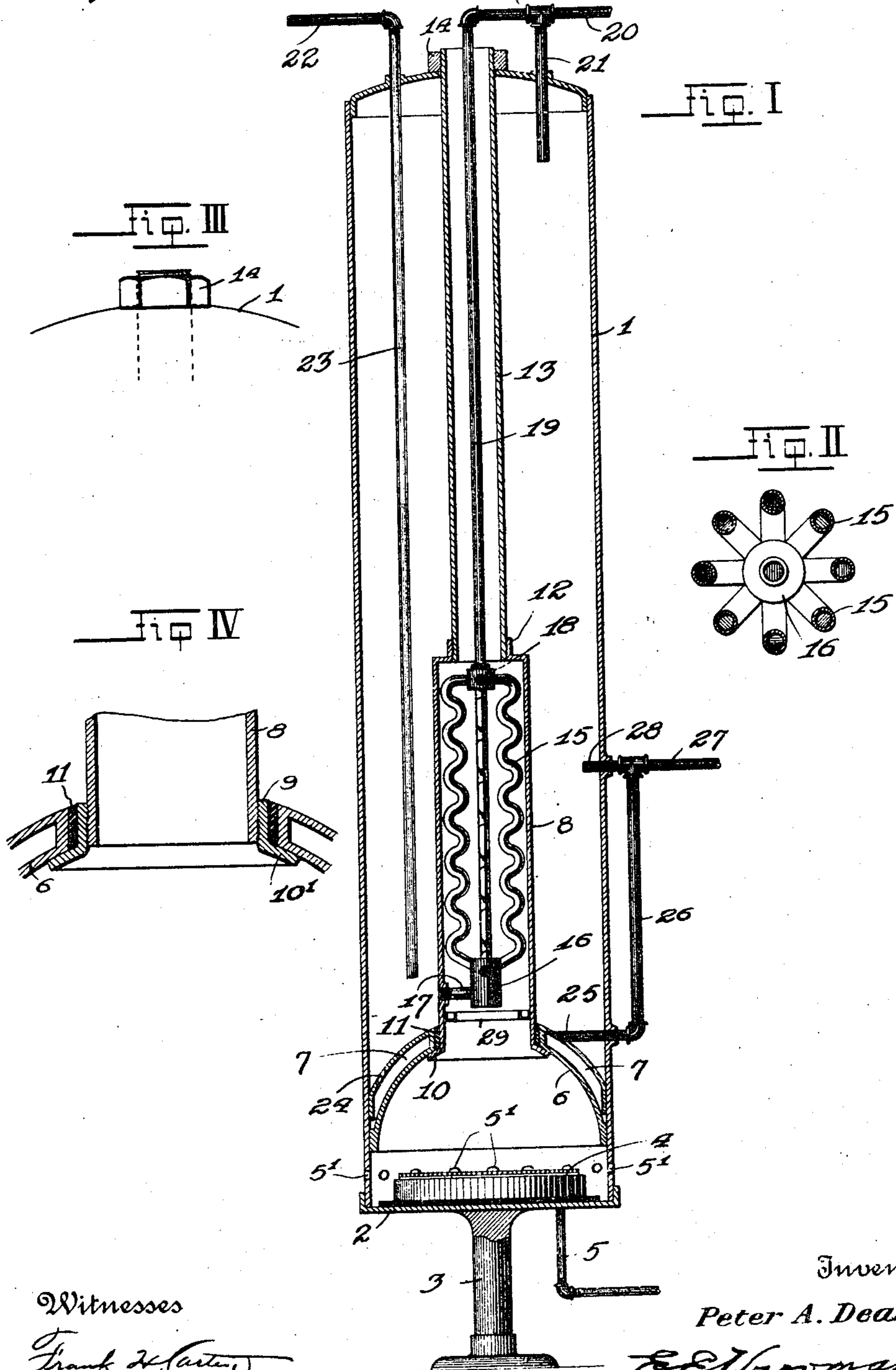


P. A. DEASY.
BOILER.

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966,532.



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BOILER.

966,532.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PETER A. DEASY, citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Boilers, of which the following is a specification.

This invention relates to water heaters for heating water in domestic boilers and has a special reference to that class of water heaters in which the water circulating through the heater is conducted to the range or other point and the heated water is exposed to heat supplied by a gas burner or other heating means.

In this class of devices there has been provided an inner heating chamber containing water circulating coils which are exposed to the products of combustion of a heating device, said products of combustion passing in contact with said circulating coils and escaping through a flue in the inside of the boiler.

The object of this invention is to provide a water heater of the character described so constructed and arranged as that the parts therein will take up as little room as possible and also by means of which the water circulating through the boiler will be fully exposed to the products of combustion and will be thoroughly heated.

Another object of the invention is to provide a water heater of the character described having an inner heating chamber which may be readily put in place and may be removed from the boiler without the use of rivets, and may be fastened in place by a simple fastening device.

Referring to the accompanying drawings: Figure 1 is a view in elevation and in vertical section of a water heater constructed according to this invention. Fig. 2 is a detail plan view in horizontal section of the end portions of the circulating coils and a branch coupling connected therewith. Fig. 3 is a detail view of a nut mounted on the upper end of the flue of the boiler and serving to keep the inner heating chamber in position. Fig. 4 is a fragmentary vertical sectional view showing a portion of the heating dome and the lower end of the heating chamber with a modified form of connection between said dome and chamber.

