March 9, 1954 D. F. JONES 2,671,500

BURNER MOUNTING IN A GAS HEATER

Filed Aug. 8, 1949

3 Sheets-Sheet 1

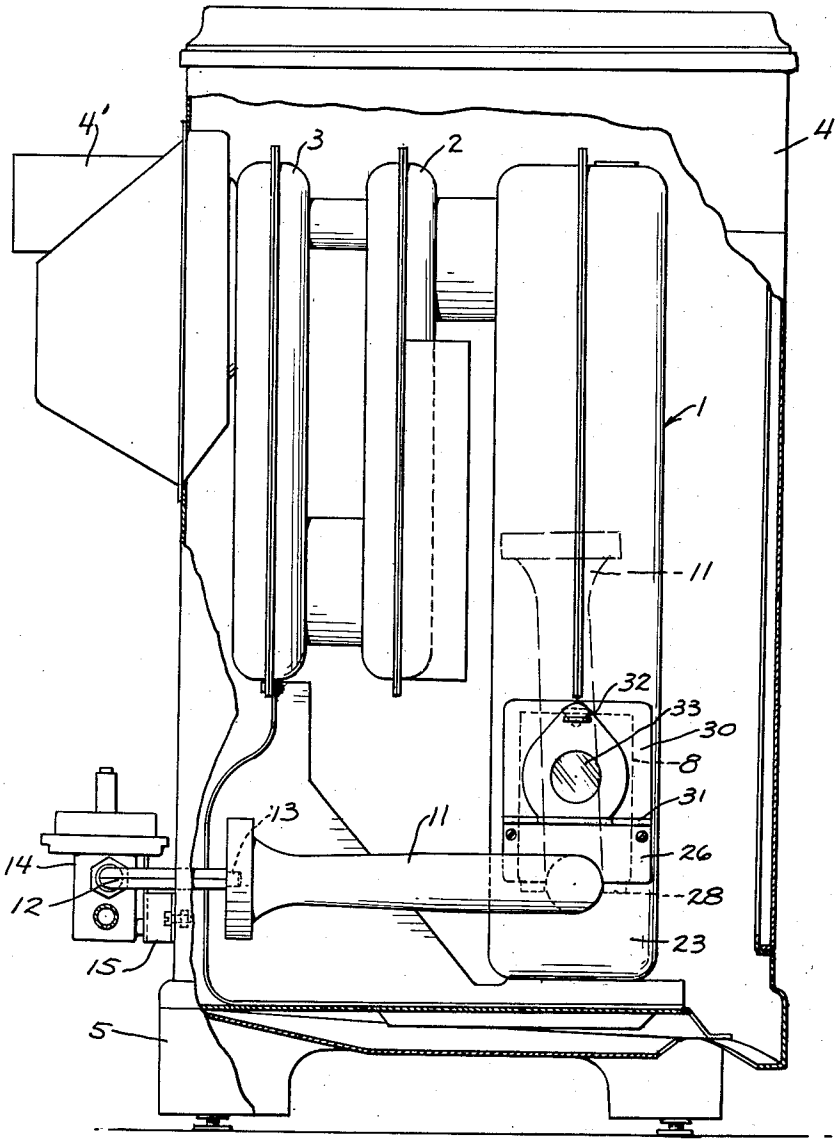


Fig. 1.

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Fig. 2.

