Aug. 27, 1929. W. A. BROWN 1,726,338

EMERGENCY HEATER

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Fig. 2.

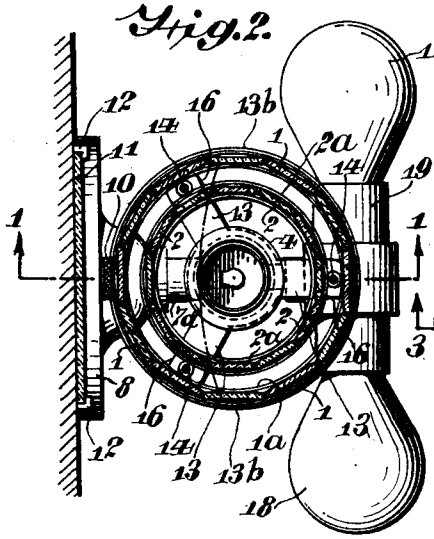


Fig. 4.

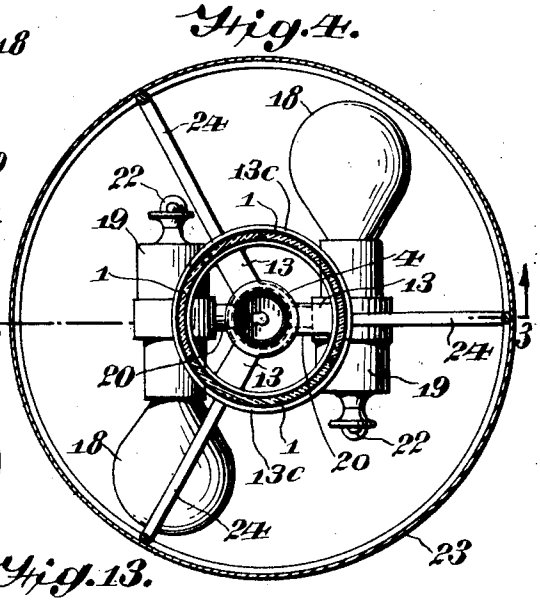


Fig. 13.

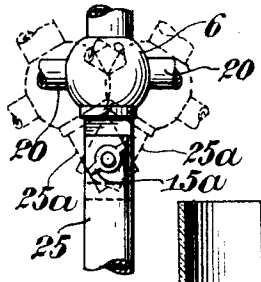


Fig. 1.

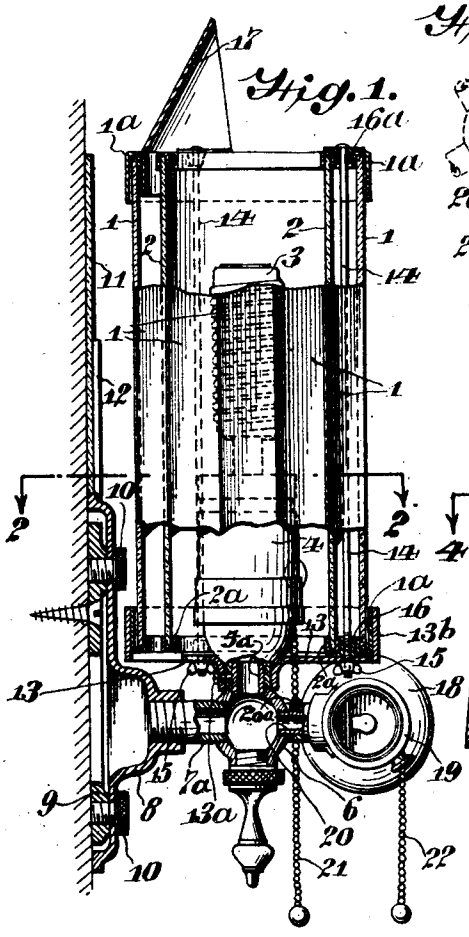
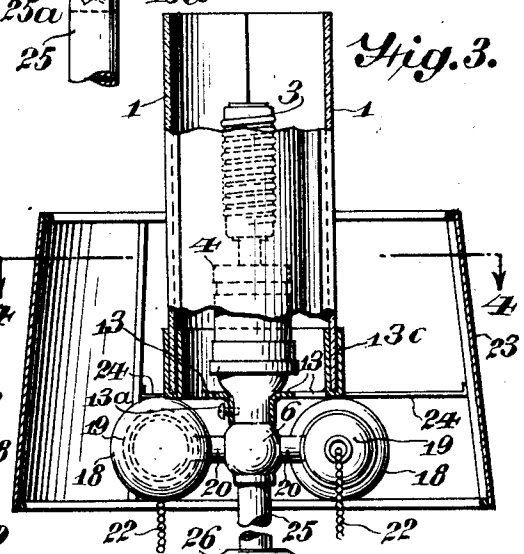


Fig. 3.



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Fig. 6.

