Sept. 25, 1951 R. E. WARNE 2,568,975

LIGHTWEIGHT REFRIGERANT BLOCK

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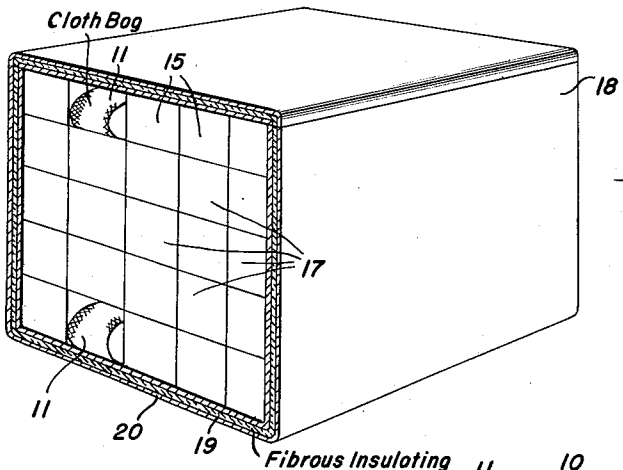
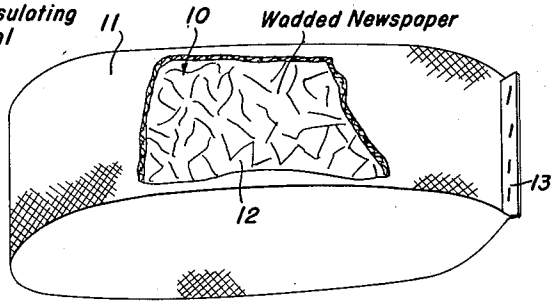


Fig. 1.

Fig. 2.



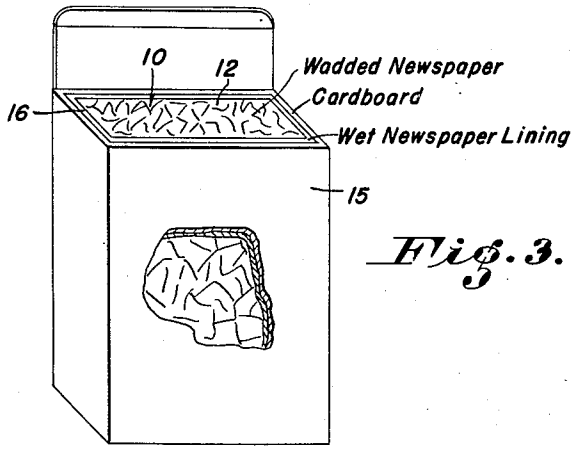


Fig. 3.

Inventor
ROBERT E. WARNE

By Gustave Miller

ATTORNEY

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LIGHTWEIGHT REFRIGERANT BLOCK

Robert E. Warne, Honolulu, Territory of Hawaii

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3 Claims. (Cl. 62—1)

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This invention relates to a lightweight refrigerant block especially intended for use in preserving perishables, particularly valuable flowers or other lightweight perishables while being shipped long distances by aircraft.

An object of this invention is to provide a method of quickly and inexpensively preparing a refrigerant block especially useful in aircraft shipment of lightweight perishables.

A further object of this invention is to provide a slow melting refrigerant block made of inexpensive materials.

A further object of this invention is to provide a refrigerant block that is substantially lighter in weight than a comparably sized block of ice, yet is substantially slower in melting than the same volume of ice would be, so that its effective period of heat absorption is substantially greater than that of the heavier block of ice, thereby providing effective refrigeration for the perishables during long aircraft shipment, as for instance across the ocean or the continent.

A still further object of this invention is to provide a refrigerant block that is an improvement over the refrigerant blocks disclosed in U. S. Patents: 1,727,878 and 2,210,946, and that serve the purpose of such prior blocks in addition to purposes herein set forth.

A still further object of this invention is to provide a refrigerant block whose main ingredient is old or used newspapers.

A yet further object of this invention is to provide a refrigerant block provided with numerous interstices filled with chilled air, thus providing lightness and slow melting.

With the foregoing and other objects in view, as will hereinafter become apparent, this invention relates to the method, constructions, combinations and arrangement of parts as hereinafter set forth, disclosed, and illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective section of a shipping case containing the perishables being preserved by the refrigerant blocks of this invention;

Fig. 2 is a perspective, partly broken away, view of one form of this invention, and

Fig. 3 is a similar view of another form.

The basic feature of this invention is the provision of a frozen block made of lightweight and inexpensive material, and is shown in two forms in Figs. 2 and 3. The basic lightweight material used is wadded newspaper, shown at 10 in the drawing.

