

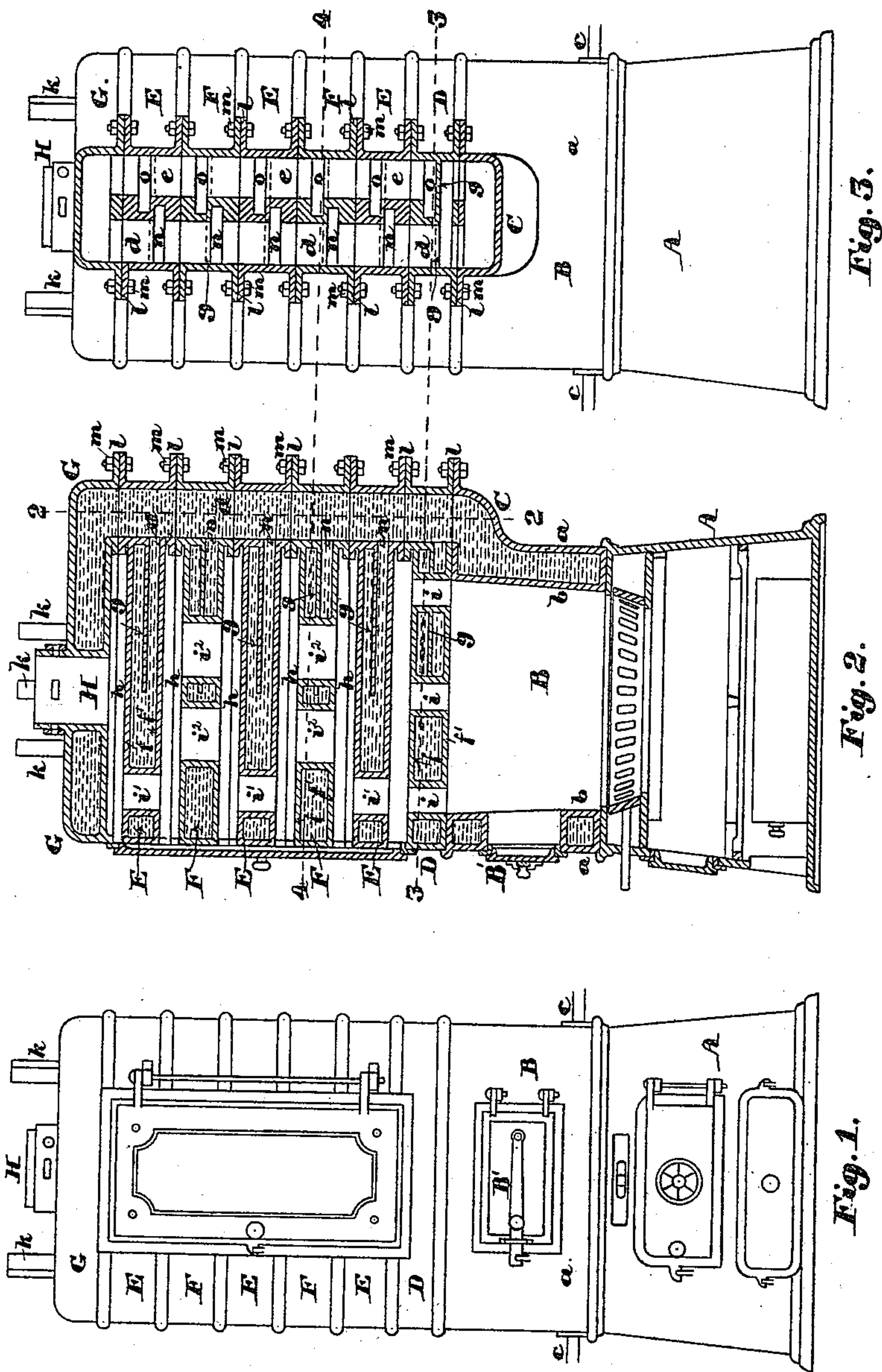
(No Model.)

2 Sheets—Sheet 1.

A. BLONDIN.
BOILER FOR HOT WATER HEATING.

No. 440,300.

Patented Nov. 11, 1890.



Witnesses:
Cyrus H. Porter
Walter E. Lombard

Inventor:
Adrien Blondin,
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Attorney.

(No Model.)

