United States Patent [19]

Sand

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[54] **HEATING AND VENTILATING ENCLOSURE MODULE CONNECTION MEANS**

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[52] **U.S. Cl.** **403/300,** 52/468, 52/716

[51] **Int. Cl.** **F16b 5/06**

[58] **Field of Search** 403/300, 301, 305; 52/468, 52/242, 716; 285/424

[56] **References Cited**

UNITED STATES PATENTS

949,839	2/1910	Pearson	52/468 X
2,149,918	3/1939	Komorous	52/753 J
2,347,510	4/1944	Sawyer	52/758 D
3,228,160	1/1966	O'Brien	52/242
3,290,077	12/1966	La Barge	52/758 D
3,415,543	12/1968	Keating	52/758 D
3,630,549	12/1971	Grimm	285/424 X

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Attorney, Agent, or Firm—McCormick, Paulding & Huber

[57] **ABSTRACT**

An enclosure comprises a plurality of modules which are to be connected in end-toward-end relationship, and each module includes one or more panels having opposed ends or edges which are to be joined in an architecturally pleasing manner. A connector strip is bent to the contour of the panels to overlie the adjacent edges of the module, panels, and has a rearwardly open recess in which several clips are mounted to connect to the module panels. Each clip has a base portion slidably received in the recess, and a projecting leg for resiliently engaging the rear surface of the panel. The clips are arranged to project in opposite lateral directions to hold the adjacent panels, and hence the adjacent enclosure modules in place.

