(No Model.) 2 Sheets—Sheet 1.

C. F. SMITH.

ICE MACHINE.

No. 345,548. Patented July 13, 1886.

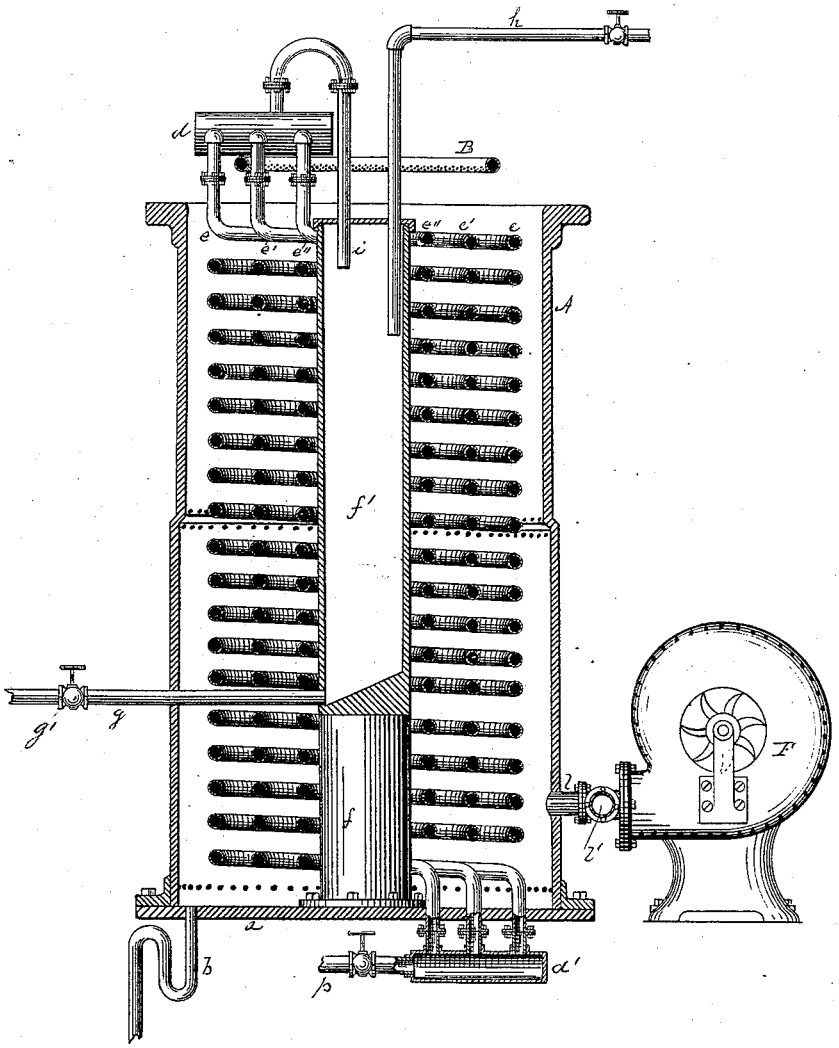

Fig. 1.

Witnesses.
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

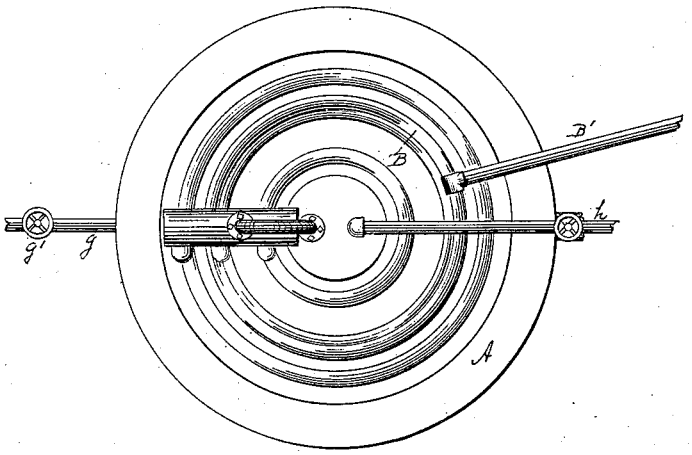
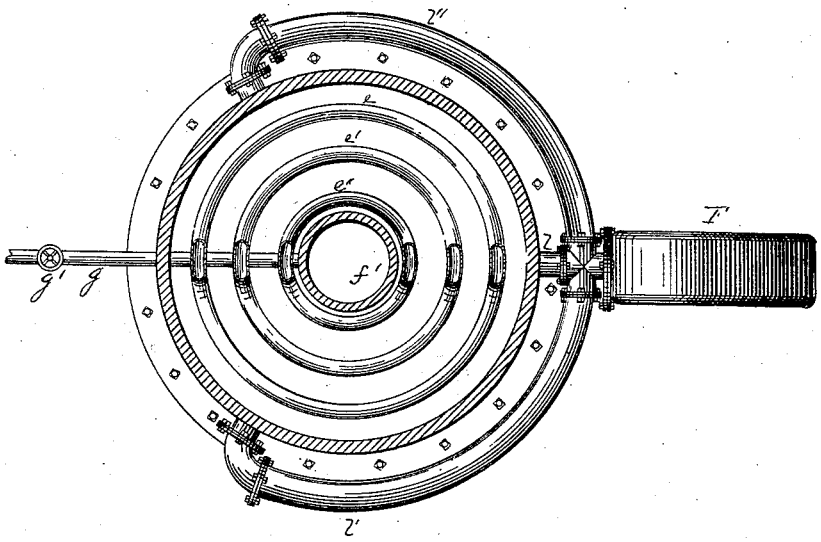


