Jan. 5, 1926. 1,568,816

H. A. ELSON

FIREPLACE

Filed Feb. 26, 1923 2 Sheets-Sheet 1

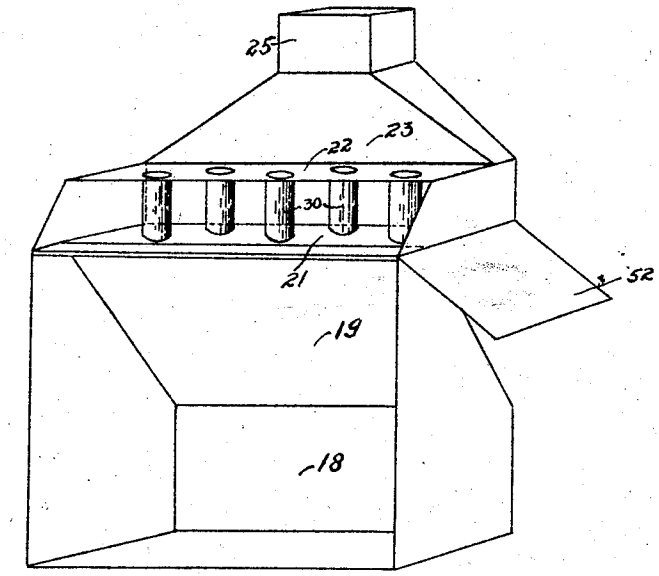


Fig. 1.

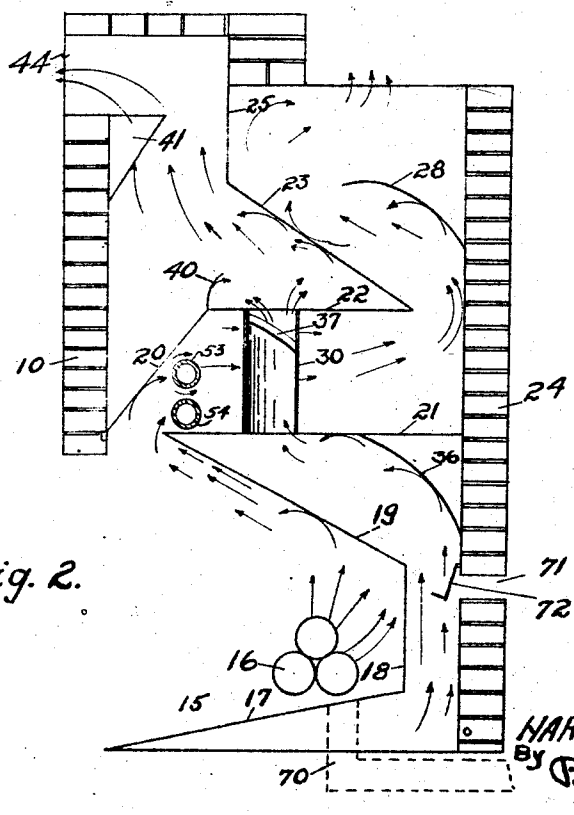


Fig. 2.

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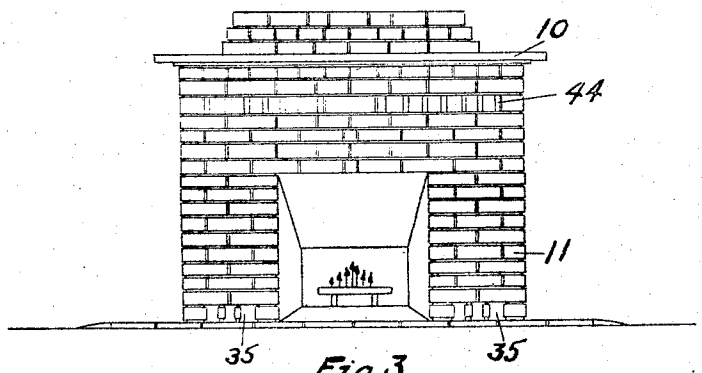


Fig. 3.

HARRY A. ELSON
By B. J. Craig

Patented Jan. 5, 1926. 1,568,816

UNITED STATES PATENT OFFICE.

HARRY A. ELSON, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FREDERICK W. SLINGERLAND, OF LOS ANGELES, CALIFORNIA.

FIREPLACE.

Application filed February 26, 1923. Serial No. 621,133.

To all whom it may concern:

Be it known that I, HARRY A. ELSON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a certain new and useful Improvement in Fireplaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to fireplaces such as are used in dwelling houses for providing heat.

