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2,907,173

METHOD OF FORMING A COOLING PACKAGE

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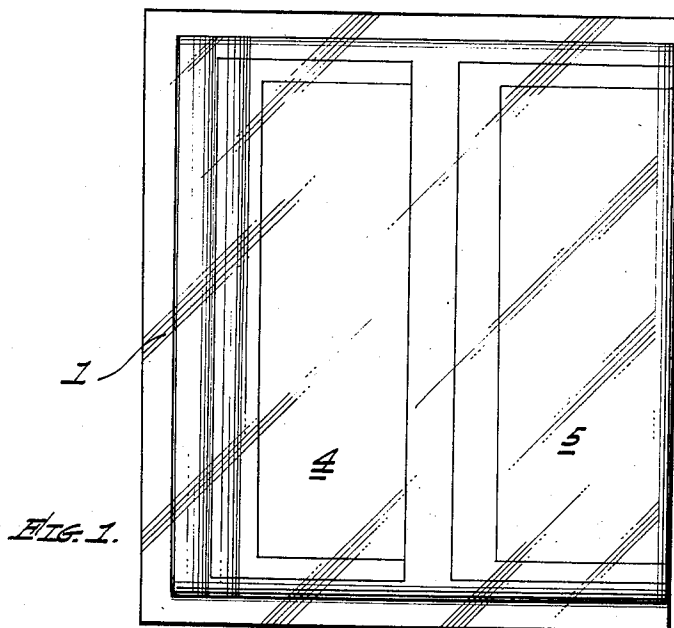


FIG. 1.

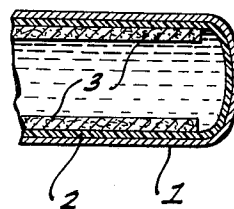


FIG. 5.

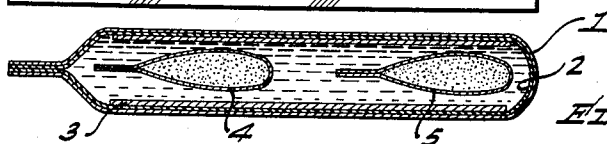


FIG. 2.

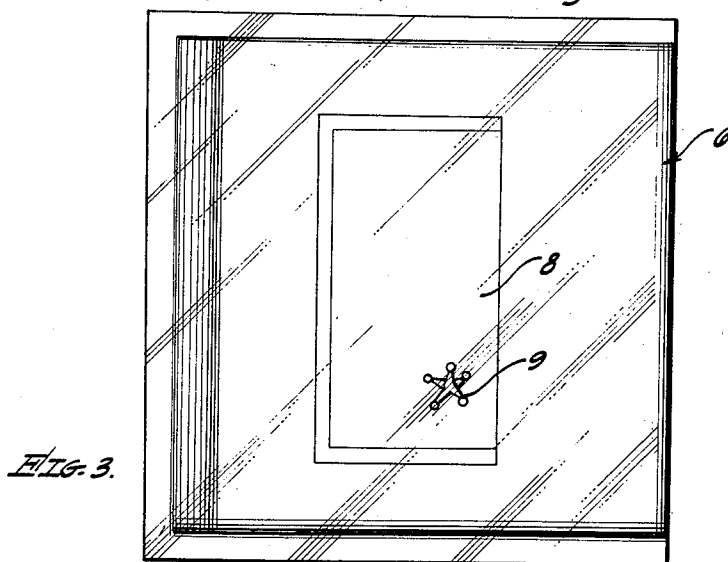


FIG. 3.

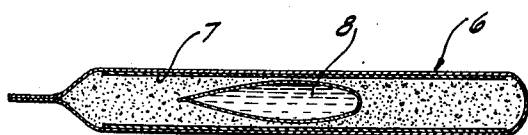


FIG. 4.

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METHOD OF FORMING A COOLING PACKAGE

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4 Claims. (Cl. 62-4)

This invention relates to a cooling or refrigerating package and to the method of preparing the same.

