May 15, 1928. 1,670,034

W. HALLBERG

FIREPLACE

Filed Sept. 15, 1926 2 Sheets-Sheet 1

Fig. 1.

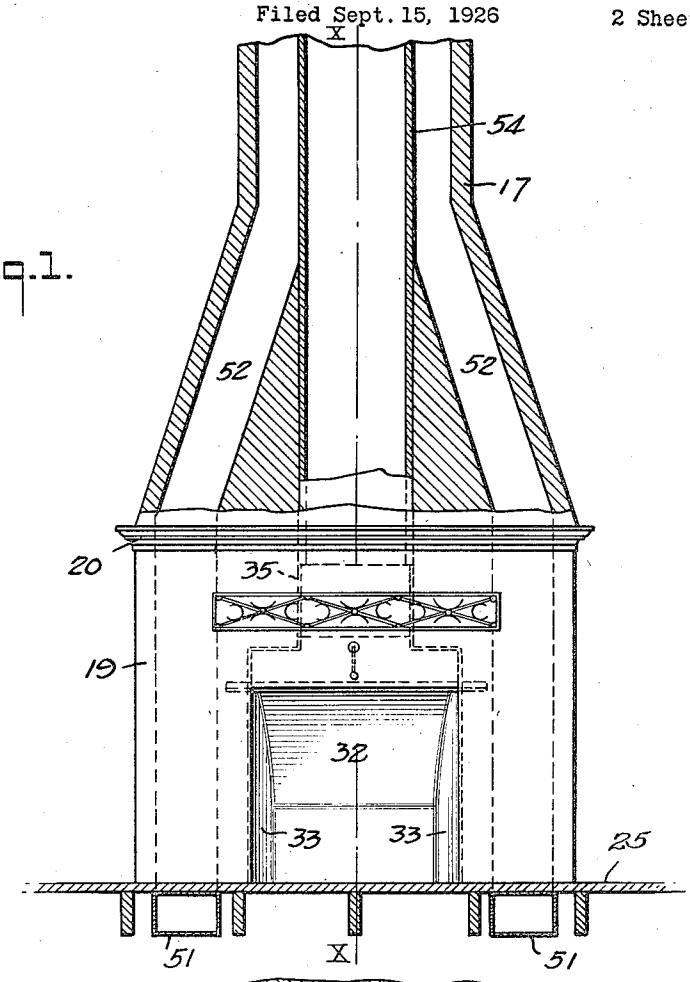
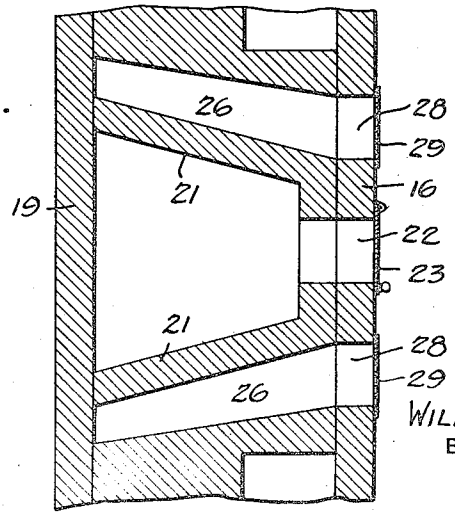



Fig. 5.




INVENTOR
WILLIAM HALLBERG
BY Munn & Co.
ATTORNEY

May 15, 1928. 1,670,034

W. HALLBERG

FIREPLACE

Filed Sept. 15, 1926 2 Sheets-Sheet 2

Fig. 6.

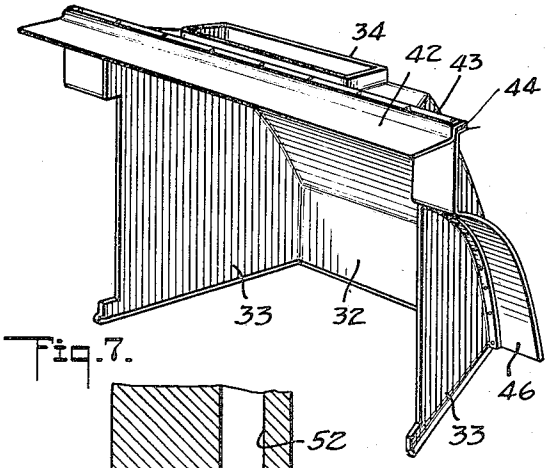



Fig. 7.

