Oct. 7, 1958 P. F. BRINEN 2,855,186

BASE-BOARD CONVECTORS

Filed Sept. 3, 1954 3 Sheets-Sheet 1

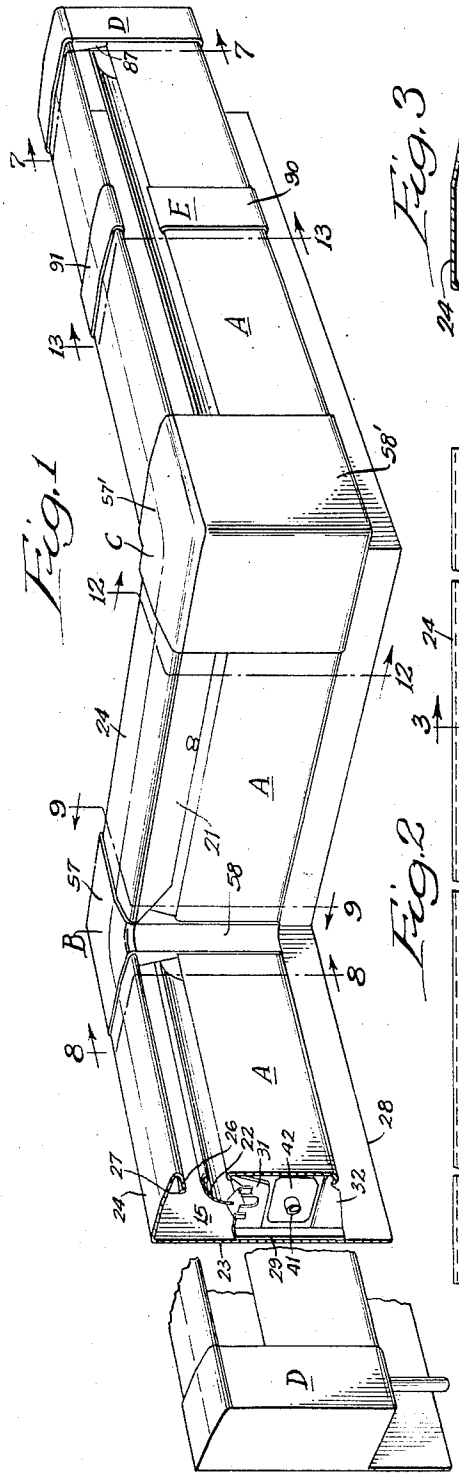

Fig. 1

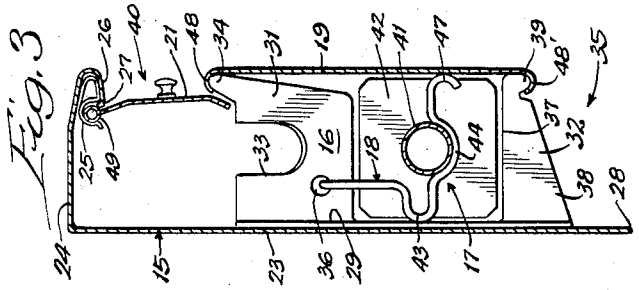

Fig. 3

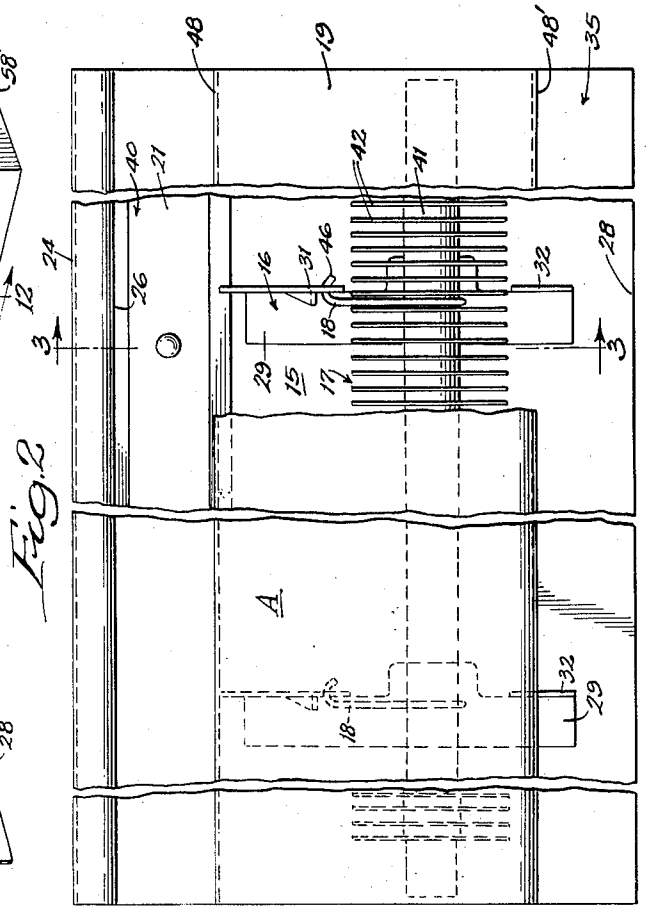

Fig. 2

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Oct. 7, 1958 P. F. BRINEN 2,855,186

