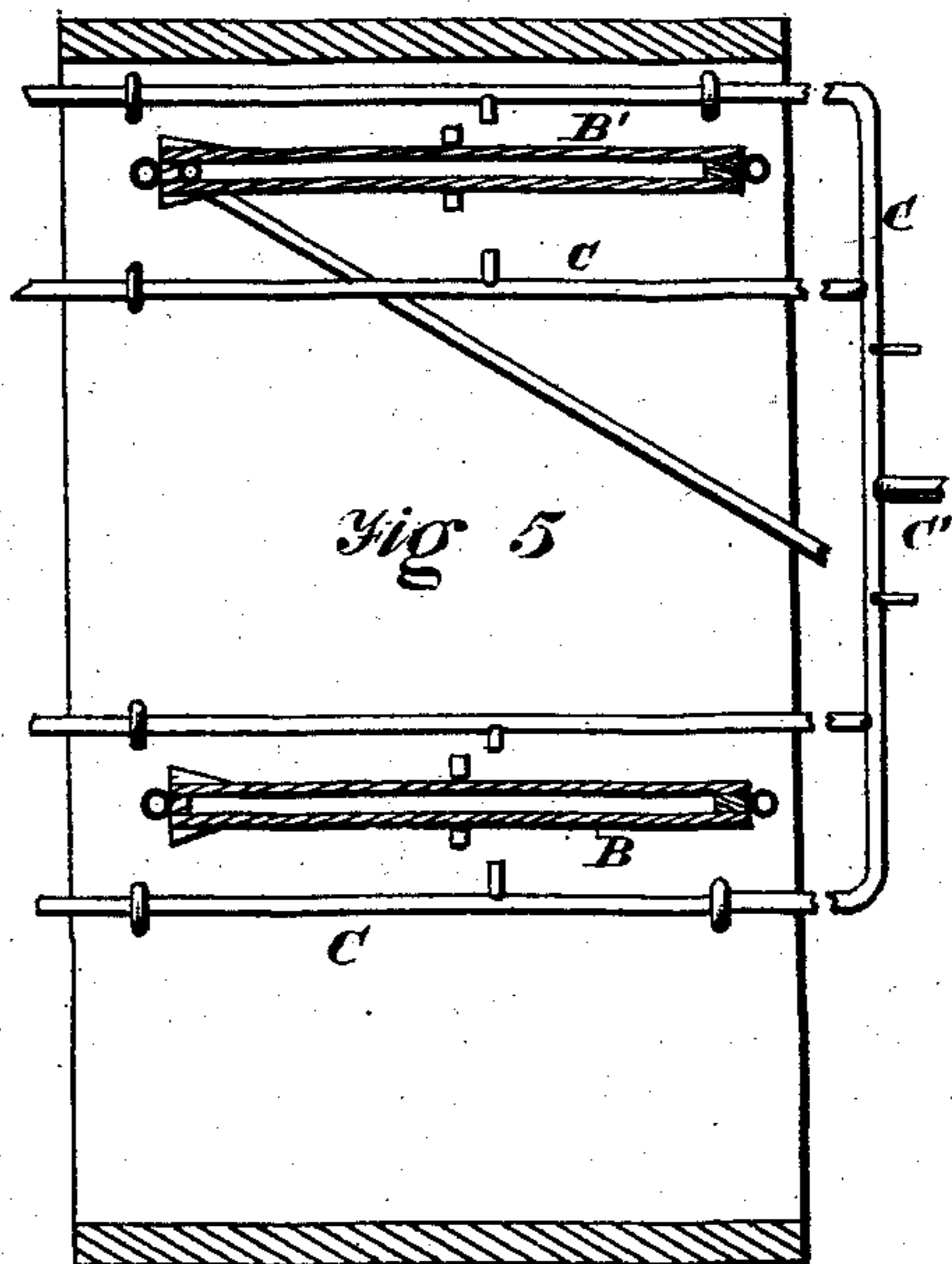
