

(No Model.)

3 Sheets—Sheet 1.

B. ETIENNE.  
HOT WATER HEATER.

No. 539,043.

Patented May 14, 1895.

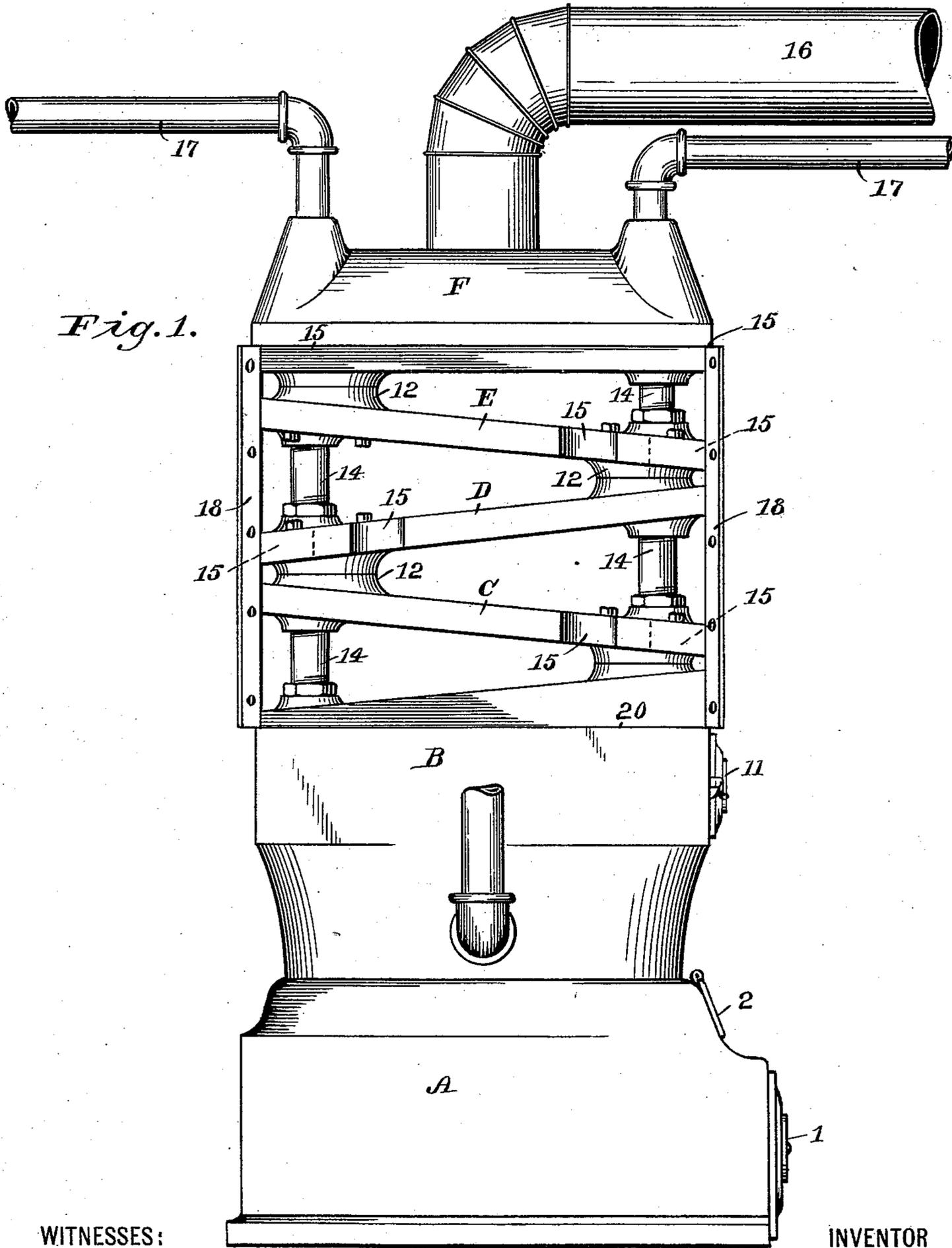


Fig. 1.

