

(No Model.)

2 Sheets—Sheet 1.

E. B. DE LA MATYR.
PETROLEUM BURNER.

No. 330,212.

Patented Nov. 10, 1885.

Fig. 1

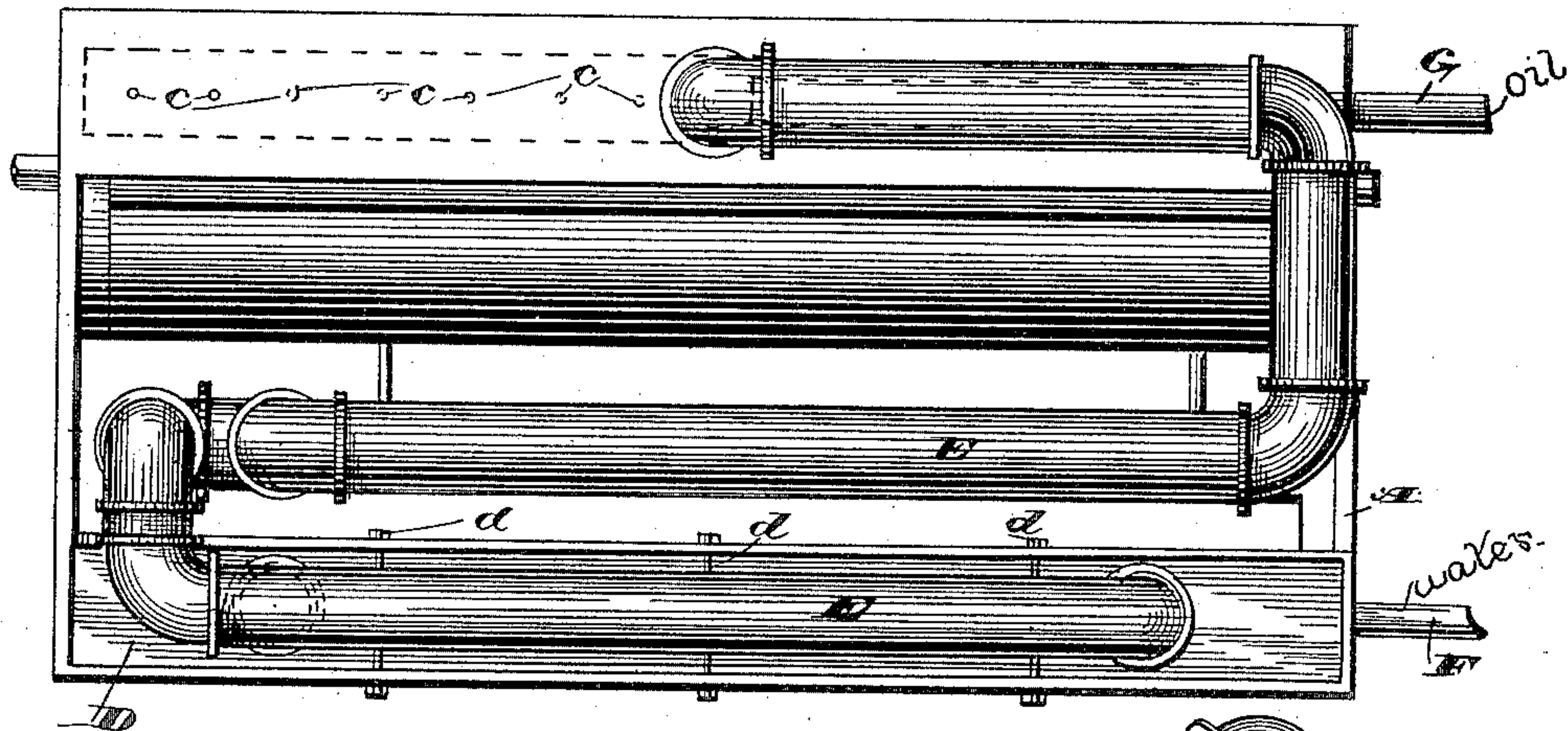


Fig. 2

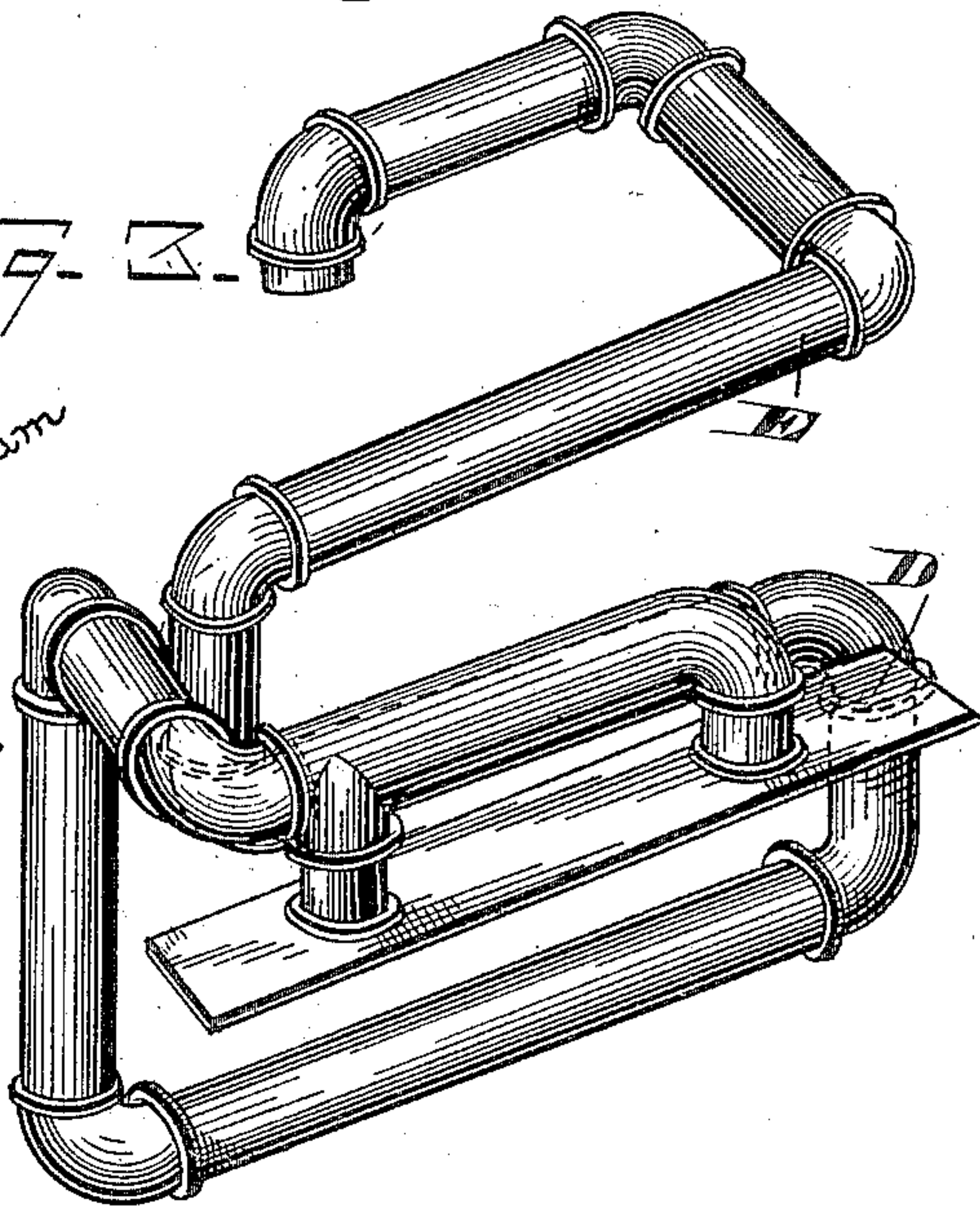
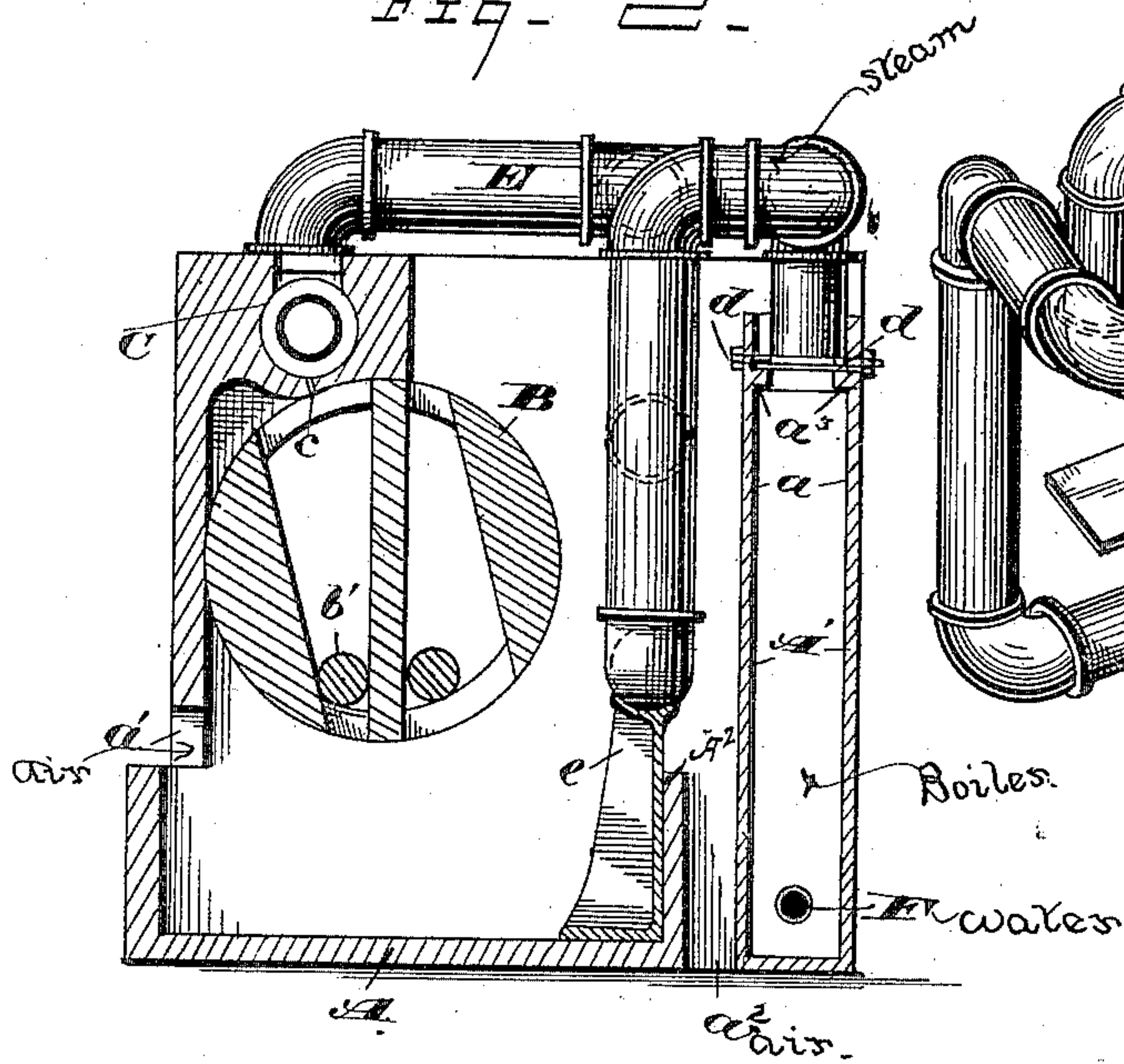


