

Oct. 11, 1932.

W. SHURTLEFF
CONCEALED HEATING UNIT

1,882,452

Filed Feb. 3, 1930

4 Sheets-Sheet 1

Fig. 1.

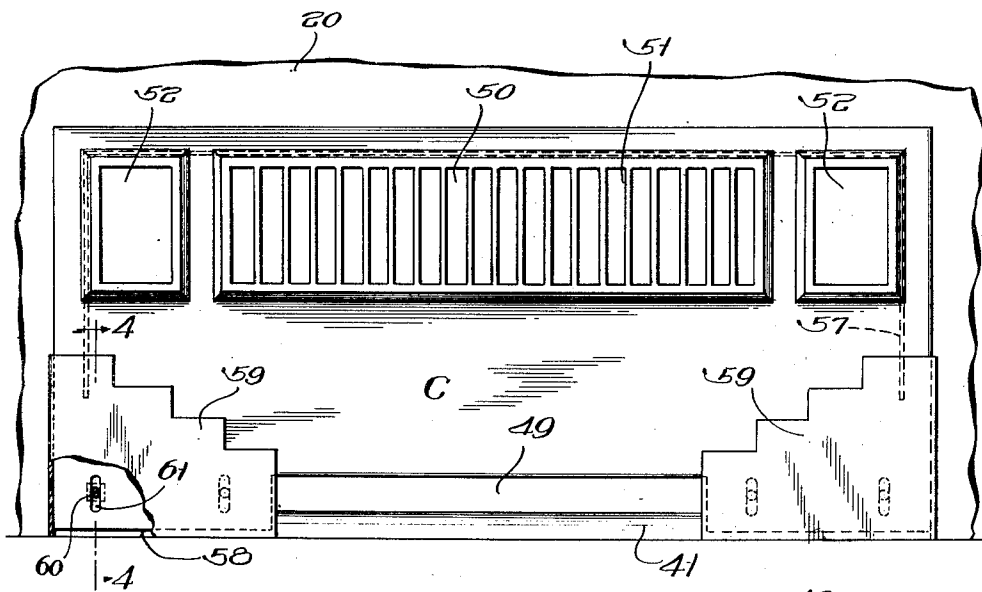


Fig. 3.

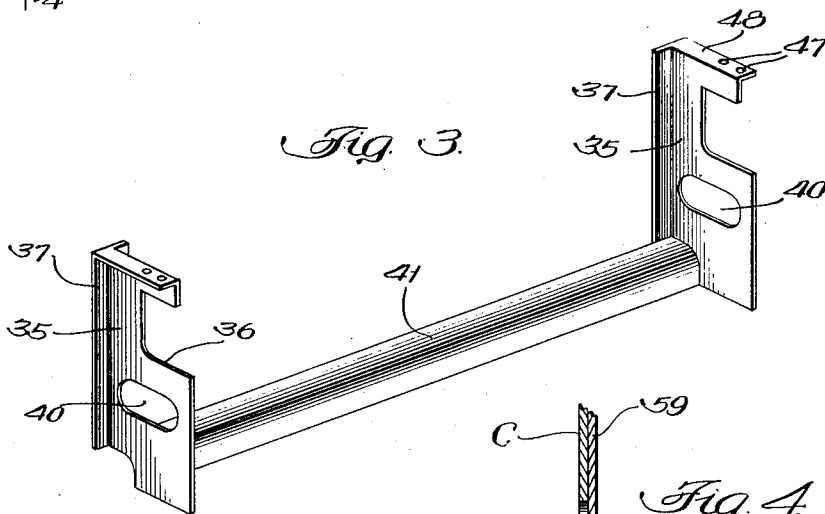
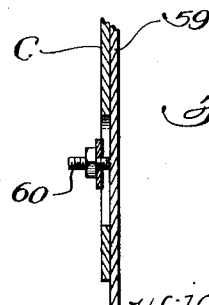


Fig. 4.