2 Sheets—Sheet 2.

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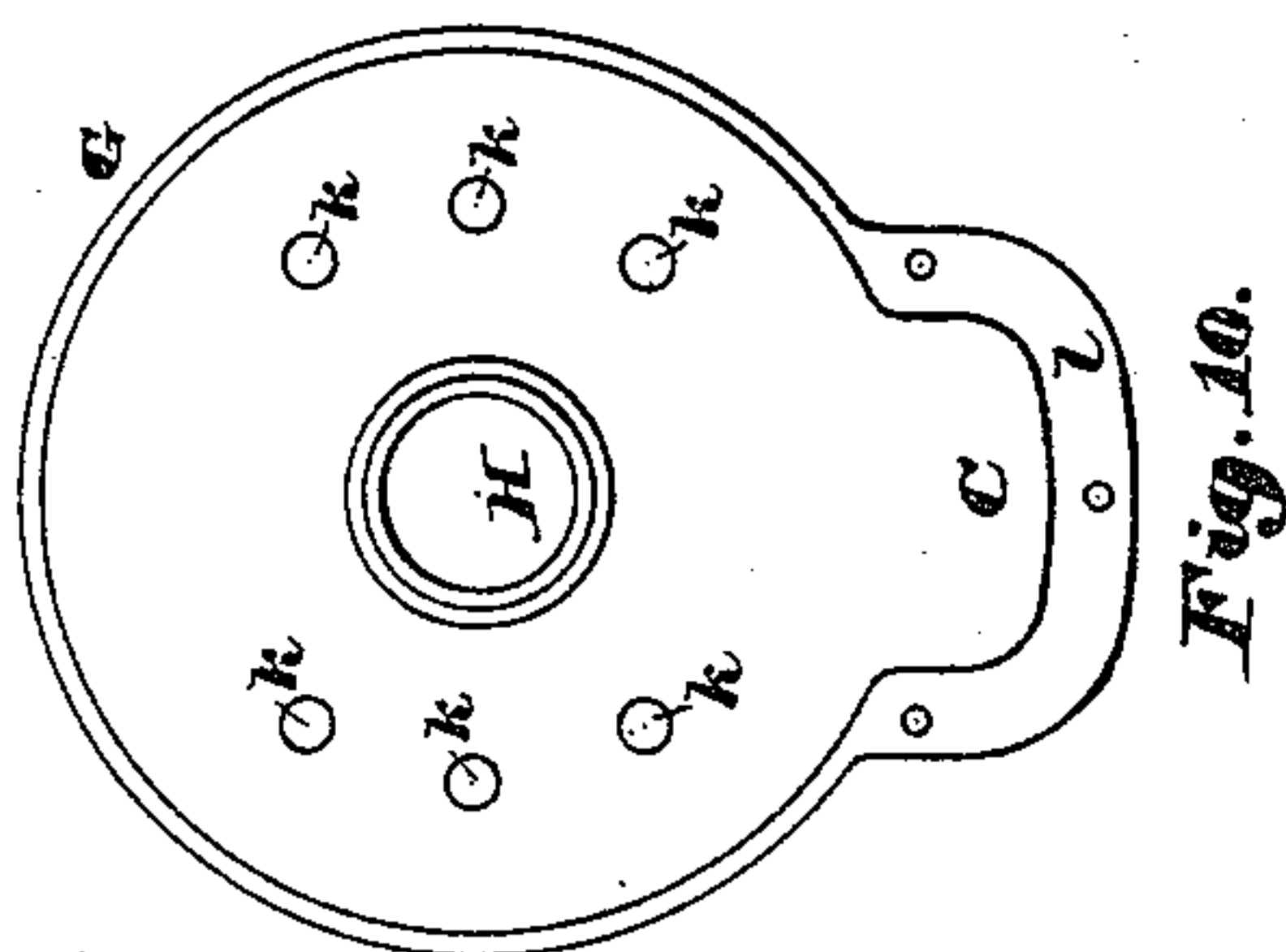


Fig. 10.

