April 13, 1948. A. B. AUSTIN 2,439,503

AIR HEATING DEVICE FOR FIREPLACES

Filed Nov. 12, 1943 4 Sheets-Sheet 1

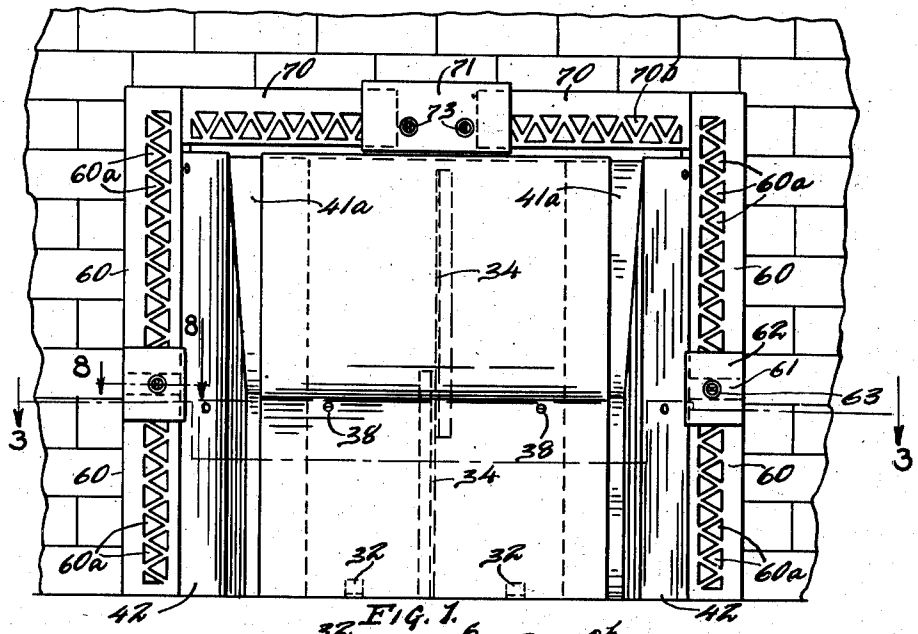


FIG. 1.

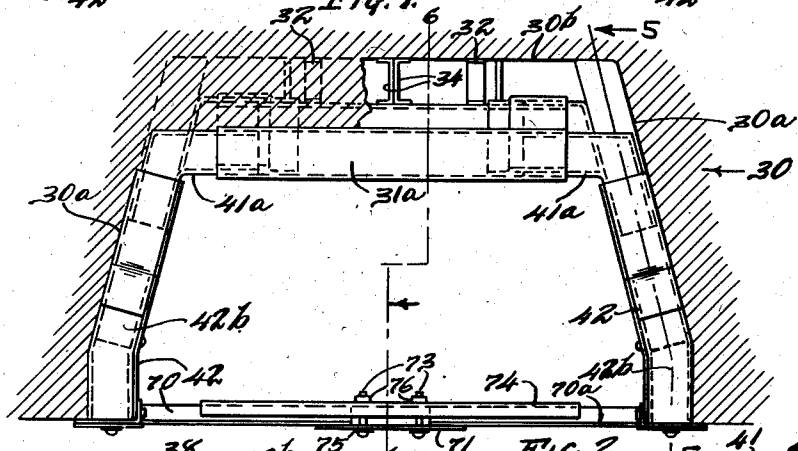


FIG. 2.

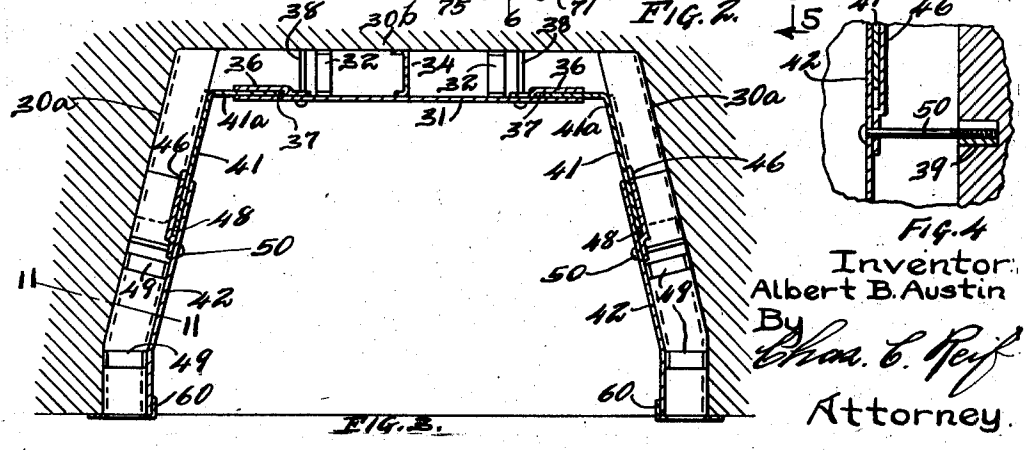


FIG. 3.

FIG. 4.

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AIR HEATING DEVICE FOR FIREPLACES

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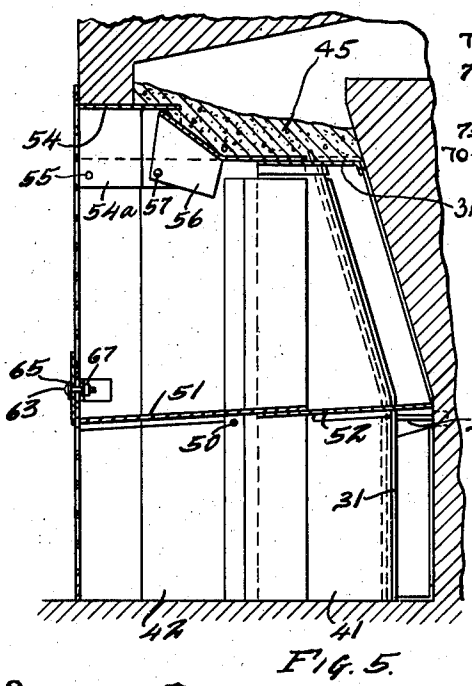


FIG. 5.