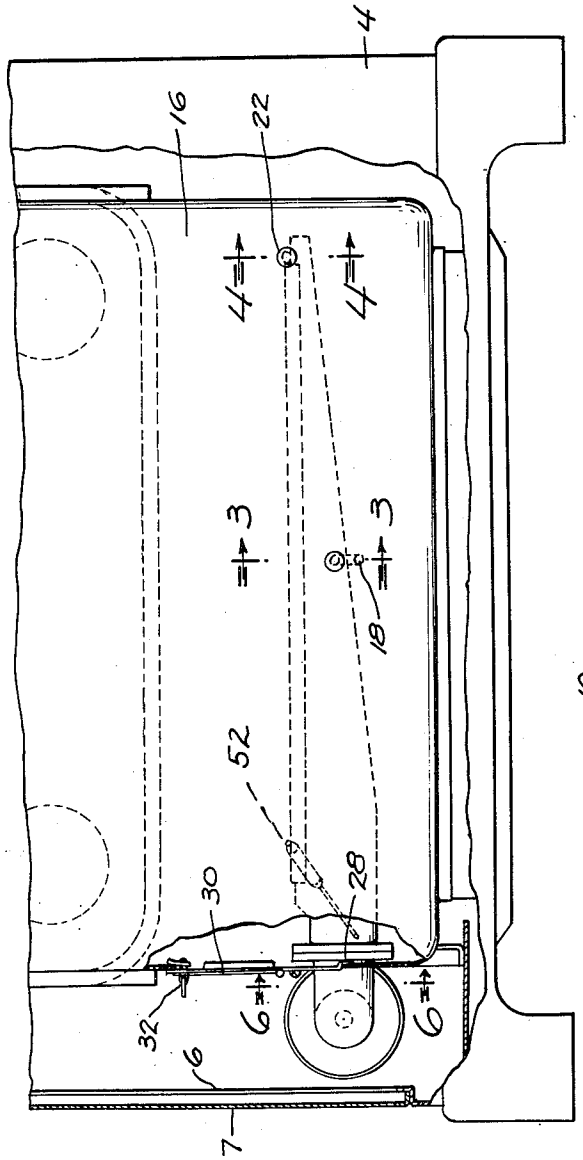


Fig. 4.

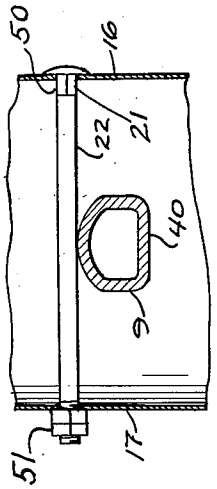
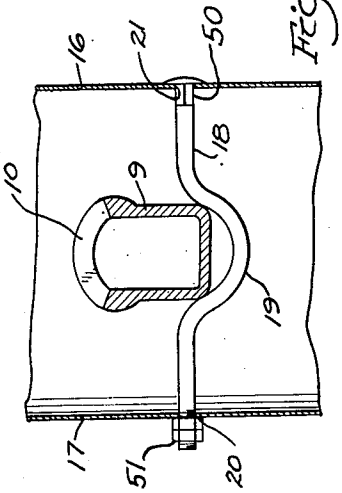


Fig. 3.



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Fig. 5.

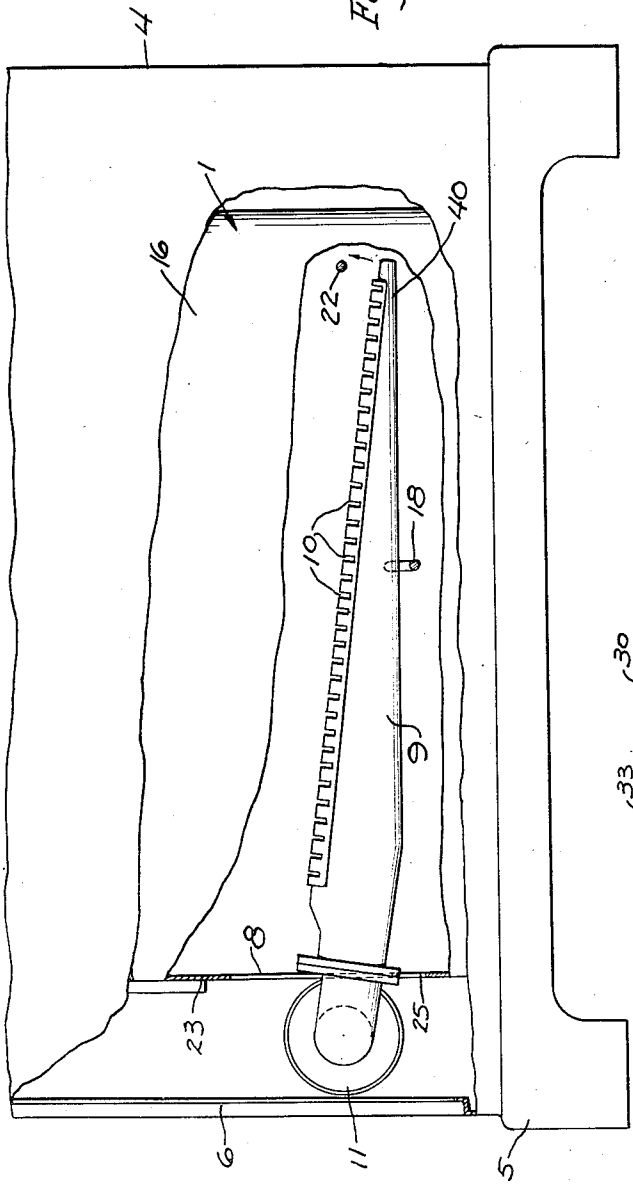
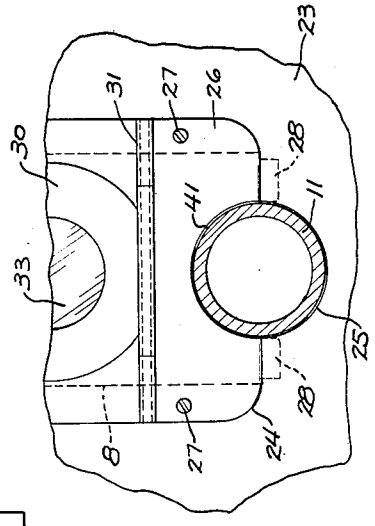


