Sept. 10, 1940. C. F. BOESTER, JR 2,214,009

COOLING APPARATUS FOR COOLING BEVERAGES AND THE LIKE

Filed Aug. 26, 1937

Fig. 1.

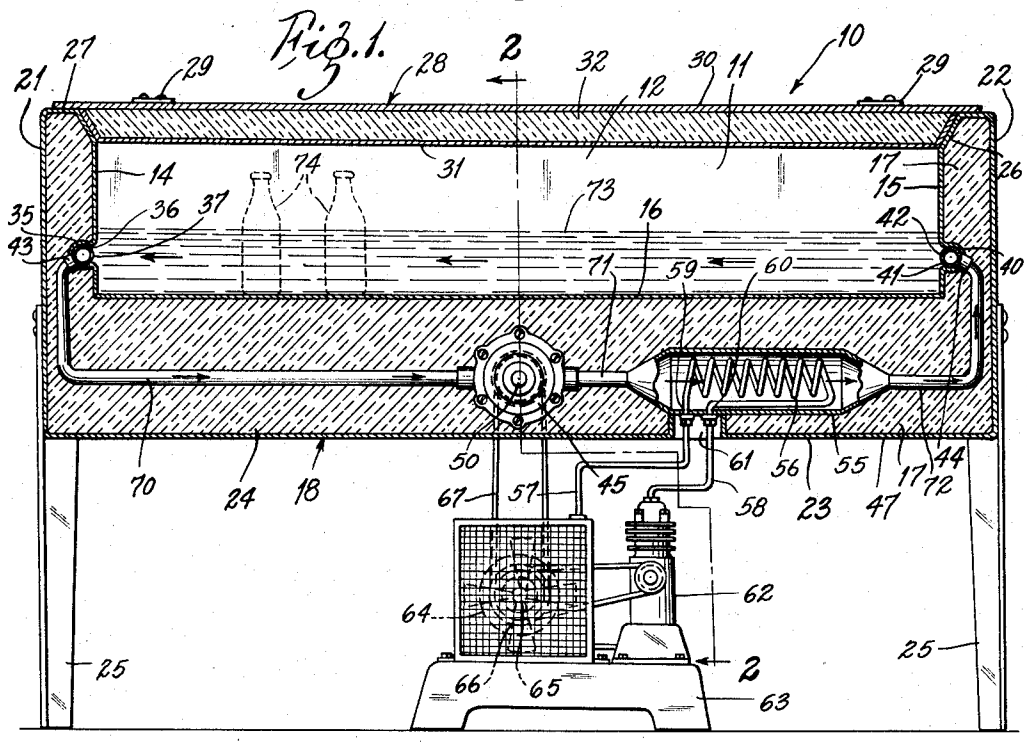
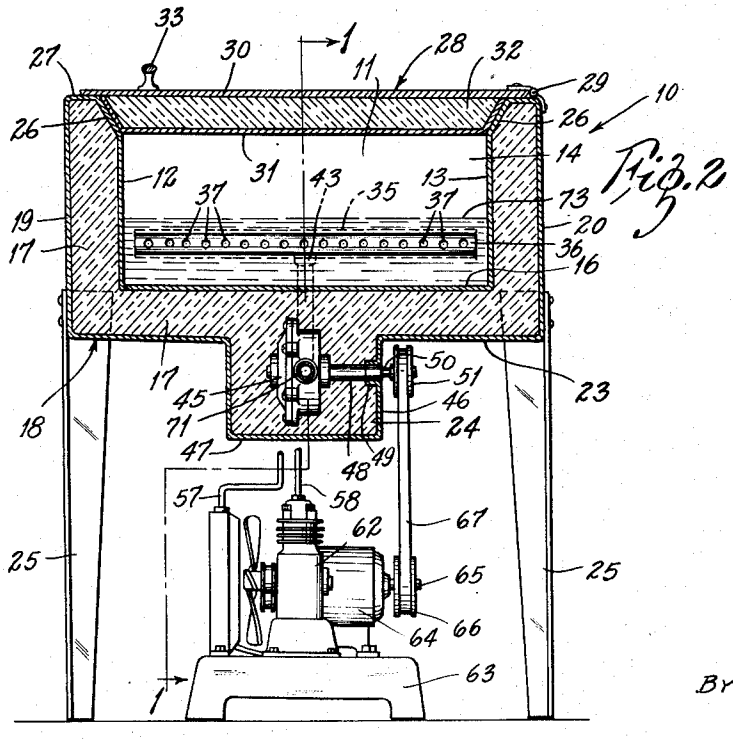


Fig. 2.



