

(No Model.)

2 Sheets—Sheet 1.

E. F. EDGAR.

APPARATUS FOR VAPORIZING AND BURNING HYDROCARBON OIL.

No. 410,827.

Patented Sept. 10, 1889.

Fig. 1.

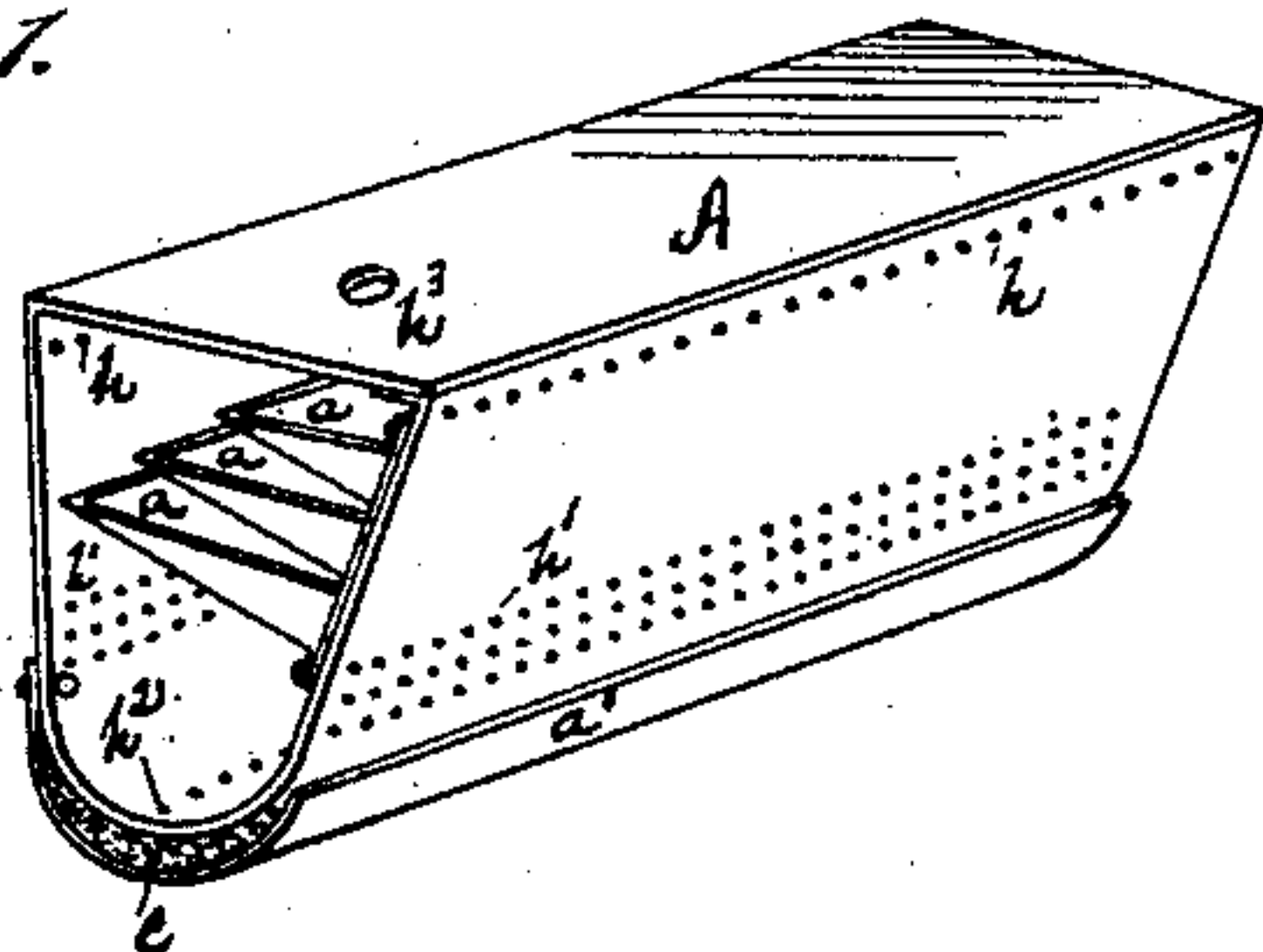


Fig. 5.