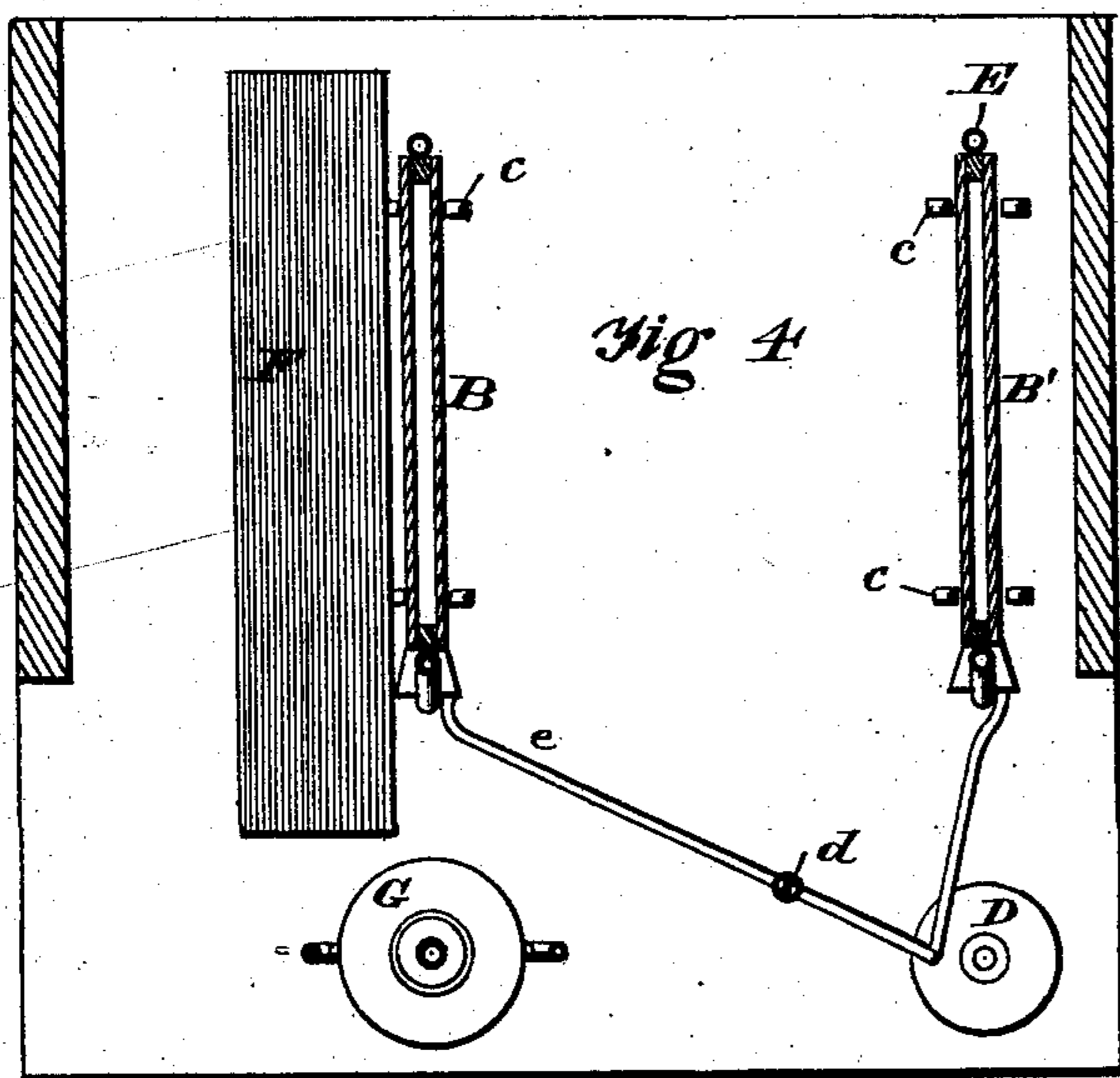
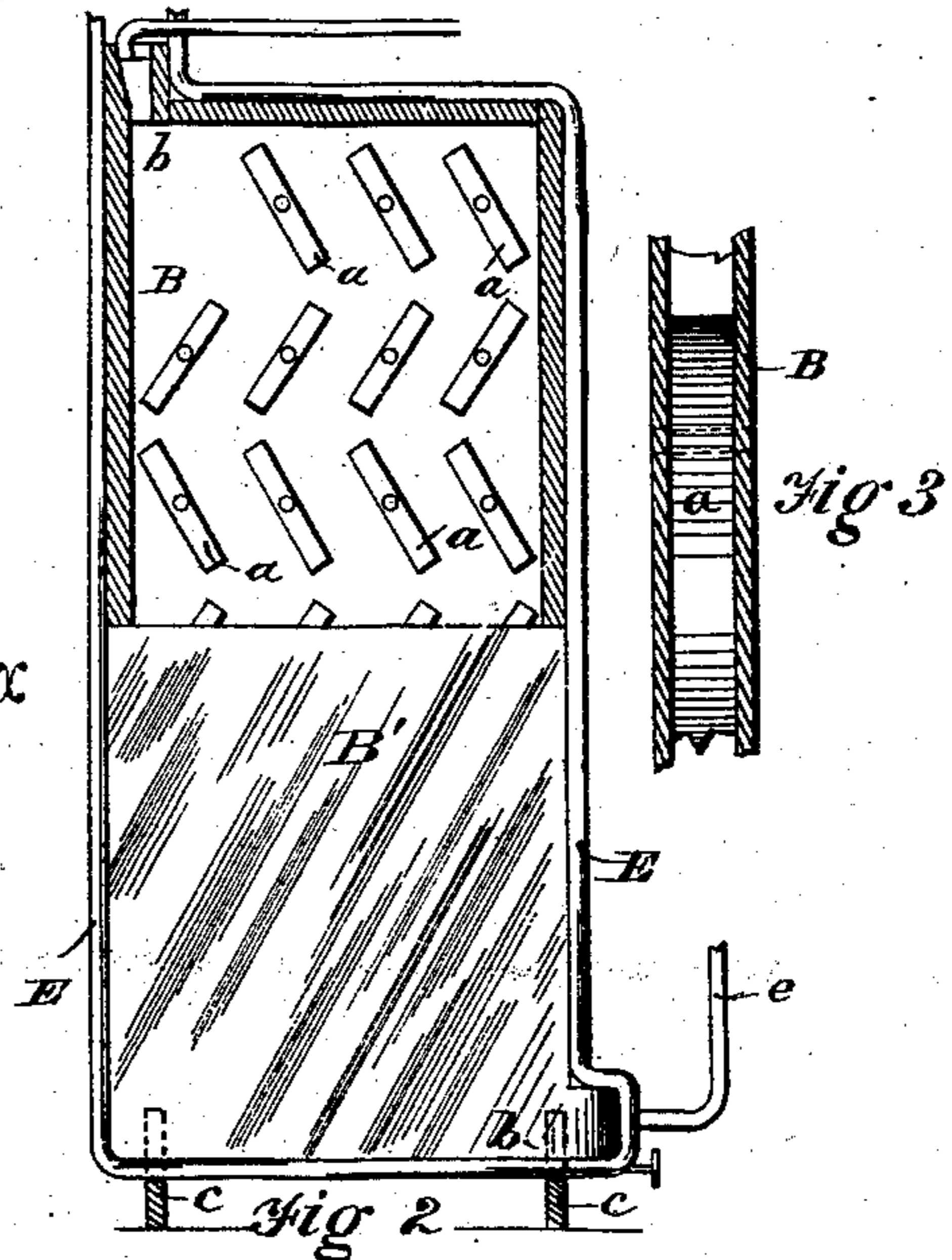