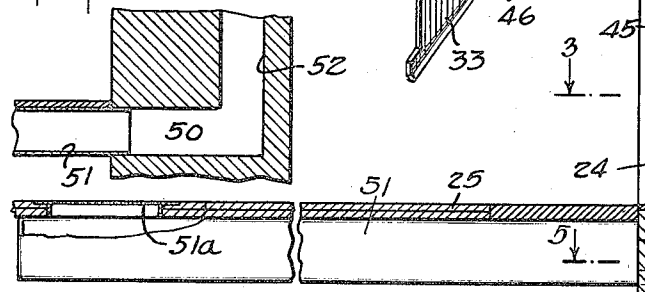



Fig. 2.

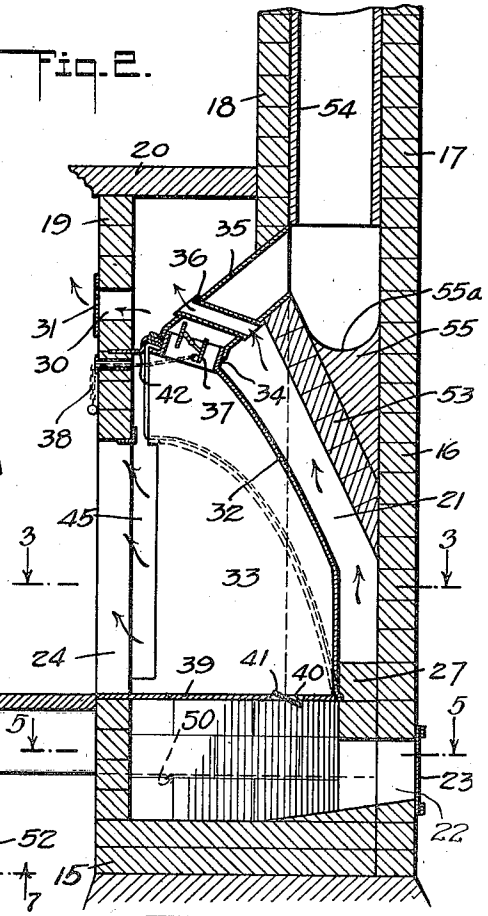



Fig. 3.

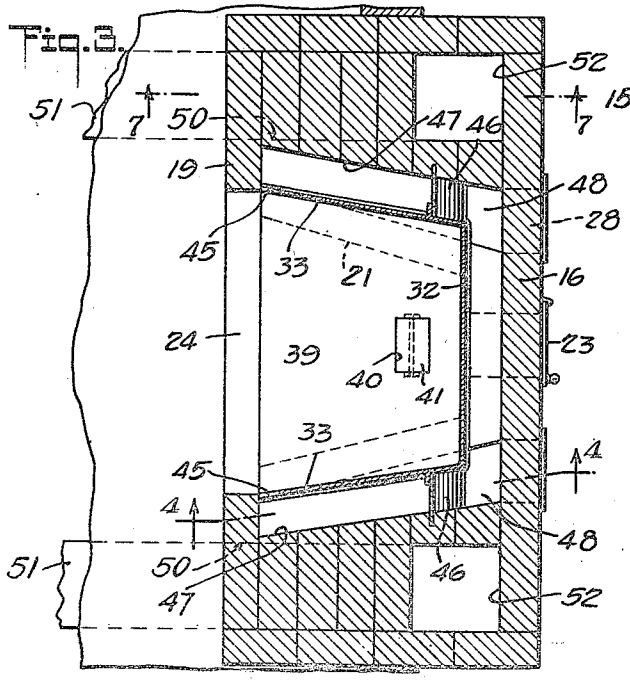
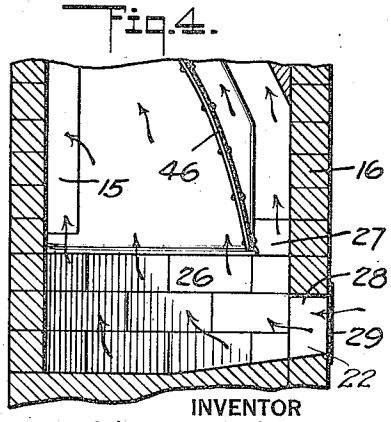