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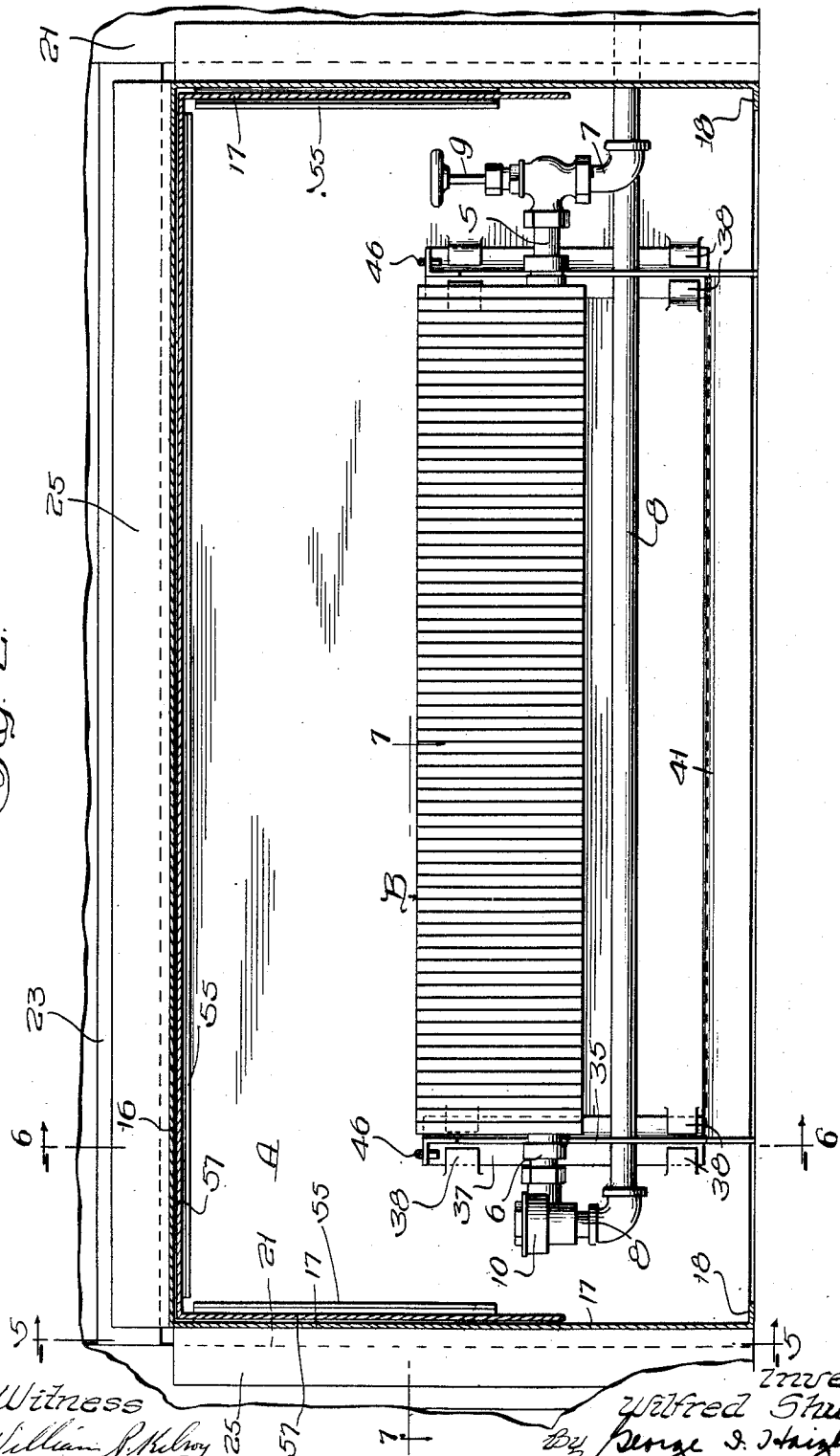
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Fig. 2.



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Fig. 5.

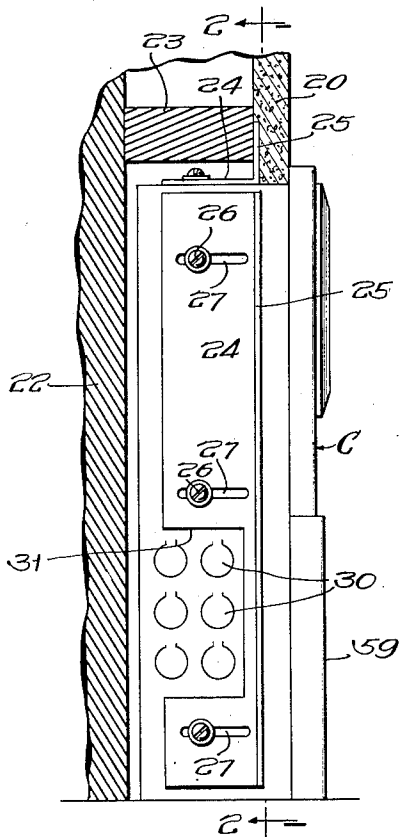


Fig. 6.

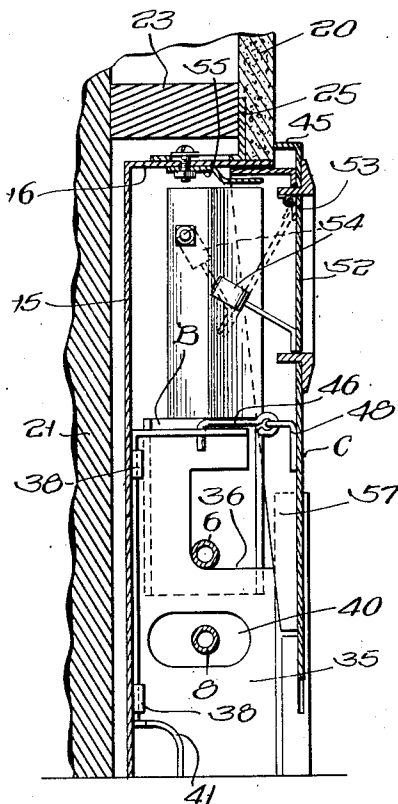
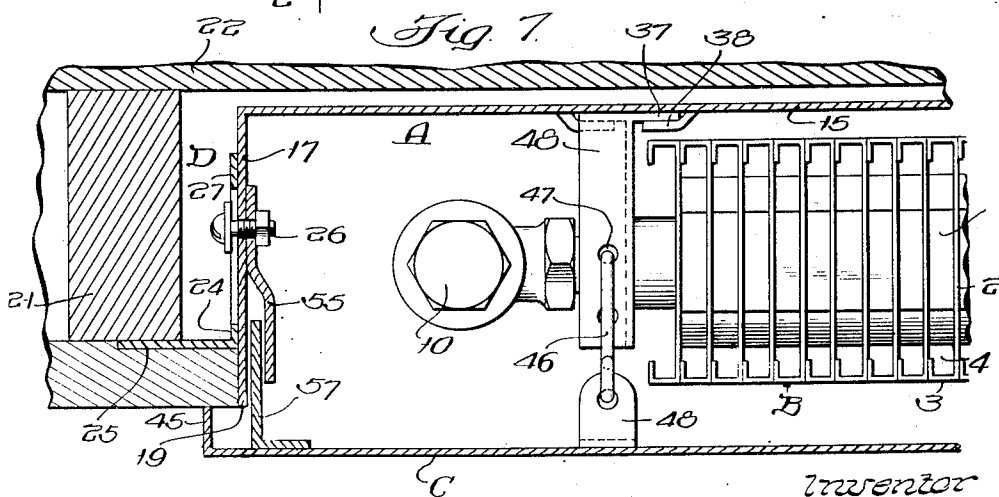


Fig. 7.