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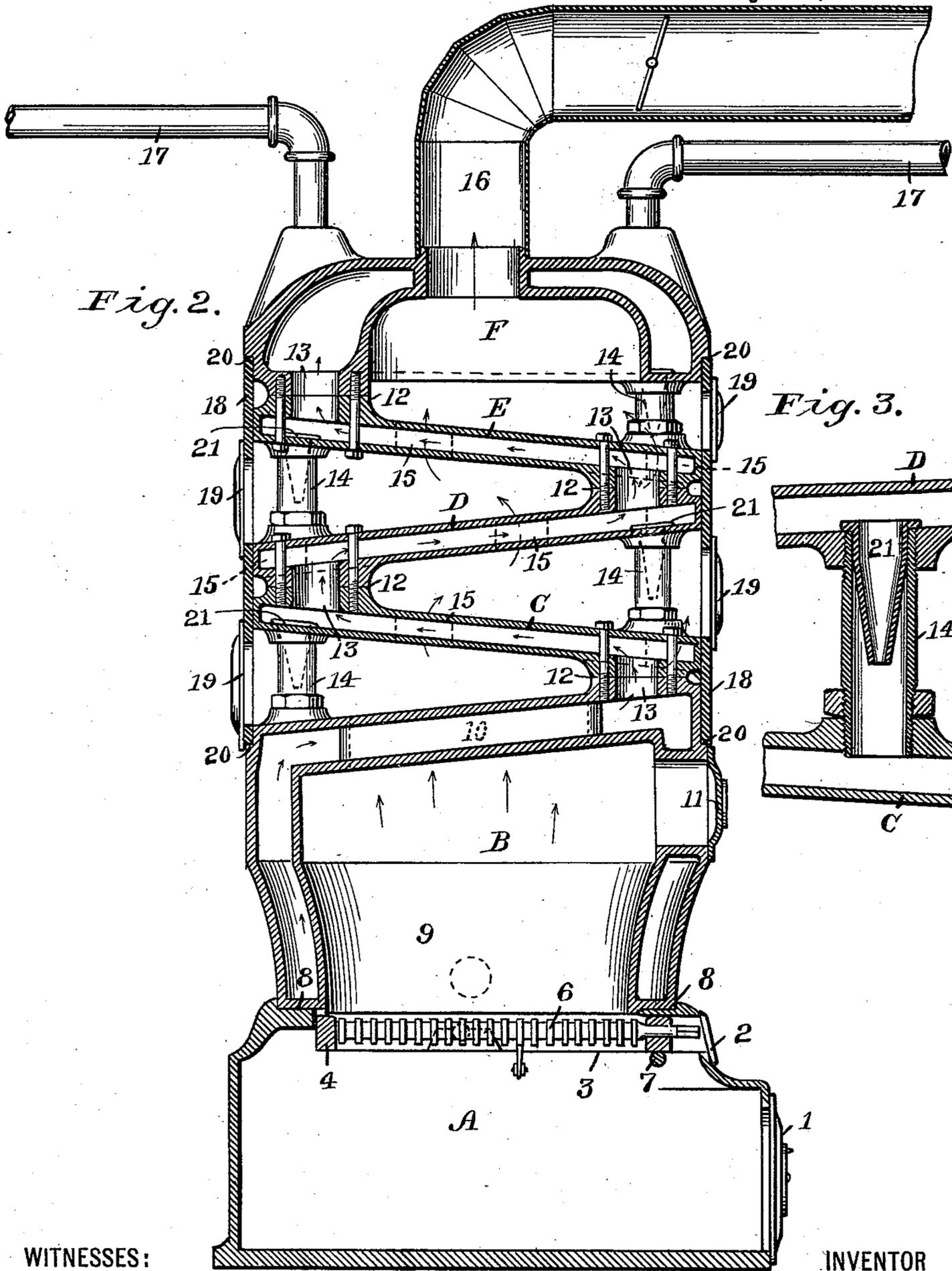
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Fig. 4.

