

Jan. 27, 1959

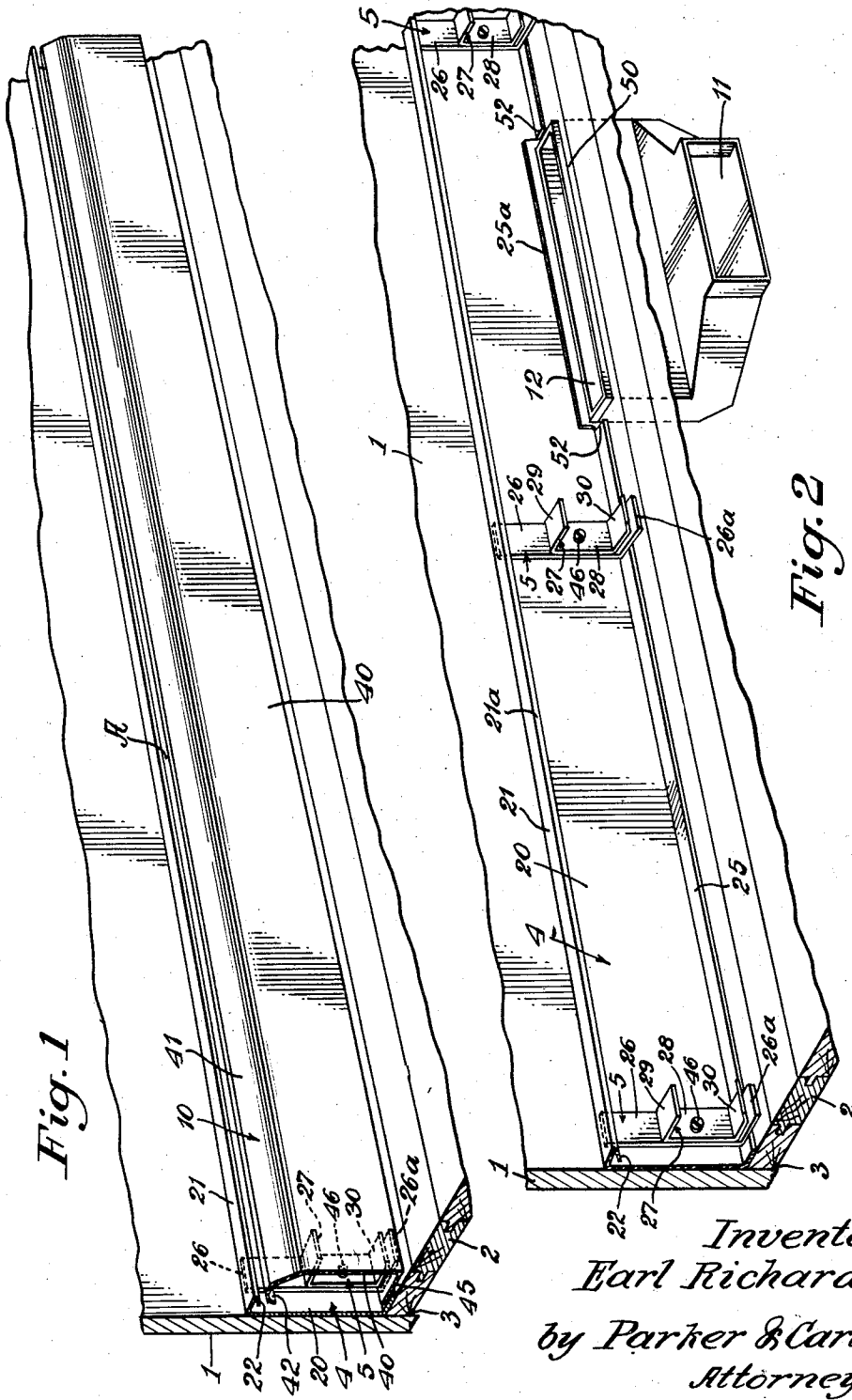
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2,870,699

