Oct. 8, 1957 R. E. SOLOMON 2,808,825

FLUE GAS SEALING MEANS FOR APPLIANCES HAVING A WALL VENT

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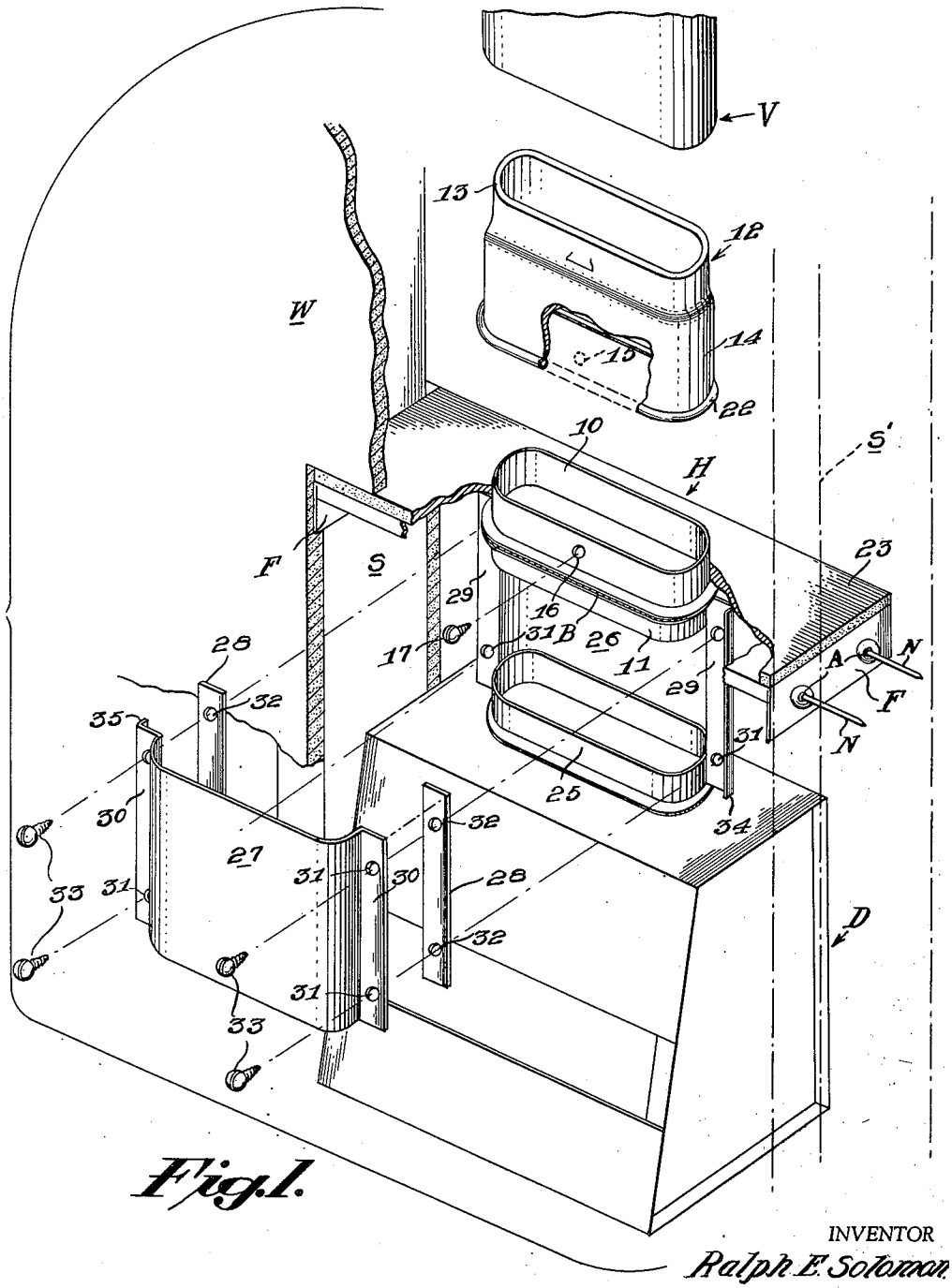


Fig. 1.