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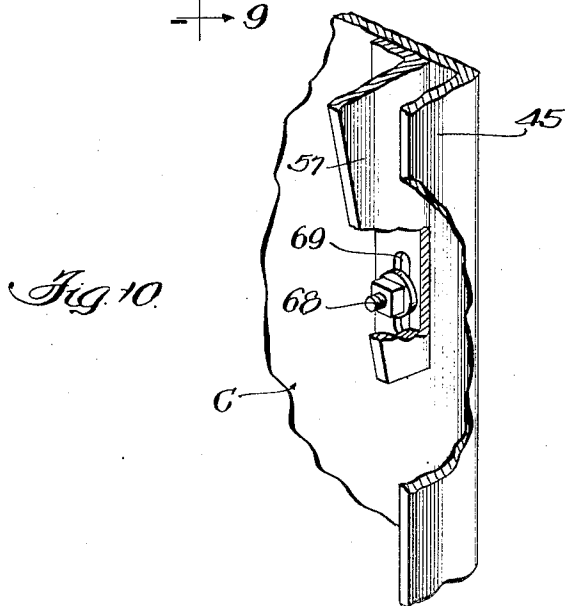
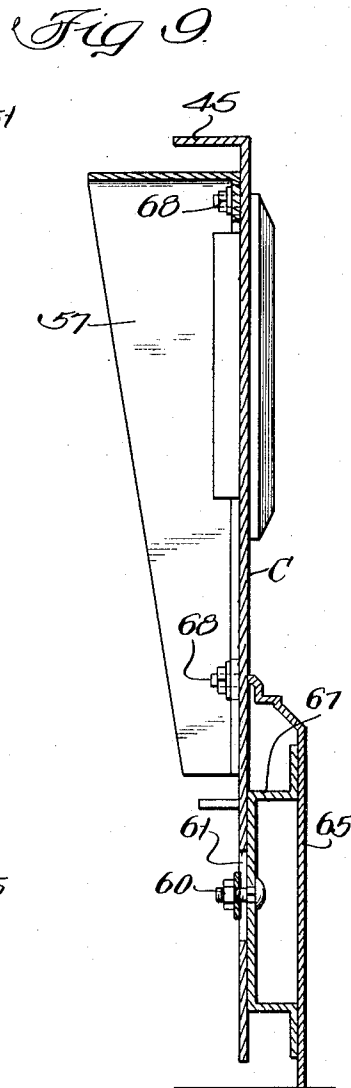
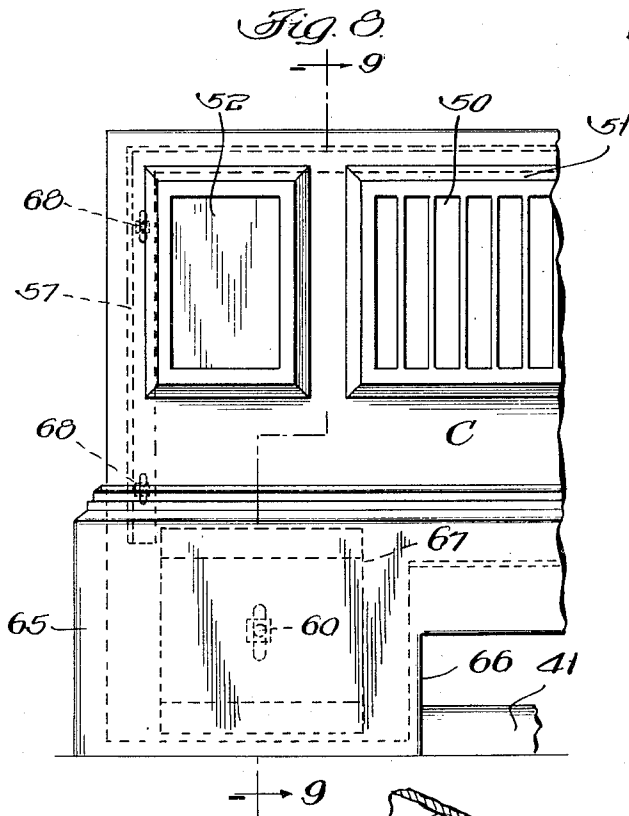
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CONCEALED HEATING UNIT

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UNITED STATES PATENT OFFICE

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CONCEALED HEATING UNIT

Application filed February 3, 1930. Serial No. 425,441.

This invention relates to improvements in concealed heating means and the principal object of the invention is to provide a complete heating unit including a cabinet which can be entirely recessed and concealed entirely within a wall and covered with a panel which harmonizes with the interior wood-work and finish of the room and is removable without tools and is provided with self-closing doors permitting access to valves and fastening means within the cabinet.

fastening devices for the panel sealing tongue.

The structure shown in the drawings comprises in general a housing or cabinet A installed in a recess in the wall of a room, a heating element B positioned within the cabinet, and a cover or panel C extending over the area of the recess in the wall for concealing the cabinet and its interior and providing a suitable finished appearance for the structure.

