No. 662,541. Patented Nov. 27, 1900.

J. MISKOLCZY.

REFRIGERATING ARTICLE.

(Application filed July 31, 1899. Renewed Apr. 6, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1

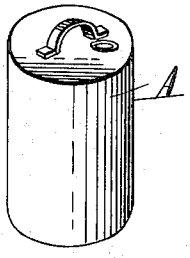


Fig. 2.

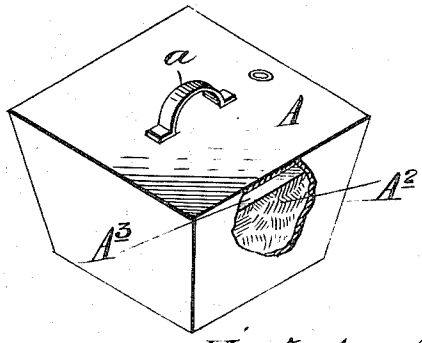


Fig. 3.

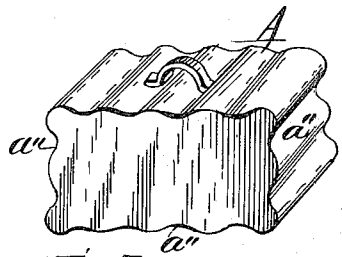


Fig. 4.

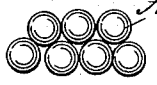


Fig. 5.

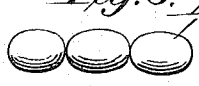


Fig. 6

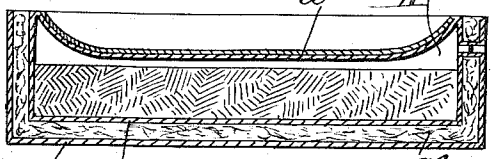


Fig. 7

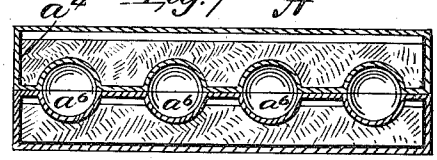


Fig. 8.

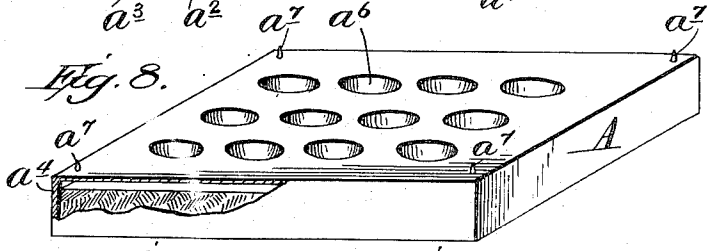


Fig. 9

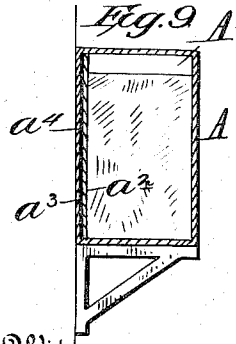


Fig. 10.

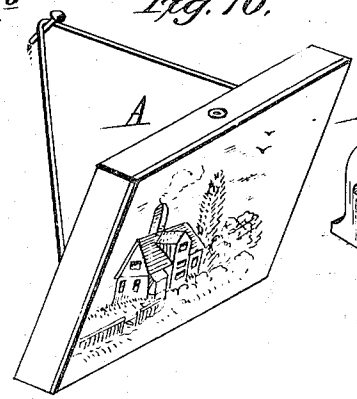
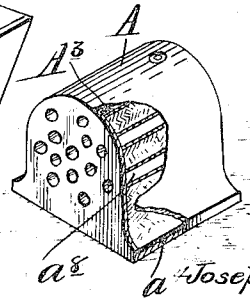
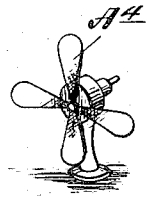


Fig. 11.





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Fig. 12.

