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D. B. WALTERS

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WALL PANEL ATTACHING AND ANCHORING DEVICE

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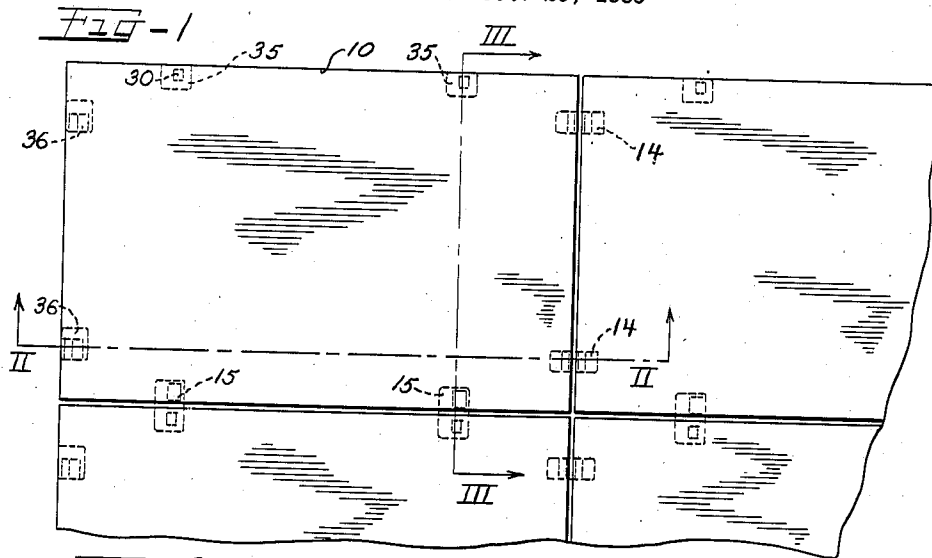


FIG-2

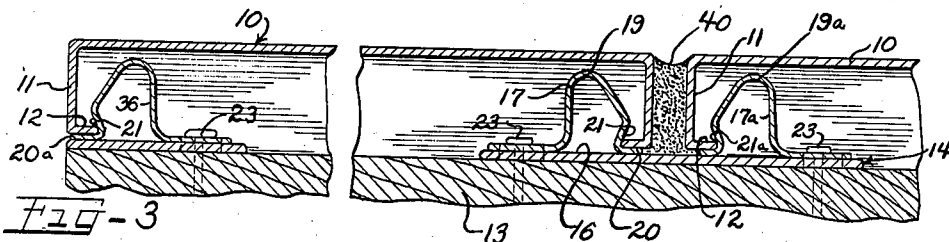


FIG-3

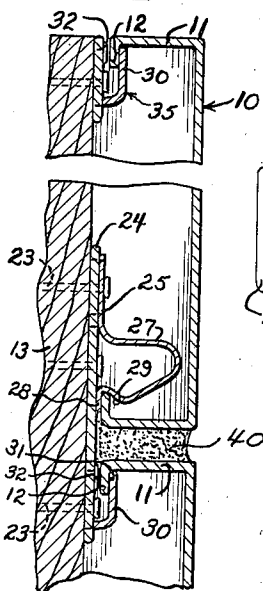


FIG-4

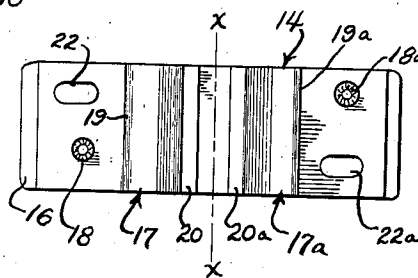
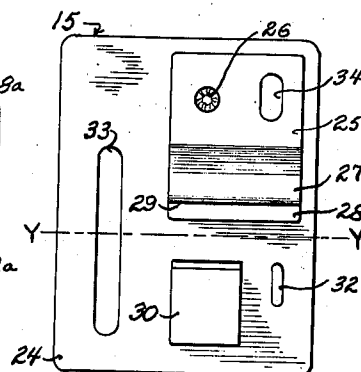


FIG-5



INVENTOR
DURWOOD B. WALTERS

By *Charles H. Hill* ATTORNEY

UNITED STATES PATENT OFFICE

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WALL PANEL ATTACHING AND ANCHORING
DEVICEDurwood B. Walters, River Forest, Ill., assignor
to Chicago Vitreous Enamel Products Co.,
Cicero, Ill., a corporation of Illinois

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5 Claims. (Cl. 189—88)

This invention relates to a wall panel attaching and anchoring device and more particularly to an anchoring device for use with metal panels having inturned marginal flanges, such as used in enameled metal wall construction.

