Jan. 30, 1934. E. KENNEDY 1,944,894

WATER HEATER

Filed Feb. 18, 1932

Fig:1.

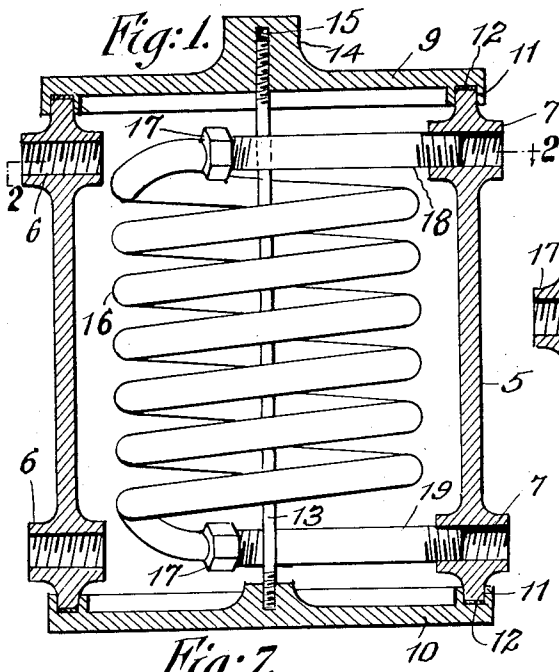


Fig:2.

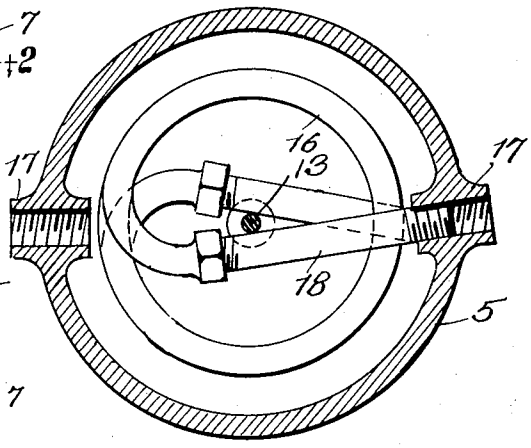


Fig:5.

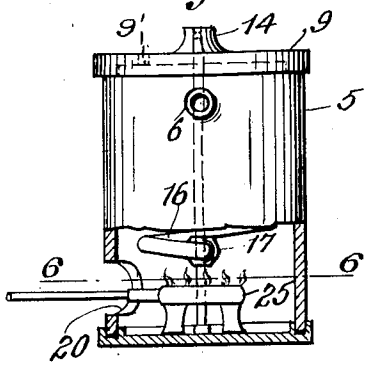


Fig:7.

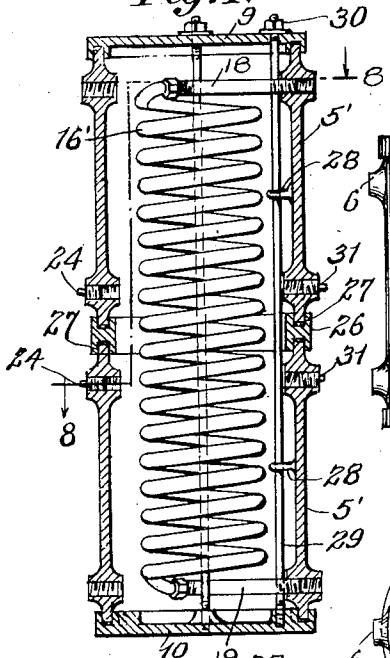


Fig:3.

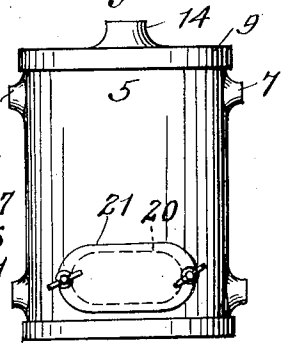


Fig:6.

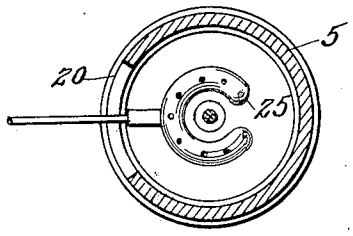


Fig:4.

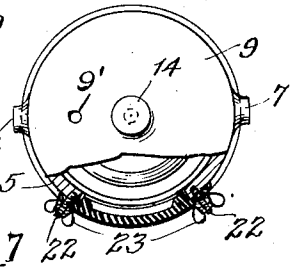
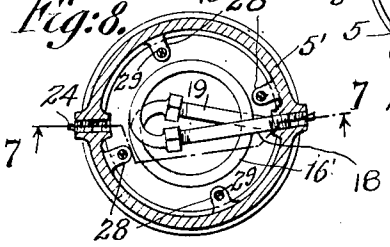


Fig:8.



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WATER HEATER

Edward Kennedy, New York, N. Y.