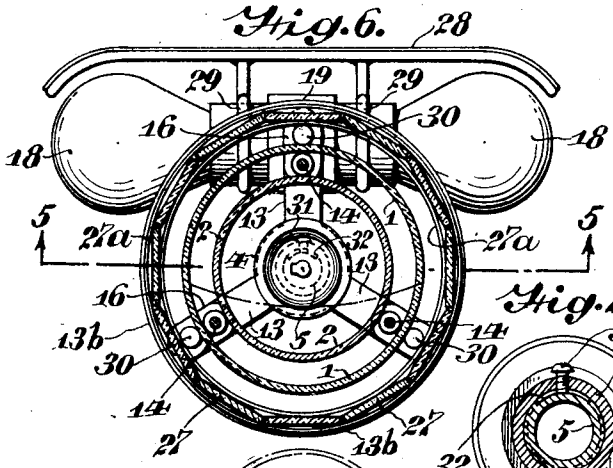
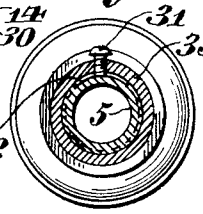



Fig. 7.



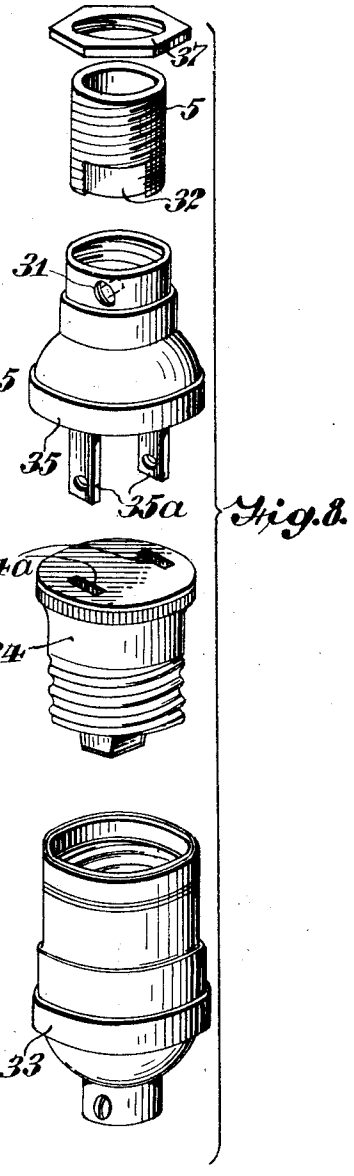
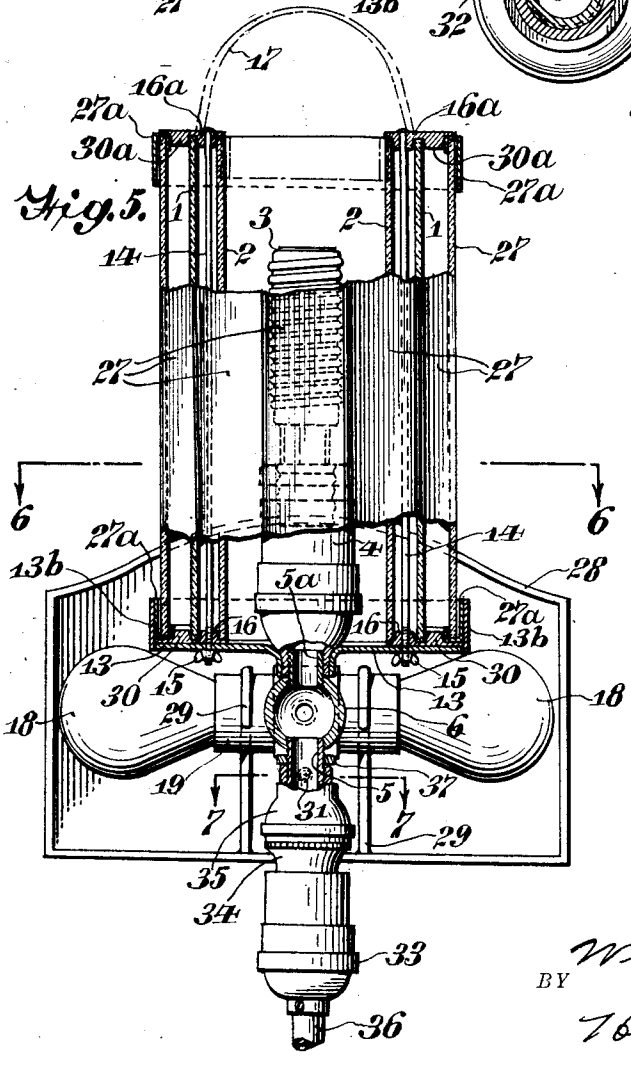




Fig. 8.

Fig. 5.




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Fig. 10.