BASE-BOARD CONVECTORS

Filed Sept. 3, 1954 3 Sheets-Sheet 2

Fig. 4

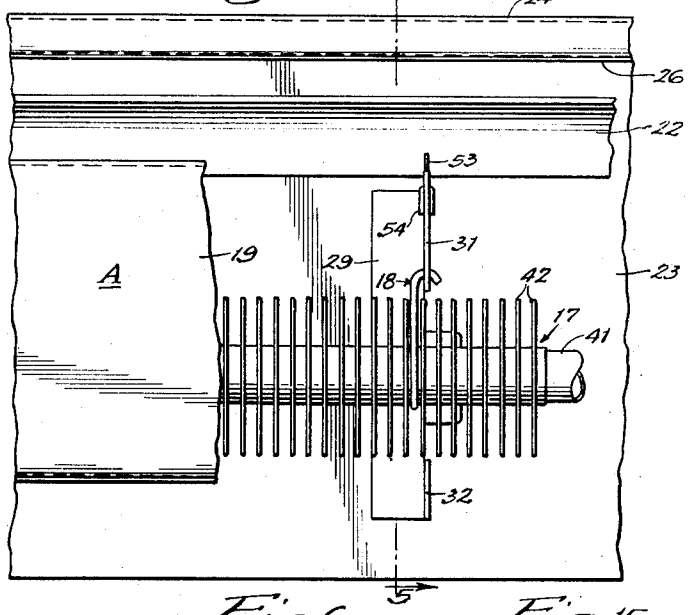


Fig. 5

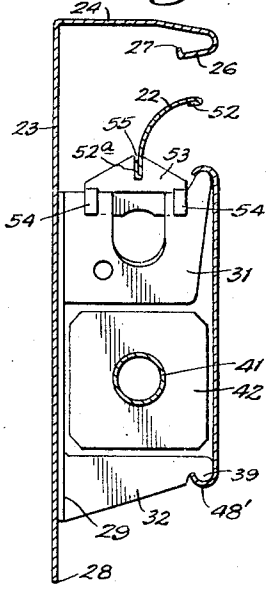


Fig. 6

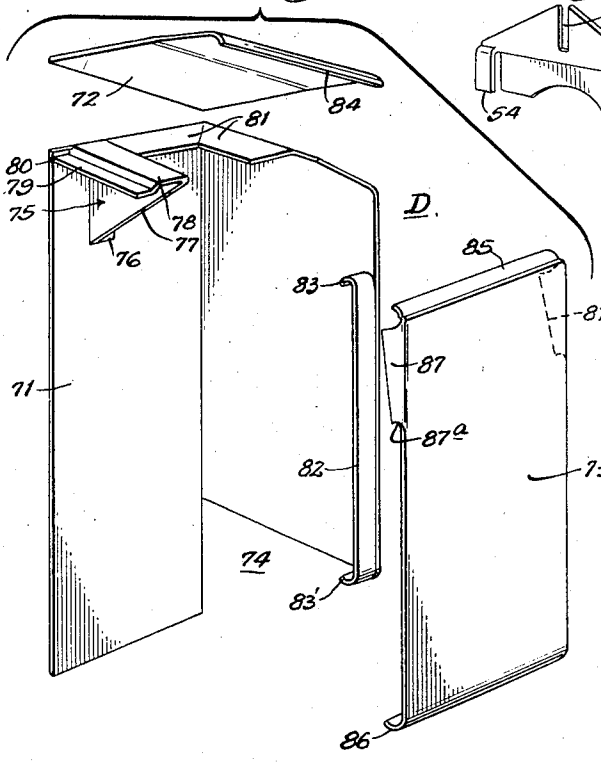
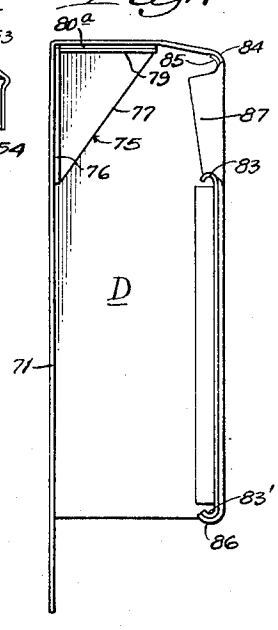