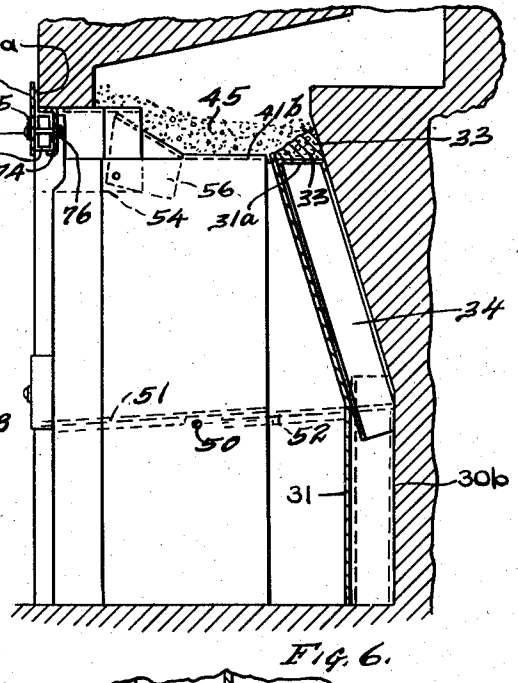


FIG. 6.

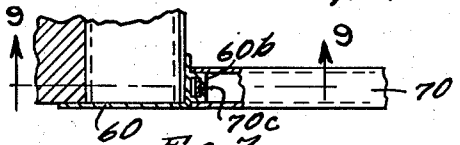


FIG. 7.

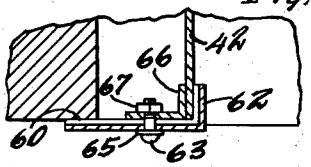


FIG. 8.

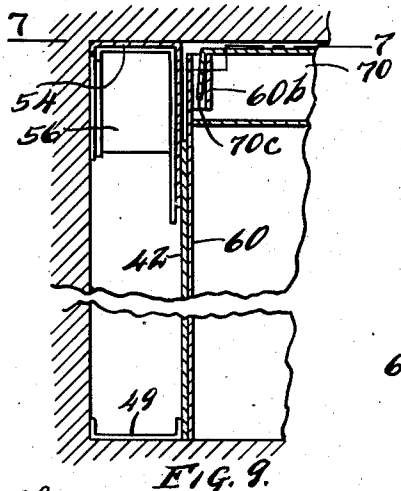


FIG. 9.

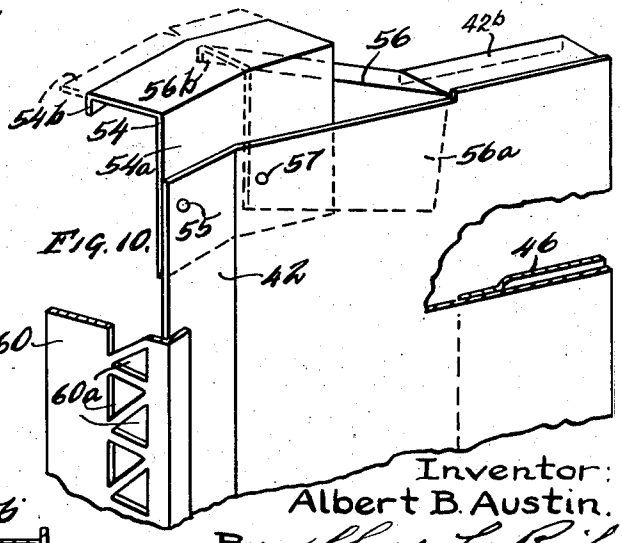


FIG. 10.

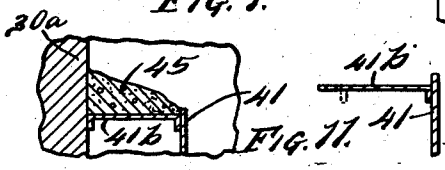


FIG. 11.

FIG. 12.

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AIR HEATING DEVICE FOR FIREPLACES

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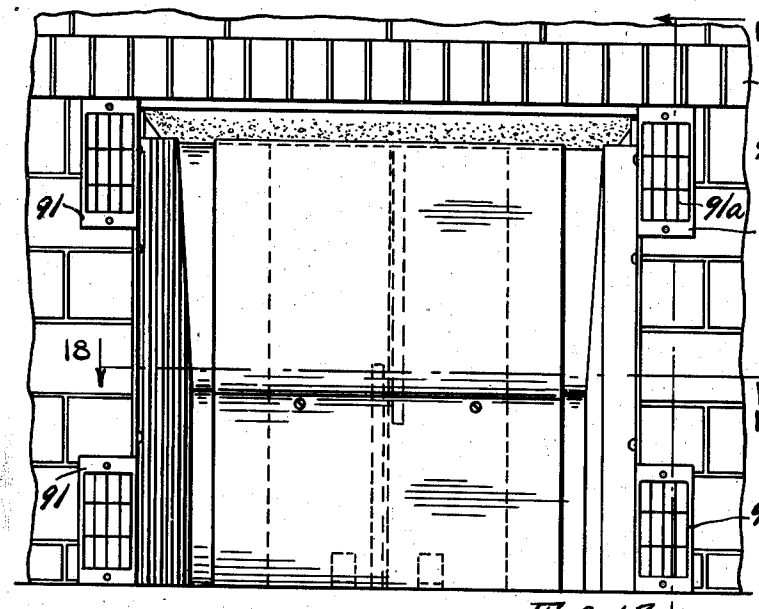


FIG. 13.

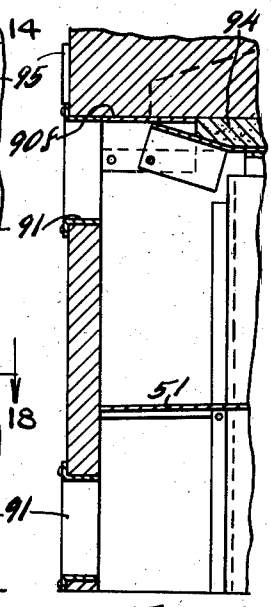


FIG. 14.