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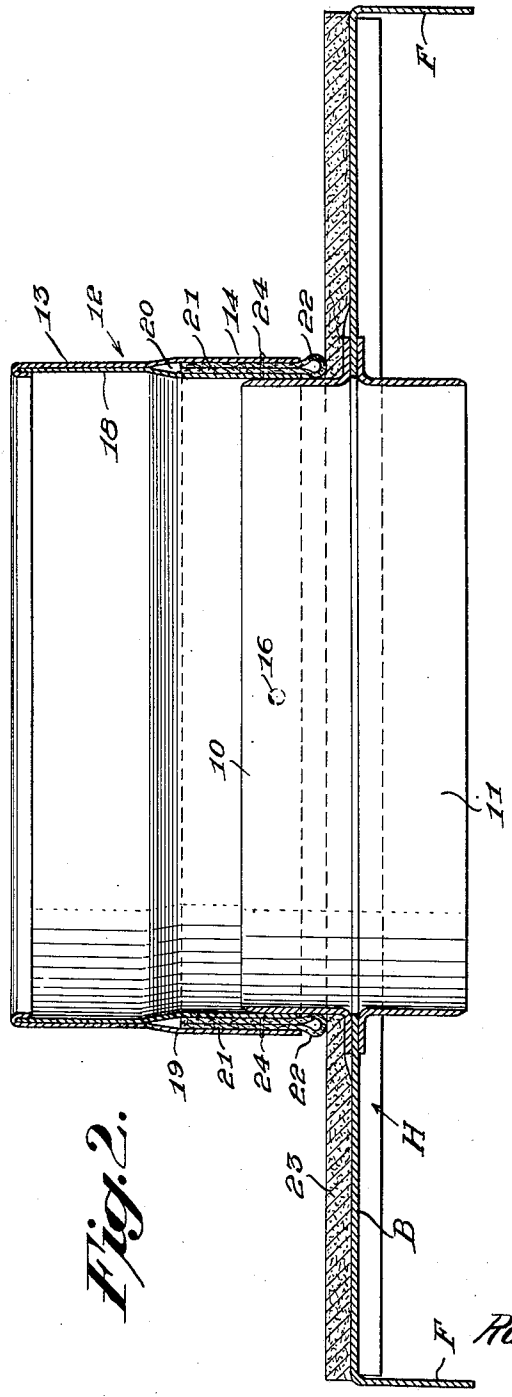


Fig. 2.

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FLUE GAS SEALING MEANS FOR APPLIANCES HAVING A WALL VENT

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4 Claims. (Cl. 126—307)

This invention relates to flue gas sealing means for appliances having a wall vent.

The invention is more particularly concerned with flue gas sealing means in connection with what is known as vented wall heater structures which generally comprise a heater or draft diverter and a vent for flue gases from the heater and all of which are disposed in a wall between a pair of 2 x 4 studs included therein.

This particular form of heating structure has become quite popular and there is considerable demand for same throughout the country all in spite of the fact that such form of heating structure has been attended by a great fire hazard for the following reasons:

A vent for flue gases from the heater is of course essential and, in order to maintain the vent at maximum efficiency, it must be hot in order to create sufficient draft for the escape of the flue gases.

Since the available space between a pair of 2 x 4 studs and the opposed wall facings is quite limited, the pipe for venting is of relatively small dimensions and accordingly same is of flattened form and measures about 2½" by 7¼" overall. Such pipe usually comprises a relatively thin quick warm-up inner aluminum section and an outer galvanized steel section spaced from the inner section with a resulting insulating air space which construction not only materially aids in retention of the heat in the inner section for effective flue gas draft but also substantially eliminates fire hazards so far as the vent pipe per se is concerned.

However, present recessed heater structures further include a vent pipe supporting header which is disposed horizontally between a pair of 2 x 4 studs and secured thereto and since the lower end of the vent pipe and upper end of the gas outlet from the heater are respectively disposed above and below the header, connecting means between the header and adjacent ends of the vent pipe and heater outlet are necessary.

Such connecting means as now employed comprise a rectangular base plate on the lower end of the vent pipe which is secured to the upper face of the header plate with an intervening seal in surrounding relation to an opening in the header plate which generally conforms to the inner wall of the vent pipe.

The header plate in accordance with the above noted present method of assembly is initially positioned with its opening alined with the outlet of the heater.

This construction fails to provide an effective seal and accordingly a fire hazard still exists in the connections between the header plate, vent pipe, and outlet collar of the heater.

It is accordingly a primary object of this invention to provide an improved and effective flue gas sealing means between the header plate, vent pipe and heater collar whereby fire hazards are substantially completely eliminated.

A further object of the invention is to provide sealing means as above whereby the header plate and vent pipe

are capable of accurate assembly prior to the positioning of the heater into the wall between a pair of 2 x 4 studs therein.

Other objects and advantages of the invention will become apparent in the course of the following detailed description, taken in connection with the accompanying drawings, wherein—

Fig. 1 is an exploded isometric view showing the header plate in assembled position in a wall between a heater and lower end of a vent pipe in positions immediately preceding the application of the flue gas sealing connection between the header plate, heater, and vent pipe in accordance with the invention.

Fig. 2 is a vertical section taken longitudinally of the header plate.

Referring now in detail to the drawings, W designates a portion of a wall whose interior comprises a plurality of 2 x 4 studs, two of which are indicated at S and S', the latter in dotted lines.

The draft diverter or heater is indicated at D, the header plate at H and the lower end of the vent pipe at V.

The header plate H is of usual construction to the extent that it comprises a horizontal supporting base portion B and opposite end flanges F which are provided with apertures A for the reception of nails N by which the plate is secured to the studs S, S'.

The header plate is, however, modified to the extent that same is provided with drawn upper and lower collars **10** and **11** respectively, whose oval opening areas are in conformity with the American Gas Association standards.

The invention comprises a gas sealing connector **12** which includes an upper male section **13** which has a gas tight reception within the lower end of the vent pipe V and a lower female section **14** which receives the upper header plate collar **10** with a gas tight fit, the connector and collar having mating apertures **15** and **16** respectively for the reception of a retaining screw **17**.

