

(No Model.)

F. GERGENS.

APPARATUS FOR MAKING CLEAR ICE.

No. 258,226.

Patented May 23, 1882.

Fig. 1.

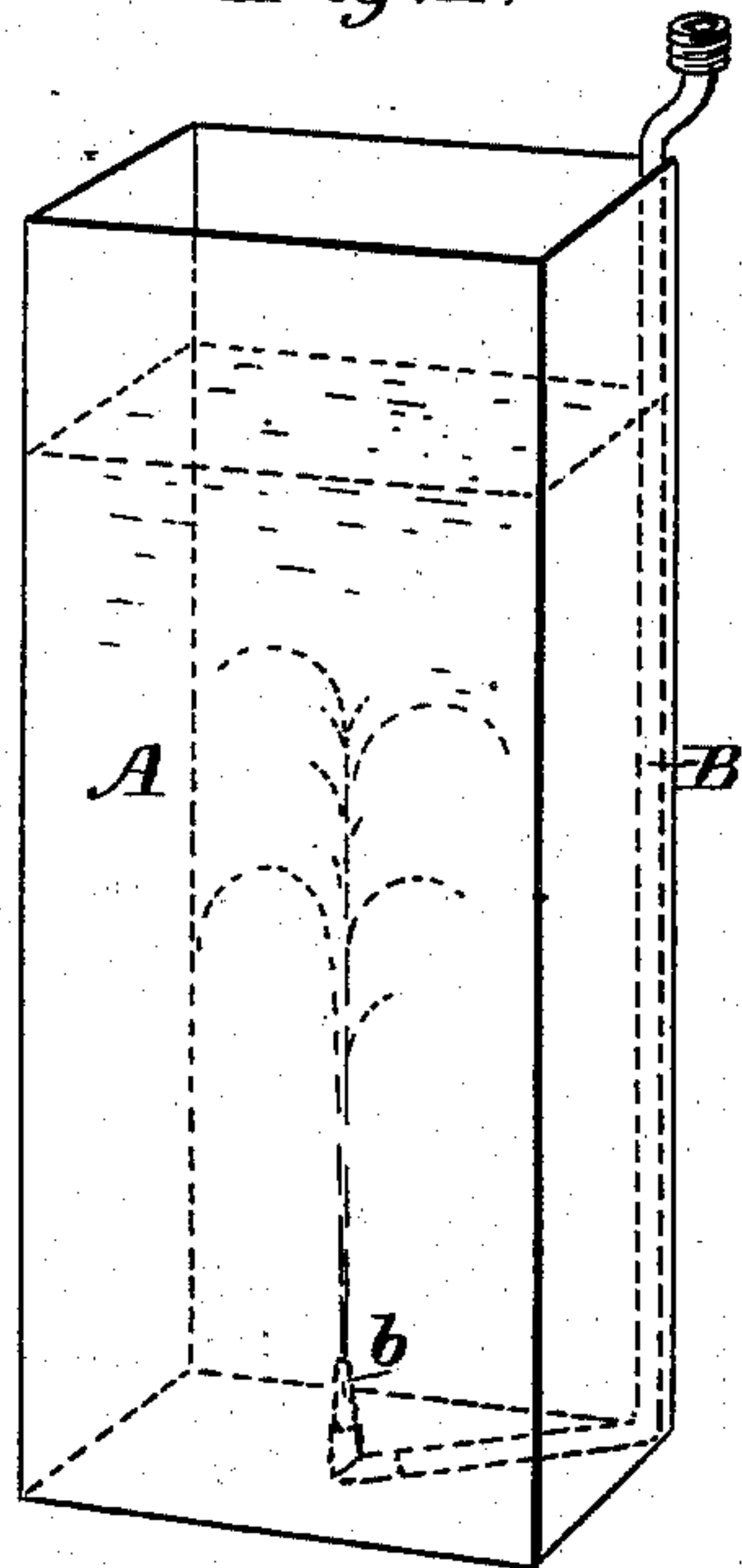


Fig. 3.