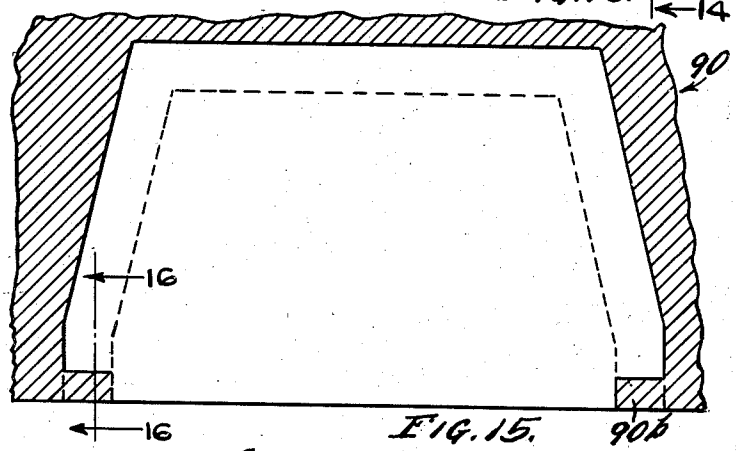


FIG. 15.

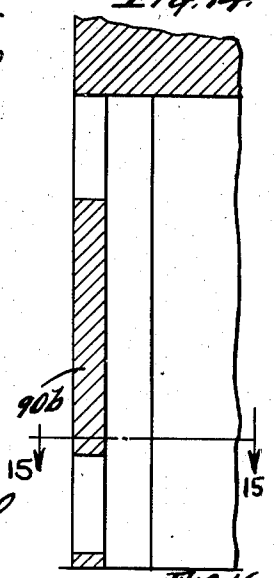


FIG. 16.

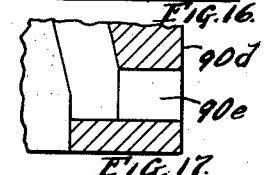


FIG. 17.

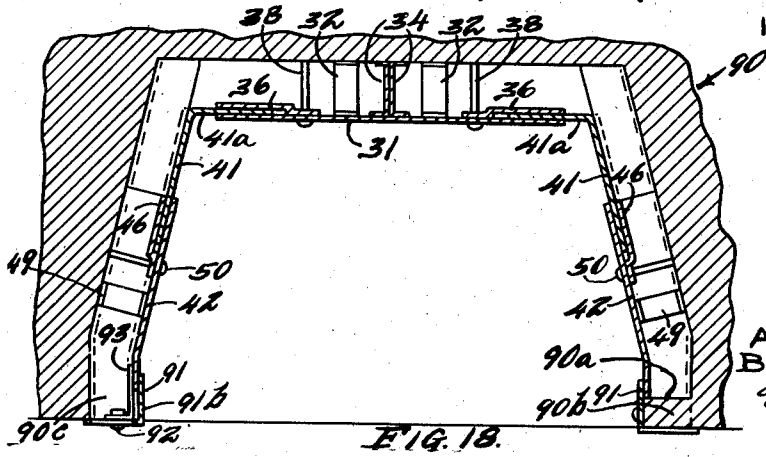


FIG. 18.

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AIR HEATING DEVICE FOR FIREPLACES

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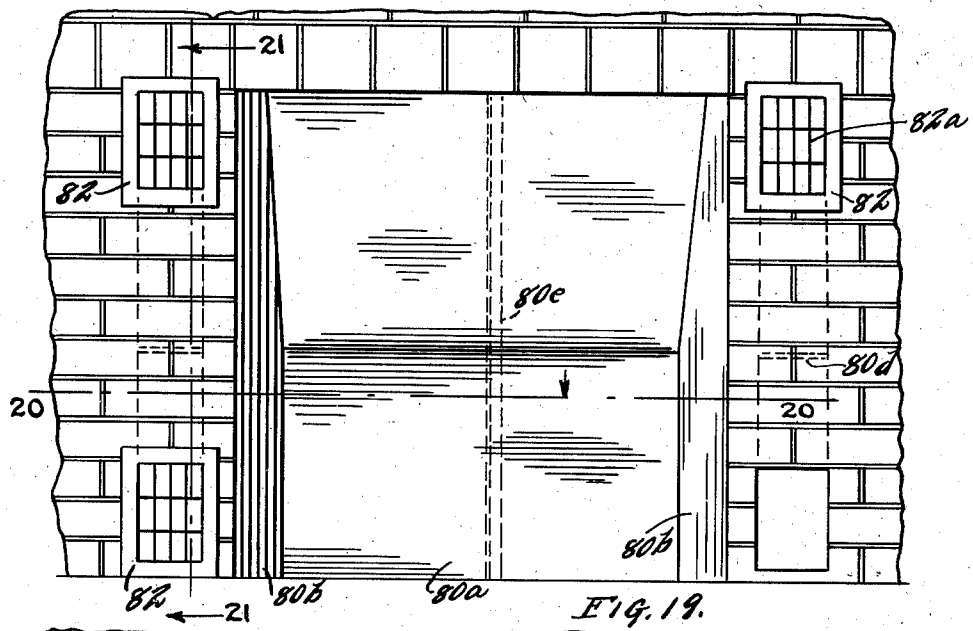


FIG. 19.

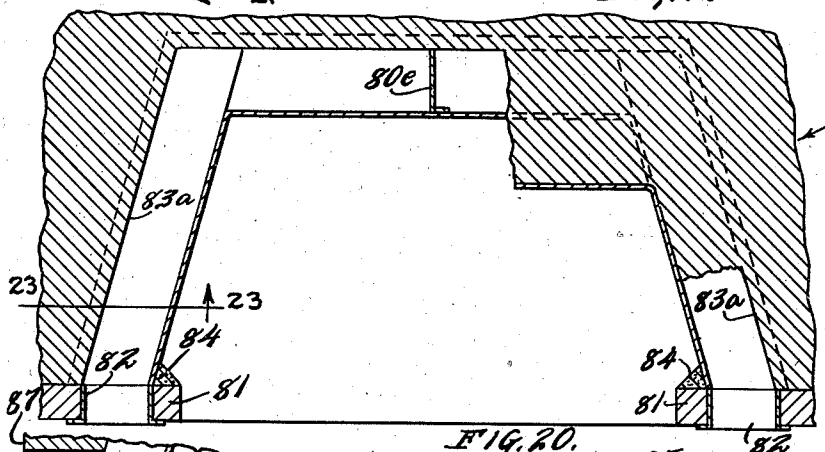


FIG. 20.