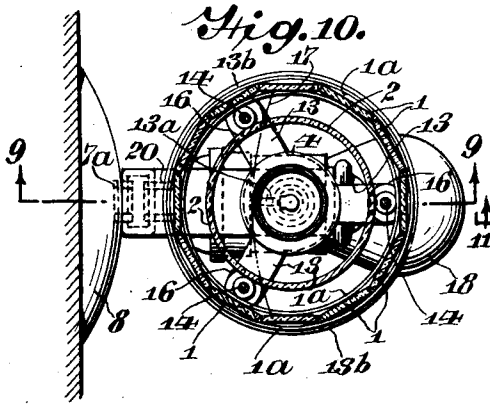


Fig. 12.

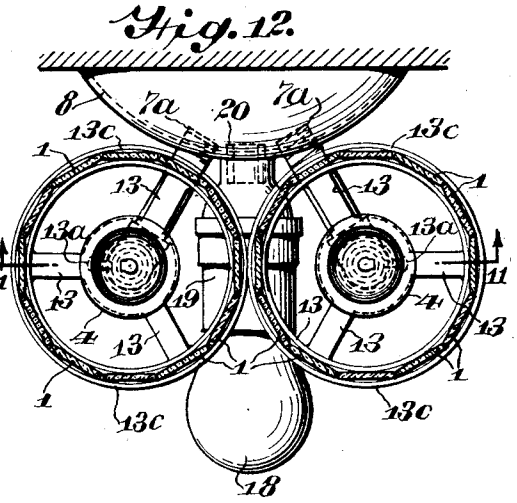


Fig. 9.

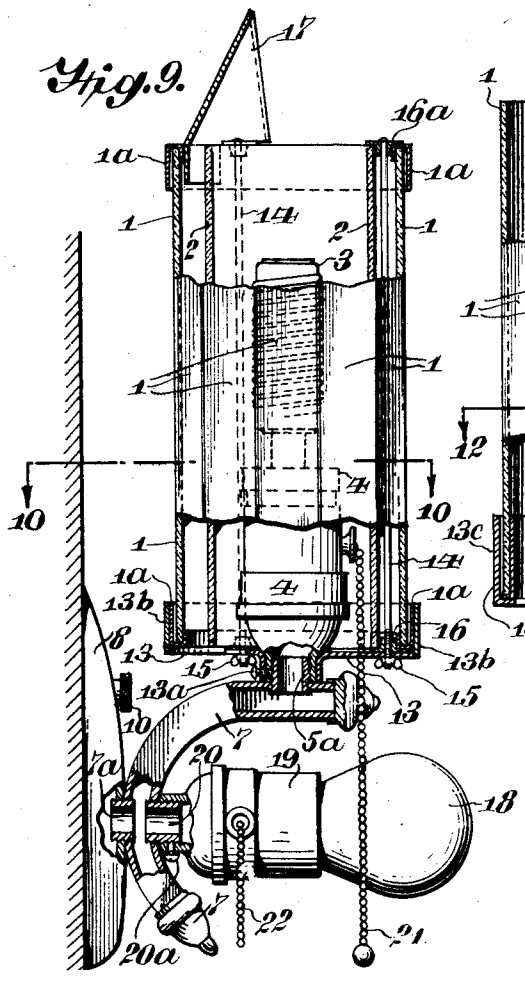
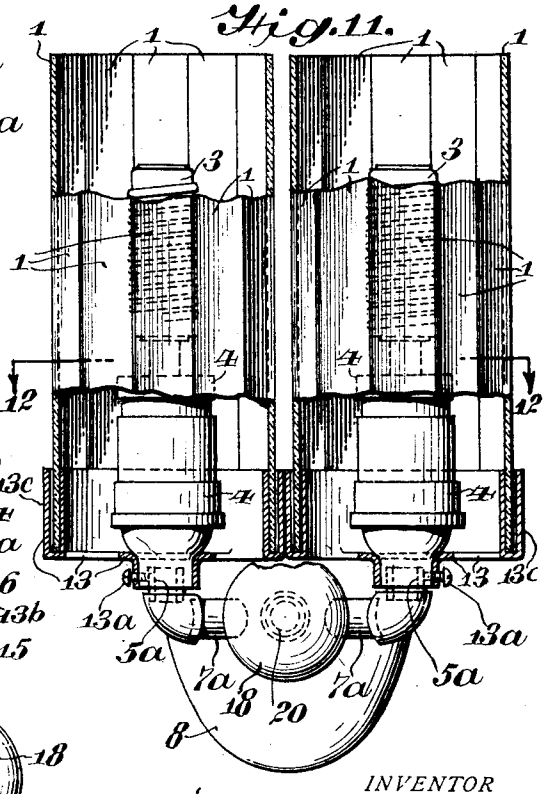


Fig. 11.



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Fig. 15.

