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COIL FOR ARTIFICIAL REFRIGERATING SYSTEMS

Filed June 25, 1925

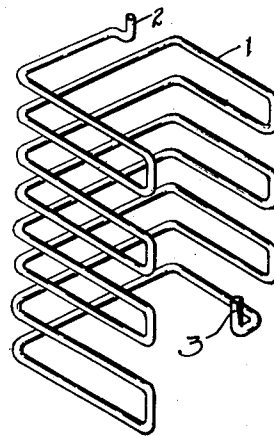
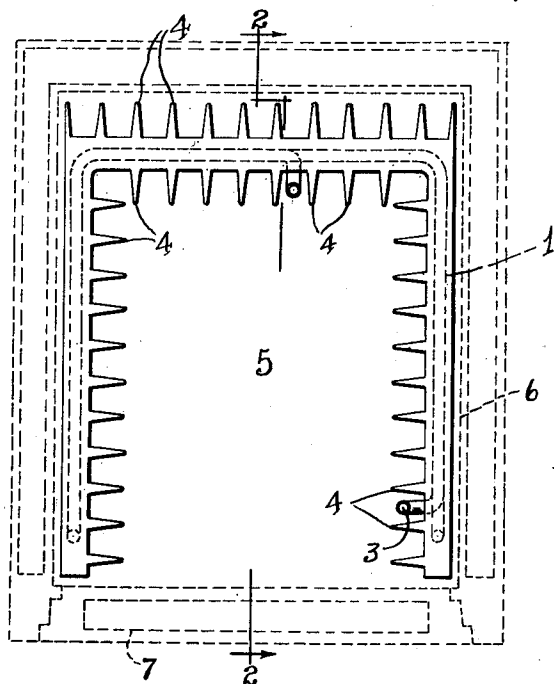


Fig. 3.

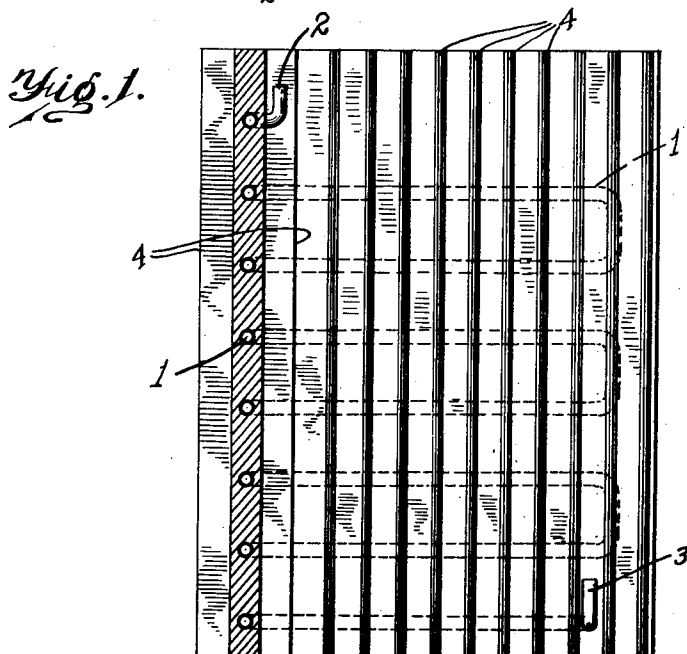


Fig. 2.

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COIL FOR ARTIFICIAL-REFRIGERATING SYSTEMS.

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This invention relates to coils for artificial refrigerating systems and the object of the invention is to provide a coil in which the cooling surface is greatly increased without adding to the number of turns of the coil thus resulting in increased efficiency for each turn of the coil. A further object of the invention is to provide a coil embedded in a block of aluminum which when cooled tends to hold the cold and retard the increase of temperature within the refrigerator. Another object of the invention is to provide a coil embedded in a block of aluminum provided with a series of ribs or fins extending from the body of the aluminum to increase the efficiency of the coil in radiating or absorbing heat. A further object of the invention is to provide a three sided cooling coil which is embedded in aluminum and may be placed in a refrigerator with the open side of the coil toward the door thus allowing the use of the space within the coil for storing food and saving considerable space in the refrigerator. Another object of the invention is to provide in a refrigerating system a copper cooling coil which is embedded in aluminum which being a better conductor of heat than copper absorbs the heat from the refrigerant and transmits the same to the refrigerant in the copper coil thus increasing the efficiency of the coil in the cooling of the interior of the refrigerator. These objects and the several novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction by which these objects are attained is shown in the accompanying drawings in which—

Fig. 1 is a plan view of a coil embodying my invention positioned within a refrigerator.

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

Fig. 3 is a perspective view of the copper coil before being embedded in the aluminum.