WARM AIR BASEBOARD HEATING STRUCTURE

Filed Jan. 26, 1955

4 Sheets-Sheet 1



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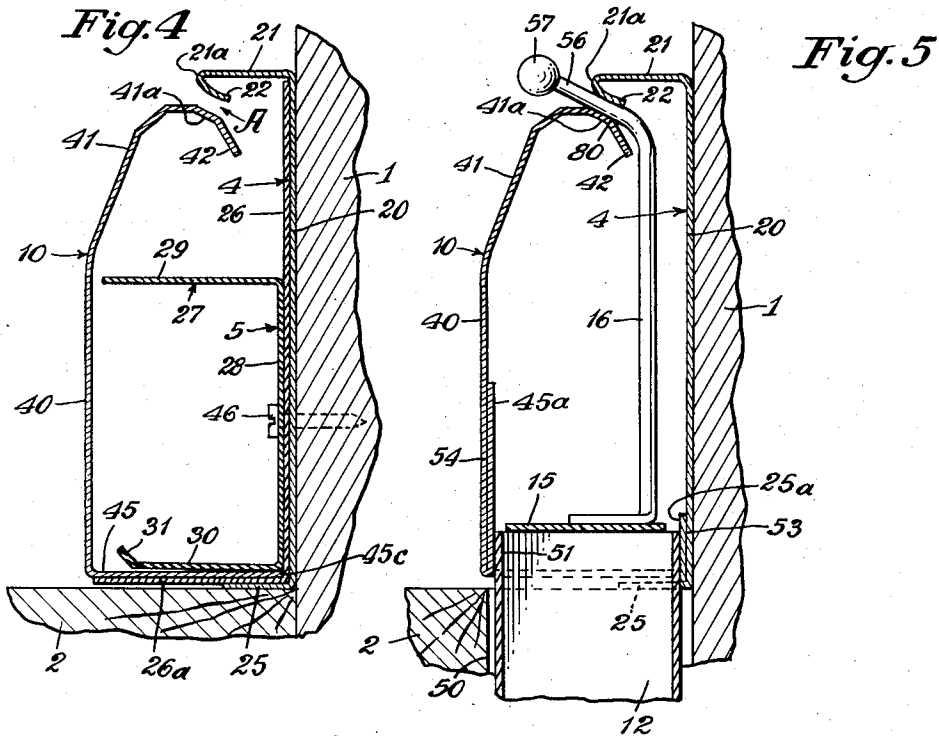
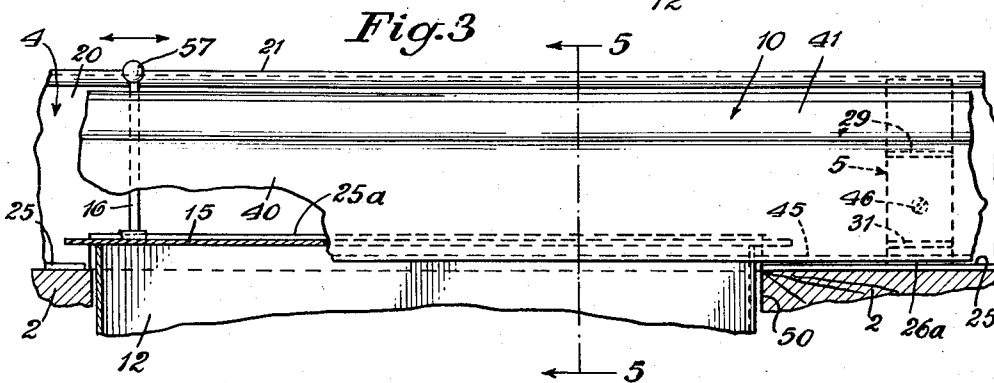
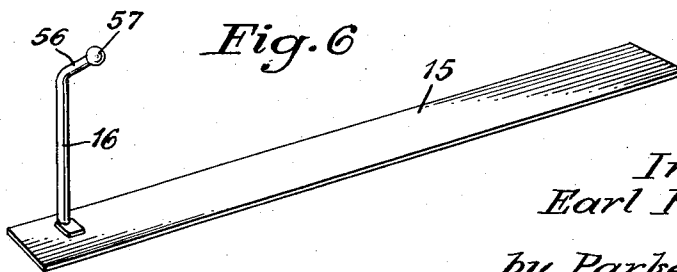
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WARM-AIR BASEBOARD HEATING STRUCTURE