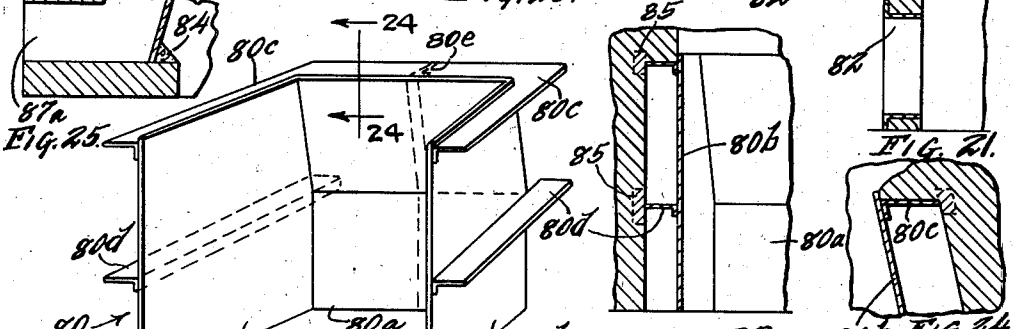


FIG. 25.

FIG. 22.

FIG. 23.

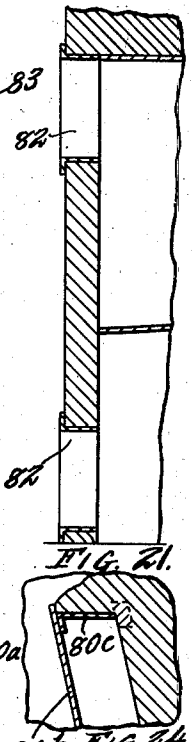


FIG. 21.

FIG. 24.

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Patented Apr. 13, 1948

2,439,503

UNITED STATES PATENT OFFICE

2,439,503

AIR-HEATING DEVICE FOR FIREPLACES

Albert B. Austin, Minneapolis, Minn.

Application November 12, 1943, Serial No. 509,975

12 Claims. (Cl. 126—121)

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This invention relates to a fireplace heater, and particularly to a structure of air heater for a fireplace arranged to be installed in fireplaces of different sizes. It is well known that fireplaces are rather inefficient as heating means for the room in which they are located. The efficiency of the fireplace can be greatly increased if means are provided in conjunction with the fireplace for causing a circulation of air in the room.

It is an object of this invention to provide an air heater for a fireplace having plates spaced from the rear and side walls of the fireplace with a top portion extending to said walls so that a chamber is formed between said plates and the walls of the fireplace together with means forming passages along the side walls whereby a circulation of air will be produced through said passages.

It is a further object of the invention to provide such a structure as set forth in the preceding paragraph, the said top portions of said plates being arranged so that they can respectively be fitted to engage the walls of said fireplace, a sealing and binding material such as cement or concrete preferably being placed on top of said top portions engaging the same and the walls of said fireplace.

It is another object of the invention to provide an air heater for a fireplace comprising a plate extending substantially vertically along and spaced from the rear wall of the fireplace, plates extending substantially vertically along and spaced from the side walls of the fireplace respectively, said latter plates having portions overlapping said first mentioned plate so that they may be moved toward or from each other to fit fireplaces of different widths, all of said plates having top portions extending toward and engaging the walls of said fireplace whereby a chamber is formed between said plates and the walls of said fireplace together with means forming passages along said side walls of the fireplace, which passages are open at their front ends and communicate with said chamber at their rear ends so that a circulation of air is caused therethrough.

It is still another object of the invention to provide an air heater for a fireplace comprising a plate extending substantially vertically along and spaced from the rear of said fireplace, rear side plates extending substantially vertically along and spaced from the side walls of said fireplace respectively, said latter plates having portions overlapping said rear plates, front side plates extending substantially vertically along

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and spaced from the side walls of said fireplace respectively and overlapping said rear side plates whereby said front and rear side plates may be moved toward and from each other to fit fireplaces of different widths and said front side plates may be moved relatively to said rear side plates to fit fireplaces of different depths, all of said plates having top portions extending toward and engaging the walls of said fireplaces respectively so that a chamber is formed between said plates and the walls of said fireplace together with means forming passages in said chamber along the side walls of said fireplaces, a vertical partition preferably being used extending from said rear plate to the wall of said fireplace substantially centrally of said rear plate.

It is still another object of the invention to provide a structure such as set forth in the preceding paragraph together with simple and efficient means for fitting the heater to fireplaces of different heights.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which—

Fig. 1 is a view in front elevation of an air heater for a fireplace embodying the present invention;

Fig. 2 is a top plan view of said heater showing the walls of the fireplace in horizontal section;

Fig. 3 is a horizontal section taken on line 3—3 of Fig. 1 as indicated by the arrow;

Fig. 4 is a partial horizontal section similar to Fig. 3 shown on an enlarged scale;

Fig. 5 is a vertical section taken substantially on line 5—5 of Fig. 2 as indicated by the arrow;

Fig. 6 is a vertical section taken substantially on line 6—6 of Fig. 2 as indicated by the arrow;

Fig. 7 is a partial view partly in horizontal section and partly in plan taken substantially on line 7—7 of Fig. 9;

Fig. 8 is a horizontal section taken substantially on line 8—8 of Fig. 1;

Fig. 9 is a vertical section taken substantially on line 9—9 of Fig. 7.

Fig. 10 is a partial perspective view of the front upper portion of said heater;

Fig. 11 is a vertical section taken substantially on line 11—11 of Fig. 3;

Fig. 12 is a view in vertical section of the rear top portion of the heater illustrating a method of installation;

Fig. 13 is a view in front elevation showing a modification;

Fig. 14 is a vertical section taken substantially on line 14—14 of Fig. 13 as indicated by the arrow;

Fig. 15 is a horizontal section through the wall of the fireplace as used in connection with Fig. 13, certain parts being indicated in dotted lines, said section being taken substantially on line 15—15 of Fig. 16.

