Jan. 9, 1940. G. SLAYTER ET AL 2,186,539

HEATING SYSTEM

Filed July 19, 1937 2 Sheets-Sheet 1

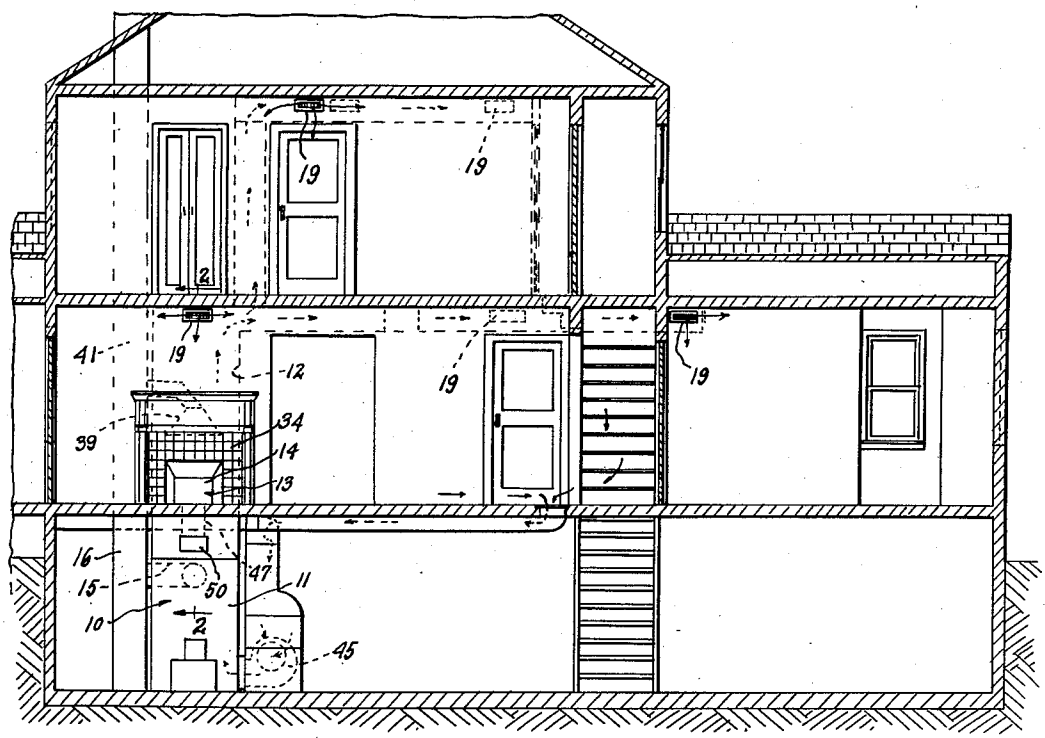


Fig 1.

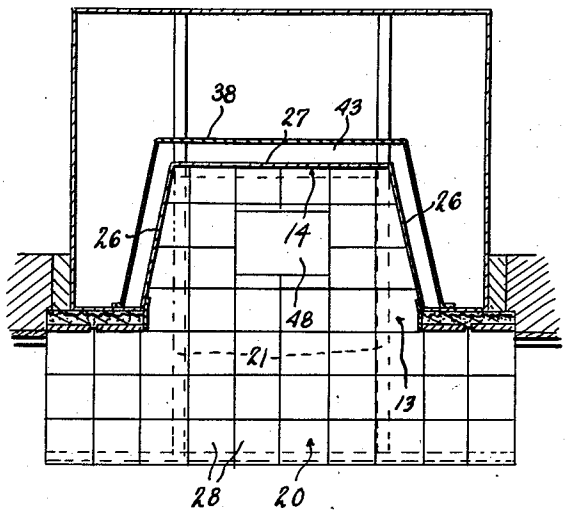


Fig 5.