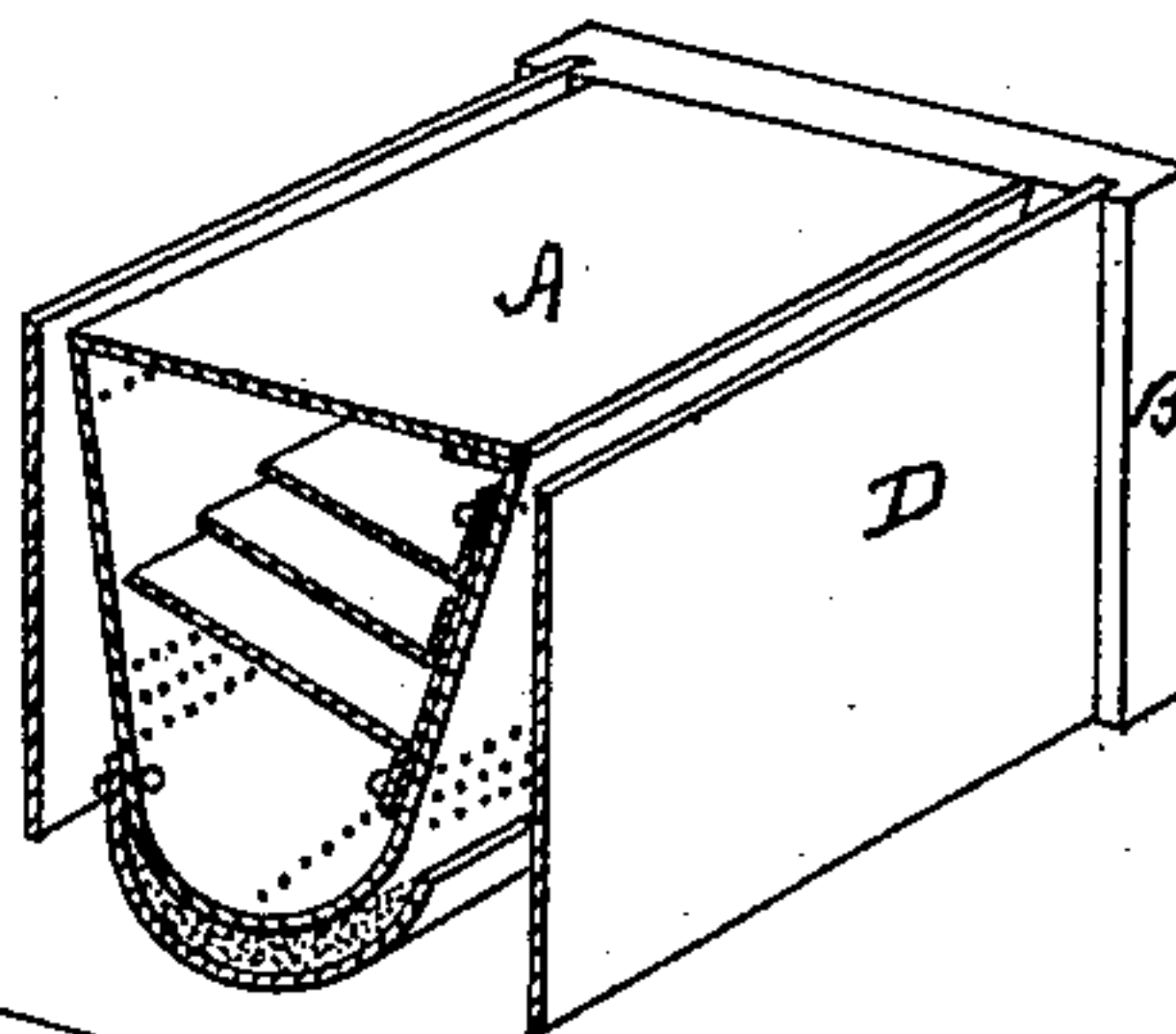


Fig. 2.