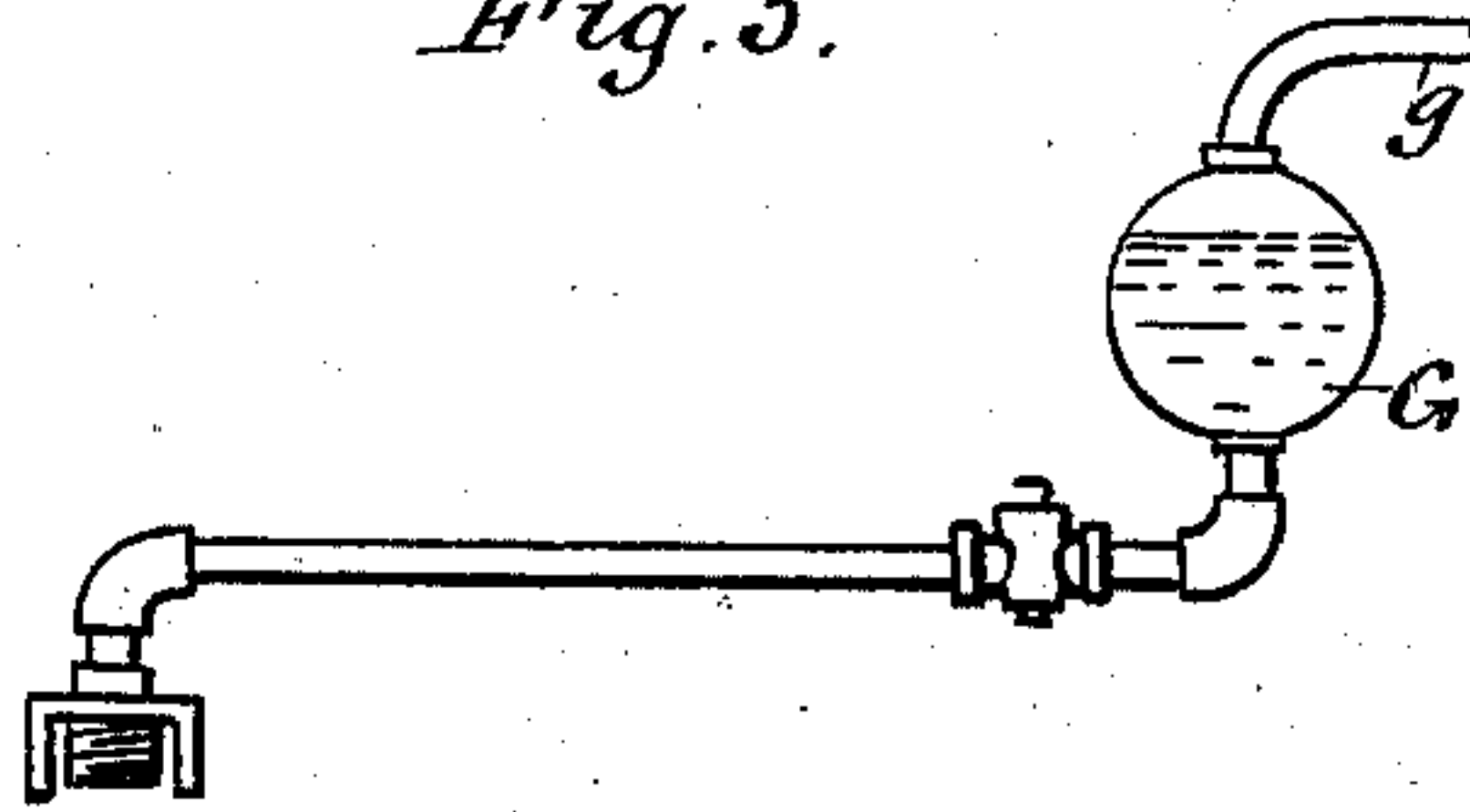
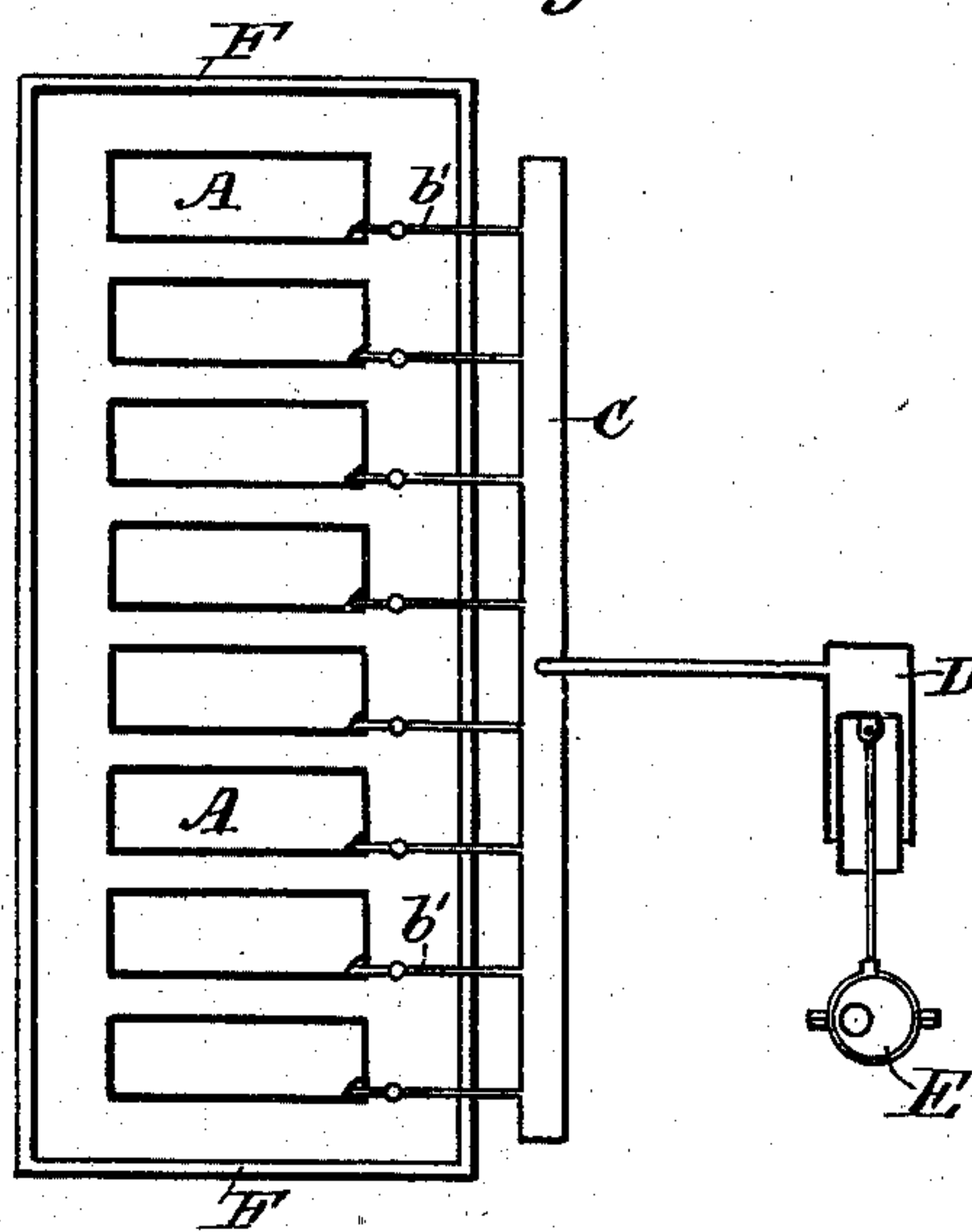


Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING CLEAR ICE.

SPECIFICATION forming part of Letters Patent No. 258,226, dated May 23, 1852,

Application filed October 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANK GERGENS, of the city of Brooklyn, Kings county, and State of New York, have invented a new and useful
5 Apparatus for Making Clear Ice, which invention is fully set forth in the following specification.

This invention has for its object to release the air-bubbles from the water in the freezing
10 vessels or cans of ice-machines, so that clear ice will be obtained. It is known that water will part with its air by agitation at a low temperature. This principle has heretofore been applied, or its application attempted, to the
15 separation of air-bubbles from water in the artificial production of ice, various stirring devices of solid material (wood or metal) being used for the purpose. In the present invention the use of such devices is dispensed with. The
20 agitation is effected by a jet or jets of water forced into the water in the freezing vessels or cans. Usually one jet is employed for each can. It is preferred in order to make the jets to withdraw a portion of the water from the
25 cans, particularly from the bottom of the cans, and then return it, and to use for the purpose a sort of syringe or pump without valves. The amount of water withdrawn and returned in this way is comparatively very small, the ob-
30 ject being simply to keep the water in a state of agitation. The agitation can be thus produced not only efficiently, but also in a very economical manner, by simple means, which interfere little, or practically not at all, with
35 the removal and replacement of freezing vessels or cans, or with the inspection of them. The freezing operation can therefore be carried on with ordinary water substantially as well as with water previously deaerated.