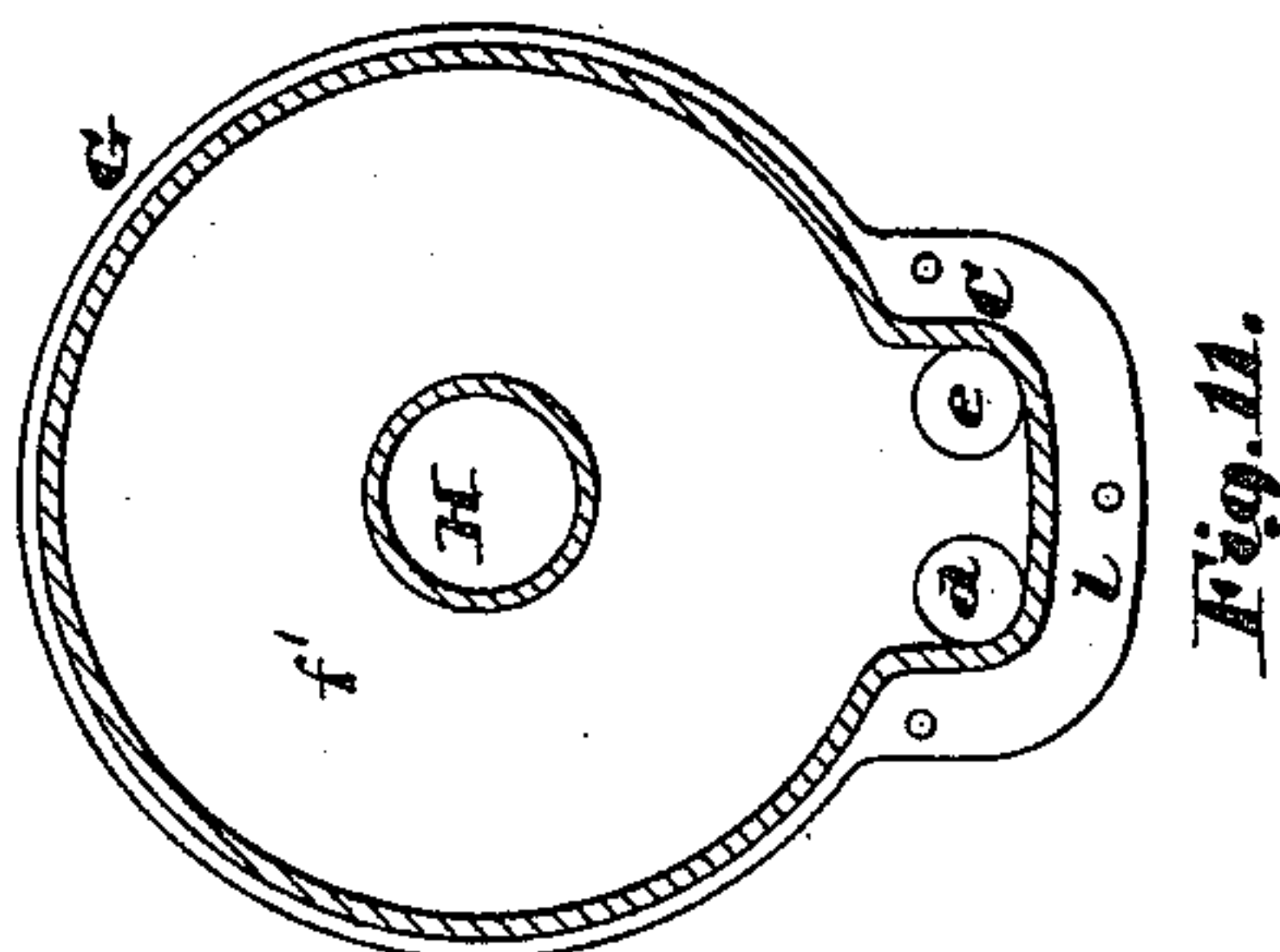


Fig. 11.

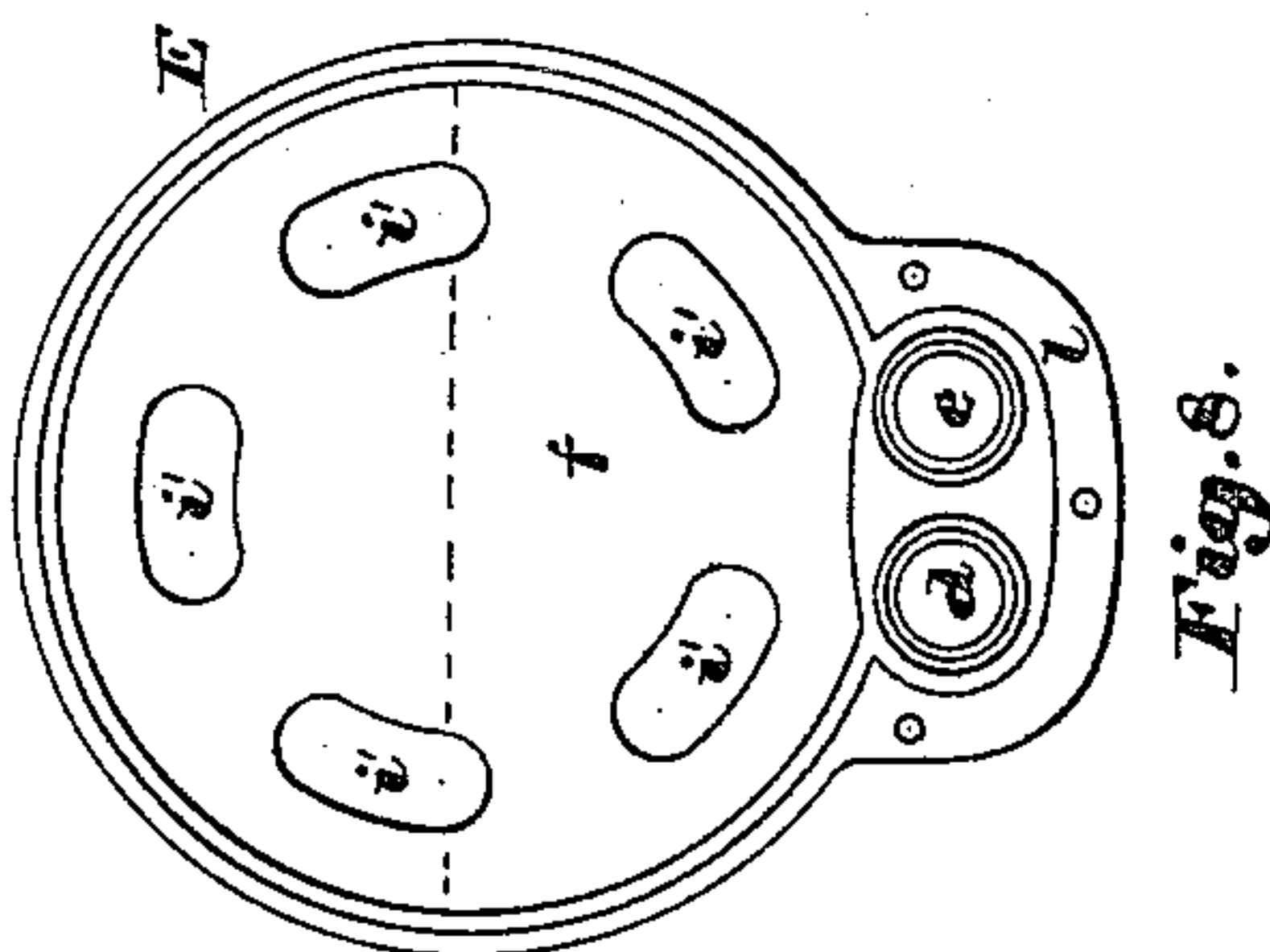


Fig. 8.

