a single piece of material formed into a loop having both ends connected with said article.

5. A device for controlled liberation of a volatile substance into the atmosphere, said device comprising an article containing said substance in condition to be liberated to the atmosphere, an envelope made of a material substantially impervious to said substance, bonding means for closing an end of said envelope by securing together opposite layers of the envelope to confine said article in the same, a cord connected with said article and by means of which said article may be suspended, a part of said cord being arranged in position to be readily accessible at that part of said envelope which is closed by said bonding means, and a second bonding means below the first mentioned bonding means and which extends about said cord to hold the same in place, said first bonding means forming a hermetic seal at the upper end of said envelope and the second bonding means serving only to hold said cord in readily accessible position.

6. A device according to claim 5, in which said envelope in the part thereof closed by said bonding means is provided with a small slit extending inwardly into but not through said bonding means and located adjacent to said cord.

7. A device according to claim 5, in which a pair of slits are provided in the upper bonded part of the envelope, said slits extending inwardly but not through said bonding means adjacent to said cord, the space between said slits being such that when an opening from said slits is formed through bonding means the size of the opening is sufficient to permit said article to be only partly removed therefrom.

8. A device for controlling the liberation of a volatile substance into the atmosphere, said device comprising an article containing a substance in condition to be liberated to the atmosphere, an envelope made of a material substantially impervious to said substance, bonding means for closing an end of said envelope by securing together opposite layers of said envelope to confine an article in the same, said bonding means including a plurality of closely spaced corrugations extending lengthwise of said envelope

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and facilitating the tearing of said envelope at said bonding means in a direction lengthwise of said corrugations, and a cord connected with said article and by means of which said article may be suspended, a part of said cord being arranged in a position to be readily accessible at that part of the envelope which is closed by said bonding means, said bonding means extending about a part of said cord and holding the same against displacement therefrom, said article being of increasing width from the upper portion thereof toward its lower portion, whereby said bonding means may be successively opened to a greater extent to permit increasingly larger parts of said device to extend outwardly from said envelope.

9. A device for controlling the liberation of a volatile substance into the atmosphere, said device comprising an article containing a substance in condition to be liberated to the atmosphere, an envelope made of a material substantially impervious to said substance, bonding means for

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closing an end of said envelope by securing together opposite layers of said envelope to confine an article in the same, and a cord connected with said article and by means of which said article may be suspended, said article being of increasing width from the upper portion thereof toward its lower portion, whereby said bonding means may be successively opened to a greater extent to permit increasingly larger parts of said device to extend outwardly from said envelope.

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