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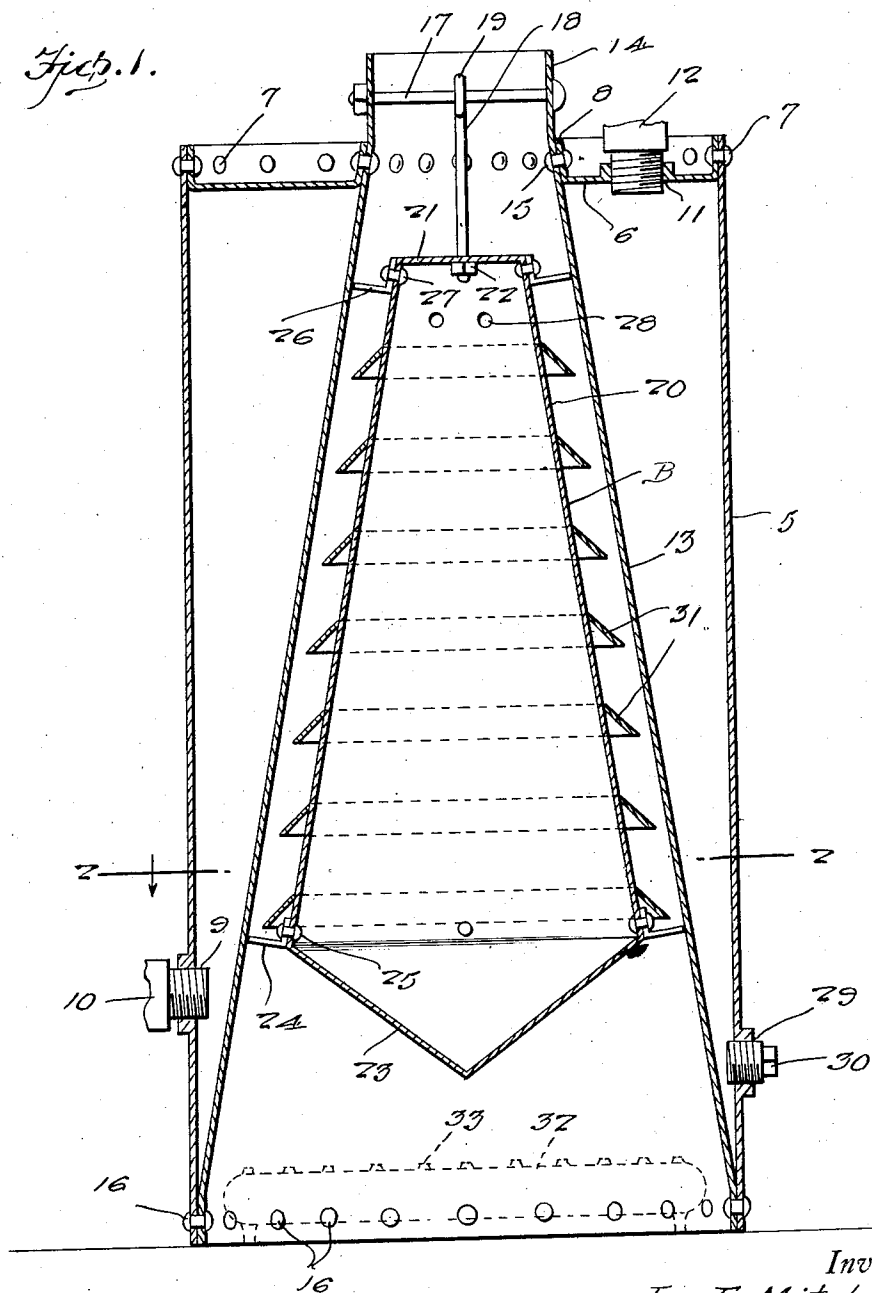
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L. J. MITCHELL

