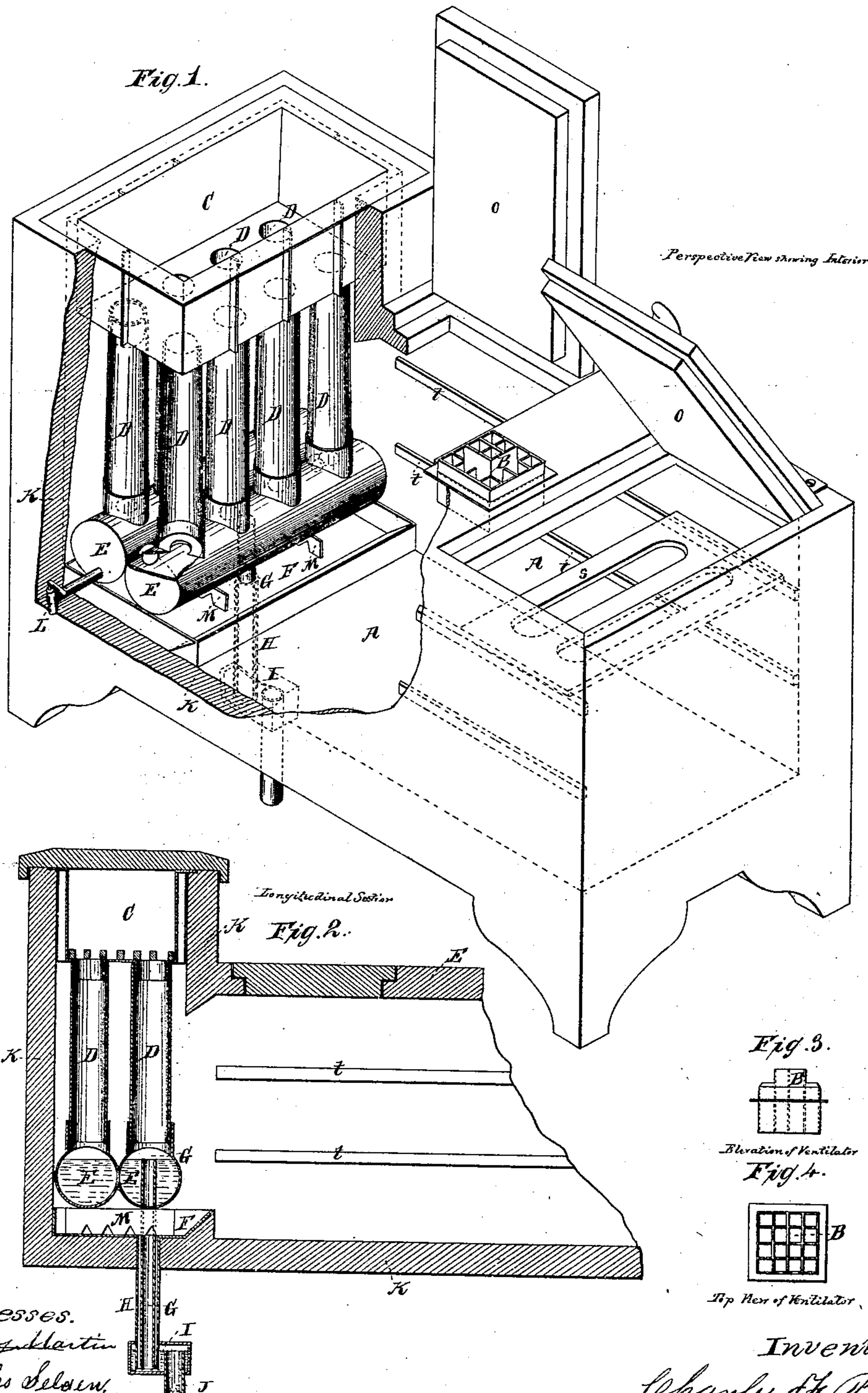


C. F. PIKE.

APPARATUS FOR COOLING AND PRESERVING MEAT, FISH, VEGETABLES, &c.