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES F. SMITH, OF FITCHBURG, MASSACHUSETTS.

ICE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 345,548, dated July 13, 1886.

Application filed March 15, 1886. Serial No. 195,266. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. SMITH, of Fitchburg, Worcester county, Massachusetts, have invented certain Improvements in Ice-Machines; and I 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 vertical sectional view of my invention. Fig. 2 is a plan view of the same. Fig. 3 is a horizontal sectional view.

My invention relates to that class of ice-making machinery operating with an alternately volatilized and condensed freezing medium, and particularly relates to the condenser used in such class of machines.

My invention consists in a certain combination and arrangement of devices, as hereinafter set forth, and specifically recited in the claim, whereby the heat is extracted from the condensed freezing medium, as will be fully described.

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

In the said drawings, A is a casing having its upper end open and provided with a bottom, *a*, from which depends a siphon-trap drip-pipe, *b*. Arranged within the casing concentrically are three or more coils of pipe, *e e' e''*, their upper ends entering a manifold, *d*, and their lower ends passing through the wall of the casing and terminating in a manifold, *d'*. In the center of the chamber, supported on a standard, *f*, is a gas-receiving chamber, *f'*, from the bottom of which passes a pipe, *g*, out through the wall of the casing to carry off any deposited oil from the incoming gas, the chamber acting as an oil-trap, and pipe *g* being provided with a valve, *g'*. A pipe, *h*, conducts the condensed gas from the compressors into the gas-receiving chamber, and from there the gas escapes through pipe *i* to the manifold *d*, and passes into the coils *e e' e''*. While the gas passes through the coils it is subjected to a low temperature induced by the rapid evaporation of moisture from the various surfaces within the casing, which is brought about in the following manner: Just above the open end of the casing is a cylindrical or convoluted perforated pipe, B, having a water-supply pipe, B', from any desirable water-reservoir, and provided with proper valves to control the flow at will. The perforations in pipe B are arranged at such diverging angles that the spray thrown from them will completely cover the area of the top of the casing and drench the surfaces of the coils of the pipes, the interior surface of the casing, and the wall of the gas-receiving chamber *f'*. While the spraying of the surfaces is going on, a strong downward current of air is produced through the casing by means of a suction-fan, F, which connects with three air-ducts, *l l' l''*, tapping the casing at intervals of one hundred and twenty degrees on the circle of the casing, so as to draw the air steadily downwardly through the coils in a well-distributed manner. The rapid current of air moving downward over the various surfaces that have been wetted produces an enormous and rapid evaporation from these surfaces. This evaporation absorbs the required amount of heat necessary to change the condition of the water to a vapor from the coils and surfaces of the casing, and thereby rapidly reducing the temperature of any medium passing through the coils *e e' e''*. In this instance the cooled gas passes from the pipes or coils into the manifold *d'*, and thence by pipe *p* to the pump or reservoir provided for its reception.

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

In ice-making and refrigerating machinery operating with an alternately volatilized and condensed freezing medium, the condenser consisting of the casing A, exhaust-fan F, multiple exhaust-pipes *l l' l''*, central oil-trap chamber, *f'*, connected with the gas-inflow pipe *h*, and pipe *i*, connecting the oil-trap chamber with manifold *d* and manifold C, in combination with a spraying device and a series of coils, *e e' e''*, arranged within the casing and connecting manifolds *d* and *d'*, all constructed, arranged, and operated as and for the purpose described.

CHARLES F. SMITH.

Witnesses:
W. E. CHAFFEE,
L. BACON.