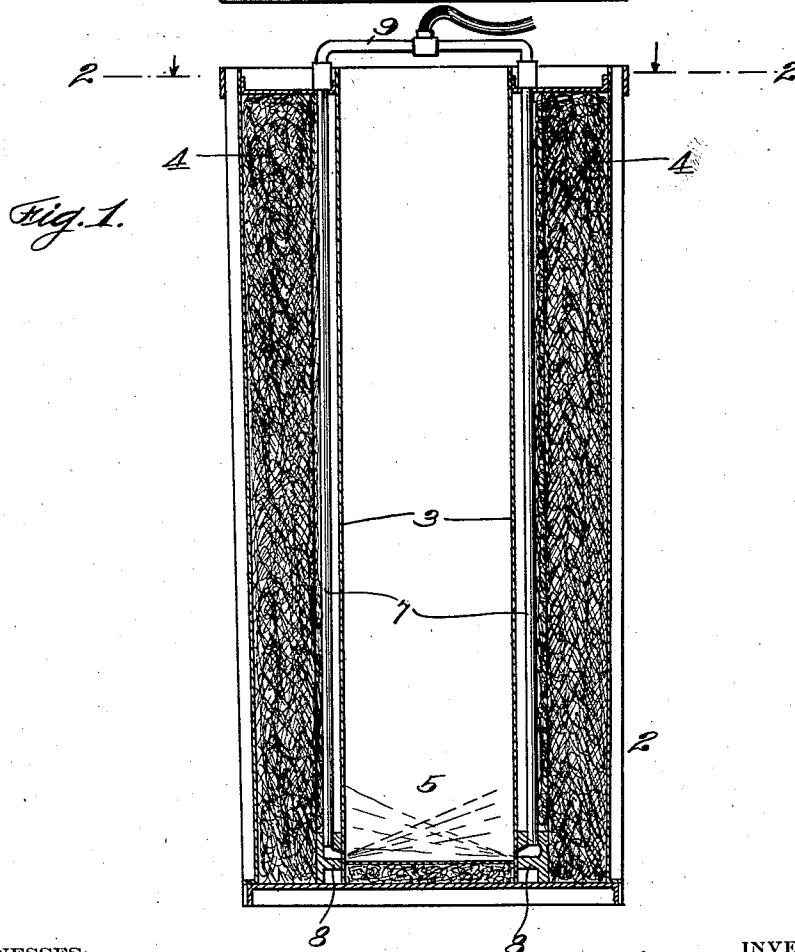
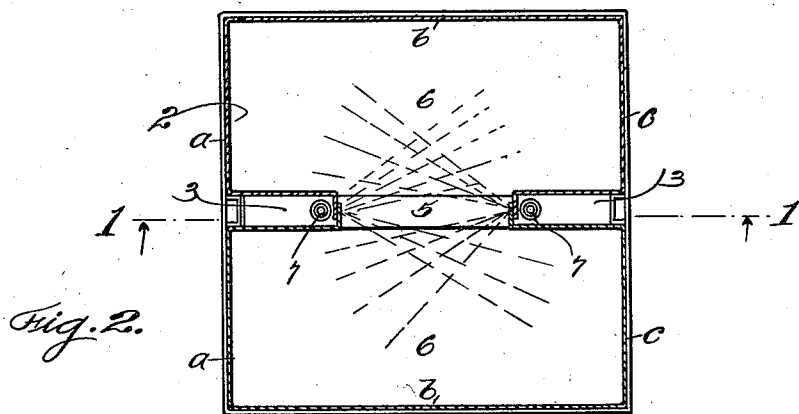


F. H. LEWIS.
ICE MAKING APPARATUS.
APPLICATION FILED JAN. 19, 1915.

1,174,591.

Patented Mar. 7, 1916.



WITNESSES:

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ICE-MAKING APPARATUS.

1,174,591.

Specification of Letters Patent.

Patented Mar. 7, 1916.

Application filed January 19, 1915. Serial No. 3,034.

To all whom it may concern:

Be it known that I, FRANK H. LEWIS, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented new and useful Improvements in Ice-Making Apparatus, of which the following is a specification.

The invention relates to a means of making a plurality of cakes of artificial ice, at one and the same time, in a special can, so arranged that cakes of pure artificial ice will be formed, entirely free from any air bubbles or white or milky appearance and entirely eliminating the formation of a core in the cakes of ice while freezing; and particularly relates to a special ice can so arranged that a combination of two or more cans are handled as one unit. This unit is exposed to the effect of a refrigerant, such as brine in an ice making tank, said refrigerant acting on three sides only of each compartment of the can.

The principal defects existing in various methods of manufacturing ice, now in use are as follows: The formation of a core in the center of every block of ice, said core being of a white or milky appearance, and is detrimental to the manufacturing of clear or crystal ice, the sale of ice depending to a great extent on the absence of any white appearance in the cake. While the ice is being frozen, any impurities or minerals which may be contained in the water will be deposited in the core at the center of the block of ice. In order to prevent this as far as possible, the block of ice is frozen until a small section in the center is left, from which the unfrozen or impure water is withdrawn by suitable apparatus, and the space is again filled with fresh water. In some systems it is necessary to withdraw the pipe used for aerating or agitating the water during the process of freezing in order that said pipe shall not be frozen in the heart of the block of ice. This necessitates the careful watching of all cans during the freezing process.