The heating element B may be of a suitable type for the purpose. The radiator of the type disclosed in Patent No. 1,775,257, issued September 25, 1930, is especially adapted to the purposes of the present invention, because of its compactness, lightness of weight and high efficiency. Radiators of this type can, for given capacity, be made narrow enough to occupy less space than the space within the confines of the usual or standard wall construction of buildings, hence they are particularly adaptable to so-called invisible or concealed heating units.

These radiators or heating elements comprise in general a core member 1 for the passage of steam or hot water, and a plurality of thin highly conductive fins or plates 2 mounted on said core in intimate association therewith and arranged in parallel with their outer edges 3 turned at right angles and engaged with the next adjacent fins to provide a plurality of passages 4 through which the air circulates in the process of heating said air, as shown more clearly in Figs. 2 and 7. The radiator is horizontally positioned in the cabinet A with the passages 4 disposed vertically to promote maximum circulation of air through the radiator. At its ends, the radiator core 1 is provided with nipples 5 and 6 for connection with the usual inlet piping 7 and return piping 8. A hand valve 9 is usually connected in the inlet end of the radiator and trap 10 in the outlet or return end, Fig. 2.

In heating systems in buildings, the layout of piping, while located within the confines of the walls, is varied greatly in accordance with the construction of buildings and other factors. An instance of piping

A further object is to provide a complete self-contained heating unit which can be manufactured entirely in the factory and which will have its parts so related and adjustable that it can be adapted to the irregularities and variable factors in building construction without the necessity of individually cutting and fitting the structure to adapt it to a particular installation.

Other objects of the invention will appear from the construction and arrangement of parts hereinafter disclosed and shown in the accompanying drawings, in which

Fig. 1 is a face view of the front panel of a heating unit structure embodying my invention;

Fig. 2 is an enlarged front view of the heating unit structure with the panel removed, and the cabinet or housing in section substantially on the line 2—2 of Fig. 5 to illustrate the interior of the structure;

Fig. 3 is a detail perspective of the partitions which divide the interior of the cabinet and support the heating radiator;

Fig. 4 is a detail section on line 4—4 of Fig. 1;

Fig. 5 is a transverse vertical section on the line 5—5 of Fig. 2, showing the structure in relation to the recess in the wall;

Fig. 6 is a transverse vertical section on the line 6—6 of Fig. 2;

Fig. 7 is a plan section on the line 7—7 of Fig. 2;

Fig. 8 is a face view similar to Fig. 1 of a portion of modified front panel construction;

Fig. 9 is an enlarged detail vertical section on line 9—9 of Fig. 8; and

Fig. 10 is a detail perspective view partly broken away to show one of the adjustable

layout is illustrated in Fig. 2, in which the inlet pipe 7 and the return pipe 8 are both disposed horizontally and lead into the cabinet through the same end wall. The return pipe 8 extends clear across the cabinet beneath the radiator to the return end of the radiator. It is just as usual, however, to enter the inlet pipe horizontally through one end wall of the cabinet and the return pipe through the opposite end wall, or to extend both pipes vertically through the floor to the radiator at the respective ends thereof.

The arrangement of piping constitutes no part of this invention, but in order to accommodate the heating unit to these various piping conditions, the structure is arranged, as will hereinafter appear, for adjustment with respect to any particular piping layout, without the necessity of cutting and fitting the individual unit. This makes it possible to manufacture the heating units complete in the factory and to ship them ready for installation.

The housing or cabinet A is preferably made of sheet metal substantially rectangular in shape and provided with a rear wall 15, a top wall 16, and end walls 17. The lower edges of the end walls are turned inwardly to form flanges 18 for fastening the cabinet to the floor or framing of the wall within the recess, and to strengthen the lower edges of the walls.

The cabinet is comparatively shallow in depth to correspond to the depth of the recess in the wall in which it is positioned, and the front edges 19 of the top and end walls are intended to be flush with the plaster line of the wall or with the plane of whatever material is used for finishing the wall. In fact, these front edges can be so positioned that they will serve as grounds to guide the plasterer in the application of the finishing or final face coat to the wall.

Since the thickness of walls varies considerably with the character of the materials used, means are provided by which the position of the cabinet within the recess may be readily adjusted to conform to the wall thickness. In the drawings, the wall structure is indicated conventionally as comprising the outer wall construction 22, and lath and plaster covering 20 supported by the usual studding 21. The recess D is formed in the space defined by this studding between the wall covering 20 and the outer wall 22, Figs. 5, 6, and 7. The upper margin of the recess is defined by a suitable header 23 secured in position horizontally between the vertical studding which define the end margins of the recess.

The cabinet or housing is installed in the recess D and its position within the recess is determined by adjustable angle or flange members on the end walls 17 and the top wall 16 of the cabinet. These angle members

have one of their flanges 24 flat against the walls of the cabinet and their other flanges 25 extending outwardly at right angles to the cabinet wall surfaces. They are clamped in position by the fastening screws and nuts 26 which extend through these flanges 24 and through the walls of the cabinet. The openings in the flanges 24 for the fastening screws are elongated slots 27 which permit of considerable relative adjustment in and out of the flanges with respect to the cabinet.

In installing the structure, the flanges 25 are placed against the studding and headers and the angle members adjusted on the cabinet until the forward edges 19 of the cabinet project from the plane of the studding and header a distance corresponding to the desired thickness of the wall material 20, as shown more clearly in Figs. 2, 5, 6, and 7. The flanges are interchangeable and reversible, so that in the event that the thickness of the wall material 20 is greater than the range of adjustment of the flanges in the relation in which the angle members are shown in Fig. 7, the angle members may be reversed to bring their flanges 25 closer to the rear wall of the cabinet. This will permit the cabinet to be extended a greater distance outwardly from the plane of the studding. This condition arises where brick or tile is used for wall covering material, thus making the wall several inches thick beyond the studding. Where metal lathing is used in the wall covering, the flanges 25 also serve as anchors to which the edges of the lathing surrounding the recess may be secured. The advantage of this construction is that the range of adjustment permitted by the adjustable flanges is sufficiently great to accommodate any of the various types of wall covering used in building construction, without the necessity for cutting and fitting the cabinet. In other words, by means of this adjustable structure, the front edges 19 of the cabinet can always be positioned flush with the outer face of the wall, regardless of the thickness of said wall.

