

(No Model.)

J. W. MILLER.

Process of and Apparatus for Making Ice.

No. 230,318.

Patented July 20, 1880.

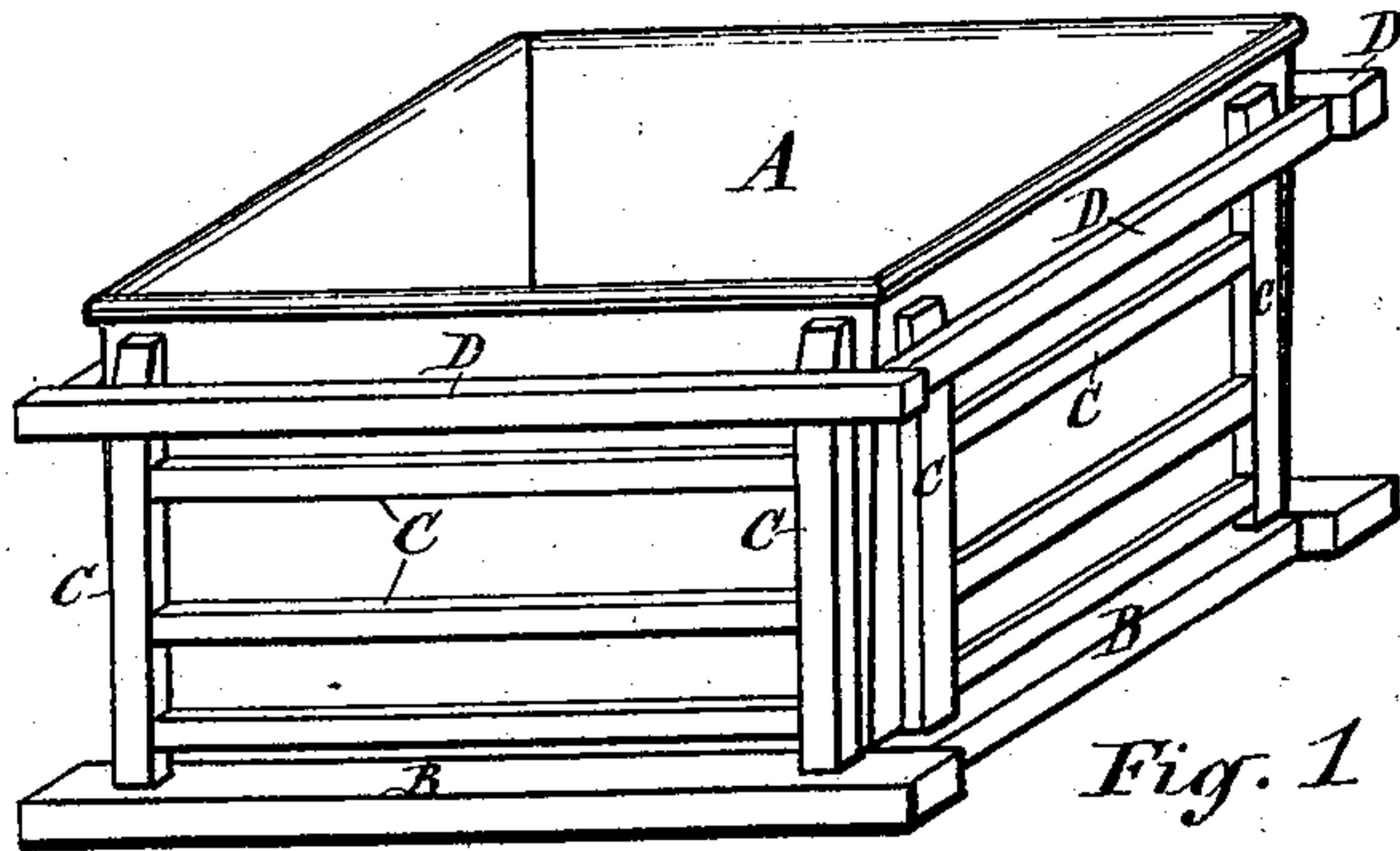


Fig. 1

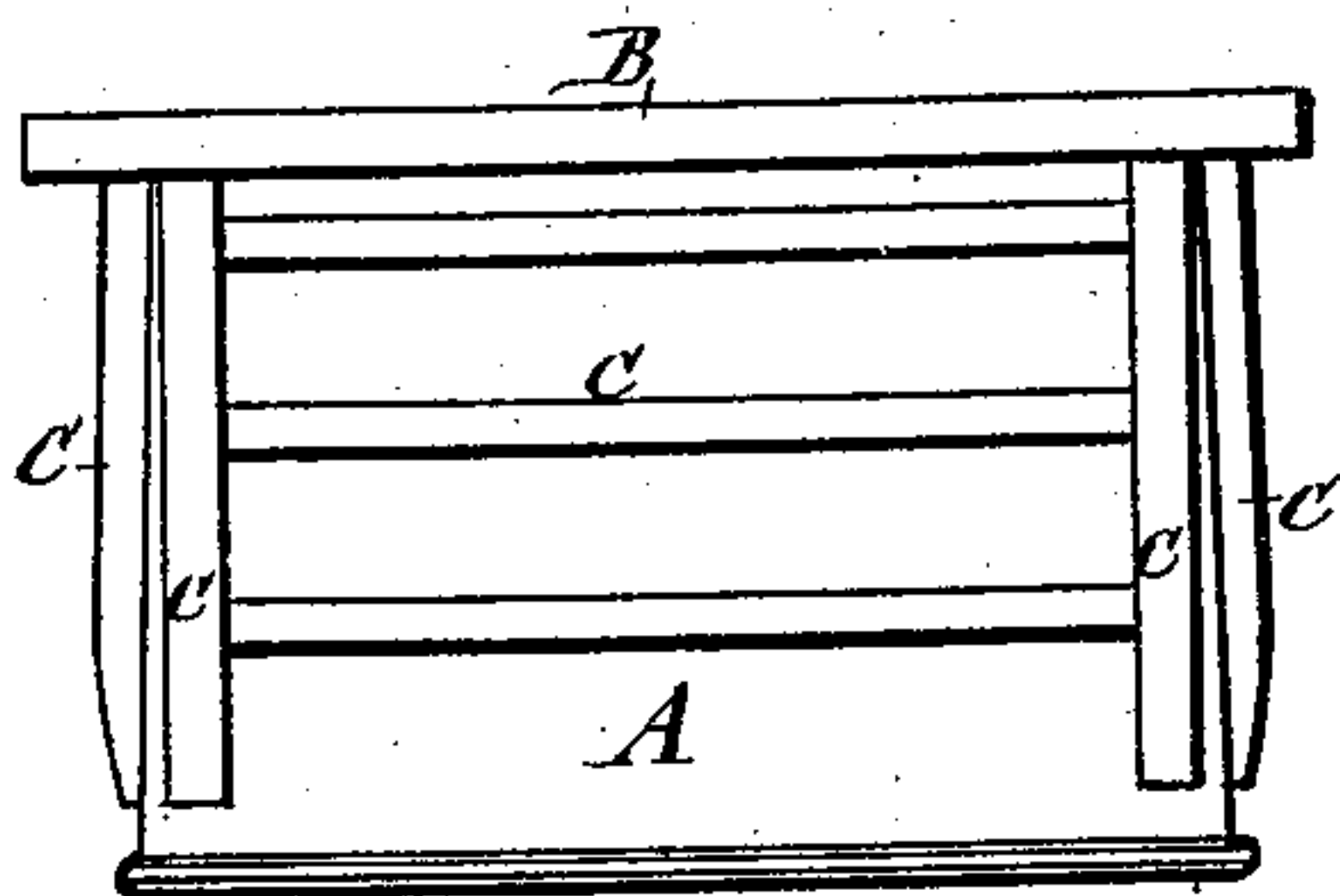


Fig. 2

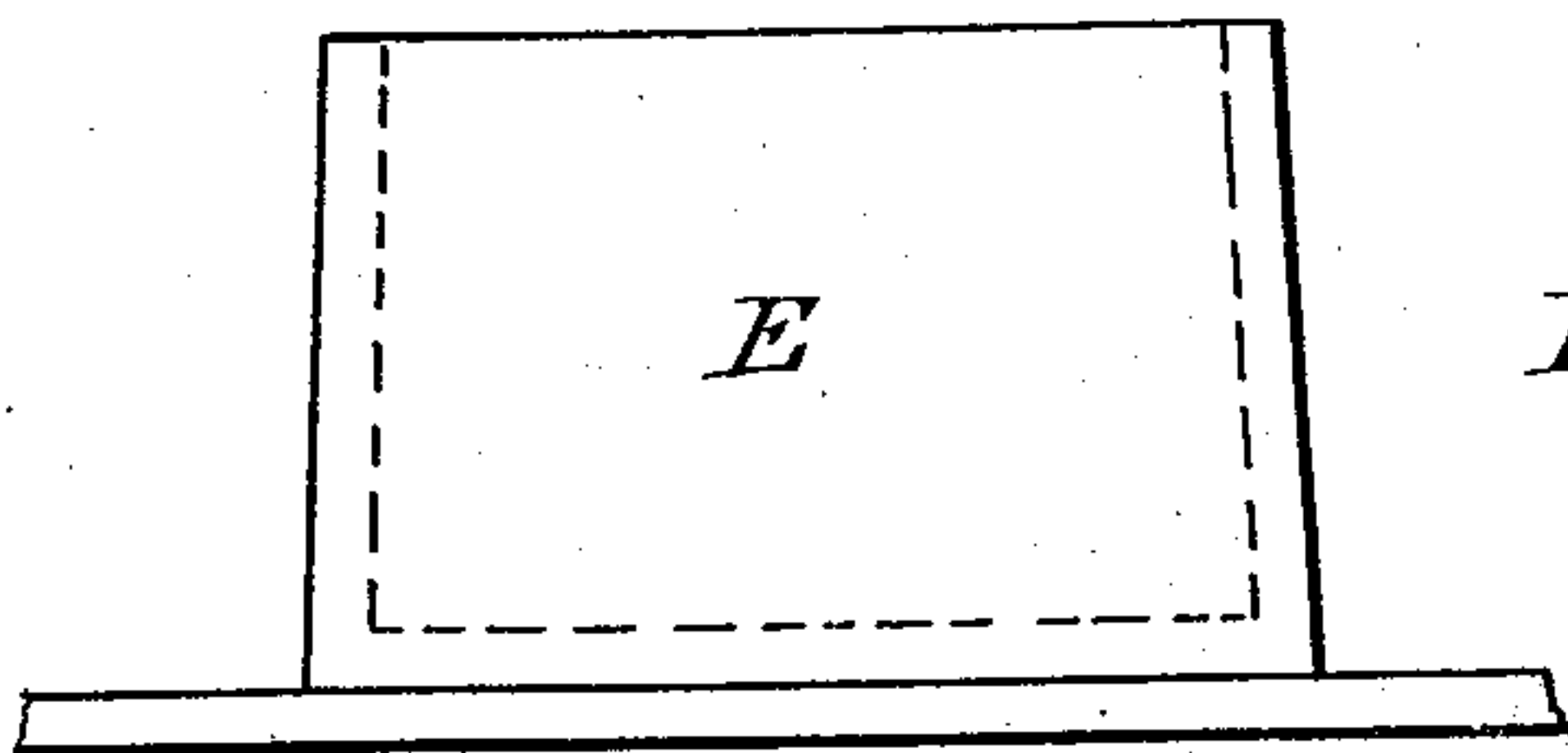


Fig. 3

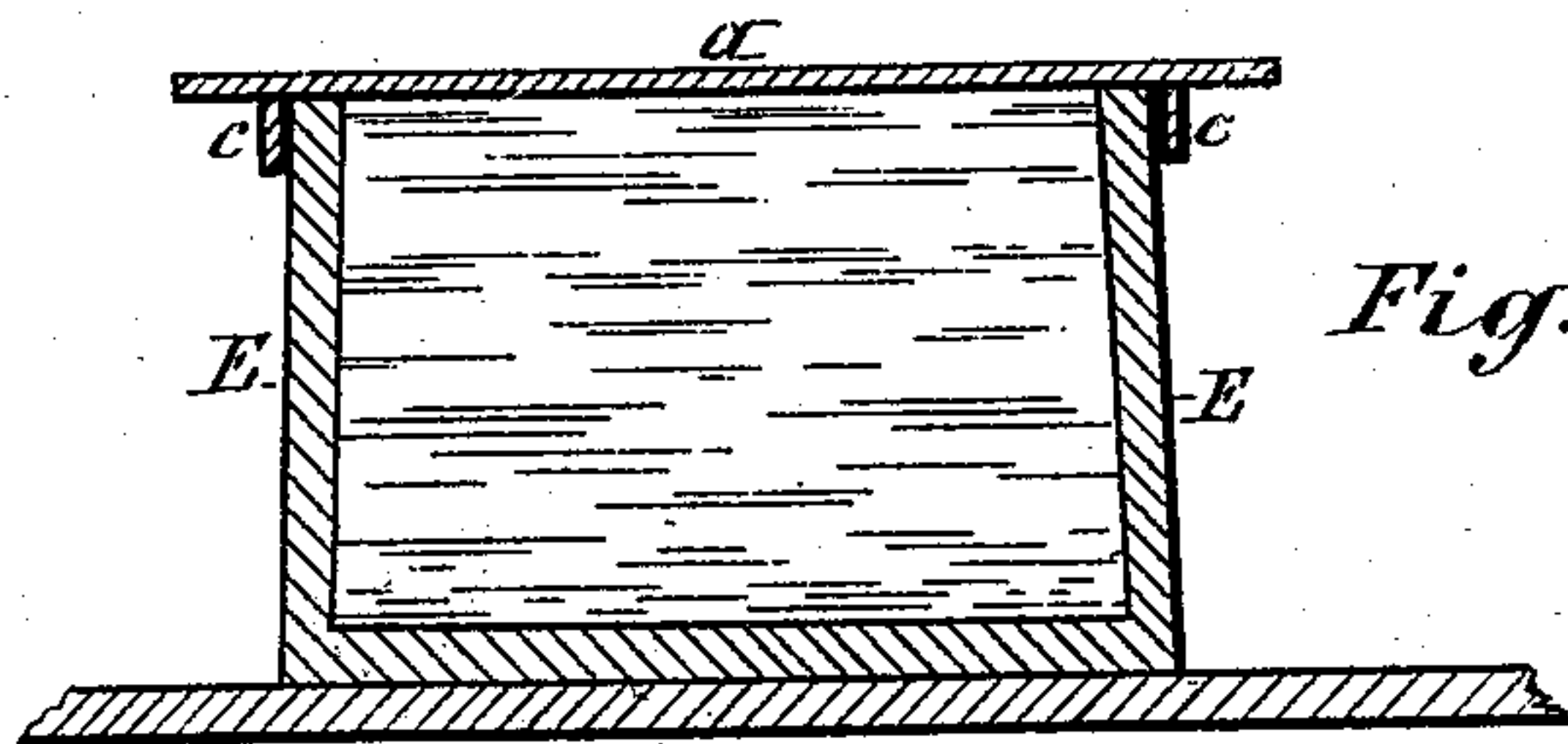


Fig. 4

WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN W. MILLER, OF WHITESBOROUGH, NEW YORK.

PROCESS OF AND APPARATUS FOR MAKING ICE.

SPECIFICATION forming part of Letters Patent No. 230,318, dated July 20, 1880.

Application filed May 15, 1880. (No model.)

To all whom it may concern :

Be it known that I, JOHN W. MILLER, of Whitesborough, in the county of Oneida, in the State of New York, have invented new and useful Improvements in the Manufacture of Ice, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The nature of this invention consists in a peculiar method of freezing water into blocks of ice of convenient size and shape for storage and transportation; and it also consists in novel, simple, and effective means for carrying out the aforesaid method, all as hereinafter fully described, and specifically set forth in the claims.