3 Claims, 5 Drawing Figures

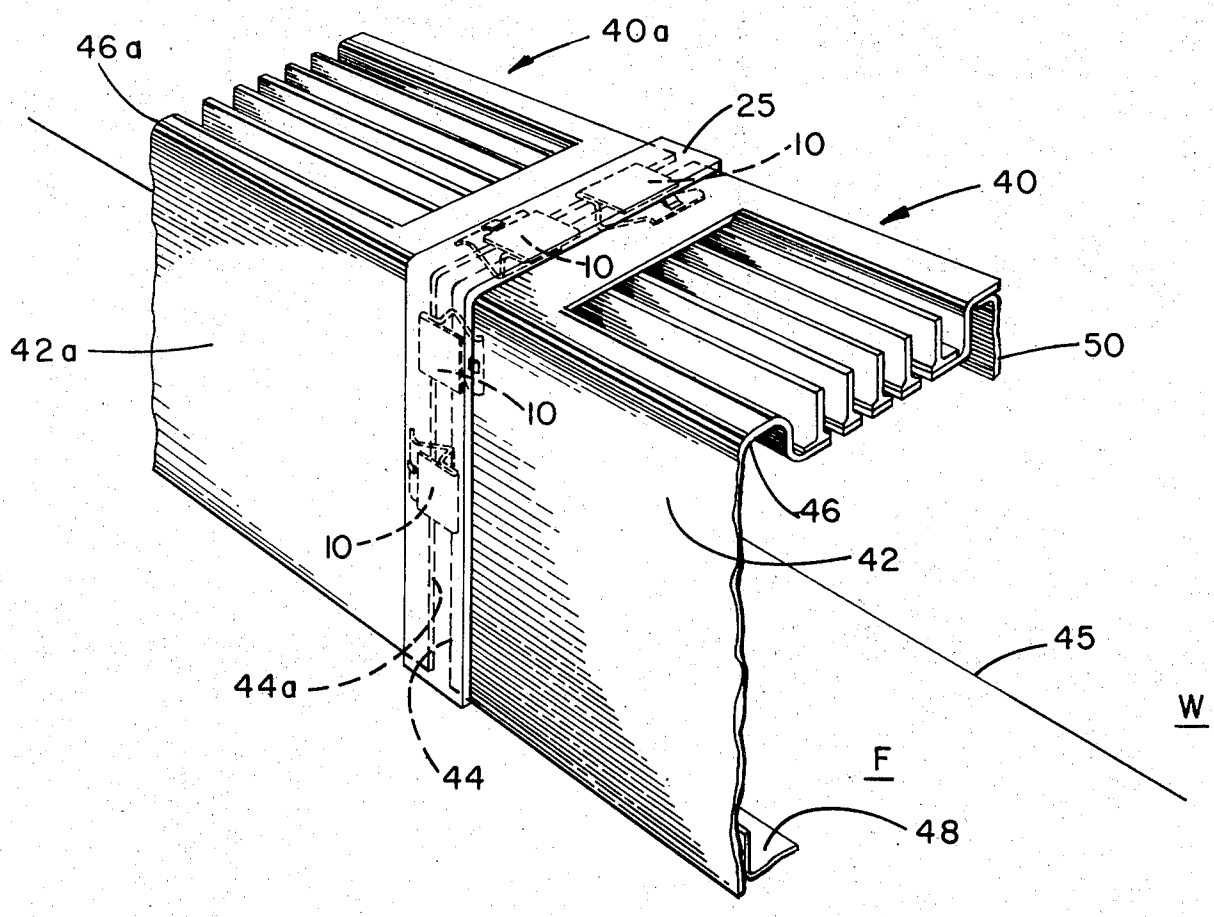


FIG. 1

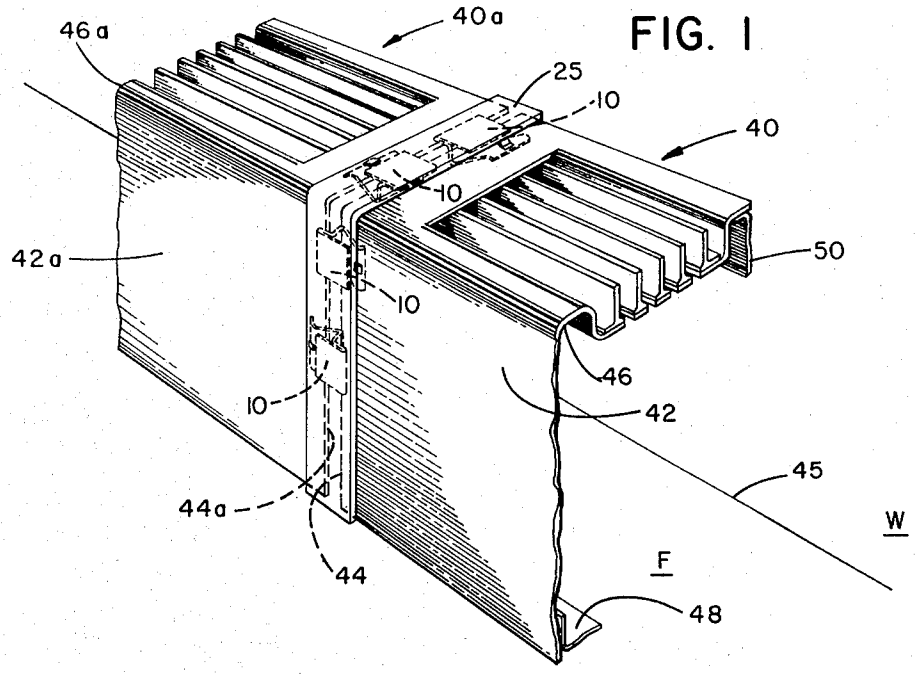

46a
40a
25
10
40
10
50
42a
10
46
10
42
45
44a
W
44
F
48

FIG. 2

