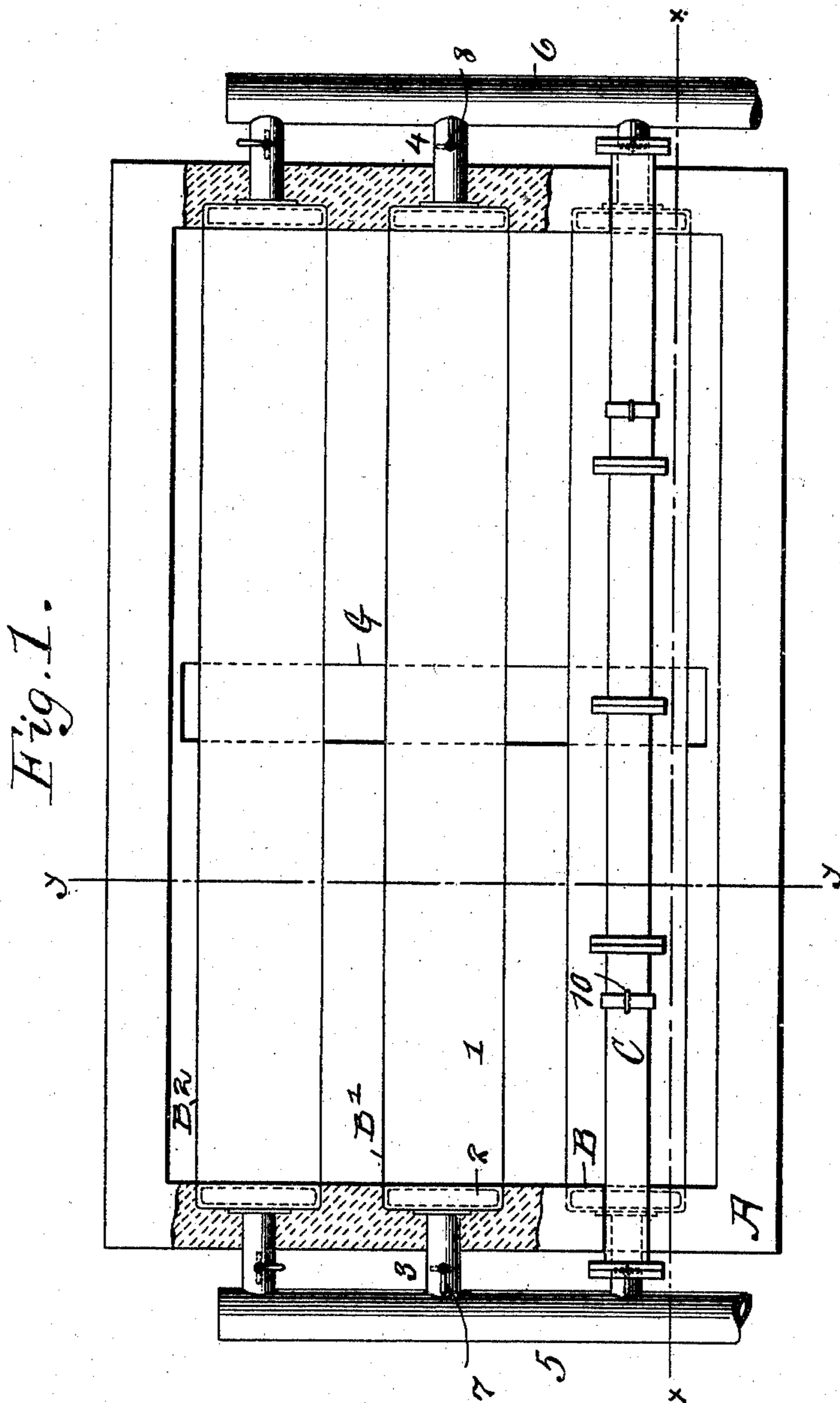


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 APPARATUS FOR MAKING PLATE ICE.  
 APPLICATION FILED JAN. 10, 1910.

967,191.

Patented Aug. 16, 1910.

2 SHEETS—SHEET 1.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

DAVID J. HAVENSTRITE, OF NEWARK, NEW JERSEY.

