Nov. 8, 1949 R. A. ROTT 2,487,674

CABINET DEFROSTING DEVICE

Filed March 6, 1947 2 Sheets-Sheet 1

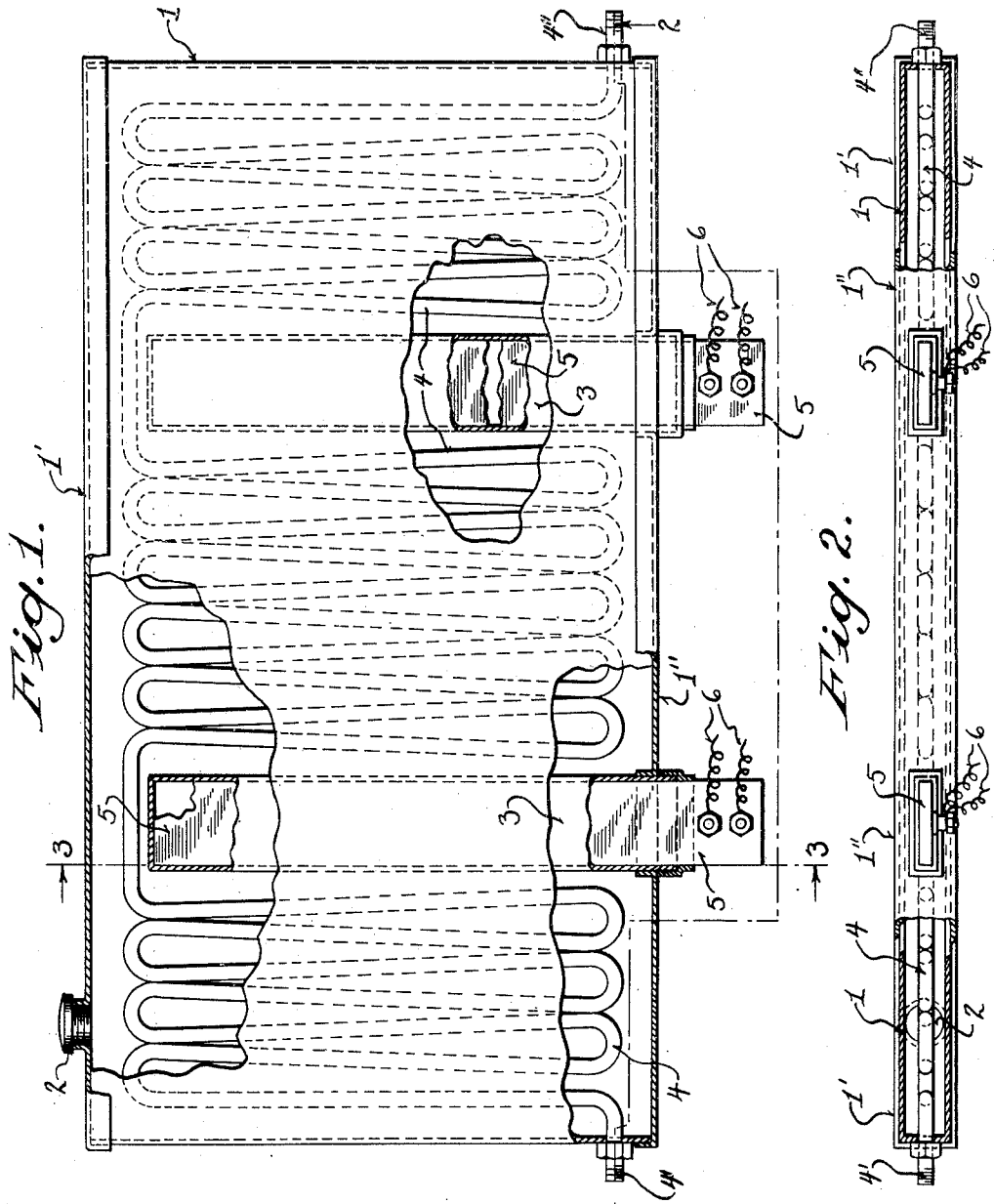


Fig. 1.