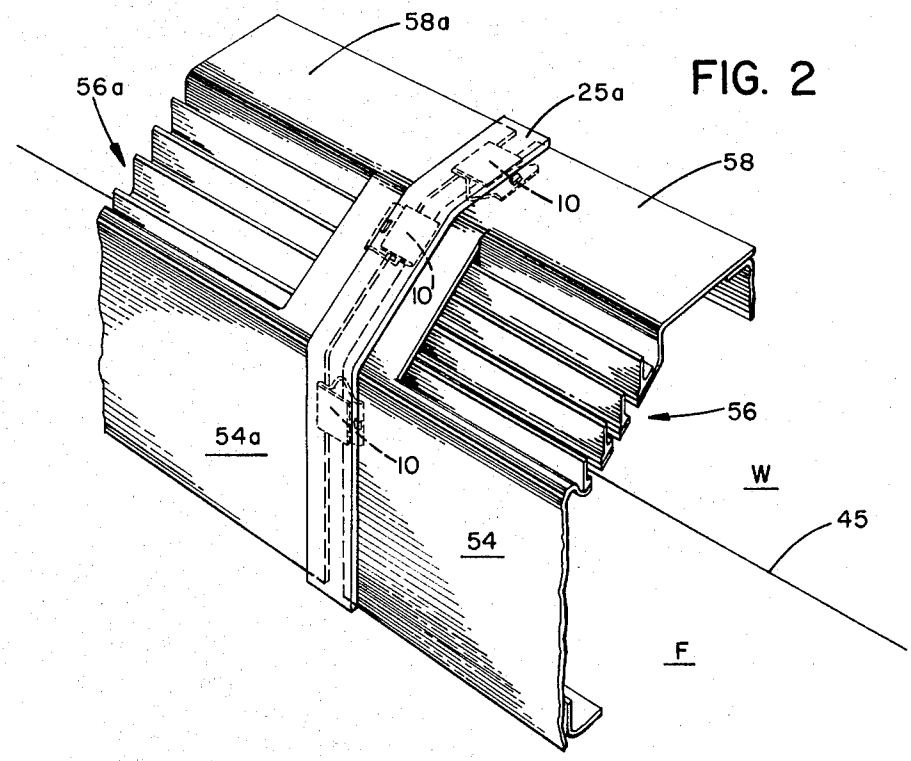

58a
56a
25a
58
10
10
56
54a
10
W
45
54
F

FIG. 3

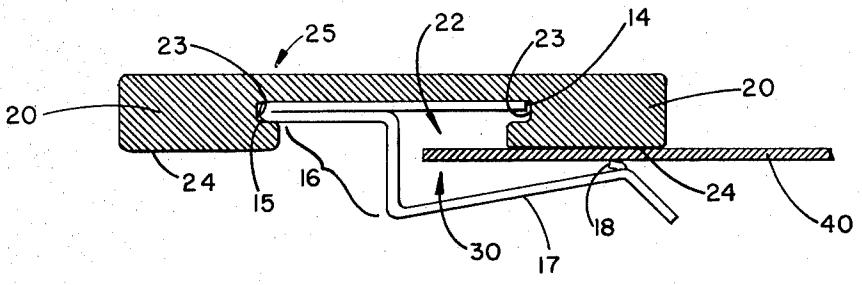


FIG. 4

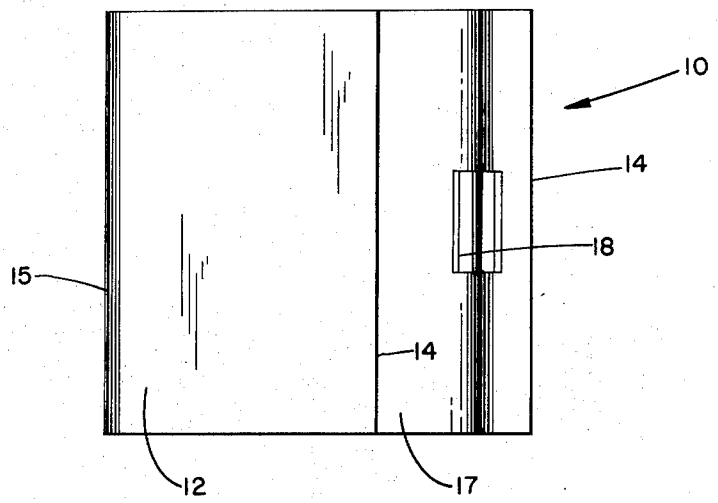
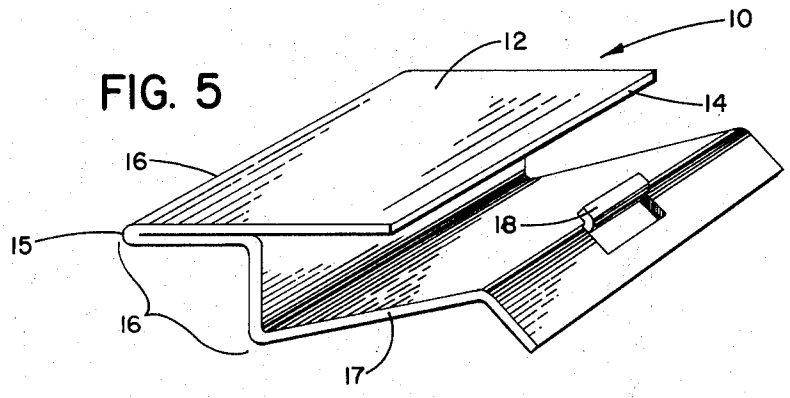


