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REFRIGERATING APPARATUS

Filed Jan. 31, 1948

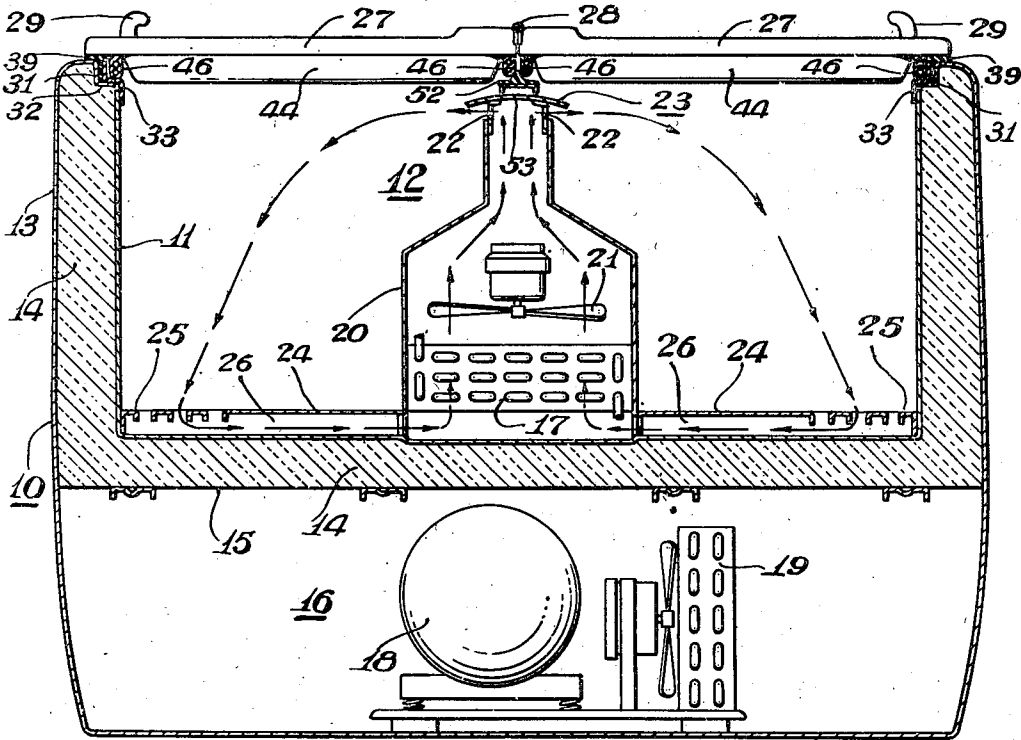
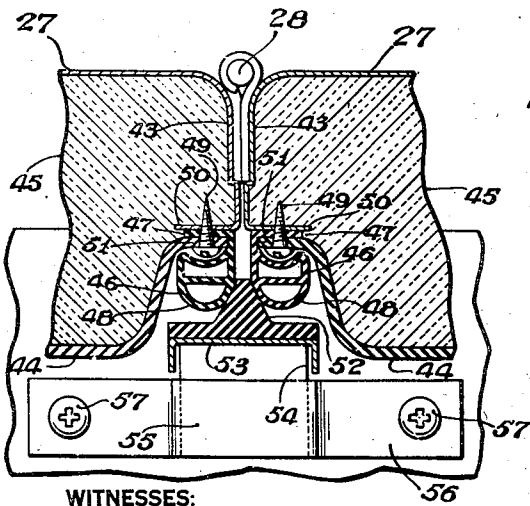


Fig. 1.



WITNESSES:

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Fig. 3.

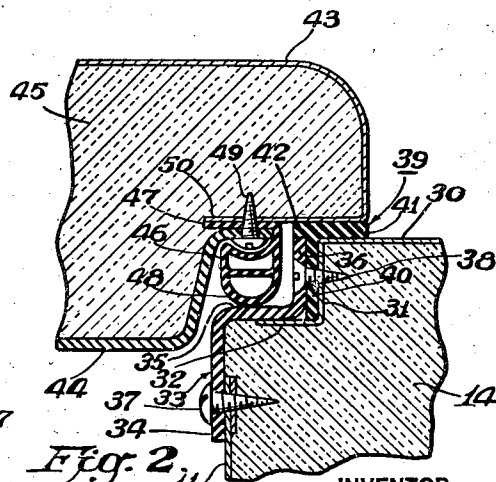


Fig. 2.