It is an important object of this invention to provide a wall panel attaching and anchoring device of comparatively simple construction that is easy to employ and that affords a substantially permanent anchorage for metal panels while at the same time permitting free expansion and contraction of such panels under varying atmospheric conditions.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawing.

This invention (in a preferred form) is illustrated in the drawing and hereinafter more fully described.

On the drawing:

Figure 1 is an elevational view of a paneled wall assembly, illustrating the use of the attaching and anchoring devices of my invention.

Figure 2 is a broken, enlarged sectional view taken substantially along the line II—II of Fig. 1.

Figure 3 is a broken, enlarged sectional view taken substantially along the line III—III of Fig. 1.

Figure 4 is a plan view of one form of wall panel attaching and anchoring device.

Figure 5 is a plan view of another form of my wall panel attaching and anchoring device.

As shown on the drawing:

The reference numeral 10 indicates generally a panel of the type with which my attaching and anchoring devices are intended to be used. Each of said panels 10 comprises a rectangular sheet, which may be formed of sheet metal either with or without a coating of vitreous enamel thereover, and provided on all four of its edges with rearwardly extending edge portions 11 having inturned marginal flanges 12. Although the panels have been shown as rectangular and with relatively sharply bent edges, it will be understood that other shapes of panels and more rounded edges may be employed. The specific form of panel constitutes no part of my invention, other than as it cooperates with the particular form and construction of my attaching and anchoring device.

For the attaching and anchoring of the panels 10 to a wall or frame structure 13, which may be formed of wood, brick or other structural material, I provide two different forms of attaching

and anchoring devices, the one form indicated by the reference numeral 14 (Fig. 4) being used for the vertical edges of the panel, and the other form, indicated generally by the reference numeral 15 (Fig. 5) being used for the horizontal edges of the panels. Each of these forms of attaching and anchoring devices is so constructed that upon being cut into two parts, as by severing along the line X—X of Fig. 4, or along the line Y—Y of Fig. 5, forms of attaching and anchoring devices are obtained that are particularly adapted for use at the extreme lateral and top and bottom edges of a wall of panels.

The device 14 comprises a plate 16 (Figs. 2 and 4) which may be rectangular in shape and which may suitably be formed of sheet metal. To one surface of the plate 16 is attached a pair of spring members 17 and 17a, which may be formed from a flat ribbon-like band of sheet metal having a fairly high degree of resiliency, or springiness. The spring members 17 and 17a are positioned in opposed relationship on the plate 16, with their more remote ends secured thereto, as by rivets 18 and 18a. An intermediate portion 19 and 19a of each of said spring members 17 and 17a, respectively, is bowed upwardly and is provided with a free end 20 and 20a, respectively. Said free ends 20 and 20a extend toward each other in substantially parallel, contacting relationship to the surface of the plate 16. Reentrant bends 21 and 21a are formed in said bowed portions 19 and 19a adjacent the free ends 20 and 20a thereof. Said reentrant bends 21 and 21a are thus positioned in opposed, spaced relationship to each other.

Each of the attaching and anchoring devices 14 is provided with an elongated opening 22 and 22a, one adjacent each end of the plate 16 and passing through the anchored end of the corresponding spring member. These elongated openings 22 and 22a are for the purpose of receiving nails 23, or other form of securing means, for fixedly attaching the devices 14 to the wall structure or frame 13. By virtue of the elongation of the openings 22 and 22a a certain amount of adjustability is provided so that a certain amount of latitude is given in the positioning of the nails 23 or other form of securing means.