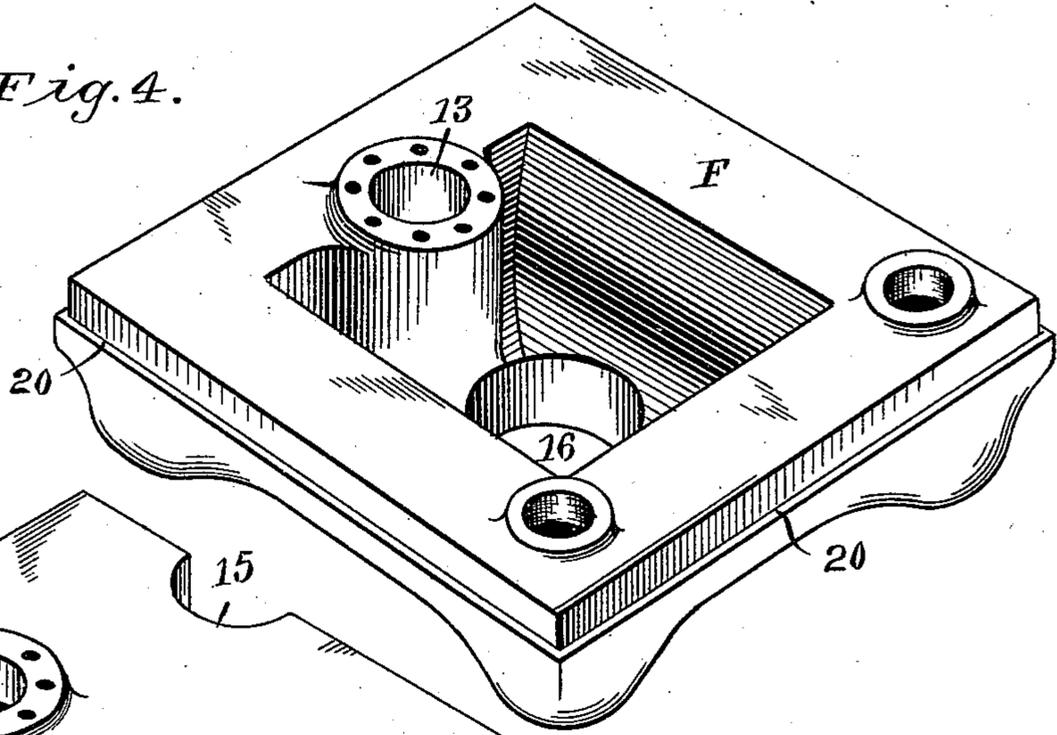


Fig. 5.

