Oct. 11, 1949. K. H. HERMANSON 2,484,292

DUAL FIREPLACE HEATER

Filed Sept. 18, 1946

Fig. 1

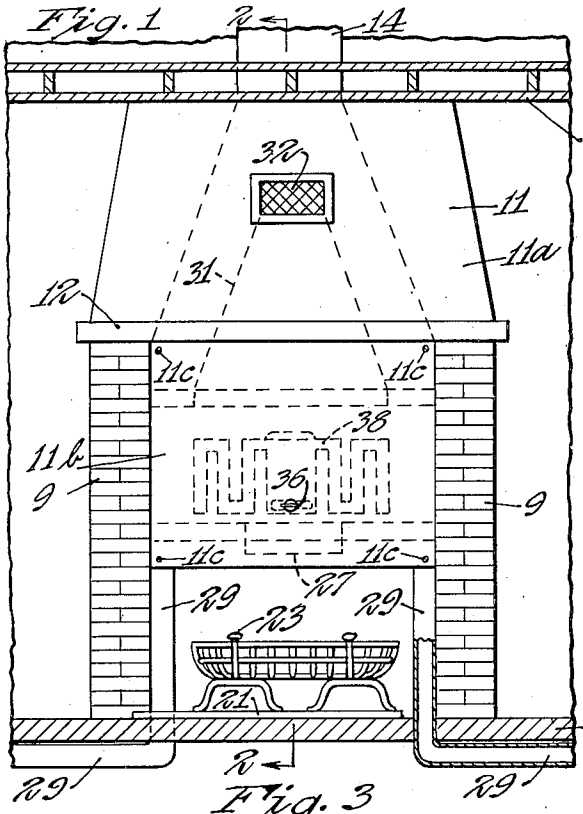


Fig. 2

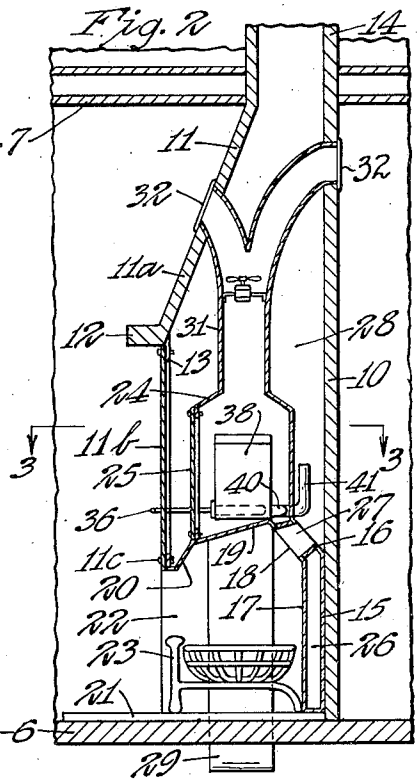


Fig. 3

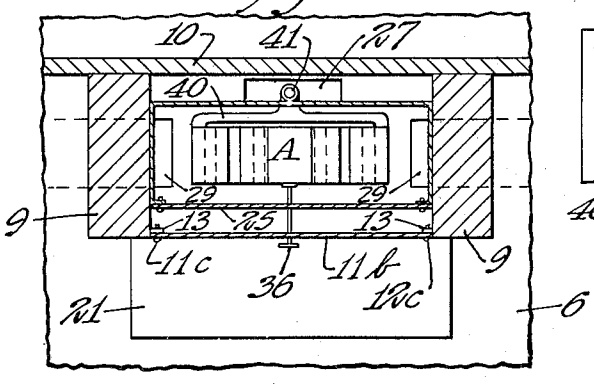


Fig. 4

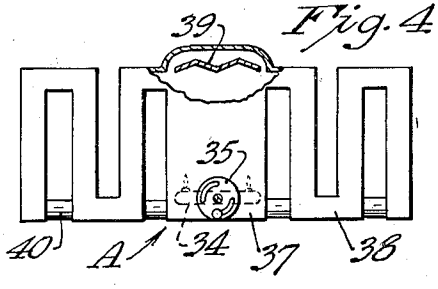
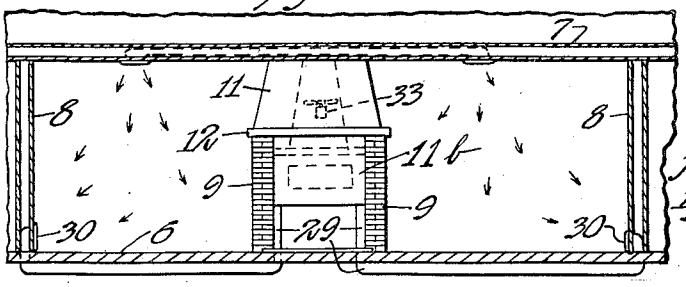


Fig. 5



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Patented Oct. 11, 1949 2,484,292

UNITED STATES PATENT OFFICE

2,484,292

DUAL FIREPLACE HEATER

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Application September 18, 1946, Serial No. 697,786

4 Claims. (Cl. 126—121)

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This invention relates to dual fireplace heaters.

