

(No Model.)

A. VON KRAUSE & M. KUHNEN.

ICE HOUSE.

No. 253,790.

Patented Feb. 14, 1882.

Fig. 1.

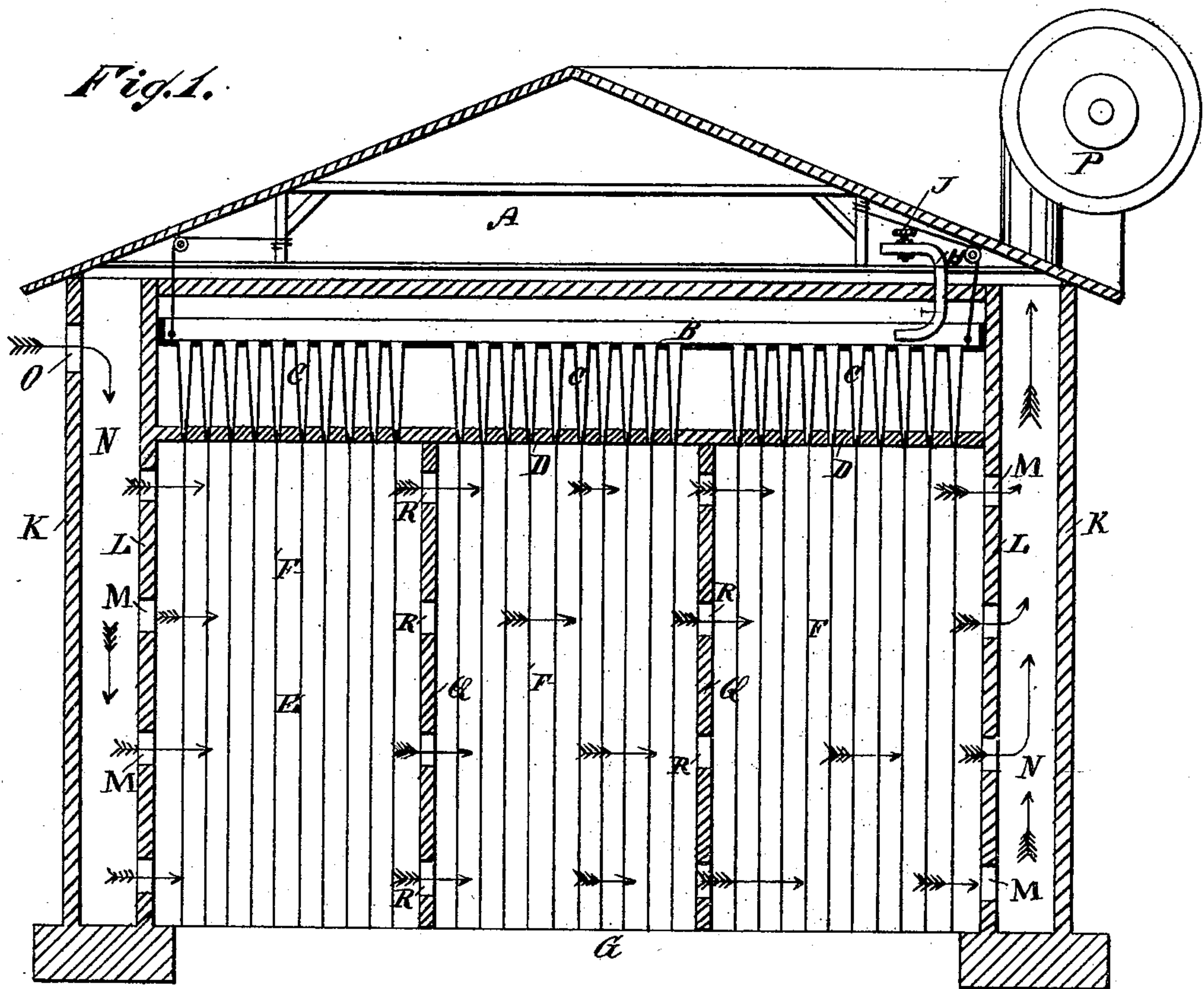
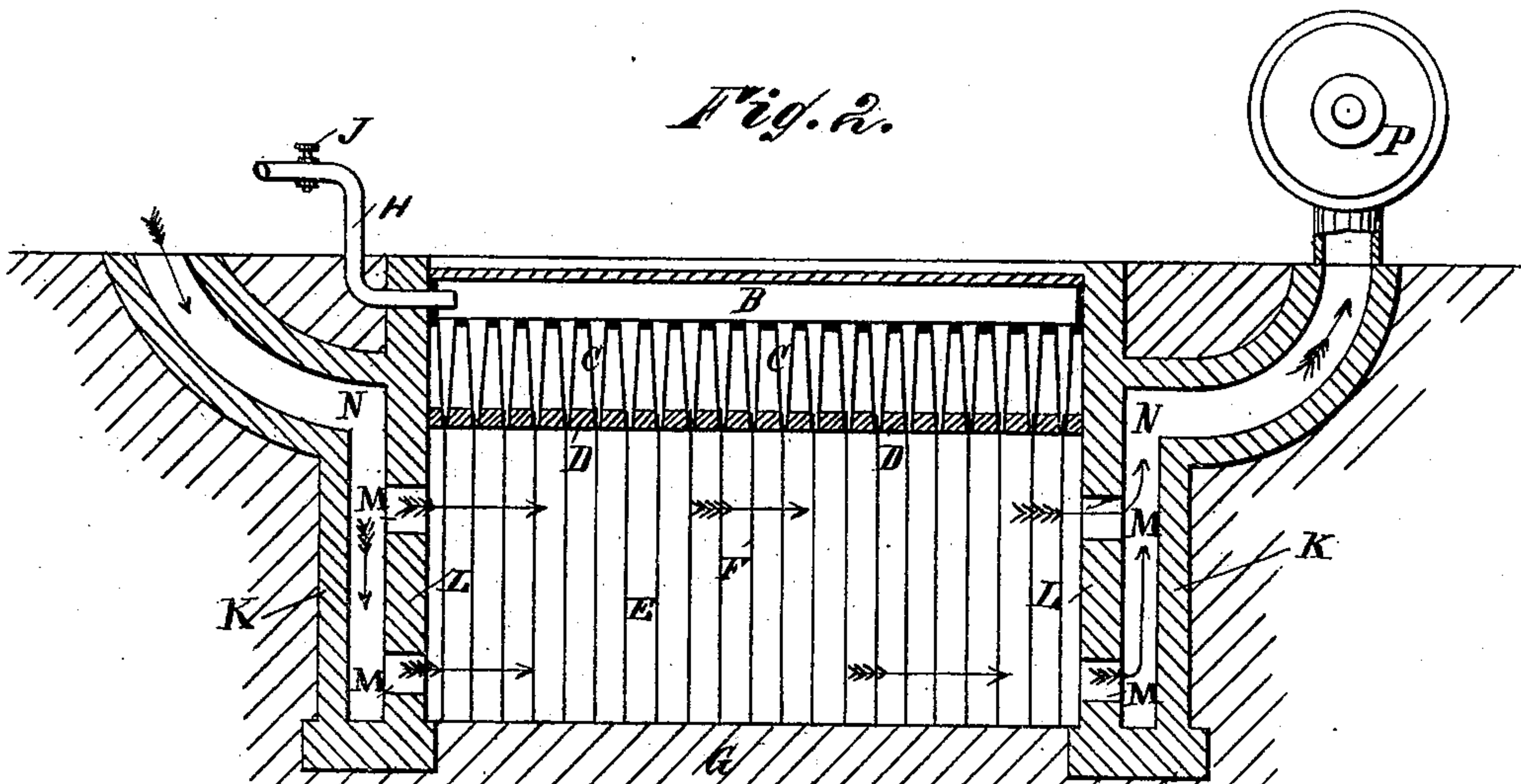


