

(No Model.)

A. J. CHASE & C. F. SMITH.

METHOD OF AND MEANS FOR REFRIGERATION.

No. 348,824.

Patented Sept. 7, 1886.

Fig. 1.

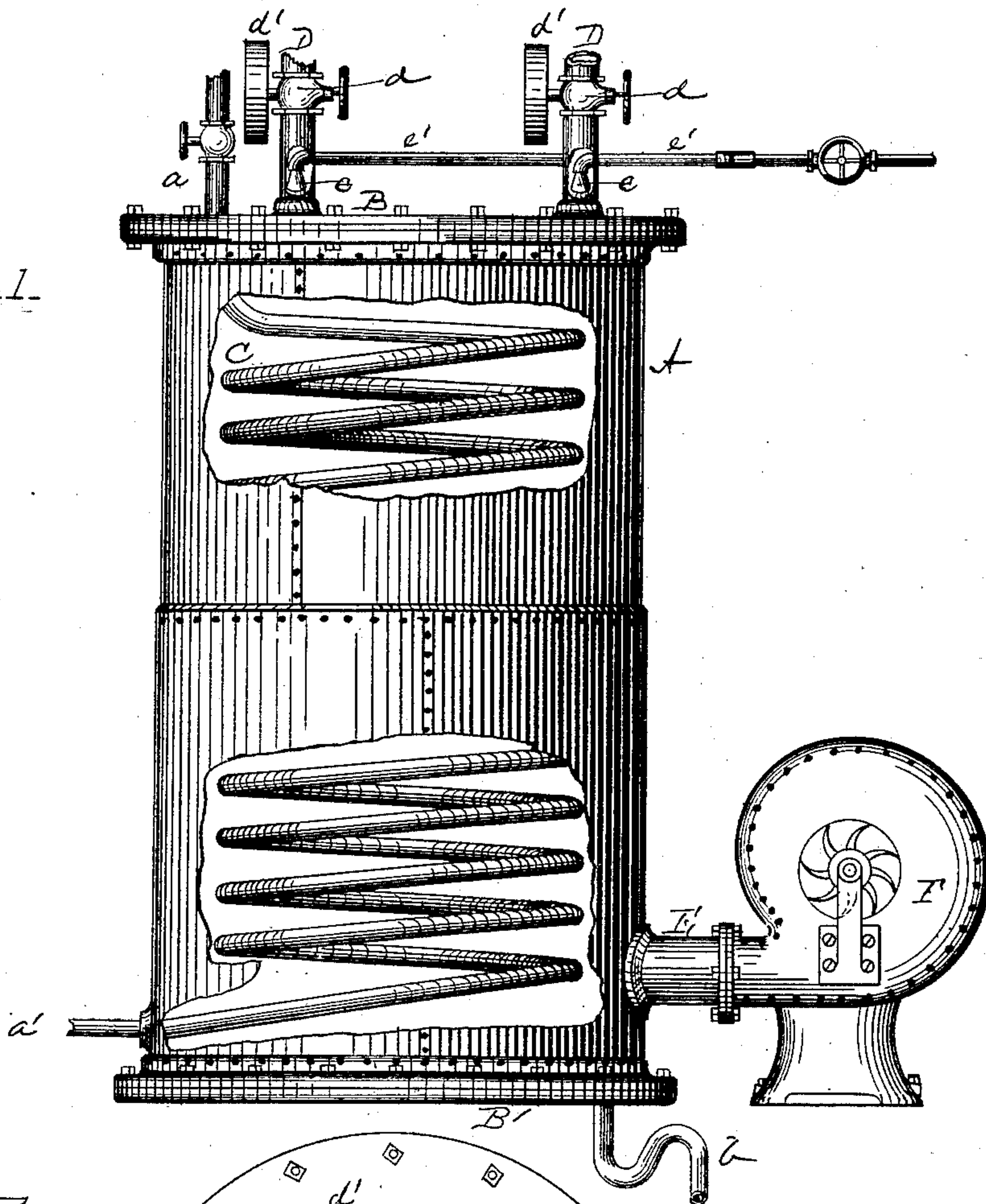
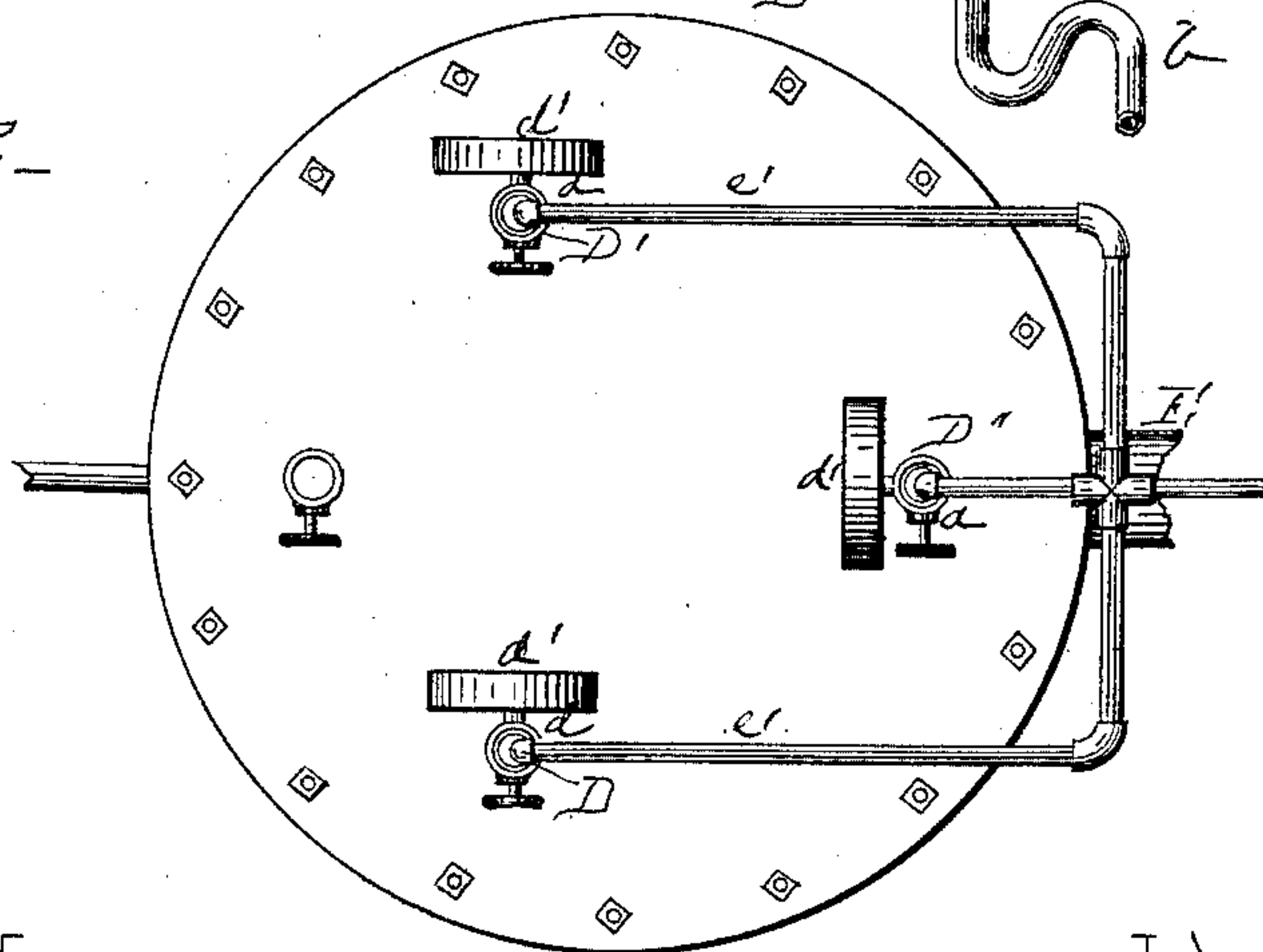


Fig. 2.



Witnesses.