In order to accommodate the cabinet to the various piping layouts found in building construction, the end walls 17 are provided with a plurality of knockout portions 30 which are distributed over an area of the end walls within which the piping is likely to be brought into the cabinet. These knockout portions are of well known construction and consist in weakening circular portions of the metal, which permits them to be removed by a slight blow of a hammer and which provides a clean-cut circular opening. A sufficient number of these knockouts are provided to accommodate any position to which the cabinet is adjusted. The flanges 24 of the adjustable angle members are cut away at 31, Fig. 5, around the area of the knockouts so as not to interfere with the pip-

ing. It is obvious that since the cabinet has no bottom wall, there is nothing to interfere with the entrance of piping vertically into the cabinet from below.

5 The radiator B is supported within the cabinet by means of vertically disposed partitions 35 which are positioned at the ends of the radiator and which have cut-out portions forming horizontal shoulders 36, Fig. 3, upon
10 which the inlet and outlet nipples 5 and 6 of the radiator rest. These partitions have right angled vertical flanges 37 on their rear edges, which are slidably mounted vertically in guide clips 38, Fig. 2, struck up from the rear
15 wall 15 of the cabinet and bent over to embrace said flanges. The lower ends of the partitions rest on the framing of the wall substantially at the floor line and support the radiator at the proper height within the cabinet. The relative height of the radiator in
20 the cabinet may be adjusted by placing blocks of suitable thickness beneath the lower ends of the partitions. The so-called "leveling" of radiators for draining purposes may also be accomplished by blocking up one end of the
25 radiator slightly higher at its inlet end. The vertical sliding adjustment of the partitions also serves another purpose. In the event that the piping is brought vertically
30 into the cabinet from below, and connections therewith have to be made close to the floor, the partitions may be raised vertically to provide sufficient clearance for swinging wrenches or other tools used in making the
35 pipe connections.

The length of the cabinet and the radiator is so proportioned that there is sufficient space between the partitions 35 and the adjacent end walls of the cabinet to provide
40 room for the valves, traps, and other fittings. The end chambers thus formed between the partitions and the walls of the cabinet are ventilated to prevent interference with the operation of the usual thermostatic steam
45 traps 10, by circulating sufficient air through these chambers. This ventilation is accomplished by elongated slots or openings 40 in the partitions 35 which form ports communicating with the front cool air inlet of the
50 cabinet and through which air can enter the end chambers and circulate upward around the steam traps. These openings are large enough so that the return pipe 8 can be inserted therethrough in the event that the
55 piping layout requires the return pipe to be extended across beneath the radiator to the opposite end of the cabinet, as indicated in Fig. 2. If it is desirable to conceal the return pipe 8, it may be positioned lower and
60 closer to the floor and extended through a quarter-round conduit 41 which extends between the partitions 35. This conduit is secured at its ends to the partitions 35, and, in addition to concealing the return pipe 8, it
65 also acts to hold the partitions 35 in rigid

relation to each other. The conduit may also be used for concealing electric bell and telephone wires if desired.

The recess D in the wall and the heating unit are covered by a panel C which may be
70 of any suitable shape for the purpose, and which may be given in suitable ornamentation to harmonize with the interior of the room. This panel is comparatively thin so
75 as not to project into the room sufficiently to occupy any appreciable floor space. It is preferably formed of sheet metal with its top and side edges 45 bent inwardly at right
80 angles to provide a finished edge for the panel and to engage the outer face of the wall as snugly as possible. The panel may be secured in position in any suitable manner for the purpose, but for appearance's sake it is
advisable to conceal these fastening means.

Figs. 6 and 7 show fastening or anchoring
85 means for the cover panel. This consists of hooks 46 adapted to engage in holes 47 formed in flanges 48 on the top edges of the partitions 35. A plurality of these holes may be
90 provided to accommodate any irregularities there may be in the relation between the heating unit cabinet and the wall. The hooks are conveniently hinged to small brackets 48 which are fastened, preferably by
95 welding, to the inner face of the panel.

When the panel is in position it forms, with the cabinet, a chamber or duct by which the air is conducted upwardly through the radiator. The lower edge of the panel adjacent the floor line is cut out to form an inlet
100 opening 49 for the admission of cooler air from the room into the cabinet below the radiator. In like manner, the upper portion of the panel is provided with an opening or port 50 which forms an outlet for the heated air above the radiator. The air
105 inlet opening 41 at the bottom of the structure is approximately the same length as the space between the inner partitions 35. Since the partitions 35 are positioned close to the
110 ends of the radiator, the duct formed between them and the rear wall of the cabinet and the cover panel insures the circulation of all the incoming air through the radiator, and prevents the by-passing of any air
115 around the radiator, except the slight amount which circulates through the ventilating slots 40 in the partitions. The outlet 50 may preferably be greater in area than the inlet 49, so as not to offer any resistance to the out-
120 flow of heated air from the cabinet chamber above the radiator. This outlet opening may be provided, if desired, with a suitable ornamental grill 51, Fig. 1.