Fig. 2.



WITNESSES:

Theo. G. Norton
C. Sedgwick

INVENTOR:

A. von Krause
M. Kuhnén
BY
Munn Ho
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ARTHUR VON KRAUSE AND MATHIAS KUHNEN, OF BLAUVELTVILLE,
NEW YORK.

ICE-HOUSE.

SPECIFICATION forming part of Letters Patent No. 253,790, dated February 14, 1882.

Application filed November 4, 1881. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR VON KRAUSE and MATHIAS KUHNEN, of Blauveltville, Rockland county, New York, have invented a new and Improved Ice-House, of which the following is a clear, full, and exact description.

The object of our invention is to facilitate freezing large blocks of ice without the use of artificially-cooled air, and in the house in which the ice is to be stored.

The invention consists in an ice-house constructed with a flat tank, either fixed or vertically adjusted, and provided with a series of funnels from which wires or equivalents extend down to the bottom of the ice-chamber, down which wires the water flows and freezes, gradually forming a solid block of ice in the ice-chamber. After a few days the wires become loosened and are withdrawn. A circulation of cool and rarefied air is maintained in the ice-chamber.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a cross-sectional elevation of our improved ice-house, and Fig. 2 is a cross-sectional elevation of a modification of the same.

The ice-house A is constructed with a flat water-tank, B, of wood or metal, in its upper part, and this tank is provided with a series of slender downwardly-projecting funnels, C, the centers of which are separated from eight to ten or twelve inches transversely and longitudinally. The lower ends of these funnels C fit in apertures in a horizontal partition, D, arranged a short distance below the bottom of the tank B and forming the top of the ice-chamber E. From each funnel C a wire or equivalent, F, extends down to the bottom G of the ice-chamber E, these wires being suitably supported in the funnels, but not fastened on the bottom of the ice-chamber. A series of wires, F, arranged in longitudinal and transverse rows, will thus cross the ice-chamber vertically.

A water-pipe, H, provided with a cock, J, conveys the water from a suitable tank or pump to the tank B.

The ice-house A is constructed with outer side walls, K, and inner side walls, L, an air-

space being formed between the two walls K and L. The inner walls, L, are provided with a series of apertures, M, and one of the outer side walls K is provided with openings O near the top. The air-space N between the inner and outer side walls, K and L, on the opposite side of the building, is in communication with a suction-fan, P, or some other device for drawing off the air.

If desired, the ice-chamber E may be provided with a series of partitions, Q, provided with apertures R.

The entire device may be arranged in a pit underground, as shown in Fig. 2, the construction otherwise remaining the same.

If desired, the tank B, the funnels C, and the horizontal partition D may be made vertically adjustable, either by means of screws or ropes and pulleys.

The building may be made of wood, stone, or metal.

The space between the tank B, the funnels C, and the horizontal partition D is preferably filled with some non-conductor of heat—such as sawdust, &c.—to prevent the freezing of the water in the funnels.

The operation is as follows: If the fan or other device P is operated, it will draw all the air out of the ice-chamber E, and fresh cool air will enter into the same through the apertures O and M, the air circulating through the ice-chamber, as indicated by the arrows. Water is admitted into the tank B through the pipe H, and this water will flow through the funnels C and down the wires F, only sufficient water being admitted into the tank B to cause the water to flow down the wires F in a very thin layer. The cold air circulating through the ice-chamber causes the thin layer of water on the wires to congeal, and as the air in the ice-chamber E is more or less rarefied, the congealing process is facilitated. The layer of ice on the wires gradually thickens and gradually fills up the space between the wires, and a block of ice is formed. After a few days the heat passing down the wires causes them to be loosened and they are withdrawn, and the apertures or channels they formed will freeze up. A solid block of ice eight feet square and eight feet high has been formed in this manner at 1° Reaumur, (34° Fahrenheit.)

Care must be taken not to allow the flow of water to become so copious that water will collect on the bottom of the ice-chamber.

5 If the partitions Q are provided, several blocks will be formed, which can be moved successively. If the tank B is made vertically adjustable, a block or blocks of ice of a certain thickness can be formed. The tank can be raised and another block can be formed on the first, 10 and in this manner the thickness of the block can be gradually increased.

The longitudinal apertures originally made by the wires F greatly facilitate cutting the large block into smaller cubes or blocks.

15 We are aware that ice has been naturally as well as artificially formed in successive layers by trickling in a thin stream over a twig, pole, rope, or cord; also, that it has been made to flow from a tank over small pendent tubes into 20 which steam or hot water is injected to loosen the formed ice therefrom. Our object is to

avoid this by guiding the water in funnels, so that it will trickle and be formed into ice around pendent wires, which may be readily drawn out in a few days, leaving the ice solid and 25 unaffected by any application of heat, as well as saving a great deal of time, labor, and expense.

What we claim as new and of our invention is— 30

The tapering funnels C, having their small ends fitted into apertures of a water-tank bottom, D, in combination with pendent wires F, supported at their upper ends in said funnels and extending down into a freezing-chamber, as 35 shown and described.

ARTHUR VON KRAUSE.
MATHIAS KUHNEN.

Witnesses:

OSCAR F. GUNZ,
C. SEDGWICK.