March 26, 1929. W. A. BREWSTER 1,706,768

COMBINATION FIREPLACE AND HEATER

Filed May 5, 1927 2 Sheets-Sheet 1

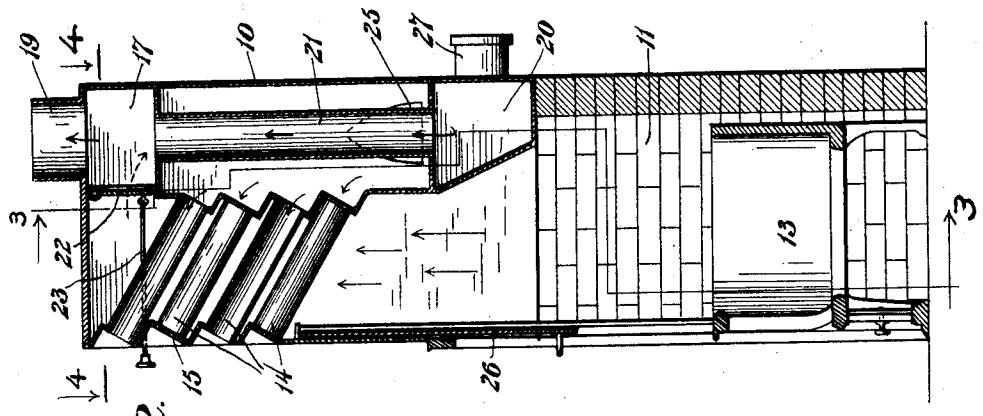


Fig. 2.