No. 60,552.

Patented Dec. 18, 1866.



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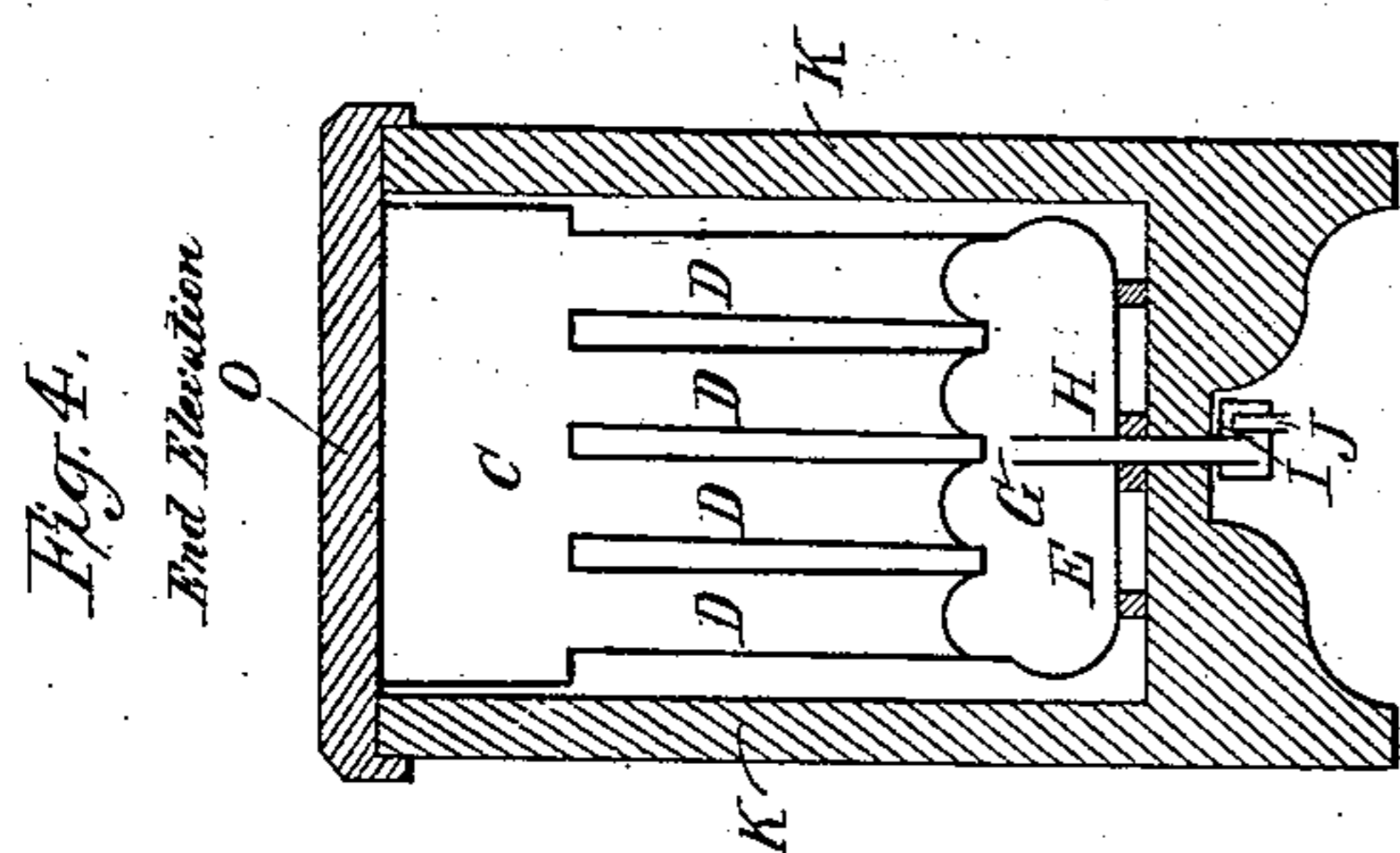