In the form of my attaching and anchoring means 15 (Figs. 3 and 5) the device comprises a plate 24, which may suitably be rectangular in shape and formed of sheet metal. A spring member 25 is attached, as by means of a rivet 26, in one corner of the rectangular plate 24. Said spring member 25 is, in general, similar in shape

and construction to the spring members 17 and 17a, having an upwardly bowed portion 27, a free end 28 and a reentrant bend 29.

In addition to the bowed spring member 25, each of the devices 15 is provided with a hook-like lug 30 struck up from the metal of the plate 24, or otherwise formed thereon. Said hook-like lug 30, as best shown in Fig. 3, has a free end 31 extending in parallel spaced relation to the surface of the plate 24 in the direction of the reentrant bend 29. A raised portion 32 is formed in the surface of the plate 24 in alignment with the hook-like lug 30 for a purpose that will later appear.

The devices 15 are provided with a plurality of slots, such as the elongated slot 33 at one side of the bowed spring member 25 and the hook-like lug 30 and extending across the line of severance Y—Y, and a second, smaller elongated slot 34 positioned in one corner of the plate 24 and extending through the spring member 25 and the plate. These slots serve for the positioning of the securing means, such as the nails 23. By making the slot 33 of considerable length, it is possible, in driving in the nails 23, to avoid cracks or other places in the wall or frame structure where it would be undesirable to drive the nails 23.

In assembling a plurality of the panels 10, the appropriate forms of the attaching and anchoring devices are secured to the structural supporting wall or frame 13 at properly spaced positions. As illustrated in Fig. 1, two of the attaching and anchoring devices may be provided for each lateral edge of a panel 10, but the number of attaching and anchoring devices used per panel will depend upon the size of the panel and upon the specifications for the building. In general, it is not necessary to use the attaching and anchoring devices along the vertical edges of the panels, except at the extreme vertical edges of the wall, but the devices may be used on all four sides of each panel, as illustrated.

The devices, indicated by the reference numerals 35, positioned along the uppermost top edge of the wall construction shown in Fig. 1, are formed by severing devices, such as the device 15 (Fig. 5) along the line Y—Y and using the lower half carrying the hook-like lug 30. As shown best in Fig. 3, the inturned marginal flange 12 on the upper edge 11 of one of the upper row of panels 10 is inserted in back of the hook-like lugs 30 and the panels 10 suspended from said lugs 30. It will be noted that the inturned marginal edge 12 lies in back of the free end of the hook-like lugs 30, with but slight clearance between the flange and the bump 32. The bump 32 thus prevents any great amount of looseness in the fit of the flange 12 in back of the hook-like lugs 30. Furthermore, the bumps 32, being raised substantially to the same extent as the thickness of the free end 28 of the spring members, the panels are thereby aligned so that their outer surfaces are all substantially flush with each other.

At the extreme vertical edges of the wall structure, devices 36 are employed that are formed by cutting a device such as the device 14 (Fig. 4) along the line X—X. The vertical edge flange 12 of each of the panels in the vertical row is sprung over a spring member of a device 36 and thus snapped into a reentrant bend 21, as best shown in Fig. 2. The resiliency of the spring member permits a slight movement of the free

end of the spring, sufficient to permit the flanged edge of the panel to be sprung into place. The provision of a flanged free end on each of the spring members, such as the free ends 20, 20a and 28, extending parallel to and in substantial contact with the surface of the plates 16 or 24, resists the collapsing of the bowed portion of said spring members and prevents said spring members from becoming easily distorted and rendered useless.

Attaching and anchoring devices similar to the device 14 are used along the vertical joints between the adjacent panels 10. In each case, a marginal flange 12 is sprung into a reentrant bend 21 or 21a to be resiliently held therein. Similarly, devices such as the device 15, are positioned along the horizontal joints between adjacent panels. The inturned marginal flanges 12 along the lower edge of a row of panels are sprung into the reentrant bend 29, as best shown in Fig. 3. The inturned marginal flanges 12 along the upper edges of the adjacent row of panels are hung over the hook-like lugs 30. As is obvious, the hanging of the upper edges of the panels on the hook-like lugs 30 is made the first operation in the mounting of the panels 10, and then the lower edges of the panels are sprung over the bowed portions 27 of the springs 25 to snap into the reentrant bends 29.