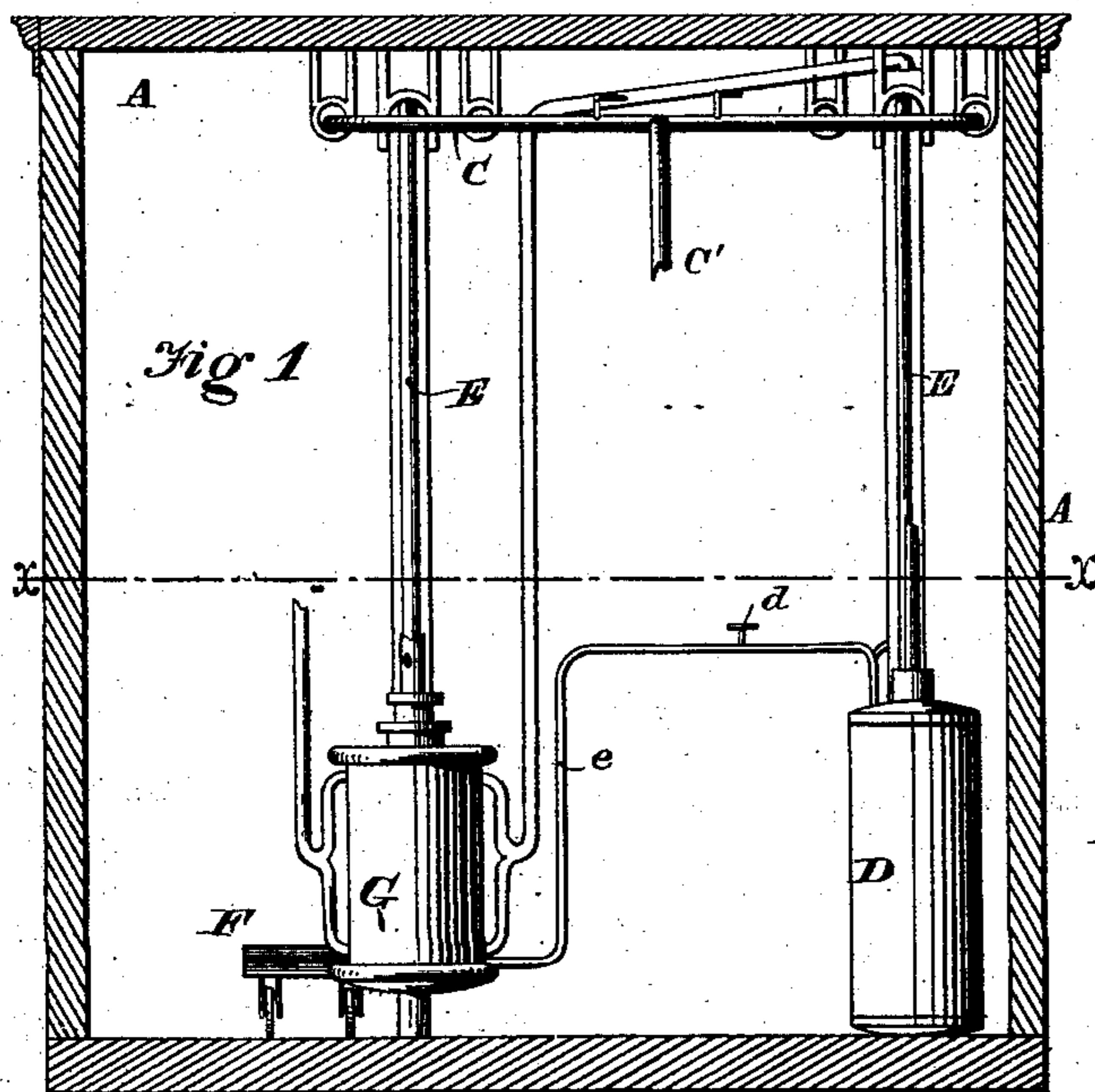


