March 7, 1939. J. FUSS 2,149,912

METHOD FOR THE MANUFACTURE OF CLEAR ICE

Filed April 20, 1938

Fig. 1

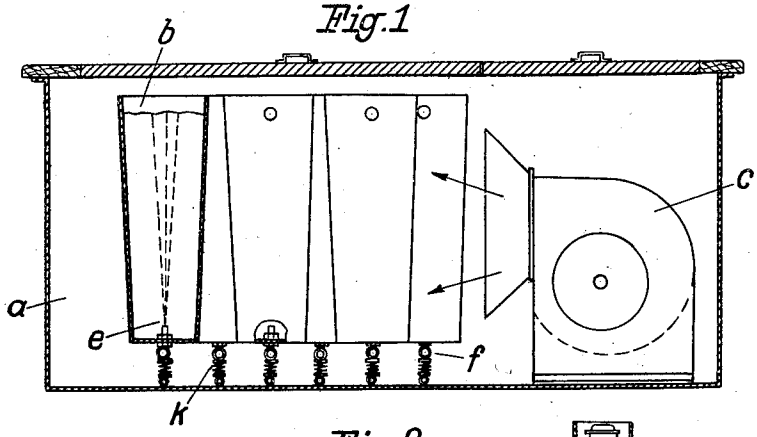


Fig. 2

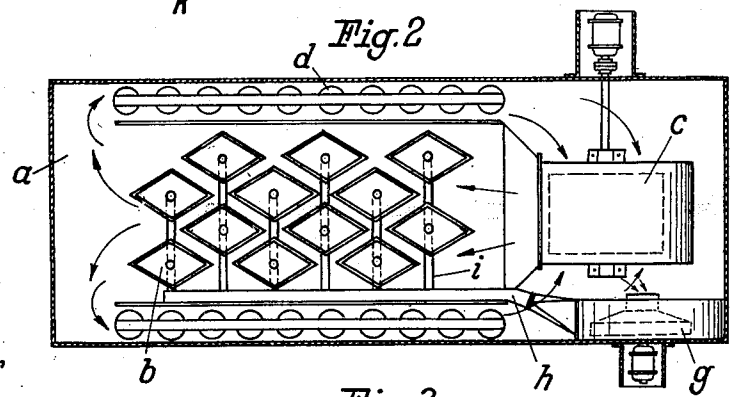


Fig. 3

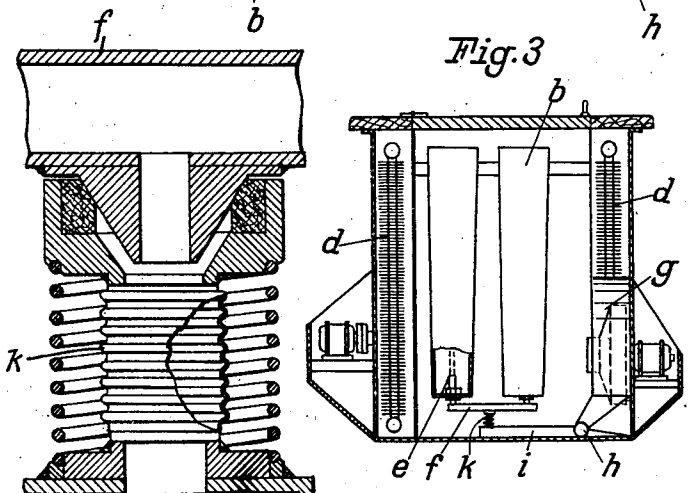


Fig. 4

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METHOD FOR THE MANUFACTURE OF CLEAR ICE

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2 Claims. (Cl. 62—172)

The present invention relates to a method for the manufacture of clear ice in ice generators operating with air as carrier of cold.

The manufacture of clear ice is effected in a well known manner, for instance by a method according to which during the freezing process dry air, cooled to low temperature is, by means of a rotary pump, a blower or a compressor, blown into the water present in the ice cans for the purpose of freezing. The air particles and the air bubbles contained in the freezing water in the ice cans are separated by this operation and the contaminations are brought to the core of the ice block, so that they easily may be removed and replaced by pure water before the freezing process is finished. The clear ice produced by this method practically is free of contaminations and congealed air bubbles so that ice made according to the new method is of substantially higher value than ordinary ice.