Application February 18, 1932. Serial No. 593,715

3 Claims. (Cl. 257—229)

This invention relates to water heaters, and has for its general object and purpose to provide a water heater of the type in which the water to be heated is circulated through a coil enclosed within a tank, and in which means is provided whereby said tank may be readily connected with the hot water or steam space of the furnace or heating plant whereby the hot water or steam may be utilized as the heating medium, and in which means is provided for enabling said coil to be heated by means of a gas burner during the summer months when the furnace is not in operation.

It is another object of the invention to provide a tank of simple construction with means for removably mounting the water coil therein, said tank including opposite end heads, and means for effecting a water tight seal between said heads and the opposite ends of the tank body.

It is a further object of my invention in one embodiment thereof to provide a multiple section tank structure whereby a tank of the required capacity may be easily and quickly built up, and the several parts thereof securely and rigidly fixed in assembled relation.

With the above and other objects in view, the invention consists in the improved water heater, and in the form, construction and relative arrangement of its several parts, as will be hereinafter more fully described, illustrated in the accompanying drawing and subsequently incorporated in the subjoined claims.

In the drawing wherein I have disclosed several simple and practical embodiments of the device, and in which similar reference characters designate the corresponding parts throughout the several views,

Figure 1 is a vertical sectional view of a water heater illustrating one embodiment of the present invention.

Fig. 2 is a horizontal sectional view taken substantially on the line 2—2 of the Fig. 1;

Fig. 3 is a side elevation of the heater.

Fig. 4 is a top plan view partly in section;

Fig. 5 is an elevation looking at right angles to Fig. 3, the heater tank being partly in section and showing a gas burner associated therewith;

Fig. 6 is a horizontal sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is a vertical sectional view illustrating a multiple unit type of heater tank, said section being taken substantially on the line 7—7 of Fig. 8, and

Fig. 8 is a horizontal sectional view taken on the line 8—8 of Fig. 7.

Referring in detail to the drawing, the heater tank includes one or more body sections 5, preferably of cylindrical form, the wall of said body section adjacent its opposite ends and at diametrically opposite sides thereof being provided with the internally threaded bosses 6 and 7 respectively, the purpose of which will presently be explained.

A head or closure 9 and 10 respectively is provided for each end of the tank body 5. These closure heads are each provided upon one side thereof and at its outer edge with an annular channel or groove 11, to receive a sealing gasket 12. These channels receive the opposite end edges of the body wall 5 of the tank. While various means may be provided for tightly clamping the closure heads on the ends of the tank body to secure a watertight connection therebetween, I have herein shown a central tie rod 13 in Fig. 1 of the drawing, centrally threaded in or otherwise connected to the lower head 10 of the tank. The upper closure head 9 for the tank has a central boss 14 formed thereon provided with a threaded bore 15 to receive the upper threaded end of the rod 13. It will thus be evident that by screwing this head on the upper end of the rod 13, the two closure heads may be drawn or forced into tight clamping engagement on the opposite ends of the tank body, the end edges of the body wall compressing the sealing gaskets 12 and thus effecting a water tight connection between each head and the body wall of the tank.

Within the tank body 5, the water circulating coil 16 is arranged. The opposite ends of this coil are detachably connected by means of suitable unions indicated at 17 with the inner ends of the pipes or nipples 18 and 19 respectively. The outer end of the nipple 18 is threaded into the inner end of the boss 7 at the upper end of the tank body 5, while the outer end of the nipple 19 is similarly threaded into the inner end of the boss 7 on the lower end of the tank body. The water inlet or supply pipe for the coil 16 has a threaded connection in the outer end of the lower boss 7, while the pipe leading to the service faucets in the house or building is connected to the upper boss 7. The upper nipple 18 has its inner end disposed at one side of the tie rod 13, while the inner end of the lower nipple 19 is disposed at the opposite side of said tie rod. Thus, the ends of the coil 16, instead of being abruptly bent, are extended inwardly on a curve of considerable radius for connection with the inner ends of the nipples 18 and 19.

To the upper threaded boss 6 on the tank body 5, an inlet pipe connection from the hot water or steam space of the furnace boiler is adapted to be connected, while the return pipe from the tank 5 to said boiler is connected with the lower boss 6.

The wall of the tank body 5 adjacent its lower end is provided with a horizontally elongated opening therethrough, as shown at 20, which is adapted to be securely closed and sealed by means of the cover plate 21, said cover plate at its opposite ends having suitable openings to receive threaded studs 22 fixed in the wall of the tank body, and upon which suitable clamping nuts 23 are engaged.

In the use of the water heater as above described during the winter months, the tank 5 is connected by supply and return pipes as above explained to the hot water or steam space of the boiler of the heating plant, so that the water heater or steam, as the case may be, will be circulated through the tank and in contact with the convolutions of the coil 16, so that the water in its circulation between the inlet and outlet connections 18 and 19 will be progressively heated to a comparatively high temperature. In this manner, a copious supply of hot water will be always available for household use.

