April 15, 1958 E. RICHARDS 2,830,522

WARM AIR BASEBOARD HEATING STRUCTURE

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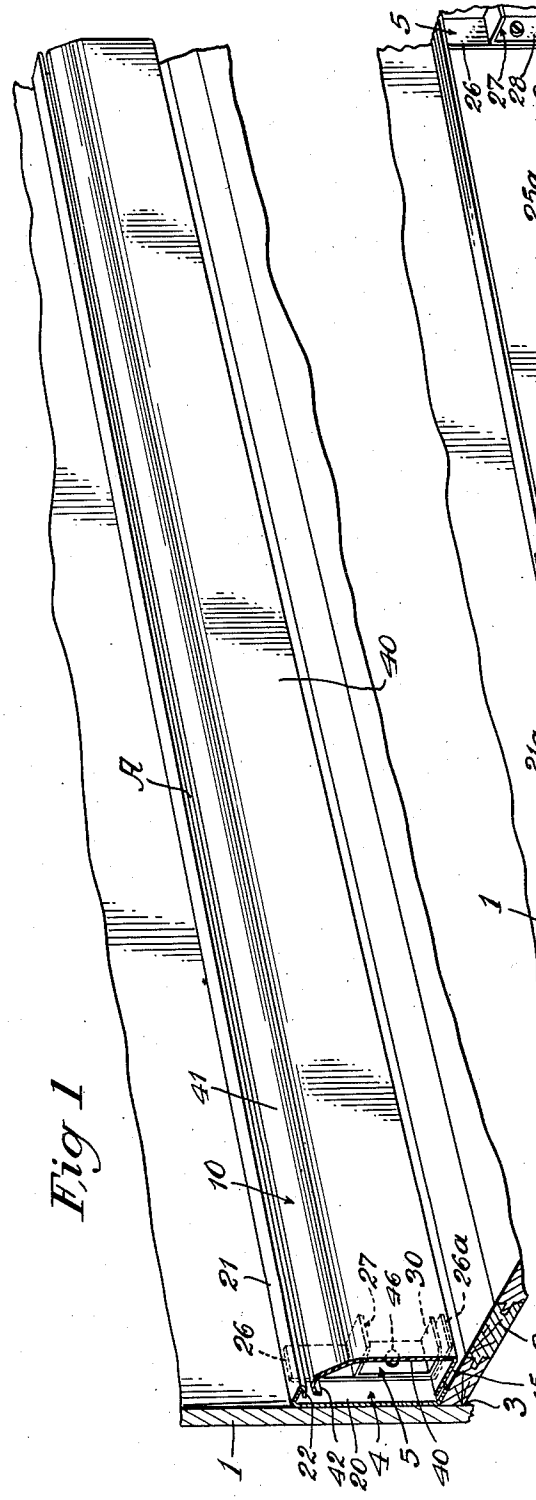