Fig. 16 is a vertical section taken on line 16—16 of Fig. 15;

Fig. 17 is a horizontal section showing a modification;

Fig. 18 is a horizontal section taken substantially on line 18—18 of Fig. 13 as indicated by the arrow;

Fig. 19 is a view in front elevation of a further modification, some parts being removed;

Fig. 20 is a view in horizontal section taken substantially on line 20—20 of Fig. 19 as indicated by the arrow;

Fig. 21 is a vertical section taken substantially on line 21—21 of Fig. 19;

Fig. 22 is a perspective view of a unitary heater structure;

Fig. 23 is a vertical section taken substantially on line 23—23 of Fig. 20 showing also the fireplace wall;

Fig. 24 is a partial vertical section taken substantially on line 24—24 of Fig. 22 also showing the fireplace wall; and

Fig. 25 is a partial horizontal section showing a modification.

Referring to the drawings, particularly Figs. 1 to 12, a fireplace 30 is shown having the usual chamber, the same having side walls 30*a* and a rear wall 30*b*.

In accordance with the present invention a plate 31 is provided and while this may be made of any suitable material, it is preferably made of comparatively thin sheet metal. Plate 31 extends substantially vertically in a location extending along and spaced from the rear wall 30*b* of said fireplace. Said rear wall 30*b* has its upper portion extending somewhat forwardly as shown in Figs. 5 and 6. Plate 31 extends so as to be substantially parallel to said rear wall. Members 32 shown as narrow strips of metal having their ends bent upwardly at right angles, are provided and these rest on the floor of the fireplace having their upturned ends engaging the inner side of plate 31 and the rear wall of said fireplace respectively. Members 32 act as spacers to definitely locate the bottom of plate 31 and insure that it will be held in the desired position. Plate 31 has a top portion 31*a* and while this could be variously formed, in the embodiment of the invention illustrated it is shown as having its front edge bent downwardly to engage plate 31 and it will be secured to plate 31 in any suitable manner as by welding. Portion 31*a* at its rear end is bent downwardly to engage and extend along the rear wall for a short distance. Plate 31 preferably is formed to extend a short distance above portion 31*a* as shown in Fig. 6, and a body of material 33 such as cement or concrete is placed on top of portion 31*a*, the same engaging the rear wall 30*b* as well as the projecting upper end of plate 31. A vertical partition 34 is provided which extends from plate 31 to the rear wall of the fireplace and while this could be variously formed, in the embodiment of the invention illustrated it is shown as comprising a channel member having its ends or flanges engaging plate 31 and the rear wall respectively. Member 34 is formed in two parts, one part extending throughout the lower vertical portion of plate 31 and the other part extending throughout the upper forwardly inclined portion of plate 31. Said two parts of plate 34 are oppositely disposed as clearly shown in Fig. 2. Plate 31 adjacent each end has secured thereto in any suitable manner as by welding, a plate 36 having its outer portion offset and spaced from plate 31 and extending parallel thereto to a point flush with the end of plate 31. Channels 37 are thus formed between plate 31 and said plates 36. Plate 31 is positively held in place by members 38 shown as headed bolts extending through plates 31 and 36 and into expansion nuts 39 set into the rear wall of the fireplace. While various types of nuts might be used, nuts 39 are shown as having a slit or slot at their top portions as indicated in Fig. 4.

Rear side plates 41 are provided and these extend from the floor of the fireplace substantially vertically along and spaced from the side walls 30*a* of the fireplace. Said plates 41 have rear portions 41*a* bent to extend parallel to plate 31 and disposed in the channels 37. Said portions 41*a* will substantially fit channels 37 and will be slidable therein. Front side plates 42 are also provided extending substantially vertically along and spaced from the side walls of the fireplace. Plates 41 have top portions 41*b* which extend from the inner sides thereof to the side walls of the fireplace, and while these might be variously formed, in the embodiment of the invention illustrated they are shown as having outer portions bent to extend along and be secured to plates 41 in any suitable manner as by welding. The other ends of plates 41*b* are bent downwardly to extend along the side walls of said fireplace for a short distance. Preferably the upper ends of plates 41 extend somewhat above portions 41*b* as shown in Fig. 11 and a body of material 45 such as cement or concrete is placed on top of portions 41*b*, the same extending from plates 41 to the side walls of the fireplace. The material 33 and 45 as shown, preferably has its greatest depth at the fireplace wall and decreases in depth toward its outer end. Plates 42 have top portions 42*b* extending to the side walls of the fireplace respectively. Plates 42 have secured thereto adjacent their inner ends in any suitable manner as by welding, plates 46. Plates 46 are offset to extend parallel to plates 42 to a point somewhat beyond the ends of plates 42, thus forming channels 48. The outer ends of plates 41 are disposed in channels 48, being slidable therein and substantially fitting therein. Plates 42 have spacing members 49 secured thereto at their bottoms, said members 49 being substantially identical with members 32, the same engaging plates 42 with their upturned ends and also engaging the side walls 30*a* with their upturned ends. Plates 42 and thus plates 41, are held positively in place by the headed bolts 50 extending through plates 42 and 46 and threaded into nuts in the fireplace wall similar to nuts 39. Plates 42 have secured thereto a considerable distance above the bottom of the fireplace partitions 51. Partitions 51 may be secured to plates 42 in any suitable manner as by welding. Plates 41 also have secured thereto in any suitable manner as by welding, partitions 52 which overlap at their front ends the partitions 51. Partitions 51 and 52 extend from plates 42 and 41 respectively to the side walls of the fireplace and as shown in Fig. 5, plates 52 are

preferably continued to engage the rear wall of the fireplace. From the described structure it will be seen that plates 31, 41 and 42 together with their top portions, form a chamber with the rear and side walls of the fireplace. The side portions of this chamber are formed into upper and lower passages by partitions 51 and 52, which passages are in communication in said chamber at the rear portion thereof. A member 54 is provided having a side portion 54a which extends along and engages the inner side of plate 42. Member 54 has a horizontal top portion and also a portion 54b bent downwardly to engage and extend along the side wall of the fireplace. Member 54 will be adjusted to position in the installation of the device and be held in the desired position by a member 55 which may be a small headed and nutted bolt. A member 56 is provided having a side portion 56a engaging the inner side of wall 54a and extending to the inner side of plate 42. Member 56 has a top portion, the rear end of which will engage the front end of portion 41b and the front end of which will engage the underside of the horizontal portion of member 54. Member 56 also has a portion 56b bent downward for engagement with and to extend along the side wall of the fireplace. Member 56 will be held in the desired position by a member 57 which may be a small headed and nutted bolt. Member 54 can thus be adjusted at the time of installation to the desired position at the front of the fireplace. After members 54 and 56 are located the material 45 which overlies top portion 41b, will be placed on the top horizontal portions of members 54 and 56 are indicated in Figs. 5 and 6. It will be seen that the top portions 31a and 41b and top portions 41b and 42b overlap and are relatively movable with the plates carrying the same. This is clearly shown in Fig. 2.