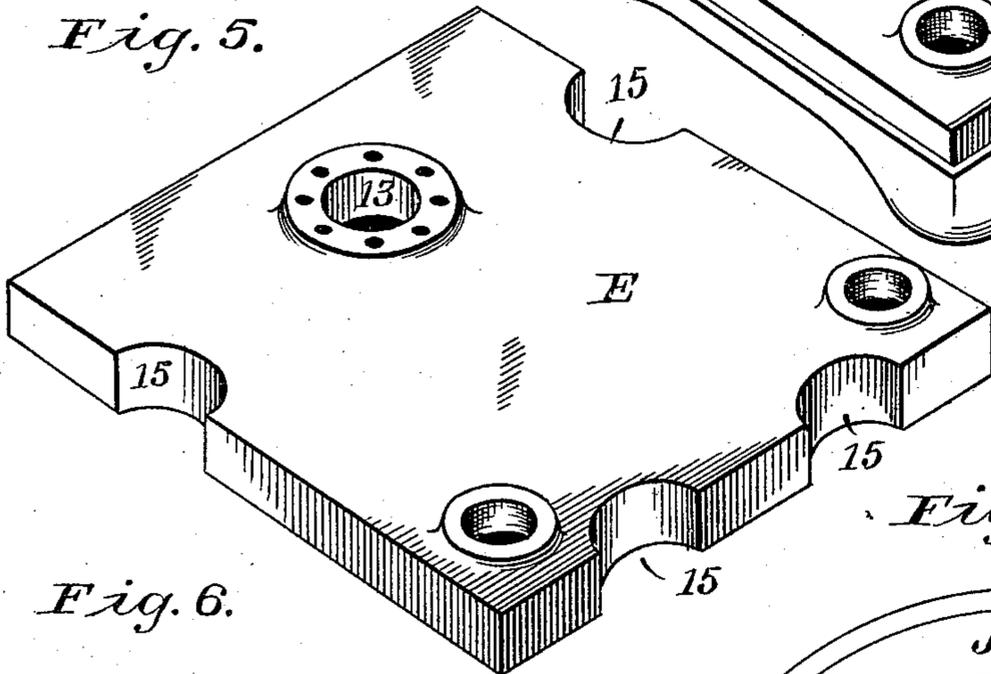
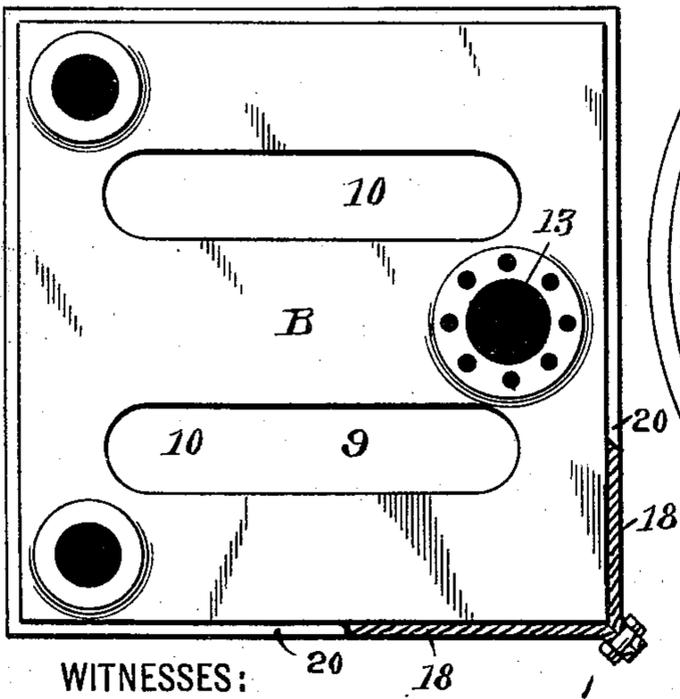
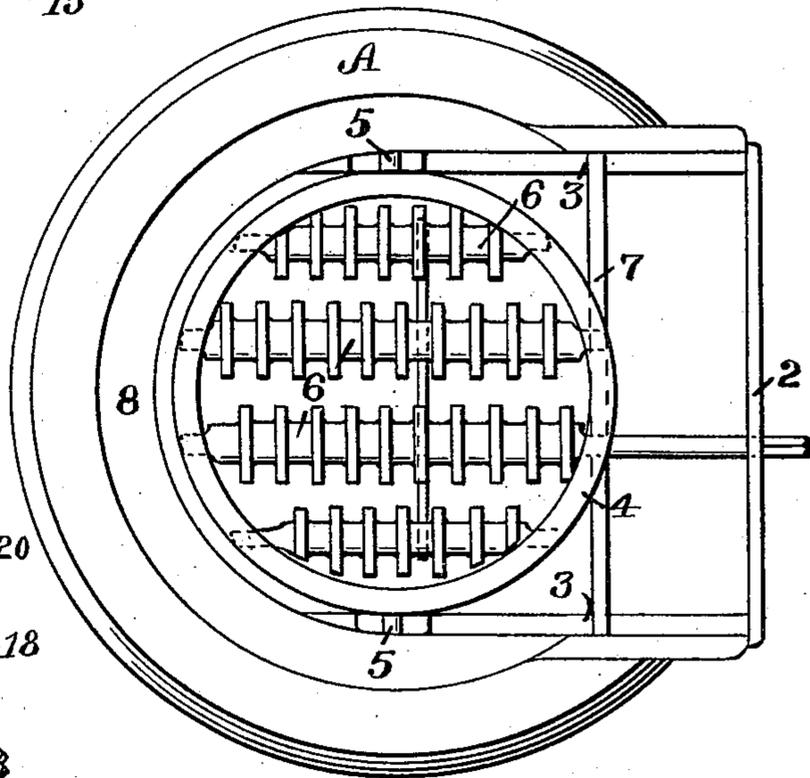


Fig. 6.