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REFRIGERATING APPARATUS

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3 Claims. (Cl. 220—24)

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This invention relates to refrigerating apparatus and particularly to a cold storage cabinet embodying such apparatus.

The invention particularly relates to cold storage or cooler cabinets of the horizontal type having a top opening lid for affording access to the interior of the cabinet, and may be particularly exemplified by a cabinet used for the storage of packaged goods such as a bottle cooler.

More particularly, the invention relates to a horizontal cooler where the heat transfer from the stored goods to the refrigerating system is accomplished by the use of cold circulating air. In such coolers the heat leakage at the junction of the lids and the cabinet walls becomes a source of trouble, since the surface temperature is lowered on the cabinet exterior therefore tends to cause moisture condensation on the cabinet.

Further, such cabinets are often provided with double lids, that is a lid having two portions hinged together centrally. In this construction it is important that an effective seal against moisture infiltration be made at the hinge. It is also desirable that the hinged lid be entirely removable as a unit from the cabinet so that the entire interior of the storage compartment be easily accessible for cleaning or storage purposes.

A particular object of the invention, therefore, is to provide in a hinged lid cabinet a construction which provides an effective seal at the hinge connection.

More specifically an object is to provide a sealing arrangement at the hinge connection which arrangement includes a portion attached to the cabinet but removable therefrom.

A further object is to provide such a detachable portion that will also assist in centering the hinged lid when one of the portions is temporarily raised to afford access to the cabinet.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a vertical elevation principally in section, of a refrigerator cabinet embodying the invention, and which cabinet is provided with a two-piece lid hinged at its center;

Fig. 2 is a sectional view, on an enlarged scale, of a portion of the cabinet wall and the cooperating lid;

Fig. 3 is a sectional view, also on an enlarged scale, of the construction adjacent the hinge joining the two lid portions.

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In the drawings, in Fig. 1 there is shown a top-opening cabinet 10 having an inner liner 11 which serves as the storage compartment 12 for the articles to be cooled. The cabinet is provided with an outer shell 13 spaced by insulation 14 from the inner liner 11. The outer shell may be extended below the bottom wall 15 of the storage compartment 12 to provide a non-refrigerated compartment 16 for receiving the condensing unit of a refrigerating system.

The evaporator portion 17 of the refrigerating system is located in the storage compartment 12. This evaporator is operatively connected in a known manner to the compressor 18 and condenser 19, both the latter being here shown as located in the non-refrigerated compartment 16. The evaporator is surrounded by a shroud 20 for directing the path of circulating air and for dividing the storage compartment into two sections.

A motor-driven fan 21 is provided inside shroud 20 and above evaporator 17 for forcing air upwardly through the evaporator and the apertured upper end 22 of the shroud. A baffle 23 directs the cooled air toward the ends of the storage compartment. A pair of shelves 24, each imperforate except at its end 25, are provided in the storage compartment near its bottom wall. These shelves extend from the baffle 20 substantially to the end walls of the compartment and from one side wall of the compartment to the other so that they form together with the bottom wall of the compartment, ducts 26 for the return of air from the compartment through the perforated end 25 of each shelf to the evaporator. The general path of the circulating air is indicated by the arrows in Fig. 1. The closure for the upper end of the storage compartment comprises a two-piece lid 27 centrally hinged as at 28 so that either piece may be separately raised by a handle 29.

Referring to Fig. 2 which shows details of the cabinet and lid construction adjacent the rim of the lid, the cabinet shell 13 is bent to form a horizontal wall 30, a short depending portion 31 and a short horizontal portion 32 providing a ledge. A breaker strip 33 has a vertically depending leg 34, a short horizontal portion 35 and a short upwardly extending portion 36. The leg 34 is suitably attached, as by screws 37, to the inner liner 11, and the upwardly extending portion 36 is attached by suitable fastening means such as screws 38 to the depending flange 31 of the outer shell. When so disposed the horizontal portion 35 of the breaker strip lies above the ledge portion 32 of the outer shell. A gasket 39 has a vertical flange 40 interposed between members 31

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and 36 and also has a long horizontal flange 41 overlying the horizontal wall 30 of the shell 13 and a shorter flange 42 overlying the upper edge of breaker strip 33.