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4 Sheets-Sheet 2



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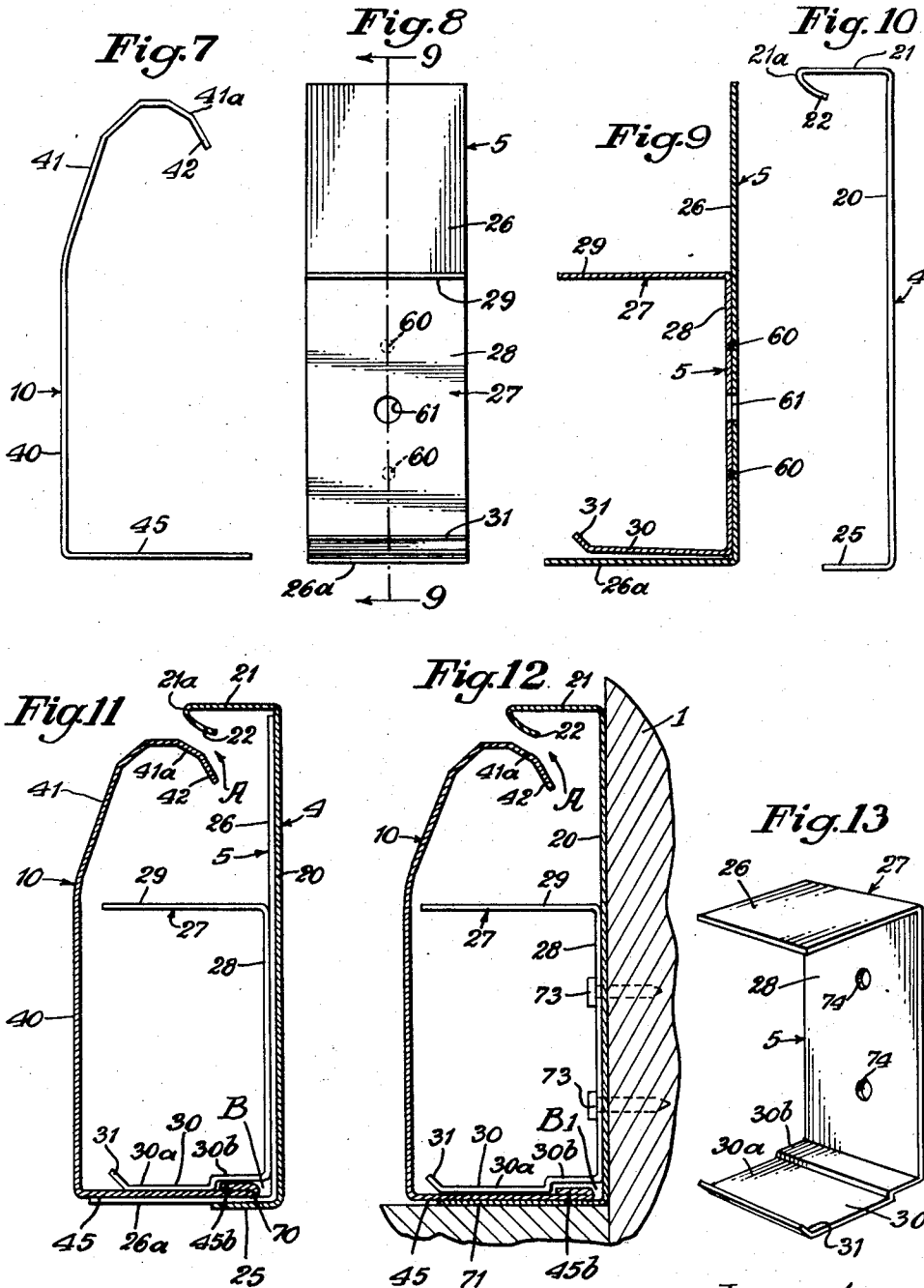
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WARM AIR BASEBOARD HEATING STRUCTURE

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4 Sheets-Sheet 3



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WARM AIR BASEBOARD HEATING STRUCTURE