Fig. 3



WITNESSES

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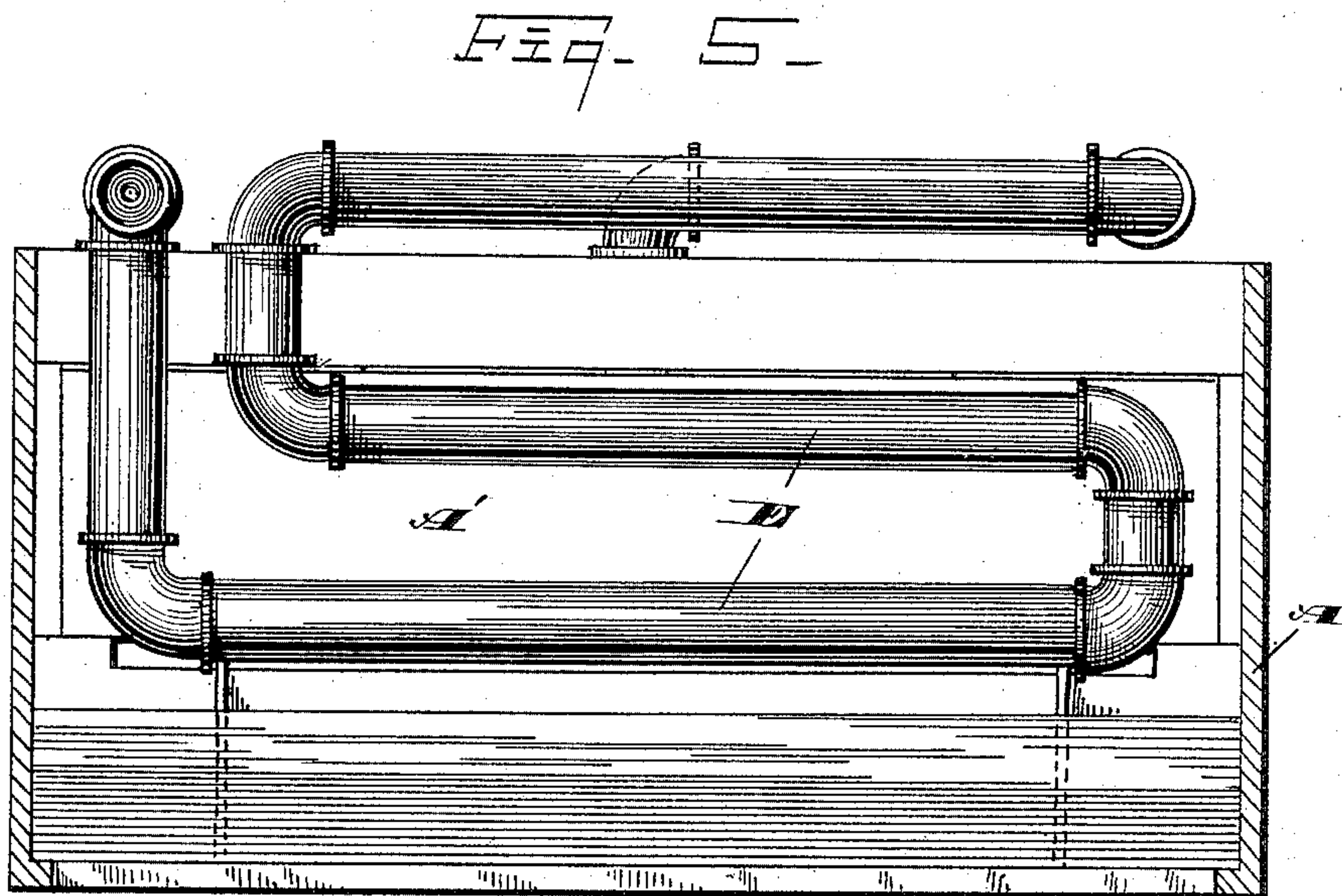