INVENTOR.S
Games Slayter
Howard W. Collins
BY Whittemore Hulbert & Belknap
ATTORNEY.S

Jan. 9, 1940. G. SLAYTER ET AL 2,186,539

HEATING SYSTEM

Filed July 19, 1937 2 Sheets-Sheet 2

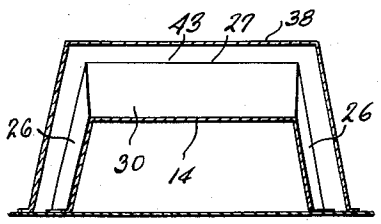


Fig. 4.

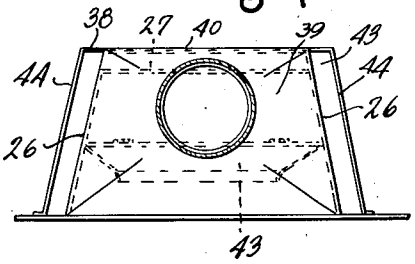


Fig. 3.

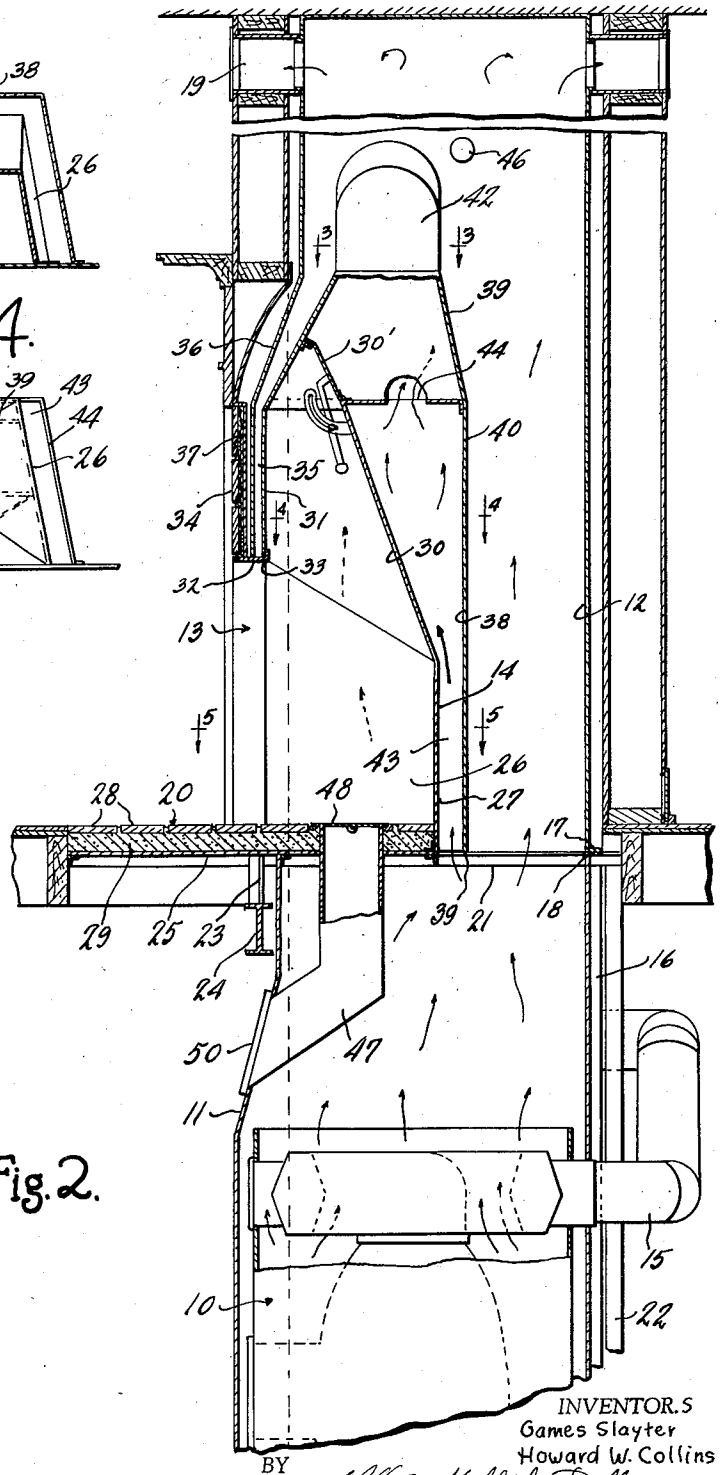


Fig. 2.