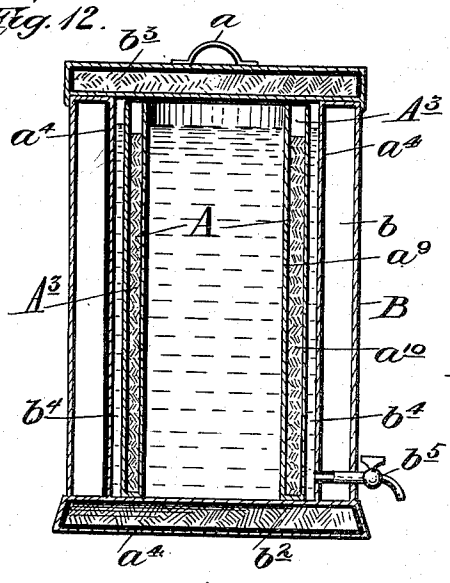


Fig. 13

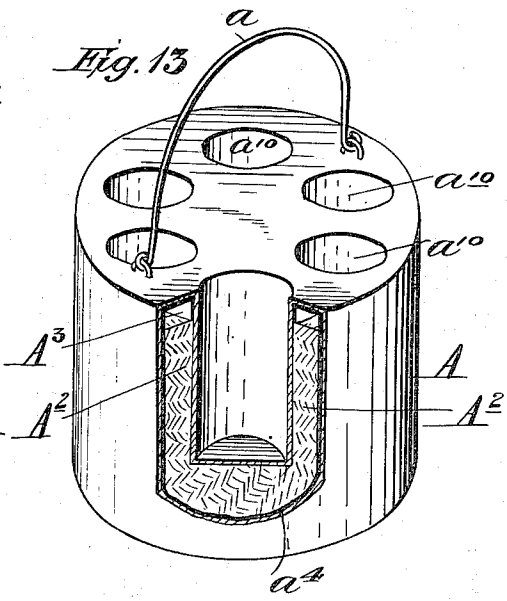


Fig. 15

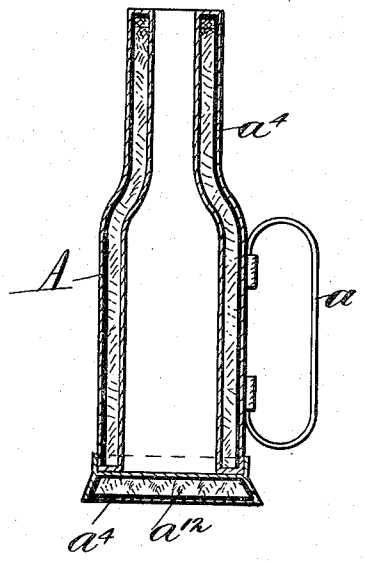
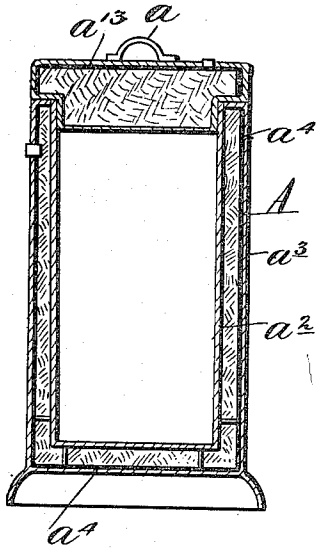