Fig. 1

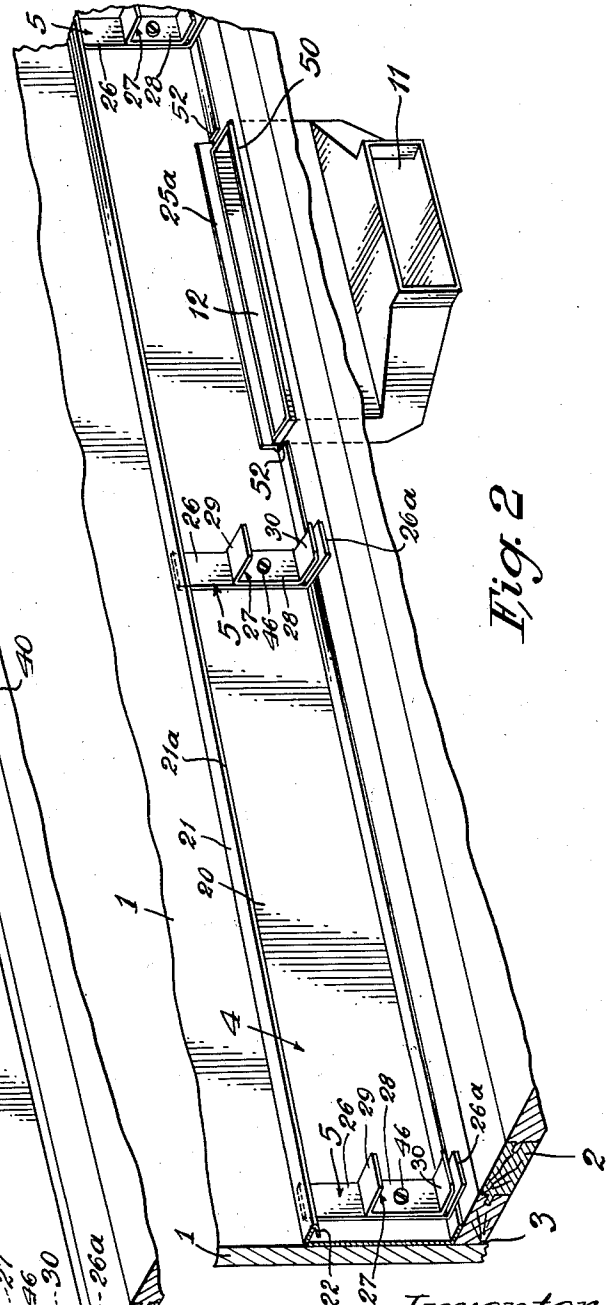

Fig. 2

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Fig. 4

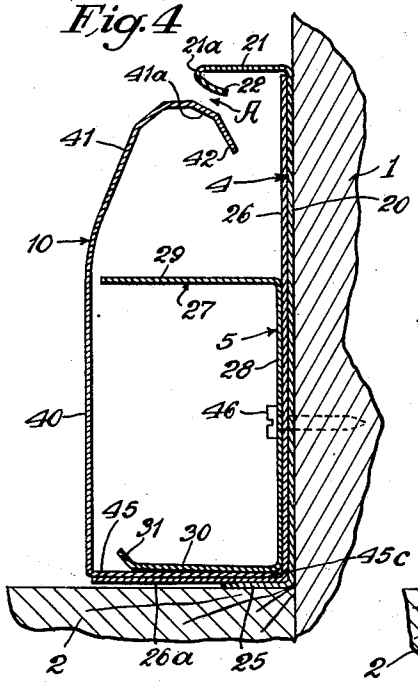

Fig. 5

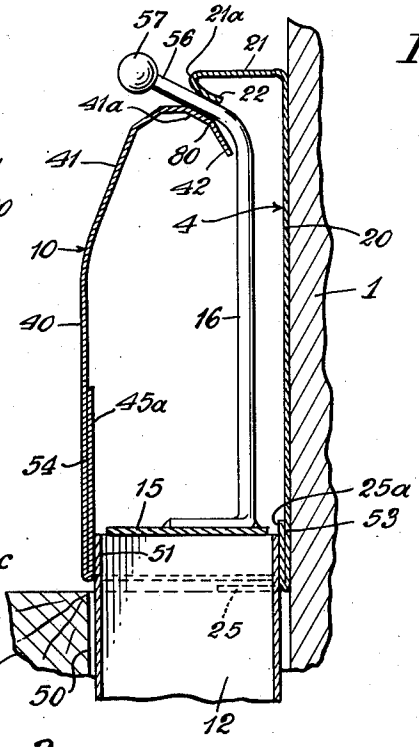

Fig. 3

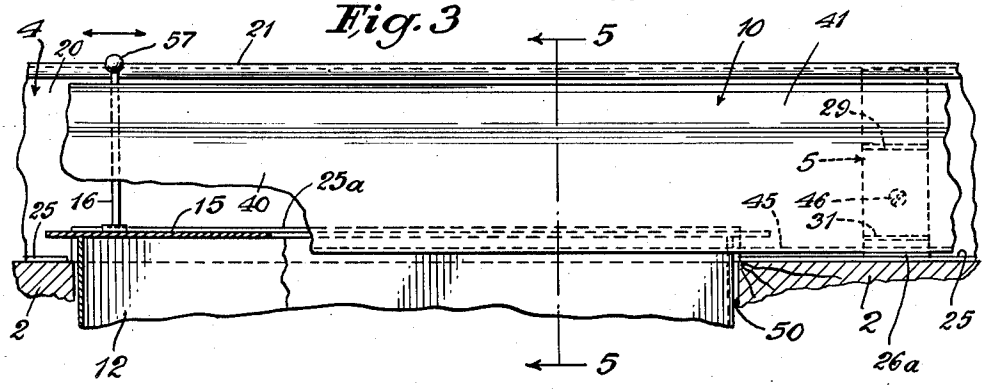

Fig. 6

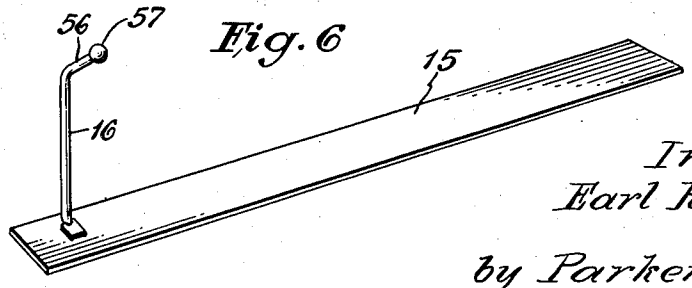

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Fig. 7