FIG. 5



HEATING AND VENTILATING ENCLOSURE MODULE CONNECTION MEANS

BACKGROUND OF INVENTION

This invention relates to enclosure structures for use with heating and cooling units to provide an architecturally pleasing appearance in commercial or residential buildings, and deals more particularly with the means for connecting adjacent enclosure modules.

A general object of the present invention is to provide an improved means for joining two adjacent module panels, said means incorporating a relatively thin extruded metal connector strip and spring clips which when assembled with the strip present an attractive finished appearance with the module panels.

A more specific object of the present invention is to provide an inexpensive connector strip of extruded metal to cover the juncture of two adjacent panels and which may be shaped to match the contour of the panels to be joined.

Still another object of the present invention is to provide a economical one-piece sheet metal clip which may be mass produced by utilizing simple stamping and bending operations and which may be used in conjunction with the above-described extruded connector strip.

SUMMARY OF THE INVENTION

In accordance with the present invention, an extruded metal connector strip is provided having a generally rectangular cross sectional shape and also having a recessor cavity in its rear side for the purpose of receiving and retaining a plurality of clips. Sheet metal spring clips have a base portion which fits snugly but movably within the cavity in the connector strip and each clip also has a leg portion which cooperates with the rear side of the connector strip to receive the panel. Burrs or projecting tabs on the legs of the clips serve to hold the panels in place and prevent inadvertent disassembly of the structure.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of the device with portions broken away showing the assembly of connector strip and several clips with two adjacent modules.

FIG. **2** is a view similar to FIG. **1** but showing an alternative module configuration.

FIG. **3** is a sectional view of the connector strip.

FIG. **4** is a plan view of one of the clips.

FIG. **5** is a perspective view of one of the clips shown in FIGS. **3** and **4.**

DETAILED DESCRIPTION

Turning now to the drawings in greater detail, FIG. **1** shows a portion of a heating and ventilating enclosure comprising two adjacent modules **40** and **40*a***, each of which modules include a one-piece panel **42** and **42*a*** respectively, which panels have adjacent edges **44** and **44*a*** respectively, to be connected to one another in an architecturally pleasing manner at the corner **45** defined by the floor F and wall W of a room to be ventilated.

The heating and cooling unit has been omitted for clarity, and the panels **42** and **42*a*** are preferably formed at a right angle as shown at **46** and **46*a*** respectively, to provide a front portion parallel the wall W and a top portion which includes a grill with vanes or the like to direct the heated or cooled air vertically. The front portions of the panels may be spaced above the floor F or have cut out portions (not shown) to permit circulation of room air. Conventional means, such as shown at **48** and **50,** is provided to support the modules from the floor F and wall W respectively. The enclosure connection strip **25** covers the joint between the adjacent panels in a manner to be described, and is formed to fit the contour **46** of the panel as shown.