In the accompanying drawings, Figure 1 is an isometric view of the apparatus for freezing water into blocks. Fig. 2 is a side view, illustrating the operation of removing the ice-shell or partially-formed ice-block from the aforesaid apparatus. Fig. 3 is a side view of the ice-shell, and Fig. 4 a transverse section of the latter.

Similar letters of reference indicate corresponding parts.

A represents a tank or vessel, preferably of rectangular form, and of a size to contain about one hundred pounds of water. It is composed of sheet metal or other suitable material, and made with water-tight sides and bottom and an open top, and slightly flaring from the bottom to the top, for the purpose hereinafter demonstrated.

The tank A rests with its bottom upon a horizontal frame, B, to which are secured vertical frames C C, which are flexible and yieldingly embrace the sides of the tank A.

By means of another frame or a clamp, D, removably applied to and encompassing the top of the frames C C, the latter are held against the sides of the tank and made to sustain the same against outward pressure.

The described apparatus is designed to be used in the winter or during a freezing temperature.

The method of operating the same is as follows: The tank A, resting on the frame B, and having the vertical frames C clamped against its sides by the clamp D, is filled or partially filled with water, and allowed to freeze suffi-

ciently to form at the top and next to the sides of the tank A a crust of ice of the requisite thickness to form a self-sustaining ice-shell, E, capable of containing the water in the center thereof without the aid of extra braces against its sides. The bottom of the tank A being to some extent protected from frost, causes the water thereat to be but thinly frozen, barely sufficient to prevent the water from spilling while inverting the tank A. After the ice-shell E has been formed, as aforesaid, the clamp D is removed from the top of the frame, and the case A is inverted upon a suitable platform and then withdrawn from the ice-shell. The removal of the clamp D, allowing the sides of the case A to spring away from the ice-shell, facilitates the withdrawal of the case. A thin coat of oil applied to the interior of the case before filling it will effectually prevent adhesion of the ice. If this is omitted, the insertion of a thin blade at the sides of the case will readily loosen the same from the ice.

The aforesaid operation leaves the ice-shell standing with the thin crust of ice, which before was at the bottom of the case, now at the top of the ice-shell. This top crust is broken or removed, and a cover, *a*, applied to the top of the shell E, as shown in Fig. 3 of the drawings, for the purpose of retarding or preventing as much as possible the formation of ice across the top of the shell E, and allowing the water to rise as it is expanded during the freezing process, and thus relieving the shell of excessive strain. To accomplish this more effectually the cover *a* may be provided with a downward-projecting flange, *c*, between which and the top edge of the ice-shell a packing of felt, paper, or other non-conducting material may be inserted.

To insure a perfectly level bed for the support of the ice-shell an opening should be made in the top crust of the ice-shell while formed in the tank, so as to allow the water to flow over the top of said crust, which, when frozen, will form a perfectly smooth and level surface.

It will be observed that by my improved process the tank or vessel can be filled from three to five times a day, thus requiring a comparatively small number of said tanks; and

since the process can be carried on near the ice-house and with water derived from a well or spring, it saves the expense of sawing and hauling the ice from a distant pond or other
5 unclean source, and avoids the dangerous results from the latter.

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

10 1. The within-described method of forming ice-blocks for storage, consisting in exposing a tank or vessel of water to freezing temperature until a crust of ice is formed around the sides and top of the tank of sufficient thickness
15 to form a self-sustaining ice-shell capable of containing the water in the center thereof, then inverting the tank and removing the same from the ice-shell, and completing the freezing of

the water contained in said shell by exposure of the sides and bottom thereof, while retard- 20 ing or preventing the formation of ice at the top.

2. The tank or vessel A, in combination with the frame B, provided with the flexible side frames, C C, and the clamps D, substantially 25 as described and shown, for the purpose set forth.

In testimony whereof I have hereunto signed my name and affixed my seal in the presence of two attesting witnesses, at Syracuse, in the 30 county of Onondaga and State of New York, this 10th day of May, 1880.

JOHN W. MILLER. [L. S.]

Witnesses:

E. LAASS,

WM. C. RAYMOND.