In the summer months, when the heating plant is not in operation, the connections with the threaded bosses 6 are closed by means of suitable valves. The cover plate 21 of the opening 20 is then removed, and a gas or oil burner such as that shown at 25 in Fig. 5 of the drawing is inserted within the lower end of the heater tank and beneath the coil 16. The heat from the burner, rising in contact with the convolutions of the coil, will then heat the water circulating therethrough. The head 9 of the tank may be provided with an outlet opening 9' for the products of combustion.

In Fig. 7 of the drawing, I have shown a multiple unit heater tank in which two or more body sections indicated at 5' are adapted to be disposed in superposed relation. Between adjacent body sections of the tank, a ring or annulus 26 is inserted, said ring having the annular grooves or channels 27 in its upper and lower edges to receive the ends of the tank sections and suitable packing or sealing gaskets, in substantially the same manner as is provided upon the end heads or closures of the tank. Thus a water tight connection is obtained between the ends of the superposed tank units. In this construction, I provide the body wall of each tank unit interiorly thereof with apertured lugs or projections 28 to receive the vertical tie rods 29 which are threaded in the lower head of the multiple unit tank. The upper ends of these rods extend through apertures in the upper closure head for the tank and receive suitable clamping nuts indicated at 30.

The multiple unit type of heater tank is used or operated in the manner above described, it being understood of course that a relatively long water circulating coil 16' is employed and connected with the lower and uppermost threaded bosses 7 of the lower and upper sections of the tank. The other threaded bosses 7 of the tank sections are closed by means of the plugs 31.

From the foregoing description considered in connection with the accompanying drawing, the construction, manner of use and several advantages of my invention will be clearly and fully understood. It will be seen that the several parts of my water heater are of relatively simple construction, and may be easily and quickly assembled. The device may be used and readily connected with a hot water or steam heating plant of any standard type, and will therefore be very economical in operation. When necessary to obtain access to the interior of the tank for cleaning or repair of the water circulating coil, this may be easily accomplished by the removal of the end heads or closures, said closures together with the connecting or tie rods therefor being completely detached from the body section or section to the tank. These body sections of the tank may be produced in the form of very simple castings. In each of the described embodiments of the invention, by reason of the use of the elongated nipples 18 and 19, said nipples provide adequate support for the coil 16, and after the tank heads have been removed, admit of the easy and quick application of a wrench to said nipples whereby they may be disconnected from the bosses 7 and the unions 17, so that the coil can be removed from the tank body. Also, it will be noted, that by reason of the fact that the primary circuit connections are arranged on one side of the tank body near its ends while the secondary circuit connections are at the opposite side of the tank body adjacent the ends thereof, the closure heads 9 and 10 may be quickly removed without disturbing these connections. Also by eliminating the water circulating connections through the end heads of the tank, it will be evident that the device may be operatively mounted and arranged in locations of comparatively small area, which otherwise would not be possible. Thus, the device as herein described, may be produced at comparatively small manufacturing cost. I have herein shown and described several simple and practical embodiments of my present invention, though it is understood that the essential features thereof may also be incorporated in various other alternative structural forms, and I accordingly reserve the privilege of resorting to all such legitimate changes therein as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. A water heater comprising a plurality of tank body sections adapted to be arranged in superposed relation, a ring interposed between adjacent body sections of the tank and having annular channels receiving sealing gaskets and the ends of the respective body sections, closure heads for the lower and uppermost sections of the tank, the body walls of said tank sections being provided internally thereof with apertured lugs, tie rods extended through said sections and threaded in the lower closure head and extending through apertures in the upper closure head, and clamping means threaded upon the upper ends of the tie rods engaged with the latter closure head.

2. In a water heater, a tank provided at its opposite ends with internal and external projecting bosses, said external bosses providing means for the connection of water supply and service pipes with the tank, a heating coil within said tank substantially concentric therewith and having its upper and lower ends curved inwardly from the same side of the coil and terminating adjacent to the axis of the coil, a union on each terminal end of the coil, elongated water conducting nipples detachably connected at one of their ends to the said unions, projecting beyond the opposite side of the coil and detachably connected at the other ends to said internal bosses independently of the supply and service

pipes, and said nipples constituting the sole supporting means for the heating coil.

3. In a water heater, a cylindrical tank having open ends and provided with detachable covers for said open ends, threaded nipple openings provided in the walls of the cylindrical tank near each end thereof, a heating coil within said tank having its convolutions substantially concentric therewith and extending substantially the length of the tank, and having its upper and lower ends curved inwardly from the convolutions of the coil and terminating near the axis of the convolutions of the coil, nipple connecting means on each inwardly extending terminal of the coil, and elongated water-conducting independent nipples detachably connected at one of their ends to the last-named means and projecting beyond the opposite side of the coil and detachably connected at the other ends to said threaded nipple openings in the walls of the cylindrical tank, whereby upon the removal of the nipples, the coil may be removed from the tank.

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