

W. H. GEIS.  
HOT WATER BOILER.  
APPLICATION FILED MAY 4, 1909.

978,365.

Patented Dec. 13, 1910.

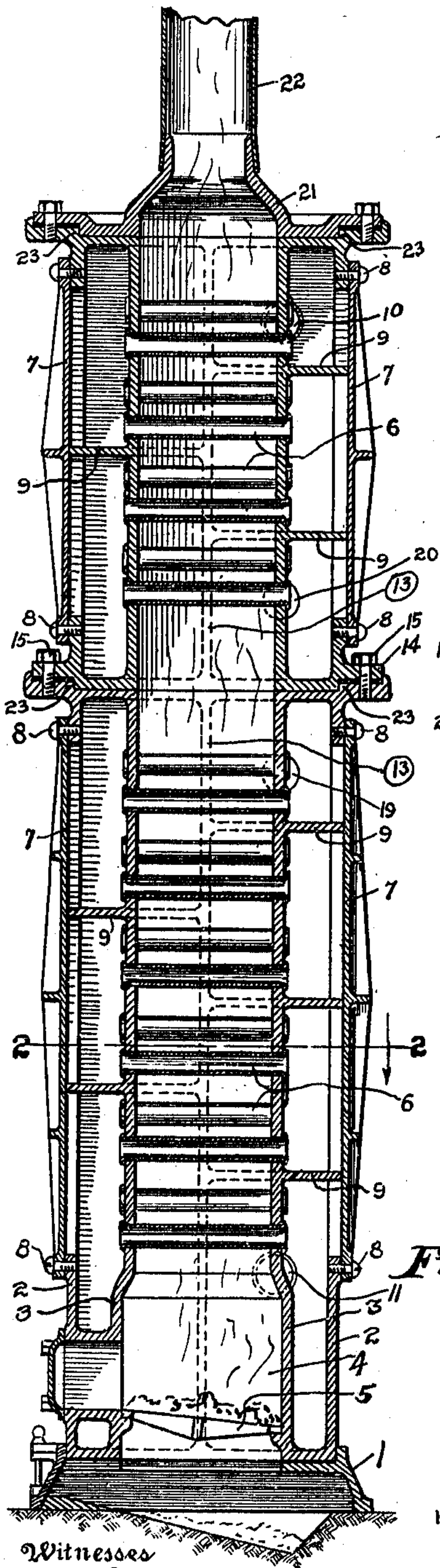


Fig. 4.

