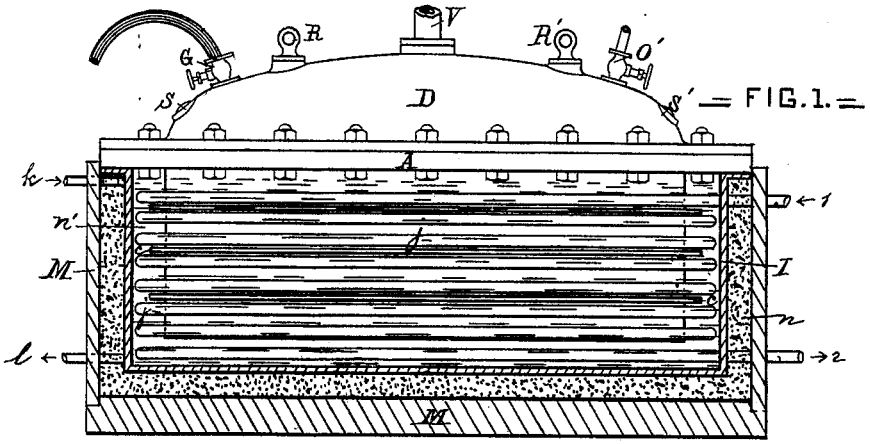
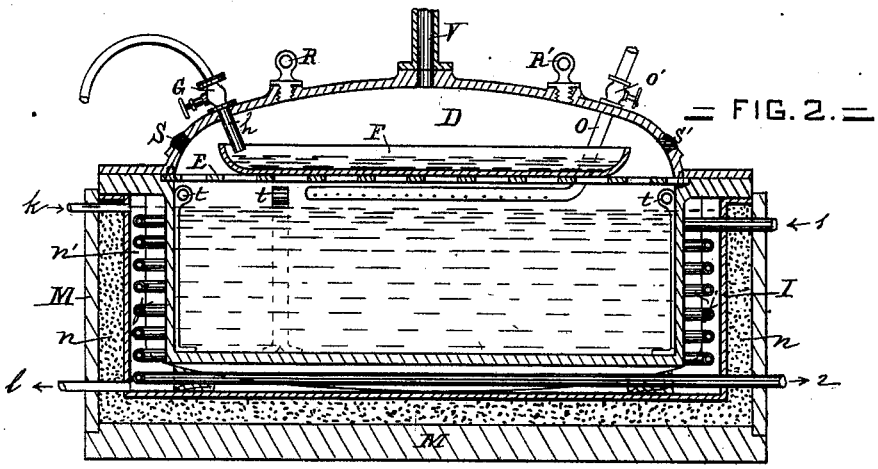
E. KROST.

Apparatus for Making Ice.

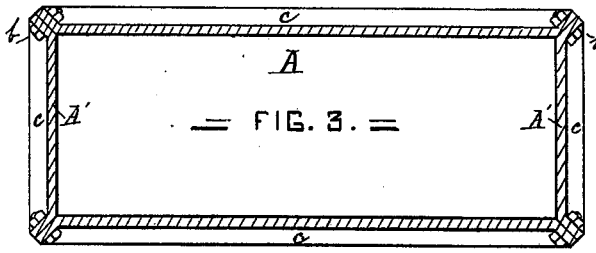
No. 197,223. Patented Nov. 20, 1877.



= FIG. 1. =



= FIG. 2. =



= FIG. 3. =

WITNESSES.

F. V. Delegger

J. C. Hubbell

INVENTOR.

Eugene Krost

BY H. N. Jenkins

ATTORNEY.

UNITED STATES PATENT OFFICE.

EUGENE KROST, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN APPARATUS FOR MAKING ICE.

Specification forming part of Letters Patent No. **197,223**, dated November 20, 1877; application filed April 5, 1877.