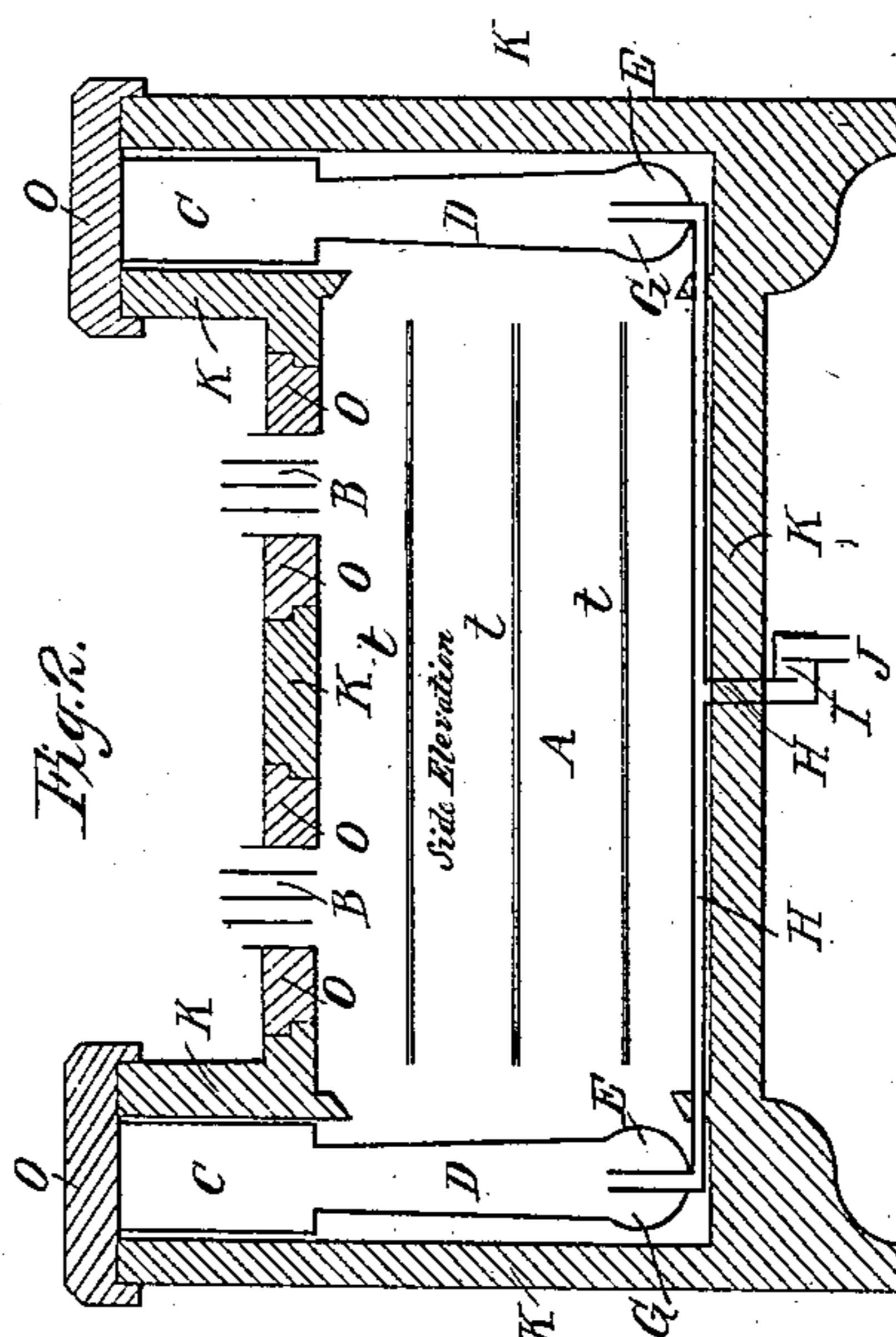