Fig. 16



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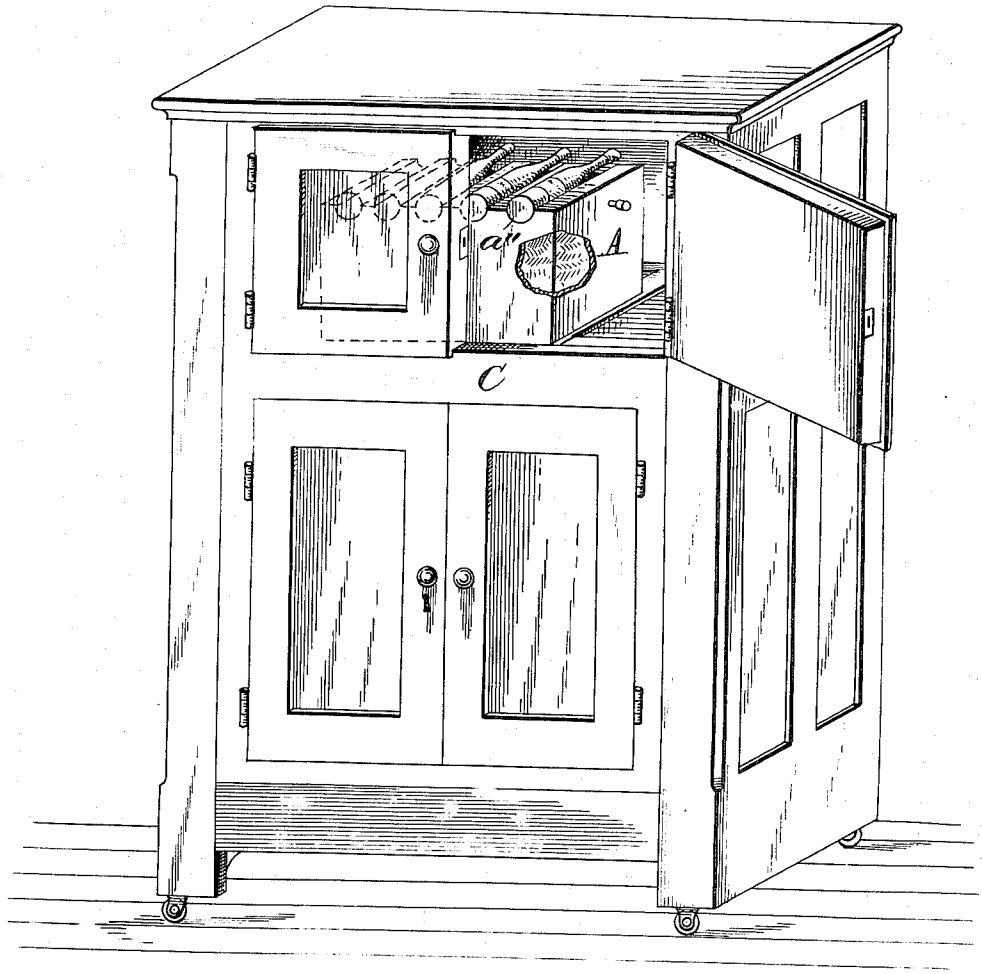
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(No Model.) 3 Sheets—Sheet 3.

Fig. 14.



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UNITED STATES PATENT OFFICE.

JOSEPH MISKOLCZY, OF NEW YORK, N. Y., ASSIGNOR TO THE MISKO ICE COMPANY, OF SAME PLACE.

REFRIGERATING ARTICLE.

SPECIFICATION forming part of Letters Patent No. 662,541, dated November 27, 1900.

Application filed July 31, 1899. Renewed April 6, 1900. Serial No. 11,896. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MISKOLCZY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in the Art of Refrigeration; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is in a simple, economical, hygienic, and at once highly-efficient manner to effect refrigeration.

To this end the invention consists in the practical presentation of means for effecting refrigeration, avoiding exposure of any liquefiable refrigerant or contact thereof with matter by it to be cooled, thereby conserving the refrigerant, avoiding direct effect upon it of any fluid, and effect upon any fluid of its presence exposed—such as the contamination of drinking-water, &c.—and in the case of any adjacent aeriform fluid—say common air—causing a practical drying thereof by deposit of moisture therefrom, thus presenting dry air for any use desired or affording a more efficient preservation of any perishable matter with such air in a compartment present and under less need of a low degree of temperature—that is, under need of less low degree of temperature—since it is well known that all substances subject to eremacausis or decay may last long or even be preserved in dry air where they will break down and rot in moist air. The point is to protect the ice against contact with and intrusion of air or extraneous liquid; to prevent, so far as possible, inclusion in the body of the ice of air or any solid matter; to produce the ice in a protective covering, envelop, or mantle at a temperature sufficiently low to cause it to be solid throughout and, in fact, to produce it in the vessel or covering at any desirable low temperature, and to present it with the vessel as one body at any desirable low temperature, even a very low temperature, as an article of use and of trade.

To effect the freezing of any liquid in any one of the holders or containing vessels herein shown to or below the point of congelation of the liquid without causing rupture of the vessel, a suitably-shaped vessel is partly filled with the liquid or with ice or with a liquid and ice and is then, in any suitable manner, practically exhausted of air and finally closed against any possible intrusion of air or liquid, and the vessel thus charged is then subjected to an adequately low temperature, in any preferred manner, to effect congelation of the charge and kept permanently closed. The vessel or holder will of course generally or in the main preferably be of metal or of some substance capable of ready conduction of heat, though it may be partly of conductive and partly of non-conductive substance, and the ice may be long conserved by inclusion of a non-conductive covering. The article thus produced may be cylindrical, conical, wedge-shaped, oval, a mold, or of any other desirable form, be of metal, glass, or other substance, and be of a size suitable for cooling beverages or other matter in glasses, pitchers, bottles, dishes, or milk-cans, or for placing in a refrigerator, or for cooling beer in vats, or for cooling apartments, or for anything else.