The general object of the invention is to provide a fireplace which is so constructed that the heat from the material burned serves, in an efficient manner, to heat cold air which is conveyed to the rooms to be heated.

One of the specific objects of the invention is to provide a fireplace having an inlet for cold air in the lower part of the front portion and an outlet for heated air near the top of the front together with means whereby the air going in at the bottom and out at the top is heated with a maximum of efficiency.

Another object of the invention is to provide a fireplace with means to lead cold air therethrough, together with means whereby the desired humidity of the air is maintained and wherein the products of combustion serve to heat water in a water tank.

A further object of my invention is to provide a fireplace of the kind wherein cold air is warmed and returned to the room, with a casing so that the fireplace may be set up in a room as a complete unit without the need for assembling after it reaches the place of installation.

Other objects of the invention will be apparent from the following description taken in connection with the accompanying drawings, wherein Fig. 1 is a perspective view showing an embodiment of my invention; Fig. 2 is a central section through a fireplace and Fig. 3 is a front elevation of a fireplace.

Referring to the drawings by reference characters, I have shown at 10 a fireplace. This fireplace may comprise the usual brick work 11 which surrounds a heating member embodying the features of my invention.

This heating member comprises a fire chamber wherein the source of heat is arranged. The heat may be derived from a hydro-carbon burner or means for burning coal or wood. A tortuous passage leads from the fire chamber to a chimney. The arrangement is such that the air which is used to heat the room is drawn through the fireplace without coming into contact with the hot gases, and is then led into the room to be warmed.

By referring to Figs. 1 and 2, wherein the details of one embodiment of my invention are shown, I show a fire chamber 15 having a source of heat 16 therein. The chamber is defined by a lower, upwardly directed wall 17, by a rear wall 18 which may be vertical, and by an upwardly inclined wall 19.

The hot gases from the fire pass along the inclined plate 19 and impinge against a plate 20, shown as inclined toward the rear of the fireplace. The walls 19 and 20 are joined respectively to walls 21 and 22 which are here shown as arranged in parallel manner. The wall 21 has a tight engagement against the back wall 24 of the fireplace, while the wall 22 is shown as connected to another inclined wall 23, the latter of which is inclined toward the front of the fireplace, and which in turn merges into a portion 25 shown as vertical.

It will be noted that the wall 23 overhangs the wall 22 for a purpose to be presently described.

I show a baffle member 28 indicated as secured to the back wall 24 and having a portion thereof deflected toward the plate 23.

The horizontal portions 21 and 22 are shown as connected by the plurality of open ended tubular members 30. These tubular members, as will be seen in Fig. 1, are arranged in staggered relation with each other, and the heated gases from the source of heat pass between and around these tubular members.

The air to be warmed, which may be taken into the fireplace through openings 35 (see Fig. 3) adjacent the bottom thereof, passes within the fireplace, around the sides and along the bottom of the fire chamber 15 and then into contact with the plate 19. In order to insure most of the air coming in contact with this plate, I provide a baffle 36 shown as engaging the rear of the fireplace and the plate 21. The air, after being warmed by the plate 19, passes through the

tubular members 30. These tubular members are provided with one or more vanes 37 shown as spirally arranged, so that the warm air, which is expanding as it is heated, is given a whirling action by these spiral vanes, thus causing a better circulation and giving greater heating efficiency. The air, after passing from the tubular members 30, comes in contact with the lower portion of the plate 23. A deflecting plate 40 arranged adjacent the juncture of the walls 20 and 22, serves to direct the air against the plate 23.

A receptacle for water is shown adjacent the fireplace as at 41. This receptacle is in the path of the hot air which goes forth from the fireplace so that the water contained therein serves to moisten the air supplied to the room.

The warm air may be led to the room through openings 44 in the front of the fireplace near the top portion thereof.

The fireplace proper, embodying my invention, may be built into a brick fireplace which is shown in Fig. 3.

In order to cause the cold air to pass around the fire chamber, I provide baffle members 52 shown as arranged adjacent the sides of the fireplace. These baffle members engage the fireplace along one edge and engage the framework for the fireplace along the other edge.

In order that the air for supporting combustion in the heater 16 may not be all supplied from the room being heated, I may provide a cold air duct 70, which leads to the atmosphere. This cold air duct may be provided with a valve mechanism so that the amount of fresh air supplied can be regulated.