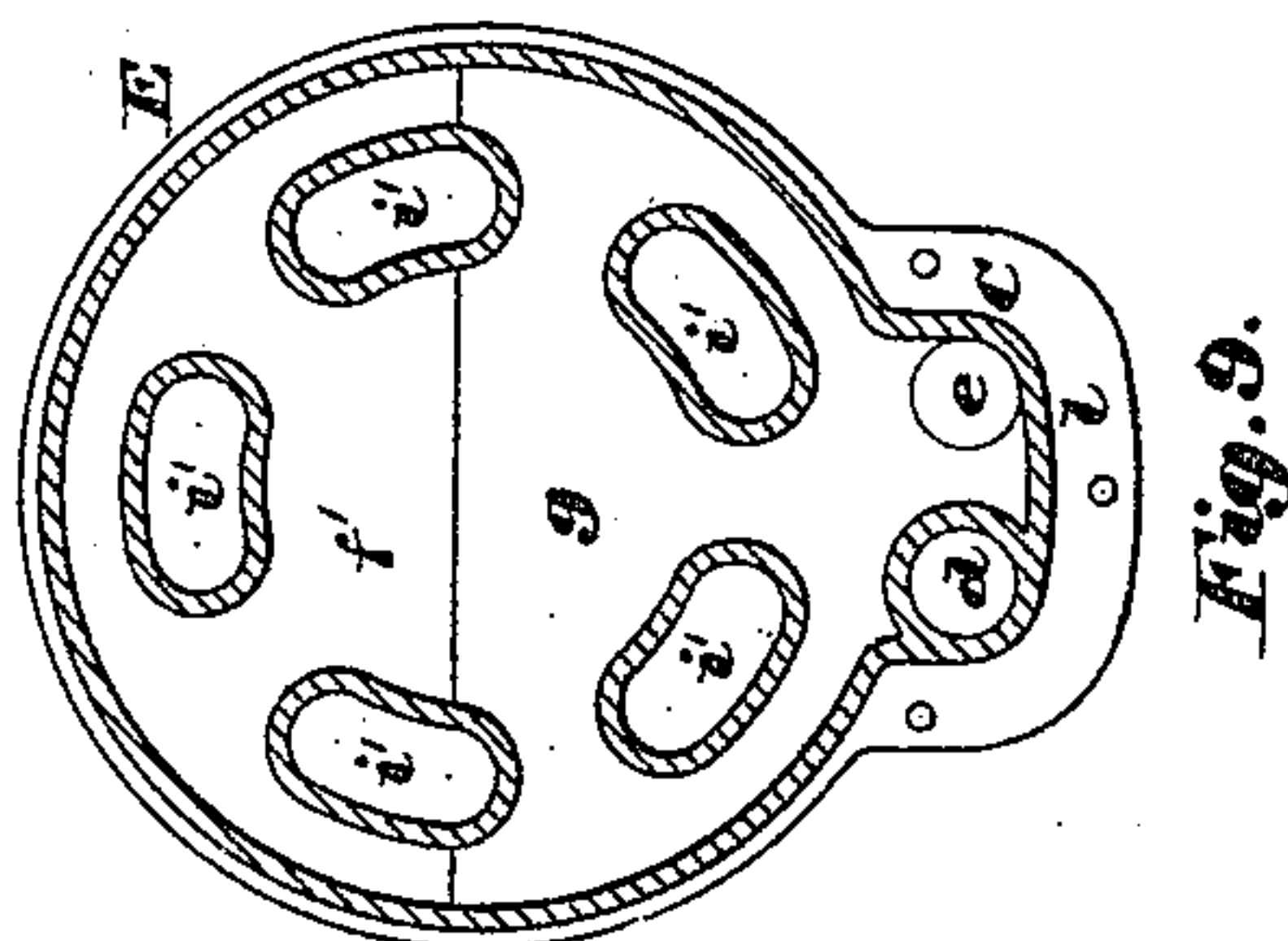


Fig. 9.