Fig. 2.

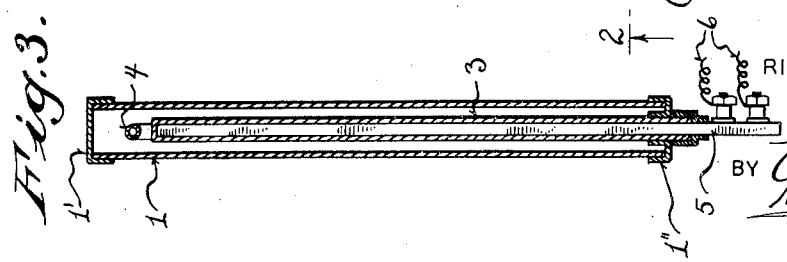


Fig. 3.

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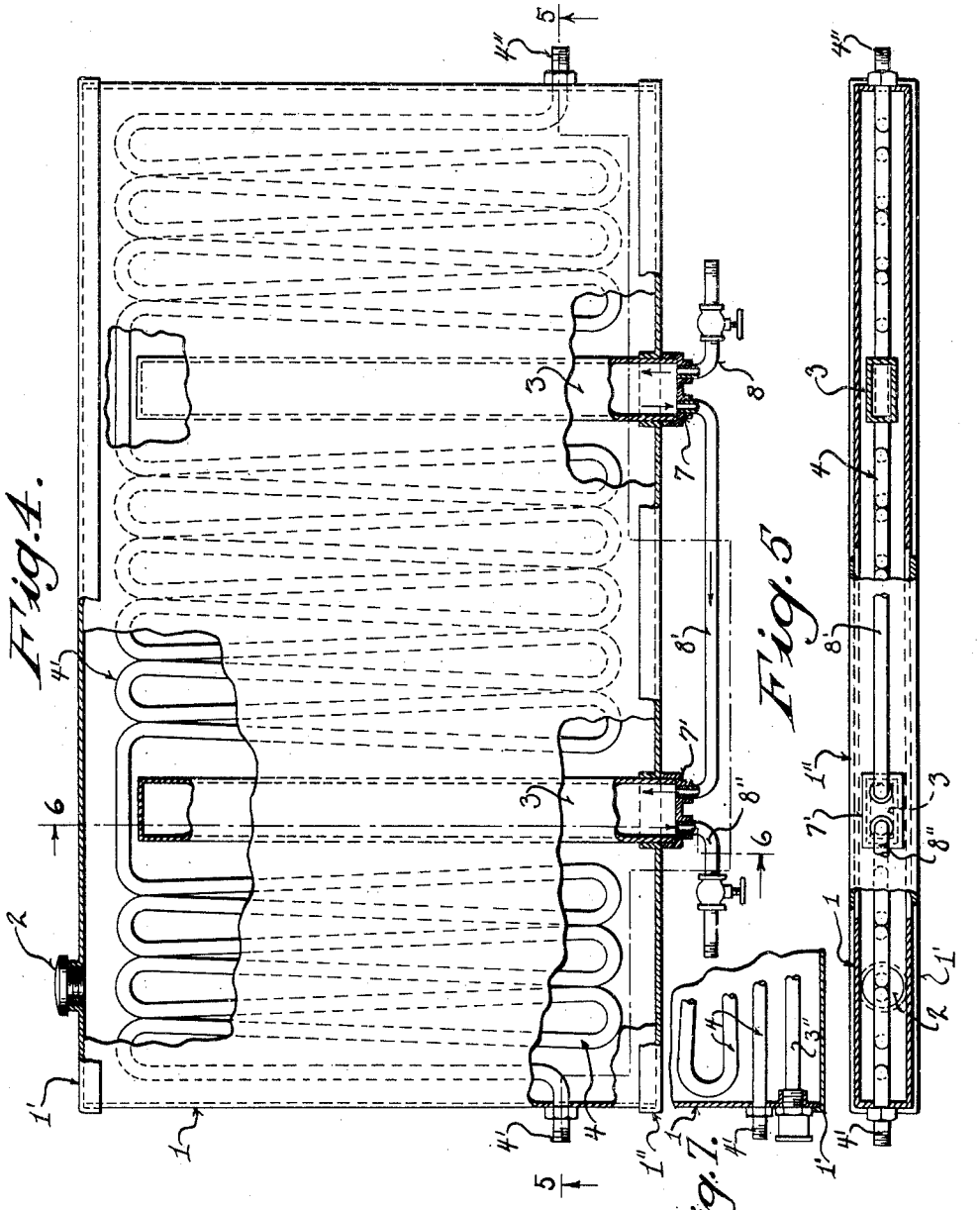
BY Thomas Wright

