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D. E. SORRES . PATENTED MAR 8 1870

Refrigerating & Preserving Apparatus.

Fig. 1

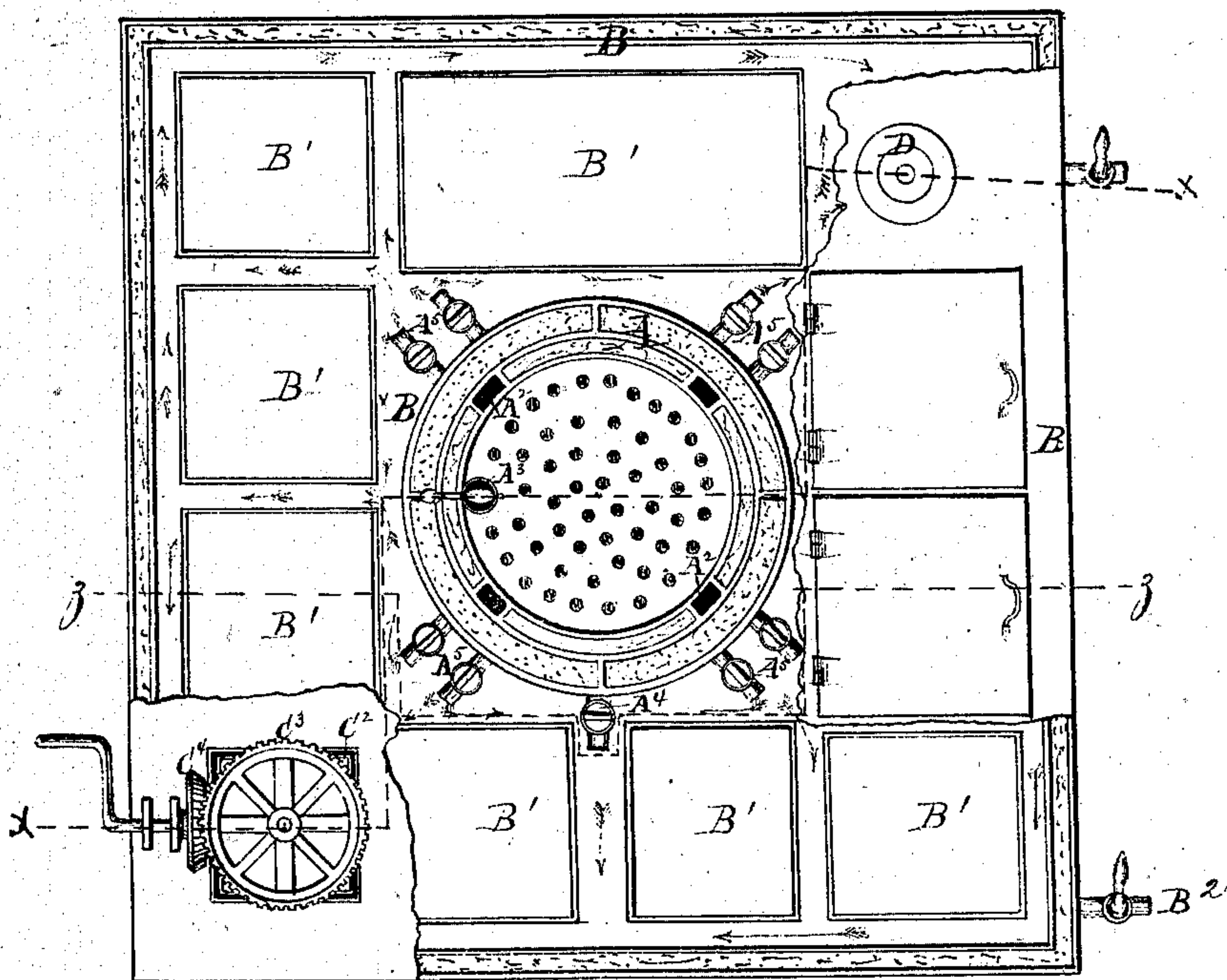