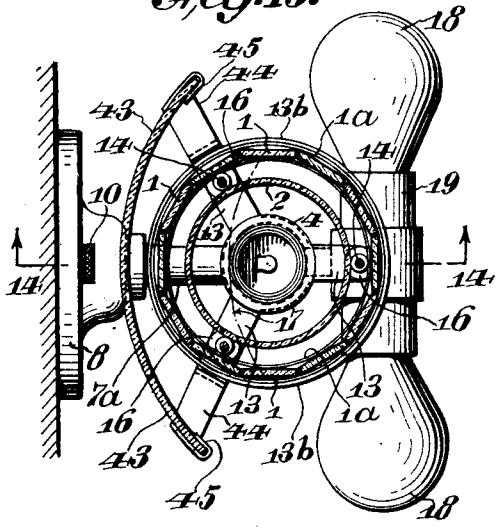


Fig. 17.

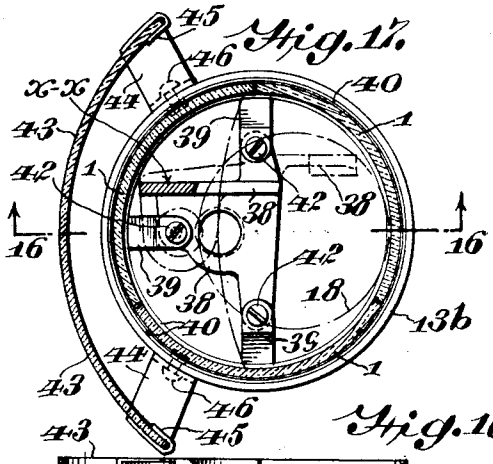


Fig. 14.

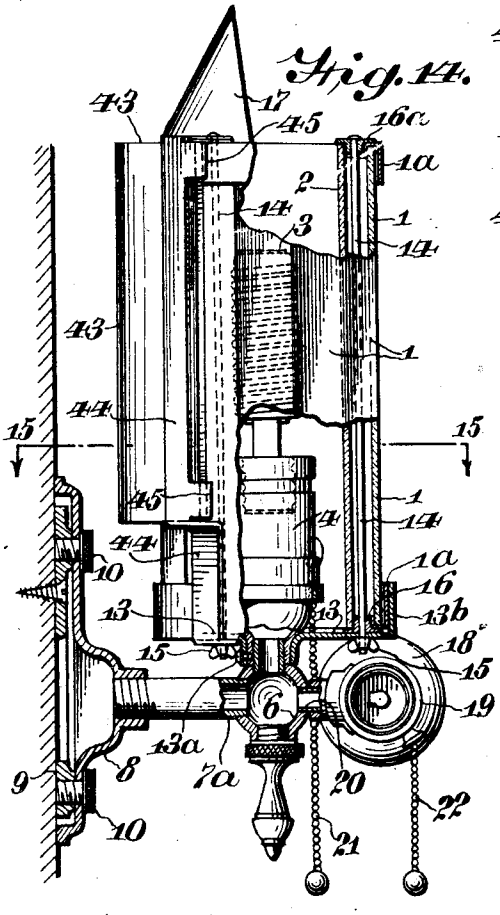
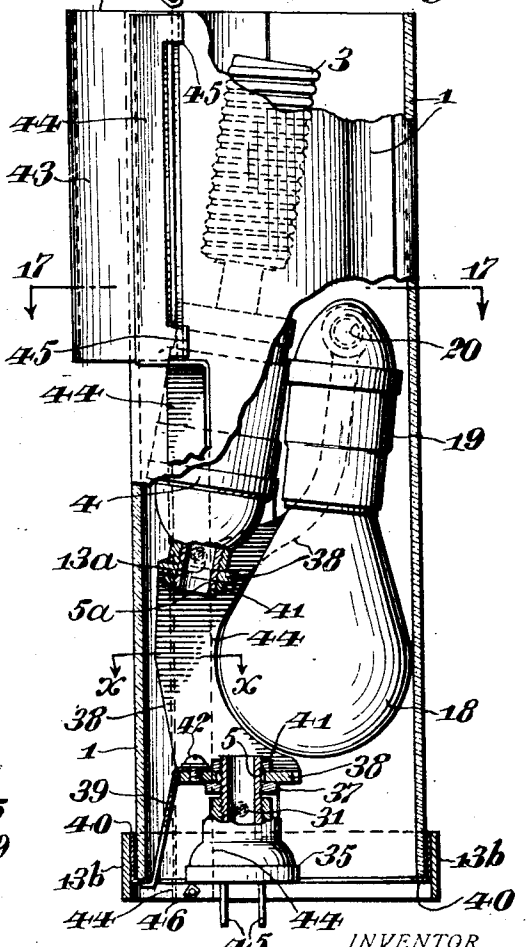


Fig. 16.



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Patented Aug. 27, 1929. 1,726,338

# UNITED STATES PATENT OFFICE.

WILLIAM A. BROWN, OF PHILADELPHIA, PENNSYLVANIA.

## EMERGENCY HEATER.

Application filed November 11, 1927. Serial No. 232,506.

In a co-pending application Serial No. 191,312, filed May 14th, 1927, for emergency heaters, I have described and broadly claimed new and novel constructions of a combined radiant convection heater and lighting fixture wherein by the use of one or more transparent or translucent flues surrounding an electrical heating element I am able to obtain an entirely new and novel result for devices of this character.