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4 Sheets-Sheet 4

Fig. 14

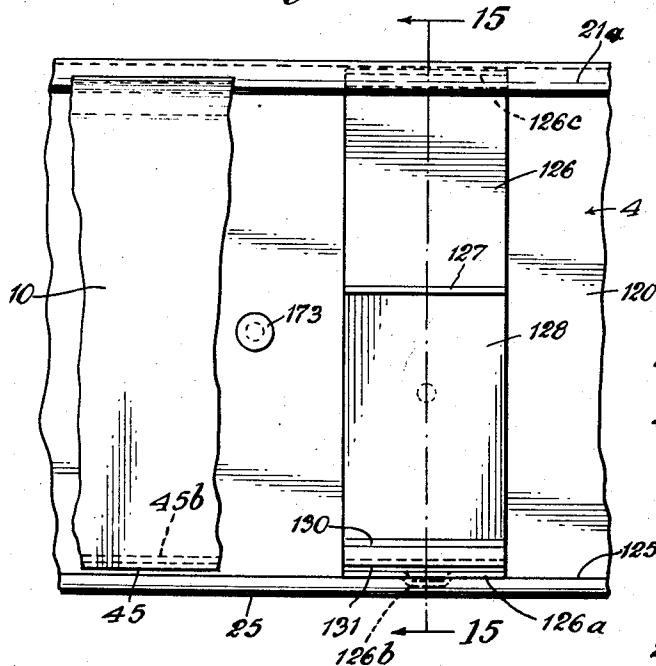


Fig. 15

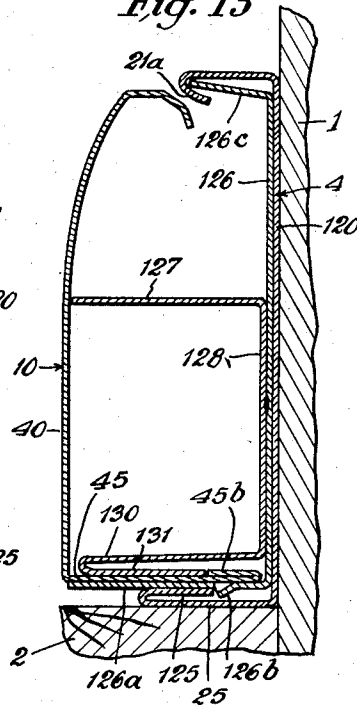


Fig. 16

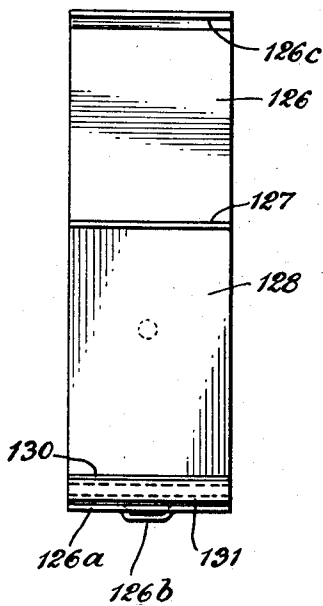


Fig. 17

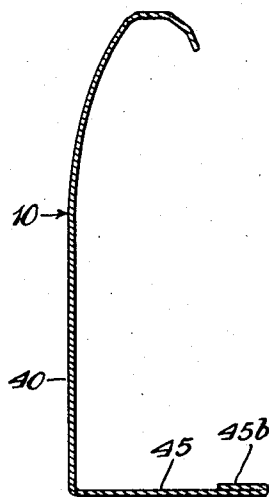
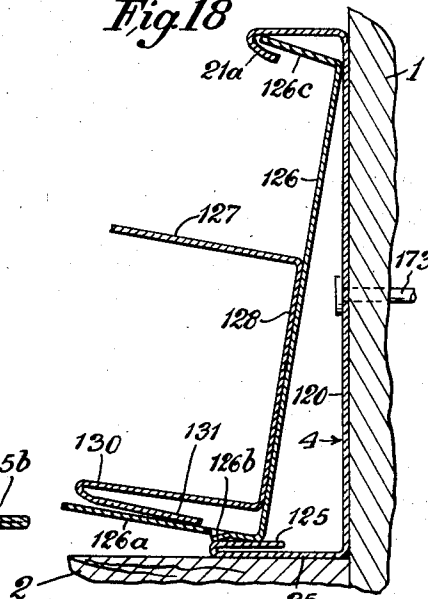


Fig. 18



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1

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WARM AIR BASEBOARD HEATING STRUCTURE

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4 Claims. (Cl. 98—40)

This invention relates to forced-air heating, cooling, and ventilating and has particular relation to an improved baseboard structure usable for such purposes.

One purpose of the invention is to provide a simplified baseboard-type structure usable with forced air to heat, cool or ventilate a room, which structure shall be economical to manufacture.

Another purpose is to provide such a structure which shall be easily and simply installed with a minimum of tools and effort.

Another purpose is to provide such a structure which may be installed without the use of connector means visible after installation.

Another purpose is to provide a simplified control means for use with such structures.

Other purposes will appear from time to time in the course of the specification and claims.

The present application is a continuation in part of my application Serial No. 468,811, filed November 15, 1954, for "Warm Air Baseboard Heating Structure," now Patent No. 2,830,522.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a perspective view in partial cross section;

Figure 2 is a perspective view with parts in cross section and parts removed;

Figure 3 is a partial side elevation with parts in cross section and parts broken away on an enlarged scale;

Figure 4 is an end view in cross section on an enlarged scale;

Figure 5 is a view taken on line 5—5 of Figure 3;

Figure 6 is a detail view illustrating the simplified control means of my invention;

Figure 7 is a detail side view of the outer member;

Figure 8 is a front elevation of the connector means of my invention;

Figure 9 is a view taken on the line 9—9 of Figure 8;

Figure 10 is a side elevation illustrating the rear member of my invention;

Figure 11 is a detail side view in cross section illustrating a variant form of my invention;

Figure 12 is a view similar to Figure 11 illustrating a variant form of my invention;

Figure 13 is a detail view illustrating a variant form of the connector means of my invention;

Figure 14 is a front elevation illustrating a portion of a variant form of my invention;

Figure 15 is a view taken on the line 15—15 of Figure 14;

Figure 16 is a detailed view similar to that of Figure 14;

Figure 17 is a detailed view illustrating a forward or masking member of my invention;

Figure 18 is a view in cross section similar to that of Figure 15 and illustrating my device in the course of installation.

