March 25, 1930. H. B. HULL 1,751,697

REFRIGERATING APPARATUS

Filed Nov. 6, 1924

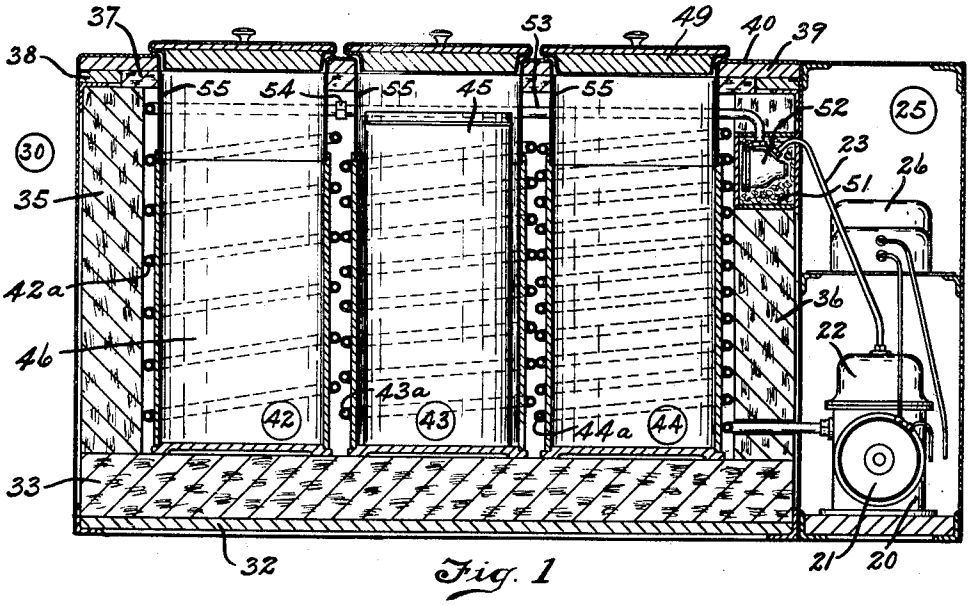

Fig. 1

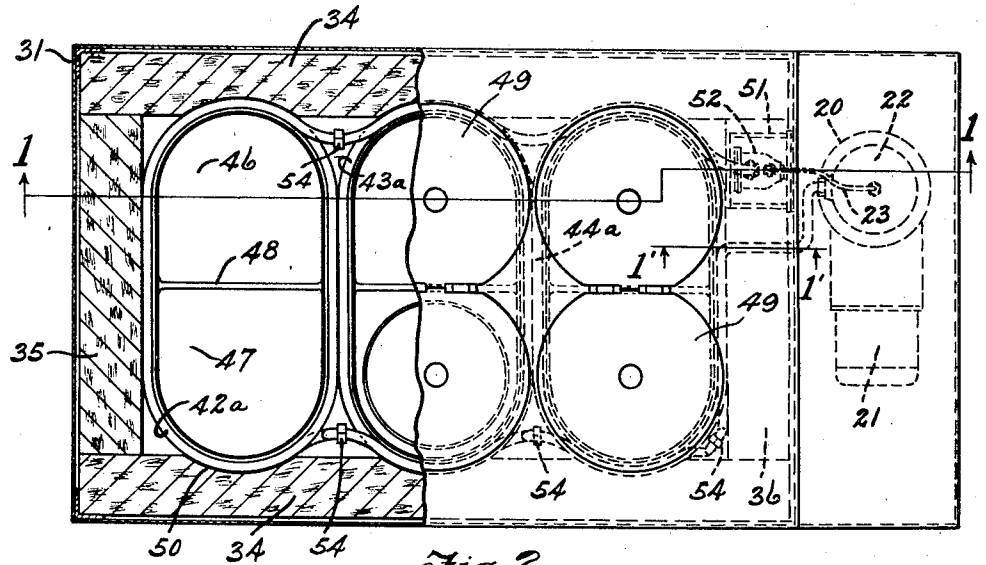

Fig. 2

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UNITED STATES PATENT OFFICE

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REFRIGERATING APPARATUS

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The present invention relates to refrigerating apparatus and particularly to the cooling of a plurality of compartments, for example food containers such as containers for ice cream or the like.

One of the objects of the invention is to reduce the cost and facilitate the manufacture of a refrigerating apparatus.

