A thermal fluid boiler has a heating chamber consisting of two concentric walls. The inner wall has baffles secured thereto in the shape between the inner and outer walls but such baffles are not in contact with the outer wall. The outer wall has fins secured to the outside surface thereof and an outside jacket surrounds the outer wall.

2 Claims, 3 Drawing Figures
THERMAL FLUID BOILER

This invention relates to boilers operating by circulation of a thermal fluid.

In most of the known thermal fluid boilers, the fluid flows through one or more coils wound around a heating chamber. Such boilers equipped with coils have, however, the major disadvantage of not being capable of being used horizontally. Indeed, such a disposition of these boilers will necessitate air vents at the top of each coil and drains at the base of each coil.

On the other hand, these boilers generally take a large amount of floor space and their vertical disposition do not facilitate accessibility to the burner and the maintenance thereof.

To overcome the above disadvantages, the present invention provides a thermal fluid boiler which is very simple in construction resulting in a much lower price, and which may be placed horizontally thus permitting a very good access to the burner and facilitating the cleaning thereof.

The boiler, in accordance with the invention, comprises an inner wall and an outer wall concentric with the inner wall. The inner wall has baffles secured thereto in the space between the inner and outer walls but not in contact with the outer wall. The outer wall has fins secured to the outside surface thereof to lower the flow of the gas circulating around the outside wall and thus increase the heat thermal exchange. An outside jacket surrounds the outer wall and the fins.

The invention will now be disclosed, by way of example, with reference to a preferred embodiment thereof and to the accompanied drawings in which:

FIG. 1 illustrates a longitudinal section through a boiler in accordance with the invention;

FIG. 2 illustrates a plan view of the outer wall of the heating chamber showing the fins for slowing down the passage of the gas; and

FIG. 3 illustrates a plan view of the inner wall of the heating chamber.

As illustrated in the drawings, the thermal fluid boiler in accordance with the invention is characterized in that it may be placed horizontally.

The boiler comprises a heating chamber consisting of an inner wall 1 and an outer wall 2. Baffles 3 are secured to the inner wall 1 between the inner and outer walls and fins 4 are secured to the outside of the outer wall 2. An outside jacket 5 surrounds the outer wall 2 and fins 4.

The baffles 3 are secured to the outside surface of the inner wall 1 by welding or any other equivalent ways and take the shape of a continuous helix 6 wound around the inner wall 1, but not in contact with the inner surface of the outer wall 2.

Because of the space 7 between the outside edge of the baffles 3 and the inner surface of wall 2, it is not necessary to provide air vents or drains for the fluid at the top and the bottom respectively of each turn of the helix 6.

In order to obtain an increase of the thermal ex-

change, the outside wall 2 is provided on its outer surface with the above mentioned fins 4 which extend towards the outside jacket 5 without touching it. The main purpose of the fins 4 is to lower the flow of gas between the outer wall 2 and the outside jacket 5.

By way of example, the fins 4 are secured to the outer wall 2, as illustrated in FIG. 2, along a generatrix 8 forming with the axis 9 of the inner wall 1 an angle of 41° 15' and such fins are sloped with respect to axis 9 by an angle of 15°.

The above described thermal fluid boiler operates as follows:

The fluid flows in from the back of the boiler through inlet 10 and circulates in the space between the inner wall 1 and the outer wall 2. The fluid flows towards the front of the boiler between the baffles 3 which, as mentioned previously, have the shaped of a continuous helix 6.

Owing to this disposition of the helix 6 and to the fins 4, there is obtained a very large heating surface and a lower heat lost, which has the effect of providing the possibility to reduce the power of the pump circulating the fluid through the boiler.

I claim:

1. A thermal fluid boiler comprising:
   a. a combustion chamber having a longitudinally extending horizontal lateral inner wall and a front and a back end;
   b. a longitudinally extending horizontal outer wall concentrically mounted over said inner wall in space relation to define therewith a flow chamber for the fluid to be heated;
   c. an elongated baffle plate in said flow chamber, said plate having one longitudinal edge secured to the outer surface of said inner wall to extend away from said outer surface and with the other longitudinal edge thereof terminating short of the inner surface of said outer wall, said plate winding around said inner wall from said back to said front end in spaced turns and in an uninterrupted helix;
   d. a longitudinally extending horizontal external casing concentrically mounted over said outer wall in spaced relation to define therewith a chamber for the flow of flue gases from said combustion chamber, and
   e. a plurality of spaced fins in said flue gas chamber, said fins being fixed to and projecting from the outer surface of said outer wall but terminating short of said external casing to slow down the flow of flue gases,
   f. said fins being disposed along parallel lines making an acute angle with the longitudinal axis of said outer wall, the fins being also disposed parallel, with respect to one another, at an acute angle to said parallel lines.

2. A thermal fluid boiler as claimed in claim 1 wherein said first acute angle is about 41° 15' and said second acute angle is about 15°.

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