It is not intended that the panel, after having
125 once been fastened in place, should be removed unless repairs are necessary. It is desirable, however, that access be permitted to the interior of the cabinet for such purposes as manipulating the hand valve 9. For
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this purpose, I provide openings through which convenient access may be gained to the interior of the cabinet. These openings are preferably located in the upper portion of the panel above each end chamber containing the valves and fittings. In the structure shown in Fig. 1, the openings are located at opposite ends of the outlet 50 and are conformed in shape and appearance to the harmonious design of the panel. However, since they perform no function with reference to the heating operations of the structure, I prefer to maintain these openings closed by means of doors 52 which are hinged at 53 at their upper ends to swing inwardly. Thus, when it is desired to gain access to the interior of the cabinet for such purposes as manipulating the hand valves, the person may swing the door inwardly and insert his arm through the opening. Access is also gained to the panel hooks when the panel is to be removed. On their inner sides, the doors are provided with suitable counterweights 54 which automatically return the access doors to closed position when the arm is removed. These doors may be given the appearance of panels conforming to the design of the cover panel in such manner as not to indicate the presence of the access openings.

On account of the fact that in a structure of this character it is difficult to provide a tight joint between the edge of the panel and the wall surface due to the irregularities of the wall, leakage of hot air would occur around the edge of the panel adjacent the wall and cause streaks, which, of course, mar the appearance of the wall. To guard against any leakage of this character, a channel is provided along the front edge of the top wall of the cabinet and the upper edge portions of the side walls of the cabinet. This is accomplished by metal strips 55 which are fastened along the inner surface of the top and end walls of the cabinet and arranged with their outer edge portions offset, Figs. 6 and 7, to space them from the cabinet walls and thus form channels or grooves between the cabinet walls and the strips. The strips are secured to the cabinet walls, preferably by welding, and are provided with holes through which the fastening screws 26 for the adjustable angle members are inserted. In addition to this, a tongue 57 is fastened to the inner face of the panel B in position to enter the marginal groove of the cabinet when the panel is placed in position. This tongue is of considerable width and extends to a considerable depth into the marginal groove, and, together with the marginal groove, constitutes a seal which completely closes the joint between the panel and the cabinet and positively prevents any leakage of air at these points. The marginal groove and the tongue on the end walls of the cabinet may be extended to the bottom of the cabi-

net, although I have found it sufficient if they extend to a point below the top of the radiator, since there is no tendency of the air to leak below this point.

Heating units of this character are usually installed before the wall covering and flooring are put in. It often happens, however, that the type of flooring is changed after the heating units have been installed. The change in type of flooring makes the height of the flooring a variable factor, and in order to provide for these variations the lower edge 58 of the panel is terminated short of the floor line, and the panel is provided with adjustable members 59 on the outer face thereof. In the structure shown in Figs. 1 and 4, these adjustable members are in the form of corner plates positioned against the outer face of the panel and vertically adjustable with respect thereto, so that after the panel has been placed in position these corner plates may be raised or lowered to conform to the relative height of the floor line. It is thus unnecessary to individually cut or trim the panels to provide a finished joint between the panel and the floor. The corner plates may be given any suitable shape to conform to the harmonious appearance of the panel. They are fastened in their adjustable position by instanding threaded studs 60 on which clamping nuts are threaded. These studs extend through slots 61 in the panel, the slots being long enough to permit relative adjustment of the corner plates and panel.

In Figs. 8, 9, and 10, a modified form of adjustable panel is illustrated. Instead of using corner plates 59 as adjustable members, a baseboard effect is obtained by providing a suitable member 65 which extends clear across the width of the panel, and is provided with a cut-out 66 which coincides with the inlet opening 49 at the lower edge of the panel. This single member is preferably shaped like a baseboard and thus harmonizes with the baseboard of the room in which the unit is installed. It is spaced outwardly to some extent from the surface of the panel, but is supported against the panel by the spacing member 67 secured to the inner face of the baseboard member 65. The spacing member has threaded studs 60 which extend through slotted openings 61 in the panel and carry clamping nuts at their inner ends.

Instead of welding or permanently fastening the tongue 57 to the panel, it may be fastened thereto by studs 68 which are mounted on the inner face of the panel and project through elongated slots 69, Fig. 10, so that the tongue member may be adjusted relatively to the panel if desired. This provides an additional adjustment for the structure in the event that the variations in building construction requires a greater range of adjustment than is provided by the structure heretofore described.

I claim:

