Nov. 22, 1932. F. G. GASCH 1,888,497

ELECTRIC HEATER

Filed June 6, 1931

Fig. 1.

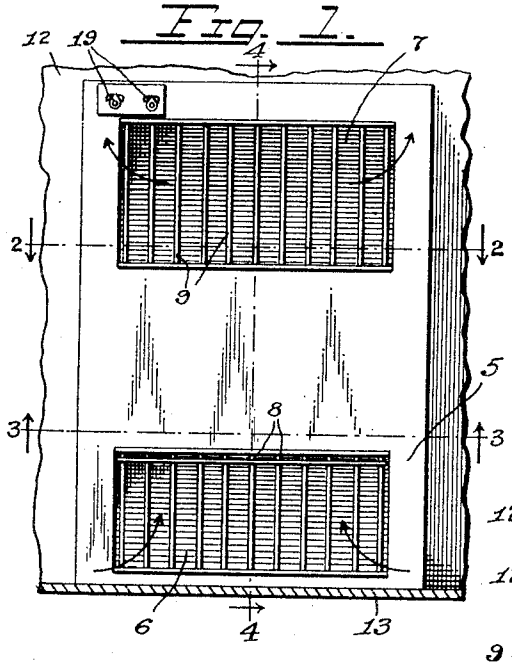


Fig. 2.

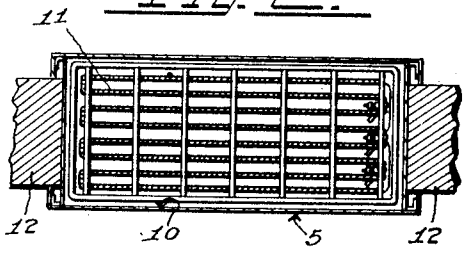


Fig. 3.

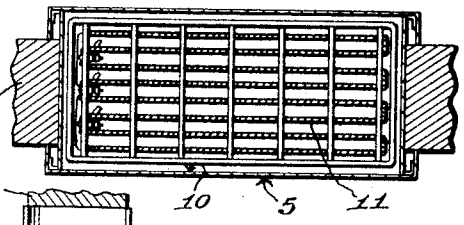


Fig. 5.

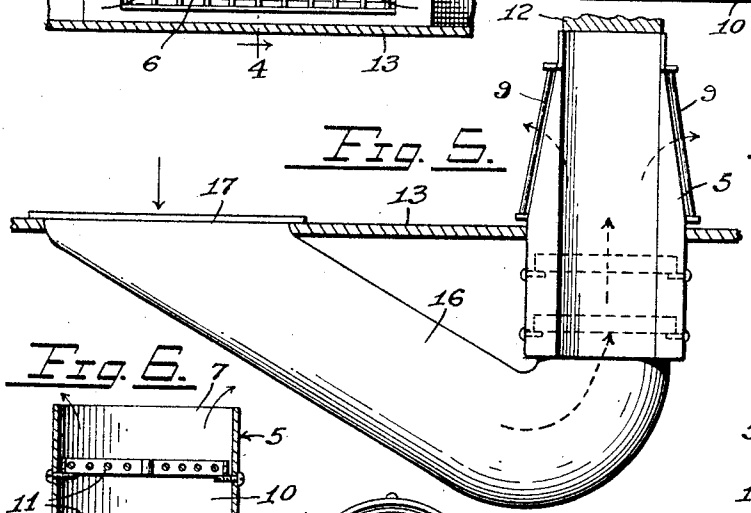


Fig. 4.

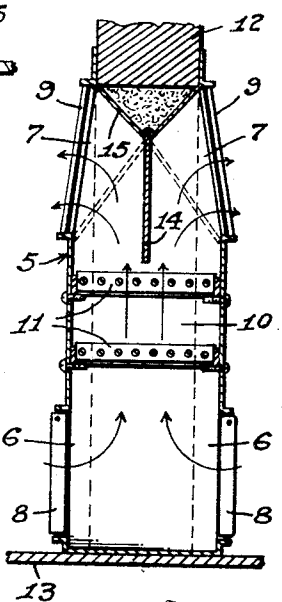


Fig. 6.