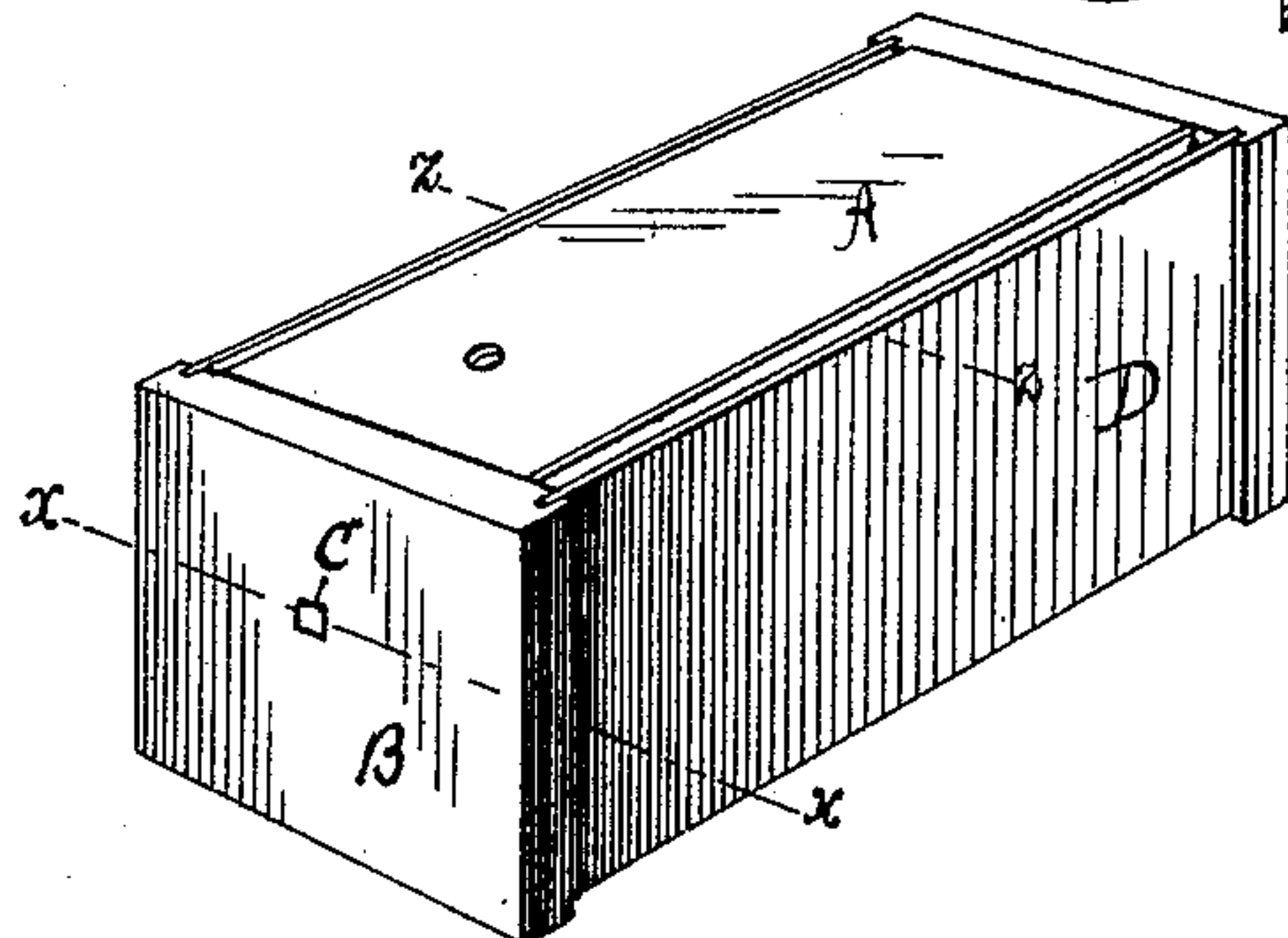


Fig. 4.

