Aug. 30, 1927. 1,640,771

W. A. HANNUM

GRATE

Filed Dec. 4, 1926

Fig. 1.

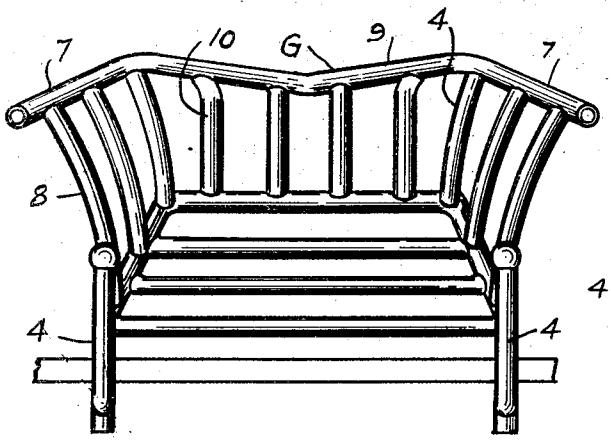
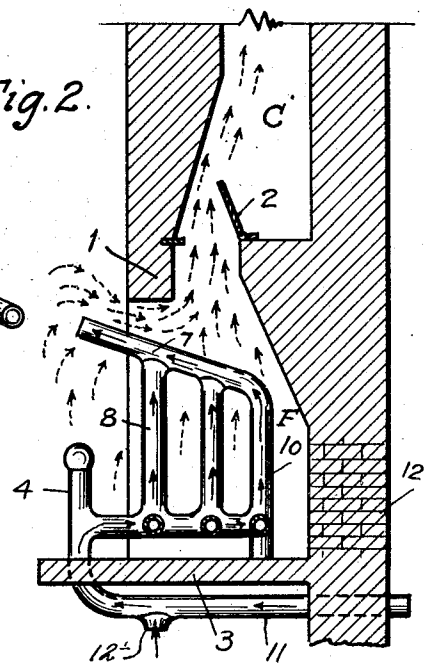


Fig. 2.



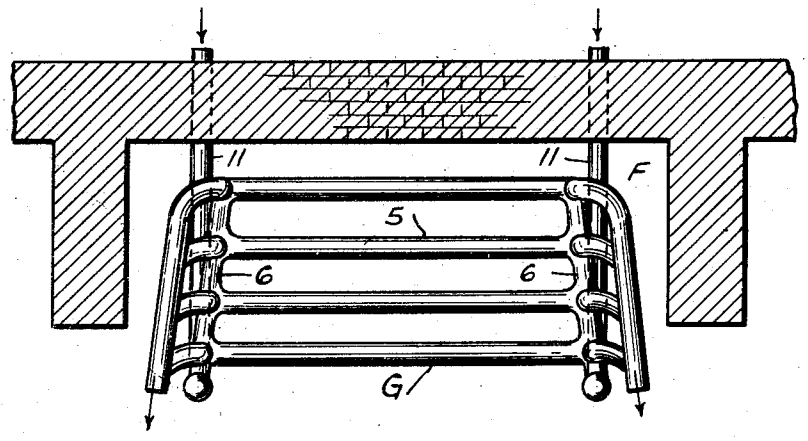


Fig. 3.

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UNITED STATES PATENT OFFICE.

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GRATE.

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This invention relates to certain improvements in grates for open fireplaces and it is an object of the invention to provide a device of this kind constructed in a manner whereby air may pass through the grate from the outside or other convenient point before being discharged into a room, such passage of the air resulting in the same being effectively heated before being delivered into the room to be warmed.

Another object of the invention is to provide a device of this kind which serves to assure effective ventilation of the room, such ventilation occurring either during the time a fire is burning or otherwise.

An additional object of the invention is to provide a grate of this kind which operates to deliver air within the room adjacent to the fireplace and thereby assuring a more effective and even circulation of air within the room than when the admission of the air depends upon its entrance through the doors or windows of the room and which also assures such desired effective circulation with the doors and windows tightly closed.