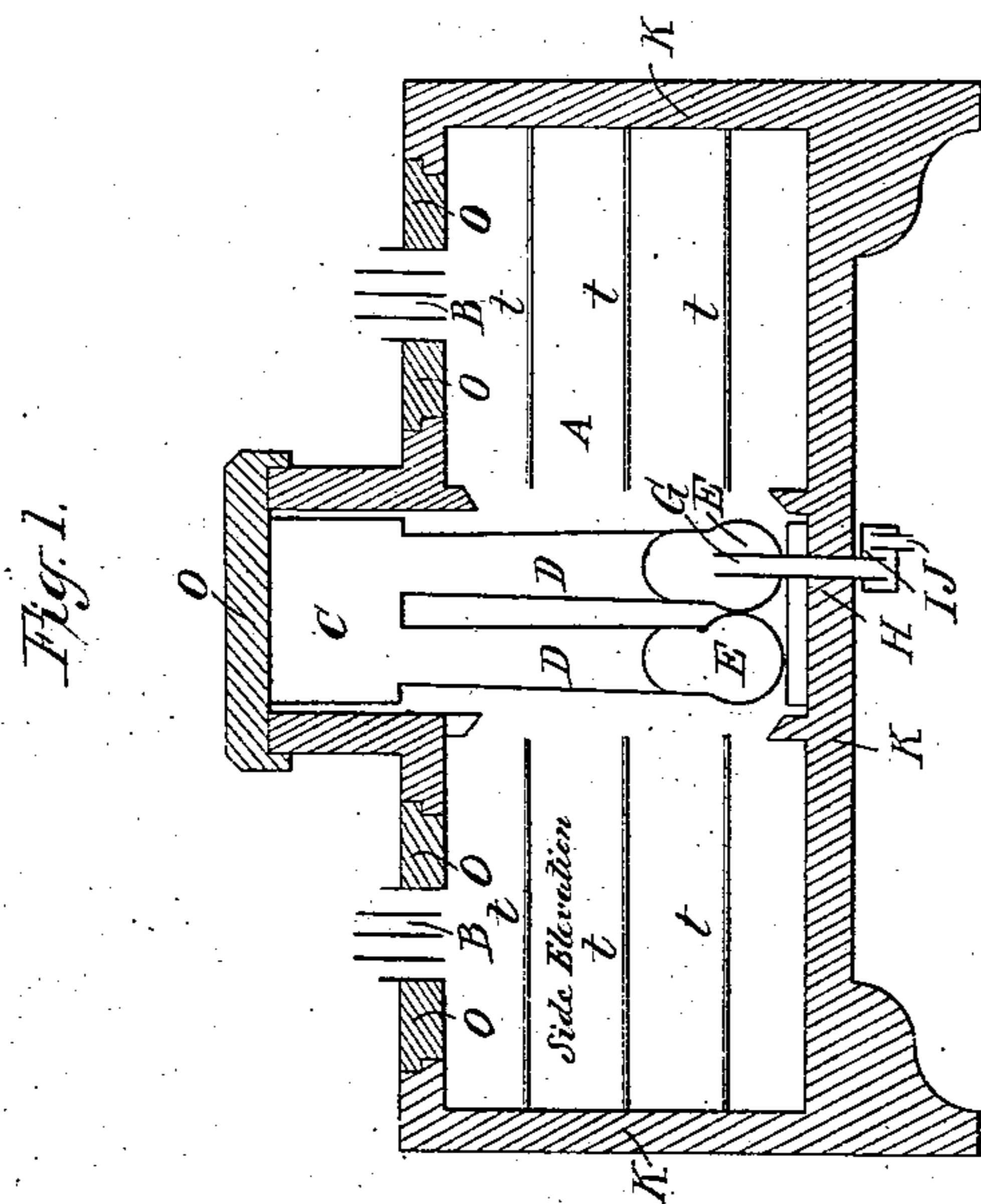
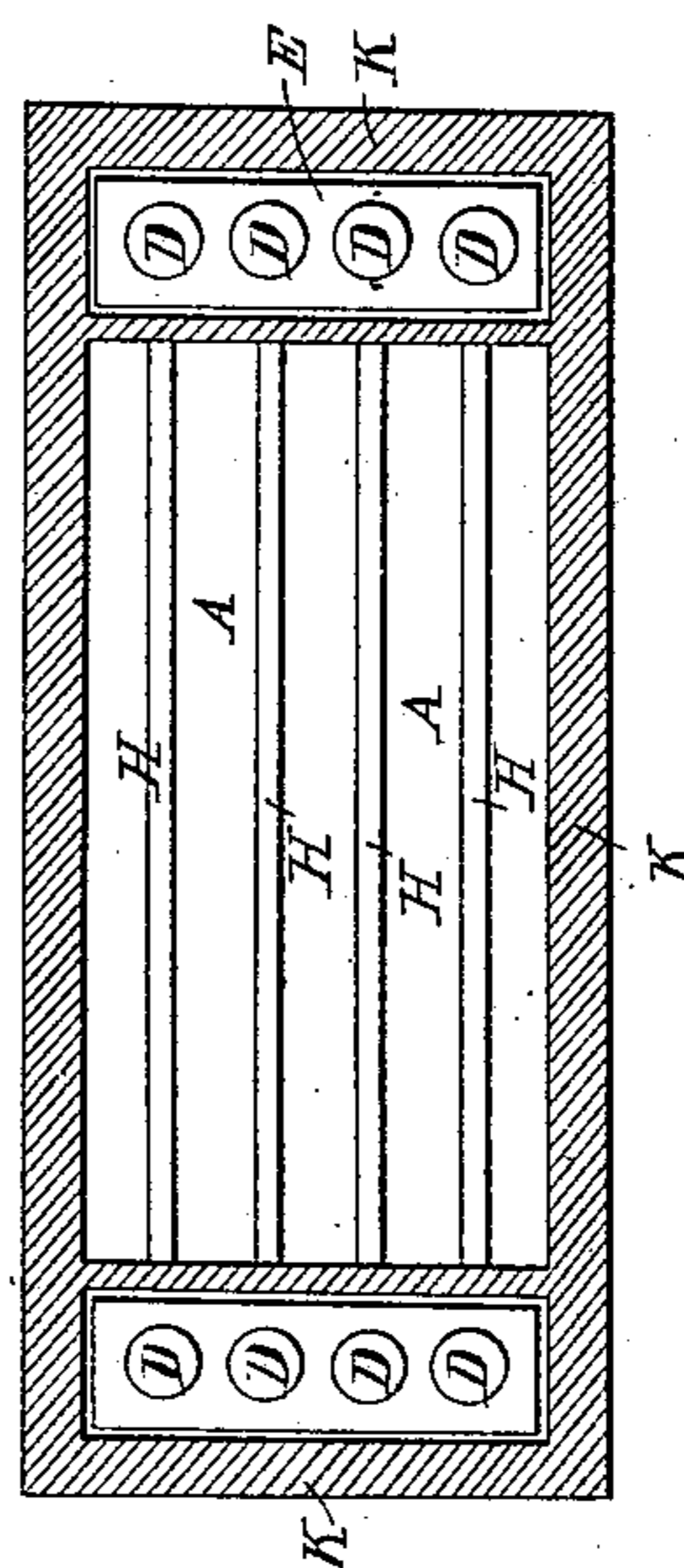


