Aug. 30, 1927. 1,640,937

H. G. HEINISH

FIREPLACE

Filed Sept. 16, 1926 2 Sheets-Sheet 1

Fig. 1.

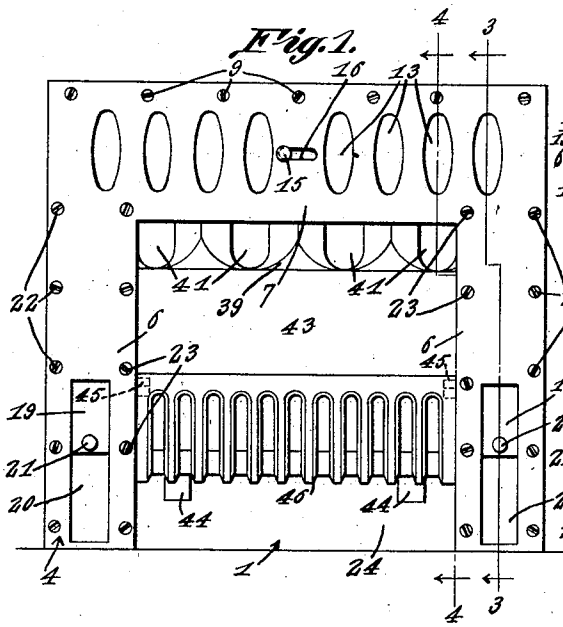


Fig. 3.

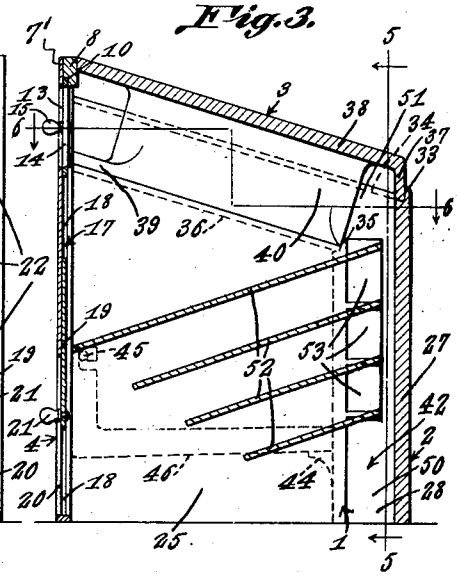


Fig. 2.

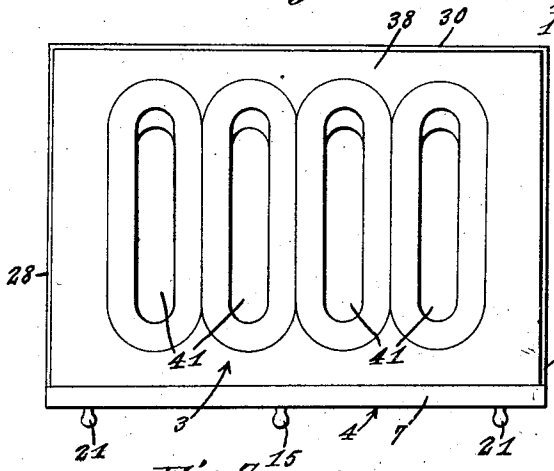


Fig. 4.

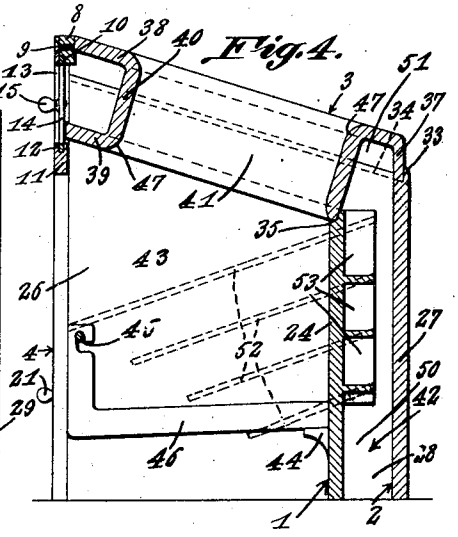
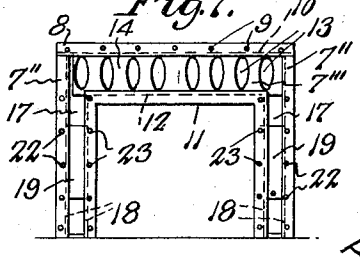


Fig. 7.



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Fig. 5.

