Jan. 9, 1945. L. F. CLERC 2,367,097

CONTROL MECHANISM FOR REFRIGERATING DEVICES

Filed Nov. 16, 1942 2 Sheets-Sheet 1

Fig 1

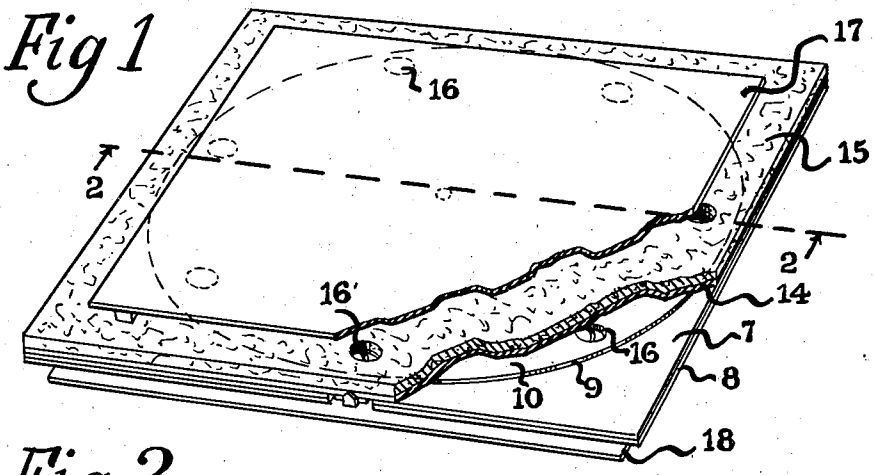


Fig 2

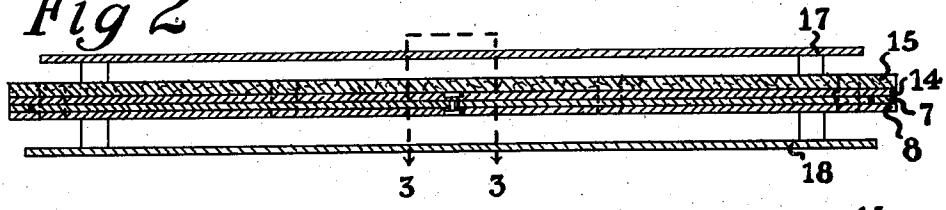


Fig 4

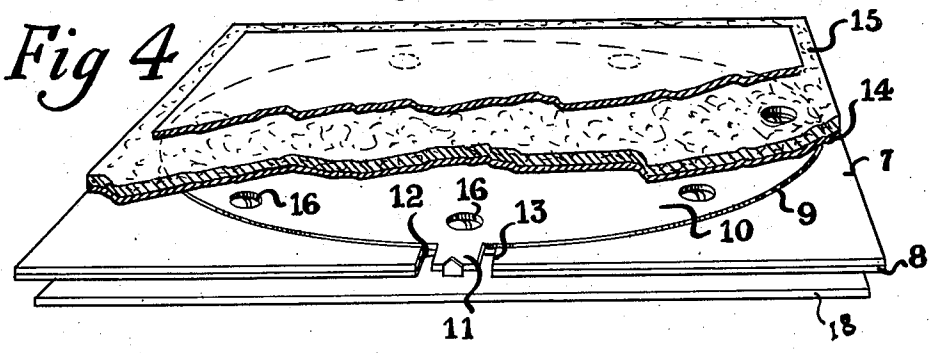
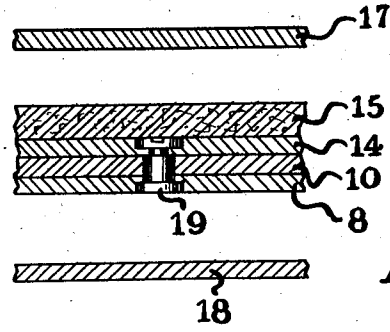