Fig. 3.
Ground View, showing the drain pipes 'H' to carry off the meltings from the ice, lying on the bottom of the box 'K'.



Witnesses:

Henry Martin
Charles Selden

Inventor:

Charles F. Pike

United States Patent Office.

IMPROVED APPARATUS FOR COOLING AND PRESERVING MEATS, FISH, VEGETABLES, AND OTHER SUBSTANCES.

CHARLES F. PIKE, OF PROVIDENCE, RHODE ISLAND.

Letters Patent No. 60,552, dated December 18, 1866.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CHARLES F. PIKE, of the city and county of Providence, in the State of Rhode Island, have invented a new and improved Self-Ventilating Refrigerator, for the preservation of meats, poultry, fish, and all kinds of provisions and other articles usually used or kept in a family, or kept in a provision store, meat or fish market.

My invention is applicable to any and all purposes that any refrigerator is applicable to, or is used for, either for a packing-house, where they cut and pack beef and pork, railroad cars for the transportation of butter, beef, pork, fish, poultry, and all kinds of provisions, fruits of any and all kinds. It is also applicable to a railroad passenger car, for the purpose of keeping it cool in the summer time and giving it a perfect ventilation. It is applicable to a dead-house, for the preservation of the dead.

The ice receptacle, or box, and its accompanying parts, being made of light tinned copper, or its equivalents, with the small amount of ice that it consumes for the great degree of cold that it gives off, will commend it to the public.

The nature of my invention consists in having a refrigerator made in any of the usual well-known forms, with a metal ice box or receptacle made of zinc, tinned copper, galvanized iron, or other suitable metal, placed in the upper part of the refrigerator, supported in part by the top of the refrigerator, and with holes in the bottom opening into metal tubes or pipes of any required number and dimensions, either of the same diameter or larger at the bottom, passing down from the bottom of the ice box or receptacle through the provision chamber and opening into a water tank at the lower ends, with a discharge-pipe passing up into the water tank; so as to have its upper end or mouth at any desired height for the purpose of retaining the cold ice water in the tank and thereby obtain its effect by conduction in the provision chamber. The water tanks do not rest directly on the bottom of the refrigerator, but on separate supports resting on the bottom of the refrigerator, and so placed as to allow a free circulation of air under and around the tanks and into the provision chamber. Under this water tank a pan is placed to catch any moisture that may be condensed in the ice box or receptacle, tubes or pipes, or water tank, and these withdraw it from the provision chamber. The water so condensed is carried off through a tube or pipe in the bottom of the pan made to enclose the tube or pipe passing down from the water tank and both emptying their contents into a trap of usual form, and so discharging the waste water. The ice box or receptacle is so constructed as to have open spaces on all sides of it, connecting with the open spaces about the tubes or pipes, passing through the provision chamber and around the water tanks, and all connecting with the provision chamber. In this ice box or receptacle, C, and also in the tubes or pipes leading down from the bottom of it, I place ice, either mixed with or without salt or any other known refrigerating material or not, as may be desired. The cold produced thereby is carried by conduction through the ice box or receptacle, and through the tubes or pipes leading from it, and from the water tank into the provision chamber, there to be used for the desired purpose.

I think the preferable form in which to build one of these refrigerators is to raise that part of it which is to contain the ice box or receptacle, so that the bottom of the ice box or receptacle will be about on a level with the top of the provision chamber, though it may be constructed with the top of the ice box or receptacle on a level with the top of the refrigerator, or at any other height, as may be desired.

This ice box or receptacle, together with the tubes or pipes leading down from it into the water tanks, and the water tanks and appendages, may be placed in one or both ends, or in the centre of the refrigerator and provision chamber, or in any other desired position. At the bottom of the refrigerator, and under the pipes, D, and the water tanks, E, a metal pan is placed, entirely open at the top, and extending up at its sides and ends some four or six inches, more or less. The horizontal pipes, E, or water tanks, are supported by separate supports resting directly on the bottom in this pan, which in the accompanying drawing is represented by the letter F. These supports, are made and so placed as to allow a free circulation of air around them and thence into the provision chamber. The object of this pan is to catch any water that may be condensed upon the ice box or receptacle, C, the tubes or pipes, D, and the water tank, E, and that may run or drip from them. The sides or ends of this pan nearest to the provision chamber, A, are carried far enough to catch any drip from the

same side of the ice box or receptacle, C, above, and is constructed on its side, not upright, but with a flaring or slanting side, so as to allow a free circulation of air.