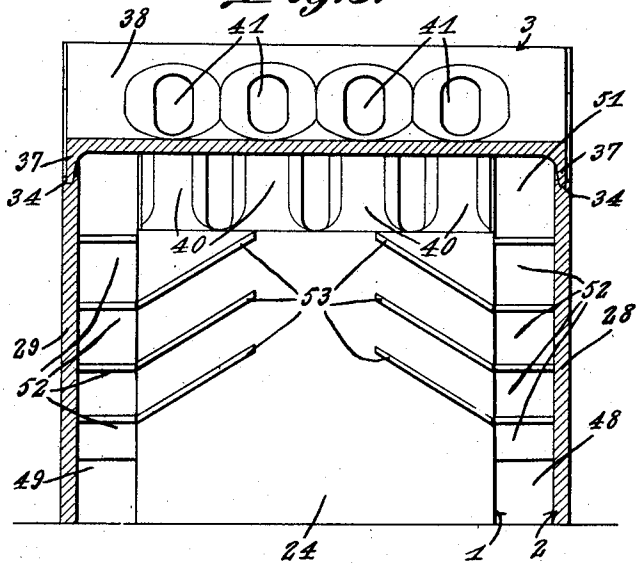
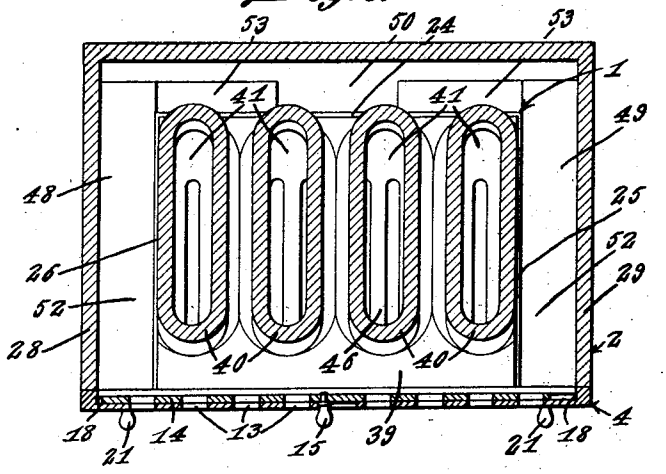


Fig. 6.



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Patented Aug. 30, 1927. 1,640,937

UNITED STATES PATENT OFFICE.

HUBERT G. HEINISH, OF HUNTINGTON, WEST VIRGINIA.

FIREPLACE.

Application filed September 16, 1926. Serial No. 135,886.

This invention relates to fire places, more particularly to an air circulating and heating attachment for positioning within the fire place, that is to say an open fire place or grate, and the invention has for its object to provide, in a manner as hereinafter set forth, a heating attachment for facilitating the circulation of air around and discharging the same in a heated condition into the room with which the fire place is associated thereby increasing the temperature of the room, and further for utilizing the heat at the sides, back and top of the fire place for heating such air during the circulation thereof through the attachment, whereby when the air is discharged into the room it will be in a heated condition, and materially increase the temperature of the room with respect to the temperature created by an open grate fire when the attachment is not employed, and with the attachment so set up that the heat derived from the open grate fire will also be employed for heating the room in connection with the heated air which circulates around the fire place and discharged into the room.

It is an accepted custom, in connection with open front fire places, to place fire bricks at the side and back walls of the fire place, and such arrangement is had because the heat at such points is so great that ordinary brick and stone will not stand it very long, and under such conditions it is evident that some heat is getting away and is not employed for heating the room, with which the fire place is associated, and an attachment in accordance with this invention, is so set up as to trap this waste heat and utilize it for heating air circulated around the fire place and discharging such air into the room with which the fire place is associated or into other rooms. The air enters at the bottom of the sides of the attachment, passes throughout the sides, as well as the back of the attachment, and also through the top of the attachment and discharges into the room and by this arrangement the sides, back and top of the attachment are heated under such conditions heating the air to a material extent so that the temperature of the room will be increased over that which it would be if the fire alone from the grate was employed for heating the room.

A further object of the invention is to provide, in a manner as hereinafter set forth, a heating attachment for the purpose referred to so constructed and arranged as not to impair the passage of the products of combustion from the fire place through the flue or chimney.

Further objects of the invention are to provide, in a manner as hereinafter set forth, a heating attachment for the purpose referred to which is simple in its construction and arrangement, strong, durable, compact, thoroughly efficient in its use, readily installed with respect to a fire place and comparatively inexpensive to set up.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a front elevation of a heating attachment in accordance with this invention.

Figure 2 is a top plan view thereof.

Figure 3 is a section on line 3—3 Figure 1.

Figure 4 is a section on line 4—4 Figure 1.