In the accompanying drawings, forming a part of this specification, and in which like letters of reference indicate corresponding parts, I have illustrated a few of many forms of embodiment of my invention, it being understood, however, that other forms of embodiment may be employed without departing from the spirit of the same, and in the drawings—

Figures 1, 2, 3, 4, and 5 are views of different forms of ice-containing holders constructed wholly of conductive material and having a vacuum, the vacuum being shown only in Fig. 2. Figs. 6, 7, 8, 9, 10, 11, 12, and 13 are views of different forms of ice-containing holders constructed partly of conductive and partly of non-conductive material and having a vacuum-space. Fig. 14 is a view in perspective displaying the adaptation of an ice-containing holder to a refrigerator, the holder herein shown being preferably made of conductive material and having a vacuum-space; and Figs. 15 and 16 show two different forms

of ice-containing holders constructed partly of conductive and partly of non-conductive material.

Referring to the drawings, Figs. 1, 2, and 3 exhibit forms of ice-containing holders adapted particularly for use in connection with refrigerators, the form shown in Fig. 1 being a cylinder, that in Fig. 2 a tapered rectangular vessel, and that in Fig. 3 a rectangular vessel with corrugated surfaces. The forms herein shown are constructed, preferably, wholly of conductive material—as sheet-iron, galvanized iron, and the like—the holder being designated by A, the ice by A^2, and the vacuum-space by A^3. These holders may be provided with a handle a to facilitate handling. In the form of ice-containing holder shown in Figs. 4 and 5, which are adapted particularly for cooling drinks in glasses, pitchers, water-coolers, &c., the holder may be made of any material, preferably of glass.

In Fig. 6 I have shown the adaptation of my principle to the cooling of a butter-dish or the like. In this instance the holder is shown as constructed of an inner shell a^2 and an outer shell a^3, the space between the two shells being lagged by insulating material a^4. The top of the holder is depressed to contain butter or other substance to be refrigerated, the depressed portion being lined on its upper surface with a film or layer a^5 of any good conductor of cold, such as porcelain or the like, which also adds cleanliness to the device.

In Fig. 7 I have shown the adaptation of my principle to the cooling of crates for the shipment of fruit or the like from one place to another. These crates are constructed, preferably, in the same manner as the dish just described—that is to say, the portion that will be exposed to the atmosphere that is not to do effective work is suitably lagged to prevent absorption of heat and thus wasteful expenditure of the function of the device. The crate, as shown in section in Fig. 7 and in perspective in Fig. 8, is constructed of two parts, which are adapted to be placed one upon the other, with the depressions a^6, in which the fruit is to lie, alined, suitable dowel-pins a^7 being employed, if desired, for the purpose of keeping the parts of the crate together. It is to be understood that this same idea may be carried into effect in the shipment of melons or other like perishable substances.

In Figs. 9 and 10 I have shown the adaptation of my principle to the cooling of an apartment. The ice-containing holder in this instance may be a large rectangular structure suitably ornamented, if preferred, to represent a picture or panel, the front and sides of the holder being a good conductor of heat and the back being suitably lagged to prevent absorption of heat at the rear and where cooling would subserve no useful function. As shown in Fig. 9, wherein a slightly-modified form of apartment-cooler is exhibited, the back may consist of an inner shell a^2, an outer shell a^3, and the interposed insulating material a^4, it being understood that the same ideas may be carried into effect in connection with the structure shown in Fig. 10.

In Fig. 11 I have shown the adaptation of my principle to the cooling of an apartment in connection with a blast-fan. The holder A, which may be of any preferred shape, is provided with a plurality of tubes or channels a^8, through which air from the fan A^4 will be forced and be thus cooled. The great advantage of employment of such an ice-holder for the purpose described over ordinary naked ice, such as is usually employed, is that the air that leaves the holder will be dry and will thus not tend to deposit moisture upon the furniture and upon the occupants of a room, as will inevitably result where naked ice is employed. The form of holder shown in Fig. 11 is one of many that may be employed, and I do not, therefore, wish to be limited to this particular structural arrangement.

