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METHOD AND APPARATUS FOR DEFROSTING AND WASHING REFRIGERATORS

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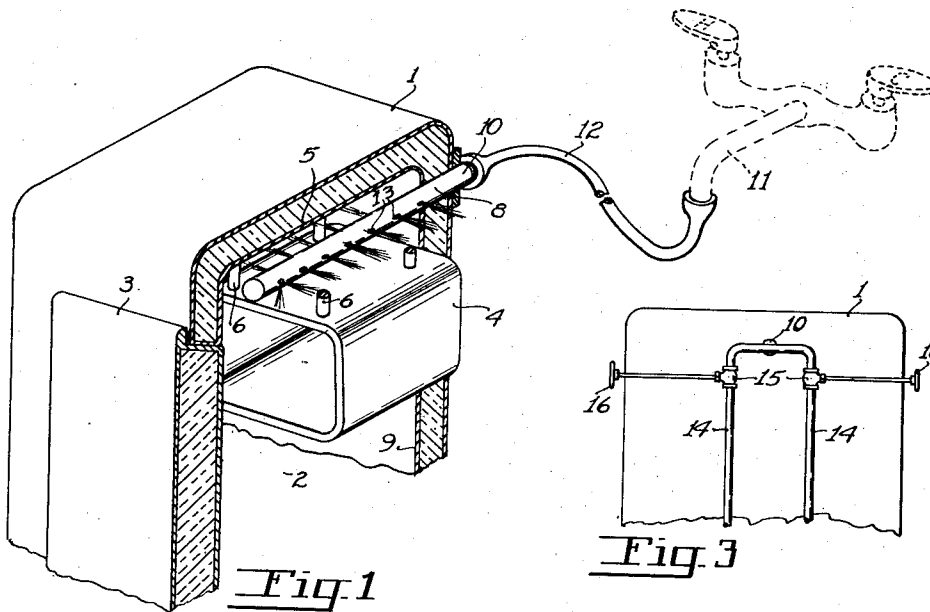
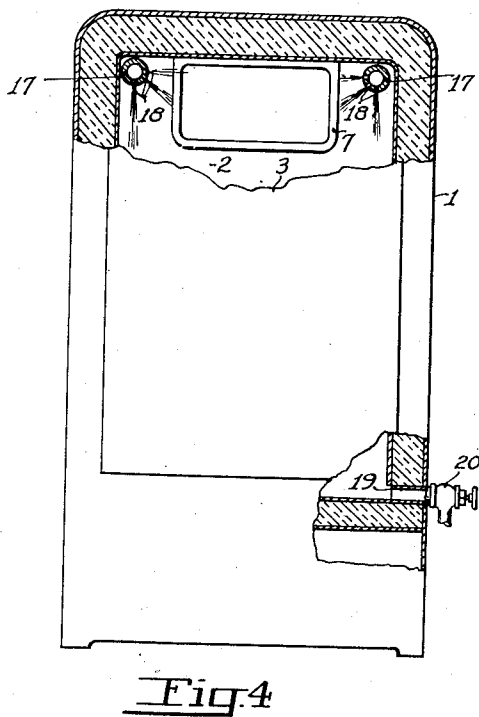
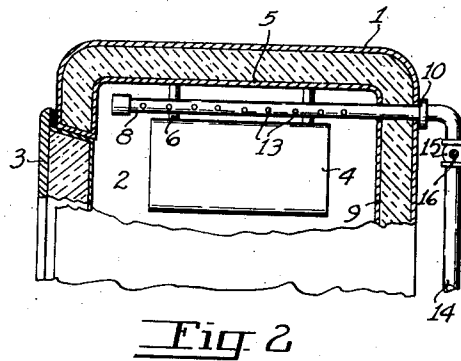
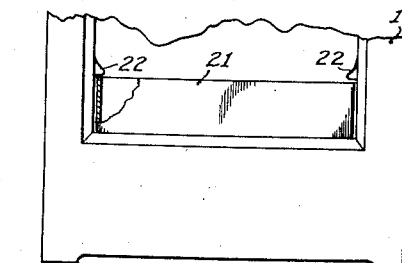


Fig. 5 CLARENCE R. YUNKER
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METHOD AND APPARATUS FOR DEFROST-
ING AND WASHING REFRIGERATORS

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5 Claims. (Cl. 62-1)

This invention relates to refrigerators of the type used extensively in private homes for the preservation of foodstuffs, and has particular reference to a new and improved method and apparatus for defrosting the cooling unit and for washing and deodorizing the food compartment of a household refrigerator.