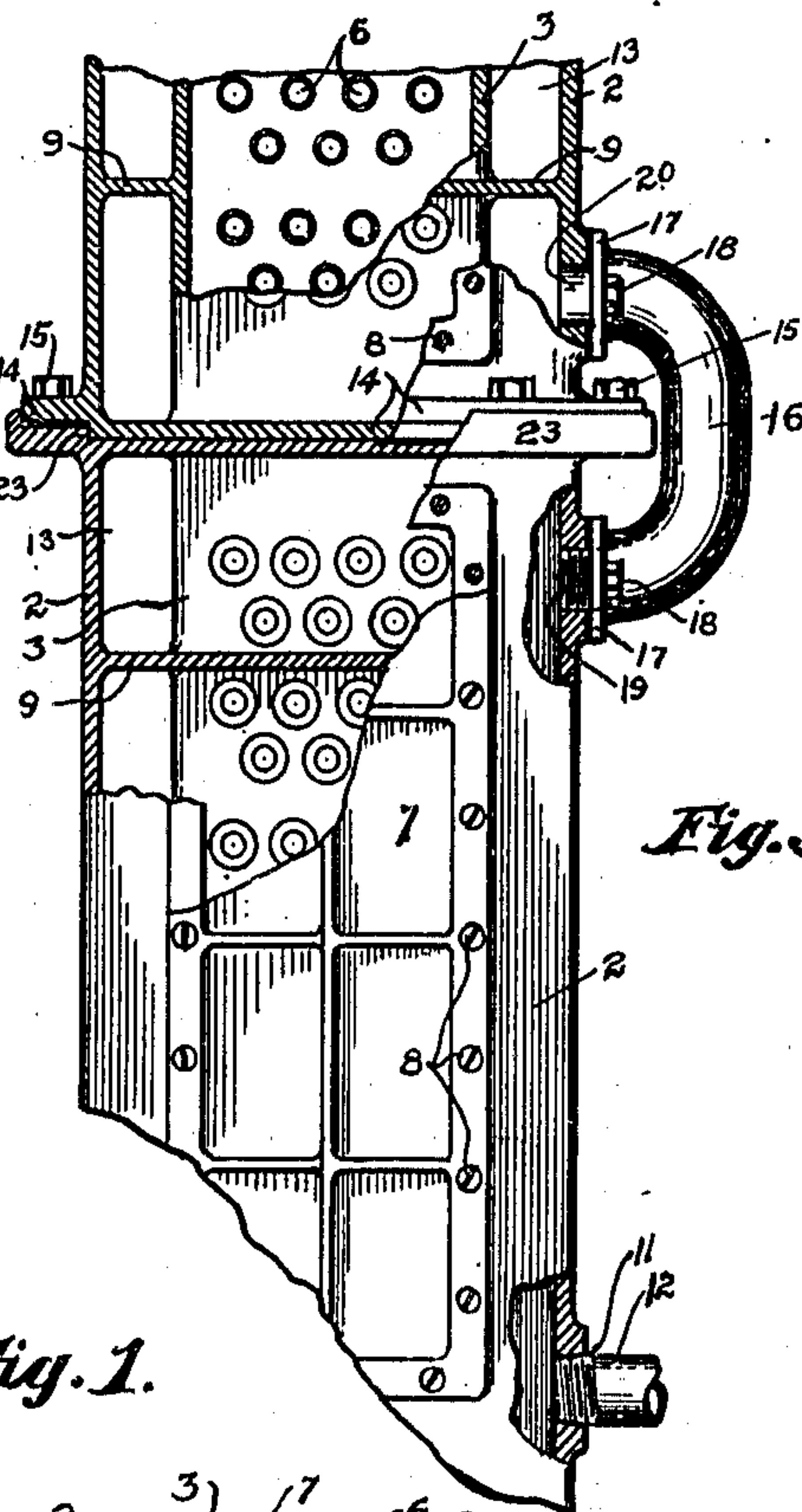