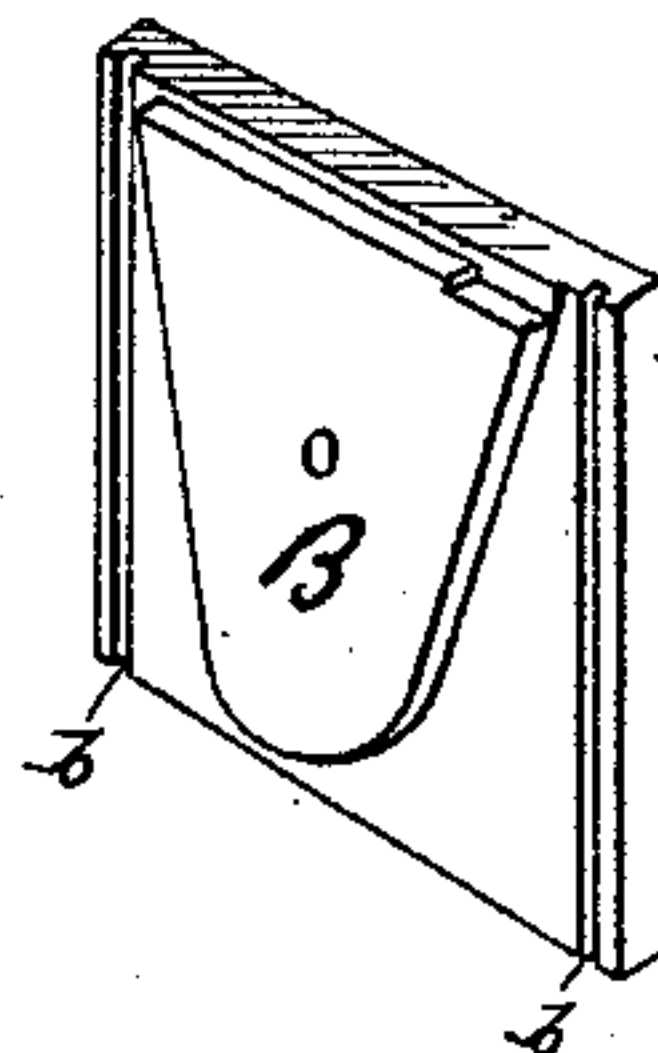