## APPARATUS FOR MAKING PLATE-ICE.

967,191.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed January 10, 1910. Serial No. 537,174.

*To all whom it may concern:*

Be it known that I, DAVID J. HAVENSTRITE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Apparatus for Making Plate-Ice, of which the following is a specification.

The invention is an apparatus for making plate ice which employs depending freezing tubes substantially as set forth in reissued Letters Patent No. 12,808, granted to me June 9, 1908, and consists more particularly in the construction of the freezing tank in which groups of freezing tubes are disposed above conduits countersunk in the walls and bottom of the tank and flush with the inner surface thereof, and of a width greater than the thickness of the several ice cakes to be produced. The ice cakes when complete meet the inner surfaces of these conduits and are thawed from said surfaces by the circulation of a warm fluid through the conduits.

In the accompanying drawings—Figure 1 is a plan view of the apparatus, showing one of the tube supporting headers in place. Fig. 2 is a section on the line *x, x*, showing the completed ice cake, and Fig. 3 is a section on the line *y, y*, of Fig. 1.

Similar letters and numbers of reference indicate like parts.

The tank A, in which is placed the water to be frozen, is preferably made of molded cement or concrete. Embedded in suitable recesses in its walls and bottom is a metal conduit or flue B, formed of a horizontal bottom portion 1 and two vertical portions 2. The surfaces of the conduit within the tank are flush with the tank surfaces. The width of said conduit should be not less than the proposed thickness of the ice cake. Communicating with said conduit at opposite ends of the tank are pipes 3, 4, which branch respectively from mains 5, 6. Valves 7, 8 are disposed in said pipes 3, 4.

The header C is held in notches 9 in the tank wall, and has depending from it tubes D closed at their lower ends. Extending through said header is a pipe E, from which depend tubes H which extend down into tubes D. This arrangement of header and

circulating tubes is substantially the same as is disclosed in my said reissued Letters Patent, and may be provided with any suitable means of supply of refrigerating fluid which, in passing through said tubes, causes ice cylinders to form around their circumferential peripheries and ends, which cylinders ultimately coalesce to form a single cake. The notches 9, which receive the header C, are placed directly above the upper extremities of the vertical portions 2 of conduit B, so that the lower ends of tubes D come opposite the bottom portion 1, and the tubes respectively at the ends of the row come opposite the vertical portions 2 of conduit B.

The ice cake F which forms on the tubes, therefore, extends entirely across the tank and meets the inner surfaces of conduit B. In order to release said cake, hot fluid is caused to circulate through said conduit, said fluid entering by pipes 6, 4 and escaping by pipes 3, 5 or vice versa, and the flow being regulated by the valves 7, 8. As soon as the ice cake is thawed clear of conduit B it is lifted from the tank conjointly with the header and freezing tubes, by means of hoisting devices connected to eyebolts 10 on said header, or in any other suitable way. The subsequent treatment of the cake being fully set forth in my said reissued patent, need not here be described. There will, of course, be as many conduits B, B<sup>1</sup>, B<sup>2</sup>, as there are headers and groups of freezing tubes, so that a plurality of ice cakes may be produced in the tank.

In order to insure liquid circulation in the tank, I provide a recess G in the bottom which extends under the conduits B.

I claim:

1. An apparatus for making plate ice comprising a tank, a conduit countersunk in the walls and bottom and flush with the inner surface of said tank, the said conduit being of a width corresponding to the thickness of the ice cake to be produced, a support disposed above the upper ends of said conduit, and a plurality of freezing tubes depending from said support into said tank.

2. An apparatus for making plate ice comprising a tank, a plurality of conduits countersunk in the walls and bottom and

flush with the inner surface of said tank  
and each of a width corresponding to the  
thickness of the ice cakes to be produced,  
supports disposed above the upper ends of  
5 said conduits, and a plurality of freezing  
tubes depending from each of said supports  
into said tank.

In testimony whereof I have affixed my  
signature in presence of two witnesses.

DAVID J. HAVENSTRITE.

Witnesses:

GERTRUDE T. PORTER,  
MAY T. MCGARRY.