Fig. 15

Fig. 7



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BASE-BOARD CONVECTORS

Filed Sept. 3, 1954 3 Sheets-Sheet 3

Fig. 8

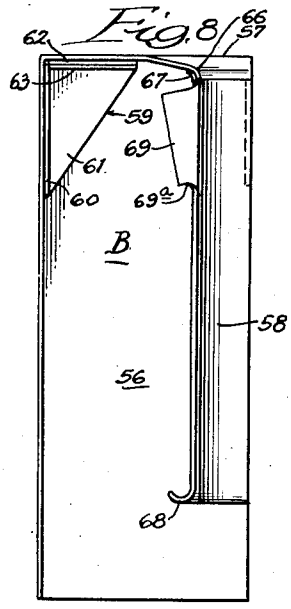


Fig. 9

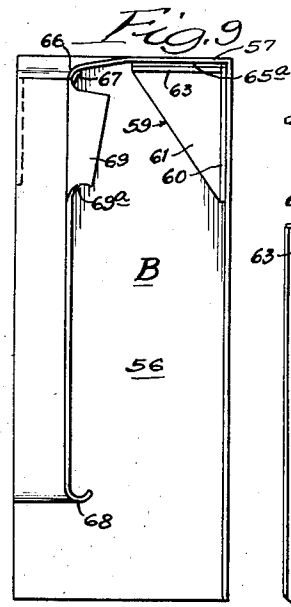


Fig. 10

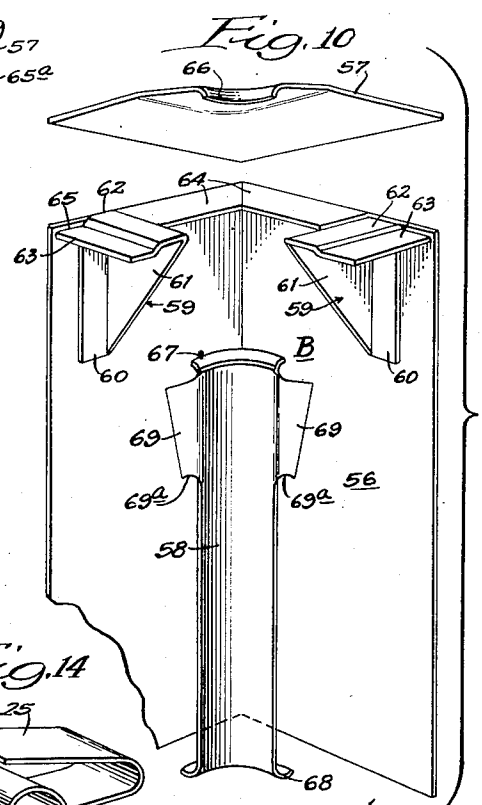


Fig. 11

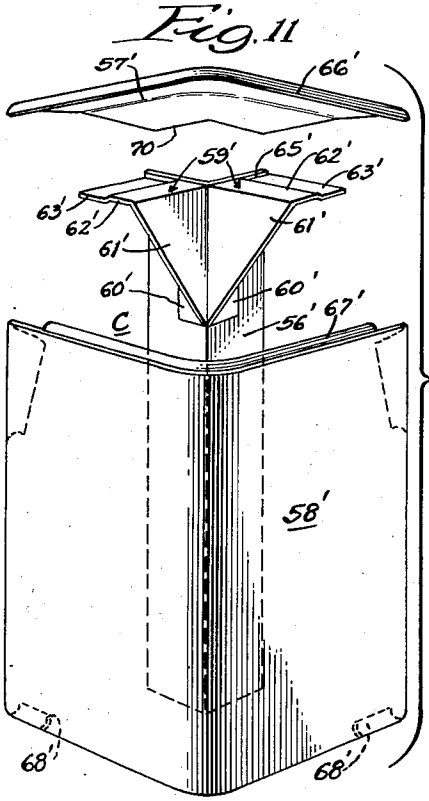


Fig. 14

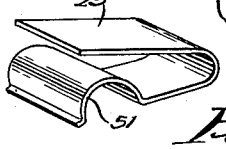


Fig. 12

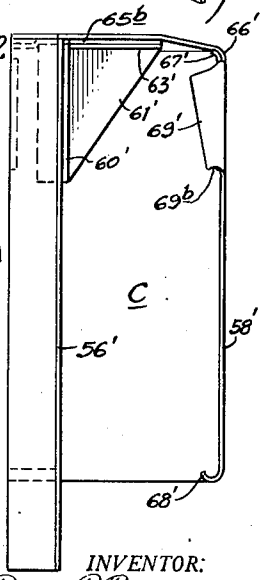
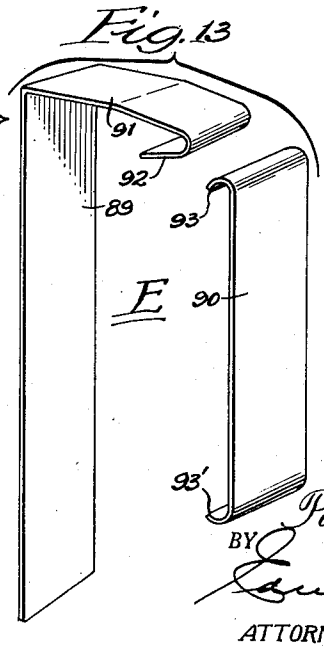


Fig. 13



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2,855,186

BASE-BOARD CONVECTORS

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Application September 3, 1954, Serial No. 454,186

8 Claims. (Cl. 257—133)

This invention relates to heat exchangers of the convector type for location around a room along what is generally known as the base board.