Another object of the invention is to provide a refrigerating apparatus in which a plurality of compartments are cooled to substantially the same temperature by individual refrigerating elements one for each container, the elements being connected in series relation.

Other and further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of one form of the invention is clearly shown.

In the drawings:

Fig. 1 is a sectional view taken on line 1—1 and 1′—1′ of Fig. 2 showing the improved refrigerating apparatus; and

Fig. 2 is a plan view partly in elevation and partly in section, of the device shown in Fig. 1.

Referring to the drawings, a compressor is shown at 20 driven by a motor 21 and which is adapted to force refrigerant into a condenser 22 and thence through a pipe 23. This mechanism is supported within a cabinet 25 which also supports a motor controlling switch 26, which is controlled in any suitable manner such as by the temperature of the device being cooled, or by the pressure of the refrigerant.

A refrigerator cabinet 30, which is adapted to be cooled by the mechanism within the cabinet 25, comprises an angle iron frame 31 which supports at the bottom a base 32, which carries an insulating bottom wall 33. The side walls 34 and the end walls 35 and 36 are also constructed of insulating material. The top of the angle-iron frame 31 carries a wooden frame 38 which is apertured to receive an insulating top wall 37. The top wall 37 rests upon the end walls 35 and 36 and side walls 34 and may be secured to the frame 38. A removable wood top 39 is carried by the frame 38 and is covered with a metal cover 40. The wall 39 and the insulating top 37 are provided with a plurality of aligned openings for food receiving compartments or containers 42, 43 and 44, which are herein shown as adapted to receive ice cream cans, one of which is shown at 45. Each compartment or container is divided into a plurality of smaller compartments 46 and 47 by a wall 48. Each small compartment is provided with a lid 49, pairs of which are hinged together.

Separate refrigerating elements in the form of pipe coils 42^a, 43^a and 44^a, which preferably comprise an evaporator, surround the containers 42, 43 and 44, respectively. The walls 34 are cut away at 50 to receive the coils. Each container and its associated refrigerating coil forms a separate unit. In constructing the unit, the coil is placed around the container and the container and coil unit are immersed in a galvanizing bath or the liquid is poured over the coils and containers. In this manner the coil is secured to the container, the zinc bonding the coil and the container and providing a ready conducting material between said coil and container. The containers 42, 43 and 44 terminate a substantial distance below the top of the cabinet and each container carries an insulating sleeve 55. These sleeves limit the conduction of heat from the top of the cabinet to the containers and likewise prevent condensation on the top of the cabinet. The end wall 36 of the cabinet 30 is provided with an opening 51 in which a pressure-reducing valve 52 is carried. The condensed refrigerant from pipe 23 is conducted to the valve 52 where it is expanded and passes by pipe 53 to the coils 42^a, 43^a and 44^a.

These coils are connected in series relation by couplings 54. In order to compensate for the temperature rise in the coils between the valve 52 and the compressor 20, so as to cool all of the food compartments at substantially the same degree of temperature, the number of convolutions of the coils increases progressively. In this manner, although the temperature of the coil 44^a is slightly higher than the temperature in the coil 43^a and like-

wise the temperature in the coil 43^a is slightly higher than the refrigerant in the coil 42^a, said coils 43^a and 44^a will maintain the temperature of the compartments 43 and 44 substantially the same as the temperature of the compartment 42.

By removing the top 39 and likewise insulating wall 37, then removing the sleeves 55, and uncoupling the coils, each container and its coil can be removed, as a unit, separately.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. Refrigerating apparatus comprising in combination a plurality of compartments to be cooled, and means for refrigerating all of the compartments to substantially the same temperature including an individual refrigerating element associated with each compartment, said elements being connected in series to form a single conduit, and means for supplying refrigerant to one end of the conduit, the refrigerating surface of the elements being increased along the series in the direction of flow of refrigerant from said supply means.

2. Refrigerating apparatus comprising in combination a plurality of compartments to be cooled, and means for refrigerating all of the compartments to substantially the same temperature including a single conduit formed into a plurality of coils, one coil being associated with each compartment, and means for supplying refrigerant to one end of the conduit, the number of convolutions of the coils being increased along the conduit in the direction of flow of refrigerant from said supply means.

In testimony whereof I hereto affix my signature.

HARRY B. HULL.