WATER HEATER OR BOILER

Filed April 12, 1926

2 Sheets-Sheet 1



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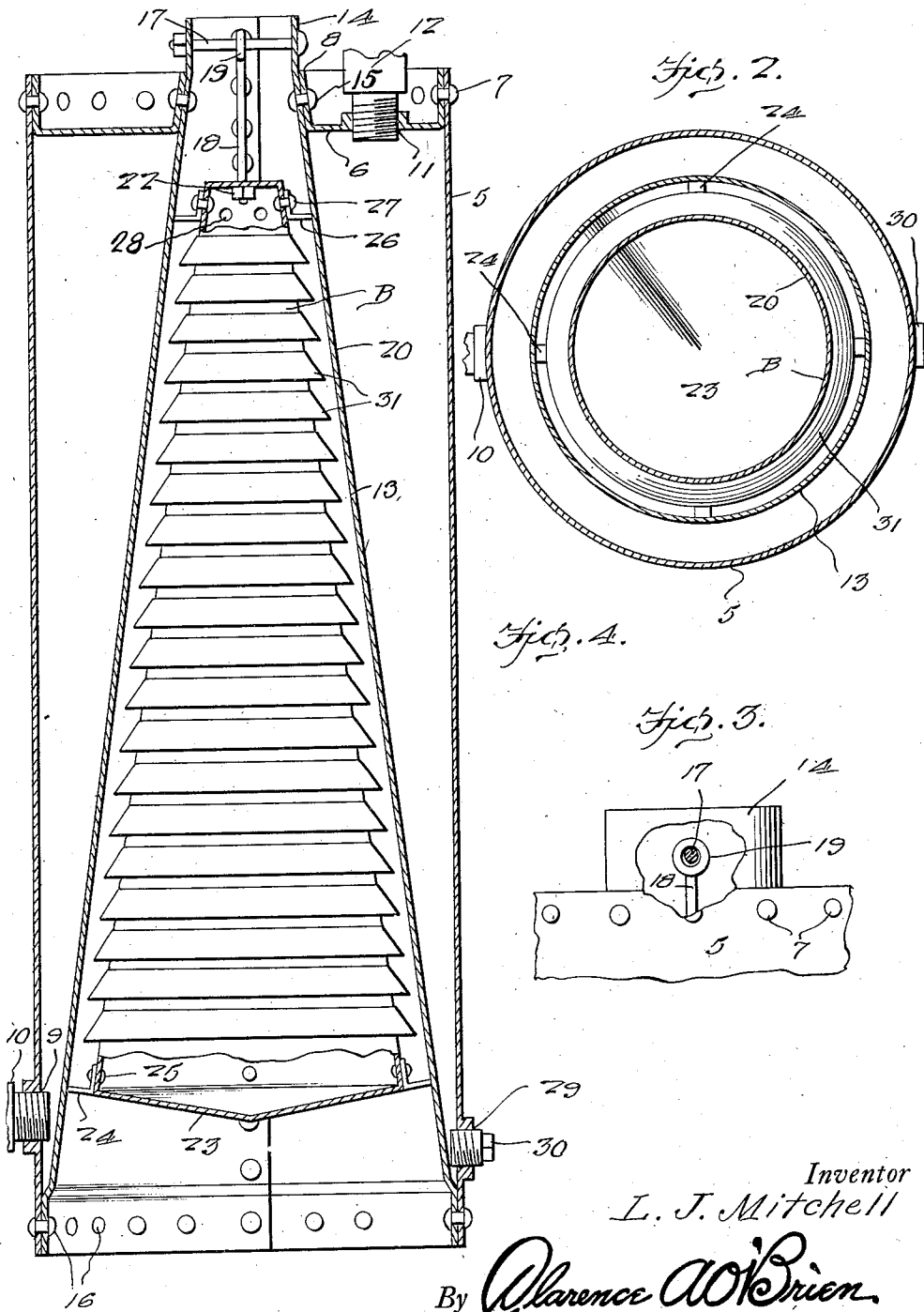
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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WATER HEATER OR BOILER.

Application filed April 12, 1926. Serial No. 101,408.

The present invention relates to a water heater or boiler and aims to provide a structure wherein it is possible to heat a maximum amount of water or generate a maximum amount of steam with a minimum amount of heat.

Another important object of the invention is to provide a device of this nature which is exceedingly simple in its construction, inexpensive to manufacture, strong, durable, thoroughly reliable, and efficient, and otherwise well adapted to the purpose for which it is designed.

Heretofore, it has been the practice to heat water or generate steam by heating a coil or passing heat through a plurality of relatively small flues, and this is the practice to-day that is most prevalent. I am aware that attempts have been made to use a single vertical flue with a boiler disposed thereabout, but little or no practical success has been attained.

My invention contemplates the necessary improvement to insure success with a vertical flue extending through the boiler.

With the above and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing,

Figure 1 is vertical section through the device of my invention, showing it used with a water heater.

Fig. 2 is a horizontal section therethrough, taken substantially on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary elevation showing the upper portion thereof with a part broken away, and

Fig. 4 is a vertical section through an embodiment of the invention used with a boiler.

