Oct. 3, 1933. E. L. ESTES 1,928,649

WATER HEATER

Filed July 6, 1932

Fig. 1.

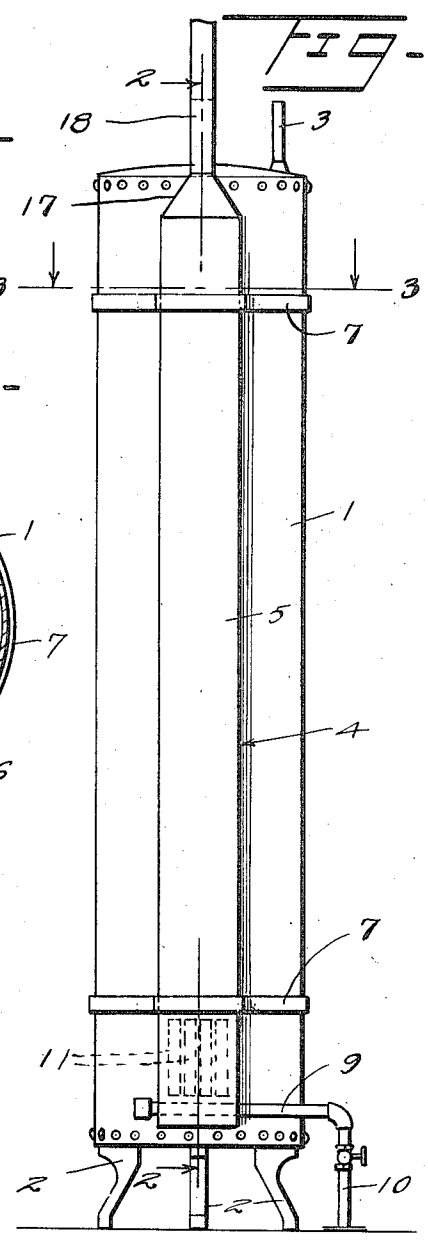


Fig. 2.

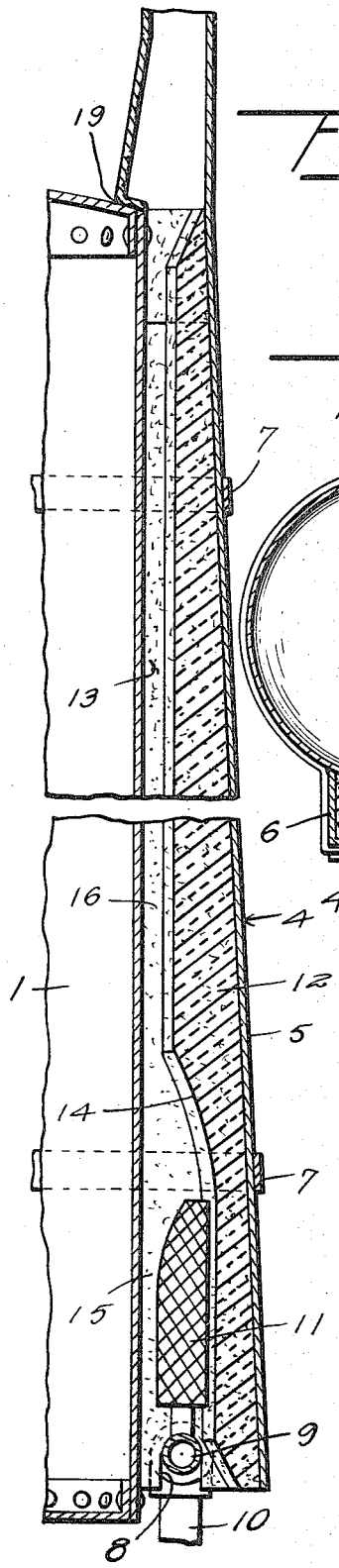
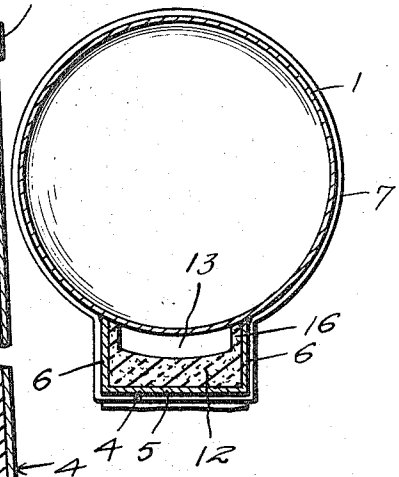


Fig. 3.



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WATER HEATER

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4 Claims. (Cl. 122—14)

This invention relates to improvements in heating attachments for water tanks and pertains particularly to a device designed to be attached to a stand boiler.

The primary object of the present invention is to provide a heater which will apply heat to the wall of a boiler throughout the length thereof and over a circumferential area and thereby rapidly heat the adjacent portion of the contents of the boiler.

Another object of the invention is to provide a device for application to the side of a boiler which is designed to concentrate the heat from a burner disposed adjacent the lower part of the boiler, against the wall of the boiler and throughout the length of the same.

A still further object of the invention is to provide a heating device for a water boiler, which is heavily insulated and in which the insulation operates as a means for radiating the heat rays from a heating unit against the wall of the boiler to which the device is attached.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Figure 1 is a view in elevation of a water boiler showing the heating device applied to the side thereof;

Figure 2 is a vertical sectional view taken substantially upon the line 2—2 of Figure 1;

Figure 3 is a transverse sectional view taken upon the line 3—3 of Figure 1.