MACHINE FOR THE MANUFACTURE OF ICE.

Patented Oct. 11, 1881.



*Witnesses*

Wilmer-Bradford  
J. Crastus Lester

*Inventor*

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att'y.

# UNITED STATES PATENT OFFICE.

CHARLES W. GELETT, OF OAKLAND, CALIFORNIA, ASSIGNOR OF ONE-HALF  
TO EDWARD P. FLINT, OF SAME PLACE.

## MACHINE FOR THE MANUFACTURE OF ICE.

SPECIFICATION forming part of Letters Patent No. 248,157, dated October 11, 1881.

Application filed February 24, 1880.

*To all whom it may concern:*

Be it known that I, CHARLES W. GELETT, of Oakland, in the county of Alameda and State of California, have invented an Improvement in Machines for the Manufacture of Ice, of which the following is a specification.

My invention relates to that part of an ice-machine known as the "congealer;" and it consists of a thin, hollow, rectangular plate having stops at intervals between the two freezing-surfaces, so that the flow of the refrigerant will meet with more or less impediment in passing through the plate, and a more rapid congelation of the water which is directed upon the outside of the plates will take place.

My invention also relates to a means for directing a stream of water to the plates intermittently during the operation of making the ice. The ice is detached from both sides of this plate by letting an excess of hot gas or fluid from the receiver pass through the hollow plate, which causes the ice to separate from the plates, as will be more fully described hereinafter.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a front elevation. Fig. 2 is a side view of one of the congealers, with a part broken away. Fig. 3 is a sectional edge view of a portion of the plate. Fig. 4 is a section on line *xx* of Fig. 1, looking downward. Fig. 5 is a section on line *xx* of Fig. 1, looking upward.