It is also frequently desirable to provide means whereby fresh air, taken from a point outside the room being heated, may be led through the fireplace. Means for doing this is shown at 71, where the fresh air duct is indicated as communicating with the chamber in the rear of the fire chamber. The passage of air through this duct 71 may be controlled, if desired, by a closure 72 which may be operated in any suitable manner from the front of the fireplace.

From the foregoing description, it will be apparent that I have provided a novel form of fireplace which can be economically manufactured, readily installed, and which is highly efficient in use.

Having thus described my invention, I claim:

1. A fireplace structure having a fire chamber, and a front brick wall, a flue at the top of the fire chamber and extended through said fireplace structure, an air passageway adjacent to said fire chamber and having a fresh air inlet, said air passageway increasing in area from the inlet thereto, pipes extending across said flue, an air passageway and expansion chamber directly above said pipes, said pipes communicating with said fresh air inlet, said front wall having openings therein through which the hot air discharges, the top of said fire chamber being inclined toward the front of the fireplace, said inclined part being made of sheet metal whereby it may be heated to thus heat the air passing over the other side thereof.

2. A fireplace structure having a fire chamber, and a front wall, a flue at the top of the fire chamber and extended through said fireplace structure, an air conduit adjacent to said fire chamber and having a fresh air inlet, pipes extending across said flue and communicating with said fresh air inlet and adapted to form an air discharge, said front wall having openings therein through which the hot air discharges, the portion of said fireplace structure defining the top of said fire chamber being inclined toward the front of the fireplace, said inclined part being made of metal whereby it may be heated to thus heat the air passing over the other side thereof, an air expansion chamber directly above said pipes and means affording communication between the air expansion chamber and the exterior of the fireplace.

3. The combination with a fireplace having a chimney and including a vertical rear wall and a vertical front wall spaced apart, of a fireplace furnace, a fire chamber, said fireplace furnace including a portion forwardly and upwardly inclined, and adapted to be heated from said fire chamber, said portion being spaced from an adjacent portion of the structure to provide a passageway for air being warmed, a transverse wall adjacent the upper end of said portion, a second transverse wall spaced from said first transverse wall, flues connecting the two transverse walls, said front wall having a warm air discharge opening, said flues serving to connect said passageway and said warm air discharge opening whereby the warmed air will be conducted through the opening, said transverse walls forming a passageway between said flues from the fire chamber to the chimney.

4. In a fireplace, a fire chamber communicating by a tortuous passage with the atmosphere, said passage being defined by an upwardly inclined plate directed towards the front of the fireplace, then by a second upwardly inclined plate directed towards the rear of the fireplace, then by two horizontally arranged partition members, then by the rear of the fireplace, then by an upwardly inclined plate directed towards the front of the fireplace, thence to the chimney, a baffle for directing the heated gases against the last mentioned inclined plate, means

for leading cold air adjacent said first mentioned inclined plate, a baffle for urging the air against said last mentioned plate, a plurality of tubular members having spiral vanes therein and connecting said two horizontal plates and around which the hot gases pass and through which the air to be heated passes, a baffle arranged above said tubular members and adapted to direct the air against one of said inclined plates and means to lead the heated air to the room.

5. In a fireplace, a fire chamber communicating by a tortuous passage with the atmosphere, said passage being defined by an upwardly inclined plate directed towards the front of the fireplace, then by a second upwardly inclined plate directed towards the rear of the fireplace, then by two horizontally arranged partition members, then by the rear of the fireplace, then by an upwardly inclined plate directed towards the front of the fireplace, thence to the chimney, a plurality of tubular members having spiral vanes therein and connecting said two horizontal plates and through which the air to be heated passes, and means whereby air may be taken from the room, passed over said inclined plates and through the tubular members.

6. In a fireplace, a fire chamber communicating by a tortuous passage with the atmosphere, said passage being defined by an upwardly inclined plate directed towards the front of the fireplace, then by a second upwardly inclined plate directed towards the rear of the fireplace, then by two horizontally arranged partition members, then by the rear of the fireplace, then by an upwardly inclined plate directed towards the front of the fireplace, thence to the chimney, a baffle for directing the heated gases against the last mentioned inclined plate, a baffle for urging cold air against said first mentioned plate, a plurality of tubular members having spiral vanes therein and connecting said two horizontal plates and through which the heated air passes, a baffle arranged above said tubular members and adapted to direct the air against an inclined plate and means to lead the heated air to the room.

In testimony whereof, I hereunto affix my signature.

HARRY A. ELSON.