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COOLING APPARATUS FOR COOLING BEVERAGES AND THE LIKE

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3 Claims. (Cl. 62—101)

The present invention relates generally to cooling apparatuses and cooling methods, and more particularly to an apparatus for and a method of cooling bottled beverages, and the like.

An object of the present invention is to provide a method of cooling bottled beverages, and the like, which is adapted to shorten the time normally required to cool bottled beverages, and the like.

Another object is to provide a method of cooling bottled beverages, and the like, which includes subjecting the same to a moving stream of cool liquid.

Another object is to provide a method of cooling bottled beverages, and the like, which includes continuously circulating a given amount of liquid past bottles and through cooling coils in continuous succession.

Another object is to provide an apparatus for cooling bottled beverages, and the like, which is adapted to materially shorten the time normally required to cool such bottled beverages, and the like.

Another object is to provide an apparatus for cooling bottled beverages, and the like, which includes a cabinet and means for circulating and continuously cooling a liquid which is passed in a continuous stream over bottled beverages, and the like.

Another object is to provide a cabinet cooler which is adapted to shorten the normal cooling time for bottled beverages, and the like, to thereby reduce the required bottle capacity.

Another object is to provide a cabinet cooler which is adapted to cool bottled beverages in a fraction of the time normally required by similar units, which provides a full unobstructed cabinet for the bottled beverages, and which reduces correspondingly the amount of space required for and the number of bottles required in storage for a given sale factor.

Another object is to provide a cabinet cooler which is sturdy in construction and which does not readily fall into disrepair.

Other objects and advantages will be apparent from the following description, taken in conjunction with the accompanying drawing, in which:

Fig. 1 is a central longitudinal section on the line 1—1 of Fig. 2 of a cabinet constructed in accordance with the concepts of the present invention; and,

Fig. 2 is a transverse section on the line 2—2 of Fig. 1.

Referring to the drawing more particularly by reference numerals, 10 indicates generally a cooling cabinet preferably of sheet metal having a cooling chamber 11 defined by side walls 12 and 13, end walls 14 and 15, and a bottom 16. Surrounding the walls and bottom of the chamber 11 is insulation 17 which is maintained thereagainst by the exterior frame 18 which includes side walls 19 and 20, end walls 21 and 22, and a bottom 23. The bottom 23 includes a longitudinally extending centrally disposed dropped portion 24, the purpose of which will be presently described. The dropped portion contains insulation 17 also. Legs 25 are attached to the lower four corners of the exterior frame 18 and serve to support the cabinet 10.

The side walls 12 and 13 and the end walls 14 and 15 have a flared portion 26 adjacent the top edges thereof which are connected to inwardly turned flanges 27 of the side walls 19 and 20 and the end walls 21 and 22 to form a peripheral seat for a cover 28, which is maintained in operative position by hinges 29. The top 28 includes spaced plates 30 and 31 in which is insulation 32. A handle 33 is provided for lifting the cover 28. It is, of course, obvious that the cabinet 10 may be of any suitable configuration and construction.

The end wall 14 is formed to provide an elongated depression 35 which extends substantially across the chamber 11. Within the recess 35 is a pipe or hollow member 36 having spaced apertures 37 therein. Similarly, the end wall 15 has a recess 40 in which there is a pipe or hollow member 41 having spaced apertures 42. The pipes 36 and 41 are provided with annular apertured bosses 43 and 44, respectively. Another preferred construction comprises apertures in the straight walls 14 and 15 leading to similarly apertured pipes fixed to the back of the walls 14 and 15.

A rotary pump 45 is packed in the insulation 17 of the dropped portion 24 and is supported by one side wall 46 thereof. A sleeve 48 rigidly fixed to the pump 45 is mounted in a flanged opening 49 formed integral with the wall 46, or comprising a sleeve fixed thereto for the purpose of supporting the pump 45. A rotatable shaft 50 extends through the sleeve 48 and is operatively connected at one end to the vanes of the pump and at the other to a grooved pulley 51.

Likewise packed within the insulation 17 of the dropped portion 24 is an enlarged elongated shell or housing 55 of copper, or the like, of a configuration shown in Fig. 1. Within the housing 55 is a cooling coil 56, the leads 57 and 58 of which pass through apertures 59 and 60 in the

housing 55 and through an opening 61 in bottom 47 of the dropped portion 24.

The leads 57 and 58 pass to a compressor 62 located beneath the cabinet 10 and supported upon a base 63. Likewise supported upon the base 63 is a motor 64 which drives the compressor. To the drive shaft 65 of the motor 64 is fixed a grooved pulley 66 about which and the pulley 51 is disposed a flexible belt 67. The motor 64 therethrough drives the pump 45.