Fig. 2

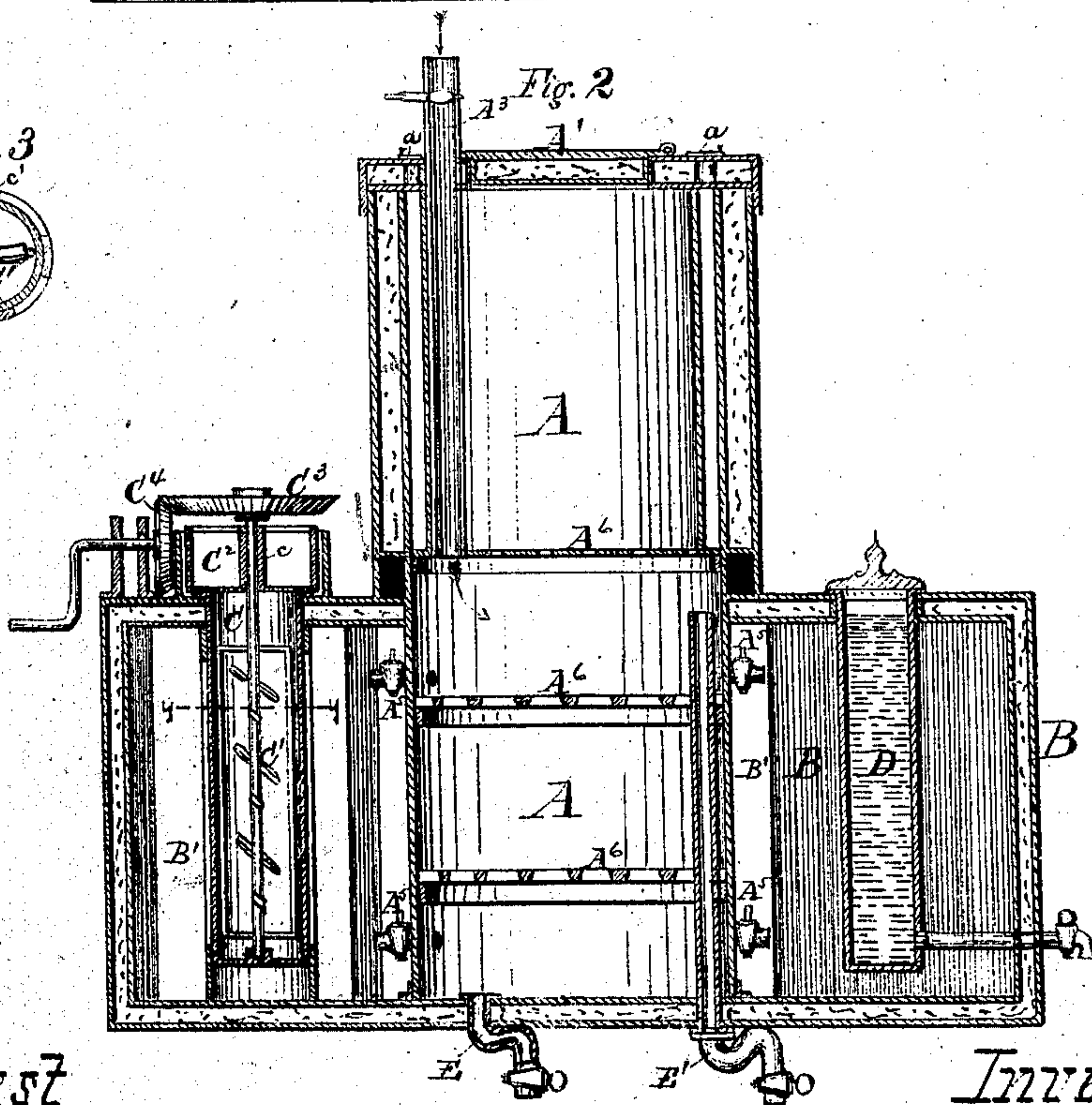


Fig. 3



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Refrigerating & Preserving Apparatus