In Fig. 2 this wadded newspaper 10 is first made wet by soaking it in water, then stuffing it

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rather tightly in a bag 11, of proper size, made of muslin or other inexpensive cloth material. As will be apparent, such wadded newspaper 10, made of crumpled up individual sheets of paper, will be provided with innumerable interstices 12 filled with air, many of which air cells will still remain in spite of the paper being soaked with water. After the bag 11 has been stuffed with the wet paper 10, it is drained at least two to four minutes, or more, thus making the bag substantially dripless. Obviously, many of the larger interstices will again become air-filled during the draining process, while the smaller interstices that do not drain will, of course, retain their water content through capillary attraction, thus being non-dripping. The bag 11 is then stapled as at 13 to close it. Next, the closed bag is placed in a freezer, or otherwise subjected to a low temperature, until it is frozen solid. Of course the bag will be self shaping as shown, but if an absolutely rectangularly-shaped frozen bag block is desired, it may be placed in a suitable mold while being frozen, which mold may be removed from the frozen brick, or it may be a cardboard carton, similar to that shown at 15 in the form in Fig. 3.

In Fig. 3 the carton 15 is shown as being first lined with wet paper 16 and then packed tightly with the wadded wet newspaper 10, then drained and frozen.

Obviously, the many interstices in the wadded paper provide air-cells of varying sizes, many of which still exist in the frozen bag or cardboard carton block.

These many still existing air-cells make the completed frozen block rather lightweight compared to the prior art frozen blocks, and are extremely desirable when weight is an important factor. In addition, these air-cells have an insulating effect and greatly extend the period of time that it takes for the frozen block to melt, thus providing a refrigerant block that will maintain a desired temperature a much longer period, and particularly, a temperature that is not too extreme. It is particularly desirable for use in shipping perishables, such as flowers, long distances by air-shipment, because it enables the flowers to be kept at the most desirable temperature. One instance of this use is in shipping flowers by air across the ocean, as from Honolulu to the United States, where many hours may elapse between the time the flowers are packed and are unpacked. Frozen blocks made according to this invention have remained frozen in their center for as long as thirty to forty hours,

while in a similar use, ice blocks of the same size are long since melted.

In Fig. 1 is shown one example of how the blocks of this invention are used. The flowers are packed in cartons 17 similar in size and shape to that of the frozen block. A dozen blossoms may be packed in a carton 3" x 5" x 7". and these cartons 17 are then placed in a shipping box 18 containing twelve, sixteen, twenty or more cartons 17. One or more of these flower containing cartons 17 are omitted and replaced by the frozen blocks of this invention, the number of frozen blocks used being dependent on the size of the shipping container 18, as well as the distance the flowers are to be shipped. In addition, the shipping container 18 may be wrapped in a fibrous insulating paper 19—one form of which is commercially known as Kimpack, and then in a wrapping paper 20. Of course any type of insulating paper, even dry newspaper, may be used.

A container 18 filled with flower boxes 17 and one or more of the frozen blocks of this invention will be but very slightly heavier than one containing only flower boxes, and will be considerably lighter in weight than one containing blocks of solid ice or of other material of the same size as the frozen blocks of this invention. In addition, the flowers will not be chilled as much as with ice, an undesirable condition, but will be maintained at a cool but non-freezing temperature. Furthermore, the ice, as it melts, would wet the flower boxes, but due to the frozen blocks of this invention having been drained before freezing, they will be substantially drip proof. Also, the solid ice will melt completely in a much shorter time than the frozen blocks of this invention, because with these blocks the desired cool temperature will be maintained a much longer time, enabling the flowers to be perfectly preserved at the end of a very long air journey.

While wadded newspaper has been disclosed as the preferred basic material, obviously any type of more or less absorbent paper may be used, so long as it may be crumpled and wadded to provide numerous interstices or air-cells. Old newspaper is preferred principally because of its cheapness and ready availability. Of course, with different types of paper, the melting time may vary slightly, and some slight variations in melting time may result from varying the tightness with which the wadded paper is packed.

There is thus provided a comparatively long-lived frozen block, light in weight, capable of maintaining perishables at a desired cool temperature during long air shipments.

While the above description and accompanying drawing comprehend only the general and preferred embodiments of this invention, it will be understood that various changes in construction, combination, and arrangement of parts may be made within the scope of what is hereinafter claimed, without sacrificing any of the advantages of this invention.

I claim:

1. A light weight refrigerant adapted to be placed within a shipping case to preserve lightweight perishable goods packed therein, comprising wadded absorbent water-soaked paper that has been packaged in a container, drained, and then frozen, the refrigerant container comprising a cardboard carton lined with wet paper.

2. A light weight refrigerant adapted to be placed within a shipping case to preserve lightweight perishable goods packed therein, comprising wadded absorbent water-soaked newspaper that has been packaged in a container, drained, and then frozen, the refrigerant container comprising a cardboard carton lined with wet newspapers.

3. A heat absorbing body for the purpose described, consisting of a block, the block comprising tightly packed, water-soaked, wadded newspaper packaged in a container for holding it in its block form, the packaged container being drained to substantially eliminate free dripping therefrom and then frozen, the container being a cardboard carton lined with wetted newspaper.

ROBERT E. WARNE.

REFERENCES CITED

The following references are of record in the file of this patent:

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