The main objects of this invention are to provide an improved construction and relative arrangement of the several component parts of base-board convectors; to provide an improved form and arrangement of the main mounting member for attachment to a wall and for support of all the other parts; to provide an improved form of bracket for the supporting of the heating core and of the concealing front panel therefor; to provide an improved means for suspending the heating core on the bracket; to provide an improved mounting and bracket of this kind which permits the use of either a damper or an air-splitter for regulating the flow of heated air into the room; to provide an improved construction of the corner and end cap trims and the association thereof with the other aforesaid parts to complete a full enclosure of the heating core; and to provide an improved base-board convector of this kind all of the several parts of which are simple in form so as to make their manufacture quite economical, very facile to assemble on the job, and highly attractive in appearance.

In the accompanying drawings,

Fig. 1 is a perspective view of a completely assembled stretch of base-board convection constructed in accordance with this invention, the same being shown running along the side of a room with parallel sections horizontally offset from each other, one of which parallel sections is equipped with an air-splitter and the transversely connecting section is equipped with a damper;

Fig. 2 is an enlarged, partly-broken-away front elevational view of the transverse section of this improved baseboard convector, as shown in Fig. 1, equipped with a damper;

Fig. 3 is a transverse sectional elevation of the same as viewed from the plane of the line 3—3 of Fig. 2;

Fig. 4 is a view similar to Fig. 2, of the left hand end section of the assembly shown in Fig. 1, wherein an air-splitter is used in place of a damper;

Fig. 5 is a transverse, sectional elevation of Fig. 4 as viewed from the plane of the line 5—5 of Fig. 4;

Fig. 6 is an exploded perspective of the parts of the end cap trim, this particular view being of the end cap for the right hand end of the assembly shown in Fig. 1;

Fig. 7 is a side elevation of the assembled parts shown in Fig. 6 as viewed from the plane of the line 7—7 of Fig. 1;

Figs. 8 and 9 are opposite end elevations of the assembled parts of an inside corner trim and viewed respectively from the planes of the lines 8—8 and 9—9 of Fig. 1;

Fig. 10 is an exploded perspective of the parts which make up the assembled inside corner trim of Figs. 8 and 9;

Fig. 11 is an exploded perspective of the parts which make up the outside corner trim as shown in Fig. 12;

Fig. 12 is a side elevation of the assembled parts

which make up the outside corner trim, as viewed from the plane of the line 12—12 of Fig. 1;

Fig. 13 is a perspective side elevation of the two pieces which constitute a joint cover trim, as viewed from the plane of the line 13—13 of Fig. 1;

Fig. 14 is a perspective of one of the clips which swingably support a damper in place; and

Fig. 15 is a perspective view of one of the clips two or more of which support an air-splitter.

The essential concept of this invention involves a series of wall-supported sections each with a panel-concealed heating core wherewith is associated either a damper or an air-splitter, adjacent sections being secured together by inside and outside corner trim assemblies and joint cover trims, the ends of the sections being closed by end trim assemblies.

An improved base-board convector embodying the foregoing concept comprises a series of heating sections A, inside and outside corner trims B and C, end trims D, and joint cover trims E.

A section A of this improved base-board convector comprises a wall mounting 15 whereto are secured brackets 16 from which a heating core 17 is suspended by hangers 18 and concealed behind front panels 19 and above which core is arranged either a damper 21 or an air-splitter 22.

The wall-mounting 15 is a sheet metal stamping formed with a right angle disposed back 23 and top 24. The top 24 has its front edge tapered slightly downward and turned inwardly to form a bead 26 terminating in an upwardly-disposed narrow perimetrical flange 27 (Fig. 3), within which flanged bead 26 are retained damper hinge clips 25. The back 23 of each mounting 15 is of a height such that with its lower edge 28 resting on the floor the back 23 lies flat against the wall and disposes the transverse top 24 at the desired elevation above the floor and so relatively positions the parts assembled thereon as to make heating most effective. Suitable apertures (not here shown) are drilled in the back 23 by the installers to permit it to be anchored to the wall.

The brackets 16, of which there may be two or more to a length of each mounting 15, are metal stampings from the bases 29 of which extend the right-angularly-disposed, vertically-spaced flanges 31 and 32. Medially the flange 31 is formed with a U-shaped recess 33 and has its upper outer corner extended to form an upwardly-disposed rounded prong 34. Near its lower rear portion is an aperture 36 for the reception of one end of the hanger 18. The recess 33 is provided to accommodate a return pipe for the heating core 17 when, for some reason, it is desired to have the inlet and outlet supply pipes at one end of the stretch of convection.

The flange 32 has its upper edge 37 at right angles to the base 29 but its lower edge 38 is inclined upwardly and notched near the outer end to provide a downwardly-disposed rounded prong 39. These flanges 31 and 32 are so spaced from each other vertically that the prongs 34 and 39 may have the panel 19 releasably snapped thereon, as so clearly shown in Figs. 3 and 5.