Moreover, by blowing air cooled to a low temperature into the freezing water in the ice cans, the freezing process is accelerated, whereby a greater economy of the ice generators is obtained.

In the carrying out of the known methods for the manufacture of clear ice operating with brine as heat exchanging means, a special air cooler has been necessary to produce the dry air cooled to a low temperature required for the manufacture of clear ice. This additional air cooler is used only for the purpose of cooling the air, before it is conducted into the air conduits provided with valves and nozzles, to such a low temperature, that further deposit of water in the air conduits, valves and nozzles is impossible.

The initial cost and operating expenses of a plant for the manufacture of clear ice are, of course, substantially increased by the additional air cooling device.

The object aimed at by this invention consists in removing an additional device for cooling to a low temperature and drying the air to be blown into the cans for the production of clear ice, whereby the initial cost and the cost of operation of a plant for generating clear ice are substantially reduced. This object is achieved with the ice generators, operating with air as carrier of cold, by the air used for freezing the water in the ice cans and flowing along these cans being drawn in by means of a rotary blower or a compresser and being blown through the freezing water of the ice cans.

The advantages obtained by the method according to the present invention are of greatest importance for the entire field of clear ice production.

A device adapted for carrying out the method according to this invention is shown by way of example in the accompanying drawing, in which

Fig. 1 is a longitudinal sectional view of a device for producing clear ice in accordance with my invention.

Fig. 2 is a horizontal sectional view of the device shown in Fig. 1.

Fig. 3 is a transverse sectional view of the device.

Fig. 4 is a detail view showing the spring connection.

The tank *a* of the ice generator contains the ice cans *b*, a fan *c* for circulating the air used as heat exchanging medium and the vaporizers *d*. In the bottoms of the ice cans *b* nozzles *e* for blowing in air are provided which nozzles are connected to the distributing pipes *f*.

Branching from the rotary blower or compresser *g* arranged within tank *a* or outside of the latter is a main pipe *h* and from the latter connecting pipes *i* lead to the distributing pipes *f* of the ice cans *b*. The connecting pipes *i* are connected to the distributing pipes *f* by perfectly tightening spring connections *k* in such a manner, that on insertion the rows of cans coupled together need only be placed upon the spring connection *k* which is compressed by the own weight of the cans *b* and thereby is automatically closed.

The operation of the clear ice generating plant is as follows:

The air flowing around the vaporizers *d* and cooled and dried thereby is drawn in by the fan *c* and blown along the ice cans *b*, whereupon the air returns again around the vaporizers *d*. A larger or smaller amount of this cooled and dried air is drawn in by the rotary blower or compressor *g*, arranged within tank *a* or outside the same, and is blown by way of the pipes *h*, *i*, *k*, *f* and the nozzles *e* into the ice cans *b* which are filled with freezing water. If the air flows through the freezing water in the ice cans, the air bubbles present in the freezing water are carried upwardly and are discharged with the blown in air. The contaminations of the water collect in the core of the ice block and may easily be removed shortly before the freezing process is finished. The air freely leaving the freezing water of the ice cans is mixed again with the air serving as carrier of cold and on passing around the vaporizers *d* is freshly cooled and dried, the cycle of operations being thus repeated.

What I claim is:

1. A method of generating clear ice in ice generators operating with air as cold carrier, comprising the steps of blowing dried air cooled to a low temperature along ice cans for generating ice, blowing dried air cooled to a low temperature through freezing water in said ice cans, mixing the air leaving said cans again with the air serving as carrier of cold and finally drying and cooling said air again to a low temperature.

2. A method of generating clear ice in ice generators operating with air as cold carrier, comprising the steps of blowing dried air cooled to a low temperature along ice cans for generating ice, blowing dried air cooled to a low temperature by means, arranged within a tank containing said ice cans, through freezing water in said ice cans, mixing the air leaving said cans again with the air serving as carrier of cold and finally drying and cooling said air again to a low temperature.

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