In Fig. 12 I have shown the adaptation of my principle to the cooling of the contents of a water-cooler B. As shown, the water-cooler has double walls, the space b between the walls to contain water or a freezing compound which may readily be frozen. The base b^2 and the cover b^3 may also be made hollow for the same purpose. Within the cooler is placed the ice-containing holder A, which in this instance is shown as cylindrical, although it may be of other forms, the holder having an inner wall a^9 and an outer wall a^{10}, the space between the two walls being partly filled with water or with a suitable freezing compound, the chamber thus formed between the walls being hermetically sealed to prevent escape of liquid therefrom or admission of air thereto. In the space b^4 between the outer wall of the holder and the inner wall of the cooler is placed the water to be consumed, a suitable faucet being provided for the purpose of drawing it off. The cooler is lagged, as indicated at a^4, at its sides, top, and bottom.

In Fig. 13 I have shown the adaptation of my principle to the cooling of bottles containing liquors or wine. The holder is shown as a bucket-shaped arrangement provided with a plurality of pockets $a^{10\times}$, in which the bottles to be cooled are placed, the ice entirely surrounding each of these pockets, and in use, if preferred, water may also be placed in the pockets to hasten refrigeration of the liquid contained in the bottles.

In Fig. 14 I have shown the adaptation of my principle to the cooling of a refrigerator C. The holder A, herein shown, is of the rectangular form; but it is to be understood that any other form may be employed in lieu of that shown and may be corrugated, as at a^{11}, or be provided with extensions or depressions to increase the exposure or for any other useful purpose, as to hold objects directly to be cooled.

In Fig. 15 I have shown the adaptation of my principle to the cooling of a hollow bottle-shaped structure, such as a champagne-bottle holder, between the walls of which the ice is confined, the outer wall being suitably lagged, a removable hollow base a^{12}, suitably lagged and filled with ice, being employed for the purpose of holding the bottle-holder in upright position and also providing additional refrigeration.

In Fig. 16 I have shown the adaptation of my principle to the cooling of a milk-can to be used in shipping milk. The can or holder A is constructed with an inner wall a^2 and an outer wall a^3, the outer wall being suitably lagged, as at a^4, the space between the two walls being filled with ice. A removable lid or cover a^{18}, made hollow, filled with ice, and suitably lagged, is provided for the double purpose of closing the holder and also adding increased refrigeration.

The application of this invention to any use where it may be found desirable will, it is thought, be obvious, and I have therefore mentioned but a few of the uses to which it may be put.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. As a new article of commerce, a portable refrigerating-body comprising a hermetically-sealed, air-exhausted holder, confining a mass of ice, substantially as described.

2. As a new article of commerce, a portable refrigerating-body, comprising an air-exhausted holder permanently impervious to intrusion of any extraneous fluid and containing frozen liquid, substantially as described.

3. As a new article of trade, a hermetically-sealed, air-exhausted, portable vessel, containing a body of ice, said vessel having a surface rendered conductive and a surface or surfaces rendered non-conductive, the vessel and the ice being presented together for use as a refrigerating-body, substantially as described.

4. As a new article of trade, a vessel or holder comprising an inner and an outer shell, with a mass of ice confined between the shells, the holder being hermetically sealed and practically exhausted of air, substantially as described.

5. The combination with a closed chamber, of a portable refrigerating-body, normally dry and having free conductive surface, the body comprising a hermetically-sealed, air-exhausted, suitably-shaped holder, confining a mass of ice, and in use having its exterior freely exposed, thereby effecting rapid cooling and condensation, substantially as described.

6. As a new article of commerce, a portable shell or holder practically exhausted of air and containing frozen liquid, substantially as described.

7. As an article of commerce, a tapering shell or holder practically exhausted of air and containing ice, substantially as described.

8. As an article of commerce, a hermetically-sealed shell or holder practically devoid of air and containing ice, the shell having a side or sides rendered non-conductive of heat, substantially as described.

9. As a new article of manufacture, a hermetically-sealed, portable vessel, practically exhausted of air and containing ice, the vessel being corrugated or provided with depressions, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH MISKOLCZY.

Witnesses:
R. G. DYRENFORTH,
R. M. ELLIOTT.