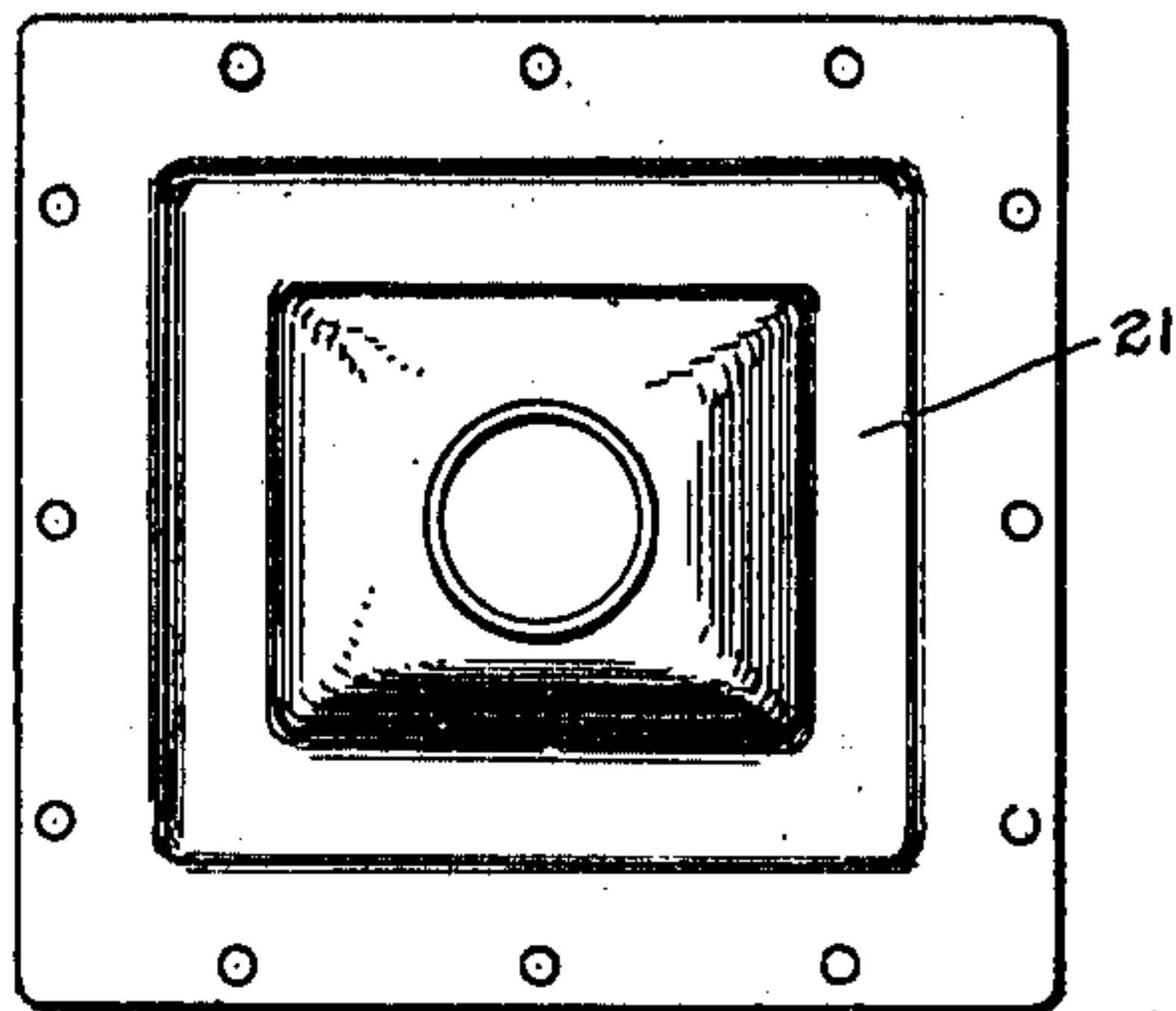