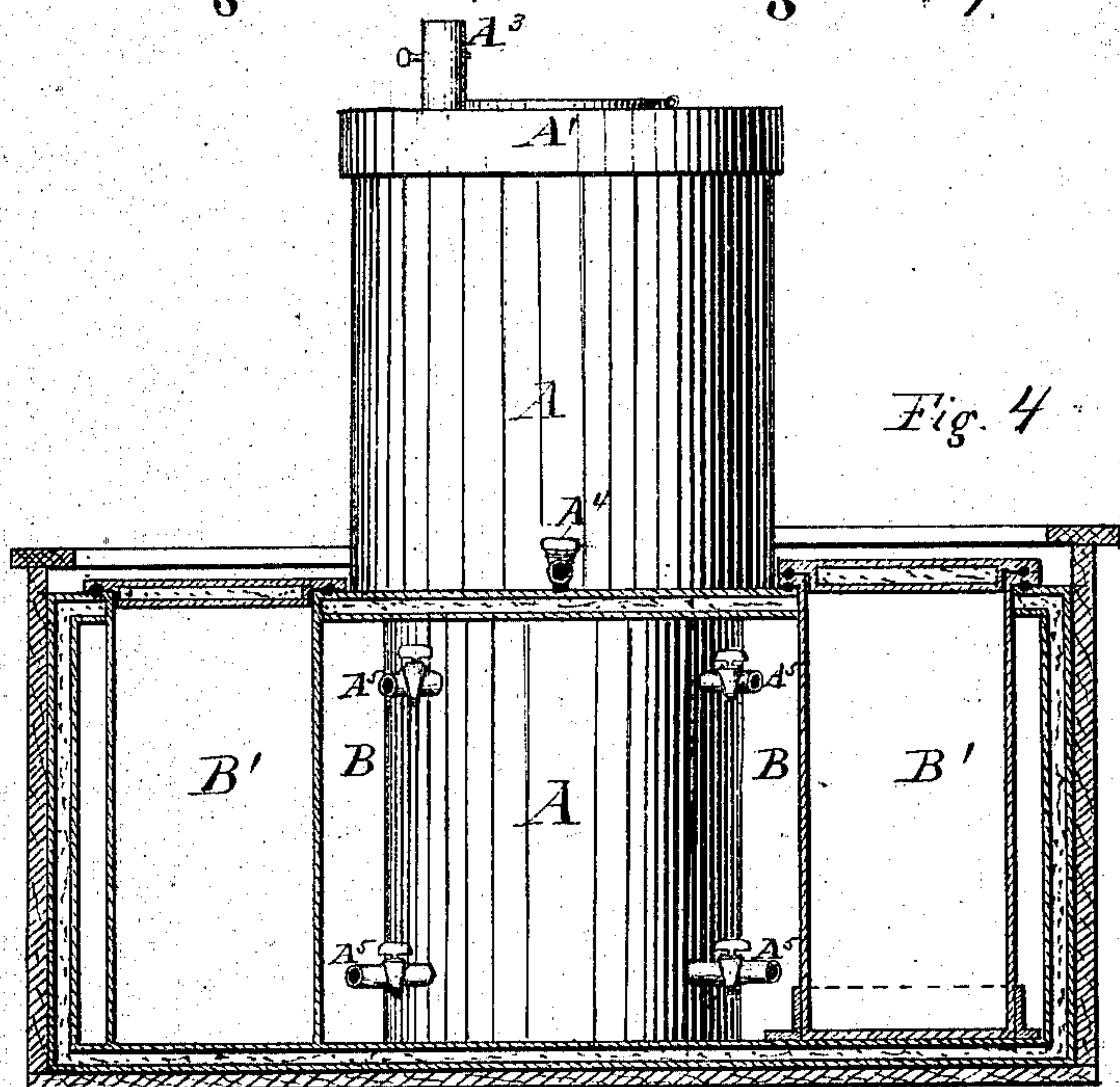


Fig. 4

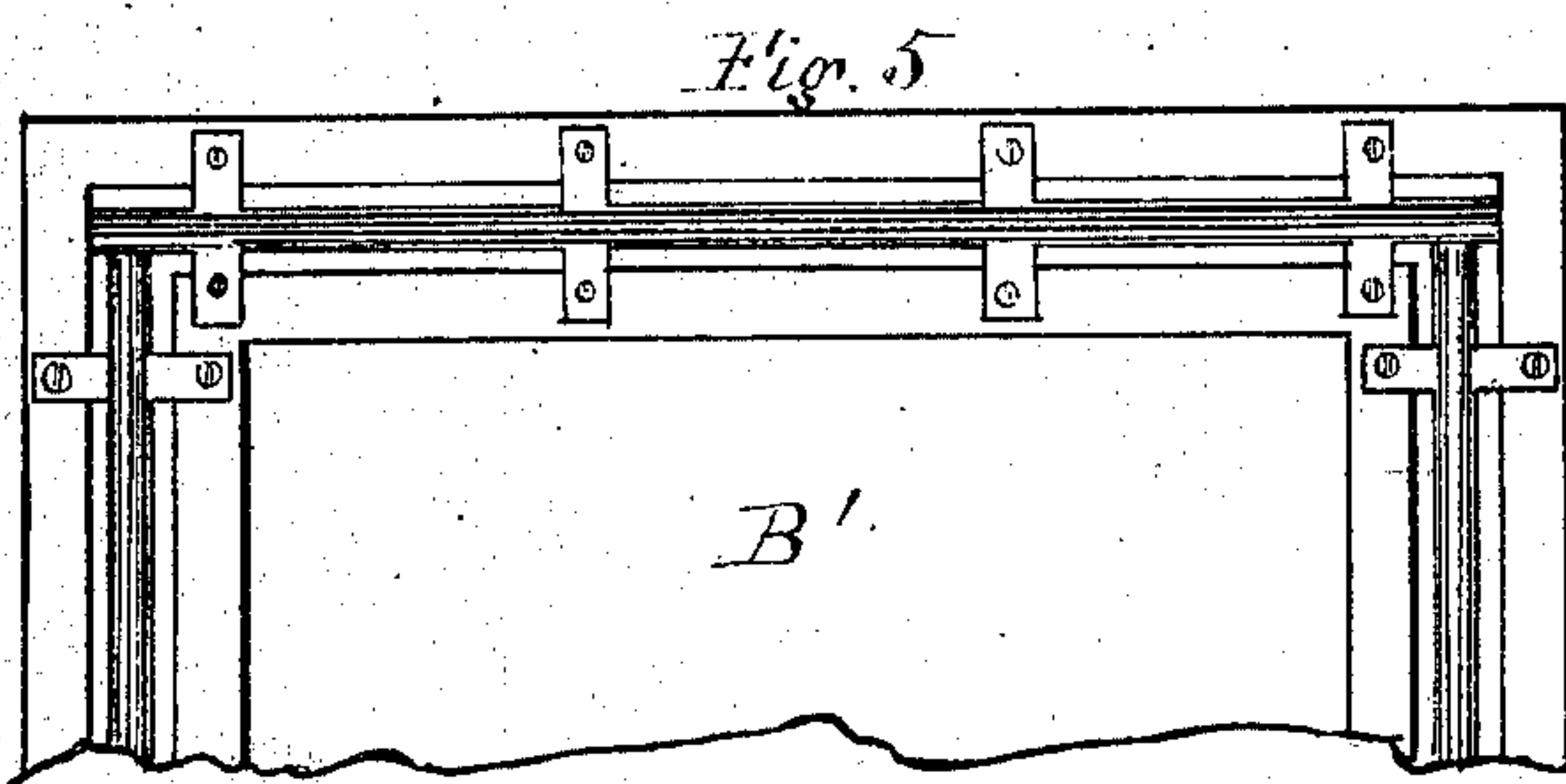


Fig. 5

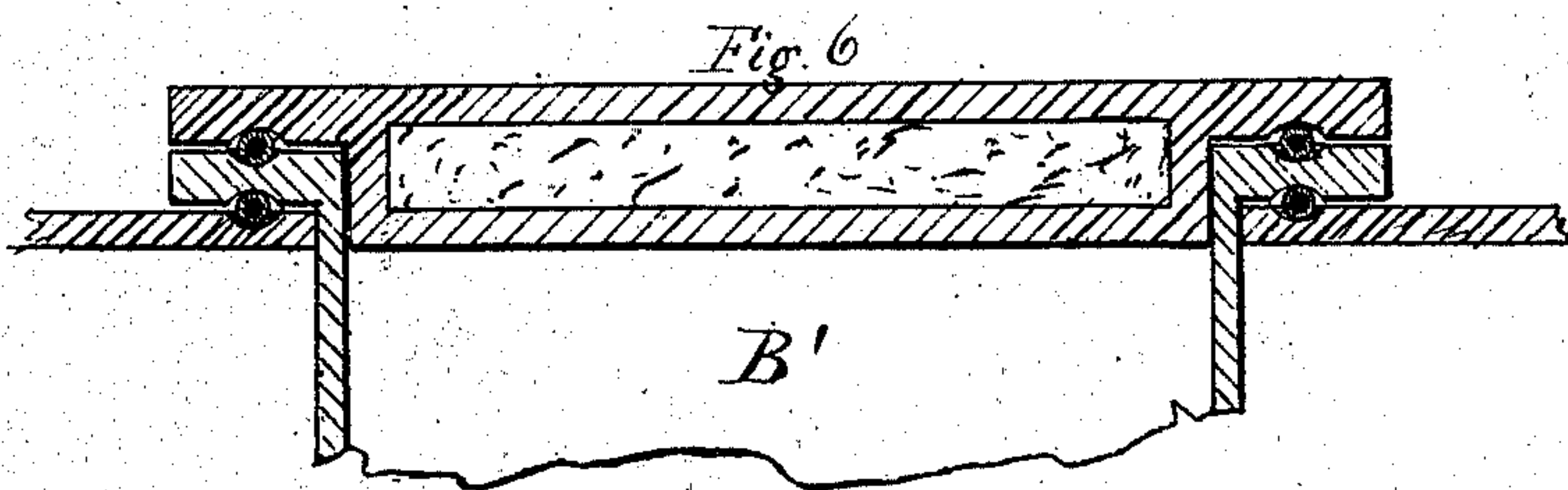


Fig. 6

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UNITED STATES PATENT OFFICE

DANIEL E. SOMES, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN APPARATUS FOR REFRIGERATING AND PRESERVING.

Specification forming part of Letters Patent No. 100,681, dated March 8, 1870.

To all whom it may concern:

Be it known that I, DANIEL E. SOMES, of Washington, in the county of Washington and in the District of Columbia, have invented a new and useful Improved Refrigerating and Preserving Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a plan view of my improved refrigerating and preserving apparatus, the head of the ice-receptacle and portion of the upper wall of the preserving-box being removed to show their interior arrangement. Fig. 2 is a vertical section on line *xx* of Fig. 1. Fig. 3 is a horizontal section on line *yy* of Fig. 2, through ice-cream freezer, showing the flanges upon its periphery, which hold it in position in the slotted case in the preserving-box. Fig. 4 is a vertical section on line *zz* of Fig. 1, the left-hand section showing a tank rigidly secured in the preserving-box, and the right-hand section a removable tank inserted into the preserving-box, and