Plates 42 extend forwardly to a line flush with the front of said fireplace and angle plates 60 are provided having portions extending along and engaging the front of the fireplace and portions at right angles thereto engaging the outer sides of plates 42. These plates 60 have openings 60a therein and while these might be variously formed, in the embodiment of the invention illustrated they are shown as triangular openings interfitting and arranged in a vertical row as shown in Fig.1. Plates 60 are in two parts having their adjacent ends spaced at 61 as shown in Fig. 1, and they are overlaid by a plate 62 having a flange extending inwardly along the inwardly extending flanges of plates 60, said plate 61 being held in place by a headed bolt 63 extending therethrough between the two parts of plates 60. A washer 65 underlies the head of bolt 63. Bolt 63 extends through plate 61 and through an angle member 66 extending vertically and overlapping plate 60, the same having one flange engaging the inner side of the adjacent plate 42 and welded thereto. Bolt 63 is provided with a suitable nut 67 which will preferably be welded to angle member 66. With the described structure plates 60 can be positioned a greater or lesser distance apart and be held in the desired position by bolts 63 and members 66. Members 70 extend across the top of the fireplace, having their outer ends engaging the inner sides of plates 60 and having their top edges flush with the top edges of plates 60. Members 70 are of rectangular form in vertical cross section and have upper flanges 70a. As shown in Fig. 7, members 70 at their outer ends fit over inwardly projecting lugs 60b formed on the upper ends of upper plates 60 so that the outer surfaces of members 70 are flush with the outer surfaces of plates 60. Members 70 are provided with a horizontal row of triangular openings too, similar to openings 60a to give a harmonious and ornamental appearance. Members 70 have downwardly extending tongues 70c extending into apertures in the lugs 60b and are thus supported thereby. Members 70 are spaced at their inner ends and are overlaid by a plate 71 of rectangular form and of slightly greater width than members 70. Headed bolts 73 extend between members 70 and through a channel member 74 extending between and engaging the rear sides of members 70. Washers 75 underlie the heads of bolts 73 and said bolts are provided with suitable nuts 76 in the rear of channel 74. With the described construction it will be seen that plates 70 can be spaced a greater or smaller distance and will be held in adjusted position by plate 71, channel 74 and bolts 73.

With the described construction the fireplace heater can be installed in fireplaces of different widths, depths and heights. The plate 31 will be placed in position and the top portion 31a thereof will have its free end cut so that it may be bent and disposed as shown in Fig. 6. Considerable stock will be left on the end of the top plate 31a so that plate 31 may be positioned the desired distance from the rear wall. Said free end of portion 31a will be bent at the time of installation to properly engage the rear wall. This will also be true of top portion 41b and the top portions of members 54 and 56 as will spacing members 32, 49, partitions 34 and partitions 51 and 52. Plate 31 can be secured in position by bolts 38 which will be secured as stated, in the nuts 39 suitably embedded in the wall of the fireplace. Side plates 41 and 42 will now be adjusted by moving portion 41a in channel 37 to suit the width of the fireplace. Plates 42 can then be moved relatively to plates 41 to bring their front ends flush with the front of the fireplace. Members 54 and 56 can then be adjusted to suit the height of the fireplace at the front thereof. Fireplaces vary considerably as to the top wall just above the front opening. After the top portions 31a, 41b and the top portions of members 54 and 56 are positioned the cement or concrete 33 and 45 will be placed in position. This of course, will be placed in position while it is wet or fluent and the material is such that it is adapted subsequently to harden. The material will engage the inner side of the projecting upper ends of plates 31 and 41 so that should material or any part thereof loosen it will not move forwardly into the fireplace opening. The plates 60 and the members 70 and 71 will now be positioned as well as the plates 62. The plates 60 and 70 will of course, be adjusted to fit the height and the width of the fireplace respectively. After being placed in position they will be held by plates 62 and 71 and by bolts 63 and 73 respectively. The side plates will be secured in position by bolts 50.

In operation the plates 31, 41 and 42 will be heated by the fire in the fireplace. This will cause a current of air to enter the passage below partitions 51 and 52 through the openings 60a, which air will pass rearwardly in said passages into the rear of the chamber formed by the plates and the walls of the fireplace adjacent the vertical partition 34. The air will then move upwardly and will move outwardly in the passage

above partitions 51 and 52 and will pass out into the room through the openings 60a. A circulation of air will be provided and this causes a circulation of air in the room so that the room becomes uniformly heated. A great deal more heat is obtained from the fire in the fireplace than would be the case if the heater were not used. It has been demonstrated in actual practice that the air in the room becomes quite uniformly heated and heated to a much greater degree. It is well known that with the ordinary fireplace it is usually quite hot immediately in front of the fireplace, but it is quite cool in more remote parts of the room. This condition is entirely overcome with the present invention. The present invention is very efficient in the use of material as the circulating chamber is formed at one side by the wall of the fireplace. The wall of the fireplace thus functions differently than if an entire metal casing were used, one side of which extended along the wall of the fireplace as in applicant's device shown in his prior co-pending application S. N. 362,063, filed October 21, 1940, now matured into Patent No. 2,362,526, granted November 14, 1944. Furthermore, the wall of the fireplace absorbs considerable heat and forms a much more desirable side for the chamber than would a metal plate. In some cases due to the heating of the metal, in the construction shown in said prior application, the circulation appears to become impeded for some reason not clearly apparent. This objection is entirely overcome by the present structure. The present structure can be much more easily adjusted and conformed to fireplaces of different sizes and requires a great deal less material than applicant's prior structure also and can thus be made at a much lower cost.