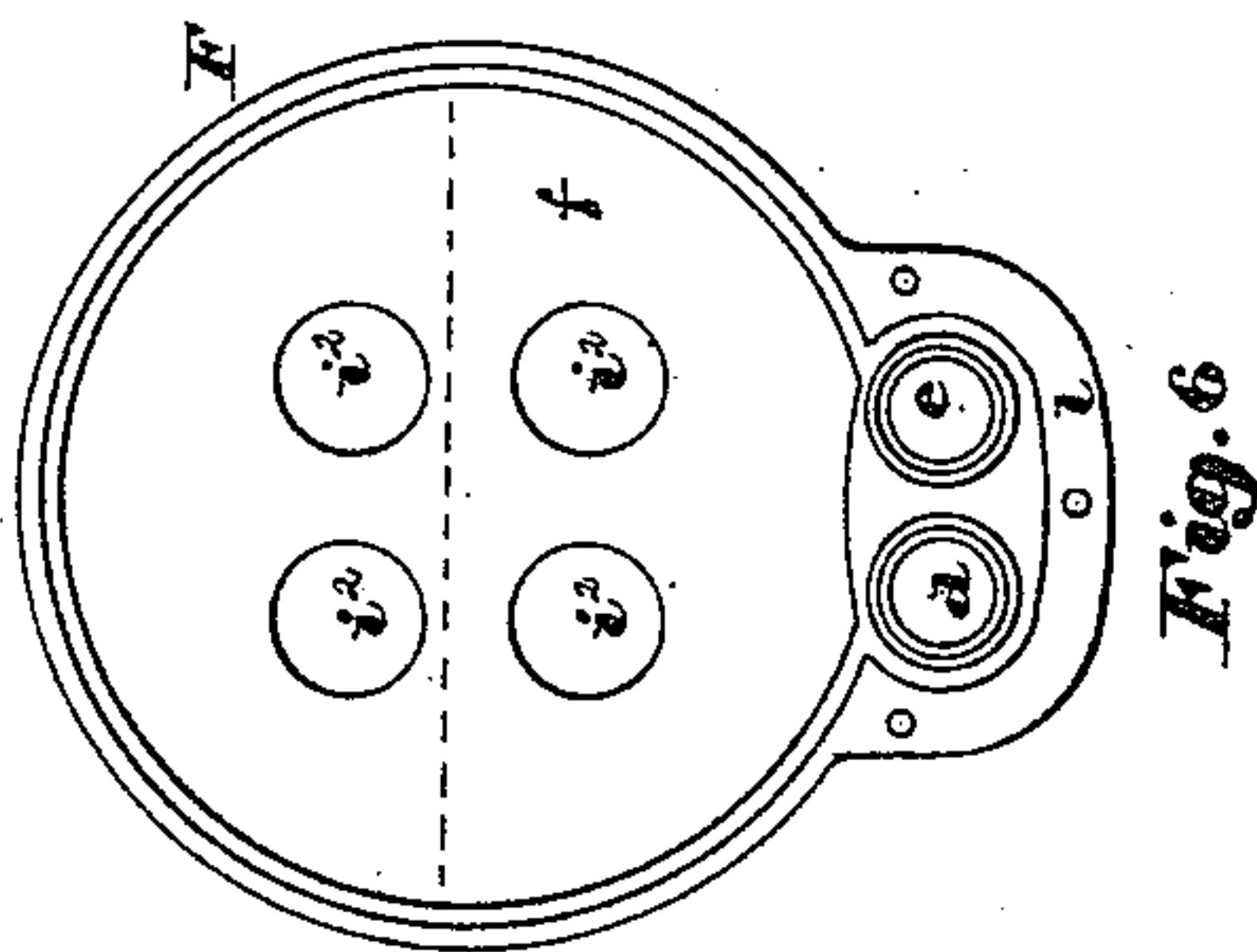


Fig. 6.