2

Like parts are indicated by like symbols throughout the specification and drawings.

Referring now to the drawings and particularly to Figure 1, numeral 1 generally indicates the lower portion of a wall, normally the outer wall of a building. The numeral 2 indicates generally a floor in such a building which meets the wall 1, as shown generally at 3. Positioned against the lower portion of the wall 1 and resting upon the floor 2 at the point of its junction with the wall 1 is a rear duct member 4. A connector means 5 is secured to the member 4, as best seen in Figure 2. As shown best in Figure 2, there may be a plurality of connector means 5 associated with the member 4. A forward or front member 10 may be positioned in relation to the rear member 4 by means of the connector means or brackets 5. A forced-air duct outlet box is indicated generally at 11. It will be realized that the box 11 will normally be connected with any suitable source of forced air. As indicated in Figures 2, 3, and 5, the box 11 may include an upwardly extending or vertical end portion 12, which may place the box 11 in communication with the area between the members 4, 10 of the baseboard duct structure.

A control means for the forced-air supply means 11 is illustrated in perspective in Figure 6 and may comprise a plate-like body member 15 and a handle means 16.

Referring now particularly to Figures 1 and 4, the rear member 4 may include a generally upright or vertical wall portion 20. The wall 20 may be bent at right angles adjacent its upper edge to form a generally horizontal, longitudinal ledge 21. The ledge 21 may have its projecting longitudinal edge rearwardly and downwardly bent to form the lip 22, which may extend rearwardly toward the wall 20 in a plane generally rearwardly disposed with relation to the wall 20 and ledge 21. The wall 20 has its lower edge bent also at 90° and in the forwardly projecting direction paralleling that of the ledge 21, as indicated by the numeral 25.

The connector bracket 5 may include a generally vertical rear plate portion 26, the lower end portion of which is bent to form the portion 26a extending forwardly from the element 26 and at substantially right angles thereto. Secured to the forward face of the portion 26 is a generally U-shaped, positioning member 27. The member 27 may have a back wall portion 28, a forwardly projecting, upper portion 29 which extends forwardly from the portion 28 at substantially a right angle thereto, and the lower portion 30 which extends forwardly in a plane generally parallel with that of the portion 29. The element 30 may have its outer edge upwardly bent, as indicated at 31.

The forward duct member or front duct member 10 may comprise a generally vertical, longitudinal wall segment 40, the upper portion of which may be bent gradually upon itself to form the curved segment, generally indicated at 41, terminating in the downwardly bent edge portion 42, positioned beneath the ledge 21 and lip 22 and masked by the major portion of the segment 41. The member 10 has a lower longitudinal portion 45, which extends rearwardly from the lower edge of the segment 40 and generally in a plane substantially at right angles with that of the segment 40. The numeral 46 generally indicates a connector, such as a nail or screw, effective to secure the bracket 5 and rear member 4 to the wall 1.

Referring now to Figures 3, 5 and 6, the forced-air supply duct portion 12 may extend upwardly through an appropriate opening 50 in the floor 2 at the juncture 3 and may extend upwardly into the space between the members 4 and 10, as indicated at 51. In order to permit this, the lower, generally horizontal segment 25 of

3

the rear member 4 may be cut, as indicated at 52 in Figure 2, and the portion 25a between the cuts 52 may be bent upwardly to lie against the forward face of the rear member 4, as shown at 53 in Figure 5. Similarly, the forward member 10 may have its segment 45 cut in general alignment with the cuts 52 (not shown), and the portion 45a, between such cuts, may be bent upwardly to lie against the rear face of the forward member 10, as shown generally at 54 in Figure 5. As indicated in Figure 5, the duct portion 12 is of sufficient extension laterally of the members 4, 10 to cause the forward and rear walls of the duct 12 to fit snugly between and to contact the opposed faces of the upwardly bent portions 25a, 45a. The draft control is positioned between the members 4, 10 to allow the body or plate portion 15 to seat upon the upper edges of the duct 12. The handle 16 of the control is secured adjacent one end of the body 15 and extends upwardly therefrom between the members 4, 10. The handle 16 includes a forwardly bent upper end portion 56 which extends through the space between the lip 22 and the upper curved portion 41a of the forward member 10. The handle portion 56 terminates in a knob 57 positioned just forward of the curved forward edge portion 21a of the ledge 21. As best seen in Figure 5, the handle portion 56 is of a width or diameter sufficient to permit slidable movement thereof longitudinal of the members 4, 10 through the opening or air escape passage indicated by the letter A, while at the same time fitting with sufficient snugness to prevent rattling.