INVENTOR.S
Games Slayter
Howard W. Collins

BY Whittemore, Hulbert & Belknap

ATTORNEY.S

Patented Jan. 9, 1940 2,186,539

UNITED STATES PATENT OFFICE

2,186,539

HEATING SYSTEM

Games Slayter and Howard W. Collins, Newark, Ohio, assignors, by mesne assignments, to The Ingleside Company, Newark, Ohio, a corporation of Ohio

Application July 19, 1937, Serial No. 154,496

5 Claims. (Cl. 237—51)

This invention relates to a heating system for houses, and more especially a hot air heating system in which a furnace and an open hearth fireplace have a cooperative relationship.

This invention contemplates a heating system employing an open hearth fireplace positioned and designed to directly aid in the heating of a house, either in conjunction with, or independently of the furnace proper.

A further object of this invention resides in utilizing a large portion of fireplace heat normally transmitted through the flue.

The foregoing, as well as further objects of the invention, will be made more apparent as the description proceeds.

In the drawings:

Fig. 1 shows a vertical section of the dwelling with our improved heating system;

Fig. 2 is a vertical section of the heating system taken on lines 2—2 of Fig. 1;

Fig. 3 is a cross-section taken on lines 3—3 of Fig. 2;

Fig. 4 is a cross-section taken on lines 4—4 of Fig. 2; and

Fig. 5 is a cross-section taken on lines 5—5 of Fig. 2.

Referring to the drawings more in detail, with particular reference to Figs. 1 and 2, it will be seen that a hot air furnace 10 is shown having an outer casing 11 connected to a plenum chamber 12, and an open hearth fireplace 13 associated with said chamber. The invention resides in this novel construction in which the fireplace is so located and the plenum chamber so designed that the air in the chamber circulating from the furnace to the rooms passes about the heat reflecting portions 14 in the fireplace from whence it is directed to the rooms.

The furnace 10 is of the general hot air type having a conduit 15 connected to a flue 16 to allow the escape of products of combustion. About the furnace is located a metal casing 11. This casing confines the hot air arising from furnace and directs it into the plenum chamber 12. We prefer to locate the plenum chamber directly above the furnace, and to construct it of light sheet metal sections secured together as at 17. This chamber extends directly from the top portion 18 of the casing 11, up through the building to the uppermost floor, so that hot air passes directly through it, as shown by the arrows to the individual vents 19.

Located above the furnace is the fireplace 13 having a hearth 20 supported upon cross bars 21. We have shown the bars as having the ends thereof at the rear side of the furnace supported from the basement floor by means of vertical stanchions 22. The forward ends of the bars 21 are supported on a metal spacer 23 which in turn rests upon I-beam 24. Upon these bars a metal framework 25 is placed, to which the side walls 26 and the backwall 27 of the fireplace 13 are firmly secured by welding or the like. This part of the heat reflecting portions 14 is substantially U-shaped in horizontal cross section. The framework 25 provides the base of the hearth 20 which is herein shown as comprising fireproof tile 28 secured in a filler of cement 29.

At the top portions of the walls 26, 27, is secured a pyramid-shaped sheet metal hood 30 having a front portion 31 acting as a front wall of the fireplace proper. A lip 32 extends outwardly from the lower edge 33 of the front portion to support a tile facing 34. Between this facing and the hood front 31 is an air space 35, an insulating guard 36 and a sheet metal form 37 to which the tile facing 34 is secured by cement or the like. This air space is employed because that front portion of the fireplace receives a large amount of heat and if that heat is not transmitted to the plenum chamber but allowed to radiate directly into the walls around the fireplace, in time it would dry out the cement filler which holds the tiling and also injure painted portions around the front of the fireplace proper.