Fig. 6.



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BURNER MOUNTING IN A GAS HEATER

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Application August 8, 1949, Serial No. 109,137

7 Claims. (Cl. 158—7)

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This invention relates to a burner mounting in a gas heater and is more particularly concerned with the mounting of a burner in a gas space heater so that the burner can be easily installed, readily disassembled from the heater for servicing and yet positively secured in place so that it is not necessary to either tie the burner down or remove it while shipping or handling the heater.

This invention contemplates a mounting for a gas burner, particularly in a space heater, which is extremely simple and which facilitates the assembly of the burner in, and the disassembly of the burner from, the heater and which securely holds the burner in position under all conditions of handling.

In the drawings:

Fig. 1 is an end elevation of a gas space heater showing my burner mounting with the end of the heater casing partly broken away.

Fig. 2 is a fragmentary front elevation of the gas space heater shown in Fig. 1 and viewed from the right hand side of Fig. 1.

Figs. 3 and 4 are sections taken along the lines 3—3 and 4—4 of Fig. 2.

Fig. 5 is a fragmentary front elevation of my gas space heater illustrating the assembling of the burner in the heater.

Fig. 6 is a detail section taken along the line 6—6 of Fig. 2.

Referring more particularly to the drawings there is shown a gas space heater comprising a combustion chamber 1 communicating with dual heat exchangers 2 and 3 which in turn are connected to the flue outlet pipe 4'. The combustion chamber and heat exchangers are enclosed by an outer casing 4 supported on legs 5 and having at one end an opening 6 closed by a door 7 hinged to swing about a vertical axis. Opening 6 provides access to the burner described below.

The end of the combustion chamber adjacent opening 6 in the casing is provided with an opening 8 closed by a lighter door assembly, Fig. 6. Opening 8 is sufficiently large to permit installation of the burner 9.

Burner 9, by way of illustration, takes the form of an elongated hollow iron casting having a plurality of gas outlets 10. Burner 9 is secured by bolts to Venturi tube 11. Gas is supplied to the Venturi tube 11 and thence to the burner 9 through an orifice spud or tube 12 which projects into an orifice at the end of Venturi tube 11 as at 13. Tube 12 is threaded into a conventional gas control mechanism 14 which is mounted on the outside of casing 4 by bracket 15. The vertical

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side walls of combustion chamber 1 are designated 16 and 17. The bottom of combustion chamber 1 is preferably open to atmosphere in accordance with the well established practice in the gas space heater art.