The household type of refrigerator commonly comprises a food compartment having mounted therein a cooling unit, preferably secured to the upper wall of the compartment. During operation of the refrigerator, moisture condenses on the cooling unit and forms frost and ice, necessitating frequent periods of non-use of the refrigerator for defrosting purposes. A recommended practice of defrosting is to place pans of warm water in the refrigerator adjacent the cooling unit to cause the frost and ice to melt from the cooling unit. This method of defrosting or de-icing the cooling unit requires a substantial period of time during which no refrigeration takes place. Thereafter the walls and fixtures of the food compartment are thoroughly cleansed and deodorized. After this task is completed the refrigerator must be put in operation for a considerable time before the food compartment is rendered safe for the preservation of foodstuffs.

The present invention has for its object the provision of an apparatus in a refrigerator for facilitating the task of defrosting the cooling unit and washing and deodorizing the food compartment.

A further object of the invention is to provide a new and improved method of defrosting, washing and deodorizing a household refrigerator.

To the accomplishment of these objects, means is provided for subjecting the closed interior of the food compartment to the action of a spray of hot water for a time sufficient to remove the frost and ice from the cooling unit and to thoroughly wash the food compartment; and thereafter, by the same means, to subject the closed interior of the compartment to a spray of cold water for a time sufficient to thoroughly cool the walls and fixtures of the compartment. Suitable provision is made for the escape from the compartment of the water received therein through the spray nozzles.

An advantage of the invention resides in the fact that the time factor is greatly reduced; less than five minutes being required to completely defrost, wash, and deodorize the food compartment, and render it safe for food products.

With these and other objects and advantages

in mind, the invention resides in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawing, and set forth in the appended claims; it being understood that various changes in form, proportion, size and details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:

Figure 1 is a perspective view of a portion of a household refrigerator embodying the invention, showing one form of cooling unit commonly in use, and a form of spray nozzle applicable for use therewith.

Figure 2 is a sectional elevation of the apparatus shown in Figure 1, except that the spray nozzle is shown as being connected with pipes forming a permanent part of the water system of the house.

Figure 3 is a rear view of a refrigerator showing the spray nozzle permanently connected to the water system of the house.

Figure 4 is a front elevation, partly in section, of a refrigerator embodying the invention, and embodying a cooling unit and spray nozzles of modified construction. A portion of the lower end of the refrigerator is broken away to show one form of drain for withdrawing the water from the food compartment.

Figure 5 is a front elevation of the lower portion of a refrigerator illustrating a modified form of apparatus for collecting the water used to defrost and wash the refrigerator.

The drawing illustrates a refrigerator of conventional form having a casing 1 enclosing a food compartment 2, access to which is had by means of the usual door 3. The refrigerator shown in Figures 1 and 2 is equipped with a cooling unit 4 supported from the ceiling 5 of the compartment 2 by means of rods 6. The refrigerator shown in Figure 4 is equipped with a cooling unit 7 fastened tightly against the ceiling of the compartment. It should be understood, however, that the means employed to cool the food compartment, or the location of such means relative to the compartment, constitutes no essential part of this invention and has no bearing thereon; except that the location of the cooling unit may determine the type of nozzles employed for admitting water to the food compartment.

In refrigerators wherein the cooling unit is mounted as illustrated in Figures 1 and 2, a single nozzle may be used to admit water to the food compartment, the nozzle comprising a tube 8

mounted above the cooling unit 4, between the cooling unit and the ceiling 5. The tube is preferably of sufficient length to reach from front to rear of the food compartment and to extend through the rear wall 9, where it may terminate in a ribbed extension 10. Water may be supplied to the tube 8 from the tap 11 by way of a hose 12, the water entering the food compartment 2 from perforations 13 in the form of a spray. Figures 2 and 3 illustrate the tube 8 as being directly connected with hot and cold water pipes 14 which may connect with and be a part of the permanent water system of the house. Flow of water through the pipes 14 is controlled by means of valves 15 which, for convenience, may be operated by means of handles 16 which extend beyond the sides of the refrigerator.

In refrigerators wherein the cooling unit is mounted as illustrated in Figure 4, a nozzle 17 may preferably be mounted in each upper corner of the food compartment on each side of the cooling unit 7. In this construction the perforations 18 may be so placed in the nozzle 17 as to direct sprays of water both toward the cooling unit 7 and downwardly along the walls of the food compartment. The nozzles 17 are preferably of sufficient length to extend from front to rear of the food compartment and extend through the rear wall thereof. Water may be supplied to the nozzle 17 either through a hose connection such as illustrated in Figure 1, or by means of a piping arrangement similar to that illustrated in Figure 3.

As illustrated in Figure 4, the food compartment 2 may be equipped with a drain pipe 19. It is not intended that the drain 19 be connected into the waste system of the house, but rather, that the water be led to any convenient place of disposal by means of any suitable temporary connection. To avoid the loss of cold air from the food compartment during refrigeration, the drain pipe 19 may be closed by a valve 20.