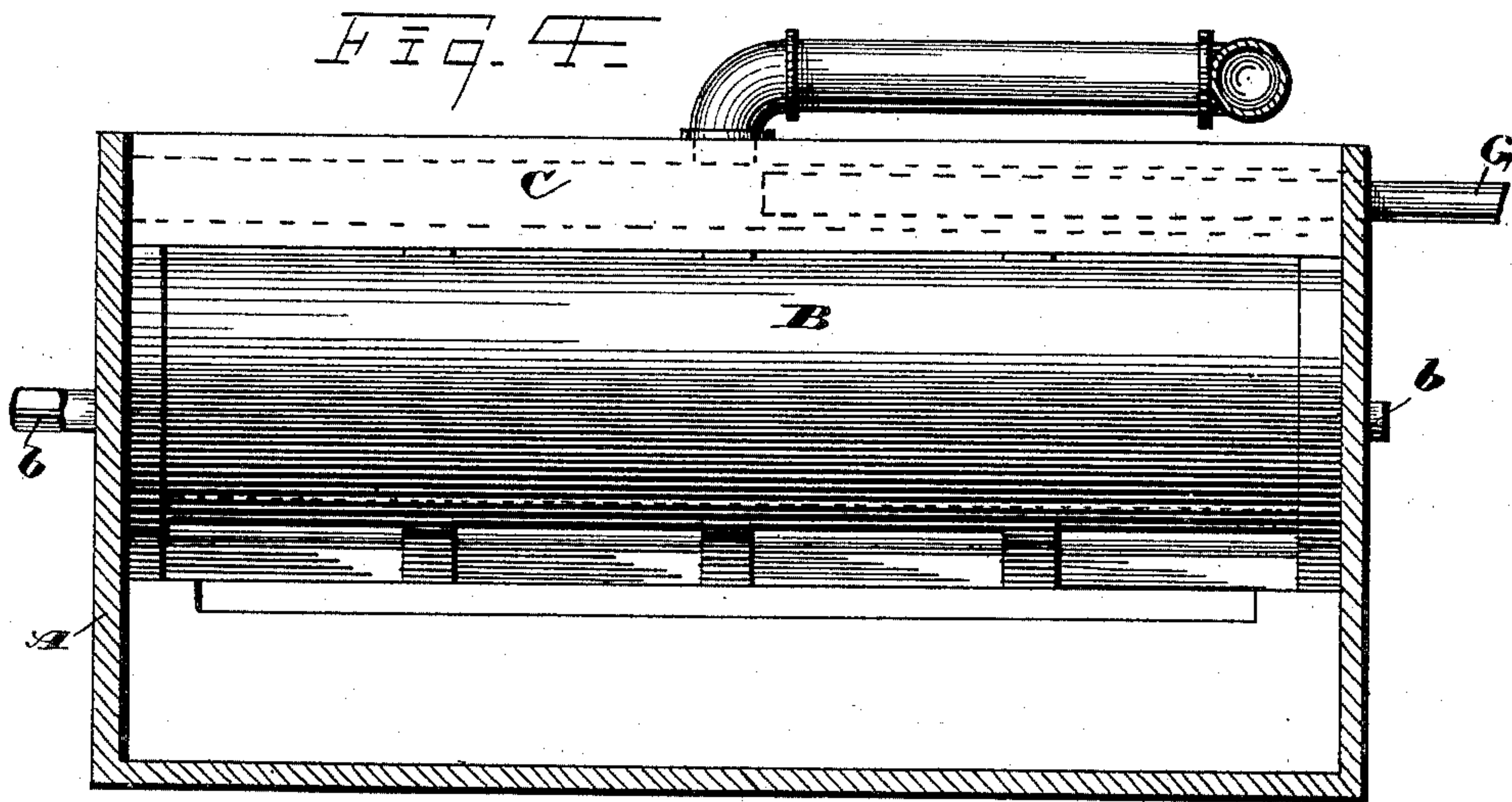
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UNITED STATES PATENT OFFICE.