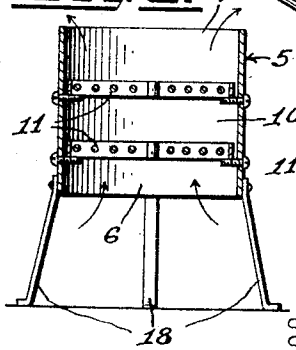


Fig. 7.

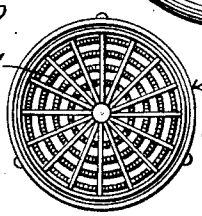
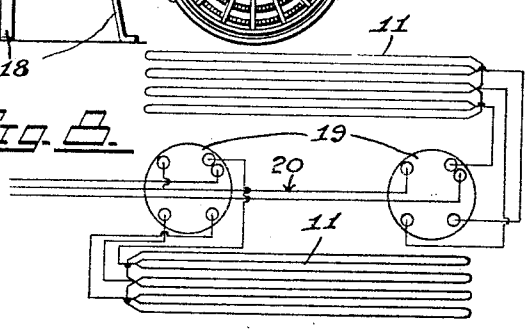


Fig. 8.



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UNITED STATES PATENT OFFICE

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ELECTRIC HEATER

Application filed June 6, 1931. Serial No. 542,552.

My invention relates to electric heaters and the principal objects of the invention are to provide an electric heater comprising a casing having a heating chamber portion with a plurality of electric heating elements mounted therein and having a large air intake below and a large outlet above whereby a continuous circulation of air passes from below through the heating elements and thence through the outlet. The device is thus based on continuous circulation of air similar to a furnace and a much larger volume of heat is therefore generated than in heaters based on radiation and forced projection of heat. Further objects of the invention are to provide a damper or swinging door control whereby the heat passing out through both sides of the outlet may be regulated and controlled.

With the above and other objects in view which will appear as the description proceeds, the invention consists of the novel construction, adaptation, combination and arrangement of parts hereinafter described and claimed. These objects are accomplished by devices illustrated in the accompanying drawing; wherein:—

Figure 1 is a view in elevation showing the heater installed in a wall between two rooms and with both the inlet and outlet disposed above the floor;

Fig. 2 is a view in horizontal section taken substantially on a broken line 2, 2 of Fig. 1;

Fig. 3 is a similar view taken on a broken line 3, 3 of Fig. 1;

Fig. 4 is a view in vertical section taken on a broken line 4, 4 of Fig. 1;

Fig. 5 is a view in side elevation showing a heater installed in a wall with the intake portion disposed below the floor;

Fig. 6 is a view in vertical section showing a cylindrical type of heater involving the same principles;

Fig. 7 is a top plan view of the same; and

Fig. 8 is a wiring diagram;

Referring to the drawing throughout which like reference numerals indicate like parts, the numeral 5 designates a casing having large corresponding air intakes 6 disposed on opposite sides of its lower end portion, and large outlets disposed on opposite sides of its upper end portion. Said intakes may be closed by a shutter or slat arrangement 8 and the outlet may be screened by bars 9 fixed in spaced relation or by any other desired means.

The most important feature of my invention resides in the provision of a middle heating chamber portion 10 disposed between the inlets 6 and the outlets 7 and wherein a pair of heating elements 11 are mounted one above the other. Said heating elements comprise the usual resistance coils insulatively mounted on a frame and no detail description of same is considered necessary. It will however be understood that said air inlets and outlets are sufficiently large and substantially equal to the area of the heating chamber portion in cross section whereby the upward circulation of air may continue at all times without retardation and this continuous circulation in passing upwardly through the heating elements causes the air to be thoroughly heated.