The brackets 16 are so positioned on the mounting back 23 that with the panel 19 in place on the prongs 34 and 39 there is a space 35 above the floor and a space 40 below the mounting top 24 to provide for the requisite circulation of air into, and up through, and from the space wherein the core 17 is suspended.

The heating core 17 is of a conventional character comprising a tube 41 on which are bonded rectangularly-shaped axially-spaced fins 42.

The hanger 18 (Figs. 2 and 3), which is one of the special features of this improved base-board convector, is a piece of wire bent to simulate the general form of an

L with an outwardly-disposed loop 43 formed near the junction of the two leg parts of the L. The lower horizontally-disposed leg part is curved downwardly to provide a cradle 44 for the pipe 41 on the heating core 17.

The free ends of the wire hanger 18 are bent to form hooks 46 and 47. The loop 43 and the hook 47 are so shaped and spaced that the opposite extreme peripheral points are spaced apart a distance but slightly less than the front-to-rear distance between the front face of the bracket base 29 and the inside face of the front panel 19, when the latter is in place on the prongs 34 and 39, as shown in Fig. 3. Thus, when the hook 46 is inserted in the aperture 36 in the flange 31 and the heating core 17 is suspended on two or more of these hangers 18 the edges of the fins 42 are held free of contact with the bracket bases 29 and the panel 19. Accordingly, when there is an expansion and contraction of the heating core 17 there is no tinkling sound created by the dragging of the edges of the fins 42 on these parts, a sound which can be very annoying to occupants of a room when such expansion and contraction are alternatively taking place, and no provision has been made for preventing contact of the fins edges with these housing parts.

The panel 19, for each section A of this base-board convector, is simply a sheet of metal. The opposite longitudinal peripheral portions are bent to provide annual beads 48 and 48' which are so formed that with just a little pressure they may be sprung over the curved extremities of the prongs 34 and 39, to insure the panels being held firmly in place on these brackets 16 to conceal the heating core 17.

As previously noted, a damper 21 or an air-splitter 22 may be arranged above the heating core to influence the heated air flow through the outlet 40.

The damper 21, suitable for use with a section A has one longitudinal edge rolled to form an annular bead 49 whereby the damper 21 is swingably held on the mounting-top bead 26 by two or more spring hinge clips 25 (Figs. 3 and 14). These spring clips 25 are somewhat V-shape, one leg of which has its free end bent to constitute a socket 51 to yieldingly embrace the damper bead 49. These clips 25 are sprung into the bead 26 to seat rearwardly of the flange 27 and against which the damper bead 49 is firmly held by the free end sockets 51 of two or more of the clips 25.

The air-splitter 22 is a curved strip of sheet metal formed with a reinforcing rib 52 along the upper longitudinal edge and a V-disposed flange 52*a* (Fig. 5) along the other edge. An air-splitter 22 is supported on two or more bracket flanges 31 by special clips 53 (Figs. 5 and 15). Each such clip has prongs 54 punched out from the face thereof at the opposite lower corners. The opposite edge is tapered to an apex at which point a slot 55 extends inwardly toward the middle. In width this slot 55 is slightly greater than the thickness of the material from which the air-splitter 22 is made so that with the V-flanged edge 52*a* pressed into the slot 55 the air-splitter 22 is frictionally held in place. With one of these clips 53 astride the upper edges of each bracket flange 31 the air-splitter 22 is positioned nearly medially in the heated air outlet 40.

The corner trims B and C are constructed to provide an ornamental continuity for adjacent and angularly-disposed sections A. Although the three pieces of which each such two differently-placed trims B and C are formed are differently shaped they are fundamentally of the same general construction and purpose, as is most evident from Figs. 10 and 11. Each such trim comprises a right-angular shaped upright support, a top member, and a front plate. For the inside corner trim B supports are herein respectively identified by the reference numerals 56, 57 and 58 but for the outside corner trim are identified by the reference numerals 56', 57' and 58'.

The support 56, for the inside corner trim B, is disposed with its angle facing out and has brackets 59 bonded at the upper outer corners of the two sides of the support 56. Each of these brackets 59 is formed with a base 60, a gusset 61 and a plate 62. The plate 62 of each such bracket 59 is offset medially to form a ledge 63. The free outer edge of the ledge 63 is flush with the adjacent verticle edge of the upright 56 to which the bracket is bonded. The inner short edge of the offset 63 is spaced from the support 56 to form a slot 65 (Fig. 10) equal to the thickness of the back 23 of the mounting 15. Intermediate these two brackets 59 the support 56 is formed with inwardly-extending flanges 64 disposed in the plane of the bracket plates 62.

The top member 57 is a flat rectangular-shaped piece of metal with an arcuate-shaped depending lip 66 formed at the forward corner thereof. This top member is practically square and of a width substantially equal to the width of the mounting top 24. The top member 57 is bonded, preferably by spot welding, to the bracket plates 62 and the support flanges 64 with the rear right angle edges flush with the rear faces of the upright support 56 and the lip 66 disposed forwardly of the support 56. Between the ledge 63 and the under face of the top 57 is constituted a slot 65*a* (Figs. 8 and 9).