In another co-pending application Serial No. 205,596, filed July 14th, 1927, I have described and broadly claimed novel emergency heaters wherein the heating unit is surrounded with transparent or translucent flues in conjunction with which a polished reflector is mounted on a desired side of the flue or flues to intensify and concentrate the radiating effect of the visible incandescent heating unit in any given space desired, the reflector being placed exterior of the flue or flues so that the thermal action within the flue, due to the incandescence of the unit, is not baffled and a maximum circulation of hot air is obtained without sacrificing any of the effectiveness of the heat rays generated and thrown out by the incandescent unit and intensified and concentrated by the reflector.

It is more particularly the object of this invention to devise a novel construction and arrangement of these flues whereby any and all types of commercial and art glass and other transparent and translucent materials may be used in the building of transparent and translucent flues for use in emergency heaters of this character where a high temperature of heat is generated by the heating unit and transmitted to the flue or flues surrounding said heating unit.

In practice, it has been found that certain desirable types of glass cannot be used in the form of a continuous one piece chimney or flue because of its inability to withstand frequent heating and cooling where high temperatures are used, and cracking of the glass from this heating and cooling effect quickly takes place. It has also been found in practice that certain desirable and artistic glasses and other transparent and translucent materials cannot be manufactured as a one piece chimney or flue.

This invention therefore broadly comprehends the use of transparent and translucent flue or flues in a combined radiant convection heater and lighting fixture wherein said flue or flues comprise a plurality of pieces of glass or other material formed in a manner to permit of their assembly in the shape of a flue or flues.

By this new and novel method of constructing my flues, I am able to take care of the resultant expansion and contraction of the material caused by heating and cooling; the breakage, that would otherwise be present, is entirely eliminated and an appreciable saving to the operator of the device is possible.

My novel construction of sectional flues also permits me to use certain desirable inexpensive kinds of glass and other material which cannot now be obtained in one piece in the shape of a flue or chimney. This applies particularly to most types of art glass and certain commercial types of mica.

The radiating effect which I obtain by the use of sectional transparent or translucent flue or flues surrounding a heating unit as herein described which is instantly perceptible as soon as the unit reaches an incandescent state, which effect I fully described in my co-pending application Serial No. 191,312 filed May 14th, 1927, is identically the same in the present case as described in said application. The great volume of convection heat or circulating hot air which is generated by the device because of the surrounding of the heating unit with a chimney or flue, is the same as described in detail in the aforesaid application Serial No. 191,312.

My invention further consists of a novel method of assembling the various component parts of these devices for mounting either in a quick detachable form on existing fixtures or as a permanent new fixture.

For the purpose of illustrating my invention, I have shown in the accompanying drawings forms thereof which are at present preferred by me, since they will give in practice satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a vertical sectional view of a combined radiant convection heater and lighting fixture, embodying my invention, the section being taken on line 1—1 of Figure 2, the segmental flues being shown partially in elevation and partially in section, the deflector and its support being in section, and

the heating unit and its socket and electric light bulbs being in elevation.

Figure 2 represents a plan view taken on line 2—2 of Figure 1, the segmental flues being in section, and the support, electric light bulbs and heating unit socket being in elevation.

Figure 3 represents a vertical, sectional view of a combined radiant, convection heater and lighting fixture, the section being taken on line 3—3 of Figure 4, the segmental flue being shown partially in elevation and partially in section, the ornamental shade being shown in section, and the rest of the figure in elevation.

Figure 4 represents a horizontal, sectional view taken on line 4—4 of Figure 3, the flue and ornamental shade being in section.

Figure 5 represents a sectional view of a quick-detachable, rotatable, combined radiant convection heater and lighting fixture, the section being taken on line 5—5 of Figure 6, the outer segmental flue being shown partially in elevation and partially in section, the two other flues and junction box being shown in section, and the rest of the figure being shown in elevation. The deflector is shown in dot and dash lines as it is cut out of the picture by the section.

Figure 6 represents a sectional plan view, the section being taken on line 6—6 of Figure 5, the three flues being shown in section and the heating unit removed from its socket, the screw which limits the rotating of the device and the slot in which it operates, being shown dotted.

Figure 7 is an enlarged plan view showing a section taken on line 7—7 of Figure 5, of the rotatable control of my invention.

Figure 8 is an exploded view of the assembly shown at the base of Figure 5, up to and including the parts at section line 7—7.

Figure 9 is a side view of a combined radiant convection heater and lighting fixture taken on line 9—9 of Figure 10, the outer segmental flue being shown partially in elevation and partially in section, the inner flue, deflector and portions of the support being shown in section, and the rest of the figure in elevation.

Figure 10 is a plan view taken on line 10—10 of Figure 9, the flues being shown in section, and the rest of the figure in elevation.

