Nov. 3, 1931. C. C. WALSH ET AL 1,830,305

COOLING UNIT

Filed Jan. 25, 1928

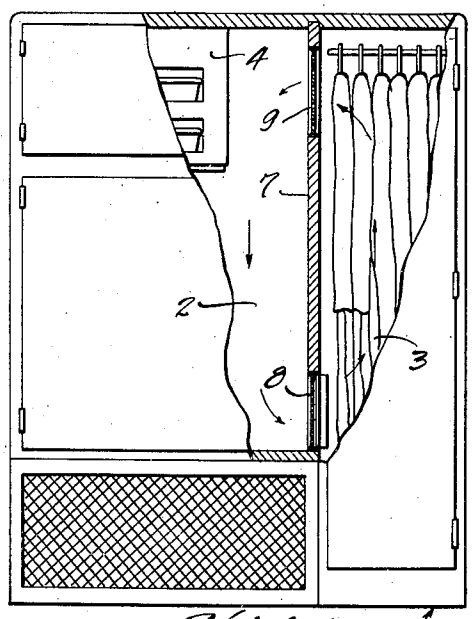


Fig. 1

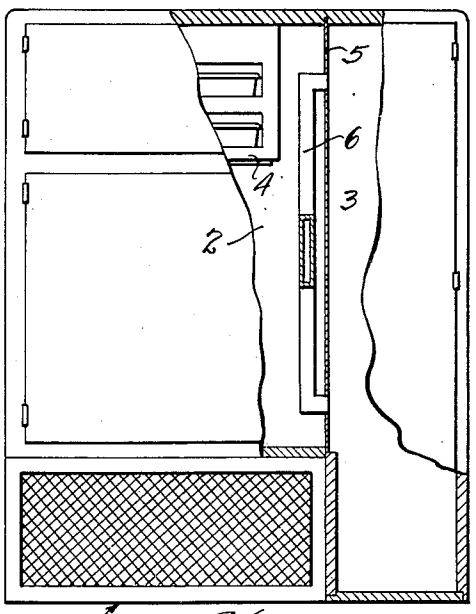


Fig. 2

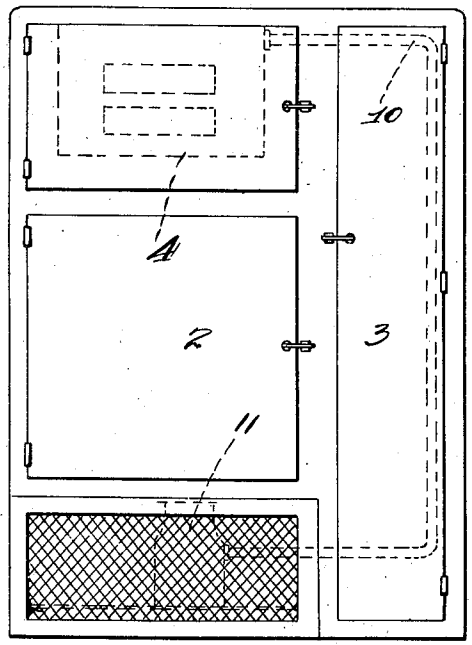


Fig. 3

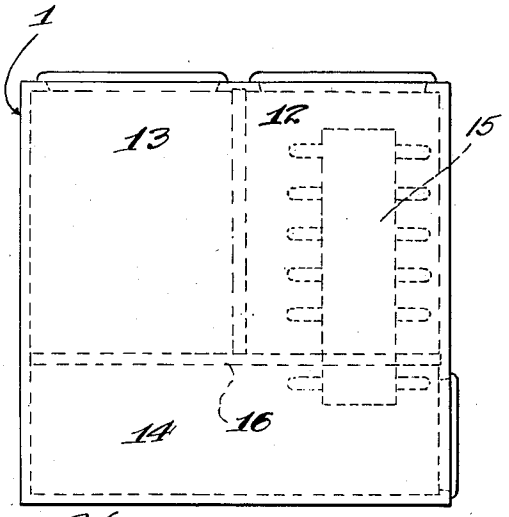


Fig. 4

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UNITED STATES PATENT OFFICE

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COOLING UNIT

Application filed January 25, 1928. Serial No. 249,302.

This invention relates to a cooling unit and has to do particularly with the provision of a combined cooling unit having separate compartments for storing and cooling articles of a different nature or characteristics, such as food and clothing.

It is the object of this invention to provide a domestic refrigerating unit such as is now in general use for the storing and cooling of foodstuffs with a separate compartment for the storing of articles such as furs, clothing, or the like, whereby the clothing or similar articles may be conveniently and advantageously stored and kept in a cool, moth-proof condition.

A further feature of the present invention has to do with the manner of combining the food refrigerating unit and the separate storing compartment, and the manner of regulating the heat transfer between the refrigerating mechanism and the separate storage compartments. Other features of the invention will be brought out in the specification and claim appended hereto.

In the drawings:

Fig. 1 is a diagrammatic illustration, partly cut away, of a cooling unit constructed in accordance with our invention wherein the clothes storage compartment is formed as a separate compartment in the unit but is in direct circulating contact with the air in the food compartment.

Fig. 2 is a view similar to Fig. 1 but illustrating a modified manner of cooling the separate storage compartment.

Fig. 3 is a front elevation of a refrigerator or cooling unit similar to the structures shown in Figs. 1 and 2 but modified in that the return pipe from the sharp freezing chamber or cooling unit is positioned partially in the separate storage compartment.

Fig. 4 is a plan view illustrating a further modified form of our invention wherein the storage compartment is positioned at the rear of the unit and wherein the cooling unit or sharp freezing unit projects partially into the separate storage compartment.