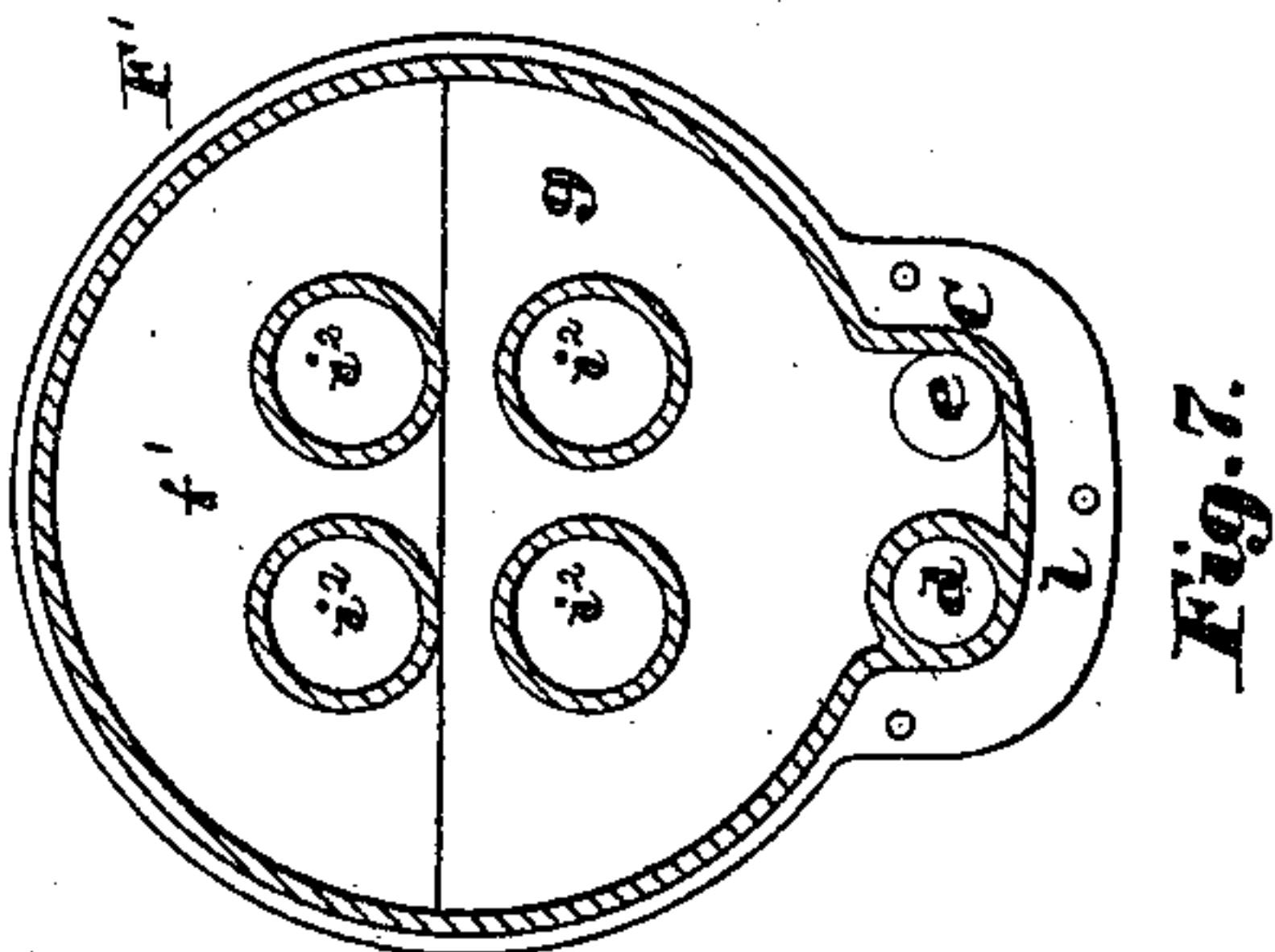


Fig. 7.

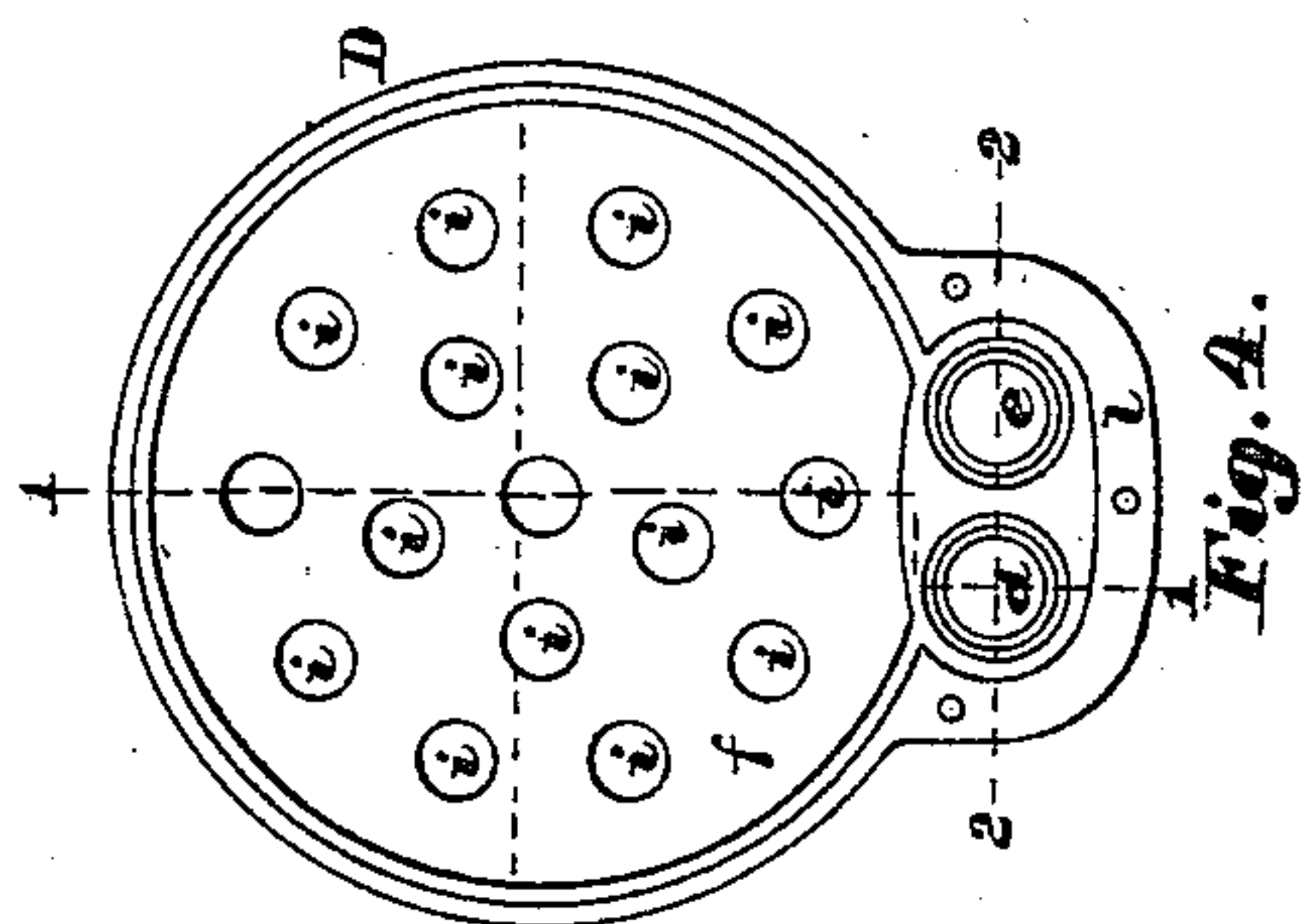


Fig. 4.