Referring now to Figures 8 and 9, the element 28 of the bracket 5 may be secured to the rear plate portion 26 thereof by any suitable means such as the spot welds 60. An aperture 61 may be provided through the members 28, 26 to provide for ease of passage therethrough of the means 46.

Referring now to Figures 11-13, it will be seen that the lower segment 30 of the member 27 may be formed with a downwardly offset portion 30a positioned intermediate the rear edge of the member 30 and the forward lip 31, thus creating a pocket, generally indicated by the letter B, between the segment 26a and the rear portion 30b of the member 30. The lower longitudinal, horizontally positioned segment 45 of the member 10 may have its longitudinal edge portion 45b rearwardly bent upon itself to form an enlargement, indicated generally by the numeral 70, which is of sufficient thickness to substantially fill the space B.

In the variant form of Figure 12, the lower, forwardly projecting, longitudinal edge portion 25 of the rear member 4 may be substantially extended, as indicated at 71, and the segments indicated at 26, 26a in Figure 4 may be removed, the connecting bracket 5 thereafter comprising the generally U-shaped element 27. As illustrated in Figure 12, the member 27 is formed in the manner illustrated in Figure 11, the space B1 being created between a rear portion of the segment 71 and the portion 30b of the bracket segment 30. 73 generally indicates suitable connectors for connecting the bracket element 27 and rear member 4 to the wall 1. Illustrated in perspective in Figure 13 is the connector bracket means shown in side elevation in Figure 12, the apertures 74 being provided for the connectors 73 shown in Figure 12.

Referring now to Figures 14-18, the member 4 may have its lower horizontal forwardly extending edge 25 increased in width and may have its outer edge bent inwardly upon itself to form the thickened edge or enlarged edge 125 which in effect constitutes a flange or abutment running the length of the member 4 and spaced outwardly from the vertical portion 120 thereof. The bracket member illustrated in Figure 9 is shown in variant form in Figures 15 and 18. The vertical portion 126 may have its lower horizontal forwardly extending portion 126a upset or offset as at 126b to form a downwardly extending abutment therein, spaced inwardly from

4

the rear vertical wall 126. At its opposite or upper end the vertical wall or portion 126 may have a forwardly extending, angularly disposed portion 126c. The portion 126c forms an angle with the wall 126 of slightly more than 90 degrees.

A clip or clamping means for the forward heater section 10, and specifically for the lower rearwardly extending horizontal portion 45 thereof illustrated in Figure 17, is formed by rearwardly bending upon itself the forward edge portion of the forwardly extending horizontal portion 130, which is secured by means of the vertical section 128 to the wall 126. The rearwardly bent portion of the member 130 is indicated at 131, and as best seen in Figures 17 and 18, it presses against the upper surface of the portion 126a, its rear edge terminating at a point spaced from the rear vertical wall 126. A forwardly extending central brace portion 127 is connected to the wall 126 through the medium of the vertical portion 128.

A nail or screw 173 may be driven through the wall portion 120 of the member 4 into the wall 1.

It will be realized that, whereas I have described and illustrated a practical and operative device, nevertheless, many changes may be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as, in a broad sense, illustrative or diagrammatic, rather than as limiting me to my precise showing.

The use and operation of my device are as follows:

Since simplicity is one of the features of my invention, both in manufacture and installation of my device, the use and operation is considered to be best described with relation to the installation of my device. The rear member 4 is placed with the upright rear wall segment 20 flush against the lower, outer surface of the wall 1. The lower horizontal segment 25 is allowed to rest upon the floor 2, as best seen in Figures 1, 2, and 4. When desired, the rear member 4 may, at this point, be secured to the wall 1 by any suitable means, such as nails or screws. Since the bracket 5 will be secured to the wall 1 through the member 4, it will not normally be necessary to separately secure the member 4 to the wall 1.

After the member 4 is in position, an appropriate number of connector brackets 5 are secured to the wall 1 through the member 4. The rear, vertically disposed plate member 26 of the connecting means 5 is placed against the forward face of the wall segment 20 and a connector, such as the member 46, is driven through the connecting means 5 and wall segment 20 into the wall 1. When the variant forms of the connecting means, illustrated in Figures 12 and 13, are used, the vertically disposed rear portion 28 thereof is placed directly against the forward face of the wall segment 20 and the connector means, such as the means 73, is driven through the segments 28, 20 into the wall 1. As shown best in Figures 2-4, the bottom, forwardly projecting, horizontally disposed segment 26a of the connector means 5 is positioned directly upon and rests upon the upper surface of the portion 25 of the rear member 4. When the variant form of the connector bracket 5, illustrated in Figures 12 and 13, is used, the rear segment 28 is positioned against the outer surface of the segment 20 in such position as to place the offset portion 30a in predetermined, spaced relationship above the extended lower segment 71 of the rear member 4. It will be observed that, in the form of the connector bracket illustrated in Figure 1-11, the lower segment 30 is spaced upwardly from the segment 26a. As best seen in Figure 9, the element 30 may be slightly angularly disposed in relation to the segment 26a, the rear portion of the portion 30 being spaced a shorter distance from the segment 26a than is the lip portion 31.

