April 29, 1924. 1,492,337

C. V. REID

BAFFLE PLATE FOR HEATERS

Filed Dec. 29, 1922

Fig. 1.

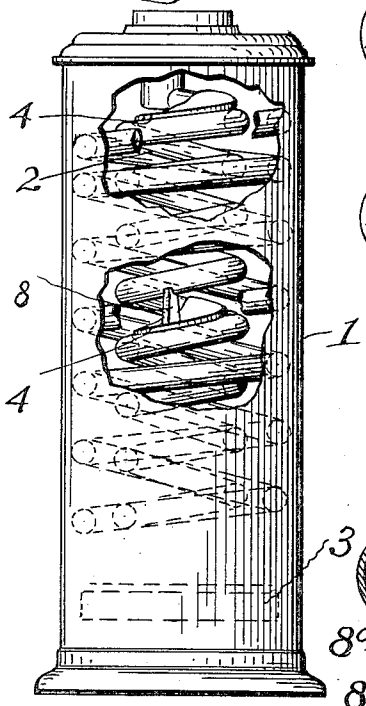



Fig. 2.

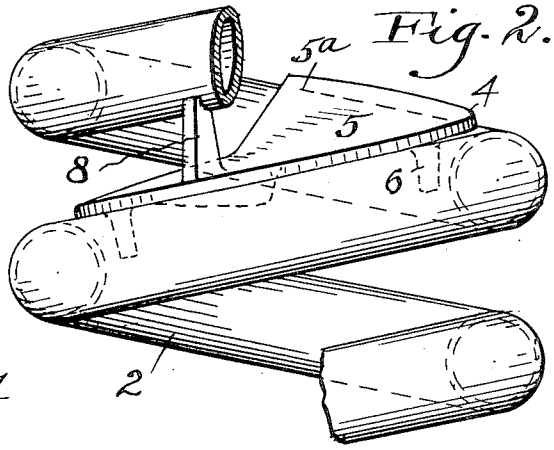



Fig. 3.

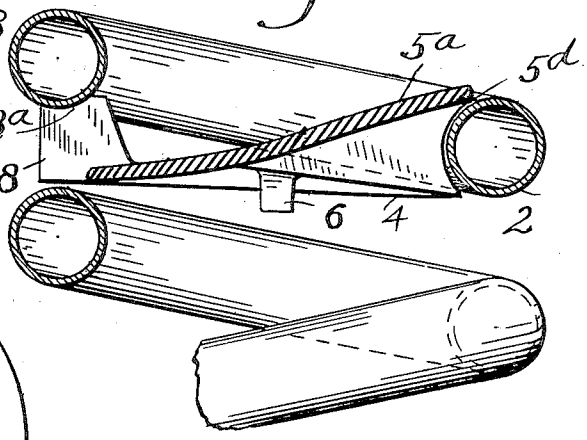



Fig. 4.

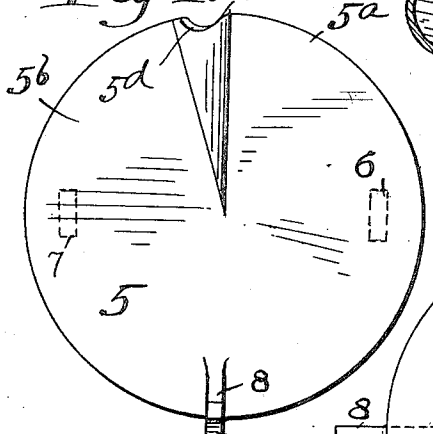



Fig. 5.

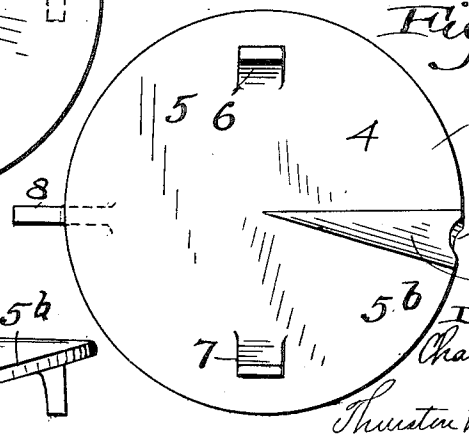
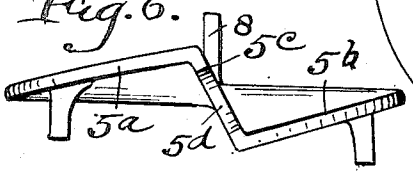



Fig. 6.




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Patented Apr. 29, 1924. 1,492,337

# UNITED STATES PATENT OFFICE.

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## BAFFLE PLATE FOR HEATERS.

Application filed December 29, 1922. Serial No. 609,719.

*To all whom it may concern:*

Be it known that I, CHARLES V. REID, a citizen of the United States, residing at Lorain, in the county of Lorain and State of Ohio, have invented a certain new and useful Improvement in Baffle Plates for Heaters, of which the following is a full, clear, and exact description.

The present invention relates to a water heater in which there is employed a spiral coil of pipe, or its equivalent, through which the water circulates, and one or more baffling devices which are inserted between certain adjacent coils so that the heated gases of combustion from a burner of any description which is normally placed at the lower part of the coil, will be deflected from the normal path which they travel, that is to say, centrally through the spiral, and will be caused to be deflected outwardly, passing in contact with the coil, thereby more effectively delivering their heat to the water which passes through the water coil.

A further object of the invention is to provide a baffling device which may be inserted between adjacent turns of the spiral coiled pipe, and which will be frictionally held in place without the necessity of any extraneous fastening means.