An objectionable feature in certain systems using fixed or stationary cans, is the necessity of removing the cold brine from around the cans and circulating a warm brine in order to loosen the blocks of ice. Owing to the fact that hooks are frozen in the sides of the block of ice for lifting same,

there is always a liability of these hooks pulling out, due to the ice becoming brittle, and thus allowing the block to drop back into the can, and damaging same.

In certain systems the pipe which carries air for agitating the water while freezing, is placed outside the can, or runs down to the bottom in an inside corner, thus placing it in close contact with the brine surrounding the can. In case the air supply is cut off during process of freezing these pipes will immediately fill with water and freeze solid.

In systems where the aerating pipes are introduced at the top of the can, it is a difficult matter to keep up a continuous agitation during the time the can is being filled with water, owing to the fact that the pipe interferes with the can filler.

My invention proposes to eliminate the core from the block of ice, thus allowing no possibility of a deposit of impurities or mineral matter to occur in the ice itself, this deposit occurring in the unfrozen water, located between the two cakes of ice being frozen. This also eliminates the necessity of withdrawing any impure core water from the center of the cakes, and filling same again with pure water, thus doing away with the apparatus necessary for this work.

My invention also provides for locating the aerating pipes in the insulated partitions between the two compartments of the can or unit, thus removing them from the direct effect of the brine or refrigerant, and the chance for freezing up if the supply of air is suddenly cut off. The location of these pipes are such that they do not have to be removed at any time during the process of freezing. The air can be supplied to the can prior to the time the water to be frozen is introduced and can be continued uninterruptedly until the ice is frozen and ready to be harvested. The unit is so constructed that the two compartments are side by side and separated from each other by two double partitions, each extending part of the way across the can toward the center, with the space between left open to act as a core for the double can. The space between the walls of the partitions is filled with an insulating material, and the aerating pipes are inserted in same.

My invention eliminates the necessity of removing the cold brine from an ice tank

and filling same with warm brine, as is done in certain systems now in use, as each unit will be lifted out and dipped in warm water to liberate the ice. In my invention I handle two cakes of ice as one unit up to the time the frozen cakes are dumped out of the cans.

The invention consists of the parts and the combination and construction of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a vertical central section on line 1—1 of Fig. 2. Fig. 2 is a horizontal section on line 2—2 of Fig. 1.

The invention comprises a polygonal vessel 2 of suitable proportions and appropriate material. The vessel preferably forms a substantial unit in which may be simultaneously formed two separate cakes of ice. To that end the vessel is divided from top to bottom and diametrically by vertical inwardly extending relatively thick partitions 3—3, which are filled with heat insulating material 4—4. Between the adjacent edges of the partitions 3—3 is a space 5 which substantially divides the vessel into two similar compartments 6—6.

During the process of freezing the refrigerant acts on three sides as *a—b* and *c* of each compartment, thus causing the water in each to freeze toward the space 5 in which will be formed the common core of the two ice cakes.

It is only necessary to harvest the ice from the vessel before the "core" water is frozen in order to have two clear, complete symmetrical cakes of ice.

For the purpose of aerating the water during refrigeration there is embedded in the insulation of partitions 3—3, air pipes 7—7, whose lower ends terminate in spray nozzles 8—8 in the bottom and which project the air outwardly into both compartments 6—6. The upper ends of the air pipes are exposed for easy attachment and removal of a manifold supply hose 9. The air pipes are thus an integral part of the unit and do not interfere in any way with the handling of the vessel and being protected are not affected by the refrigerant surrounding the vessel during process of freezing, and as the nozzles are arranged

contiguous to the central space 5, a continuous circulation of air may be maintained up to the time of drawing the can, since the air can rise in the unfrozen intermediate core space.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. In refrigerating apparatus, a vessel having a pair of interior confronting hollow partitions spaced at their inner sides to divide the vessel into two compartments which latter communicate by virtue of said space, means in each partition to force air in opposing streams horizontally across the bottom of the vessel in said space, and heat insulating material in the partitions.

2. In refrigerating apparatus, a vessel having a pair of interior confronting hollow partitions spaced at their inner sides to divide the vessel into two compartments which latter communicate by virtue of said space, means in each partition to force air in opposing streams horizontally across the bottom of the vessel in said space, and heat insulating material in the partitions, and also arranged under the bottom of the vessel in alinement with said space.

3. In refrigerating apparatus, a vessel having a pair of interior confronting hollow partitions spaced at their inner sides to divide the vessel into two compartments which latter communicate by virtue of said space, and means in each partition for forcing air in opposing streams horizontally across the bottom of the vessel in said space.

4. In refrigerating apparatus, a vessel having a pair of interior confronting hollow partitions spaced at their inner sides to divide the vessel into two compartments which latter communicate by virtue of said space, there being a space below the bottom of the vessel in alinement with the space between the partitions, and heat insulating material in the space below the vessel bottom and in each of the partitions.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK H. LEWIS.

Witnesses:

N. L. BURKE,
D. E. ROSLING.