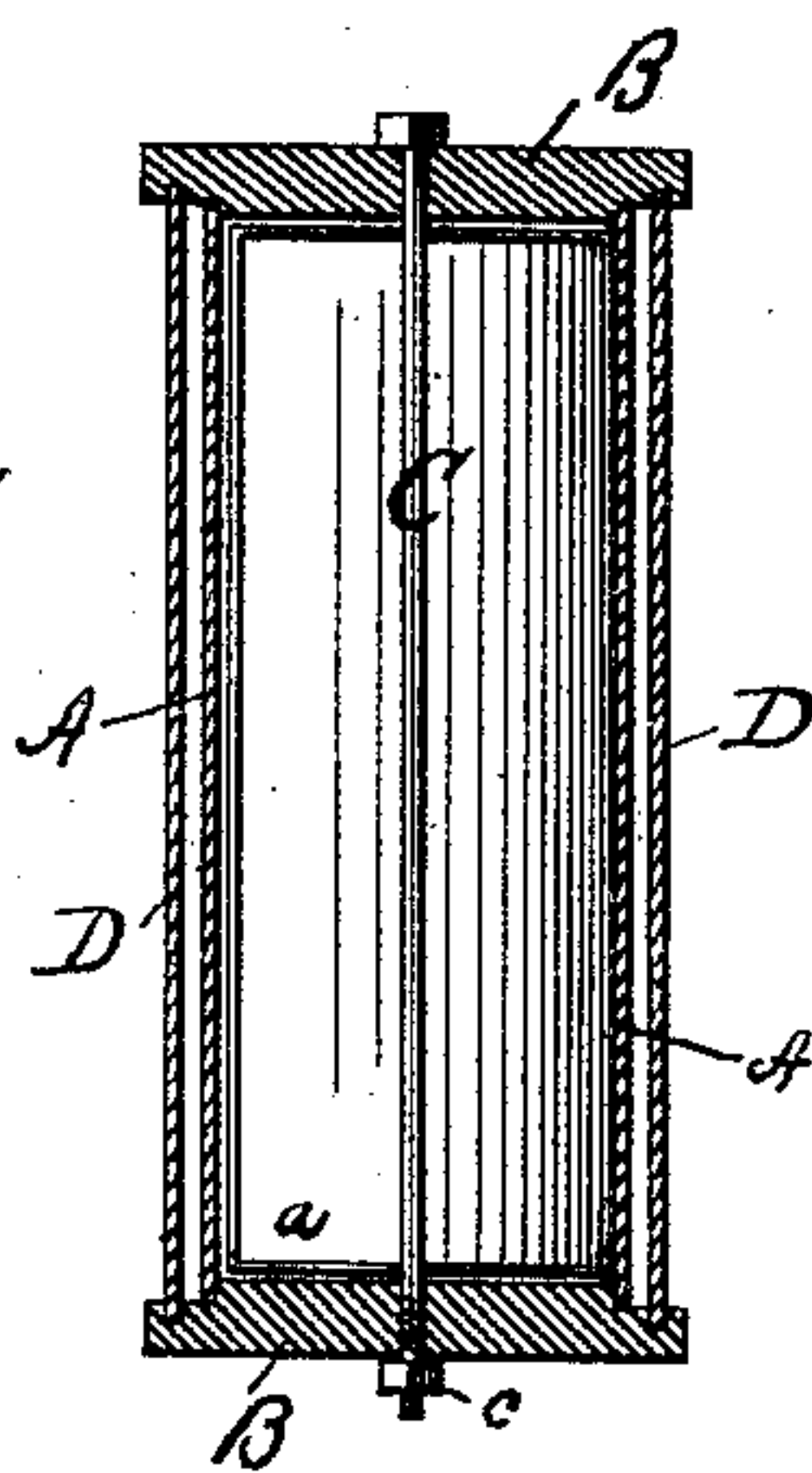