1. In a heating unit of the class described, the combination of a cabinet adapted to be positioned within the confines of a wall, a radiator within the cabinet to heat air circulated therein, a detachable cover panel for said cabinet arranged to bear against the wall within which the cabinet is positioned, and means on the panel and cabinet cooperating to form a sealed joint between the panel and the cabinet to prevent the leakage of air heated by the radiator between the panel and the wall.
2. In a heating unit of the class described, the combination of a cabinet adapted to be positioned within the confines of a wall, a radiator within the cabinet to heat air circulated therein, a detachable cover panel for said cabinet arranged to bear against the irregularities of the wall within which the cabinet is positioned, means forming a marginal channel at the front edge of the cabinet, and means on the panel extended into the channel to prevent leakage of air heated by the radiator between the marginal edge of the cabinet and the panel.
3. In a heating unit of the class described, the combination of a housing adapted to be positioned within the confines of a wall with its front face substantially flush with the surface of the wall, a panel covering the front of the housing, said housing and panel forming a duct for the circulation of air therethrough, means within the housing for heating the air circulating through the duct, and means around the marginal edge of said housing at the front face thereof for preventing leakage of air from said housing between the housing and the cover panel.
4. In a heating unit of the class described, the combination of a housing adapted to be positioned within the confines of a wall with its front face substantially flush with the surface of the wall, a panel covering the front of the housing, said housing and panel forming a duct for the circulation of air therethrough, means within the housing for heating the air circulating through the duct, and means around the marginal edge of said housing at the front face thereof for preventing leakage of heated air from said housing between the housing and the cover panel, said means comprising a tongue member on the panel extending into the housing and overlapping the walls thereof, and a member on the walls of the housing extending toward the panel and overlapping said tongue.
5. In a heating unit of the class described, the combination of a housing set within the recess of a wall with its front edges substantially in the plane of the surface of the wall, a panel covering the front of said housing and extended beyond the walls of the housing to overlap the wall adjacent the margins of the recess therein, said panel having its edge portions bearing against said wall surface, heating means within the housing for heating and circulating air through the housing, means around the marginal edge of the front of said housing forming a channel, a tongue member mounted on said panel and projecting into the channel in overlapping relation to the walls of said channel, and means for holding said panel in position.
6. In a structure of the class described, the combination of a housing positioned in a recess in a wall with its front face substantially in the plane of the surface of the wall, a removable panel forming a front wall for said housing and extending at its edges beyond the housing to overlap the portion of the wall surrounding the recess, heating means within the housing for heating and circulating the air therethrough, and means on said panel and housing for preventing the leakage of heated air therebetween from the housing and along the wall surface between the wall and the overlapping portions of the panel.
7. In a structure of the class described, the combination of a housing positioned in a recess in a wall with its front face substantially in the plane of the surface of the wall, a panel forming a front wall for said housing and extending beyond the housing to overlap the portion of the wall surrounding the recess, heating means within the housing for heating and circulating the air therethrough, means for preventing the leakage of heated air from the housing and along the wall surface between the wall and the overlapping portions of the panel, means within the interior of the structure for detachably securing the panel in position, and means forming access doors in said panel permitting access to said fastening means from the outside of the structure.
8. In a heating unit of the class described, the combination of a cabinet adapted to be positioned within the confines of a wall and having its front side open, a panel forming the front wall of said cabinet and together with the cabinet forming a duct for the flow of air therethrough, said panel having an air inlet opening and a heated air outlet opening, a radiator positioned within the cabinet for heating and circulating the air therethrough, said panel having an access opening permitting access to the interior of the cabinet from the outside thereof, and means forming a self-closing cover for said access opening.
9. In a heating unit of the class described, the combination of a cabinet adapted to be positioned within the confines of a wall and having its front side open, a panel forming the front wall of said cabinet and together with the cabinet forming a duct for the flow of air therethrough, said panel having an air inlet opening and a heated air outlet opening, a radiator positioned within the

cabinet for heating and circulating the air therethrough, said panel having an access opening permitting access to the interior of the cabinet from the outside thereof, a hinged door forming a closure for said access opening, and means for yieldingly maintaining said door in closed position.

10. In a heating unit structure of the class described, the combination of a cabinet adapted to be set within a recess in a wall, means for supporting the cabinet in said recess with its front side substantially flush with the outer surface of the wall, a heating radiator positioned within the confines of the front side of the cabinet, a panel covering the front side of the cabinet and the adjacent margins of the wall surrounding said recess, and means for adjusting the lower edge of the panel to coincide with the height of the floor line relatively to the position of the cabinet.

11. In a heating unit structure of the class described, the combination of a cabinet adapted to be installed within a recess in an unfinished wall before the finishing covering is applied to said wall, means supporting said cabinet in a position where it projects beyond the unfinished wall substantially to the extent of the thickness of the finishing covering applied to the wall, a heating radiator positioned within said cabinet within the confines of the front side thereof, and a panel covering said recess and the front of said cabinet and bearing against said wall covering, and having means vertically adjustable in conformance with the height of the floor line relatively to the position of the cabinet.

12. In a heating unit structure of the class described, the combination of a cabinet adapted to be set within a recess of a wall adjacent the floor line, a radiator within said cabinet, a panel covering said cabinet and the recess in the wall and forming with the cabinet a duct for air heated by said radiator and terminating at its lower edge above the maximum relative floor height, and an adjustable extension on said panel adapted to be extended below the edge of the panel and into contact with the floor.

13. In a heating unit structure of the class described, the combination of a cabinet adapted to be set within a recess of a wall adjacent the floor line, a radiator of less depth than the depth of the cabinet and positioned therein to the rear of the front margin thereof, a panel covering said cabinet and the recess in the wall forming with the cabinet a duct for heated air and terminating at its lower edge above the maximum relative floor height, an adjustable member mounted on said panel and adapted to be extended below the edge of the panel in contact with the floor, and means for fastening said member in its adjusted position.

14. In a heating unit structure of the class described, the combination with a cabinet adapted to be positioned within a recess in the vertical wall of a building adjacent the floor thereof, a radiator within the cabinet, means connected with the cabinet for supporting the radiator for movement relative to the cabinet, a panel independent of said radiator forming a cover for said cabinet from the floor line to the top of the cabinet, and means forming an extension for said panel for adjusting the height of the panel to the distance between variations in the floor line and the top of the cabinet.

15. In a heating unit of the class described, the combination of a cabinet forming a duct through which air is circulated and having an air inlet opening and a heated air outlet opening, a radiator positioned within the cabinet, and vertically movable supports for the radiator connected with the cabinet for adjusting the relative position of the radiator within the cabinet.

16. In a heating unit of the class described, the combination of a cabinet forming a duct through which air is circulated and having an air inlet opening and a heated air outlet opening, a radiator positioned within the cabinet, and vertically movable partitions within said cabinet supporting said radiator, and spaced from the end walls of the cabinet to provide chambers for the inlet and outlet connections of the radiator.