It is one of the objects of the invention to provide a novel and improved dual fireplace heater including a section wherein solid fuels, such as wood or coal, can be burned and also including a section wherein a heating plant, such as a heating plant burning gas or oil, may be placed, it being possible to employ the device for burning either solid fuel or a conducted fuel, such as gas or oil, or for burning both solid fuel and a conducted type of fuel simultaneously.

Another object is to provide a fireplace type of central heating plant for small house construction which will give all the benefits of an ordinary fireplace and which at the same time will provide all the benefits of a central heating plant.

Another object is to provide a small heating plant which can be operated either by gas or by oil and which can be located above a fireplace to be used either simultaneously with solid fuel, such as wood or coal, that may be burned in the fireplace or which can be utilized alone to supply heat to the house wherein it is located.

The objects and advantages of the invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to the same or similar parts throughout the various views and in which:

Fig. 1 is a view taken in vertical section through a house wherein one of my dual fireplace heaters is installed, the fireplace heater being shown for the most part in front elevation but certain parts being broken away and shown in section to illustrate more clearly the construction thereof;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1 as indicated by the arrows;

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2 as indicated by the arrows;

Fig. 4 is a view in front elevation of the gas burning section illustrated in Figs. 1 to 3 and detached from the remainder of the heater, certain parts being broken away and shown in section; and

Fig. 5 is a more or less diagrammatic view showing a typical household installation of the fireplace heater employing both cold air return and warm air delivery ducts.

Portions of an ordinary small house are shown including first floor 6 and second floor 7, walls or partitions of the house being designated by the numeral 8. Built into the house structure are fireplace side walls 9, fireplace back wall 10, and

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a fireplace front wall 11 having inclined section 11*a* above a mantelpiece 12, and a removable sheet metal front plate 11*b* secured as by bolts 11*c* to lugs 13 mounted in the side walls 9 adjacent their forward edges. Above the walls 9, 10, and 11 there is formed a chimney 14 of the usual type employed in connection with wood and coal burning fireplaces.

Extending across the back wall 10 between the side walls 9 and projecting upwardly to a point about level with the lower edge of the front plate 11*b* is a metal sheet 15, which joins an inclined sheet 16, which inclines somewhat upwardly and forwardly from the sheet 15. Spaced forwardly from the sheet 15 is another sheet 17, and joining the upper edge of the sheet 17 is an upwardly and forwardly inclined sheet 18 spaced from the sheet 16. The upwardly inclined sheet 18 connects with or joins a forwardly extending and downwardly inclined sheet 19, and this sheet in turn connects with or joins a rather sharply downwardly inclined sheet 20 which has a forward edge lying adjacent the lower edge of the front plate 11*b*. Of course the first floor 6 is lined with brick or other heat-impervious material 21 within the vertical confines of the fireplace casing formed by the rear wall 10, the side walls 9, and the front wall 11 and preferably for some distance forwardly thereof. The space defined by the sheet 17, sheet 18, sheet 19, sheet 20, and the side walls 9 defines a fireplace combustion chamber 22, within which solid fuel, such as wood or coal, may be burned, there being shown in the illustrated embodiment located within the fireplace combustion chamber 22 and adapted for the burning of coal a grate 23.

Above the plate 19 and portions of the plate 18 a heating casing 24 is provided, this casing having a front service door 25 for access thereto. The rear edge of this casing joins the upper edge of sheet 16, and the sheet 19 forms in reality the bottom of this casing. The two sheets 15 and 17 together with sheets 16 and 18 define a passage 26 at the rear of the fireplace combustion chamber 22, which passage communicates with the rear portion of the casing 24, and a central thimble 27, connected to the two plates 16 and 18, forms a passage leading from the fireplace combustion chamber 22 upwardly to a flue chamber 28 which surrounds the casing 24 at the front and rear thereof and communicates with the chimney 14.

Cold air ducts 29 extending upwardly around the inner portions of the side walls 9 also communicate with the lower portion of the heating casing 24, and these ducts may be carried out to the walls or partitions 8 of the house, where they are equipped with registers 30 for receiving the cold air in the house. The casing 24 has a branched warm air trunk 31 connected to the upper portion thereof, and the branches or ducts from trunk 31 may be carried to any desired point in the house to deliver warm air through registers 32. In the case of the structure shown in Figs. 1, 2, and 3, the ducts from trunk 31 are shown as extending through the front wall 11 and rear wall 10 to deliver warm air directly therefrom. In the case of the structure shown in Fig. 5, these ducts are connected with extensions which run laterally from the fireplace heater to deliver warm air to the upper portions of the house structure in spaced relation from the fireplace heater.

To force the circulation of air, there may be mounted in the central warm air trunk 31 or elsewhere in the air circulating system an electric fan 33 or blower.