The burner 9 is supported approximately midway between its ends by a support in the form of a bolt 18 having an arcuate offset 19 which forms a saddle for the burner. The bolt is supported at its opposite ends in openings 20 and 21 in the side walls 17 and 16 respectively of the combustion chamber. The mounting for the closed end of the burner, that is, the end remote from the Venturi tube, consists of a bolt 22 likewise supported at its opposite ends in the side walls 16 and 17 of the combustion chamber. The opening 8 in the end wall 23 of the combustion chamber is rectangular but the lower edge 24 of the opening is provided with a semi-circular notch 25 which acts as a saddle in which the Venturi tube 11 rests or is seated adjacent its point of connection with burner 9. The Venturi tube is held in saddle 25 by closure plate 26 which is secured to the combustion chamber by bolts 27. The plate 26 is provided with two integral legs 28 which are positioned on the inside of end wall 23. Plate 26 with door 30 closes and overlaps opening 8. The door 30 is hinged to plate 26 by hinge 31 and is held in closed position by latch 32. Door 30 is provided with a glass viewing window 33. Door 30 can be swung open so that access can be had to burner 9 for lighting the same.

To assemble burner 9 in the combustion chamber, door 7 in the outside housing 4 is opened and plate 26 and door 30 removed. The burner 9 and venturi 11 are now passed endwise through opening 6 in the housing 4 and through opening 8 in the combustion chamber 1 with the burner and venturi swung through 90° from the position shown in Figs. 1 and 5, dotted line showing Fig. 1, so that the venturi is in vertical position. Holding the venturi in vertical position is necessary merely because the door opening 6 is narrow and not wide enough to permit the Venturi pipe 11 to be passed therethrough when the venturi is in the horizontal position as shown in Fig. 1. If the door opening 6 is made wide enough to accommodate venturi 11 when in horizontal position, holding of the venturi in its vertical position while assembling the burner in the combustion chamber would not be necessary.

Burner 9 is passed through opening 8 in the combustion chamber 1 with the remote end 40 of the burner foremost and burner 9 is tilted

at an angle so that the Venturi end is higher than end 40 which passes under bolt 22, Fig. 5. While the burner is moved to the right side of opening 8 and saddle 25, tube 12 is inserted in the end of Venturi tube 11 as at 13. The burner is then moved to the left into its saddle seats 19 and 25. The burner is now in substantially horizontal position, Fig. 2, so that the burner rests near its center in saddle 19 of bolt support 18 and the end 40 of the burner is beneath bolt 22, Fig. 4. Bolt 22 prevents any substantial upward movement of end 40 of burner 9. At this time the Venturi tube 11 rests in saddle 25. Plate 26 is now positioned over opening 8 with the semi-circular notch 41 in plate 26 surrounding and contacting Venturi tube 11 and holding it securely in saddle 25. Plate 26 is secured to the combustion chamber wall 23 by the bolts 27 and the door 30 may now be closed and the heater is ready for operation.

It will be noted that burner 9 is provided with a three point mounting; one point 19 below the approximate mid-section of the burner and the other points 22 and 41 adjacent the ends of the burner so that the burner cannot rock about support 19 as a fulcrum or bodily move substantially in any direction. It will also be noted that when the burner is connected to tube 12 it is also prevented from being rotated axially on its mountings.

The disassembling of the burner from the gas heater for servicing can be accomplished very readily by first removing plate 26, disconnecting pipe 12 from the end of the Venturi tube 11, and then raising the Venturi tube end of burner 9 upwardly sufficient to disengage the venturi from saddle 25, Fig. 5, whereupon the burner can be withdrawn from the combustion chamber through opening 8 and from the casing 4 through opening 6. It will be noted that no dismantling of the heater is necessary to disassemble the burner therefrom.

Each bolt 18 and 22 are of square section beneath the heads as at 50. This square head portion of each bolt fits into its respective square opening 21 in the side wall 16 and prevents the bolt from turning and thus positively holds saddle 19 in the position shown in Fig. 3. The bolts are fitted with nuts 51.

The side walls 16 and 17 of the combustion chamber are bowed slightly outwardly so that if they warp, the tendency will be for these sides to move outwardly. Hence, with nuts 51 drawn tight when initially installed, the bolts will always stay tight throughout the life of the heater.

It should also be noted that while the burner 9 is held accurately in position, it is not placed under any stress so that the expansion of the burner or heat chamber does not throw any stresses on either the burner or heat chamber. The accurate locating of the burner in the heat chamber is important particularly where the burner is used in conjunction with a pilot burner 52 because it is essential that the burner maintain its location with respect to the pilot burner.