As shown in Figs. 1 to 4 of the drawing, the device may be installed in a wall 12 between two adjoining rooms and entirely above the floor 13 thereof. In this case the two rooms are heated at one and the same time as the cold air enters from each room through the two opposite inlets 6 and the hot air is projected into each room through the two opposite outlets 7. For the purpose of regulating the amount of heat going into each room I have provided a swinging door 14 centrally pivoted between the opposing outlets to a wedge shape top wall 15. When said door is in its central or vertical position, as shown in full lines in Fig. 4, an equal amount of heat goes into each room, and when said door is moved to either extreme position as shown in dotted lines one of said outlets is entirely closed and the other is entirely open. It will be understood that said door may be moved to any position intermediately of the extreme positions whereby a large volume of heat will enter one room and a correspondingly small amount of heat will enter the other room.

In Fig. 5 of the drawing I have shown

a heater installed partly below the floor 13 and with the upper containing the outlets 7 exposed to view within the rooms. A large air conduit 16 has its intake end 17 set horizontally into the floor and extends downwardly at a slant to a direct connection with the lower end of the heating chamber portion 10. In this case two of such conduits may be used if desired, one leading downwardly from each room to a connection with the heating chamber portion, or the intake end 17 of the one conduit may be in communication with both rooms. The same principles are involved in this type of heater as in the foregoing described type and the object in installing same partly below the floor is that it will present a better appearance in having only the small upper portion exposed to view in the rooms.

The cylindrical type of heater shown in Figs. 6 and 7 also involves the same heating principles. Here the heating chamber portion 10 is set on legs 18 and its top and bottom are entirely open so that the entire volume of the circulating air passes directly and upwardly through the heating elements 11. In all types of the heater a pair of switches 19 is provided for the heating elements. As shown in the wiring diagram in Fig. 8, each of the heating elements is connected in series parallel with said switches respectively by three coils and having a ground wire 20 whereby any desired intensity of heat may be obtained ranging from full capacity of both elements to one-third capacity of only one element. No description in detail of the wiring is considered necessary, it being understood that the invention is based primarily on the continuous circulation of a large volume of air through the heater and the means for controlling or regulating this circulation. It has been found in actual practice that this heater when centrally installed supplies heat sufficient for a home of five or six rooms.

Having thus described my invention, it being understood that the device shown and described is merely intended as an illustration of one means of reducing the principles of the invention to practice and that minor changes may be resorted to in its construction and arrangement without departing from the scope and spirit of the invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. An electric heater having in combination a casing with a middle vertically disposed heating chamber portion, said casing having inlet means disposed in the opposite sides of its lower portion and substantially equal in area to the area in cross section of the heating chamber portion, a plurality of electrical heating elements mounted horizontally across the heating chamber portion in spaced apart relation and having spaced apart resistance coils, and said casing having outlet means disposed in the opposite sides of its upper portion and substantially equal in area to the area of the heating chamber in cross section whereby cold air enters the inlets and passes upwardly through the heating elements and outwardly through the outlets.

2. The combination with a wall between two adjoining rooms of a building, of an electric heater comprising a casing installed in an opening of the wall, said casing having a middle heating chamber portion, a plurality of heating elements mounted horizontally in spaced apart relation within the heating chamber portion and having spaced apart resistance coils, and said casing having oppositely disposed intakes communicating with both rooms below the heating chamber portion and opposite outlets communicating with both rooms above the heating chamber portion whereby air enters the inlets, passes upwardly through the heating elements and outwardly through the outlets into the two adjoining rooms.

3. The combination with a wall between two adjoining rooms of a building, of an electric heater comprising a casing installed in an opening of the wall, said casing having a heating chamber portion, a plurality of heating elements mounted in spaced relation within the heating chamber portion, said casing having oppositely disposed intakes communicating with the rooms below the heating chamber portion and opposite outlets communicating with the rooms above the heating chamber portion, a wedge shape top wall centrally of said outlets, a door pivotally and centrally suspended from said top wall, said door arranged to close either of said outlets and to be positioned at any intermediate point therebetween.

In testimony whereof I affix my signature.

FRED G. GASCH.