ELIAS B. DE LA MATYR, OF CLEVELAND, OHIO.

PETROLEUM-BURNER.

SPECIFICATION forming part of Letters Patent No. 330,212, dated November 10, 1885.

Application filed June 6, 1885. Serial No. 167,840. (No model.)

To all whom it may concern:

Be it known that I, ELIAS B. DE LA MATYR, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Petroleum-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in petroleum-burners in which a steam-generator and superheating-pipes are employed, and arranged to discharge superheated steam into a distributing-chamber, from whence the steam, together with the oil, is discharged to the burner, to the end that a more perfect combustion is had and no smoke is formed.

A further object is to provide a steam-generator formed partially by the walls of the casing in which the burner is located, said generator having a cover easily detachable, to the end that sediment may be removed from the generator.

A further object is to provide a distributing-chamber for the superheated steam and oil, to the end that a more even combustion is had throughout the length of the burner.

With these objects in view my invention consists in certain features of construction, and in combination of parts, hereinafter described, and pointed out in the claims.

My present invention is designed more especially as an improvement on a petroleum-burner for which I have obtained Letters Patent, granted May 5, 1885, No. 316,950, and to which reference is made in this specification.

In the accompanying drawings, Figure 1 is a plan view of my improved burner and attachments. Fig. 2 is an elevation, in transverse section, of the same. Fig. 3 is a view in perspective of the superheating-coil and attached generator-cover. Figs. 4 and 5 are elevations in longitudinal section.

The device as illustrated is in suitable form for introduction into the fire-boxes of an ordinary cook-stove or range.

A represents an oblong metallic box-like structure or casing rectangular in cross-section, and having a double wall, a , at the rear, that forms the side walls of the steam-

generator A' , the bottom and ends of the generator being also formed by the casing A . The cylindrical reversible burner B is mounted on trunnions b , that extend through and are journaled in the end walls of the casing A . This burner is substantially the same as that shown and described in my former patent aforesaid. Along the front and upper edge the casing is of considerable thickness and incloses the distributing-chamber C , from the bottom of which a series of small orifices, c , discharge into the burner. The casing has an offset in front, as shown in Fig. 2, and has openings a' and a'' for admitting air. The walls a have a ledge, a^3 , that supports the cover D , and a tight joint is made by means of packing or cement placed between the cover and ledge, or between the edges of the cover and the walls a .