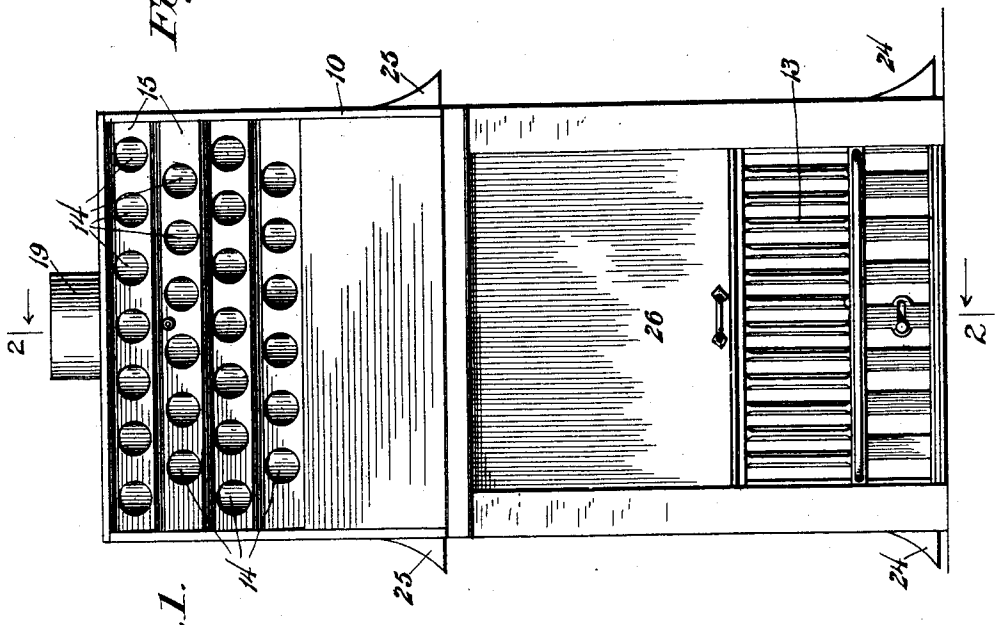


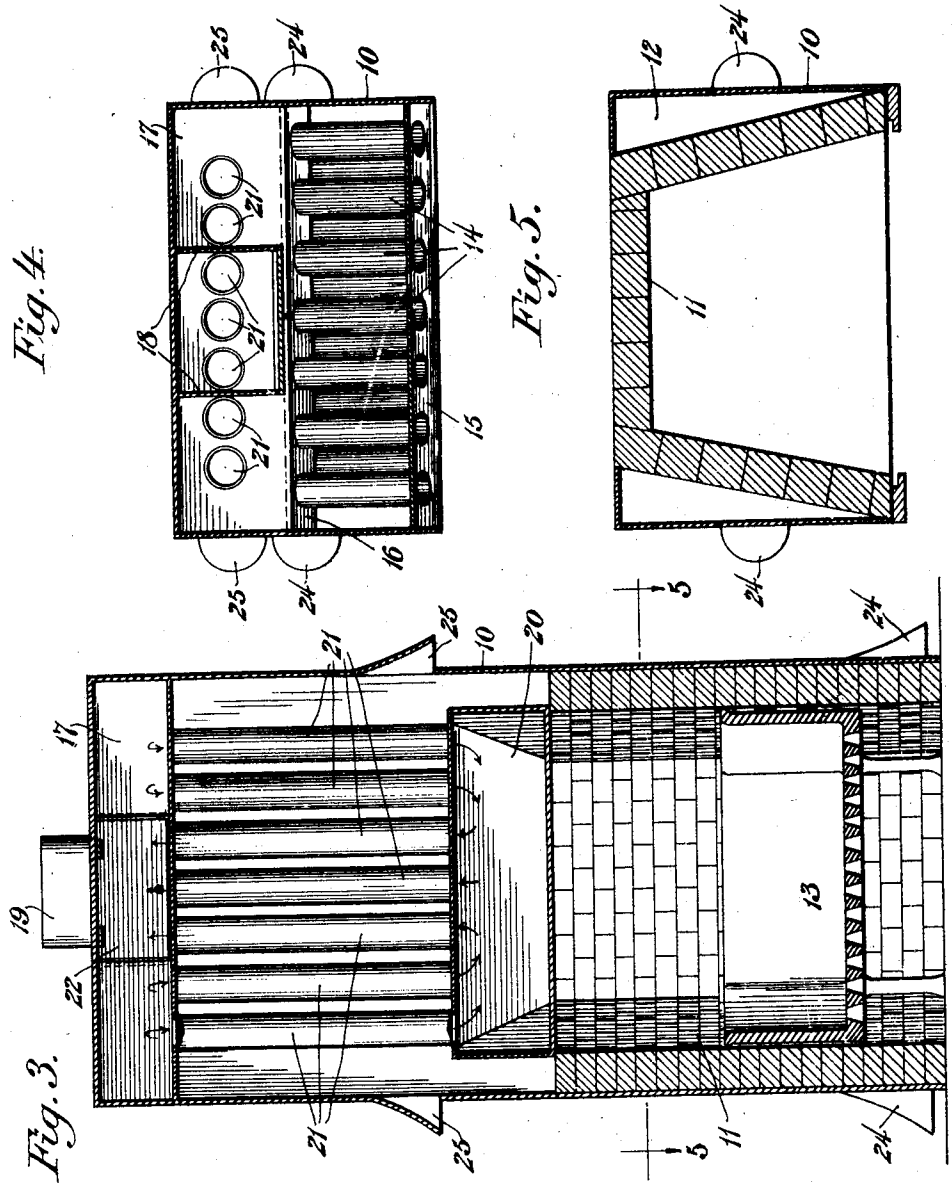
Fig. 1.

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UNITED STATES PATENT OFFICE.

WILLIAM A. BREWSTER, OF REDLANDS, CALIFORNIA.

COMBINATION FIREPLACE AND HEATER.

Application filed May 5, 1927. Serial No. 189,118.

My invention relates to fire-place heaters and, among other objects, aims to provide an improved apparatus to conserve some of the heat of the waste gases.

In the accompanying drawings wherein I have shown one illustrative example of my invention,

Figure 1 is a front elevation of a fire-place embodying my improvements;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figures 3 and 4 are sectional views taken on the lines 3—3 and 4—4 respectively of Figure 2; and

Figure 5 is a sectional view taken on the line 5—5 of Figure 3, the grate being omitted.

Referring specifically to the drawings, I have shown the preferred embodiment of my invention in the form of an open fire-place heater adapted to be placed in a room and connected to an ordinary chimney flue. Herein, I have shown an outer casing 10 made of sheet metal and being substantially oblong in cross section above the fire-place. The lower portions at the front and rear are open and an open brick fire-place 11 of suitable size and shape is built within it. (See Figures 2, 3 and 5.) Herein the back wall of the fire-place is narrower than the casing, and the side walls converge rearwardly to provide air circulating flues 12 between them and the side walls of the casing.