A further object of the invention is to provide a grate of this kind which operates to create an air circulation within a room which serves to create sufficient pressure to cause smoke and other foul air to enter and pass out the chimney in a more direct manner and more particularly in connection with the type of open fireplace employing a front arch and damper control.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved grate whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein:—

Figure 1 is a view in perspective of a fireplace grate or basket constructed in accordance with an embodiment of my invention;

Figure 2 is a vertical sectional view illustrating my improved grate or basket in applied position within a fireplace;

Figure 3 is a view in top plan of my improved grate or basket with the adjacent walls of the fireplace shown in horizontal section.

As disclosed in the accompanying drawing, F denotes an open fireplace having in communication therewith through its top wall the chimney flue C and which fireplace embodies a front top arch 1 and a damper control 2. My improved grate or figure basket G is suitably positioned or rested upon the hearth 3 of the fireplace and comprises the vertically disposed tubular corner members or posts 4; the horizontally disposed tubular members 5 in communication with the bottom side horizontal tubular members 6 each in communication with the adjacent tubular corner posts 4. The rear corner posts 4 are continued by the upwardly and forwardly inclined tubular extensions 7 open at their outer ends, said extensions 7 and the horizontal bottom side members having interposed therebetween and in communication therewith the vertically directed tubular side members 8. The rear corner members 4 also have in communication with the upper portions thereof the horizontally disposed upper rear tubule member 9 and interposed between said member 9 and the rear horizontal member 5 and in communication therewith are the vertically disposed tubular back members 10.

The forward or front corner members or posts 4 each extends below the hearth 3 and, as herein disclosed, is continued by the rearwardly disposed tubular member 11 extending through the rear wall 12 of the hearth to the atmosphere or other desired location. Each of the members 11 adjacent to its inner end is provided with an auxiliary air inlet 12′, the same being arranged within the building structure and below the hearth 3.

In practice, the fresh or cold air passes from the atmosphere or other location through the members 11 and circulates through the members 5, 6, 7, 8, 9 and 10 and discharges into the room through the open ends of the members or extensions 7. The air as it passes through these members is effectively heated by the fire burning within the grate or basket and as the heated air is discharged into the room, the pressure of the cold air thereabove causes the heated air to circulate through the room and return to the atmosphere by way of the chimney flue C.

It is to be particularly noted that the arch 1 at the throat of the chimney is slightly

lower than the opposite upper end of the rear wall of the chimney throat. This has a tendency to permit an easier exit for the smoke. With the heated air from the room and grate, the cooling air in the upper part of the chimney and the atmosphere outside has a tendency to draw the smoke faster upward of the chimney flue.

In practice, it has been thoroughly demonstrated that with the use of my improved grate smoking of the room is eliminated and that with the heated air of the room caused by the fresh air entering through the tubular members of the grate or basket the up draft in the chimney flue is greatly increased. As is believed to be obvious, this up draft may be regulated or controlled as desired by the damper 2 which is of any desired type.

With the conventional fireplace and appurtenances, it is impractical to employ two or more in the same room for the reason that the draft in one chimney is greater than of the other and the chimney of greater draft invariably draws air down through the other chimney or chimneys into the room with the smoke. With the present invention, the air within the room being under pressure, and the construction of the device to effect the preheating of the air, it makes no difference as to the number of fireplaces as each fireplace draws from the outside the necessary amount of air for its own combustion.

It is also believed to be obvious that when a fire is not burning in the grate or basket, effective air circulation may be had within the room.

From the foregoing description it is thought to be obvious that a grate constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

A grate structure comprising vertical tubular front corner post sections adapted to receive air currents through their lower ends and closed at their upper ends to provide air retaining pockets, horizontal tubular side sections joined at their forward ends with the corner sections at points below the upper ends thereof, bottom tubular sections joined with the said tubular side sections and bridging the space between them, upwardly disposed back and side wall tubular sections joined at their lower ends with the horizontal side and one of the bottom sections and a substantially U-shaped upper edge tubular section joined at points between its ends with the upper ends of all of the upwardly disposed back and side wall sections, said upper edge section being open at both of its ends to form air current outlets, said outlets being spaced and located substantially vertically above said corner post sections and the air retaining pockets thereof.

In testimony whereof I hereunto affix my signature.

WILLIAM A. HANNUM.