Normally prior to the installation of the rear member 4 and connectors 5, the opening 50 will have been made in the floor 2, and the duct portion 12 will have been

5

positioned in the opening 50. The cuts 52 will have been made in the portion 25, and the aligned, corresponding cuts will have been made in the segment 45 of the forward member 10. The rear member 4 and forward member 10 will have had their segments 25a, 45a bent, as indicated at 53 and 54 in Figure 5. When the rear member 4 was installed, these dropped over the upwardly projecting duct 12 with the cuts 52 at either end thereof. Therefore, after the brackets 5 have been appropriately positioned, the control member 15 will be placed upon and above the duct 12 with the handle portion 16 extending upwardly. As best seen in Figure 2, a pair of brackets 5 will normally be positioned one on either side of the duct 12. Thus the forwardly projecting positioning element 29 of each of these last-named connector brackets will serve as a stop means, limiting the travel of the handle 16 longitudinally through the space A and thus limiting the travel of the plate 15 across the duct 12 and retaining the control member 15 in the general location of the duct 12.

The forward member 10 may thereafter be easily and simply installed merely by placing the forward lower edge 45c between the upwardly bent lip 31 and the forward upper surface of the segment 26a and thereafter by gentle pressure moving the member 10 rearwardly to the wall 1, thus forcing the lower, horizontally disposed edge 45c between the segments 30, 26a of the connector means 5. Since, as shown in Figure 9, the segments 30, 26a lie in converging planes and since the space between the rear portions of these segments may be made less than the thickness of the segments 45, it will be seen that a type of clamp or gripping means is provided which will effectively and securely hold the forward member 10 in position. After the segment 45 of the member 10 has been inserted within the clip elements of the brackets 5, the positioning or backing means 29 is effective to insure the proper positioning of the segments 40, 41 of the member 10. Similarly, the member 29 will prevent maladjustment of the space A due to inadvertent, rearwardly directed pressure against the member 10 after it has been installed. It will be seen that the width of the forced-air escape passage A may be adjusted by the simple forward or rearward movement of the member 10 or, in other words, of the segment 45 between the grip elements 26a.

In the variant form illustrated in Figures 11-13, the enlarged forward edge 70 of the segment 45 is pressed beneath the lip 31 to force the element 30 upwardly and thus to permit the enlargement 70 to pass between the downwardly offset portion 30a and either the element 36a of the connector means A, as shown in Figure 11, or the extended lower segment 71 of the rear member 4 within the connector bracket means as that illustrated in Figures 12-13. After the enlargement 70 has passed beneath the offset 30a into the space B or B1, the offset 30a will snap downwardly against the segment 45 and into the position shown in Figures 11 and 12. Thus is provided a type of lock means locking the forward member 10 against inadvertent forward movement away from the rear member 4 while, at the same time, permitting slippage of the member 10 from the member 4, when desired, by the employment of sufficient force to move the enlargement 70 back through the space between the offset 30a and the segment 36a or the segment 71.

As indicated in Figures 3 and 5, the draft control means 15 is of particularly simple construction and, at the same time, provides an absolute minimum of break in the smooth lines of my device, as shown in Figure 1. All that is seen by the viewer is the handle or knob 57. Since the only possible point of contact of the control means with the members 4, 10 exists at the point illustrated at 80 in Figure 5, namely, the rear downwardly bent portion 41a of the segment 41, any scratching or marring of the surface at such point of contact will not be normally visible to the viewer of the overall structure.

Referring to the variant forms shown in Figures 14-18,

6

the installation of my heater duct structure may be considered even more simplified and made more secure. All that is necessary is that the installer shall place the vertical wall 120 of the member 4 against the wall 1. He then nails or screws the member 4 to the wall 1. Thus the only portion of the structure which must be thus secured is the rear member 4 and the nails or screws may be driven into the member 1 at any point along the wall 120 of the member 4. As best seen in Figure 18, my securing bracket is formed with the upwardly inclined upper portion 126c. The portion 126c may be inserted within the looped upper edge portion 21a of the member 4 and the bracket may then be pushed rearwardly against the wall 120 of the member 4. As best seen in Figure 18, the bracket is thereby "snapped" into position. When the abutment portion 126b passes beyond the rearwardly bent portion 125 of the member 4, the spring action created by the upwardly inclined portion 126c forces the abutment 126b into the position illustrated in Figure 15, i. e. behind or in alignment with the abutment or flange created by the rearwardly bent portion 125. Since the portion 125 of the member 4 and the loop 21a of the member 4 extends throughout the length of the member 4, it will be realized that the securing brackets may thus be pressed into position at any point along the member 4 and there is no need to align the securing brackets with uprights or other sufficiently strong portions of the wall 1.