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METHOD OF AND MEANS FOR REFRIGERATION.

SPECIFICATION forming part of Letters Patent No. 348,824, dated September 7, 1886.

Application filed March 13, 1886, Serial No. 195,746. (No model.)

To all whom it may concern:

Be it known that we, ANDREW J. CHASE, of Boston, Suffolk county, State of Massachusetts, and CHARLES F. SMITH, of Fitchburg, Worcester county, Massachusetts, have invented a new and Improved Gas Condensing and Cooling Method and Apparatus to be Used in Ice-Making or other Refrigerating-Machinery; and we hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of our improved apparatus. Fig. 2 is a plan view of the same.

Our invention relates to a method and means for the rapid absorption and removal of caloric from liquids or gases in ice-making or other kinds of refrigerating apparatus.

Our invention consists in a novel method of absorbing and removing caloric from confined liquids or gases by subjecting them to the action of air saturated with moisture in a partial vacuum, intermittent or continuous, whereby the conversion of the moisture in the air into vapor rapidly and certainly absorbs a large number of units of heat from the liquid or gas to be cooled.

Our invention also consists in certain combinations and arrangements of mechanical devices, whereby we carry out our novel method, as will hereinafter be fully described, and specifically pointed out in the claims.

In order that those skilled in the art may make and use our invention, we will proceed to describe the exact manner in which we have carried it out.

In the said drawings, A is an iron or other casing having heads B B', and within which is arranged a coil, C, having the inlet *a* from the ice-making or refrigerating chamber and the outlet *a'* to the receiver. (Not shown.) Leading from the bottom of the casing is a pipe, *b*, to draw off any accumulated water.

In the head B are a series of air-inlet pipes, D D' D'', each having in its upper end a rotating valve, *d*, provided on its stem with a pulley, *d'*, for the purpose hereinafter set out.

Within each one of the air-inlet pipes D D' D'', below the rotary valves *d*, is located a

spraying nozzle or rose, *e*, connected to water-supply pipes *e' e'*, passing through the walls of pipes D D' D''.

At the bottom of the drum or casing A is a large exhaust-pipe, E, connected with an exhaust-fan, F, for rapidly drawing the air from the drum or casing A.

The rotation of the fan F tends to produce a partial vacuum in casing A, as well as a strong draft through it. As the air flows into the casing A, it comes in contact with the spray of water located in each air-inlet pipe, and produced by pipes *e' e'* and spray-pipes *e e*. This heavily charges the current of air with moisture, and as the current reaches the interior of the casing, where there is a partial vacuum, the moisture is by well-known physical laws converted into vapor. This conversion into vapor necessitates the absorption of a large amount of caloric, which is drawn to a greater or less degree from coil C and its contents, thereby cooling or lowering the temperature of the coil and its contents.

Though it is true that the constant tendency of the fan-exhaust is to produce a vacuum, as the capacity of pipe E is greater than the combined capacity of pipes D D' D'', yet a more complete operation may be accomplished by intermittently opening and closing the rotary valves *d* to cause a pulsatory movement of the air in the casing. This intermittent opening and closing of the valves *d* is accomplished in a ready and desirable manner by applying power-belts to the pulleys *d'* on the valve-stems.

It will, from the foregoing description, be readily seen that the rapid expansion of the incoming air will absorb heat readily, and the moisture in the air-current changing suddenly into vapor will also absorb a large increment of caloric. These two elements combined with the third—the strong inflowing current—will absorb the heat from the coil to an extraordinary degree.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The method of refrigeration or cooling herein described, consisting, essentially, in exposing the material to be cooled within a

casing, in which is maintained a partial vacuum, to a current of air which is highly charged with moisture when it enters the casing, as set forth.

5 2. The casing A and interior coil or equivalent device, in combination with inlet air-pipes D D' D'', provided with valves and spraying devices, and pipe E, with its exhaust-fan F, substantially as and for the purpose described.

3. In a refrigerating apparatus, substantially as described, the combination of an air-inlet pipe, a rotating valve, and stem provided with pulley *d'*, for the purpose specified.

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Witnesses:

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