WITNESSES: 20 18

Fig. 7.



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# UNITED STATES PATENT OFFICE.

BRUNEAU ETIENNE, OF WATERBURY, CONNECTICUT.

## HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 539,043, dated May 14, 1895.

Application filed November 27, 1894. Serial No. 530,193. (No model.)

*To all whom it may concern:*

Be it known that I, BRUNEAU ETIENNE, a citizen of the United States, and a resident of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Hot-Water Heaters, of which the following is a specification.

My invention relates to sectional hot water heaters, and has for its object to improve upon heaters of this class, by providing a large amount of heating and radiating surface, to insure an even and positive combustion, to effect a perfect circulation, a proper drainage, and to prevent trapping.

As before stated my invention consists in a sectional heater of novel construction as will be fully set up in the following description. The said sections are arranged above the fire chamber and crosswise thereof. They are arranged upon a desirable incline, a proper distance apart, being united together by suitable joints and couplings.

Upon the accompanying drawings which form a part of this specification, the same letters and numerals of reference denote like or corresponding parts throughout the several views, and of which—

Figure 1 represents a side elevation of my improved heater and having one side of the casing removed. Fig. 2 is a central vertical cross-section. Fig. 3 is an enlarged detail sectional view of one of the couplings and its valve. Fig. 4 is an inverted perspective view of the top section of the heater. Fig. 5 is a perspective view of the section indicated by E. Fig. 6 is a plan view of the fire-pot section B. Fig. 7 is a plan view of the base A and grate therein.

Referring to the drawings it will be seen that my novel heater is constructed preferably of six principal sections, as follows: A base, A, fire section B, inclined intermediate sections C, D, and E and a dome or top section F.

It is an important feature in the construction of this furnace that the inclined sections C, D, and E, are interchangeable, and that the heater may be set up with any desired number of said sections. For instance, I may complete the heater as shown in Figs. 1 and 2, of the drawings, or I may add two more sec-

tions similar to D and E, thereby slightly increasing the height, and also the heating surface, and water space. In practice the base, fire pot, and dome, would be cast the same for different capacities of heaters, the variation of size of said heaters being in the numbers of sections as above specified.

The base A constitutes the bottommost section and serves as a suitable ash pit. It is provided with a door 1 by means of which ashes, &c., may be removed, and a door 2 for the withdrawal of the grate. Within this base are formed suitable guideways 3 upon which a slidable grate frame F is mounted, by means of said frame having lugs 5 at opposite sides engaging a slide block upon the said ways. This frame may be provided with any desired form of rotary or rocking grate bars, as for example the form shown which I designate by 6. The grate is also designed to be dumpable (see sectional view) by simply disengaging the rod 7 which supports the forward portion of the grate frame. The base A within which the said grate is supported, is provided with a draft door 2 as above stated. This door 2 as will be seen, is of sufficient size to permit of the withdrawal of the grate upon the before mentioned guideway 3, thus permitting the grate being removed from the furnace, for repairs, &c.

Within the open top of the base A, I provide a circular shoulder 3 within and upon which is seated the fire pot B. Said section is of special construction as shown in Fig. 2, and consists of a fire pot 9, a water space surrounding the fire chamber, an orifice 10 within the top of the fire section. Said section is further provided with the usual firing door 11. It will be seen that the escapement of fire from the said fire chamber, is by way of the orifice 10 before mentioned.