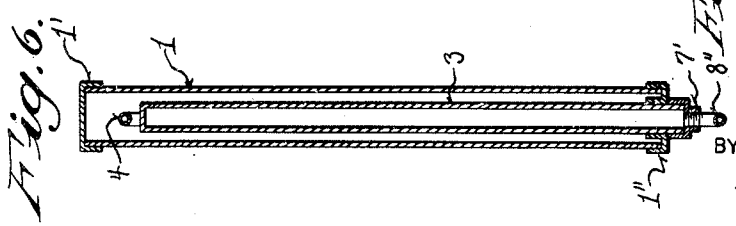
ATTORNEYS

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CABINET DEFROSTING DEVICE

Filed March 6, 1947 2 Sheets-Sheet 2





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2,487,674

CABINET DEFROSTING DEVICE

Richard A. Rott, Madison, Wis.

Application March 6, 1947, Serial No. 732,675

1 Claim. (Cl. 62—115)

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My invention refers to defrosting units to be installed in any refrigerating cabinet or portable equipment, such as trucks utilized for transporting and delivering food products, such as Ice cream and the like. Practice has demonstrated where delivery trucks have refrigerator equipment in use, defrosting is a problem.

This truck equipment, after a certain period, develops a coating of frost and in order to defrost the same, the trucks must be put out of commission and housed, in many cases, for a day or two before they are sufficiently defrosted to be again put into commercial use. It follows that under such conditions, trucking becomes extremely expensive.

A refrigerating unit equipped with a defrosting element embodying the features of my invention, will overcome the above noted objectionable defrosting features and a truck having one or more flat containers, embodying my defrosting unit, may be put in commission in approximately an hour or so whereby great saving in a delivery system is accomplished.

The primary object of my invention is to provide a flat casing containing a solution having a predetermined freezing point. Submerged within said solution is a tubular evaporator, the same being of standard construction. The solution in the container is thus frozen solid for refrigeration.

However, after a certain period, a thick coating of frost will accumulate on the outer surface of the container or jacket and this coating will function as an insulator which will reduce the refrigerating efficiency of the cooling surface approximately 50% per one-half inch accumulation. Defrosting must then be affected and for this purpose I provide one or more tubes extending into the casing or jacket and the same are provided with heating elements which serve to supply heat within the body of the solution whereby the temperature of the same is raised above the freezing point of water which will, in a short time, loosen the frost accumulated upon the surface of the cooling units and restore heat absorption to its full capacity whereby, heat application then ceases. Stoppage thereof may be actuated by a thermostat installed on the cooling unit which will stop the current when the solution reaches the point causing the frost accumulation to melt. Damaging, unnecessary heat will thus be kept out of the refrigerated area. Hence, my defrosting equipment, being much simpler than standards now in use, will materially lighten the motive equipment.

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Briefly, my invention embodies one or more tubes adapted to receive an electric strip heater.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts, substantially as hereinafter described, and more particularly defined by the appended claim, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claim.