Figure 5 is a section on line 5—5 Figure 3.

Figure 6 is a section on line 6—6 Figure 3.

Figure 7 is a rear elevation of the front section of the device.

A heating attachment in accordance with this invention, can be readily installed in an open fire place already built. It also can be installed during the building of chimneys on fire places and provision can be made for any size opening, as well as for admitting cold air in behind the fire place, in the side of the chimney itself, inside a room, or from the outside. The attachment can be set up of any suitable material and as before stated can be built simultaneously with the building of the fire place and chimney, or it can be an independent device and positioned within the fire place after the same has been built. One embodiment of the invention is illustrated in the drawings, and referring to these latter the heating attachment comprises an inner section 1, an outer section 2, a top section 3, and a front section 4. The upper ends of the sections 1 and 2 incline downwardly from the front to the rear there-

of. The sections 1 and 2 are substantially U-shape in plan. The section 4 is of inverted U-shape. The top section 3 inclines downwardly from front to rear.

The front section 4 is of inverted U-shape, and has each side thereof indicated at 6 and its top at 7. The sides 6 of the section 4 are of greater thickness than the upper portion 7′ of the top 7. Secured to the inner face of the thin part 7′ of the top 7, and flush with the top and side edges of the section 4 is a bar 8. The holdfast devices for securing said bar in position are indicated at 9. The bar 8 has the lower portion of its forward face rabbeted, as at 10, which in connection with the thin part 7′ of the top 7 forms a guide groove. The lower part of the top 7 is indicated at 11, and constitutes what may be termed a cross piece for connecting the sides 6 of the section 4 together. The cross piece 11 has its upper face formed with a lengthwise extending guide groove 12, arranged in alinement with the guide groove provided by the rabbet 10. The side marginal portions 7″ of the top 7 below the thin upper part 7′, but above the cross piece 11, are of greater thickness than that part 7‴, of the top 7, which is positioned between the side marginal portions 7″ and below the thin upper part 7′. See Figure 7. The thickened side marginal portions 7″ do not extend to the upper edge of the top 7, and have the bar 8 mounted thereon. The part 7‴, of the top 7 is formed with a series of spaced vertically disposed substantially oval shaped hot air outlet openings 13 and associated with these latter is a slotted controlling side 14, operating in the guide grooves. The slide 14 is formed with a forwardly extending knob or finger piece 15. The part 7‴ of the top 7, is formed centrally with a lengthwise disposed slot 16 and through which extends the shank of the finger piece or knob 15.

The rear face of the section 4 at each side thereof, is formed with a vertically disposed groove 17, which extends from a point in proximity to the lower end of each side 6 to the top edge or upper face of the cross piece 11. The side walls of the groove 17 are incut as at 18. The outer side wall of the groove 17 is extended to the upper edge of each thickened side marginal portion 7″ of the top 7. Arranged within each of the grooves 17, as well as being retained therein by the incut side walls thereof, is a vertically movable slide 19, employed for controlling the supply of cold air to the attachment, through a vertically disposed rectangular opening 20 at the lower portion of each side 6 of the section 4. The slide 19 is provided with a knob or finger piece 21 which projects forwardly through an opening 20.

The forward edges of the outer section 2, abuts against the sides 6 of the front section 4 and are secured therewith by the hold fast devices 22. The forward edges of the inner section 1 abuts against the rear of the sides 6 of the section 4 and are secured therewith by the hold fast devices 23.

The section 1 is provided with an open top, open bottom and open front and comprises a back wall 24 and a pair of side walls 25, 26, see Figure 6. The section 2 is formed with a back wall 27, and a pair of side walls 28, 29. The top edge of the back wall 27 of the section 2 is rabbeted as at 33 to provide a seat. The top edge of the side walls 28 and 29 of the section 2 is provided throughout with a lengthwise extending groove 34 which is coextensive with said edge. The top edge of the wall 24 of the section 1 is rabbeted as at 35 to provide a seat and which is coextensive with said edge. The top edge of each side wall of the section 1 is provided with a groove 36 which is coextensive with said edge.

The top section 3 of the attachment is removably mounted in the seats and grooves formed in the top edges of the sections 1 and 2, and as the sections 1 and 2 incline downwardly from front to rear the top section 3 will be disposed in the same inclination. The outer section 2 of the attachment is of greater height than the inner section 1, see Figure 4. The top section 3 consists of a hollow apertured body with its top projecting beyond its bottom and with the sides and rear of the top thereof formed with a depending flange 37 seating in the top edges of the section 2. The top of the section 3, which is indicated at 38 has its forward edge abut against the bar 8, see Figure 4. The bottom of the section 3, and which is indicated at 39, seats in the top edges of the walls of the section 1 and further extends in close proximity to the slide 14, see Fig. 4. The top 38 of the section 3 is connected to the bottom 39 by a series of spaced transversely extending oval-shaped upstanding rearwardly inclined conduits 40 which are integral with said top 38 and bottom 39 and which provide outlets 41 for the products of combustion.