Fig. 4.




INVENTOR
WILLIAM HALLBERG
BY Munn & Co.
ATTORNEY

Patented May 15, 1928. 1,670,034

# UNITED STATES PATENT OFFICE.

WILLIAM HALLBERG, OF LOS ANGELES, CALIFORNIA.

## FIREPLACE.

Application filed September 15, 1926. Serial No. 135,615.

My invention relates to fireplaces of a character embodied in my Patent No. 1,587,227, issued June 1, 1926.

It is a purpose of my present invention to provide a fireplace which, in addition to possessing the advantages of the fireplace embodied in my above referred to patent, operates to circulate fresh air from the atmosphere at a point external with respect to a room or building inwardly into a room or building in such manner that the air is heated during transit and simultaneously exhausting the stratum of air adjacent the floor of the room through the fireplace to the atmosphere, thus effecting a constant circulation of air into and out of the room so as to insure at all times a constant supply of fresh heated air to the room.

It is also a purpose of my invention to provide a fireplace having a fire box so correlated with the fireplace as to permit unlimited expansion thereof when heating without bulging or in any way distorting the walls of the fireplace.

I will describe only one form of fireplace embodying my invention and will then point out the novel features thereof in claims.

In the accompanying drawings,

Figure 1 is a view showing in front elevation and partly in section one form of fireplace embodying my invention.

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

Figure 3 is a horizontal sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a fragmentary vertical sectional view taken on the line 4—4 of Figure 3,

Figure 5 is a horizontal sectional view taken on the line 5—5 of Figure 2,

Figure 6 is a detailed perspective view of the fire box embodied in the fireplace shown in the preceding views.

Figure 7 is a fragmentary sectional view taken on the line 7—7 of Figure 3.

Similar reference characters refer to similar parts in each of the several views.

Referring specifically to the drawings, my invention in its present embodiment comprises a fireplace constructed of brick or other suitable material, including a base 15 of rectangular form and from the rear of which a wall 16 extends upwardly to form the rear of a chimney 17. The front wall of the chimney is designated at 18, and is disposed rearwardly of the front wall 19 of the fireplace the two walls being spanned by horizontal wall or mantel 20. Adjacent the base, the fireplace is internally provided with two upstanding walls 21 (Figure 5), and the space between these walls constitutes an ash pit, the walls converging toward the rear of the fireplace and contacting with the rear wall 16. An opening 22 is formed in the wall 16, and through this opening access is had to the ash pit for removing ashes therefrom and the opening is normally closed by a door 23. The walls 21 are in spaced relation to the adjacent side walls of the fireplace, and their upper edges are adapted to terminate with the lower end of an opening 24 in the front wall 19, such lower end being flush with a floor of a room indicated at 25 when the fireplace is properly positioned. By spacing the walls 21 in respect to the side walls of the fireplace, two chambers 26 are formed, separated from each other at their rear ends by an upward extension 27 of the walls 21. Air from atmosphere, that is, air from a point external of the room, is admitted to the chambers 26 through inlet openings 28, having register plates 29. These chambers are adapted to communicate with a discharge opening 30 in the wall 19, the opening being provided with register plate 31 through which heated air is adapted to be discharged into the room.