The refrigerator shown in Figure 5 is equipped with a drain pan 21, the walls of the food compartment being provided with a bead 22 overlying the edges of the pan so that water flowing down the walls will be directed into the pan. At such time as the drip pan is not in use for collecting water sprayed into the food compartment, it may be equipped with a suitable cover and used as a vegetable hydrator or crisping pan.

By means of the hereinbefore described apparatus, a new and novel procedure may be followed in defrosting the cooling unit of a household refrigerator and simultaneously washing and deodorizing the food compartment. In practicing the method provided by the invention, foodstuffs are removed from the food compartment and the control is turned to the "off" position. Thereupon the door 3 is closed and the valve controlling the flow of hot water to the spray nozzles is opened. Hot water is sprayed over the cooling unit and onto the walls of the food compartment in sufficient quantity to melt the frost and ice from the cooling unit and to wash the walls and fixtures of the food compartment. The valve 20 being opened, the water drains from the food compartment through the pipe 19. Having accomplished the defrosting of the cooling unit and the cleansing of the food compartment, the valve controlling the flow of hot water is closed and the valve controlling the flow of cold water is opened to permit cold water to be sprayed into the food compartment, thereby dissipating the heat produced by the previous

flow of hot water. The flow of cold water is continued for a time sufficient to thoroughly cool the food compartment, whereupon the valve controlling the flow of cold water is closed and the door 3 may be opened to permit excess moisture adhering to the walls and fixtures to be wiped therefrom. Thereupon, the control is moved to "on" position and the valve 20 is closed.

The invention is productive of a material saving in the time necessary for defrosting and washing a refrigerator. It will be appreciated that the application of hot water to the cooling unit immediately rids the cooling unit of its insulation of frost and ice, and that within a minute of time a considerable quantity of water can be flowed over the walls and fixtures of the food compartment for the washing operation. An insufficient quantity of hot water is used, however, to heat the walls or fixtures, and the application of a spray of cold water for a similarly short period of time is sufficient to completely dissipate the heat produced by use of the hot water spray. The application of the spray for both washing and cooling the refrigerator need not consume more than two minutes of time, and the compartment may be in readiness for further refrigeration within five minutes after the operation is begun.

It will be appreciated that if the refrigerator is equipped with a drain pan 21 instead of the drain pipe 19, the pan must of necessity be emptied after the application of the hot water spray and before the application of the cold water spray, and then again after completion of the application of the cold water spray. It will be seen, therefore, that the provision of a drain pipe greatly facilitates the completion of the task of defrosting and cleansing the refrigerator.

Having now described my invention and in what manner the same may be used, what I claim as new and desire to protect by Letters Patent is:

1. An apparatus for defrosting and washing a refrigerator comprising walls defining a food compartment and having a cooling unit mounted in said compartment, said apparatus comprising a spray nozzle mounted in the upper portion of said food compartment adjacent the cooling unit therein, orifices in said nozzle for directing sprays of water onto said cooling unit and onto the walls and fixtures of the compartment, said nozzle extending through one wall of said compartment, supply means connecting said nozzle with a water system, and valve means for controlling the supply of water to said nozzle.

2. In a refrigerator, walls defining a food compartment, a cooling unit mounted within said compartment, a spray nozzle mounted in said compartment adjacent said cooling unit and extending through one wall of said compartment, orifices in said nozzle for directing sprays of water onto said cooling unit and onto the walls and fixtures of the compartment, supply means for supplying water to said nozzle, and a valve for controlling the flow of water through said means.

3. In a refrigerator, walls defining a food compartment, a cooling unit mounted within said compartment, a spray nozzle mounted in said compartment, orifices in said nozzle for directing sprays of water onto said cooling unit and onto the walls and fixtures of the compartment, supply means for supplying water to said nozzle, a valve for controlling the flow of water through

said means, a pipe for draining said compartment, and a valve for closing said pipe.

4. The method of defrosting, washing and deodorizing a refrigerator, consisting of applying a spray of hot water onto the cooling unit and onto the walls and fixtures of the food compartment of the refrigerator and thereafter ceasing said application of hot water, thereafter applying a spray of cold water onto said cooling unit and onto said walls and fixtures and thereafter ceasing said application of cold water, continuously and simultaneously draining said water from said compartment, and maintaining said compartment closed during both said applications of water therewithin.

5. The method of defrosting, washing and deodorizing a refrigerator, consisting of applying a jet of hot water onto the cooling unit and onto the walls and fixtures of the food compartment of the refrigerator and thereafter shutting off the flow of hot water to said jet, thereafter applying a jet of cold water onto said cooling unit and onto the said walls and fixtures and thereafter shutting off the flow of cold water to said jet, closing said food compartment prior to said first application and maintaining said closed condition during the application of both said jets of water.

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