Reference should be had to the accompanying drawings forming a part of this specification, in which Fig. 1 is an elevation with portions in section showing a water heating device of the type embodying my invention; Fig. 2 is an elevation of a portion of a coil showing a baffle in place. Fig. 3 is a transverse section of a coil showing a baffle; Fig. 4 is a top plan view of a baffle; Fig. 5 is a bottom plan view of a baffle; Fig. 6 is a front elevation of a baffle.

For the purpose of explaining the invention it is shown as applied to a water heater of the type in which there is an outside casing 1 with a coil or coils of water conducting pipe 2 upon the interior thereof which pipe is suitably supported. At the lower end of the casing there is a burner 3 which may be a gas burner, oil burner, or any other kind of burner which will supply heated gases to ascend through the coils of water conducting pipe. In the present instance there are more than one coil of water conducting pipe, but the one which bears the reference numeral 2 will be sufficient to consider so far as the present invention is concerned.

The heated gases from such a burner as that indicated at 3 when rising through the casing 1 will tend to follow the path of least resistance, or through the central opening of the coil 2, and this is actuated because in most of such heaters this space is in line with the outlet flue at the top of the casing 1. Under these circumstances the gases exit from the casing without having delivered their proper amount of heat to the coils, so that more gas is consumed in producing a desired water heating effect.

To obviate this one or more baffles such as indicated at 4 may be associated with said coil at different parts thereof so as to baffle the heated gases that may tend to rise centrally through the coil, impeding their progress and spreading them out so that they will remain through a longer period of time, in contact with the water conducting pipe coils, thus giving opportunity for the transfer of greater amounts of heat.

In the present instance two such baffles are used, one adjacent the top of the coil of water conducting pipe, and the other a little below the midway portion thereof.

The baffle itself is best shown in Figs. 4, 5, 6, and as will be seen, comprises a plate member 5 which has a portion of its surface relatively raised, as indicated at $5^a$, and a portion of its surface relatively depressed, as indicated at $5^b$, and there is a part of the plate having an inclined surface $5^c$ which joins the inclined surfaces $5^a$ and $5^b$ and the edge of this portion $5^c$ is preferably provided with a recess $5^d$.

Extending from one surface of the plate 5 which we may term the under surface, are two projections 6 and 7. These are spaced inwardly from the periphery of the plate for a purpose which will be subsequently described. Upon the reverse side of the plate 5 to that which carries the projections 6 and 7, or as it may be termed, the top side of the plate, there is an upwardly extending projection 8 which extends slightly beyond the edge of the plate 5. Preferably this member is provided with a slight recess in the top portion thereof, as indicated at $8^a$. This baffle device is adapted to be inserted between adjacent turns in the coils, and when inserted the portion of the plate having the

slanting surface 5c is first pushed between the turns and until the projecting members 6 and 7 pass inside of the turns of the coil between which the plate is being pushed. When the plate is inserted the edge of the surface 5c with its indentation 5d will engage with a portion of a pipe turn of the coil and the projection 8 will be in engagement with the under portion of an adjacent turn of the coil, and the rounding surface of the pipe will rest in the recess 8a. All of which is very clearly illustrated in Fig. 3 and in Fig. 2.

The projections 6 and 7 will tend to prevent any slippage of the plate 5, and the height of the extension 8 is such as to cause a slight displacement of the turn of the coil with which it engages, so as to induce a pressure and frictional engagement which on its part serves to retain the baffle plate in place and prevent its coming out.

By the construction which has just been described the desired result of baffling the hot gases from the burner is attained and at the same time provides an easy assembling proposition in that no outside fastening means is required for holding the baffle in place.

Having described my invention, I claim:—

1. In a water heater, a spiral coil of pipe, a baffle member lying between adjacent turns of said coil said baffle having a portion which engages a turn of the coil transversely of such turn and said baffle having an oppositely disposed projection which frictionally engages an adjacent turn of the coil thereby to frictionally hold the baffle in place.

2. In a water heater, a spiral coil of pipe, a baffle member lying between adjacent turns of said coil said baffle having a portion which engages a turn of the coil transversely of such turn and said baffle having an oppositely disposed projection which frictionally engages an adjacent turn of the coil thereby to frictionally hold the baffle in place, said baffle having upon one surface thereof a pair of projections which lie inside of a turn of said coil.

3. In a water heater, a spiral coil of pipe, a baffle member lying between adjacent turns of said coil said baffle having an inclined edge which engages a turn of the coil transversely of such turn said baffle having a projection oppositely disposed with respect to said inclined edge which projection frictionally engages a turn of the coil adjacent thereto thereby to frictionally hold the baffle in place.

4. In a water heater, a spiral coil of pipe, a baffle member lying between adjacent turns of said coil said baffle member having a shaped surface which provides an inclined edge which edge engages a turn of said pipe transversely of the pipe, the said plate being provided with a projection oppositely disposed with respect to said inclined edge which projection engages with a turn of said spiral coil which is adjacent to it.

5. In a water heater, a spiral coil of pipe, a baffle member lying between adjacent turns of said coil said baffle having a shaped surface thereby presenting an inclined edge which has a reentrant notch therein said notched edge engaging with the pipe of a turn of said coil transversely with respect to the pipe, and said baffle having a projection which is oppositely disposed with respect to the inclined edge, said projection having a reentrant notch upon its upper surface which projection and notch engage with the pipe of a turn of the coil adjacent to said projection thereby to frictionally hold the baffle in place.

In testimony whereof, I hereunto affix my signature.

CHARLES V. REID.