In the modification shown in Figs. 19 to 25 a form of the device is shown comprising a unitary device 80. This form of device is designed to be placed in a fireplace when the same is originally built. Member 80 includes the rear plate 80a and the side plates 80b which correspond with the plates 31 and 41 and 42 already described. The member 80 also has the top portion 80c corresponding to portion 31a already described and also has the partitions 80d corresponding to parts 51 and 52 already described. Rear plate 80a also has extending rearwardly therefrom a vertical partition 80e corresponding to partition 34. While portions 80c, 80d and 80e might be variously formed or attached, in the embodiment of the invention illustrated they are shown as having one portion bent at an angle, which portion is welded to plates 80a and 80b respectively. The member 80 will be set into the fireplace as indicated in Fig. 20, normally occupying the place that the fire brick or facing brick usually occupy. As shown in Fig. 20, the front edge of member 80 will terminate in the rear of the front portion or brick 81 of the fireplace and flanged conduits 82 will communicate with the passages formed by side plates 80b, top plate 80c, the side wall 83a of the fireplace 83, and the partitions 80d. Conduits 82 may be formed with grids 82a as shown in Fig. 19. Preferably cement, concrete or some similar material 84 adapted to harden after being put in place, will be used in the rear of front portions 81 and between the same and the side walls 80b. Preferably some material 85 will be inserted in the fireplace where the same is engaged by top plate 80c and partitions 80d, which material will permit some expansion of said parts 80c and 80d without cracking. Such material may comprise mineral wool. It will be noted that rear wall 80a and side walls 80b project slightly above top plate 80c. Said projecting portions of walls 80a and 80b can thus be disposed or set within the wall of the fireplace as shown in Fig. 23.

The fireplace brick can be placed on top portion 80c and the top portion of plates 80a and 80b will preferably be disposed in line with the space between the bricks.

Some fireplaces project outwardly so that there is a side wall or surface 87 as shown in Fig. 25. In such cases an opening or passage 87a will be provided at the top and bottom of the side passages formed by partitions 80d and the conduits 82 will be disposed in such openings. The inlet and outlet openings for the air will thus be at the side of the fireplace instead of at the front.

The operation of the structure shown in Figs. 19 to 25 is substantially like that already described. The member 80 will be heated by the fire in the fireplace and this will cause a circulation of air, which air will pass into the lower members 82 and will pass rearwardly beneath partitions 80d to the space between the rear wall 80a, and the wall of the fireplace at each side of central partition 80e, said air then returning forwardly through the upper members 82. If the members 82 are disposed in passages at the sides of the fireplace the air will enter and leave through these members at the sides of the fireplace.

It may be desirable in some cases to remove the fire brick or facing brick in the fireplace before the device is installed. Such a construction is shown in Figs. 13 to 18. The device used in such cases is the same as that described in connection with Figs. 1 to 12, except that front plates 42 terminate at the surface 90a of the fireplace 90 which is in the rear of the front portion or front facing brick. At the top and bottom portions of the fireplace the front portion or front facing brick 90b will be removed as shown at the left hand part of the section in Fig. 18. Members 91 having flanged front grid portions 91a will be provided, the same having their flanges extending beyond the openings 90c and having the side flange 91b extending inwardly along the front part of the side plates 42. These members 91 can be secured by headed and nutted bolts 92 to the front flanges of angles 93 having inwardly extending flanges secured to plates 42 in any suitable manner as by welding. In a fireplace having side portions with side wall surfaces 90d the openings at the top and bottom of the fireplace such as 90e may extend to the side walls of the fireplace. Suitable flange members similar to members 82 already described, may be placed in opening 90c. The upper members 91 are arranged as shown in Fig. 14, the cement material 94 being used similar to the material 45 shown in Figs. 5 and 6. Material 94 extends to the surface 90f in the rear of the front portion 90b of the fireplace so that there is no necessity for any grid plate such as plate 70 extending along the top of the fireplace. The usual front facing 95 of the fireplace is retained. The heating device shown in Figs. 13 to 18 can be adjusted to suit the fireplace space just the same as that described in connection with Figs. 1 to 12.

The operation of the structure shown in Figs. 13 to 18 will be substantially the same as that already described. The air will enter the lower of the members 91 and will pass rearwardly below

the partitions 51 and 52 to the chamber at the rear of the rear plate and will then pass forwardly in the passages above partitions 51 and 52 and out at the upper members 91.

From the above description it will be seen that I have provided a novel, quite simple and very efficient structure of fireplace heater. The device is constructed and arranged to be installed in fireplaces already built or those originally built with the heater. A great saving of material is made by having the plates just at the inner part of the chamber so that the outer walls of the chamber formed are constituted by the fireplace wall. Not only is a great saving of material made, but the installation is made easier and simpler. The fireplace wall due to its thickness in construction, absorbs considerable heat and this causes the device to function in a different manner than if the chamber formed had the metal plates on all sides thereof. The wall does not tend to become locally heated but becomes quite uniformly heated and thus causes a uniform and perfect circulation. The circulation is not interfered with at any time by any local heating of the metal. The fireplace wall also retains its heat for some time so that there will be a circulation of air even after the fire in the fireplace has died down or become extinguished. The device can be easily and quickly installed and when in place, forms a device of pleasing and ornamental appearance. The efficiency of the fireplace is immensely increased by the use of the device and the room to be heated is quite uniformly heated. The device has been demonstrated in actual practice and found to be very successful and efficient.

It will of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A device for heating a room from an open front fireplace having rear and side walls having in combination, a plate extending substantially vertically along and spaced from the rear wall of a fireplace, said plate having a top portion extending toward and engaging said rear wall, plates extending substantially vertically along and spaced from the side walls of said fireplace respectively and having top portions extending toward and engaging said side walls, said side plates having portions respectively overlapping the ends of said first mentioned plate whereby all of said plates form a chamber between the same and the walls of said fireplace, and said side plates may be movable toward and from each other to suit fireplaces of different widths, a partition extending from said last mentioned plates intermediate their heights to the side walls respectively, thus forming upper and lower passages, said passages being open at the front of the fireplace and communicating in said chamber at their rear ends and means for holding said plates in position.

2. A device for heating a room from an open front fireplace having rear and side walls having in combination, a rear plate spaced from and extending along the rear wall of said fireplace, the same having a top portion extending along and engaging said rear wall, rear side plates extending along and spaced from the side walls respectively of said fireplace, said latter plates having portions overlapping the ends of said rear plate, front side plates spaced from and extending along the side walls of said fireplace respectively, the same overlapping said rear side plates, said rear and front side plates having top portions extending to and engaging the side walls of said fireplace whereby a chamber is formed between all of said plates and the walls of said fireplace, said rear and front side plates having partitions intermediate their heights extending to and engaging the side walls of said fireplace respectively, said side plates being movable toward and from each other to fit fireplaces of different widths and said front side plates being movable forwardly and rearwardly to suit fireplaces of different depths.