held in proper position therein by a suitable frame upon the bottom of such box, also showing a mode of making the joints between the open upper end of the tanks and the lower side of their doors airtight, by means of rubber tubing. Figs. 5 and 6 are sections, on an enlarged scale, of a portion of a tank and its door, to show the rubber tubing.

The same letters are used in all the figures in the designation of identical parts.

My invention relates to a refrigerating and preserving apparatus; and my improvements consist in sundry peculiarities of construction and arrangement of various parts, as will be more specifically set forth in the following specification and claims.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the annexed drawings, A represents the ice-receptacle, and B the preserving-box, the former of which is set into the latter, having no connection therewith, excepting through valves or cocks A⁵. When the ice-receptacle projects above the top of the preserving-box, as I have shown in this instance, such pro-

jecting part is constructed with multiple walls, the spaces between which may be filled with air, or some good non-conducting substance, as charcoal, cotton, tow, and the like. Around the innermost wall I prefer to construct flues, which are always left open for the air to circulate through, and may communicate through registers *a* in the head A¹ with the exterior atmosphere. These flues are marked A² in Fig. 1. A³ is an independent flue or pipe extending from near the top of the preserving-box upward through the head of the ice-receptacle, being provided with a suitable damper. This pipe is used for introducing fresh air into the ice-receptacle, and may be used in connection with a cock or valve, A⁴, Figs. 1 and 4, to cool the atmosphere in the room in which this apparatus is placed, warm air constantly falling down through the stack to take the place of cold air discharged through the valve. That portion of the ice-receptacle within the preserving-box is constructed with a single wall, so that its temperature may be readily transmitted to the latter. Valves or cocks A⁵ serve to open or close communication between the ice-receptacle and preserving-box. A⁶ represent diaphragms or grates, placed at different altitudes in the ice-receptacle, for the purpose of supporting the ice or other cooling substances at different heights therein, all the diaphragms being made so that they can be removed out of the receptacle.

The preserving-box may be made of any suitable size and form to suit the various conditions under which it is to be used. All its walls are made multiple, packed between with good non-conducting substances.