The coil 1 is made up as shown in Fig. 3 so that it is open on one side and is provided with an inlet end 2 and an outlet end 3 shown in Figs. 1, 2 and 3. This coil is placed in a mold which is then filled with molten aluminum so that the coil is embedded in the aluminum and the mold is shaped to form ribs or fins 4 on the aluminum. The inlet end of the coil 2 is turned up so that it extends upwardly between two of the fins 4 and does not extend into the chamber 5 with-

in the coil. The outlet end 3 is also turned up in the same manner and extends between two of the fins 4 so that it is also out of the way and does not extend into the chamber 5. As will be seen in the drawing the coil is formed so that one side is left open. The coil in this shape is particularly designed to be placed within the ice compartment 6 of a refrigerator so that by opening the door 7 of the refrigerator access may be had to the chamber 5 formed by the three sides of the coil. With this arrangement the coil does not take up an entire compartment of the refrigerator and any articles which must be kept very cold may be placed in the chamber 5. This peculiar form of refrigerating coil however is used only in the small refrigerating systems such as household refrigerators or the like. Where the coil is used in larger refrigerating systems it may be made of the usual cylindrical shape and the aluminum cast thereabout and provided with the fins 4. When the coil is used in a small household refrigerating system the system is usually arranged to operate in cycles. As the interior of the refrigerator increases in temperature to a certain point the refrigerant is circulated through the low pressure coil and decreases the temperature of the low pressure coil and the aluminum. When the temperature within the refrigerator decreases to a certain point the circulation of the refrigerant is automatically stopped until the temperature again increases to a certain point. During this cycle as the temperature increases the aluminum defrosts due to its ability to absorb and conduct the heat of the atmosphere and for this reason the frost does not build up on the aluminum and tend to form an insulating wall which is the case in most artificial refrigerating systems in which the frost continues to build up on the cooling coil to such an extent that the coldness of the coil is not communicated to the atmosphere of the refrigerator. In the household type of artificial refrigerator the aluminum defrosts during each cycle and correspondingly increases the efficiency of the coil in cooling the refrigerator. When an ordinary copper coil is used there is very little volume of metal and due to this reason the coils are easily affected by changing temperatures in the refrigerator but by embedding the coils in aluminum the body of metal is increased to such extent that it will maintain the in-

terior of the box at a low temperature for a much longer period than the copper coils when used alone and the body of metal thus acts to some extent like a cake of ice placed
5 in the box.

While I have described the coil as used on the low pressure or cooling coils of an artificial refrigerating system, the same principle may be used on the high pressure or
10 warm coils of the system as the aluminum has the characteristic of efficiently radiating and absorbing heat which is assisted by providing the fins on the aluminum. When used
15 on the high pressure coil the shape of the coil is immaterial and also when used on the cooling coil of an artificial refrigerating system of larger capacity than the household type the common cylindrical coil may be used and
20 embedded in aluminum with the fins extending either radially or circumferentially, the three sided coil being particularly designed to line the interior of the ice chamber of the usual household refrigerator and allow easy access thereto through the refrigerator door.
25 From the foregoing description it becomes evident that the device is very simple and efficient in operation; will not easily get out of order, may be easily and cheaply made and will conduct or radiate heat with an
30 increased efficiency as compared with the usual coil and provides a device which accomplishes the objects described.

Having thus fully described my invention, its utility and mode of operation, what I
35 claim and desire to secure by Letters Patent of the United States is—

1. A coil for an artificial refrigerating system comprising a copper tube bent to the desired shape, and an aluminum body cast

about the copper tubing and having a series
40 of fins projecting from the surfaces thereof.

2. A coil for an artificial refrigerating system comprising a copper tube bent to form a three sided coil, a three sided aluminum body
45 cast about the copper tubing and a series of fins projecting from the surfaces of the aluminum.

3. In an artificial refrigerating system, a cooling chamber, a three sided aluminum wall lining the cooling chamber and having
50 ribbed surfaces, and a cooling coil embedded in the aluminum wall.

4. In an artificial refrigerating system, a cooling chamber provided with a door opening
55 thereto; an aluminum lining for the chamber having an open side toward the door, a series of fins extending from the surface of the aluminum lining and a cooling coil embedded in the aluminum lining.

5. In artificial refrigerating apparatus
60 having a circulating system through which the refrigerant may be intermittently circulated, the combination therewith of a heat insulated compartment, a coil of the apparatus
65 being located in the said compartment, a metal body within which the coil is embedded and the volume of which is in excess of the volume of metal forming the coil, said metal
70 body providing a means by which the heat is extracted from the compartment and due to its avidity for heat, maintaining the temperature of the compartment practically constant between intervals of circulation of the
75 refrigerant.

In testimony whereof, I sign this specification.

HOWARD L. FOSTER.