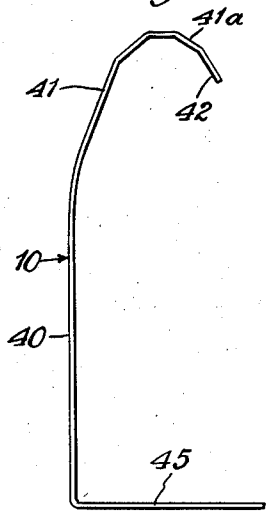


Fig. 8

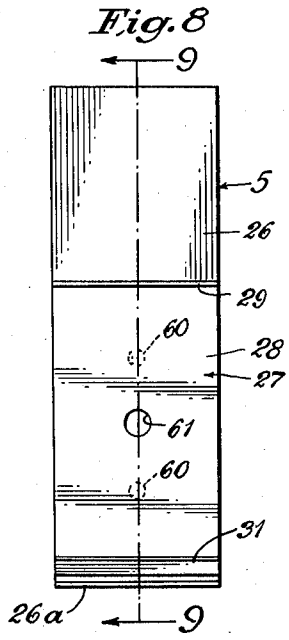


Fig. 9

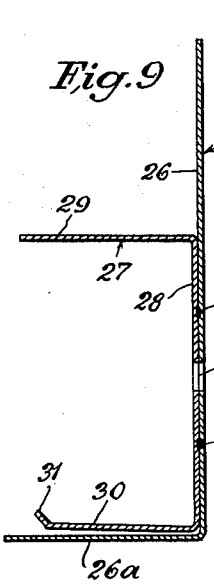


Fig. 10

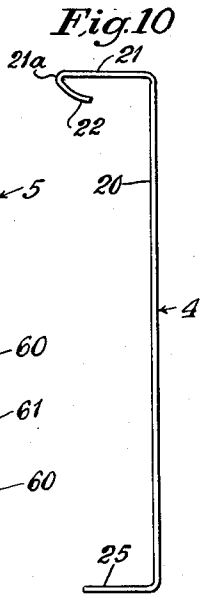


Fig. 11

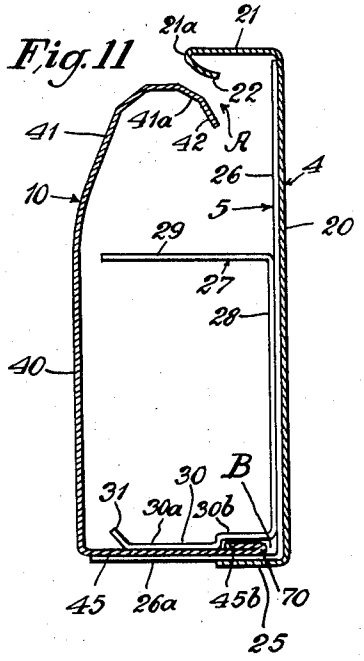


Fig. 12

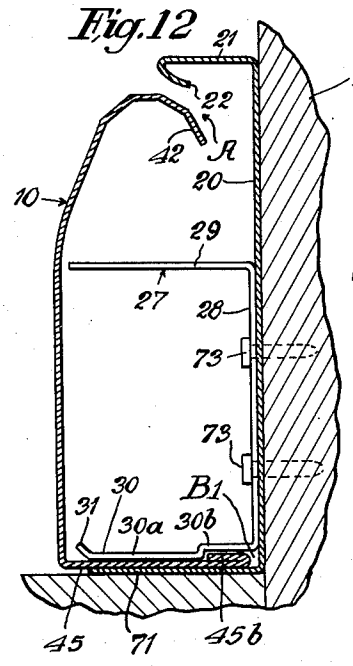
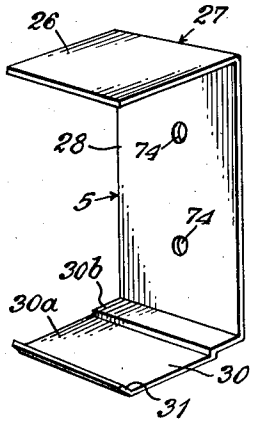