An object of my invention is to provide a freezing or cooling mixture within containers or envelopes, in which the outer envelope or container is relatively difficult to tear or break, while the inner envelopes containing certain chemicals or water are relatively thin and may be easily or readily broken or torn.

Another object of my invention is to provide a novel cooling or refrigerating package with an outer bag or envelope formed of a suitable plastic, the plastic permitting the transmission of heat therethrough, either by conduction or reflection; said plastic envelope containing a chemical which absorbs heat on the addition of water thereto and, further, in which water or an hydrous chemical is retained in another plastic envelope or bag, the second plastic envelope or bag being substantially waterproof, in that water cannot readily or freely pass through the walls thereof.

Still another object of my invention is to provide a novel method of forming a refrigerating package of the character stated, in which the outer envelope or bag is laminated or coated with a metal foil or any foil which has heat reflecting properties.

Still another object of my invention is to provide a novel method of forming a refrigerating package in which the outer envelope or bag is sealed around its edges, and is formed with a plurality of compartments with means to provide communication between the compartments to intermingle the substances in the two or more compartments.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing:

Figure 1 is a plan view of a refrigerating package formed according to my method.

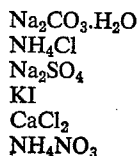
Figure 2 is a transverse sectional view of the same.

Figure 3 is a plan view of another form of refrigerating package formed according to my method.

Figure 4 is a transverse sectional view of the same.

Figure 5 is an enlarged fragmentary sectional view of the outer envelope.

It is well known in the chemical art that certain chemicals absorb heat when water is added thereto, this heat being obtained from adjacent bodies by means of conduction, convection or radiation, or perhaps all three. These so-called freezing mixtures, which will hereinafter be so termed, may include any of the following chemicals, or many others having this same property; these freezing mixtures have the following formulae:



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The addition of plain water to any of these chemicals will cause a marked reduction in temperature in the surrounding air or to adjacent articles. Consequently, a package containing any of the freezing mixtures when enclosed in a box, carton, hamper, or container will lower the temperature therein and will maintain a low temperature for foods, liquids, cans, bottles, etc., which are placed within the container and adjacent to the refrigerating package.

In order that the package may be easily transported and, further, that it may be activated at any time desired, I provide a method of forming a refrigerating package as follows: An outer envelope or housing 1 is preferably formed of a plastic sheet material, such as polyethylene, vinyl or acetate. These plastic sheets are usual and well known in the industry and are formed of sufficient thickness so that they will not readily tear or break. Further, the plastic sheet is sufficiently dense that gases will not readily pass therethrough. By gases in meant ammonia, chlorine, etc. The plastic sheet is laminated or coated with an outer or inner metallic foil 2. The plastic, instead of being coated, may also be laminated with the metallic foil, and also this metallic foil may be non-metallic, if desired, as long as it is reflecting and will have the property of partially reflecting heat rays. The reflecting metallic or nonmetallic foil has the further property of preventing the filtering of gas out of or into the bag or container 1. Also within the envelope 1 I provide sheets of blotting material 3 which have the property of distributing the water throughout the entire area of the envelope. This causes the water to be fairly equally distributed and thus activate all of the freezing mixture within the package. As shown in Figures 1 and 2, I provide two or more inner envelopes 4 and 5. These envelopes are each formed of a plastic sheet, such as polyethylene, vinyl or acetate, and are sufficiently thin so that when the package is twisted or compressed these inner envelopes will be torn or shattered, thus permitting the material therein to escape and to intermingle or mix. The bag 4, for example, may contain ammonium nitrate (NH_4NO_3) which is one of the freezing mixtures. The envelope 5 may contain a hydrous chemical, such as sodium carbonate (Na_2CO_3 with 5-10 H_2O). Furthermore, the bag 5 which contains the hydrous material is substantially waterproof so that the water of crystallization or free water within the bag 5 will not percolate outwardly to admix with the material in the bag 4. Furthermore, the bag 4 may be formed of a very porous plastic so that water can pass readily through the walls thereof; thus if the bag 5 only were fractured or torn then the water or hydrous chemical therein could mix with the freezing mixture in the bag 4 by passing through the walls of said bag. The hydrous chemical has enough water of crystallization which will be released and will mix with the ammonium nitrate to activate the nitrate in a manner well known with freezing mixtures.