All around the ice-receptacle are placed tanks or boxes B¹, of convenient size and form, and either rigidly secured in the preserving-box or loosely set into the same, so that they can be removed therefrom. In the latter case they are provided with flanges around their upper ends, as shown in the right-hand section of Fig. 4, such flanges being provided on their upper and under surfaces with a continuous groove, somewhat flat, in which rubber tubes or other packing are fastened, for the purpose of making the joints between the flanges and the preserving-box, as well as between such flanges and the doors or lids which

close the tank, air-tight. I prefer to employ these rubber tubes in every case where openings are made in any part of the apparatus, and closed by doors or lids.

The tanks, whether rigidly connected to the preserving-box or set loosely into the same, must always be made water-tight, and no communication must exist between the two.

In any convenient part of the preserving-box I propose to insert an ice-cream freezer, C, consisting of a cylinder of suitable size, made of sheet metal by preference, in which an agitator, C¹, is pivoted, extending some distance above the top of the cylinder, as shown in Fig. 2.

The upper end of the cylinder is open, and upon this open end a box, C², is placed, having a central hub, c, through which the projecting end of the agitator-spindle passes, extending a short distance through the same to receive a bevel-wheel, C³, which meshes into and is driven by another bevel-wheel, C⁴, mounted upon a horizontal shaft, placed in suitable bearings, and having a crank or other device upon its outer end by which to turn it.

The office of the box C² is to receive lumps of ice, ice and salt, or other cooling substances, for the purpose of freezing the cream in the cylinder independent of the other parts of the apparatus.

The cylinder C is inclosed by an open or slotted case within the preserving-box, and prevented from turning by flanges c' upon its periphery, which take into grooves formed in the inclosing-case.

The beaters upon the agitator-spindle are in the form of screws, so that in turning the agitator in one direction they press the contents toward the bottom of the cylinder; but on turning the same in the opposite direction they tend to lift the contents out of such cylinder.

D is another vessel set into the preserving-box, which is to receive water to cool the same, it being provided with a discharge-pipe in its lower portion, extending through the side wall or bottom of the preserving-box, and provided with a suitable cock, as shown in Figs. 1 and 2.

A faucet is arranged in the bottom of the preserving-box at B², Fig. 1, by which to draw off any liquids which it may be desirable to remove.

Pipes E and E' extend through the bottom of the ice-receptacle to different heights, as shown, through which to discharge the water or other liquids therein. They are provided with traps and cocks on the outside, the traps being for the purpose of preventing the escape of the cold air from the ice-receptacle.

This apparatus may be operated in the following manner: The preserving-box, when a

very low temperature is wanted, is filled, through suitable openings in its top, with water or brine, which surrounds the ice-receptacle, tanks, ice-cream freezer, and water-cooler upon all sides. The upper diaphragms or grates in the ice-receptacle are then taken out of the same, and a sufficient quantity of ice or other cooling substances placed upon the lowest grate. Very soon a very low temperature will be obtained in the preserving-box, which temperature soon reduces the air in the tanks to the same state. A low temperature can thus be maintained, with little expense of ice, in the various tanks and other devices inserted into the preserving-box. Sometimes such a low temperature is not desirable. The brine is then removed from the preserving-box, and air only used. In this instance the temperature in the preserving-box can be readily regulated by opening or closing the cocks in the ice-receptacle. The lower portion of the ice-receptacle is generally to be filled with brine, the level of which can be determined by the discharge-pipes.

In the application of my invention to preserving-houses and packing-houses, and the like, the stack or ice-receptacle may extend one story or more above the preserving box or chambers or salting-tanks, and be filled to the top, thus securing a supply of ice sufficient to last several months, or an entire year.

When used for cooling buildings or apartments, and ventilating the same, the air, as it falls through the flues or pipes A² and A³, is conducted through the valve A⁴ to the different apartments to be cooled by means of tubes provided with valves for regulating the supply thereof.

The chambers or tanks may be made of any suitable material; but glass, made independently of the other parts of the apparatus, with grooved flanges, as shown in Fig. 6, and placed within the case, is preferable.

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

1. The combination of the preserving-box or refrigerating-chamber, ice-receptacle, and ice-cream freezer, operating substantially as described.

2. The combination of the refrigerating-chamber, ice-cream freezer, water-cooler, and ventilating-tubes with an ice-box, substantially as set forth.

3. An ice-cream freezer with an ice-box forming the cover thereto, substantially as shown and described.

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Witnesses:

B. EDW. J. EILS,
F. C. SOMES.