Fig. 3.



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(No Model.)

2 Sheets—Sheet 2.

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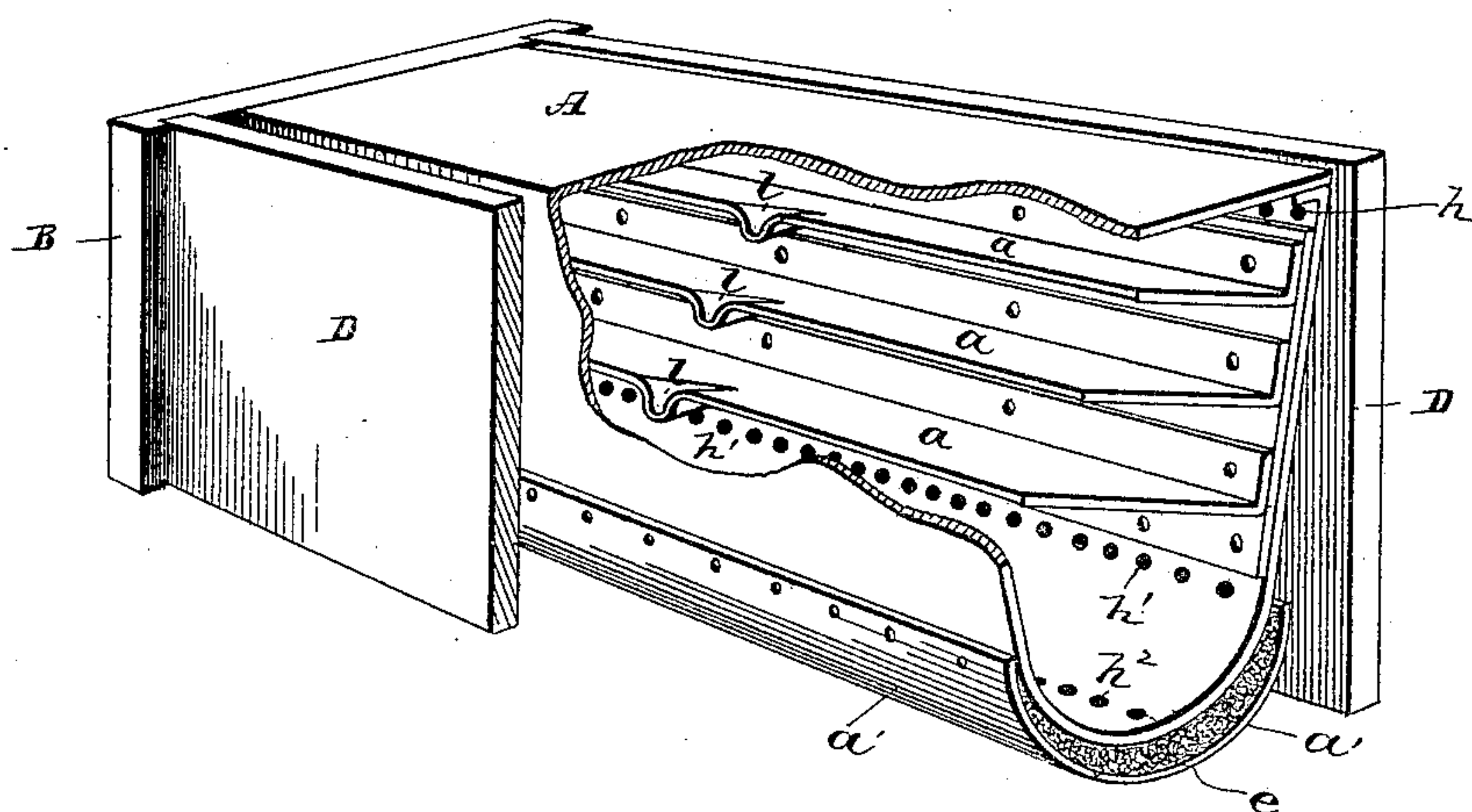


Fig. 5.

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UNITED STATES PATENT OFFICE.

ELLIS F. EDGAR, OF WOODBRIDGE, NEW JERSEY.

APPARATUS FOR VAPORIZING AND BURNING HYDROCARBON OILS.

SPECIFICATION forming part of Letters Patent No. 410,827, dated September 10, 1889.

Application filed March 31, 1888. Serial No. 269,179. (No model.)

To all whom it may concern:

Be it known that I, ELLIS F. EDGAR, of Woodbridge, in the county of Middlesex and State of New Jersey, and a citizen of the United States, have invented certain new and useful Improvements in Apparatus for Vaporizing and Burning Hydrocarbon Oils, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of the interior part, or what may be termed the "retort" of the apparatus. Fig. 2 is a similar view of the entire apparatus. Fig. 3 is a horizontal sectional view on line $x x$, Fig. 2. Fig. 4 is a perspective view of the end plates or heads. Fig. 5 is a view in perspective of a portion of the apparatus, cut off on line $z z$, Fig. 2; and Fig. 6 is a perspective view of said apparatus, showing the pans provided with lips, for a purpose to be explained, said pans or vessels being shown with their ends removed.

The apparatus is intended for use in vaporizing oil or other suitable material and then burning it; and it consists in the devices and combinations of devices hereinafter specified and claimed.

As embodied in the apparatus shown in the drawings, (though of course I do not confine myself to that alone,) it consists of a hollow body A, formed of sheet metal or other suitable substance, bent into a form preferably flat on top, with the sides approaching each other as they recede from said top, and curved at the bottom.

Bare end or head pieces rabbeted, as shown, so that they will set into and over the ends of the body A, and they may then be securely held together by a rod C and nut c , or other suitable device. The heads B are also preferably provided with vertical grooves b —one on either side—in which may be slid the side pieces D, which are simply rectangular pieces of the proper dimensions to form a side, as shown. When the apparatus is used in a stove, range, or similar structure, the place of these sides may sometimes be supplied by the walls of the fire-box itself.