The front plate 58 is of quarter circular cross section with an offset upwardly-extending lip 67, formed at the upper end, and an inwardly-curved bead 68, formed at the lower end. Rearwardly-curving wings 69 are also formed adjacent the upper edges of the plate 58. The lower ends of these wings 69 are curvedly recessed at 69*a* in opposed relationship to the ends of the corresponding curved bead 68 and spaced from such bead 68 a distance equal to the vertical outside dimension of the front panel 19. The function of these recessed wings 69 coacting with the bead 68 will appear presently.

The support 56' and front panel 58' for the outside corner trim C, in their overall horizontal dimensions, are more like the horizontal dimensions of the front panel 58 and support 56 respectively of the inside trim C just described but similar to the support 56 and front panel 58 respectively in their transverse cross-sectional form. The support 56' is disposed with its right angle rearward. Brackets 59' are bonded at the upper ends of the two sides in abutting relationship. These brackets 59' are identical with the brackets 59, each having a base 60', a gusset 61' and a plate 62'. The plate 62' is medially offset to form a ledge 63' the inner end of which is spaced from the side to form a slot 65*a* equal in thickness to the material out of which the back 23 of the mounting 15 is made.

The top member 57' for this trim C is a flat rectangular piece of metal with the rear corner cut out at 70 to fit around the upper end of the support 56'. It is of a width equal to that of the mounting top 24. The forward perimetrical portions of the top member 57' are formed with a continuous downwardly-disposed lip 66'. The top member 57' is bonded, preferably by spot welding, to the brackets 59' with the edges of the angular cut out 70 seated against the upper inside faces of the angle upright 56' and the lip 66' disposed outwardly of the brackets 59'. Between the ledge 63' and the under face of the top 57' is constituted a slot 65*b* (Fig. 12).

The front plate 58' for the trim C is a right-angle shaped piece formed with an inwardly-upwardly offset lip 67' along its upper edge and with inwardly-upwardly curved beads 68' at lower opposite corners. It also has inwardly-curved wings 69' formed adjacent the upper corners. The lower ends of these wings 69' are curvedly recessed at 69*b* in opposed relationship to the corresponding end beads 68' and spaced from such beads a distance equal to the vertical outside dimension of the front panel 19. The function of these wings will appear presently.

The end cap trim D is quite similar in its general construction to the inner and outer corner trims B and C

in that the former each comprises an upright support **71**, a top member **72** and a front plate **73**.

The upright support **71**, for an end trim D, is of angle form with the angle facing out, and one section shorter than the other, as shown at **74** in Figs. 6 and 7. At the top outer corner of the longer section is a bracket **75** of identical form with the brackets **59** and **59'**. The bracket **75** is formed with a base **76**, a gusset **77** and a plate **78**. The plate **78** is medially offset to form a ledge **79** with the outer edge of the ledge flush with the adjacent vertical edge of the upright support **71** and the inner end of the offset spaced from the support **71** to constitute a slot **80** equal in thickness to the material out of which the back **23** of the mounting **15** is made. The top edges of the member **71**, at the angle, are formed with flanges **81** flush with the plate **78**.

Along the opposite vertical edge of the support **71** is a strip **82** the ends of which are bent to form beads **83** and **83'**. In longitudinal cross-sectional length the strip **82** is equal to the vertical outside dimension of the front panel **19**. This strip **82** is bonded to the face of the shorter section of the support **71**, directly above the cut-out (**74**), so that when the trim D is positioned on a heating section A the strip **82** is disposed in horizontal alinement with the front panel **19** on the above-mentioned bracket-flange prongs **34** and **39**.

The top member **72**, like the top members of the other previously-described trims, is of rectangular form and in width substantially equal to the width of the mounting top **24**. The top member **72** has the front thereof bent downward slightly out of the plane of the main part and is curved downwardly along that forward edge to provide a lip **84**. The top member **72** is bonded, preferably by spot-welding, to the bracket **75** and the flanges **81** with the rear right angle edges flush with the rear faces of the upright support **71** and the front edge of the lip **84** and the adjacent right angle edge respectively flush with the free vertical edges of the support **71** (see Figs. 6 and 7). Between the ledge **79** and the under face of the plate is constituted a slot **80***a* (Fig. 7).

The front plate **73**, for a trim D, is a flat piece of sheet metal with an inwardly-upwardly offset arcuate lip **85** and an inwardly-upwardly curved bead **86** formed along the lower edge. Wings **87** are formed adjacent the upper corners. The lower ends of these wings **87** are curvedly recessed at **87***a* in opposed relationship to the ends of the bead **86** and spaced from such bead **86** a distance equal to the vertical outside dimension of the front panel **19**. The function of these recessed wings **87** will appear presently.