Figure 11 is a front elevation of a modification of a combined radiant, convection heater and lighting fixture, the segmental flues being shown partially in elevation and partially in section.

Figure 12 is a plan view of Figure 11, the support being sectioned on line 12—12 of Figure 11, the segmental flues being shown in section and the rest of the figure in elevation.

Figure 13 is an adjustable joint on the upright 25 of Figure 3.

Figure 14 represents a section taken on line 14—14 of Figure 15, the segmental flue being shown partially in elevation and partially in section, the junction box, inner flue and deflector being shown in section, and the reflector being shown in elevation.

Figure 15 represents a section taken on line 15—15 of Figure 14, with the heating unit removed.

Figure 16 represents a partial sectional view taken on line 16—16 of Figure 17, showing the segmental flue in partial elevation, the reflector and rest of the figure being shown in elevation.

Figure 17 represents a sectional view of Figure 16, taken on line 17—17 with all parts removed from the inside of the flue above section $x$—$x$, the brackets supporting the flue and reflector being shown in elevation.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:—

1 designates an outer sectional flue which is held in permanent assembly by the grooved member $1^a$; 2 designates an inner sectional flue surrounding the heating unit 3 which is screwed into the standard socket 4 which is attached by the nipple $5^a$ to the top of the junction box 6, the nipple $7^a$ connecting the junction box 6 to the wall bracket 8 which is in turn attached to the wall plate 9 by the screws 10 and supports the heat resisting protecting plate 11 which is held in the rabbets 12 which are part of the bracket 8.

The spider 13 supports the flues 1, 2 and 27 shown in the various figures, which are held in concentric assembly by means of the rods 14 and the nuts or buttons 16 and $16^a$, in combination with the grooved members $1^a$, $2^a$ and $27^a$. The nut or button 16 may be tapped as shown to receive the lower end of the rod 14, which may be threaded, thereby enabling the user of my device to remove the flues in their assembled state, to be cleaned, merely by unscrewing the wing nut or thumb screw 15, which serves to hold the flues in an upright position on the spider 13. The set screw $13^a$ is used to hold the spider 13 rigidly upon the socket 4 and also to secure the socket 4 in a stationary position upon the nipple $5^a$. The ornamental band $13^b$ is permanently attached to the spider 13.

The deflector 17 is placed in the space between the flues 1 and 2 and is self-locating on account of its shape. The electric light bulbs 18 are supported in a standard socket 19 which is in turn attached to the junction box 6 by the nipple 20. The set screw $20^a$ holds the light socket 19 in place upon the nipple 20.

The heating unit is controlled by the pull chain 21 or its equivalent and the electric light bulbs are controlled by the pull chain 22 or its equivalent.

In Figure 3 we show a modification of Figure 1 applicable to table or floor lamps and

having an additional ornamental shade or flue 23 supported on the flue arms 13 by the shade arms 24 and the entire fixture is supported by an elongated pipe 25 on the base 26. The sectional flue 1 is held in assembly by the grooved extension 13[c] of the spider 13.

In Figure 5 the integral flues 1 and 2 are surrounded by an extra sectional flue 27 which is held in permanent assembly by the grooved member 27[a] and supported by an extension of the arms of the spider 13, the same method being used to hold the three flues together as was used to hold the two flues together in Figure 1, thereby enabling the three flues to be detached from the device as an entity for cleaning or for repairing the fixture; the nuts or buttons 16 and 16[a] having an extension 30 and 30[a] for purposes of holding the outer and adjacent sectional flue 27 in concentric position.

The flues 1 and 2 in Figure 5, are preferably made of special high heat-resisting translucent or transparent material and provide a positive protection to the outer sectional glass flue 27 when a high capacity heating unit is used. The ornamental shield 28 may be attached by the hooks 29 to the bulb socket 19 and is easily demountable. It is of course evident that the intensity of the radiating effect of the device may be controlled by the number and density of the flues surrounding the heating unit regardless of the capacity of the unit.

Figure 6 shows this shield 28 in plan view and also the three flues 1, 2 and 27 on the extended spider 13 with the sectional flue 27 held in assembly by the grooved member 27[a]. The button 30, also shown in Figure 5, which is an extension of the nut or button 16, maintains the sectional flue 27 in concentric position with the adjacent flue 1. The ornamental band 13[b] is the same as in Figure 1.

Figure 7 shows the rotatably adjustable feature of the nipple 5 within the top of the cap 35 which is limited by the set screw 31 working in the milled space 32 to restrict the rotative movement of the cap 35 upon the nipple 5 so that it is impossible to twist off or break the wiring of the fixture which leads to the heating unit socket 4.

In Figure 5 the house socket 33, which is attached to the support 36 of any lighting fixture already installed, receives the screw plug 34 which in turn receives the pronged cap 35 into which is screwed the nipple 5 which is locked to the cap 35 by the screw 31 which is placed in a tapped hole at the top of the cap 35 and restricts the movement of the nipple 5 by engagement in the milled recess 32. It is of course evident that the milled section 32 may be entirely removed if desired without changing the function of the nipple 5. The socket 33 and the support 36 are not included as a part of my quick detachable device.