I claim:

1. In a gas heater, a combustion chamber comprising side and end walls, a gas burner positioned in said combustion chamber, a mounting carried by the side walls of said combustion chamber and positioned under said burner between the ends thereof for supporting the burner in said combustion chamber, one end wall of said combustion chamber having an opening through which the burner projects, said opening being sufficiently large to pass the burner therethrough, a second mounting carried by said combustion chamber and positioned between the first mentioned mounting and the closed end wall of said combustion chamber and contacting the top side of said burner, and a third mounting contacting the top side of said burner adjacent the opening in the end wall of said combustion chamber, said third mounting being positioned to obstruct said opening and being readily removable whereby the burner can be removed from said combustion chamber by moving the same through the said opening in the end wall of the combustion chamber.

2. In a gas heater, a combustion chamber comprising side and end walls, a gas burner positioned in said combustion chamber, a mounting carried by the side walls of said combustion chamber and positioned under said burner between the ends thereof for supporting the burner in said combustion chamber, one end wall of said combustion chamber having an opening through which the burner projects, said burner resting on its lower side upon the lower edge of said opening and closing a portion of said opening, a second mounting carried by said combustion chamber and positioned between the first mentioned mounting and the closed end wall of said combustion chamber and contacting the top side of said burner, and a third mounting contacting the top side of said burner adjacent the opening in the end wall of said combustion chamber, said third mounting being in the form of a closure for another portion of said opening and being readily removable whereby the burner can be removed from said combustion chamber by moving the same through the said opening in the end wall of the combustion chamber.

3. The combination set forth in claim 2 wherein the first and second mountings are in the form of rods each supported at its opposite ends in the side walls of the said combustion chamber, the end of the burner being positioned under one rod and resting upon the upperside of the other rod.

4. In a gas heater, a combustion chamber comprising end walls and side walls, one of said end walls having an opening therein, a gas burner and Venturi tube assembly mounted with the burner in said combustion chamber and the Venturi tube positioned outside said chamber, said opening being of a size to pass said burner therethrough, a mounting located within said combustion chamber and positioned under said burner between opposite ends thereof for supporting the burner in the combustion chamber, and separate mountings positioned above said burner on opposite sides of the aforesaid mounting and contacting the top side of said burner for holding the burner upon the aforesaid mounting, said mountings interlocking with said burner to prevent said burner from being rotated about the aforesaid mounting on an axis disposed transversely of a line extending between said opposite ends of said burner, said burner having obstruction means thereon engaged by at least one of said mountings to prevent substantial bodily movement of said burner relative to said mountings, one of said upper mountings being removable to permit removal of the burner from said combustion chamber.

5. The combination claimed in claim 4 wherein one of said opposite ends of said burner rests upon the lower edge of said opening in the end wall of said combustion chamber and said last men-

tioned upper mounting is positioned adjacent said end wall and holds the burner down against the said lower edge of said opening in the end wall of the chamber.

6. In a gas heater, a combustion chamber comprising side walls and end walls, an opening in one of the end walls having its lower edge in the form of a saddle, a gas burner and Venturi assembly mounted with the burner within said combustion chamber and the Venturi tube without said combustion chamber and resting upon the saddle in the end wall of said combustion chamber, a closure for the opening in the end wall of said combustion chamber and contacting the top side of said Venturi tube to secure the same in said saddle, and separate mountings for said burner within the combustion chamber, the said burner resting upon the one mounting between the ends of the burner and the top side of the said burner engaging the underside of the other mounting adjacent the end of the burner remote from said Venturi tube.

7. In a gas heater, a combustion chamber comprising end walls and side walls, one of said end walls having an opening therein, a gas burner and Venturi tube assembly mounted with the burner in said combustion chamber and the Venturi tube positioned outside said chamber, a mounting located within said combustion chamber and positioned under said burner between the ends thereof for supporting the burner in the combustion chamber, and separate mountings positioned above said burner on opposite sides of the aforesaid mounting and contacting the top side of said burner for holding the burner upon the aforesaid mounting, one end of said burner resting upon the lower edge of said opening in the end wall of the combustion chamber, one of said upper mountings being positioned adjacent said end wall and holding the burner down against the lower edge of said opening in the end wall of said chamber, said burner closing a portion of the opening in said end wall and said last mentioned upper mounting being in the form of a closure for the opening in the end wall of said combustion chamber.

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