FIG. **2** shows a modified enclosure structure wherein the grill defining portion is canted with respect to the horizontal, and the panels are formed with three angularly related surfaces as shown at **54, 56,** and **58.** Other enclosure designs can be adapted for use with the enclosure connection means of the present invention, and FIG. **2** is presented to illustrate the fact that the strip **25*a*** can be readily bent to conform to the exterior contour of the module panels. FIG. **3** shows the strip **25** as a relatively thin extruded member of constant cross sectional shape throughout its length, and having a rearwardly open recess **22** with thickened edge portions **20, 20.** As so constructed this strip **25** can be readily bent to conform to the exterior contour of a wide variety of enclosure configurations.

Turning now to a more detailed description of the connection means of the present invention, FIGS. **4** and **5** show a one-piece spring clip **10** of sheet metal construction which clip has been stamped and bent to a shape which may be inserted in a recess or cavity **22** in the rear wall of the connector strip **25** as shown in FIG. **1.** The clip includes a flat base portion **12** of rectangular shape which defines laterally opposed flanged portions **14** and **15.** An L-shaped portion **16** of the clip integrally connects one marginal side edge of the base portion with a resilient leg portion **17.** This leg portion cooperates with a rear wall **24** of the connector strip **25** to form a socket **30** for receiving one enclosure panel **40.** A tab **18** adjacent to the bent free end of the clip leg deforms the rear surface of the panel **40** at least slightly when the panel is inserted between the clip leg and connector strip thus securing the panel in assembly with the strip.

The connector strip **25** is preferably extruded of aluminum, and has a generally rectangular cross sectional shape. The rear wall **24** of this strip overlies the juncture of two adjacent enclosure panels while the front wall of the strip may be finished to provide an attractive appearance. A cavity **22** is formed in the rear wall **24** of the connector strip and extends the full length of the strip. The cavity **22** includes recessed inner portions **23, 23** to receive and retain the flanged portions **14** and **16** of the clip, while permitting the clip to slide within the slot along the length of the connector strip.

FIGS. **1** and **2** illustrate examples of two typical enclosure modules having panels joined together to form continuous unity. In FIG. **1** the connector strip is formed to watch the shape of the panels to be joined, and a suitable number of clips **10, 10** are inserted into the slot in the strip. These clips **10, 10** are distributed along the length of the strip **25,** being alternately oriented in opposite directions. The panels are then inserted between the clips and the connector strip, each panel utilizing approximately half of the clips.

As may be apparent from FIG. **5** the shape of the enclosure panels may be complex requiring a number of bends in the connector strip. In this case an appropriate

number of clips may be inserted into the strip before bending thus trapping these clips in areas of the strip which would be inaccessible after bending.

I claim:

1. Enclosure module connection means for joining two adjacent module panels and comprising in combination:

a. a connector strip having a rear wall which overlies the marginal adjacent side edges of the panels, and said rear wall also having a rearwardly open cavity extending longitudinally of said strip;

b. said rearwardly open longitudinally extending cavity having its inner longitudinally extending side edges laterally spaced from one another by a slightly greater distance than the spacing between its outer longitudinally extending sides edges;

c. a plurality of clips for use at longitudinally spaced locations along said strip to hold said strip to said panels, each of said clips having laterally opposed flanged portions to permit the clip to be slidably received in said longitudinally extending cavity,

d. each clip having a panel engaging leg spaced rearwardly from one of said flanged portions to resiliently engage the rear of the panel and thereby secure the panel to the connector strip,

e. some of said clips having their panel engaging legs oriented in one direction to engage one panel and other clips oppositely oriented to engage the other of said two panels.

2. The joint means of claim **1** further characterized by said panel engaging leg including a rearwardly bent free end portion which cooperates with the rear wall of said connector strip to define a socket for receiving one of said two panels and a panel engaging tab adjacent the bent free end portion of said clip leg to deform said panel slightly when the later is received in said socket and to secure said panel in assembled relationship with said clip and connector strip.

3. The joint means of claim **2** further characterized in that each of said clip means is fabricated from a length of spring steel including a flat base portion of rectangular shape which defines said laterally opposed flanged portions, and an L-shaped portion of said clip means integrally connecting said panel engaging leg with one marginal side edge of said flat base portion.

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