Keys d pass through suitable holes in the walls a and above the cover and hold the latter in place. To the cover D is connected the coil of pipe E , that passes through the fire-space in the casing and discharges into the central part of the chamber C . A bracket, e , rests upon the bottom of the casing A and supports the coil E .

An induction-pipe, F , supplies water to the boiler, and outside of the stove or furnace is usually provided with a float or other suitable device for regulating the depth of water in the boiler.

G is the feed-pipe for supplying oil to the burner. This pipe enters through one of the end walls of the casing and passes into the chamber C , and terminates about midway of the chamber. The outer diameter of this pipe is considerably less than the diameter of the chamber C , by reason of which the oil has a free passage the entire length of the chamber.

In operating the burner the oil is first admitted through the pipe G into the chamber C , and from thence, through the orifices c , is discharged into the burner B onto the rod b' . By means of the small orifices c the oil is well distributed on the rod b' . This rod lies loosely in the chamber of the burner, although it is in contact with the wall of the burner on either side of the rod, so that although the oil may pass between the rod and contiguous wall the space is too small to admit of a flame passing

up by the side of the rod. The oil is lighted below the burner, and the flame passes around the coil E and more or less impinges the side of the boiler, although the lower portion of the latter is protected by the rib A², that is

5 integral with the casing.
In a few moments after lighting the oil steam is generated in the boiler and passes through the coil E and is discharged into the chamber
10 C. The limited capacity of the boiler, as compared with the large area in cross-section of the tube E, prevents any but a nominal pressure from accumulating in the boiler or tubes. The steam therefore passes slowly through the
15 coil, and is superheated sufficiently for the purpose, and is discharged in this heated condition into the said chamber C, when it first comes in contact with the oil. The oil by this contact with the steam is of course raised in
20 temperature, but not enough to vaporize the oil, but only to make the oil active, so that heavy oils discharge freely through the orifices e. There being only a nominal pressure of steam, of course the oil is not sprayed, but in
25 case of heavy oils passes through the orifices e, very much as the lighter oils would pass without the presence of the steam.

With my former device, patented as aforesaid, in burning heavy oils—such, for instance, as crude petroleum and refuse oils—a
30 large amount of smoke was formed. With the introduction of steam in the manner already described the burner is substantially smokeless. I do not attempt to explain the
35 phenomena, and have no theory to offer on the subject. Only a small quantity of steam is required; hence the rib A², which partially protects the boiler from the heat and limits its generating capacity. To this end also is
40 the air-passage a², by means of which cold air can be admitted alongside of the boiler, to reduce the temperature of the latter when steam is being generated too fast.

In many sections of the country the water
45 is so strongly impregnated with lime that a boiler soon becomes coated with the sediment, and if not frequently cleaned the boiler would become inoperative. It is therefore essential that the boiler be so constructed

that it can be readily and easily cleaned. 50
With the construction shown the keys d are easily removed, after which the cover D and the attached coil can be easily removed, the coil and cover only weighing usually a few
55 pounds. Only a few minutes are required to remove the cover and coil, clean the boiler and replace the parts. In case of furnaces the parts are of course much larger, and may be varied somewhat in form, according to the
60 shape of the fire-box where the burner is to be located.

What I claim is—

1. The combination with a reversible petroleum-burner, substantially as indicated, of a steam-generator and superheating-coil connected with the generator arranged to supply
65 superheated steam to the burner, substantially as set forth.

2. The combination, with a reversible petroleum-burner, substantially as indicated, of
70 a distributing-chamber located above the burner for discharging the contents of the chamber at different points into the burner, substantially as set forth.

3. The combination, with a casing, a steam-generator located within the casing, and a cover removably secured to said steam-generator, of a petroleum-burner located within
75 the casing, and a pipe connected with the removable cover for conveying steam to the burner, substantially as set forth.

4. The combination, with a casing, the steam-generator located within the casing, a water-inlet pipe connected with the steam-generator, a cover loosely mounted on the
85 steam-generator, and the removable keys for holding the cover in position, of a petroleum-burner and a steam-pipe connected with the steam-generator through the removable cover, for conveying steam to the burner, substantially
90 as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 3d day of June, 1885.

ELIAS B. DE LA MATYR.

Witnesses:

CHAS. H. DORER,
ALBERT E. LYNCH.