40 In the accompanying drawings, which form a part of this specification, Figure 1 is a view of a freezing vessel or can provided with a pipe for injecting the water for agitation, and Fig. 2 is a diagram representing a series of such
45 vessels or cans in the refrigerating-tank of an ice-machine and connected with a pump. Fig. 3 shows on an enlarged scale a connecting-pipe and receiver, preferably used between the pump and the pipes for injecting water into
50 the freezing-vessels.

The freezing-cans A, made of metal as usual,

are provided with pipes B, which may be placed outside or inside of the cans, but which are preferably placed, as shown, in one corner of the cans. They are turned up so as to project
55 slightly from the bottom, as at *b*, and are provided with a contracted opening in order that a strong jet will be produced. The freezing-cans are placed in the tank F, Fig. 2, and surrounded by cold brine in the usual way. The
60 pipes B are detachably connected at their upper ends with a common pipe, C, the connection being conveniently made by a flexible tubing, *b'*, and the ordinary hose-joint. The pipes B are or may be made of lead or other metal,
65 or of non-metallic substance. When the material of the pipe is a good conductor of heat it should be protected by a non-conducting covering, the object being to prevent the too rapid conduction of heat from the water in the
70 pipes, thus insuring their remaining open until the water in the cans is frozen. When the material is non-conducting an additional covering would not be used, unless increased thickness of wall should be desired. The constant
75 movement of water in the pipes B also assists in preventing freezing therein.

The pipe C is connected with a pump, preferably through the intermediary of a receiver, G, (see Fig. 3,) having the inlet *g* to the pump
80 connected with the top of the receiver, which is filled with air, so that the water is withdrawn from and forced back into the cans by the alternation of rarefaction and compression of air. It is preferred, also, to have the water with-
85 drawn slowly and forced back by a sharp, quick stroke, which can be done by having an irregular-shaped cam for operating the pump-piston, in place of the eccentric E. (Shown in Fig. 2.)
90

Instead of using a single-acting pump, as shown, a double-acting pump, with the opposite ends of the cylinder connected with the pipes B in separate sets of cans, could be employed.
95

The operation of injecting the water for agitating the water in the freezing vessels or cans A has already been sufficiently described. These vessels or cans are filled with water and emptied of their ice in any usual or suitable
100 way.

It is obvious that various modifications could

be made in the details without departing from the spirit of the invention, and that portions of the invention could be used without the others. For example, a continuous stream of
5 water could be withdrawn from the freezing vessels or cans and returned thereto through a jet; but as this would require two pipes for each vessel or can, instead of one, the manner illustrated of carrying the invention into effect
10 is preferred. As many jets could be used in a freezing vessel or can as may be desired or as deemed efficacious.

Having now described my said invention and the manner of carrying the same into ef-
15 fect, what I claim is—

1. In the artificial production of ice, the method of treating water to remove the contained air by injecting a current of water there-
20 into, substantially as and by the means de- scribed.

2. The method of treating the water to be frozen in the freezing-vessels of ice-machines by withdrawing a portion thereof and return-
25 ing it forcibly, so as to agitate the water to be frozen, substantially as described.

3. A freezing vessel or can for containing water to be frozen by artificial means, in com-

bination with one or more pipes for injecting water into said vessel or can to agitate the water therein contained, substantially as de- 30 scribed.

4. The combination of a series of freezing vessels or cans, one or more pipes for each ves-
sel or can for injecting water thereinto, and a
common pump connected with said pipes, sub- 35 stantially as described.

5. An apparatus comprising in combination the freezing-tank of an ice-machine, the ves-
sels or cans for containing the water to be
frozen, and means, as indicated, for forcing or 40 injecting water into said vessels or cans to agitate the contents thereof, substantially as de- scribed.

6. The combination, with the freezing ves-
sels or cans and the pipes for injecting water 45 thereinto, of a pump without valves, substan- tially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

F. GERGENS.

Witnesses:

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