Within the body A, and securely attached to its side wall or walls at some point above the bottom, I place one or more shallow pans

a , usually three in number, and extending each a little beyond the edge of the one above it, as shown.

At the upper part of A, on either or both sides, I form a series of small apertures or holes h , and another series h' (one or more, and usually three) below those arranged near the top, and unless the material is sufficiently porous to permit the passage of oil through it at the bottom I there place still another series of holes h^2 , in which case I also secure to the body a shield or pan a' , the space between which and the bottom of the body A, I fill with porous (preferably non-combustible) material e —such as asbestos—leaving the said pan a' open at one side, as shown, or both, and in the top of A is formed a hole h^3 , for use in filling, which may be closed by any suitable stopper, or may have a pipe leading thereto from a supply-tank suitably located.

The operation of this device is as follows: Oil is introduced through h^3 and allowed to fill and overflow the pan or pans a , which it will do successively, as each extends beyond the next one above. Then it flows down into the bottom of A, and either oozes through its pores or passes out through the holes h^2 and saturates the material e . It is then lighted at the opening between a' and A, and burning heats the body of A and the inclosed oil, and causes the formation of vapor therefrom, which, issuing from h and h' , is ignited by the flame already burning, and drawing in a plentiful supply of air through the space between A and D is commingled therewith, and the combined product issues in a flame from the top of the opening between A and D, producing an intense heat and a very perfect combustion. The oil in e is very soon consumed, and thereafter the operation of the apparatus is continued by the combustion of the gases issuing from h' and h .

In order that when the pans overflow and the oil runs to the bottom of vessel A it may not fill the orifices h' , and being thereafter heated carbonize and choke them, I find it advantageous to provide the lower one and sometimes each of said pans with a lip l , located and arranged in such manner (as shown preferred) that the oil will flow from it to the bottom of vessel A directly and without passing over that portion of the walls of said ves-

sel in which the apertures h' are formed. The same result may be attained by sloping pans a away from the wall of vessel A inward and downward, thus constituting the pan itself an overflow-deflector.

Locating the oil-holding vessels between apertures h and h' secures more perfect heating, and therefore more perfect vaporization, of the liquid than if said vessels were otherwise arranged.

By the use of shallow pans a , I find the generation of gas is greatly facilitated, especially when they are arranged with one side against or formed of a part of the body A, as the heating is thereby greatly facilitated, and by placing them above the bottom I am enabled to cause the gas to issue from both h and h' , and thereby burn only gas as soon as the apparatus is fully in operation. Decreasing the width of the space between A and B from bottom to top assists the draft and insures the proper commingling of the gas and air, and using two series of apertures h and h' further aids in these particulars.

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

1. In a heating apparatus for vaporizing and burning hydrocarbon oils, the combination, with a closed vaporizing-retort provided with vapor-openings through its walls, of an oil-holding vessel or pan supported within said retort, said retort being provided with an oil-supply opening through which oil is

supplied into said pan or vessel, substantially as described.

2. The combination, with a closed oil-vaporizing chamber provided with vapor-eduction openings in its upper and lower portions, of a liquid-holding pan within said chamber, located below the upper vapor-eduction openings and above the lower eduction-openings, and means for supplying oil to said pan, substantially as described.

3. The combination of a closed vaporizing-chamber provided with an oil-supply opening and with vapor-eduction openings, an oil-holding pan within said chamber, and a surrounding casing forming a combustion-chamber between itself and the outer wall of said chamber, as set forth.

4. The combination, with a closed vaporizing-chamber provided with means for supplying oil thereto and having vapor-eduction openings, of a shield secured to the exterior of said chamber and forming a space between itself and the bottom of said chamber, open on one side, and non-combustible absorbent material filling said space, said chamber being provided with openings through its bottom leading to the said material, substantially as described.

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Witnesses:

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