After the securing bracket is in position, as illustrated in Figure 15, the forward wall member 10 may be pressed into position. The horizontal portion 45 is forced between the portion 126a of the securing bracket and the rearwardly bent portion 131. When the rearwardly bent edge portion 45b of the member 10 passes beyond the rear edge of the portion 131, the portion 131 snaps downwardly against the upper surface of the portion 45 and in alignment with the rearwardly bent portion 45b on the portion 45 to secure the forward wall of the duct structure in place.

I claim:

1. A baseboard duct structure for air heating systems comprising a generally longitudinal rear member having a vertically disposed rear wall adapted to be secured to the wall of a building, a forwardly projecting horizontally disposed upper portion, said upper portion having a rearwardly bent angularly disposed edge portion forming a generally longitudinal lip extending the length of said rear member, and a forwardly projecting generally horizontally disposed lower portion positioned for contact with the floor of a building, said lower portion having a rearwardly bent forward edge portion lying along its upper surface, the edge of said rearwardly bent portion being spaced outwardly from said vertical wall, a plurality of connector means positioned along the forward face of said rear member, said connector means including a bracket having a generally vertical portion adapted to be positioned against said vertical wall portion of said rear member between said upper and lower forwardly projecting portions, said bracket vertical portion having a forwardly projecting upwardly inclined portion along its upper edge adapted to be fitted beneath said lip portion on said rear member, said bracket having a forwardly projecting generally perpendicularly disposed lower portion adjacent the lower edge of said bracket vertical portion, said lower bracket portion having a downwardly disposed offset adjacent said bracket vertical portion and spaced from said bracket vertical portion a distance not greater than the distance between the vertical wall of said rear member and the rear edge of said rearwardly bent edge portion of the lower horizontal rear member portion, the arrangement of the parts being such that said bracket member may be snapped into predetermined relationship with said rear member, said upwardly inclined upper bracket portion serving to force

said offset into position behind said rearwardly bent horizontal rear portion.

2. The structure of claim 1, characterized by and including a forward wall for said duct structure and means for securing said forward wall to said rear member, including a generally U-shaped member having its transverse wall against and secured to the vertical portion of said bracket, the upper wall of said U-shaped member extending forwardly from said bracket vertical portion to contact said forward duct wall, the lower wall of said U-shaped member being rearwardly, downwardly bent upon itself to form with the horizontally extending lower bracket portion a clip means for said forward duct wall, said U-shaped member serving to position said forward duct wall in relation to said rear member to create a longitudinally extending passage.

3. A baseboard duct structure comprising a generally rectilinear, longitudinal rear wall member having along its entire upper edge a forwardly projecting lip portion and along its entire lower edge a forwardly projecting, floor-contacting portion, a plurality of connector means removably secured to and randomly positioned along the forward face of said rear wall member and held in compression between said lip and floor-contacting portions, said connector means comprising each a bracket having a rear vertical portion and having a forwardly extending portion along the lower edge of said vertical portion, said forwardly extending bracket portion having elements constituting a receiver member, and a generally rectilinear, longitudinal front wall member having a perpendicularly disposed portion along its entire lower edge, said last-named portion having an enlargement formed and adapted to be received and gripped by said receiver member, said forward wall portion defining with said rear wall portion a baseboard duct structure and

having a portion along its entire upper edge projecting inwardly toward said rear wall portion and spaced from said rear wall lip portion to define a longitudinal air-escape passage therebetween extending the full length of said rear and forward wall portions, said bracket elements constituting said receiver member comprising a pair of forwardly extending, spaced bracket portions, one of said portions having a segment spaced a greater distance from the other adjacent said bracket vertical portion to define a receiving pocket, said lower edge portion enlargement extending along the entire length of said edge formed and adapted to seat within said pocket for gripping by said receiver member.

4. The structure of claim 3 characterized by and including an upwardly inclined, forwardly projecting bracket portion secured to the upper edge of said bracket vertical portion and formed and adapted to seat beneath and within said lip portion along the upper edge of said rear wall member, whereby said bracket member may be removably snapped into and held in position against said rear wall member.

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