Within the fireplace is arranged a fire box which, as shown in Figure 6, comprises a body of metal or other suitable material including a curved back wall 32 and divergent side walls 33, the upper end of the back wall being provided with an opening surrounded by a rectangular collar 34. To this collar is connected a pipe 35 which extends into a suitable opening formed in the wall 18 at a point below the mantel 20, the pipe having a plurality of transversally extending pipe sections 36, one of which is shown in Figure 2 and through which heated air is adapted to pass for ultimate discharge from the fireplace through the register 31. Within the collar 34 is mounted a damper 37, which is operable by a chain 38 extending through and slidable in a suitable opening provided in the front wall 19. This damper 37 constitutes the subject matter of another application.

As clearly illustrated in Figure 2, the fire box is supported on the walls 21, a separate base plate 39 also reposing on the walls

and on the lower portion of the front wall 19, this plate constituting a bed upon which the source of heat is supported. This plate is provided with an opening 40, controlled by a damper 41 and through which ashes may be deposited into the chamber beneath the plate and between the walls 21 for ultimate removal through the opening 22.

The fire box is supported in such manner that the front thereof is in spaced relation to the front wall 19 in order that the material of which the fire box is formed may be free to expand when heated and not contact with or in any way injure the front wall 19. In fire boxes heretofore proposed, they have been associated with the fireplace in such manner that when heated the resultant expansion operates to bulge the front wall of the fireplace and in some instances causes the actual collapse of the front wall. In spacing the front of the fire box from the front wall of the fireplace, it is necessary to bridge such space at the upper end of the fire box in order to prevent the passage of smoke and other gaseous fumes outwardly through the opening 30. To this end I provide a strip 42 of metal or other suitable material which is partly embedded in the front wall 19, as clearly shown in Figure 2, while its rear edge is riveted or otherwise secured to a lip 43 formed on the upper edge of the fire box. A strip of asbestos 44 is interposed between the strip 42 and the lip 43 to reduce the transmission of heat from the fire box to the strip 42. Under the expansive action of the fire box, the strip 42 will flex, thus preventing injury to the front wall 19 and at the same time properly functioning to span the space between the two to prevent the passage of smoke upwardly into the opening 30.

As in the fire box embodied in my invention hereinbefore referred to, the forward vertical edges of the side walls 33 are irregular in order to provide openings 45 between the fire box and the front wall 19 through which air currents are adapted to pass outwardly of the fireplace through the opening 24 and inwardly of the fire box in order to prevent an in-draft into the fire box.

As clearly illustrated in Figures 3 and 6, the side walls 33 of the fire box are provided with laterally extending and longitudinally curved wings or partitions 46, partly embedded in the adjacent end walls of the fireplace and functioning to divide the space between the sides of the fire box and the ends of the fireplace into front chambers 47 and rear chambers 48, the chambers 47 being in communication with the openings 45, and the chambers 48 communicating with the pipe sections 36 and with each other at a point above the wall 27. By reference to Figure 4, it will be clear that the chambers 26, at the outer sides of the walls 21, communicate with the chambers 47 and 48 so that the latter chambers are placed in communication with the air inlets 29.

The base of the fireplace is formed with horizontal passages 50 which communicate at their forward ends with pipes 51 one being shown in broken lines in Figure 2 and disposed beneath the floor 25 and provided with registers $51^a$ through which air from the room is drawn into the pipes and discharged into the passages 50. The fireplace is also formed with vertical passages 52 in communication at their lower ends with the passages 50 and extending upwardly along opposite sides of the fire box as shown in Figure 3. An inclined wall 53, which, in effect, is a continuation of the wall 18 extends rearwardly and downwardly to the rear wall 17 of the fireplace as shown in Figure 2 and co-operates with the wall 16 to form the rear wall of the fireplace. These passages 52 are disposed in opposite sides of a chimney liner 54, which is shown in Figure 2 as in communication at its lower end with the pipe 35 in order to conduct the smoke and gases from the fire box upwardly of the chimney. As shown in Figure 2 the wall 53 is secured in position by a body of cement 55 or other suitable material, which has a concave upper surface $55^a$, which operates to prevent down-drafts in the chimney liner.