17. In a heating unit of the class described, the combination of a cabinet forming a duct through which air is circulated and having an air inlet opening and a heated air outlet opening, a radiator positioned within the cabinet, and vertically movable partitions adjacent the ends of the radiator for supporting said radiator, said partitions forming end walls of an air duct within the cabinet and communicating with the air inlet opening.

18. In a heating unit of the class described, the combination of a cabinet forming a duct through which air is circulated and having an air inlet opening and a heated air outlet opening, a radiator positioned within the cabinet, vertically movable partitions adjacent the ends of the radiator for supporting said radiator, said partitions forming end walls of an air duct within the cabinet below the radiator, and having ventilating openings through which air may pass from said duct into the cabinet chamber beyond the partitions.

19. In a structure of the class described, the combination of a cabinet, a radiator disposed horizontally within the cabinet and having inlet and outlet connections at its ends, and partition walls adjacent the ends of the radiator and spaced from the end walls of the cabinet to provide chambers in the cabinet beyond the ends of the radiator, within which chambers are located the inlet

and outlet connections to the radiator, said partitions having ventilating openings for diverting a flow of air into said chambers.

20. In a structure of the class described, the combination of a vertically disposed cabinet having an air inlet in its lower portion and a heated air outlet in its upper portion, a heating radiator positioned horizontally within said cabinet between said openings, and partition walls in said cabinet forming with the walls of the cabinet a duct between said inlet opening and the radiator, said partition walls being disposed adjacent the ends of the radiator.

21. In a structure of the class described, the combination of a vertically disposed cabinet having an air inlet in its lower portion and a heated air outlet in its upper portion, a heating radiator positioned horizontally within said cabinet between said openings, and partition walls in said cabinet forming with the walls of the cabinet a duct between said inlet opening and the radiator, said partition walls being positioned adjacent the ends of said radiator and forming supports for said radiator.

22. In a structure of the class described, the combination of a cabinet having a rear wall, end walls, and a top wall, and being open at its front side, a removable panel covering said open front side and forming a front wall for said cabinet, vertically disposed partition walls within said cabinet and extending substantially from the panel to the rear wall and mounted for vertical movement on said rear wall of the cabinet, a heating radiator disposed within said cabinet between said partitions and supported at its ends by said partitions, and means forming inlet and outlet connections with the ends of said radiator between said partitions and the end walls of the cabinet.

23. In a structure of the class described, the combination of a cabinet having a rear wall, end walls, and a top wall, and being open at its front side, a removable panel covering said open front side and forming a front wall for said cabinet, vertically disposed partition walls within said cabinet and extending substantially from the panel to the rear wall and mounted for vertical movement on said rear wall of the cabinet, a heating radiator disposed within said cabinet between said partitions and supported at its ends by said partitions, means forming inlet and outlet connections with the ends of said radiator between said partitions and the end walls of the cabinet, and a pipe conduit extending between and secured to said partitions below the radiator.

24. In a structure of the class described, the combination of a cabinet comprising a rear wall, end walls, and a top wall, and having its front side open, a removable panel covering said front side and forming a front

wall for the cabinet, a horizontally disposed radiator within the cabinet, and means for supporting said radiator at its ends entirely independently of the panel, said means having a vertically adjustable connection with the rear wall of the cabinet for adjusting the position of the radiator.

25. In a structure of the class described, the combination of a cabinet comprising a rear wall, end walls, and a top wall, and having its front side open, a removable panel covering said front side and forming a front wall for the cabinet, a horizontally disposed radiator within the cabinet, and a vertical movable supporting means for said radiator comprising vertically disposed plate members positioned at the ends of the radiator and forming partition walls below the radiator, and a conduit member extending between and secured to said plate members and forming a passageway for pipe connections to the radiator.

26. In a structure of the class described, the combination of a cabinet comprising a rear wall, end walls, and a top wall, and having its front side open, a removable panel covering said front side and forming the front wall of the cabinet, a horizontally disposed radiator within the cabinet, a vertically movable supporting means for said radiator comprising vertically disposed plate members positioned at the ends of the radiator and forming partition walls below the radiator, a conduit member extending between and secured to said plate members and forming a passageway for pipe connections to the radiator, and means connecting said plate members with the rear wall of the cabinet for permitting vertical movement of the radiator and said supporting means as a unit.

27. In a heating unit of the character described, the combination of a cabinet comprising a rear wall, end walls, and a top wall, and an open front, flange members outstanding at an angle from the end walls and top wall of said cabinet for securing the cabinet within a building wall in which said cabinet is positioned, said flanges being adjustably mounted to vary the distance between the flanges and the front edges of the cabinet in accordance with the thickness of the wall covering material, whereby said cabinet may be positioned so that its front edges will serve as a guide in applying the wall covering material, a radiator positioned within said cabinet with its front face to the rear of the front edges of said cabinet, and means connected with the rear wall of the cabinet for supporting said radiator for movement relatively to the cabinet.

28. In a heating unit, the combination of a cabinet adapted to be positioned within a recess in a building wall and having angle members mounted on the outside of the cabinet for fastening the cabinet to the studding

and header of said building wall, means permitting adjustment of said angle members on said cabinet to position the front edges of the cabinet in a plane substantially flush with the plane of the outer surface of the building wall material, a radiator positioned within the cabinet and means for supporting the radiator at a variable height and angle for drainage with respect to said cabinet and building wall.

In witness that I claim the foregoing I have hereunto subscribed my name this 29th day of January, 1930.

WILFRED SHURTLEFF.

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