In the present example, I have shown a basket grate 13 for burning coal or other fuel. The casing, above the grate 13, presents a vertical flue across which I have provided a bank of upwardly and forwardly inclined hot air tubes 14, each connected to a stepped portion 15 of the front wall of the casing, and arranged to deliver heated air to the room. I prefer to arrange the tubes in adjacent horizontal rows in staggered relation as shown in Figure 1. These tubes are shown as connected to a rear plate 16 which forms the rear wall of the flue, and has stepped portions similar to those in the front wall.

At the upper end of the casing, rearwardly of the vertical flue, I provide a smoke box 17, having transverse partition walls 18 (see Figure 4), the compartment space between the portions leading directly to an outlet flue 19 connected to a chimney.

Further to utilize the waste gases to heat the air prior to entering the tubes 14, I have shown a lower smoke-box 20 resting on the top of the rear wall of the fire-place, and a series of vertical smoke tubes 21 are connected to the upper and lower smoke-boxes. As shown in Figure 4, some of the tubes 21 are connected to the two side compartments of the upper smoke-box, and some are connected to the central compartment.

To direct the waste gases through these tubes and smoke-boxes, or to permit them to pass directly to the chimney, I have shown a damper 22 controlling the central compartment of the upper smoke-box. Herein, I provide an operating rod or handle 23 projecting through the front wall of the casing. When the damper is closed, as shown in Figure 2, the waste gases enter the side compartments of the upper smoke-box, pass downwardly through the tubes 21 connected thereto into the lower smoke-box, thence, upwardly through the tubes connected to the central compartment and then out through the outlet flue 19.

To permit fresh air to circulate around the smoke tubes 21 and pass through the hot air tubes 14, I provide air inlet openings 24 at the sides of the casing adjacent to the bottom, and other openings 25 above the lower smoke-box 20. The air, as it is heated, passes upwardly into the room, and is exposed to the most intense heat as it passes through the upwardly inclined bank of tubes.

To close the front of the fire-place and increase the draft through the grate, I provide a sliding damper or plate 26 which is adapted to be pulled down to the top of the grate. This is particularly desirable for starting a coal fire. Any suitable stop means (not shown) may be employed to hold this plate in adjusted position. It is preferably made to slide upwardly behind the front wall of the casing 10 below the lowermost row of hot air tubes 10.

In some instances, it may be desirable to connect the flue from my fire-place directly to an old fire-place opening. Simply to illustrate how this may be done, I have shown an outlet 27 (see Figure 2) connected to the lower smoke-box. If such an outlet is used, the upper one 19 is closed.

Obviously the present invention is not restricted to the particular embodiment thereof herein shown and described. Moreover, it is not indispensable that all the features of the invention be used conjointly, since

they may be employed advantageously in various combinations and subcombinations.

What I claim is:

1. A heater of the class described comprising, in combination; a fire-place; a casing therefor having front, rear, and intermediate walls providing a vertical smoke flue and an air chamber; a series of upwardly and forwardly inclined hot air tubes arranged across said flue between the front and intermediate walls to deliver hot air into the room; a smoke-box adjacent at the top of the casing in the rear of said flue and having a series of compartments therein; a second smoke-box behind said flue and above the fire-place; a plurality of vertical fire tubes connecting said smoke-boxes and so arranged with relation to the compartments in the top smoke box as to permit the smoke to pass downardly into some of the tubes in the bottom smoke-box and upwardly through others of the tubes into one of the compartments to be discharged into the chimney.

2. A heater of the class described comprising, in combination; a fire-place; a casing therefor providing a substantially vertical flue; a bank of upwardly and forwardly inclined hot air tubes extending across the flue and arranged in horizontal rows with the tubes in adjacent rows in staggered relation; a smoke-box at the top of the casing having series of compartments therein; a second smoke-box below the top smoke-box arranged at the rear of said flue and projecting partly inwardly above the fire-place; a series of vertical smoke tubes connecting said smoke-boxes and so arranged as to permit the smoke to pass downwardly through some of them and upwardly through the rest of them to be discharged into the chimney; said casing presenting air admission openings to permit air to circulate around said smoke tubes and be discharged into the room through said hot air tubes.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

WILLIAM A. BREWSTER.