The joint cover trim E (Fig. 13) comprises a unitary back-top member **89** and a front plate **90**. The back-top member **89** in cross section is almost the same shape and dimension as the cross section form and height of the mounting **15**. The top **91** has the forward part inclined downwardly and terminating in a bead **92**. This bead **92**, however, does not terminate in a flange (**27**) as does the bead (**26**) on the mounting top (**24**).

The front plate **90** is a narrow strip in cross section identical with the front panel **19**. However, the distance between the beads **93** and **93'** is equal to the vertical outside dimension of the front panel **19**.

A stretch of base-board convection, constructed in accordance with this invention and such as shown in Fig. 1, is shipped to and installed on the job in the following manner:

Each mounting **15** has the brackets **16** bonded in requisite position on the back **23**. The several trims B, C and D have the supports, brackets, and top members bonded together. The heating core **17** has the fins **42** bonded on the tubing **41**. These three sub-assemblies and all the other parts—front panel **19**, the hangers **17**, the front plates for the several trims, the dampers and/or air-splitters, and the clips **25** and **53** are packed knock-down and shipped to the job.

At the point of installation, the mountings **15** are set in position, with the edges resting on the floor. The partially assembled corner trims B and C, and later the end trims D, are set on the contiguous, or exposed, ends of the respective sections A. This is effected by pushing the angular ends of the mountings **17**—i. e, the corner junction of the back **23** and top **24**—into the respective slots (**65**, **65'**, and **80**, and **65***a*, **65***b*, and **80***a*) in the trims B, C, and D.

Holes are then drilled in the backs **23** of the several mountings, and in the respective upright supports of the trims, at points where nails or screws will penetrate into the studding to secure the complete assembly in place.

When these parts are all secured in place, sections of the heating core **17** are cradled in two or more hangers **18** and set in between the bracket flanges **31** and **32** with the hanger hooks **46** inserted through the apertures in the flanges **31**. Properly positioned these hangers **18** suspend the core **17** so that the opposite vertical edges of the fins **42** are disposed free of any contact with the front face of the bracket bases **29** and the inside face of the front panel **19**, when the latter is snapped in position on the bracket prongs **34** and **39**, as is clearly indicated in Figs. 3 and 5.

If dampers **21** are to be used, the requisite clips **25** are seated in the mounting-top beads **26** rearwardly of the flange **27**. The bead **49** on a damper **21** then is seated in the clip socket **51** to bear against the flange **27**. So positioned the damper **21** may be swung and frictionally retained in desired positions to regulate the flow of heated air through the outlet **40**.

If an air-splitter **22** is to be used, the requisite clips **53** are straddled over the upper edges of bracket flanges **31** and the V-flanged edge of the air-splitter pressed down into the slots **55**, whereupon the air-splitter **22** is positioned to divide the heated air flow out through the outlet **40**.

With the heating cores **17** and dampers **21** and/or air-splitters **22** in place, the front panels **19** are next snapped onto the bracket prongs **34** and **39** (Figs. 3 and 5). Following this the front plates (**58**, **58'** and **73**), for the respective trims, are snapped into position. With each of these—except the joint cover trim E—the front plate has the upper edge lip (**67**, **67'** and **85**) set under the depending top member lip (**66**, **66'** and **84**) with the plate disposed at an outwardly-downwardly inclined angle. The plate is then swung downwardly and inwardly to bring the recessed wings (**69***a*, **69***b*, and **87***a* respectively) to slip over the top edges of the front panels **19** and allow the bottom beads (**68**, **68'** and **86**) to be snapped over the under edges of the front panels **19**.

With the end trims D the recessed wing **87** and the bead **86** at one side seats over the opposite ends of the strip **82** (see Figs. 6 and 7).

Where a joint trim E is required, the top back member **89** is set in place as is done with the upright supports for the other trims and later the front **90** is snapped over the opposite ends of the front panels **19** of adjacent sections A (Fig. 1).

I claim:

1. A base-board convector assembly comprising, a bracket having a flange extending transversely outward from a base, a heating core in the form of a finned tube, a core-concealing front panel, means for securing the panel on the bracket flange in predetermined horizontally-spaced relationship from the bracket base, and a core-suspending hanger having transverse parts one of which parts is swingably suspended from the bracket flange and the other of which parts cradles the tube and is dimensioned tranversely of the tube to contact the opposed faces of the bracket base and the front panel to dispose the fins out of contact with the bracket base and the front panel.

2. A base-board convector assembly comprising, a bracket having a flange extending transversely outward

from a base, a heating core in the form of a finned tube, a core-concealing front panel, means for securing the panel on the bracket flange in predetermined horizontally-spaced relationship from the bracket base, a core-suspending hanger having transverse parts one of which parts is swingably suspended from the bracket flange and the other of which parts cradles the tube, and shoulders on the hanger spaced apart horizontally substantially equal to the distance between the bracket base face and the inner face of the panel and adapted to contact the opposed faces of the bracket base and the panel so as to dispose the fins out of contact with the bracket base and the front panel during the recurring expansion and contraction of the heating core.