Fig 3



INVENTOR.
Leonard F. Clerc
BY
Edward M. Apple
ATTY

Jan. 9, 1945. L. F. CLERC 2,367,097

CONTROL MECHANISM FOR REFRIGERATING DEVICES

Filed Nov. 16, 1942 2 Sheets-Sheet 2

Fig 5

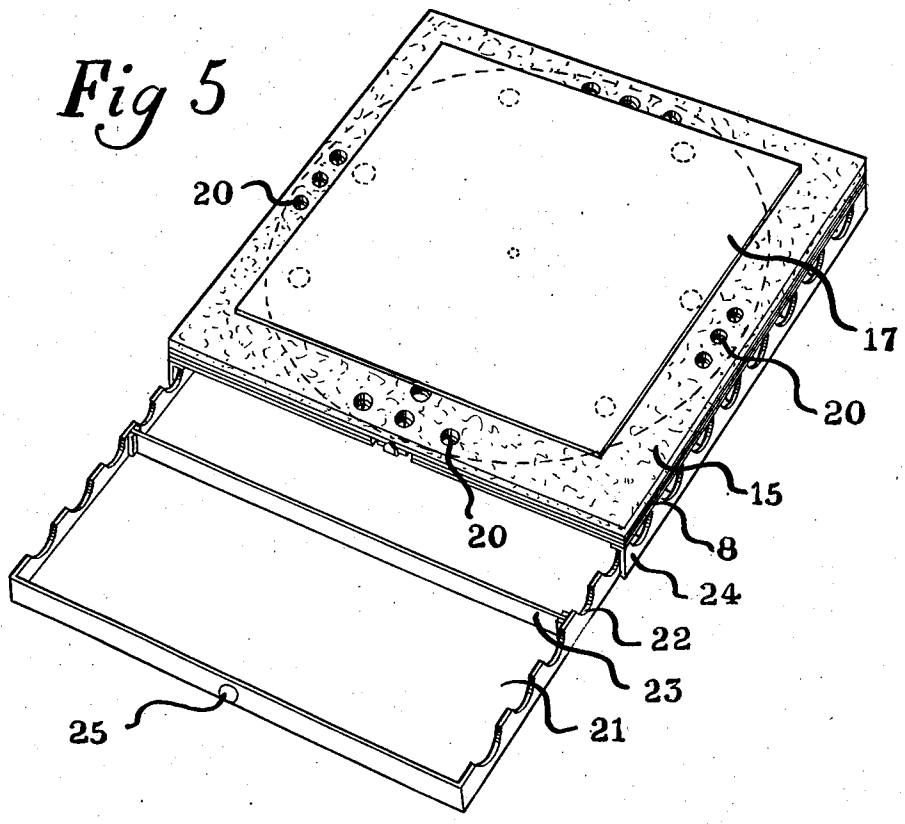
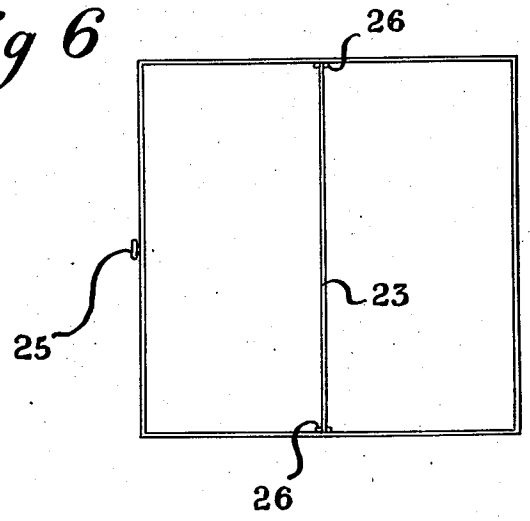


Fig 6



INVENTOR.
Leonard F Clerc
BY Edward M. Apple ATT'Y

Patented Jan. 9, 1945 2,367,097

UNITED STATES PATENT OFFICE

2,367,097

CONTROL MECHANISM FOR REFRIGERATING DEVICES

Leonard F. Clerc, Chicago, Ill.

Application November 16, 1942, Serial No. 465,659

6 Claims. (Cl. 62—91.5)

This invention relates to refrigerating devices and has particular reference to a control mechanism for effecting varying degrees of temperature in "dry ice" refrigerators, such as disclosed in my copending application S. N. 465,655, filed November 16, 1942.

An object of the invention is to provide adjustable means to control the flow of CO_2 gas and air inside refrigerated shipping containers and the like.

Another object of the invention is to provide a device for handling "dry ice" in a refrigerator, whereby the sublimation of the "dry ice" is uniformly effected throughout its surfaces.

Another object of the invention is the provision of a removable control mechanism of the character referred to which can serve as a shelf in a shipping container.

Another object of the invention is the provision of a device of the character referred to which is provided with means to defrost it.

The foregoing and other objects and advantages of the invention will appear as the description proceeds, reference being made to the accompanying drawings, in which,

Fig. 1 is a perspective view of a device embodying my invention.

Fig. 2 is a section taken substantially on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary detail in section, taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged perspective view similar to Fig. 1, with parts broken away to more clearly illustrate the construction.

Fig. 5 is a perspective view of a modified form of my device in which a defrosting tray is incorporated.

Fig. 6 is a plan view of the defrosting tray shown in Fig. 5.

Referring now more particularly to the drawings it will be understood that in the embodiment herein disclosed my control mechanism consists preferably of several layers, 7 and 8, of a plastic material, which are constructed and arranged as hereinafter described. The layer 7 is cut as at 9 to provide a circular panel 10, which is supported on the underlying panel 8, so that it may be rotated by means of the handle 11. The handle 11 also serves to limit the rotation of the panel 10 between the stops 12 and 13, which are formed by cutting out the panels 7 and 8 as shown in Fig. 4.