Mounted within the casing 24 is a heater A adapted for the burning of a conducted fluid type of fuel, such as gas or oil. The heater A in the illustrated embodiment is shown as being equipped with a gas burner 34 to which gas and air in the properly mixed proportions are supplied by a Bunsen burner tube 35, gas being conducted to the Bunsen burner tube by means of a gas line 36. While the heater A may take various forms, in the illustrated embodiment it includes a central chamber 37 within which the burner 34 is located, and extending laterally from the upper portions of the chamber 37 are tortuous radiators 38 through which the flue gases may travel, there being a spreader plate 39 of stretched-out M-shape preferably located above the burner 34 in the chamber 37 and tending to direct the flue gases into the tortuous radiators 38. The radiators 38 at their outer and lower ends deliver into a rear manifold 40 located within the casing 24, and this manifold 40 in turn connects with a smoke pipe 41 running through the rear portion of the casing 24 and delivering into the flue chamber 28.

In utilizing the device to supply heat to the house, it is possible to build a fire in the fireplace proper 22 by utilizing either wood or coal, and it is also possible at the same time to place the burner 34 in operation, or if desired, when mild weather is encountered, the burner 34 alone may be operated, or if it is desired to enjoy merely the comfort of a solid fuel fire, a fire may be built in the fireplace combustion chamber 22 by utilization of solid wood fuel without operating the burner 34. When a fire is built in the fireplace combustion chamber 22, the air in the back passage 26 as well as the air in the upright portions of the ducts 29 and in the casing 24 will be heated and this air will move on upwardly through the casing 24 where, if the burner 34 is in operation, additional heat may be supplied to the air. The warm air will be delivered through the trunk 31 and the ducts branching off therefrom to exhaust from the registers 32. The cold air registers 30 will draw the cold air from the floor of the room adjacent the side walls of the room to deliver to the ducts 29. If the fan 33 is placed in operation, a forced circulation will be created.

If a fire is not lit in the fireplace combustion chamber 22 but the burner 34 is in operation, the air passing through the casing 24 will be heated merely by the heating plant A to supply the heating requirements of the house. The long travel of the flue gases through the central chamber 37, the radiators 38, and the manifold 40 will cause the heating plant to work with great efficiency to supply heat to the surrounding air in the casing 24 when the burner 34 is in operation.

It will be seen that at one time the device of the invention supplies the needs of a small house for both a fireplace and a central heating plant. The whole device takes up no more space in the house than does an ordinary fireplace and does not exceed greatly the expense of an ordinary fireplace to build and install. The device is intended primarily for use in small homes running up to six to eight rooms and it is particularly adaptable to milder climates in this country where the expense of an ordinary heating furnace is not warranted and yet where heating is required from time to time.

It should be noted that the heating casing 24 extends way across between the two fireplace side walls 9, while the warm air trunk 31 is spaced inwardly from the said side walls. As the fireplace combustion chamber communicates with the back part of the flue chamber 28 through the thimble 27 below the heating casing 24, ashes and soot do not readily accumulate in the fore part of the flue chamber 28 forward of heating casing 24.

It will of course be understood that various changes may be made in the form, details, arrangement, and proportions of the various parts without departing from the scope of the present invention which, generally stated, consists in the matter shown and described and set forth in the appended claims.

What is claimed is:

1. A fireplace comprising a fireplace having a heater combustion chamber within which solid fuel may be burned, a flue chamber above said fireplace combustion chamber and communicating with the same, a heating chamber disposed within said flue chamber and having its front and rear walls respectively spaced from the front and rear walls of said flue chamber, a fluid fuel operated heater within said heating chamber, cold air conduits leading into said heating chamber, warm air heat delivery conduits running from said heating chamber, and a flue with which said flue chamber communicates.

2. The structure defined in claim 1 and an auxiliary heat exchange chamber at the rear of the fireplace combustion chamber in communication with the lower part of said first mentioned heating chamber.

3. The structure defined in claim 1, said cold air conduits having portions thereof extending through said fireplace combustion chamber.

4. A fireplace comprising a fireplace having a heater combustion chamber within which solid fuel may be burned, a flue chamber above said fireplace combustion chamber, the rear portion of which flue chamber communicates with said fireplace combustion chamber, a heating chamber disposed within said flue chamber and extending across the same forward of the point where said fireplace combustion chamber communicates with said flue chamber the front wall of said heating chamber being spaced rearwardly

from the front wall of said flue chamber and the rear wall of said heating chamber being spaced forwardly from the rear wall of said flue chamber, a fluid fuel operated heater within said heating chamber, cold air conduits leading into said heating chamber, warm air heat delivery conduits running from said heating chamber, and a flue with which said flue chamber communicates.

KENNETH H. HERMANSON.

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Certificate of Correction

Patent No. 2,484,292 October 11,1949

KENNETH H. HERMANSON

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 4, lines 44 and 65, strike out the word "heater"; same column, lines 43 and 64, after "fireplace" first occurrence, insert *heater*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of February, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.