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

Plate 1.

Figure 1. Said structure contains a provision chamber or room fitted with shelves, racks, hooks, and fixtures, on which the articles to be refrigerated are to be placed, designated in the accompanying drawing by the letter A. It also contains an ice box or receptacle made of zinc, tinned copper, galvanized iron, or other metal, designated in the accompanying drawing by the letter C. That part of the structure designed to contain this ice box or receptacle, as shown in figs. 1 and 2, is raised or built higher than the other portion of the structure, and a space of three inches, about, more or less, is left between the outside of the metal box and the inside of the wooden structure. This ice box or receptacle at the top is fastened to and supported in part by having its upper edge turned over on and fastened to the upper edge of the wooden structure, and rests at the bottom upon the top end of the open mouth tubes or pipes, D, the bottom of said ice box or receptacle opening into said tubes or pipes, D. This metal ice box or receptacle, C, is constructed at its bottom with any desired number of metal tubes or pipes of zinc, tinned copper, galvanized iron, or their equivalents, which pass down from the bottom of the ice box or receptacle to, and open into the water tank, E. These tubes or pipes, D, may be made of equal diameter inside and outside throughout, or they may be made so that their inside diameter will be larger at the bottom than at the top, increasing gradually from top to bottom, for the purpose of enabling the ice and mixture in them to settle more readily, and to render them less liable to clog and freeze than if they were of the same size. At the lower ends of the pipes or tubes, D, is the water tank, designated in the accompanying drawing by the letter E, and into which said pipes or tubes, D, open. This water tank, E, is represented in the accompanying drawing as made of a round tube or pipe, lying horizontally or at right angles with the tube or pipe, D, and into which a tier (if more than one perpendicular pipe is used) of the tubes or pipes, D, open at their lower extremity, and with all these horizontal tubes or pipes (if more than one is required or used) connected together and opening into each other, as shown in fig. 2.

The object of making the water tank in this wise is to give it requisite strength to support the weight of the tubes or pipes, D, and their contents resting on it. This water tank, E, instead of being constructed in this form, may be constructed with a flat top or in any otherwise, with sufficient supports under or otherwise, to prevent the top from being pressed in by the weight resting in the top of it. The water tank, whether constructed in one or another form, does not rest directly on the bottom of the refrigerator, but rests on several different supports, so as to leave an open space of three inches, more or less, between the bottom of the water tank, E, and the bottom of the pan, F, so that the space at the bottom of the tank, E, at the sides of and around the tubes or pipes, D, and around the sides of the ice box or receptacle, C, is all connected with the provision chamber, A, the air passing freely into and through all the same. A waste-water pipe, designated in the accompanying drawings by the letter G, opens into and passes down from the water tank, E, through the pan, F, and through the bottom of the refrigerator to conduct off the waste water. The upper end or mouth of this waste-water pipe, H, may be made to pass up into the water tank E, to any desired part. In fig. 2 it is represented as placed at the point G; the object in placing it well up in the tank is to retain the cold ice water in the tank for the purpose of obtaining its refrigerating qualities by conduction into the provision chamber, A. This waste-water pipe, G, at the bottom of the pan, F, passing directly into and from that point downward, is enclosed in a larger pipe, represented in the accompanying drawing by the letter H, both opening into the trap, I. The object of this larger pipe, H, with its upper end opening into the pan, F, is to carry off any water that may collect in the pan, F, from being condensed on the ice box or receptacle C, tubes or pipes D, water tank E, and thus remove the moisture from the provision chamber A. A pipe, represented in the accompanying drawing by the letter J, passes up into the trap I, and thus discharges the waste water. A cock may be inserted into the water tank and passed through to the outside of the refrigerator, for the purpose of drawing off the water from the water tanks, E, whenever desired, and to be used for any desired purpose. In the perspective view, fig. 1, in the accompanying drawings, it is designated by the letter L. I have already stated that the form of the refrigerator may be of the chest, upright, or any other desired form, opening by a cover or door at the top or side; that the ice box or receptacle may be above the top of the provision chamber, or on a level with or lower than the top of the provision chamber; and also that the ice box or receptacle, C, with the tubes or pipes, D, leading down from it to the water tank, E, and the tank and its appendages may be placed in one or both ends, in the middle, or any other part of the refrigerator, as may be preferred. I also construct my refrigerator with a ventilator, represented in the accompanying drawings by figs. 3 and 4, which are placed in the top of the refrigerator, or in the sides or ends thereof, and near the top. The form of these ventilators may be square, and divided into smaller squares, as shown in these figures, or made by round or other shaped holes in their stead, when placed in the top. I think the preferable form is to have the openings in the centre of the ventilator made higher than the surrounding openings, as represented in fig. 3. The object of these ventilators is to take off the warmest and the foulest air from the inside of the refrigerator and admit fresh air instead, thus keeping the air within the provision chamber fresh and pure. A partition may also be placed in the refrigerator between the provision chamber on the one side and the tubes or pipes, D, leading from the ice box or receptacle, C, and the water tank, E, and its appendages on the other side, with slots or openings at the top and near the bottom to allow of a circulation of the air between the provision chamber, A, and the other parts of the refrigerator, or with openings in said partition extending up and down, or by having holes through the same, if and as desired. In the perspective view, fig. 1, S represents a slat