While our invention is particularly adapted to the combining of a storage compartment for the storing of clothes and similar articles with a food refrigerating unit to form a complete cooling unit, it will be understood that this is merely the preferred manner of illustrating the invention and that various modifications and combinations may be utilized without departing from the scope of the invention.

In Figs. 1 and 2 we have shown our unit as being formed of a single casing 1 similar to the standard type of domestic refrigerating unit now in commercial use and which casing is preferably formed of a reinforcing material suitably insulated. In these two figures the casing is shown divided into a plurality of compartments, one compartment, the food compartment, being designated 2 and a second compartment for storing clothes and similar articles being designated 3. The food compartment may contain a suitable cooling unit or sharp freezing member 4 through which a suitable refrigerant may be circulated in the general manner. As shown, the storage compartment 3 is provided with a door which preferably extends the full height of the unit or casing and the portion of the casing below the food storage compartment 2 is preferably provided with a suitable compartment for receiving the refrigerating mechanism.

It will be understood that in both structures illustrated in Figs. 1 and 2 that the main transfer of heat takes place between the cooling unit 4 and the food storage compartment 2. The separate storage compartment 3 is preferably maintained at a slightly higher temperature than the temperature of the food storage compartment, and the preferred manner of cooling this separate storage compartment 3 is best shown in Fig. 2. In this figure the compartments 2 and 3 are shown as being separated by means of a suitable partition 5, preferably formed of a heat conducting material. A conduit 6 which is preferably rectangular in cross section, as shown in Fig. 2, is supported by the partition 5 and preferably extends through suitable apertures at the top and bottom of said partition, whereby to cause circulation of the air within the storage compartment 3. The surface area of this con-

duit 6 is preferably relatively great whereby to cause a positive circulation of the air within the compartment 3, the air coming from the upper part of the compartment 3, passing to the conduit 6 and being cooled, by conduction, in view of the low temperature conditions in the storage compartment 2.

Thus, the temperature in the storage compartment 3 is maintained sufficiently low to permit of efficient storage of furs and other similar articles. The transfer of heat between the two compartments is by conduction only and a positive circulation is maintained in said compartment which not only assists in cooling the same but also prevents condensation on the walls of the partition.

The structure shown in Fig. 1 is slightly modified from that disclosed in Fig. 2, in that a partition 7 is provided having suitable openings 8 and 9 in the lower and upper portions thereof respectively for permitting a circulation of the air between the compartments 2 and 3. In this event the cooling of the compartment 2 is preferably accomplished by efficient mechanical refrigeration to produce a dry, cold air. With such a dry, cold air there will be no transfer or intermingling of objectionable odors caused by the different nature of the contents in the two compartments. It will be understood, of course, that any suitable deodorizing means may be positioned adjacent the aperture 8 but this need only be a psychological addition, as in practical operation such means would be unnecessary.

In Fig. 3 we have shown a further modification, in that the compartments 2 and 3 are completely separated and the compartment 3 cooled by means of a return pipe 10 which extends through the compartment and connects the cooling unit or expansion chamber 4 with a suitable compressor of a refrigerating mechanism shown diagrammatically as at 11.

In Fig. 4 we have shown a further modified structure for cooling the separate compartments and in this modification the unit casing 1 which is shown as provided with a sharp freezing compartment 12, a food storage compartment 13, and a compartment 14 for storing clothes and similar articles. In the particular modification illustrated the doors for the sharp freezing of food storage compartment are shown in position at the front of casing 1 while the door for the storage compartment 14 is positioned at the side of the casing. In this particular modification the expansion or evaporating unit may be designated 15 and preferably has a portion thereof extending through the partition 16 into the compartment 14, whereby a portion of the cooling unit 15 will effect a direct refrigeration within the compartment 14.

It will thus be seen that we have provided a new article of manufacture wherein we have combined in a single unit a refrigerating mechanism, a cooling unit of the expansion or evaporation type, and a plurality of separate storage chambers for storing articles of a radically different nature, namely food and clothing. The clothing storage compartments shown in the various figures are shown relatively large as compared with the food storage compartments, and in the actual commercial unit, the storage compartment 3 need only be very small. The main transfer of heat is between the cooling unit and the food storage compartment and the cooling of the separate storage compartment is obtained by the same cooling medium utilized in cooling the food storage compartment. The cost of manufacture of our combined unit is practically the same as that of the standard domestic refrigerator, as the box or casing is a relatively small item in the manufacture of a domestic refrigerating unit. The efficiency of our combined unit is also relatively great, as the separate storage compartment is insulated and the door thereof would be opened only a very few times compared with the use of the door for the food storage compartment.

It will be understood that our unitary casing may be either manufactured as a unit as shown in the drawings, or formed in separate detachable parts, the point being that there is a direct combination between the food storage compartment and the separate storage compartment whereby the cooling of the separate storage compartment is dependent upon but is subsidiary to the cooling of the food storage compartment. It will also be understood that our complete unit may take on various designs and arrangements both as to general shape and individual arrangement, the food storage compartment and the cooling means therein being of any desired form, shape, and location, and the separate storage compartment being located at any desired position in the combination.

What we claim is:

In a domestic refrigerating unit consisting of a casing divided into a plurality of compartments, a storage compartment for food, a separate storage compartment for clothing extending substantially the length of the casing, refrigerating means in one of said compartments, and a conduit opening into the clothing storage compartment and projecting into the food storage compartment for effecting a heat conducting and circulation relation, and an air-tight seal between the food and clothing storage compartments.

In testimony whereof we affix our signatures.

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