Fig. 3.

Fig. 1.

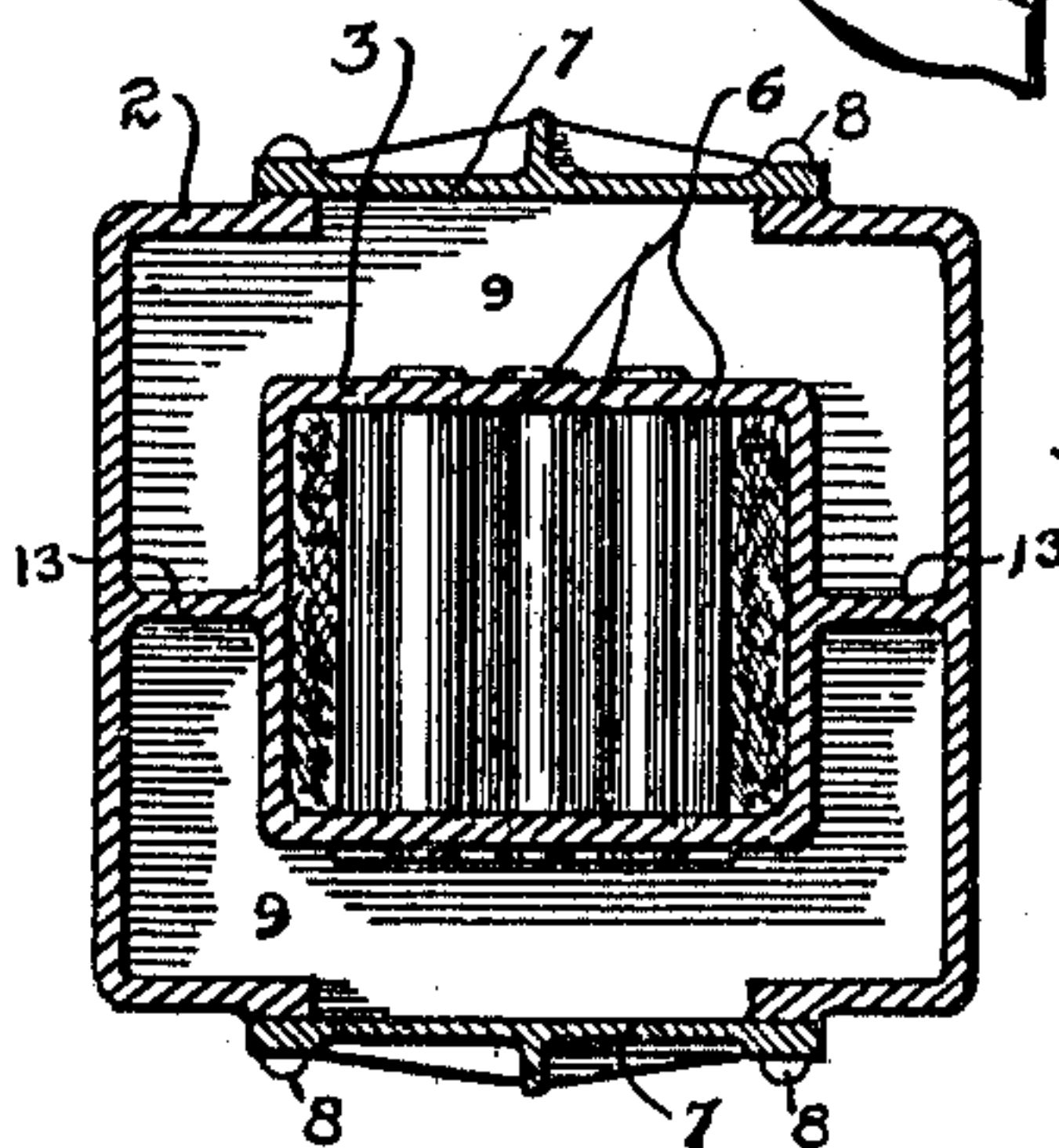


Fig. 2.

Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. GEIS, OF MASSILLON, OHIO.

HOT-WATER BOILER.

978,365.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed May 4, 1909. Serial No. 493,877.

*To all whom it may concern:*

Be it known that I, WILLIAM H. GEIS, a citizen of the United States, residing at Massillon, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Hot-Water Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, and to the numerals and figures of reference marked thereon, in which—

Figure 1 is a vertical section through the device. Fig. 2 is a transverse section on line 2—2, Fig. 1. Fig. 3 is a side elevation showing a portion of the boiler broken away. Fig. 4 is a top view of the crown.

The present invention has relation to hot water boilers and it consists in the novel arrangement hereinafter more fully described and particularly pointed out in the claim.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawing, 1 represents the base, upon which base is mounted the lower boiler section, which section is composed of the outer walls 2 and the inner walls 3, which walls are spaced from each other as best illustrated in Figs. 1 and 2. At the extreme bottom of the section is located the fuel chamber or combustion chamber 4, which is provided with the usual grate bars 5.