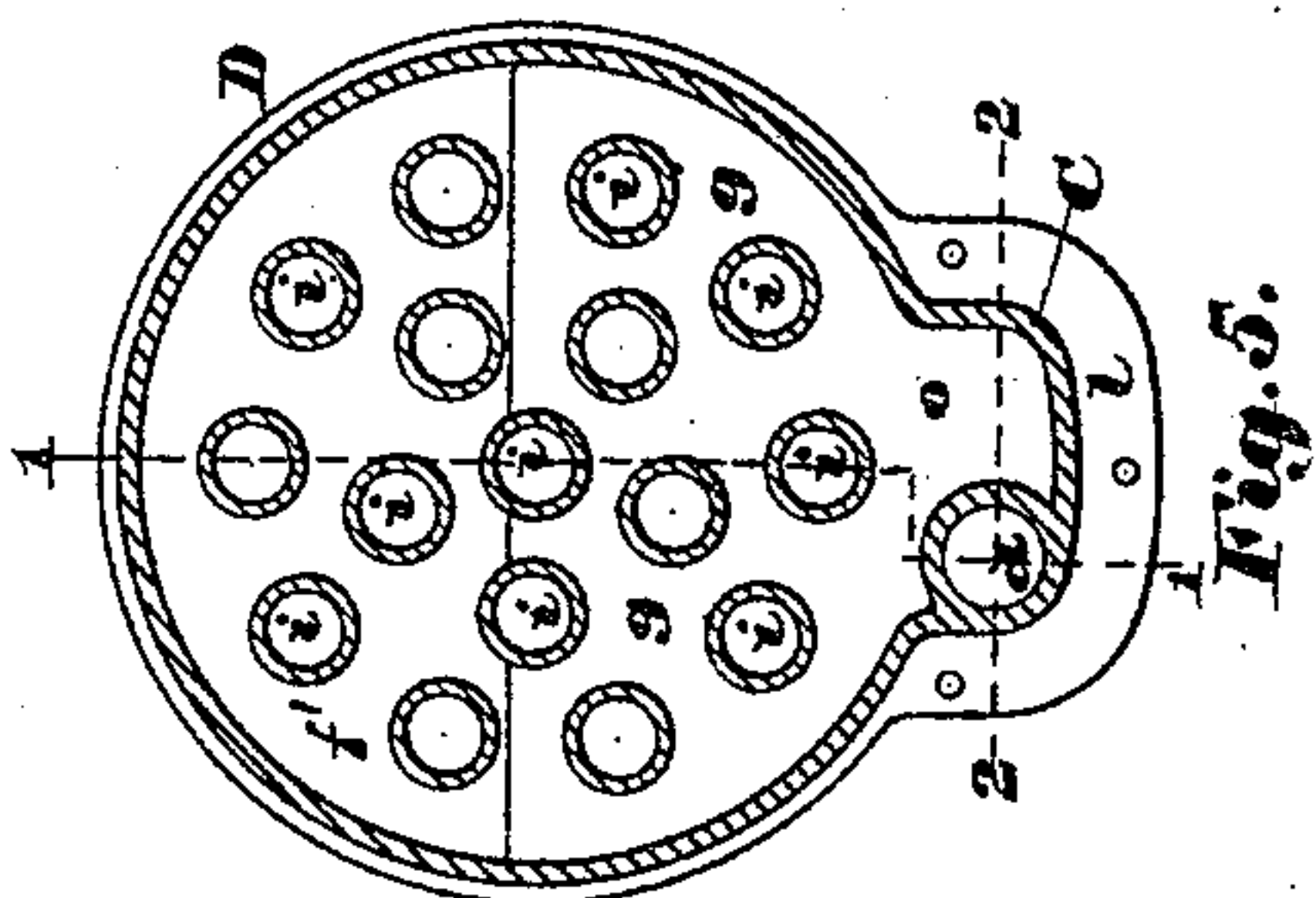


Fig. 5.

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UNITED STATES PATENT OFFICE.

ADRIEN BLONDIN, OF ST. HYACINTHE, CANADA.

BOILER FOR HOT-WATER HEATING.

SPECIFICATION forming part of Letters Patent No. 440,300, dated November 11, 1890.

Application filed August 4, 1890. Serial No. 360,902. (No model.) Patented in Canada May 27, 1890, No. 34,415.

To all whom it may concern:

Be it known that I, ADRIEN BLONDIN, of St. Hyacinthe, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Boilers for Hot-Water Heating, of which the following, taken in connection with the accompanying drawings, is a specification, said improvements having been patented in Canada on the 27th of May, 1890, No. 34,415.

My invention relates to hot-water boilers for heating purposes; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the drawings, and to the claims hereinafter given and in which my invention is clearly pointed out.

Figure 1 of the drawings is a front elevation of a boiler illustrating my invention. Fig. 2 is a vertical section of the same on line 1 1 on Figs. 4 and 5. Fig. 3 is a sectional elevation of the same, the cutting-plane being on line 2 2 on Figs. 2, 4, and 5. Fig. 4 is a plan of the first section above the fire-pot detached. Fig. 5 is a horizontal section through said first section, the cutting-plane being on line 3 3 on Figs. 2 and 3. Fig. 6 is a plane of the third and fifth sections above the fire-pot. Fig. 7 is a horizontal section of the same on line 4 4 on Figs. 2 and 3. Figs. 8 and 9 are similar views of the second, fourth, and sixth sections above the fire-pot; and Figs. 10 and 11 are similar views of the upper section.

In the drawings, A is the base-section, provided with a grate and ash-pit in the usual manner.

B is the fire-pot section, provided with outer and inner walls *a* and *b*, the space between which forms a water-chamber, into which the water-supply is fed through a pipe or pipes *c*. (Shown in Fig. 1.)