Figure 8 shows an enlarged exploded view of the method I employ in mounting my detachable device on any fixture already installed in any building in which the device is to be used. This enlarged exploded view also shows the method I use for limiting the rotatable adjustment of my device after it has been mounted on the fixture to which it is to be applied. It being evident that by the use of the screw 31 in the milled section 32 of the nipple 5, the wire to the junction box 6 cannot be mutilated in revolving the device so that the lights 18 may be in the desired position. This rotatable adjustment feature of my device permits the user to place the device in the desired position regardless of the position of the slots 34[a] of the attachment plug base 34 after said plug base 34 has been screwed into the standard socket 33 of the fixture on which my device is to be mounted, ready to receive the plug cap 35 which is a part of my device and having the blades or prongs 35[a] which are fitted into the slots 34[a]. The nut 37 is used to hold the device in permanent position by being moved down to a tight fit on the plug cap 35.

Figure 9 represents another modification of my combined radiant convection heater and lighting fixture using but one bulb 18 directly below the socket 4, which holds the heating unit 3, the heating unit 3 and the bulb 18 being controlled by pull chain switches 21 and 22 as shown, or any other suitable switching means, the flues 1 and 2 and the deflector 17 being in the same assembly as shown in Figure 1, the flue 2 being made up in an integral form from special high heat resisting translucent or transparent material if a high capacity heating unit is employed. The entire assembly being mounted on the arm 7 which is attached to the wall bracket 8 by the nipple 7[a].

Figure 11 shows another modification of my combined radiant convection heater and lighting fixture wherein I use two heating units 3, each unit being surrounded by a single sectional flue 1, both flues and heating units being mounted directly to the wall bracket 8, and held in permanent assembly by the grooved extension 13[c] of the spider 13. It will be evident that this modification of my combined radiant convection heater and lighting fixture shown in Figure 11 may be adapted for use on any floor or table lamp if desired, and may have a plurality of flues surrounding the heating unit, the heating units and the light being controlled by any suitable switching means.

Figure 13 shows a method of adjusting the fixture so that the flue or chimney may be deflected from the upright position to either one side or the other and the hot air thrown in any desired direction. The position wished for is maintained by the wing nut 15[a].

In Figure 14 I have shown a modification of the construction seen in Figure 1 wherein

I employ an integral flue 2 which is surrounded by the segmental flue 1. In conjunction with such flues I employ a polished reflector preferably of mirrored glass 43 which is secured in position exterior of the flues, by the brackets 44 having the hooks 45. The reflector 43 may be lifted off of the brackets 44 and out of the hooks 45 for cleaning or for any other purpose. This reflector 43 serves to intensify and concentrate the full radiating effect of the incandescent heating unit in any given space desired.

Figure 15 shows the location and the means employed in holding the reflector in position outside of the outer segmental flue 1.

In the embodiment seen in Figure 16, I have shown a quick detachable adjustable device adapted to be connected with any standard fixture. The lighting bulb 18 is located within the segmental flue 1, and a reflector 43 is located exterior of the flue 1 and is secured in the same manner as is shown in Figure 14. The socket 4 which receives the heating unit 3 and the socket 19 which receives the bulb 18, are both mounted inside of the flue 1 on the support 38 which is attached to the plug cap 35 by means of the nipple 5 and the nut 41.

The sockets 4 and 19 are attached to the bracket 38 by means of the nipples $5^a$ and 20 respectively. The segmental flue 1 is held in position by means of the cylindrical member 40 which is permanently attached to the arms 39 which are in turn mounted on the bracket 38 by means of the screws 42 or in any other desired manner. The nut 37 performs the same function as described in connection with the construction shown in Figure 5. The ornamental band $13^b$ is permanently attached to the cylindrical member 40. The reflector 43 is held in position by the brackets 44 and the hooks 45. The brackets 44 are held in position on the band $13^b$ by means of the screws 46, the function of the reflector 43 being the same as that described in conjunction with Figures 14 and 15. In the construction shown in Figure 16 the milled section 32 or its equivalent are dispensed with and the rotation of the device is accomplished by revolving the bracket 38 upon the nipple 5, which is then held permanently in the desired position by means of the nut 41.

In Figure 17 I have shown the method employed for holding the member 40 which receives the segmental flue 1 in position on the bracket 38 by means of the arms 39 and screws 42. It will be apparent that the electric light bulbs can be dispensed with if desired.

From the foregoing it will be evident that by the use of transparent or translucent flues the incandescence of the heating unit will be visible at all times and a thoroughly effective radiated heat delivered the instant the unit reaches an incandescent state, and as this result is obtained without the use of reflectors and the like in the flue to retard or slow up the flow of air in the flue the convection heat or circulating hot air generated by the device reaches its maximum efficiency.