The said connector **12** is preferably formed of an inner pipe section **18** and an outer pipe section **19** as illustrated in Fig. 2, wherein the upper end of section **19** is bent inwardly over the upper end of section **18** and the two sections in the provision of the reduced upper male section **13** are separated as at **20** providing a circumferential space in which is received the lapped portions **21** of a strip of insulating material whose fold **22** projects downwardly from the pipe sections **18** and **19** and firmly engages an insulating gasket **23** which covers the entire upper surface of the header plate H.

The said lapped portions **21** are preferably retained in position by means of staples **24** extended through apertures in the outer pipe section **19**.

The heater or draft diverter D is provided with a collar **25** which conforms with the lower drawn collar **11** on the header plate, and a gas tight seal between the collars **11** and **25** is effected by means of a pair of cooperating inner and outer collar halves **26** and **27** respectively, together with a pair of intervening gaskets **28**.

The collar halves **26** and **27** are provided with mating flanges **29** and **30** respectively which are provided with apertures **31** alignable with corresponding apertures **32** in the gaskets **28** for the reception of screws **33**.

At this point it is to be noted that one of the flanges **29** is provided with a narrow right angular flange **34** while one of the opposite flanges **30** is provided with a similar right angular flange **35** which function to retain the gaskets **28** in operative position.

Having set forth the novel construction in accordance with the present invention, assembly is carried out substantially as follows:

The vent pipe V is first secured to the header plate H

by means of the improved sealing connector **12** whereupon the header plate is nailed in position between the studs S, S' at the proper elevation for receiving the heater and the connector collar halves **26** and **27**.

After the above noted initial assembly, the heater or draft diverter D is slipped into position between the studs S, S', with the top front paneling removed and the assembly is then completed by bringing the collar halves **26**, **27** and gaskets **28** into gas tight sealing connection with the collars **11** and **25**.

It may be here pointed out that one of the collar halves may be welded directly to the heater collar **24** which would simplify assembly of the heater with the header plate.

In the light of the above disclosure, it should be apparent that the present invention provides a relatively simple means for effecting a dependable flue gas tight connection between the vent pipe and the heater whereby the presently recognized fire hazards in this region of wall heater structures are satisfactorily overcome.

Having set forth my invention in accordance with a preferred structural embodiment thereof, what I claim and desire to secure by U. S. Letters Patent is:

1. In a combined wall and heater construction including a draft diverter, a vent pipe and a flue gas connection between said draft diverter and vent pipe including a header plate rigidly supported within the wall intermediate the draft diverter and the vent pipe and having an opening therein for communication between the draft diverter and the vent pipe; the improvement which comprises an upwardly directed collar on said header plate in surrounding relation to the opening therein, and a gas tight sealing connector comprising an upper male section removably engageable within the lower end of said vent pipe in gas sealing contact therewith and a lower female section in which said collar is removably engageable in gas sealing relation, said header plate being provided with a top gasket, and said connector comprising a pair of nested pipe sections with their lower end portions in spaced relation, and a gasket for said connector comprising a strip of insulating material folded intermediate its edges with the lapped portions thereof disposed between said spaced pipe section portions with the fold thereof engaged with said top gasket.

2. In a combined wall and heater construction including a draft diverter, a vent pipe and a flue gas connection between said draft diverter and said vent pipe including a header plate rigidly supported within the wall and having an opening therein for communication between the draft diverter and the vent pipe; the improvement, which comprises a downwardly directed collar on said

header plate in surrounding relation to the opening therein, an upwardly directed collar on said draft diverter in vertically spaced relation to said first collar, a pair of cooperating half collars engageable with said first and second collars, and means for securing said half collars together with opposite ends thereof in gas sealing engagement with said first and second collars, said means comprising cooperating flanges on opposite edges of said half collars provided with alignable apertures, an elongated gasket disposed between said flanges of each engaging pair thereof, apertures in said gaskets alignable with said first apertures and securing means extending through all of said apertures.

3. The structure according to claim 2, wherein the flange on one edge of one of said half collars is provided with gasket retaining means, and the flange on the opposite edge of the other half collar is provided with like gasket retaining means.

4. In a combined wall and heater construction including a header plate having opposite ends thereof secured to adjacent studs, a vent pipe having its lower end in vertically spaced relation to said header plate, and a draft diverter disposed below the header plate and having an upwardly directed collar thereon; the improvement which comprises first and second collars extending upwardly and downwardly from said header plate in surrounding relation to an opening therein, a gasket disposed on the upper face of said header plate and in close surrounding relation to said first collar thereon, a gas sealing connector comprising a member having an upper end telescopically engageable within the lower end of said vent pipe and a lower end telescopically engageable over said first collar on said header plate, a gasket surrounding said connector and projecting outwardly from the lower end thereof for gas tight sealing engagement with said first gasket, and a pair of cooperating half collars whose opposite ends are engageable with said second collar on said header plate and said draft diverter collar, and means for drawing said half collars into tight engagement with said last collars.

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