Referring now more particularly to the drawing wherein like numerals of reference indicate corresponding parts throughout the several views, the numeral 1 indicates generally a stand boiler of the usual type which is supported upon the feet 2 and which is provided at its top with a water draw-off pipe 3.

The device embodying the present invention is indicated as a whole by the numeral 4. This device comprises an elongated shell having a back wall 5 and the integral side walls 6. This shell is of substantially the same length as the boiler 1 and is positioned with the free edges of its side walls 6 against the wall of the boiler as clearly illustrated in Figure 3, and is held in this position by the bands 7 which surround the boiler and the shell.

The lower end of the heater shell is open and the side walls thereof are cut-out as indicated at 8 to receive a pipe 9 which extends transversely of the lower end of the shell and which is connected with a lead-in pipe 10 through which gas or other suitable fuel is fed to the burner units 11 which are mounted upon the pipe 9 in the manner illustrated in Figure 2. It is preferred that gas be used as a fuel in connection with the present heater and that the units 11 be of the well known radiant type.

As shown in Figure 2 the thickness of the shell of the heater is greater at the bottom than at the top and the inner surface of the back wall 5 thereof has applied thereto a relatively thick body of insulation 12, the major portion of the inner surface of which is in relatively close proximity to the wall of the boiler forming the narrow heat passageway 13. Adjacent its lower end this body 12 of insulation is cut back to form the breast 14 against which the heat waves rising from the heater element 11 impinge and from which they are directed inwardly toward the wall of the boiler. As shown, the space between the insulation body and the wall of the boiler below this breast 14 is materially wider than the space above the breast which is indicated by the numeral 13 and in this wider space which is indicated by the numeral 15, the burner units 11 are disposed.

The inner faces of the side walls 6 of the heater shell are also covered with insulation material as indicated at 16, this material extending into and contacting the wall of the boiler.

At its upper end the shell of the heater is constricted or reduced in width and thickness as indicated at 17 and is coupled with and opens into a flue pipe 18 by means of which the products of combustion from the burners are carried off. The inner side of the flue 18 above the insulated portion of the shell, is extended laterally to form a shoulder 19 which rests upon the top of the boiler and assists in supporting the heating unit in position.

From the foregoing it will be readily seen that by the use of the present device the heat generated by the burner units 11 will flow upwardly through the narrow passage 13 between the wall of insulation and the wall of the tank and will heat the contents of the tank adjacent this narrow area over which it passes. It will also be apparent that by providing the relatively thick wall of insulation

heat will be taken up thereby and radiated to the tank over a considerable period after the actual operation of the burner units is discontinued.

The burner units 11 have been conventionally illustrated. It is preferable that burners of the radiant heater type be employed but this is not necessary to the operation of the device as Bunsen type burners or any other suitable type may be used if found desirable. In the event that radiant heater burners are employed the heating elements will face toward the tank.

Having thus described the invention, what is claimed is:—

1. A heating device for a water tank, comprising an elongated relatively flat casing having one side open, means for securing the casing to the tank with the open side directed toward the tank, a relatively thick body of insulation extending throughout the inner surface of the back wall of said casing and forming with the adjacent tank wall a relatively narrow heat passage, the lower end of said body of insulation being of less thickness than the upper portion and forming a breast designed to direct heat rays inwardly toward the tank wall, a heating element in the lower part of said casing beneath said breast, and a vent pipe connected with the upper end of the casing.

2. A water tank heater comprising an elongated body of insulation material having a back wall portion and side walls, means for securing the free edges of the side walls against a water tank, the body extending longitudinally of the tank, the said back wall portion being of substantial thickness throughout the major portion of its length and of reduced thickness from a point adjacent its lower end to the lower end, the inner surface of the body between the portion of reduced thickness and the overlying thick portion being arched to form a breast, the said body being open at its upper and lower ends, a heating unit disposed within the body adjacent the lower end beneath said breast, and a vent pipe connected with the upper end of the body for removing the products of combustion from the heater.

3. A heater for attachment to a stand boiler, comprising an elongated shell having a back wall and right angularly directed side walls and open at its ends, means for securing said shell longitudinally of and against a water tank with the free edges of the side walls in contact therewith, a body of insulation overlying the inner surfaces of the side and back walls of the shell body, the insulation body overlying the back wall of the shell being of substantial thickness from a point adjacent the upper end of the shell to a point inwardly of the lower end thereof and then gradually reducing in thickness and terminating in a portion of materially less thickness than the upper portion and forming a breast, the insulation material on the back wall of the shell above the said breast forming with the adjacent tank wall a relatively narrow heat passageway, heating elements disposed between the tank wall and the back wall body of insulation beneath the said breast, and a vent pipe connected with the upper end of the shell, said vent pipe having a portion extending inwardly for engagement with the top of the adjacent tank to assist in maintaining the heater in position thereagainst.

4. A heater attachment for a water boiler, comprising a body having a chamber open at one side and formed of insulation, means for securing said body against the side of the boiler with the open side of the chamber thereagainst, said body having that chamber wall confronting the boiler reduced in thickness from its inner surface over an area located adjacent one end of the body, a breast extending from the top of the area of reduced thickness inwardly toward the boiler, a heating element in the body chamber beneath said breast, and a vent pipe connected with the chamber adjacent the edge of the body remote from the first mentioned edge.

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