Fig. 13



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WARM AIR BASEBOARD HEATING STRUCTURE

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Application November 15, 1954, Serial No. 468,811

3 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.

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.

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 rests 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 20, 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 26*a* 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 the rear member 4 may be cut, as indicated at 52 in Figure 2, and the portion 25*a* 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 45*a*, 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 25*a*, 45*a*. 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 **41***a* of the forward member **10**. The handle portion **56** terminates in a knob **57** positioned just forward of the curved forward edge portion **21***a* 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 **30***a* 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 **26***a* and the rear portion **30***b* of the member **30**. The lower longitudinal, horizontally positioned segment **45** of the member **10** may have its longitudinal edge portion **45***b* 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**, **26***a* 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 **30***b* 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.

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 **26***a* 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 **30***a* 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 Figures 1–11, the lower segment **30** is spaced upwardly from the segment **26***a*. As best seen in Figure 9, the element **30** may be slightly angularly disposed in relation to the segment **26***a*, the rear portion of the portion **30** being spaced a shorter distance from the segment **26***a* 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 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 **25***a*, **45***a* 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 edg **45***c* between the upwardly bent lip **31** and the forward upper surface of the segment **26***a* and thereafter by gentle pressure moving the member **10** rearwardly to the wall **1**, thus forcing the lower, horizontally disposed edge **45***c* between the segments **30**, **26***a* of the connector means **5**. Since, as shown in Figure 9, the segments **30**, **26***a* 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 of 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 **26***a*.

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 **30***a* and either the element **36***a* of the connector means A, 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 **30***a* into the space B or B1, the offset **30***a* 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 **30***a* and the segment **36***a* 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 **41***a* 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.

I claim:

1. A baseboard duct structure comprising a generally longitudinal rear member having a forwardly projecting longitudinal lip portion, a plurality of separate connector means removably positioned along the forward face of said rear member and beneath said lip portion, each said connector means constituting a bracket having opposed, forwardly open, spaced elements extending forwardly from the lower edge of said bracket, said spaced elements constituting spring clip means, a front longitudinal member having a lower rearwardly extending portion insertable between said elements and adapted to be gripped thereby, said front member terminating at its upper longitudinal edge in a rearwardly, downwardly disposed lip portion, said last-named lip portion being spaced from said first-named lip portion a predetermined distance to create a longitudinal escape passage and means for directing forced air to the space between said forward and rear members for eventual movement through said escape passage.

2. The structure of claim 1 wherein said bracket includes an L-shaped rear member and a U-shaped forward member, said U-shaped forward member having one of its substantially parallel side walls positioned spacedly adjacent the minor wall of said L-shaped member and having an inwardly offset portion spaced a greater distance from said minor wall than the remainder of said U-shaped bracket wall to provide a pocket, and wherein said front member has an enlargement along the rear edge of said lower insertable portion formed and adapted for reception within said pocket, said enlargement being of a thickness greater than the space between said remainder of said U-shaped bracket wall and said minor wall.

3. A baseboard duct structure comprising a generally longitudinal, rectilinear rear duct wall member having a forwardly projecting upper longitudinal lip portion, a plurality of individual connector members removably positioned in spaced relation along the forward face of said rear member and beneath said lip portion, each said connector means comprising a U-shaped bracket having a first wall portion secured to the forward face of said rear member and having spaced, substantially parallel side wall portions extending forwardly from said forward face of said rear member, said rear member having a forwardly projecting lower portion spacedly adjacent and beneath the lowermost of said spaced bracket wall portions, and a longitudinal generally rectilinear forward duct wall member, said forward member having a rearwardly extending wall portion along its lower edge, said lowermost bracket wall and said forwardly projecting lower wall portion on said rear member comprising together a clip member effective to removably receive said rearwardly extending portion.

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