To all whom it may concern:

Be it known that I, EUGENE KROST, a resident of the city of New Orleans, parish of Orleans, and State of Louisiana, have invented a certain new and useful Improvement in Process and Apparatus for Making Ice; and I do hereby declare the following to be a full, clear, and correct description of the same, reference being had to the annexed drawing, making a part of this specification.

This invention relates to the artificial production of a superior quality of ice, either in large or small blocks, by the combined influences of the expansion of a liquefied gas and vacuum, the latter created by any suitable vacuum apparatus, and aided or completed by the employment of sulphuric acid, which hastens the freezing of water by absorbing its vapors as fast as they arise.

The nature of my invention will be better understood by referring to the accompanying drawings, in which—

Figure 1 represents a side elevation of my apparatus, the outer casings of which are shown in section. Fig. 2 is a vertical longitudinal section of the above; and Fig. 3, a horizontal section of the interior box or congealer A, which is constructed of metal plates A′, the flanged edges of which are bolted together, as at *b*, and strengthened on their outer sides with ribs *c*.

The congealer is provided with a dome-shaped cover, D, to the lower interior portion of which is secured, by screws or detachable fastenings, a grating, E, on which is supported a shallow dish, F, that is designed to contain sulphuric acid, the same being fed thereto through a valve, G, and pipe *h*, connected with the dome, as shown.

I is a metal casing in which is supported the inner box or congealer, the latter surrounded by a coil of pipe, *j*, the inlet and exit of which are indicated by arrow-points 1 2. This coil is submerged by filling the space between the above-mentioned casing and congealer, through a pipe, *k*, with a solution of brine or chloride of calcium, which is withdrawn, after the ice is formed, through a discharge-pipe, *l*.

The casing I is supported on cross-timbers in a wooden box, M, and the space *n* between the two filled in with sawdust, charcoal, or any other suitable non-conducting material.

Water to be converted into ice is supplied to the congealer through a pipe, O, the lower end of which is carried below the grating E, and provided with numerous small holes, through which it is sprayed in all directions.

The dome D is furnished with eyebolts R R′, for convenience in raising the same, and with eyeglasses or side lights S S′, for obtaining a view of the interior of the congealer, and thereby a correct knowledge of the progress made in freezing.

Before the operation of freezing is begun a number of iron anchors or draw-bars, *t*, are placed in perpendicular positions around the inner sides of the congealer for facilitating the removal of the ice when formed.

The operation of my invention is as follows: The compartment in which the coil is placed is first filled with a solution, as before stated, of brine or chloride of calcium, when the vacuum apparatus is put in operation, and the air withdrawn from the congealer through the pipe V. About the same time the gas is admitted to the coil *j*, after which the water is fed to the congealer through a valve, *o′*, and spray-pipe *o*. When the apparatus for creating a vacuum has ceased or nearly ceased to operate, the sulphuric acid is introduced through its conduit into the dish F, so as to hasten the freezing by absorbing the vapors as fast as they arise.

In order to remove the ice, after the block has been formed, as above described, the solution is withdrawn from the compartment *n′*, and steam introduced in lieu thereof, so as to free the ice by melting that portion which is in contact with the congealer. The cover of the apparatus is next removed, and the ice raised out of the congealer by means of hooks inserted in the eyes of the anchor-bars *t*.

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

1. In an ice-machine, the combination, with a closed congealer, of exhausting mechanism, and a vessel for containing an absorbent of

moisture, the latter being situated within the congealer, substantially as described.

2. In combination with the congealer A, the spray-pipe O and pan F, substantially as described.

3. The combination, with the congealer A, of the pipes *h*, O, and V, for introducing water and acid, and for the withdrawal of air, substantially as described.

4. The congealer A, surrounded by coil *j* and casing I, and provided with a cover, D, in which is suspended, by a grating, E, or other suitable means, a dish, F, as described, and for the purpose set forth.

In testimony whereof I have hereunto set my hand.

EUG. KROST.

In presence of—
J. C. HUBBELL,
T. F. DE COPPET.