In Figures 3 and 4 I have shown another form of refrigerating or cooling package in which the outer envelope or container 6 is formed of a plastic sheet, such as polyethylene, vinyl or acetate in the same manner as previously described. Furthermore, this outer envelope is laminated with or coated with a metallic or nonmetallic reflecting foil in the same manner as previously described and for the same purpose. Also a blotter sheet 7 is provided for the purpose of distributing the water or moisture within the envelope. It is to be understood that the envelopes 1 and 6 are entirely sealed so that neither moisture nor any of the chemicals therein can escape. The envelope or bag 6 is filled, or substantially filled, with one of the freezing mixtures, such as ammonium nitrate or ammonia chloride, as previously enumerated. In this instance a single bag 8 is provided within

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the envelope 6 and is formed of a thin plastic material, either polyethylene, vinyl or acetate. The bag 8 is tightly filled with water and then completely sealed so that the water is retained therein. The bag 8 is, furthermore, waterproof so that the water will not seep or filter through the walls. A pluripronged child's toy, called a jack 9, may be placed within the envelope 8 so that the envelope can be broken or fractured without tearing or breaking the outer envelope 6. Also if the walls of the bag 8 are sufficiently thin and if that bag is tightly filled with water, a blow or a twisting force will be sufficient to shatter the bag 8 without injuring the outer envelope 6. The water, when released from the bag 8, will admix with the freezing mixture within the envelope 6, thus materially reducing the temperature of the container in which the package is placed, or reducing the temperature of adjacent articles which are in contact with the cooling package.

The method of forming a cooling or refrigerating package, therefore, consists of forming a sealed envelope of a material which is impervious to certain gases, such as ammonia, chlorine, etc. The walls of this outer bag or envelope being laminated or coated with a metallic or reflecting foil. The outer bag or envelope contains a freezing mixture of any one of the types recited herein, or others; the freezing mixture either being loosely placed within the outer envelope or contained within another sealed envelope or package within the outer envelope. Still another package or container within the outer envelope contains water or a hydrous chemical, that is, one which has a large percentage of water of crystallization; the envelope containing the water or the hydrous chemical being fracturable or breakable without tearing or injuring the outer envelope. The container for the water, or the like, being ruptured or torn by the application of external force, such as pressure or twisting, thus releasing the water or the like and permitting its admixture with the freezing mixture.

Having described my invention, I claim:

1. A refrigerating package comprising an outer sealed envelope, said outer envelope being coated with a metallic foil, said outer envelope containing a dry freezing

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chemical mixture, another sealed envelope within the outer sealed envelope, the last named envelope containing a hydrous substance, said last named envelope being rupturable without breaking the outer envelope.

2. A refrigerating package comprising an outer sealed envelope, said outer envelope being coated with a metallic foil, and the walls of said outer envelope being impervious to certain gases, such as ammonia or chlorine, said outer envelope containing a dry freezing chemical mixture, another sealed envelope within the outer sealed envelope, the last named envelope containing a hydrous substance, said last named envelope being rupturable without breaking the outer envelope.

3. A refrigerating package comprising an outer sealed envelope, the walls of said envelope being coated with a metallic foil, said envelope containing a dry freezing chemical mixture, another sealed envelope within the outer sealed envelope, the last named envelope being formed of a plastic sheet material with thin walls so that they may be readily ruptured, said last named envelope containing a hydrous substance, said last named envelope being rupturable without breaking the outer envelope due to the thin walls of said last named envelope.

4. A refrigerating package comprising an outer sealed envelope, said envelope being coated with a metallic foil, said envelope containing a dry freezing chemical mixture, another sealed envelope within the outer sealed envelope, the last named envelope containing a quantity of water, the wall of said last named envelope being substantially thinner than the wall of the outer envelope and thus being rupturable without breaking the outer envelope, and the wall of said outer envelope being impervious to the passage of certain gases, such as ammonia and chlorine.

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