3. A base-board convector assembly comprising, a bracket having a flange extending transversely outward from a base, a heating core in the form of a finned tube, a core-concealing front panel, means for securing the panel on the bracket flange in predetermined horizontally-spaced relationship from the bracket base, a substantially L-shaped core-suspending wire hanger one leg of which is bent to form a cradle for the tube, a hook formed on each of the free ends of the hanger one hook for seating in an aperture in the bracket, and a loop formed in the wire adjacent the juncture of the transverse parts thereof, the extremities of the loop and the other hook being spaced apart a distance substantially equal to the distance between the bracket base face and the inner face of the panel and adapted to contact the opposed faces of the bracket and panel to dispose the fins out of contact with the bracket base and the front panel during the recurring expansion and contraction of the heating core.

4. A base-board convector assembly comprising, a sheet-metal mounting having a right-angularly-disposed back and top so vertically dimensioned that with the back anchored to a wall and the lower edge of the back resting on the floor the top is disposed a predetermined distance above the floor, a pair of brackets each having a flange extending transversely to a base bonded to the mounting back, a front panel secured to the outer ends of the bracket flanges, a finned heating core, and a pair of core-suspending hangers each having transverse parts one of which parts swingably suspends the hangers from a bracket flange and the other of which parts cradles the core and is of a width transversely of the tube to contact the opposed faces of the brackets and the panel to hold the fins out of contact with the brackets and the panel.

5. A base-board convector assembly comprising, a sheet-metal mounting having a right-angularly-disposed back and top so vertically dimensioned that with the back anchored to a wall and the lower edge of the back resting on the floor the top is disposed a predetermined distance above the floor, a pair of brackets on the mounting, a heating core in the form of a finned tube, a core-concealing front panel secured to the bracket flanges in predetermined horizontally-spaced relationship to the bracket bases, a pair of core-suspending hangers each having transverse parts one of which parts is swingably suspended on the respective bracket flanges and the other of which cradles the tube, and shoulders on each of the hangers spaced apart horizontally a distance equal to the distance between the bracket-base face and the inner face of the panel and adapted to contact the opposed faces of the bracket base and the panel so as to dispose the fins out of contact with the bracket base and the front panel during the recurring expansion and contraction of the heating core.

6. A base-board convector assembly comprising, a sheet-metal mounting having a right-angularly-disposed back and top so vertically dimensioned that with the back anchored to a wall and the lower edge of the back resting on the floor the top is disposed a predetermined distance above the floor, the forward perimetrical portion of the top being turned inwardly nearly parallel to the adjacent portion of the top so as to constitute an inwardly-opening V-shaped bead, a pair of brackets on the mounting, a heating core suspended on the upper brackets, a core-concealing front panel removably attached to the brackets with the longitudinal edges of the panel spaced from the floor and the mounting top to provide an air-flow inlet adjacently above the floor and an air-flow outlet adjacently below the top, a substantially V-shaped spring clip having one leg thereof terminating in an arcuate socket, the clip inwardly of the socket being yieldingly seated wholly within the mounting-top bead with the clip socket outwardly of the bead, and a damper dimensioned to substantially cover the air-flow outlet and having an annular bead along one perimeter thereof yieldingly seated in the clip socket to hinge the damper for vertical swinging to regulate the flow of heated air through the assembly.

7. A base-board convector assembly comprising, a sheet-metal mounting having a right-angularly-disposed back and top so vertically dimensioned that with the back anchored to a wall and the lower edge of the back resting on the floor the top is disposed a predetermined distance above the floor, the forward perimetrical portion of the top being turned inwardly nearly parallel with the adjacent portion of the top to form an inwardly-opening V-shaped bead with an upwardly-disposed perimetrical flange, a pair of brackets on the mounting, a heating core suspended on the upper bracket, a core-concealing front panel removably attached to the brackets with the longitudinal edges of the panel spaced from the floor and the mounting top to provide an air-flow inlet adjacently above the floor and an air-flow outlet adjacently below the top, a substantially V-shaped spring clip having one leg thereof terminating in an arcuate socket, the clip inwardly of the socket being yieldingly seated in the top bead intermediate the flange and the base of the top bead with the socket opening downwardly outwardly of the flange, and a damper dimensioned to substantially cover the air-flow outlet and having an annular bead along one perimeter thereof yieldingly seated in the clip socket in contact with the flange to hinge the damper for vertical swinging to regulate the flow of heated air through the assembly.

8. A base-board convector assembly comprising, a bracket having a flange extending transversely outward from a base, a heating core in the form of a finned tube, a core-concealing front panel, means for securing the panel on the bracket flange in predetermined horizontally-spaced relationship from the bracket base, and a core-suspending hanger having a downwardly-open hook portion at one end and an upwardly-open hook portion at the other end, the hanger being swingably suspended on the bracket by the one hooked end and cradling the heating core tube in the other hooked end to dispose the fins on the tube out of contact with the bracket base.

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