In the accompanying drawings (1) indicates a vertical boiler having a closed bottom (2) and supported by a standard (3)

secured to said bottom (2) of the boiler (1). Located in the lower end of the boiler (1) is a suitable heating device and, as here shown, preferably consisting of a gas burner (4) which is supplied with gas by means of a gas supply pipe (5). The sides of the boiler (1) adjacent to said burner (4) are provided with the usual air inlet openings 5¹. Mounted in the lower end of the boiler (1) above the burner (4) is a heating dome (6) provided with a hollow wall (7) and having a central circular opening in which is mounted the lower end of an inner heating chamber (8) said chamber consisting of an elongated narrow cylinder having an open lower end with an inclined flange (10) which presses against the under side of the dome (6) and which has clamped between it and the dome (6) a gasket (11) of rubber or metal, thereby forming a tight joint for the connection of the lower end of the inner heating chamber (8) with the top of the dome (6). The inner heating chamber (8) extends some little distance upward from the top of the dome (6) and has a reduced open end portion (12) which is held in threaded engagement with the lower end of a flue (13) extending up through the boiler and through an opening in its top and engaging a nut (14) clamped against the top of the boiler (1) and serving to hold the lower end of the heating chamber (8) firmly up against the dome (6).

Located in the inner heating chamber (8) are a number of vertical serpentine water-circulating pipes (15) which connect at their lower end with a branch coupling (16) from which extends a short pipe (17) secured at one end to the branch coupling (16) and at its other end to the side of the chamber (8) and opening into the boiler (1). The upper ends of the pipes (15) are connected with a branch coupling (18) with which is connected the lower end of an outlet pipe (19) which extends upward through the flue (13) and out of the top of the same and connects with the branch pipe (20) leading to a faucet or other connection not shown. A branch pipe (21) is connected to the branch pipe (20) and extends down through the top of the boiler (1) and into the same a short distance. A water supply pipe (22) is connected with a vertical pipe (23) extending down through the top of the boiler (1) and extending through the same to a point adjacent to the top of the dome (6)

and the mouth of the pipe (17). The water passes from the boiler (1) through an opening (24) in the top of the dome (6) on one side thereof and through the hollow wall (7) of the dome (6) and passes out of the latter through a pipe (25) connected therewith and extending through the side of the boiler (1) and connected with a vertical pipe (26) which, in turn, is connected with a pipe (27) that leads to the water-back of a range (not shown) or other suitable connection. The pipe (27) has a branch pipe (28) which projects through the side of the boiler (1) and into the same.

In order to catch the drip of condensation from the circulating pipes (15) an annular drip trough (29) is mounted in the lower end of the heating chamber (8) beneath said pipes (15).

In Fig. 4 is shown a modified form of connection between the heating chamber (8) and the heating dome (6) in which said heating chamber and dome are connected together by means of a ring (9), having an inclined flange (10') which presses against the underside of the dome, said ring (9) being held in threaded engagement with the lower end of the heating chamber (8). Between the ring (9) and the dome (6) is inserted a gasket (11) of rubber or metal which is clamped between the ring (9) and the dome (6). The flange (10') of the ring (9) will be clamped up against the underside of the dome by means of the nut (14) on the upper end of the flue (13).

It will be seen that by means of this invention the dome (6) serves to direct the heat and products of combustion up through the inner heating chamber (8) and also to heat the water circulating through the hollow walls of the dome. It will be seen furthermore that by means of this invention the vertical serpentine circulating water pipes (15) will take up very little room in the heating chamber (8) and will be fully exposed to the heat of the products of combustion passing up through the heating chamber and carried off through the flue (13).

Another advantage of this invention is that the parts may be readily assembled and

held together without the use of rivets, the heating chamber (8) and the flue (13) being connected together by threaded engagement and the heating chamber (8) being held up tightly against the dome (6) by means of the nut (14).

Having described the invention, what I claim is:

1. In a water-heater of the character described, a boiler, a heating dome having circulating hollow walls and located in the lower end of said boiler and having a central opening in its top, a flanged ring detachably-mounted in said opening and having its flange bearing against the inner side of the dome, a gasket ring between the flange of said ring and the dome, an inner heating chamber having its lower end in threaded engagement with said flanged ring, a flue extending up through the boiler and out of its top and having its lower end in threaded engagement with the upper end of said heating chamber, and a nut on the projecting upper end of the flue bearing against the top of the boiler by means of which the flanged ring is drawn up tightly against the inner side of the dome.

2. In a water heater of the character described, a boiler, a heater located in the bottom of said boiler, a heating dome with hollow water circulating walls mounted in said boiler above said heater, an inner heating chamber having its lower open end mounted in the top of said dome and clamped thereto, a flue connected to the upper end of said heating chamber and extending through the top of the boiler, an inlet water pipe projecting through the side of the heating chamber at its lower end, a branch coupling connected to said pipe, an outlet pipe extending through said flue, a branch coupling mounted on the lower end of said outlet pipe, and vertical serpentine water-circulating pipes having their upper and lower ends connected to said couplings.

In testimony whereof I affix my signature in presence of two witnesses.

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Witnesses:

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