It will likewise be apparent that the intensity of the radiant heat generated by the device and its effect upon the outer sectional flue may be definitely controlled when required by the number and character of the inner flues employed. If in practice it is found that certain types of glass or other translucent or transparent material used in the construction of the sectional flues herein described will not withstand the heat thrown out by high capacity heating units even when constructed from many pieces in the form of a chimney or flue, then in such case by the use of one or more transparent or translucent inner high heat resisting flues properly spaced to permit the proper flow of air between their inner and outer surfaces, the heat which is generated by the unit may be reduced to a point where it could not possibly affect the outer flue thereby permitting this outer flue if assembled in section, to be constructed of any material desired, particularly is this true of desirable types of art glass. In practice such a construction has been found desirable notwithstanding the fact that ordinary glass when assembled in many small sections has proved satisfactory against breakage from frequent heating and cooling under severe tests where higher temperatures are developed than will be present in the devices herein described.

Commercially the use of transparent and translucent flues of glass or mica is of tremendous significance in a device of this character because of the high resistance these materials have against the absorption and transmission of heat. In practice I have definitely proved that the ready absorption and transmission of heat which is characteristic of all metals prohibits the use of metal flues and the like in my devices which are of necessity small and compact and decidedly unlike similar devices of the past, all of which have been bulky and unsightly with excessive exposed surfaces capable of dissipating the heat absorbed by the universally used metal chimney surrounding the heating unit.

In many instances in spite of the size of these devices so great has been the absorption and transmission by the metal flue of the heat generated by the heating unit that walls of asbestos and the like have been interposed to prevent the scorching of adjacent objects. The radiating effect which metal flues on reaching a high temperature have given to devices of this character in the past is accomplished in my devices by making the incandescence of the heating unit visible and thereby permitting its heat rays to be felt di-

rectly, over a wide area and without affecting in any way the convection heat or circulating hot air produced by the device which is an effect never before attempted or accomplished and is only possible in my devices because of the use of transparent or translucent flues. And when I construct these flues of mica or glass I am able to have them of any desired size and to mount them in any desired manner and in any place without the danger of the heat generated by the heating unit being absorbed and transmitted by my flues to the entire device with more or less disastrous results to surrounding objects as is the case where flues of metal and the like are used.

In all modifications of my devices shown and described herein it will be apparent that the polished reflector referred to, which is preferably of glass to prevent the absorption of heat generated by the device, may be attached to any of the devices I show without in any way altering their general construction. If any of my devices equipped with high capacity heating units are mounted in close proximity to a wall or other object which may be disastrously affected by the heat rays which are thrown out in all directions by this visible incandescent heating unit, then in such case a reflector such as is disclosed herein may be added to the device to prevent these heat rays from reaching the object to be protected.

It is a well known fact that the rays of the ordinary electric radiant heater which employs a heating unit mounted in front of a bowl shaped polished reflector will ruin furniture and the like if these reflected heat rays reach these objects. The reflector I employ and which is optional, its use being dependent on how or where my device is used, therefore performs two functions that of preventing the heat rays from affecting any adjacent objects in addition to intensifying and concentrating those rays within any desired space.

It will also be evident in all modifications of my devices herein disclosed that the use of electric light bulbs may be dispensed with where the room to be heated has other lighting equipment with which to supply light.

It will now be apparent that I have devised new and useful emergency heaters which embody the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described preferred embodiments thereof which will give in practice satisfactory and reliable results it is to be understood that these embodiments are susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In a radiant convection heater, a support, an electric heating unit carried thereby, a segmental light transmitting flue surrounding said unit, and having means to retain it in spaced relationship with respect to said heating unit.

2. In a radiant convection heater, a support, an electric heating unit carried thereby, a segmental flue surrounding said heating unit and means to maintain said flue in spaced relationship with said heating unit, and to maintain the segments of said flue in assembled relation with each other to form a complete flue.

3. In a radiant convection heating and lighting fixture, a support, an electric heating unit carried thereby, a segmental light transmitting flue surrounding said unit, having means to retain it in spaced relationship with respect to said heating unit, and an electric light in proximity to said flue.

4. In a radiant convection heater, a support, an electric heating unit carried thereby, a plurality of segmental flues in spaced relation with each other and in spaced relationship with said heating unit and surrounding it, and means to secure said flues in spaced relationship with each other and with said heating unit, and to maintain the segments of a flue in assembled relation to form a complete flue.

5. In a radiant convection heater, a support, an electric heating unit carried thereby, a segmental light transmitting flue surrounding said heating unit, means to secure the segments of a flue in spaced relation and in assembled condition with respect to said heating unit, and a heat resistance shield extending along one side of said flue and in spaced relationship therewith.

6. In a radiant convection heater and lighting fixture, a support, an electric heating unit carried thereby, a segmental flue surrounding said heating unit and means to maintain said flue in spaced relationship with said heating unit and to maintain the segments of said flue in assembled relation with each other to form a complete flue, and an electric light in proximity to said flue.

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