A pipe 70 embedded in the insulation 17 connects the pipe 36 with the pump 45. A short pipe section 71 connects the pump 45 with one end of the housing 55. A pipe 72 connects the other end of the housing 55 with the pipe 41. Water 73, or other suitable fluid, fills the pipes 70, 71, and 72, the pump 45, the housing 55, and the chamber 11 to a suitable operating depth. Bottled beverages 74, or the like, are disposed within the chamber 11 and are at least partially covered by the fluid 73. A suitable thermostatic or other control (not shown) is provided to shut off the compressor 62 and the pump 45 when the water 73 reaches a predetermined low temperature. Individual controls may be provided.

Operation

The cooling operation of the instant cooling cabinet is relatively simple. Water, or other suitable fluid, is supplied to the chamber 11 until the elements embedded within the insulation 17 are filled to capacity and it stands within the chamber to a predetermined suitable depth. Bottled beverages are disposed in the chamber 11 in any suitable manner, but are spaced sufficiently to allow the water to flow around individual bottles. The motor 64 is started, which simultaneously starts the pump 45 and the compressor 62. Starting at the pump 45, the water is forced through the pipe 71 to and about the coil 56 disposed within the housing 55, through the pipe 72 into the pipe 41, through the apertures 42 of the pipe 41 into the chamber 11, longitudinally of the chamber 11, through the apertures 37 of the pipe 36 into the pipe 36, and through the pipe 70 back to the pump 45. This circulation or flow of the water 73 is continuous, the British thermal units of the articles being cooled being rapidly carried by the water 73 to the coil 56 to which the British thermal units are transferred. It has been found that velocities of from one foot in five seconds to four feet per second within the chamber 11 are suitable, all other factors remaining equal, for rapidly cooling bottled beverages within the chamber 11.

Inasmuch as the water is supplied to and is taken from the chamber 11 by the pipes 41 and 36, respectively, the current within the chamber 11 extends substantially the full width thereof, a fact which insures moving the water about all of the bottles 74 within the chamber 11. Of course, the size of the holes 37 and 42, the sizes of the pipes 70, 71, and 72, the capacity and speed of the pump 45, the capacity of the compressor 62, and the exposed surface of the coil 56 depend upon factors of installation and factors of use. The specific specifications can be readily ascertained for a size of cabinet and a rate of cooling.

It is, of course, fully within the scope of the present invention, and such is contemplated, to feed the water from selectively disposed holes in the bottom 16 and to withdraw the water at the sides or ends or both. The specific manner of passing the water through the chamber 11 may be varied considerably.

It is apparent that there has been provided an apparatus and method of cooling bottled beverages, and the like, which is adapted to fulfill all of the objects and advantages sought therefor. It is to be understood that the foregoing description and accompanying drawing have been given by way of illustration and example and not for purposes of limitation, the invention being limited only by the claims to follow.

What is claimed is:

1. Cooling apparatus comprising a cabinet having a chamber for containing bottled beverages, or the like, a cooling coil located within a housing embedded in insulation disposed beneath the cabinet, a pump embedded in said insulation beneath the cabinet, means for driving the pump, means for maintaining the cooling coil at a predetermined low temperature, connecting means between the chamber, the pump, and the housing, and liquid within the chamber, the connecting means, the pump, and the housing, said pump being adapted to force said liquid in a continuous rapidly moving stream past the coils to lower the temperature thereof and passed the bottles and the beverage therein.

2. Cooling apparatus comprising a cabinet having an elongated chamber having opposed ends, a hollow pipe embedded in each end adjacent the bottom of the chamber and extending substantially the full width thereof, spaced apertures in each pipe; a pump and housed cooling coils embedded in insulation disposed beneath the chamber; means connecting said pipes, the pump, and the coil housing; fluid within the chamber, the connecting means, the pump, and the housing, and means for driving the pump to force the fluid in a continuous rapidly moving stream past the cooling coils and through the chamber.

3. A cooling apparatus for bottled beverages, or the like, comprising a cabinet having a closed insulated chamber adapted to receive bottled beverages, or the like, a cooling coil disposed beneath the chamber embedded in the insulation, means for maintaining the cooling coil at a predetermined temperature, a pump within the insulation beneath the chamber, connecting means between the chamber, the coil, and the pump establishing therewith a continuous passage, liquid filling the coils, the pump and the connecting means and within the chamber, and means to drive the pump to force the liquid through the continuous passage.

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