The front section 4, in connection with the sections 1 and 2, and top section 3 provides a combined air circulating and heating chamber of an area to extend throughout the sides, back and top of the attachment and said chamber is indicated at 42. The openings 20 provide cold air inlets to the chamber 42 and the openings 13 provide hot air outlets for the chamber 42. The section 1 forms a fire box 43 and is provided with means as at 44, 45 for supporting a grate 46 therein if desired. The outlets 41 are of flaring contour and extend from front to rear with respect to the top of the section 3, or rather with respect to the top of the at-

tachment. The wall of each of the outlets 41 is rounded as at 47 at the top and bottom thereof.

The chamber 42 is so shaped, as to provide a pair of side portions 48, 49, a back portion 50 and a top portion 51 into which open the side portions 48, 49 and back portion 50 and in this connection see Figure 5. The inner wall of each portion 48, 49, of the chamber 42 is provided with a series of spaced, rearwardly extending and upwardly inclined horizontally disposed deflectors 52, which project beyond the forward wall of the section 50 of the chamber 42, and are positioned at the lower ends of oppositely disposed spaced sets of spaced, transversely extending, upwardly inclined deflectors formed integral with the rear face of the forward wall of the portion 50. The deflectors 52 are of the same width as each portion 48 of chamber 42, but the deflectors 53 are of less width than the width of the portion 50 of the chamber 42. The deflectors 52 and 53 provide means for directing the inlet air upwardly towards the top portion 51 of the chamber 42. The air as it travels upwardly will be heated before it enters said portion 51 at the rear thereof, and the air will then travel around the conduits 40 and be discharged through the outlets 13. The deflectors also provide means to increase the radiating capacities of the side and back walls of the inner section.

The outer side and back wall of the chamber 42 can be formed by the side and back walls of the opening in which the attachment is placed and with the section 3, supported upon the top of the section 1 and abutting against the aforesaid walls. Further it is to be understood that sections 1, 2 and 3 can be cast integral with each other.

The attachment provides means for utilizing the heat at the sides, top and back of the fire box 43, for heating the air travelling through the chamber 42. The air enters the chamber 42 through the openings 20 and is discharged therefrom in a heated condition through the outlet 13 into the room with which the fire place and heating attachment is associated, or into other rooms, and under such conditions materially increasing the temperature of the room, with respect to that temperature which would be given to the room by the heat alone from a fire box, and therefore it is thought that the many advantages of a heating attachment, in accordance with this invention can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:

1. In open fire places an attachment therefor including front, side, top and back walls providing an air circulating and heating chamber opposing and closed to the sides, back, top and outlet flue of the fire-place and provided at the lower portion of the front thereof with controllable air inlet means and across the top of the front thereof with controllable heated air outlet means, that portion of the chamber arranged at the top of the fire-place having extending therethrough a series of upstanding, spaced outlet conduits inclining from front to rear and closed to such portion and providing means for the passage of the products of combustion from the fire box, superposed air deflectors arranged in spaced relation, progressively increasing in length upwardly, extending at an upward inclination from front to rear, positioned in each portion of said chamber which opposes a side wall of the fire box, of the same width as the width of such portion, having the rear ends thereof positioned at the rear end of such portions and with the lower of said deflectors having their forward ends spaced from the forward end of such portion, and superposed, spaced air deflectors of equal length arranged in that portion of the chamber which opposes the back of the fire box and of less width than the width of such portion.

2. An open fire-place constructed in accordance with claim 1, said conduits integral with the walls of the top portion of said chamber, of oval contour and having each end thereof rounded.

3. An open fire-place constructed in accordance with claim 1, said deflectors positioned within that portion of the chamber which opposes the back of the fire box being arranged in sets spaced from each other and with the sets oppositely disposed with respect to each other, the lower ends of said deflectors extended from the rear end of the lower deflectors positioned in the said portions of said chamber which oppose the side walls of the fire box.

4. In an open fire-place constructed in accordance with claim 1, a pair of vertically movable slides mounted in the front wall of said chamber for controlling the cold air inlet means, and a horizontally shiftable slide mounted in the front wall of said chamber for controlling said heated air outlet means.

In testimony whereof, I affix my signature hereto.

HUBERT G. HEINISH.