shelf; T represents cleats fastened to the sides of the provision chamber for the shelves, S, to rest on; hooks, staples, or other fixtures may be fastened, upon which to place or hang provisions or other articles to be refrigerated. O represents a lid or door on the top that opens down into the provision chamber A, into which the ventilators may be placed in a small portable refrigerator. To put the invention in operation I place a quantity of ice in the ice box or receptacle, either with or without mingling it with any salt or other known refrigerating material. When it is desired to produce a very low temperature I use hard salt, and have found the proportion of twenty pounds of salt to eighty pounds of ice to work as well or better than other proportions, though it may be used in any other proportions. I also fill the tubes or pipes, D, with ice or ice and salt, or its equivalent, and thus set it in operation. The desired result is obtained in the provision chamber, A. The ventilator in the provision chamber is represented in the accompanying drawings by the letter B; also the supports between the pan, F, and the water tanks, E, by the letter M.

Plate 2.

Figures 1, 2, 3, and 4, hereby referred to, represent different forms of my said refrigerator and its several parts, as designated by the same letters as in plate 1.

Figure 3, in plate 2, is a ground view, showing the drain pipes, H, lying on the bottom of the floor of the provision chamber A, connecting the water tanks E together, and so constructed as to be always full of cold water and discharging themselves into the trap, I, as shown in fig. 2.

Figure 4, in plate 2, is an end elevation of the ice box or receptacle C, tubes or pipes D, water tank E, and its appendages.

The ice box or receptacle, C, if desired, may be made with holes or slots in the sides or ends near the top of the flange that rests on K, in order that the air may pass from the provision chamber A into the ice box C. There also may be a slot or holes in the pipes or tubes E, in order to let the air out of them. In that case the tube G will want to be shortened, so as to prevent the water rising so high in it as to overflow the pipe or tube E, at the slot or opening made in it for the air to flow out of it.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The application of the ventilator B, or its equivalent, to the refrigerator, constructed and refrigerated substantially as herein described and for the purposes herein stated.
2. I claim the making of the pipes or tubes D larger at the lower end than at the upper end, substantially as and for the purpose herein stated.
3. I claim the construction of the pipes or tubes D larger at the lower ends than at the upper ends, in combination with the ice box or receptacle C, and the water tank E, or their equivalents, substantially as herein described.
4. I claim the structure of the ice box or receptacle C, pipes or tubes D, water tank E and its appendages, provision chamber A and its fixtures, ventilator B, or their equivalents, substantially as herein described and for the purposes herein stated.

CHARLES F. PIKE.

Witnesses:

HENRY MARTIN,

CHARLES SELDEN.