In practice the source of heat in the fire box effects an increase in the temperature of the surrounding air which operates to generate currents of air which traverse the several ducts and passages in the following manner:

Fresh air from atmosphere enters the inlets 28, passing upwardly through the chambers 46 and 47. This air is heated during transit and a portion of it is discharged through the openings 45 in the manner previously described, the remaining air passing through the pipe sections 36 and outwardly into the room through the register 31. The passage of smoke and gases from the fire box upwardly through the chimney liner 54 induces up-drafts in the passages 52 which operate to draw stale air from the bottom of the room through the registers $51^a$ and to discharge this air through the pipes 51 and passages 50 into the registers $51^a$.

By this operation it will be manifest that a constant circulation of air is effected from the outside atmosphere through the fireplace and into the room, this fresh air being heated during transit so as to supply to the room fresh heated air. Concurrently with this circulation the stale air is withdrawn from the room and discharged through the chimney, whereby it will be seen that fresh air is at all time supplied in the room, while the cold stale air is constantly withdrawn.

Although I have herein shown and described only one form of fireplace embodying my invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of the invention, and the spirit and scope of the appended claims.

I claim as my invention:

1. In combination, a fire box and a fireplace in which the fire box is contained, the two coacting to provide air ducts, the fireplace having air inlets and discharges positioned in relation to the air ducts to cause currents of fresh air from atmosphere to circulate upwardly between the fireplace and fire box and inwardly of a room so as to be heated during transit, a chimney in communication with the top of the fireplace, a chimney liner constituting a flue pipe communicating with the top of the fire box and positioned to coact with the fire box in dividing the fireplace and chimney into a plurality of air passages, communicating with the outer atmosphere, and air pipes adapted to be positioned beneath a floor with their inlet ends disposed to receive cool air from the lower portion of the room and their discharge ends communicating with the air passages, whereby heat radiated from the flue pipe during the passage of smoke and gases therethrough will induce updrafts in the passages, to thereby accelerate the withdrawal of cool air from the room.

2. In combination, a fireplace and a fire box supported in the fireplace so as to have its front in spaced relation to the front wall of the fireplace whereby expansion of the fire box will be ineffective to distort the front wall of the fireplace and a member bridging the front walls of the fireplace and fire box to prevent the passage of gases upwardly between the two, said member being flexible to permit movement of the fire box with respect to the fireplace.

3. In combination, a fireplace and a firebox in the fireplace having lateral partitions extending outwardly from its side walls, said partitions extending upwardly and forwardly from a point substantially at the lower rear corner of the firebox to the front wall at a point substantially at the forward upper corner of the firebox so as to divide the space between the firebox and fireplace interiorly into a plurality of non-communicating ducts, the firebox having air inlets at the bottom and air discharges at the top both in communication with the air ducts to induce air currents upwardly of the ducts.

4. In combination, a fireplace and a firebox supported in the fireplace so as to have its front in spaced relation to the front wall of the fireplace whereby expansion of the firebox will be ineffective to distort the front wall of the fireplace, and yieldable means spanning the front walls of the fireplace and firebox for preventing the passage of gases upwardly between the two, and acting to allow movement of the firebox relative to the fireplace.

5. In combination, a fireplace, a firebox spaced from the front and side walls of the fireplace, partitions spanning the space between the firebox and side walls of the fireplace to divide the space at each side of the firebox, into a pair of air ducts, and means spanning the space between the firebox and front wall of the fireplace for preventing the passage of gases upwardly between the two, said means associated with the fireplace and firebox in a manner to allow relative movement therebetween, whereby expansion of the firebox will be ineffective to distort the front wall of the fireplace.

6. In combination, a fireplace and a firebox supported in the fireplace so as to have its front in spaced relation to the front wall of the fireplace, and means spanning the front walls of the fireplace and firebox for preventing the passage of gases upwardly between the two, yet allowing relative movement therebetween so that expansion of the firebox will be ineffective to distort the front wall of the fireplace.

WILLIAM HALLBERG.