Superimposed on the layer 7 is another layer of plastic material 14. On top of the layer 14 is a layer 15, of felt or other suitable insulating material. The circular panel 10, comprising part of the layer 7, and the layers 8 and 14, and the felt pad 15 are provided with a plurality of apertures 16 which are alignable by rotating the panel 10 of the layer 7 in one direction, and may be entirely closed by rotating the panel 10 of the layer 7 in the opposite direction. It will be seen in Figs. 1 and 4, that the apertures 16 are approximately half open to permit communication between them when the handle 11 is centrally positioned between the stops 12 and 13. When so constructed the apertures 16 will be closed to prevent communication when the handle 11 is moved against the stop 13, and will be opened to permit communication when the handle 11 is moved against the stop 12. Thus it will be seen that I have provided means for adjusting the degree of communication between these apertures. This is important when my control mechanism is used in refrigerating devices such as disclosed in my copending application S. N. 465,655, filed November 16, 1942, wherein "dry ice" is used as the refrigerant. In such uses it is desirable to control the flow of the CO_2 gas resulting from the sublimation of the "dry ice" so that varying degrees of temperature may be provided in the storage space below the control mechanism.

To obviate certain difficulties inherent in the use of "dry ice" as a solid refrigerant and to insure the uniform sublimation of the "dry ice" throughout its area, I provide a "dry ice" platform 17 which is spaced above the insulating pad 15 and is substantially smaller in area than the pad 15 and the panels 7, 8 and 14. This platform 17 is not provided with apertures, but presents a smooth and unbroken surface to the "dry ice" which rests upon it. I have found that in resting "dry ice" directly on an apertured panel there is a tendency for the "dry ice" to sublime faster over the apertures thereby causing the "dry ice" to become pitted. The CO_2 gas resulting from the sublimation of the solid refrigerant flows downwardly around the edges of the platform 17 where it strikes the top of the insulating pad 15, spreading evenly over the pad 15 and thence downwardly throughout the apertures 16, when the mechanism is adjusted to open position.

After the CO_2 gas passes through the apertures 16, when the device is in open position, it strikes the depending baffle 18 which is also smaller in area than the layers 7 and 8. The baffle 18 is intended to again distribute the CO_2 gas evenly along the inside walls of the refrigerator in which it is being used as is taught in my copending

application S. N. 465,655, filed November 16, 1942. As shown in Figs. 2 and 3, the panel 10 comprising the central part of the layer 7 is pivoted about the nut and bolt assembly 19 which is adapted to hold the layers 7, 8 and 14 in predetermined relation as shown.

In Fig. 5 I have shown a modified form of my device in which I provide an additional series of apertures 20. This is to provide communication between certain restricted areas of the refrigerating compartment and the storage compartment of certain types of refrigerators, in which I employ the control mechanism.

In this modified form I also provide a defrosting mechanism which consists of a tray 21 having cut away side walls 22 and several wiping blades or knives 23, the sharp edges of which are adapted to contact the under surface of the layers 8 of the device so that the frost which I have found accumulates on this surface may be readily removed. The frost scraped from the under side of the layer 8 is deposited in the tray 21 and may be removed for disposal. The tray 21 is supported by angular side members 24, which depend from the under side of the layer 8. In this embodiment the tray 21 serves in the same capacity as the baffle 18 in the structure disclosed in Figs. 1–4. The tray 21 is provided with a handle 25 so that it may be easily withdrawn. The knives 23 are held in position between the walls of the tray 21 by bosses 26, or by other suitable means.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. A control mechanism for a "dry ice" refrigerator, comprising a plurality of layers of rigid material, a layer of heat insulating material, alignable apertures in said layers, means to align said apertures, a "dry ice" platform spaced above and supported by said rigid layers, and a baffle depending from said rigid layers.

2. The combination defined in claim 1, in which one of said rigid layers has a cutout portion and a rotatable disc in said cutout, apertures in said disc and means to limit the rotation of said disc, to effect alignment and dis-alignment of the apertures.

3. A control mechanism for a "dry ice" refrigerator, comprising a plurality of layers of rigid material, a layer of heat insulating material, apertures in said layers, means to align and dis-align said apertures, and means for defrosting the bottom of said device.

4. A control mechanism for a "dry ice" refrigerator, comprising a plurality of layers of rigid material, a layer of heat insulating material, apertures in said layers, means to align and dis-align said apertures, and means for defrosting one of the said rigid layers, said defrosting means comprising a movable panel positioned adjacent one of said rigid layers, said panel having wiping blades thereon.

5. A control mechanism for a "dry ice" refrigerator, comprising a plurality of layers of rigid material, a layer of heat insulating material, apertures in said layers, means to align and dis-align said apertures, and means for defrosting at least one of the said rigid layers, said defrosting means comprising a removable tray positioned below said rigid layers, said tray having open side walls, and wiping blades for contacting one of said rigid layers.

6. A removable control mechanism comprising a plurality of layers of rigid, low heat conductive material, one of said layers having an apertured rotatable section, there being aligned apertures in said other layers, said last-named apertures being alignable with the apertures of said rotatable section upon the rotation of said section in one direction, and non-alignable upon the rotation of said section in the opposite direction, a "dry ice" platform positioned above said layers and a baffle, depending from said layers.

LEONARD F. CLERC.