Associated with the back of walls 26 and 27 is a baffle 38 also U-shaped in cross section. The bottom portions 39 of the baffle are open so that a part of the air passing from the furnace to the rooms will be forced into intimate contact with the walls 26 and 27. The upper end of the baffle opens into the plenum chamber through the top side portions 44 thereof.

A dome 39 is secured to the top of the back wall 40 of the baffle 38 and to the top of the hood 30. The dome is connected to a flue 41 by means of a conduit 42 for the disposal of products of combustion. Upon the upper portion of the hood a damper unit 30' has been secured for controlling the draft from the fireplace to the flue 41.

When the fireplace is in use, the air in the restricted portions 43 is heated by radiation from the walls 26 and 27 of the fireplace. The additional air in the plenum chamber is heated by radiation from the hood front 31, the dome 39, conduit 42, which are entirely encased in the plenum chamber 12.

Vents 19 in the chamber 12 are provided to

allow the hot air to expel into the various rooms. These vents may be closed individually so that one or more of the rooms may receive the hot air from the plenum chamber. Thus if only one or two rooms are desired to be heated, the fireplace may be used for that purpose, and when both the fireplace and furnace are in operation, the heating qualities of the fireplace will allow the furnace to be shut down so that it does not operate unnecessarily.

When a fan such as **45** is used with the furnace, the fan thermostat control may be located in the plenum chamber as at **46**, instead of on the furnace, as this point will be the hottest when the fireplace is operating. Thus when the fireplace is in operation and the temperature of the plenum chamber reaches a designated degree, the fan will be shut off so as not to burn fuel unnecessarily.

Provision has been made in the rear portion of the hearth for disposal of ashes through a chute **47**, which is also of sheet metal construction and is shown as extending from the fireplace through the upper portion of the furnace casing to the basement. A tiltable plate **48** closes the upper end **49** of the chute and a door **50** seals the lower end of the chute.

From the foregoing description, it will be apparent that numerous modifications may be made within the scope and purview of the description in the appended claims.

What we claim as our invention is:

1. In a heating system for a house having a plurality of rooms, a furnace, a plenum chamber associated with the furnace for the passage of hot air to the rooms, a supplementary unit for directly heating the air in said chamber, said unit comprising an open hearth fireplace having heat radiating walls and a heat radiating dome portion both within said chamber, sealing the hearth of the unit from the chamber.

2. In a heating system for a house having a plurality of rooms, a furnace, a plenum chamber extending from the furnace including a vertical column communicating with an upper portion of the house adapted to be heated by said furnace, an open hearth fireplace located above said furnace and having back and side plate like heat radiating wall portions extending into said chamber for directly heating the air in the latter by said heat radiating walls.

3. In a heating system for a house having a plurality of rooms, a furnace, a plenum chamber above the furnace for the passage of hot air to the rooms, an open hearth fireplace located above said furnace, having common wall portions with the chamber, and means spaced from said wall portions in the chamber for directing a portion of the air therein into intimate contact with said common wall portions.

4. In a heating system for a house having a plurality of rooms, a furnace, a plenum chamber associated with the furnace for the passage of hot air to the rooms, an open hearth fireplace above the furnace having heat radiating wall portions within said chamber, and a baffle located within the chamber cooperating with said walls to direct a portion of the air in the chamber into intimate contact with said walls.

5. In a heating system for a house having a plurality of rooms, a furnace, a plenum chamber above the furnace for the passage of hot air to the rooms, an open hearth fireplace located above said furnace having back and side heat radiating wall portions acting as the front wall portions of said plenum chamber where the latter contacts said fireplace, whereby substantially all of the air heated by said furnace passes about said fireplace wall portions.

GAMES SLAYTER.
HOWARD W. COLLINS.