Directly above the fuel chamber 4 are located a series of open ended water tubes 6, which water tubes are spaced from each other substantially as illustrated in the drawing. It is well known that in hot water boilers it is necessary from time to time to clean the water tubes 6 and in order to provide for the cleaning of the water tubes, the sides of the boiler sections proper are provided with the removable plates 7, which plates are connected by means of the screws or lug-bolts 8. The sections or the inner members of the section are provided with a series of horizontal flanges 9, which flanges are located in different horizontal planes upon opposite sides of the boiler proper as illustrated in Fig. 1 and are so located for the purpose of causing the water to pass through the flues 6 in a zig-zag manner, that is to say that the water will find its way, first, to the lowermost horizontal flange 9 and through the tubes 6 below the said flange

and thence up until the next flange upon the opposite sides and so on in a zig-zag manner until the water reaches the outlet passage 10, it being understood that the lower passage 11 is the intake passage. The pipe 12 shown in Fig. 3 is the feed pipe. For the purpose of preventing the water from passing directly around or upon the sides of the inner boiler section and to the one to which the tubes 6 are attached the vertical flanges 13 are provided. It is well understood that as water becomes heated it has a tendency to move upward and for the purpose of forcing the water through the tubes 6 as it ascends, the vertical flanges 13 are provided.

In Fig. 1 I have illustrated two boiler sections, one on top of the other and connected by means of the flanges 14 and the bolts 15, but the upper section is substantially the same as the lower one except that it has no fire box or fuel chamber portion. For the purpose of providing means for carrying the water from one section to another the by-passage pipe 16 is provided, which pipe is connected to the upper and lower sections by means of the flanges 17 and the bolts 18.

It will be understood that if in the event the upper section should be removed that the outlet pipe must be connected to the top of the lower section and hence the aperture 19 should be screw threaded so that an outlet pipe can be attached, but the upper opening or passage 20 need not be screw threaded as the intake pipe 12 is always connected to the lowermost section. To the top of the upper section, or to the top of a single section is connected the crown plate 21, to which the flue 22 is attached.

It will be understood that the flanges 23 should be so formed that either a boiler section or the crown section 21 can be attached as desired or in other words the boiler section and the crown are so formed that they can be used interchangeable.

It will be understood that any desired number of boiler sections can be employed, but have illustrated two complete sections.

By locating the intake passage 11 below the lowermost horizontal flange 9 or the horizontal flange directly above the base and by locating a series of horizontal flanges 9 in different horizontal planes upon opposite sides of the boiler, the water must first enter below the lowermost flange 9 and find



its way through the water tube 6 located below the lowermost flange. After all of the tubes and space below the lowermost flange 9 have been filled with water, the water 5 tubes just above the lowermost flange will conduct the water to the side chambers above the lowermost flange until the space between the lowermost flange and the next upper flange is filled, after which the water will 10 pass through the tubes located above the second or next upper flange by which arrangement the water must flow through the tubes in a zig-zag manner and by providing the vertical flanges 13 the flow of water will be 15 cut off or in other words providing two separate and distinct chambers, said chambers being divided into compartments by the horizontal flanges 9.

Having fully described my invention, 20 what I claim as new and desire to secure by Letters Patent, is—

In a hot water boiler, the combination of a base, a boiler section mounted upon said base, said boiler section consisting of upper 25 and lower portions, the lower portion con-

stituting the combustion chamber and the upper portion the boiler section, said sections provided with inner and outer walls spaced from each other, horizontal flanges located between the spaced walls, said flanges located in different horizontal planes upon opposite sides of the boiler, open headed water tubes connected to the inner walls of the boiler section and vertical flanges arranged between the outer and inner walls of the 35 boiler section, said vertical flanges extending from top to bottom of the combined boiler and combustion chamber section and a feed pipe located below the lowermost horizontal flange of the lowermost boiler 40 section, substantially as and for the purpose specified.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM H. <sup>his</sup> × GEIS.  
mark

Witnesses:

SYLVIA BORON,  
WILLIAM H. MILLER.