Aug. 19, 1958 A. C. ERNST 2,847,953

FLUE FOR GAS WATER HEATERS

Filed April 13, 1956

Fig. 1

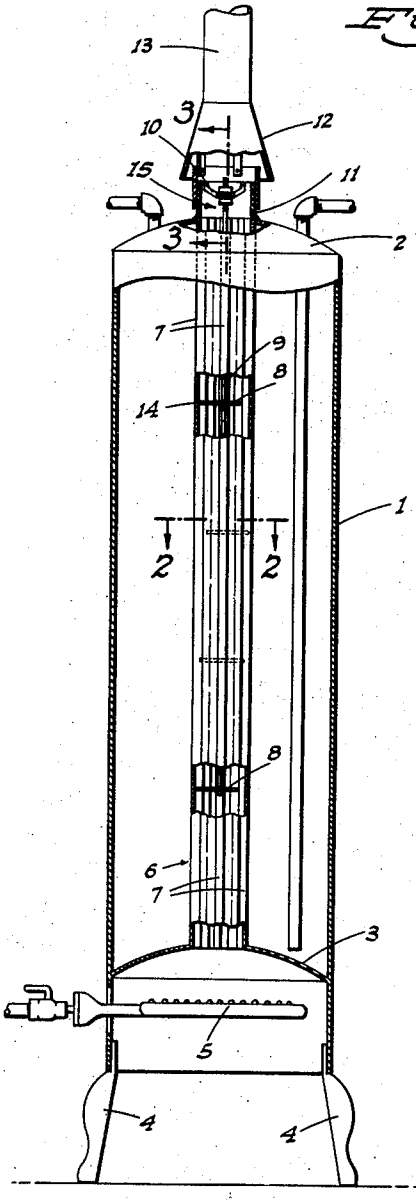


Fig. 2

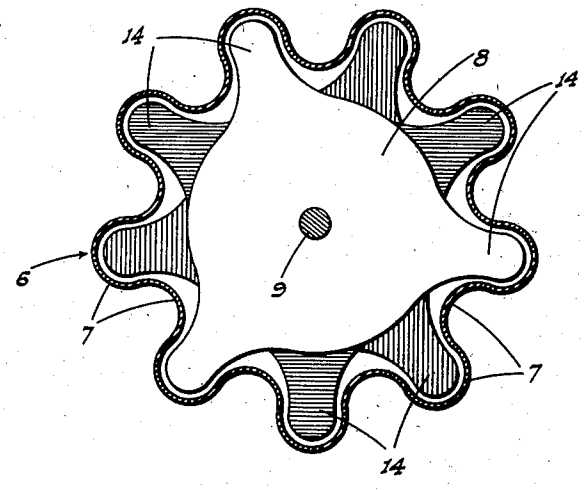
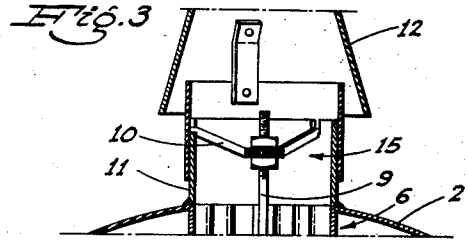


Fig. 3



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FLUE FOR GAS WATER HEATERS

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1 Claim. (Cl. 110—97)

This invention relates to vertical water heaters such as are now commonly installed in residences and the like, and the heat to the water tank of the heater unit is supplied by hot gas passing upwardly through a vertical flue extending through the tank from bottom to top thereof.

Ordinarily, this flue is a cylindrical tube, and the major object of my invention is to provide a flue for the purpose, so constructed that a materially greater heat exchange area is provided in the flue over what is obtained with the ordinary type of flue.

A further object is to provide baffle means, functioning with such flue, whereby the flow of gas therethrough is retarded and the gas is forced to follow a zig-zag path for the length of the flue, so that the heat-exchange value of the hot gas is used to the best advantage.

A further object of the invention is to provide a flue which is designed for ease and economy of manufacture.

A still further object of the invention is to provide a practical, reliable, and durable flue, and one which is exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangements of parts as will fully appear by a perusal of the following specification and claim.

In the drawings:

Fig. 1 is a vertical elevation of a gas-type water heating unit, mainly in section, and equipped with my improved flue and baffle means.

Fig. 2 is an enlarged cross section on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary enlarged section on line 3—3 of Fig. 1.

Referring now more particularly to the drawings and to the characters of reference marked thereon, the conventional water heater comprises a cylindrical tank 1, having top and bottom closure walls 2 and 3, respectively, and supported on legs 4. A gas burner 5 projects under the bottom wall 3.

A flue 6 extends centrally through the tank from top to bottom thereof and is secured to the top and bottom walls 2 and 3 in the conventional manner. The flue 6, rather than being plainly cylindrical, is formed throughout its periphery with a plurality of corrugations 7 of rounded configuration, and arranged in continuous order as clearly shown in Fig. 2. The heat exchange area of the flue is thus greatly increased over that of a plain cylindrical flue of a comparative size.

Disposed in the flue is a plurality of baffle discs 8 arranged in predetermined vertically spaced relation and connected as a unit by a central rod 9. This rod is removably suspended from a spider 10 secured in a short extension flue 11 projecting upwardly from the top of

the tank 1 and which, as usual, cooperates with the hood 12 of the exhaust or chimney flue 13.

The discs 8, as a whole, clear the inwardly projecting corrugations of the flue 6 by a considerable margin, but each one is formed with a plurality of tongues 14, considerably less in number than the outwardly projecting corrugations 7 of the flue and which tongues project into the interior of corresponding ones of such corrugations in clearance relation to the inner periphery thereof.

Each disc has the same number of tongues, but they are arranged in circumferentially offset relation to those on the adjacent discs so as to enter or fit in flue corrugations other than those into which the tongues of said adjacent discs project, as shown in Fig. 2.

It will, therefore, be seen that not only is the water in the tank about the flue 6 exposed to a great heat exchange area, but the hot gases flowing up the flue are retarded and caused to follow a zig-zag path, both vertically and circumferentially of the flue, increasing the flue-contacting action of the gases. Also, the discs cause the gases to be deflected laterally so that said gases are thrown into positive contact with the wall of the flue.

The corrugations being vertical and the baffle disc unit being removable, the flue may be readily cleaned out if it tends to become clogged up due to soot accumulation.

As stated, the rod 9 is removably mounted in the spider 10, and the latter itself may be removably mounted in the flue extension 11 in any suitable manner, as indicated at 15 in Fig. 3. By so doing, the rod may, if desired, be disengaged from the spider and the latter may be disengaged from the flue extension upon removal of the hood 12 from over said extension. This would enable the rod to be then grasped by one hand and worked up and down in the flue 6 to cause the tongues of the various baffle discs to clean out the corrugations in the areas where they are most likely to have been clogged.

From the foregoing description, it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described the invention, the following is claimed as new and useful and upon which Letters Patent is desired:

In a water heater, a hot-gas flue including a plurality of circumferentially spaced longitudinal outwardly projecting corrugations arranged in parallel relation lengthwise of the flue, longitudinally spaced baffles in the flue, and means mounting the baffles as a unit in the flue for up and down movement from a predetermined position therein; each baffle including circumferentially spaced tongues projecting in clearance relation into certain ones only of said corrugations, the tongues on adjacent baffles being circumferentially staggered.

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