After the panels 10 have been installed in place upon their respective attaching and anchoring means, they cannot thereafter be accidentally displaced or removed under any ordinary circumstances. Each of the panels is held securely in place, yet is free to expand and contract normally with changes in atmospheric conditions, owing to the resiliency of the spring members of the attaching and anchoring devices. This is an important consideration where the panels are formed of sheet metal having relatively high coefficients of expansion. For the purpose of sealing the joints between adjacent panels, mastic, as indicated by the reference numeral 40, may be introduced between the spaced marginal edges 11 of the adjacent panels. Suitable mastics are available on the market that are both water-proof and resistant against atmospheric conditions, so that water tight joints can thus be formed between the various panels.

If it becomes necessary to remove a panel, for replacement or for other reason, this can be accomplished by burning away one or more edges of the old panel. The panels are spaced sufficiently far apart to enable a new panel to be inserted in place, even in between rows of other panels, without disturbing but the single panel that is to be replaced. Since the attaching and anchoring devices are fully protected from the weather, they will last substantially indefinitely without the necessity of resorting to relatively expensive corrosion resistant material.

It will thus be apparent that I have provided a relatively simple form of attaching and anchoring means for a particular type of panel, whereby such panels can be readily installed in place by unskilled workmen.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. A wall anchoring device for panels having

inwardly turned marginal flanges, said device comprising a flat backing plate adapted to be directly secured to a wall to lie flatly thereagainst, and a pair of separate upstanding bowed ribbon-like spring members positioned in spaced opposed relationship on said plate, said spring members having their more remote ends fixed to said plate and having flanged free ends normally extending toward each other in substantially parallel relationship to the surface of said plate, each of said spring members having a reentrant bend adjacent a free end, the reentrant bends on the pair of spring members facing each other to receive and anchor intumed marginal flanges of adjacent panels sprung into said reentrant bends against the flexing of said spring members.

2. A wall anchoring device for panels having intumed marginal flanges, said device comprising a wall attaching plate, a spring member fixed to said plate at one end and having a free end provided with a reentrant bend for receiving and anchoring an intumed marginal flange of a panel sprung thereinto against the flexing of said spring member and a hook struck up from said plate having a free end extending toward said reentrant bend for engaging a marginal flange of an adjacent panel.

3. A wall anchoring device for panels having intumed marginal flanges, said device comprising a plate having elongated openings through which wall engaging means may be inserted, a ribbon-like bowed spring member fixed to said plate at one end and having a reentrant bend adjacent its free end for receiving and anchoring an intumed

marginal flange of a panel sprung thereinto against the flexing of said spring member and a hook formed on said plate with a free end extending toward said reentrant bend for engagement behind an intumed marginal flange of an adjacent panel.

4. A wall panel assembly comprising a wall structure, a plurality of panels having intumed marginal flanges and flat anchoring plates for said panels secured directly to said wall structure to lie flatly thereagainst, each of said plates having a separately formed upstanding bowed spring member fixed thereto at one end and provided with a reentrant bend adjacent its free end for receiving and anchoring an intumed marginal flange of a panel sprung thereinto against the flexing of said spring member, said free end having a flange extending in substantially parallel relationship to the surface of said plate to lie beneath said intumed marginal flange.

5. A wall panel assembly comprising a wall structure, a plurality of panels having intumed marginal flanges and anchoring devices for said panels secured to said wall structure, each of said devices having an upstanding bowed spring member fixed thereto at one end and provided with a reentrant bend adjacent its free end for receiving and anchoring an intumed marginal flange of a panel sprung thereinto against the flexing of said spring member and a hook formed on said device with a free end extending toward said reentrant bend for engagement behind an intumed marginal flange of an adjacent panel.

DURWOOD B. WALTERS.