In the accompanying drawings is illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof.

In the drawings:

Figure 1 represents a metallic casing or jacket embodying the features of my invention, with parts broken away and in section to more clearly illustrate structural features.

Figure 2 is a bottom plan view of the same partly in section as indicated by line 2—2 of Figure 1.

Figure 3 is a cross section of the same, the section being indicated by line 3—3 of Figure 1.

Figure 4 is a face view of a jacket or casing illustrating another form of my invention, with parts broken away and in section to more clearly illustrate structural features.

Figure 5 is a bottom plan view, of the same with parts broken away and in section.

Figure 6 is a cross sectional view of the jacket, the section being indicated by line 6—6 of Figure 4.

Figure 7 is a fragmentary sectional elevation of another form of an immersion heater.

Referring to the drawings by characters, 1 indicates a flat metallic jacket or casing of any desired welded construction having a top wall 1' and a bottom wall 1''. The top wall is provided with a cap closed filling opening 2 and the bottom wall has extending therethrough the mouths of a pair of tubes or sleeves 3—3, which sleeves project into the casing a predetermined space from the top wall thereof. The casing has also fitted therein the usual tubular evaporator coiled pipe 4 formed in a series of coils and having an intake supply nozzle 4' projecting out of the end edge of the casing and a discharge nozzle 4'' at the opposite end of the said casing, it being understood that the coils are spaced about the enclosed rectangular sleeves 3.

The coiled pipe 4 carries any suitable evaporator fluid such as ammonia or "freon." The

jacket is filled with any suitable fluid such, for example, as a brine or "eutectic" solution.

Fitted into the sleeves 3 are any suitable electrically controlled strip heaters 5, having their ends extending outwardly and suitably connected by wires 6—6 to a source of electric energy.

From the foregoing description it is obvious when the outer face of the jacket becomes heavily coated with frost, to defrost or melt the same, the electric current is applied to the strip heaters whereby the heat is diffused through the frozen liquid which will raise the temperature thereof to quickly melt the frost from the walls of the jacket, whereby the unit will again function properly for refrigeration.

Referring to Figures 4–6 inclusive, the general construction of the modified unit is similar to that previously described with reference to Figures 1–3 inclusive of the drawings, with the exception that the mouths of the rectangular sleeves have suitably secured thereto caps 7—7', one of which caps communicates with a valve controlled heating pipe 8 and the pair of caps 7—7' are connected by a pipe 8'. The cap 7' is also in communication with a valve controlled discharge pipe 8''.

From the foregoing description, when it is desired to defrost the casing unit, steam or hot water is admitted to the pipe units whereby heat is introduced directly into both rectangular tubes, as indicated by the arrows. Excessive rise of the temperature of the refrigerated area during defrosting is not desired. It is therefore the basic principle of this construction to guide or conduct heat within the cooling unit only, raising the solutions and the outer casing to a temperature above the freezing point of water. This will melt the frost accumulation, restoring a 100% absorption surface thereof.

Referring to Figure 7 of the drawings, 3'' illustrates an immersion electric heater wherein the jacket comprises an integral part of the heater, the same being shown in threaded union with an aperture in the casing and at the bottom corner thereof whereby the full efficiency of the heat is obtained due to the fact that said heat will rise in the fluid from the bottom.

While I have specifically described the details of construction of the units minutely, it is understood that said details may be varied within the scope of the claim.

I claim:

In a closed flat casing having top and bottom walls, adapted to contain a freezing solution; an open mouthed sleeve seated in the casing bottom wall, the same terminating a distance from the top wall of said casing to form a fluid passage therebetween, a chemical fluid evaporating pipe in coiled sections upon the opposite side of the sleeve having a looped pipe connection between said coiled sections, the same extending through the passage above the sleeve, and a manually controlled heating element extending into said sleeve through the mouth thereof, whereby the casing freezing fluid is raised in temperature for defrosting purposes.

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