Above the fire sections I provide a series of flat hollow intermediate sections C, D, and E, as seen in Figs. 1, 2, and 5. These sections are alike and arranged upon an angle so as to insure a perfect drainage, and sure draft. There may be any number of these sections according to the amount of radiating surface desired. They are connected together, at one end by means of a bolted connection 12 forming water passage 13 as shown, and by couplings 14—14 at opposite corners of the other

end. These couplings consist of a pipe threaded at both ends and engaging the adjoining sections as shown in Fig. 3. Within these couplings I insert a funnel shaped valve 5 21, for the purpose of decreasing the flow of water through said couplings, except at such times when the water of the heater should boil, in which case the force of the water would be sufficient to raise the valves allowing a more direct flow of water to the top. 10 Upon opposite sides and at the lower ends of said sections I provide a suitable fire passage 15 through which the heat and articles of combustion pass from between the successive sections as indicated by large arrows. It is obvious that these sections are amply supported one above the other at the points indicated, viz: connection 12 and coupling 14—14.

The dome or top section F will be best understood with reference to Figs. 2 and 4. It is cast in a single piece, and is provided with connections similar to those of the lower section. The water apartment of this section is considerably larger than the intermediate 25 section. The same is also true of the heat chamber, which insures a proper and final heating of the water. To the dome I attach my smoke pipe 16, and also to the water chamber thereof, is connected a desired number of 30 hot water supply pipes 17. As constructed I have shown four of these pipes but any number may be used.

The intermediate transverse sections are inclosed by vertical front, rear, and side plates 35 18 said front and rear plates being provided with clean out doors 19. These side plates fit between shoulders 20 of the sections B and F, and may be secured in position in any desired or preferred manner, for instance as 40 shown in Figs. 2 and 6.

From the above construction it will be seen that the heat and products of combustion are thoroughly distributed around and between the several sections of the heater. See large 45 arrow. By this means the life or heat of the fire is completely consumed. It is also true that the location and quantity of water distributed throughout the heater, is such as to secure the best results. The water is fed to 50 the heater at the bottom, entering the space surrounding the fire pot. From this the water rises as indicated by small arrows, passing through the various portions of the several sections, insuring a continually moving body 55 of water, and preventing any dead or idle water in any portion of the heater.

Having thus described my invention, I claim—

1. In a water heater of the class described

the combination of the fire section, of orifice 60 in the top of said section, intermediate section extending from side to side arranged upon an incline and above the fire section, water connections at opposite corners of one end uniting said sections, a coupling central with the 65 opposite end, a top section as shown connected with and supported upon the intermediate sections, vertical side plates fitted between the fire top sections and against the intermediate sections, substantially as shown. 70

2. In a heater of the class described the combination with a fire section, a top section and connecting side plates of inclined intermediate sections extending from side to side arranged between the above mentioned sections, 75 a water connection 12 at opposite and successive corners of the intermediate sections, water coupling connecting the opposite and successive ends of said sections, combustion passages 15 upon the end and sides of the intermediate sections, said passage being arranged 80 at opposite relation with that of the adjoining section, substantially as shown.

3. In a heater of the class described the combination with a fire pot surrounded by a water 85 chamber, of intermediate water sections arranged above the fire section, water connections 12 at opposite and successive ends of the said sections, water couplings connecting the opposite ends of the intermediate sections, 90 funnel like valves arranged within said couplings, the whole arranged for the purpose specified.

4. The combination with a hot water heater of the class specified, of a base provided with 95 ways upon the inside thereof, of blocks to slide upon said ways, a circular grate pivoted and mounted upon said blocks, and said grate adapted to be withdrawn from the base sliding upon the ways aforesaid. 100

5. In a heater of the class described, the combination with the section B comprising a fire pot and a water chamber surrounding the same, of flat water sections C, D, and E, supported above the fire pot, water connections 105 12 central upon one end of each section, water couplings connecting the corners of the opposite ends and forming water passages, such water passages not being one direct above the other but at variance therewith, substantially 110 as shown.

Signed at Waterbury, in the county of New Haven and State of Connecticut, this 14th day of November, A. D. 1894.

BRUNEAU ETIENNE.

Witnesses:

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