Referring to the drawing in detail, it will be seen that 5 designates a cylindrical drum having a head 6 in the upper end thereof and fixed thereto by means of rivets 7 or in any other suitable manner. This head 6 is provided with a central opening 8. The drum is provided with an opening 9 adjacent the lower end thereof for receiving a water inlet pipe 10. The head is provided with an opening 11 for receiving a water or steam outlet

pipe 12. A single frusto-conical shaped flue tube 13 extends co-axially through the drum 5, the upper end of the tube 13 passing through the opening 8 and terminating in a cylindrical portion designated specifically by the numeral 14. A flange about the opening 8 is securely riveted or otherwise fastened to the upper portion of the tube 13 as is indicated at 15. The lower end of the tube 13 is securely riveted or otherwise fastened to the lower end of the drum 5 as is indicated at 16.

A rod or bolt 17 extends diametrically across and passes through the sides of the cylindrical portion 14. A hanger in the form of an eye bolt 18 has its eye portion 19 encircling the bolt 17. The bolt 18 depends into the tube 13 terminating a slight distance below the head 6. A baffle B is suspended from the hanger 18 in the tube 13. This baffle includes a frusto-conical shaped wall 20 disposed co-axially with the tube 13 and being equally spaced from said tube 13 throughout its length.

The upper end of the frusto-conical shaped portion 20 is closed by the plate 21. The hanger bolt 18 passes through the center of the plate 21 and a nut 22 is engaged on the end of the bolt, said nut being preferably formed as a part of said plate. An inverted cone-shaped spreader bottom 23 is formed on the bottom end of the portion 20. A plurality of spacing lugs 24 are riveted as at 25 to the lower end of the portion 20 and similar spacing lugs 26 are riveted as at 27 to the upper end of said portion 20. These spacing lugs 24 and 26 are adapted to engage the inside of the flue tube 13. The hollow baffle B is provided with suitable vent openings 28, preferably at the top end of the portion 20.

An opening 29 is provided in the bottom portion of the drum 5 for clean-out purposes and is normally closed by a plug 30. A plurality of frusto-conical flanges 31 are disposed about the outside periphery of the portion 20 in spaced relation to each other, the sizes of these flanges gradually decreasing from the bottom of the portion 20 to the upper end thereof.

In Fig. 1 I have shown the device in an embodiment as a water heater, wherein a gas burner or the like 32 may be utilized in

the bottom of the tube 13. The flames will shoot up from the jets 33, and heat will be deflected by the spreader bottom 23 and the heat will be retarded in its upward passage through the flue tube 13 by the flanges 31, so that the water in the drum 5 and about the tube 13 will be heated.

It is to be noted that there is no danger of the tube burning out. In Fig. 4 I have shown the device used as a boiler, it being noted that there are provided a greater number of the flanges 31 which are disposed in closer proximity. Furthermore, the inlet opening 9 is located closer to the bottom of the drum. Except for proportions, this boiler embodiment is identical with the water heater embodiment.

It is thought that the construction, operation, utility, and advantages of this invention will now be clearly understood without a more detailed description thereof. The present embodiment of the invention has been disclosed in detail, since in actual practice it attains the features of advantage enumerated as desirable in the statement of the invention and the above description. It will be apparent that changes in the details of construction, and in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter claimed, or sacrificing any of its advantages.

Having thus described my invention, what I claim as new is:—

1. A device of the class described including, in combination, a casing, a flue tube of frusto-conical formation in the casing and forming therewith a fluid circulating chamber, a bolt extending transversely across the upper end of the tube, an eye bolt receiving the first bolt and depending therefrom, a hollow frusto-conical shaped baffle having a closed top through which passes the second bolt for suspending the baffle in the tube, and a heating element beneath the baffle.

2. A device of the class described including, in combination, a casing, a flue tube of frusto-conical formation in the casing and forming therewith a fluid circulating chamber, a bolt extending transversely across the upper end of the tube, an eye bolt receiving the first bolt and depending therefrom, a hollow frusto-conical shaped baffle having a closed top through which passes the second bolt for suspending the baffle in the tube, the bottom of the baffle being closed, said bottom being of a substantial inverted conical formation, a plurality of frusto-conical flanges disposed about the hollow baffle, and a heating element beneath the baffle.

In testimony whereof I affix my signature.
LEWIS JOHN MITCHELL.