In the congealing-room A, the walls of which may be packed with sawdust to preserve a low temperature thereof, I place my congealer-plates B. These are constructed rectangular in form, of sufficient height and width, by employing two sheets, B B', of suitable thickness—say No. 10 metal—ten feet long, and three and a half or four feet wide, and rivet them through and through to strips or bars of iron placed between them at the edges, ends, and sides, so as to be perfectly gas-tight. In the chamber or space formed between these two plates I place metal stops *a a* at an angle of about forty-five degrees with the vertical position of the plates in alternate rows, and so that the angle of inclination of one row will be opposed to the angle of inclination of the succeeding row, preserving the uniformity of these stops throughout the whole chamber from top to bottom, ex-

cept at the gas induction and eduction points or corners *b*. By this means the refrigerant is in a measure retarded, and by which and the small space between the plates a more rapid congelation or freezing or formation of ice on the plates is had, as by actual experiment I have been enabled to produce one inch of good clear ice every hour. The plates are placed in a rectangular position, as shown, upon brackets or standards *c c*, so as to isolate them from the walls of the room in which the freezing takes place.

For supplying the plates with water I employ a series of pipes, C, one for each side of the congealer, which are tapped in the center, so that a thin stream of water is caused to pass from the pipes upon the plates near the top part thereof and drip down the sides to and fro or backward and forward until ice of the desired thickness is formed on both sides of the plates, the water for this purpose being supplied by a flexible hose attached to the pipes at C'. Any suitable mechanism may be employed to move these water-pipes forward and backward, and the thrust forward may be made to that extent as to carry the stream beyond the congealer, and an intermittent stream upon the plates be had.

When the ice has reached the desired thickness on the sides of the congealers the stream of water upon the plates is shut off and the cock of the receiver D is turned wide open, and a volume of hot gas or liquid is let into the chamber for a few minutes, when the ice is detached from the plates sufficiently, and so that it can be removed from the room by means of the truck upon which it rests. Yet should any portion of the ice be frozen around the edges of the plates where the hot gas would not be likely to reach by reason of the thick bars of metal to which the plates are riveted, I employ a pipe, E, which is bent completely around the edges of the congealers, and through this pipe simultaneously with the passage of the hot gas through the plates I pass a constant stream of water at the ordinary temperature from a hydrant, which will permit the ice at those points to be easily broken away or detached simultaneously with the main body.

The truck F is simply a piece of timber of sufficient strength mounted upon castor-wheels,

so that they will turn at any point in a circle, and the truck, with the block of ice thereon, can be made to stand out and away from the plates and trundled to a place of deposit of the ice.

5 The operation will be as follows, to wit: The pump G, having been put in operation before any of the refrigerant has been admitted to the plates, will create a vacuum of about two-thirds of an atmosphere, when the cock *d* of  
10 the receiver D is opened to admit a small volume of the refrigerant into the lower end of the plate through the pipe *e*. This fluid passes upward, meeting with resistance from the stops, which retards the passage thereof in such a  
15 manner as to rapidly absorb the heat from the water which is being distributed on both sides of the plate in a thin stream, and causes the ice to form on the plates. From the chamber of the plates the gas or refrigerant is drawn into  
20 the pump and forced out, on the pressure side thereof, into an ordinary condensing-coil (not shown) situated at the top of the machine, and thence returned to the receiver D to be used  
25 over again, in the usual way in the manufacture of ice. When the ice has formed of sufficient thickness on the plates so that it becomes necessary to remove it, I open wide the cock *d* of the pipe *e*, which leads from the receiver D to the plates, and let flow a full volume  
30 of the liquid into the hollow plate, continuing the flow for a few minutes, at the same time letting in water at the ordinary temperature through the pipe E, which surrounds the

edges of the plate, when the ice can be readily detached from both sides and edges thereof. 35

It should here be observed that any excess of water passing over the plates which is not congealed is pumped up and used over in its partially-refrigerated state by admitting it again to the supply-pipes C. 40

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

1. In combination with the sides B' B and induction and eduction openings *b*, the series 45 of stops *a*, arranged in rows, the stops of each row being at an angle of forty-five degrees to those of the next row, substantially as described, whereby the vapor is kept in constant agitation and every part of it brought in con- 50 tact with the sides of the congealer, as set forth.

2. In an ice-making machine, the combination, with the frame A, reservoir D, pipe *e*, stop-cock *d*, pump G, pipes E, and spray-pipes C C', of the rectangular congealers arranged ver- 55 tically in said frame, substantially as described, whereby the ice is formed upon both sides of each of said congealers, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 12th 60 day of February, 1880.

CHARLES W. GELETT. [L. S.]

Witnesses:

C. W. M. SMITH,  
HOLLAND SMITH.