This breaker strip should be made of material of low heat conductivity such as a phenolic resin compound, while the gasket 39 should be of yieldable material such as rubber or a rubber-like compound. As the outer shell 13 and the inner liner 11 are usually made of sheet metal, the construction described provides a path of minimum heat transfer between those two parts. The horizontal flanges 41 and 42 also serve as a resilient buffer when the lid section 27 is lowered. Also the short flange 42 serves to seal and protect the upper edge of the breaker strip. It will be understood that the construction just described extends completely around the upper edge of the cabinet.

The lid 27 is formed of an outer shell 43, an inner pan 44 and suitable insulation 45 interposed therebetween. I prefer to make the inner pan 44 from molded material of relatively low heat conductivity, such as a phenolic resin compound.

A gasket 46 is provided having a flat horizontal leg portion 47 and a depending enlarged rounded portion 48 which may be hollow as shown. Portion 47 is engaged, as by screws 49, between a horizontal flange 50 formed on the outer shell 43 of the lid and a horizontal flange 51 formed at the edge of the inner pan 44. As this gasket extends entirely around the lid, the portion 47 provides a seal against moisture filtering into the insulation of the lid.

When the lid is closed, as shown, flange 50 of the outer shell 43 of the lid engages the horizontal portions 41 and 42 of gasket 39 as has been described, while enlarged portion 48 of gasket 46 engages the horizontal portion 35 of the breaker strip 33. Thus a double seal is afforded against infiltration of warm air into the cabinet at the junction of the lid with the cabinet.

With a two-section hinged lid of the character herein described, it is also necessary to provide a seal at the hinge to prevent air infiltration and this is particularly important with an air-cooled storage compartment.

It would be possible to provide a construction in which each lid section is permanently attached to the cabinet. This would, in effect provide two separate lids. However, in order to afford easy access to the entire interior of the cabinet for servicing and cleaning purposes it is preferable that the lid sections be hinged to each other and be removable from the cabinet as a unit.

To accomplish these results, I provide a construction at the top center of the storage compartment which not only provides an excellent seal against infiltration of warm air, but also permits the aforesaid desirable removable lid construction. The construction also provides a means for centering the lid on the cabinet when only one section is to be raised.

For example, a strip of material 52 of somewhat triangular cross-section is provided trans-

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versely of the storage compartment adjacent the hinge 28. This strip is preferably made of a material of low heat conductivity such as hard rubber or a phenolic condensation compound. The strip is here shown as attached to and supported by a metallic reinforcing channel-shaped member 53. The latter member is provided at each end with a downwardly-projecting flange 54 which flange is removably engaged in the enlarged portion 55 of a strap 56. The strap is fastened near its ends as at 57 to a wall of the storage compartment.

When the lid is in place, as shown in Fig. 3, the gasket portions 48 of the lid engage the opposite upwardly sloping sides of triangular strip 52 to form a seal against air leaking into the storage compartment. The triangular shape helps to center the lid when one portion or the other is raised. By removing the entire lid and the detachable channel member 53, the entire interior of the storage compartment is made accessible for any necessary cleaning or servicing operation.

It will be apparent from the foregoing description that the invention provides a cheap, readily-constructed and effective construction for a horizontal top-opening refrigerator cabinet having a removable lid construction.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What I claim is:

35 1. In a refrigerator cabinet of the top opening type and having a storage compartment with vertical walls, a two piece centrally hinged lid for closing said opening, gasket means attached to and disposed beneath each lid portion adjacent its periphery, a substantially triangular-shaped horizontally-disposed strip extending across said compartment adjacent said hinge and supported at its ends by opposite walls of the compartment, said strip having its apex disposed above its base so that when the lid is in position, its gaskets adjacent the hinge engage opposite sloping sides of said triangular portion.

50 2. Structure according to claim 1 wherein the triangular-shaped strip is detachably connected to the walls of the storage compartment.

55 3. Structure according to claim 1 where the gasket-contacting portions of said strip are formed of a non-metallic material of relatively low conductivity.

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