3. A device for heating a room from an open front fireplace having rear and side walls having in combination, a rear plate spaced from and extending along the rear wall of said fireplace having its ends spaced from the side walls thereof, plates secured adjacent one of their ends respectively to said rear plate adjacent the ends thereof and having parts spaced slightly from said rear plate to form respectively channels between the same and said rear plate, side plates extending along and spaced from the side walls of said fireplace, said side plates being bent at their ends and having portions disposed in and movable in said channels, said side plates thus being movable toward and from each other, said rear and side plates having top portions extending to and engaging the rear and side walls of said fireplace respectively whereby a chamber is formed between said rear and side plates and top portions and the walls of said fireplace, said side plates having partitions extending therealong and to said side walls, to form upper and lower passages along said side walls, said passages communicating at their rear ends in said chamber and being open at their front ends.

4. A device for heating a room from an open front fireplace having rear and side walls having in combination, a rear plate spaced from and extending along the rear wall of said fireplace having its ends spaced from the side walls thereof, plates secured to said rear plate adjacent the ends thereof and having portions spaced slightly from said rear plate to form respectively channels between the same and said rear plate, rear side plates extending along and spaced from the side walls of said fireplace, the same being bent at their ends to have portions extending parallel to said rear plate and disposed in said channels, said rear side plates thus being movable toward and from each other, front side plates extending along and spaced from said side walls, the same having plates secured thereto adjacent their rear ends and having portions spaced slightly therefrom to form channels respectively, said rear side plates having their front portions disposed in said channels, said front side plates being movable toward and from the front of said fireplace, said rear, rear side and front side plates having top portions extending to and engaging the rear and side walls of said fireplace respectively whereby a chamber is formed between all of said plates and the walls of said fireplace, said rear and front side plates having partitions secured thereto intermediate their heights extending to and engaging said side walls respectively, said partitions overlapping and forming upper and lower

passages along said side walls which communicate in said chamber at their rear ends and are open at their front ends, and means for holding said plates in the desired assembled position.

5. A device for heating a room from an open front fireplace having rear and side walls having in combination, a plate extending along and spaced from the side wall of said fireplace, said plate having a top portion extending to and engaging the said side wall, a second plate having a substantially vertical portion extending along said first mentioned plate and having a top portion extending to and engaging said side wall, said last mentioned top portion having one end engaging the end of said first mentioned top portion and inclining upwardly and forwardly therefrom, a third plate disposed at the front of said first mentioned plate having a substantially vertical portion extending along said first mentioned plate and also said second mentioned plate, said third plate having a top portion extending to and engaging the side wall of the fireplace and engaged on its underside by the other end of said second mentioned top portion, said plates forming a chamber with said side wall and means for holding said plates in position.

6. A device for heating a room from an open front fireplace having rear and side walls having in combination, a plate extending along and spaced from the side wall of said fireplace, said plate having a top portion extending to and engaging said side wall, a second plate having a substantially vertical portion extending along said first mentioned plate and having a top portion extending to and engaging said side wall, said last mentioned top portion having its rear edge engaging the front edge of said first mentioned top portion, a third plate disposed at the front of said first mentioned plate having a substantially vertical portion extending along said first mentioned plate and having a top portion extending to and engaging said side wall of the fireplace, said third plate being movable in installation relatively to said first mentioned plate to fit fireplaces of different heights, and said second plate being adjustable so that its top portion can extend from the top portion of said first mentioned plate to the top portion of said third plate, and means for holding said plates in the desired adjusted position whereby a chamber is formed between said plates and said side wall of the fireplace.

7. A device to be inserted in an open front fireplace, which fireplace has rear and side walls, said device having plates extending along and spaced from the rear and side walls of said fireplace, said plates having top portions extending to and engaging said rear and side walls respectively, said plates and rear and side walls forming a chamber, partitions extending between said plates and said side walls and disposed in planes substantially perpendicular to said plates and side walls and disposed quite a distance above the the bottom of said plates, said partitions forming passages above and below the same extending to the front of said fireplace, a grill plate extending across the top of the fireplace opening and grill plates extending vertically at each side of said fireplace opening, and means connected to said first mentioned plates for holding said grill plates in position.

8. A device to be inserted in an open front fireplace, which fireplace has rear and side walls, said device having plates extending along and spaced from the rear and side walls of a fireplace, said plates having top portions extending to and engaging said rear and side walls respectively, said plates and said rear and side walls forming a chamber, said plate extending along said rear wall being extensible whereby said plates extending along said side walls may be moved toward and from each other to suit fireplaces of different widths, means adjacent the front of the fireplace by which the plates along the side walls may be moved to fit fireplaces of different heights, grill plates extending across the top of the fireplace opening at the outer side of said fireplace, means by which said grill plates may be moved to suit fireplaces of different widths, grill plates extending along the sides of said fireplace opening, and means by which said last mentioned grill plates may be moved to suit fireplaces of different heights.

9. A device for heating a room from an open front fireplace having rear and side walls having in combination, a member constructed and arranged to be disposed in said fireplace, said member having plates extending along and substantially parallel to said rear and side walls and spaced from said walls respectively, said plates each having a top portion extending from adjacent the tops thereof to said rear and side walls of said fireplace respectively whereby a chamber is formed between said plates and said walls of said fireplace, said plates which extend along said side walls having means intermediate their tops and bottoms extending therefrom to and engaging said side walls of said fireplace thus forming with said side walls upper and lower passages along said side walls which communicate at their rear ends with the part of said chamber extending along said rear wall and are open to said room at their front ends.

10. The structure set forth in claim 9, said plates extending along said side walls of said fireplace being movable toward and from each other to suit fireplaces of different widths.

11. The structure set forth in claim 9, said plates extending along said side walls of said fireplace having overlapping portions whereby said portions can be relatively moved parallel to said side walls to fit fireplaces of different depths.

12. The structure set forth in claim 6, said plates having portions at the sides thereof respectively which are adjacent said side wall of said fireplace bent downwardly to extend along said side wall.

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