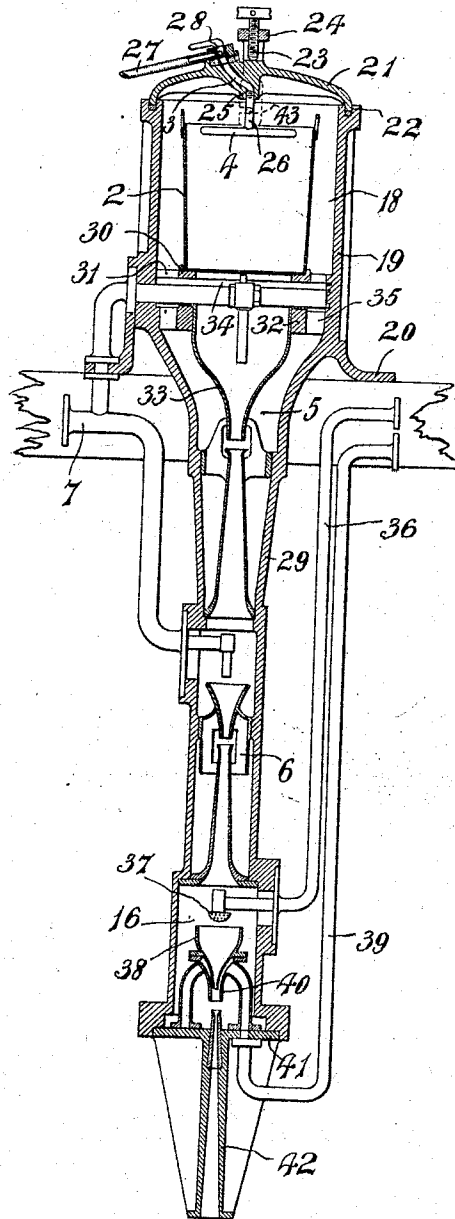


M. LEBLANC.
REFRIGERATING MACHINE.
APPLICATION FILED FEB. 15, 1905.

1,005,851.

Patented Oct. 17, 1911.



WITNESSES.
J. L. Ryder.
E. W. McCallister

INVENTOR.
Maurice Leblanc
by Jno. S. Brown
att.

UNITED STATES PATENT OFFICE.

MAURICE LEBLANC, OF PARIS, FRANCE, ASSIGNOR TO SOCIETE ANONYME POUR L'EXPLOITATION DES PROCEDES WESTINGHOUSE-LEBLANC, OF PARIS, FRANCE.

REFRIGERATING-MACHINE.

1,005,851.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed February 15, 1905. Serial No. 245,719.

To all whom it may concern:

Be it known that I, MAURICE LEBLANC, a citizen of the Republic of France, residing at Villa Montmorency, Auteuil, Paris, France, have invented a new and useful Improvement in Refrigerating-Machines, of which the following is a specification.

This invention relates to refrigerating apparatus and has for its object to provide a refrigerating machine which will operate with a rapidity and efficiency hitherto unattainable.

In the accompanying drawings, the figure is a vertical section showing the arrangement of the apparatus.

In the drawings a removable mold or receptacle 2 is shown as inserted into an inclosed air-tight vacuum chamber 18 consisting of a stationary cylinder 19 supported on a flange 20 and a removable cover 21 which is inserted into a groove 22 provided in the upper end of the cylinder 19 for the reception of packing. The joint between the cover 21 and the cylinder 19 is maintained by means of a screw 23 working in a removable yoke 24 supported on trunnions 43 on the cylinder 19. The pipe-ring or rose 4 is carried by the cover 21 to which it is attached by means of a short length of tubing 26 screwed into a central boss 25 and in connection with the inlet passage 3. Connection between the inlet passage 3 and a suitable source of liquid supply is made by means of a flexible pipe 27 and a cock 28 which is secured to the outside of the cover 21 by means of a bayonet joint. The relative positions of the ports in the cock 28 and of the jaws of the bayonet joint are so arranged that when the tongues of the bayonet joint are free the cock is closed. The lower end of the cylinder 19 terminates in a trunk 29 in which are inclosed and supported a series of two ejectors 5 and 6 and the condenser 16. The removable mold 2 is supported on a seating ring 30 provided at the lower end of the cylinder 19. At a suitable distance below the seating ring 30 a second supporting ring 32 is provided for carrying the first ejector cone 33. Free communication between the interior of the cylinder 19 and the space 34 between the two supporting rings 30 and 32 is provided by means of a suitable number of orifices 31 in the supporting ring 30, and free communication between the space 34

and the trunk 29 is provided by means of suitable orifices 35 in the supporting ring 32.

Steam is admitted to the two ejectors 5 and 6 by a common inlet pipe 7 and the condensing water is admitted by a pipe 36 to a rose 37 arranged above a cone 38 of the condenser 16. Water under pressure, which may be of the same temperature as that of the condensing water at its exhaust, is conveyed by a pipe 39 to a second cone 40 arranged below the first cone 38, and is intended to convey with it all the products of condensation. The cones 38 and 40 are supported on a flange 41 which closes the lower end of the trunk 29 and carries the reverse cone 42 of the condenser 16.

Although in the drawings a jet condenser 16 is shown, a condenser of any type may be employed.

When condensing water is plentiful and of low temperature so that a high degree of vacuum can be obtained in the condenser, the series of ejectors may be operated by steam at atmospheric pressure.

The operation is as follows: When a vacuum, or partial vacuum, is created in the head and mold 2 by the combined action of the ejectors 5 and 6, the liquid as it is gradually introduced by the pipe-ring 4 is partially evaporated, causing a fall in the temperature sufficient to cool or freeze the remainder of the liquid on falling into the mold 2, the vapor given off being meanwhile exhausted by the ejectors.

What I claim is:

1. A freezing machine comprising a vacuum chamber, a primary fluid ejector communicating with said chamber, an auxiliary fluid ejector communicating with the exhaust of said primary ejector, a jet condenser communicating with the exhaust of said auxiliary ejector and a liquid ejector communicating with the exhaust of said auxiliary ejector, coaxially aligned therewith and arranged to discharge the liquid from said condenser.

2. A freezing machine comprising a vacuum chamber, a primary fluid ejector communicating therewith, a secondary fluid ejector communicating with the exhaust of said primary ejector, a jet condenser communicating with the exhaust of the secondary ejector and a liquid ejector located coaxially with said fluid ejectors and com-

municating with the exhaust of said secondary ejector and arranged to receive and discharge the liquid from said condenser.

3. A freezing machine comprising a vacuum chamber, a primary fluid ejector communicating therewith, a secondary fluid ejector communicating with the exhaust of said primary ejector, a condenser communicating with the exhaust of the secondary
10 ejector and a liquid ejector located co-axially with said fluid ejectors and communicating with the exhaust of said secondary ejector and arranged to receive and discharge the fluid from said condenser.

15 4. A freezing machine comprising a vacuum chamber, a primary fluid ejector communicating with said chamber, a secondary fluid ejector communicating with the exhaust of said primary ejector and a liquid

ejector communicating with the exhaust of said secondary ejector and coaxially aligned with said fluid ejectors.

5. In a freezing machine, an evaporating chamber, a jet condenser connected to said chamber and a plurality of steam ejectors between said condenser and said chamber for withdrawing vapor from said chamber; said vapor passing through said ejectors in series whereby a pressure is maintained in said chamber less than the pressure corresponding to the vapor tension of ice.

In testimony whereof I have hereunto subscribed my name this 27th day of January, 1905.

MAURICE LEBLANC.

Witnesses:

ALBERT DELAS,
HANSON C. COXE.