So far I make no claim to anything as new or of my invention; but I will now proceed to describe what I consider new.

The fire-pot section B has its outer wall at the side opposite to the fire-door B' and near its upper end expanded, as shown at C in Figs. 2 and 3, to form an enlargement of the water-chamber and a means of connection with the cold-water pipe *d*, as shown in Figs. 2 and 3.

Above the section B my boiler is composed of a series of sections D, E, F, and G, placed one above the other, and each having the same general outline in plan as the upper end of the section B. Each of the sections D, E, and F is a water-chamber by itself, comprising top and bottom plates *f* and *f'*, arranged parallel to each other, an annular rib or lip projecting upward from said upper plate at its edge and an annular rib or lip projecting downward from the bottom plate at its edge and rabbeted to receive the upper edge of the rib or lip projecting upward from the section next below it, a section of the two circulating-pipes *d* and *e*, and a diaphragm-plate *g*, arranged equidistant from the top and bottom plates *f* and *f'*, and extending from said circulating-pipes forward to a line at or in front of the center of the sections, as shown in Figs. 2, 5, 7, and 9.

When the sections are placed in position one upon the other, the lower plate of one section does not come in contact with the upper plate of the section below it, they being kept apart by the annular ribs or lips, so as to form spaces *h h* between each pair of sections for the circulation of the products of combustion. The section D has a series of tubes connecting its top and bottom plate and forming passages *i* from the fire-pot to the space between the top plate of said section and the bottom plate of the section E next above it. The sections E, of which there are in the drawings three, also have a series of tubes connecting their top and bottom plates and forming flues *i'* for the passage of the products of combustion, said flues *i'* being less in number, but of larger size than the flues in the section D. The two sections F are also provided with flues *i''* for the passage of the hot gases, but preferably differing in number and position from the sections above or below them, the object being to arrange the flues in the several sections so as to compel the hot gases to circulate to all parts of the several chambers *h h* in their passage to the smoke-pipe H. The upper section G has no diaphragm, but has formed in the center thereof a section of the smoke-pipe H and the rearward enlargement to connect with the circulating-pipes *d* and *e*, and is provided with one or more discharge-pipes *k k* to con-

nect with the service-pipes for conveying the hot water to the rooms to be heated.

The several sections are provided with suitable flanges *ll* around the rearward extension thereof, which forms the pipes *d* and *e*, by means of which and the bolts *m m* and suitable packing the joints between the several sections of the pipes *d* and *e* are made tight. In each of the sections D, E, and F the space below the diaphragm-plate *g* communicates with the interior of the pipe *d* through openings *n*, as shown in Figs. 2 and 3, and the space above said diaphragm communicates with the pipe *e* through openings *o*, as shown in Fig. 3.

The operation of my invention is as follows: The boiler being filled with water through the pipe or pipes *c* and a fire being started in the fire-pot, the products of combustion pass upward through the flues in the several sections and the chambers *h h* and pass off through the smoke-pipe H. The water as it becomes heated tends to rise to top of the boiler and escape through the pipes *k k*, and if the pipes are opened, so that the water can escape or traverse the circulating-pipes, the hotter water in each section escapes into the pipe *e* through the openings *o* and rises in said pipe to the section G and passes into the circulating-pipes through the pipes *k k*, an equal amount of cold water entering each section below the diaphragm through openings *n* from the pipe *d*, and a corresponding quantity of water enters the chamber surrounding the fire-pot through the pipes *c* to supply the place of the water drawn off.

A greater or less number of sections may be employed according to the amount of heat required. The action of the several sections is simultaneous. Once the boiler is full of water each section receives and delivers its necessary quantity of cold and hot water without alternative action, delivering water at the necessary temperature into the section G through the pipe *e*, whence it passes into the heating-pipes.

I claim—

1. In a hot-water boiler, the combination of a series of horizontal sections arranged one

above another with a chamber between each two sections, each comprising short sections of the hot and cold water circulating pipes, and a water-chamber extending to the outer wall or circumference of the boiler, and a diaphragm-plate located equidistant from the top and bottom plates of said section and parallel therewith and extending from the hot and cold water circulating pipes toward the opposite side of said section, so as to divide about one-half of said water-chamber into two horizontal passages.

2. In a hot-water boiler, the combination of a series of sections arranged one above another with a heating-chamber between each two sections, each comprising sections of the hot and cold water circulating pipes, a water-chamber, and a diaphragm-plate partially dividing said water-chamber horizontally into two passages and each provided with a series of vertical flues or openings for the passage of the products of combustion from the fire-pot to the smoke-flue or chimney.

3. In a sectional hot-water boiler, a section comprising short sections of the shell of the boiler and of the hot and cold water circulating pipes of equal height, top and bottom plates inclosing a water-chamber of less height than the sections of pipes and outer shell, a diaphragm-plate extending from the hot and cold water pipes toward the front side of the water-chamber in a horizontal plane intermediate between said top and bottom plates, an opening in the side of the cold-water pipe communicating with the water-chamber below said diaphragm, an opening in the side of the hot-water pipe communicating with the water-chamber above said diaphragm, and vertical flues extending through said section for the passage of the products of combustion.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 23d day of July, A. D. 1890.

ADRIEN BLONDIN.

Witnesses:

N. C. LOMBARD,
H. F. PURINTON.