

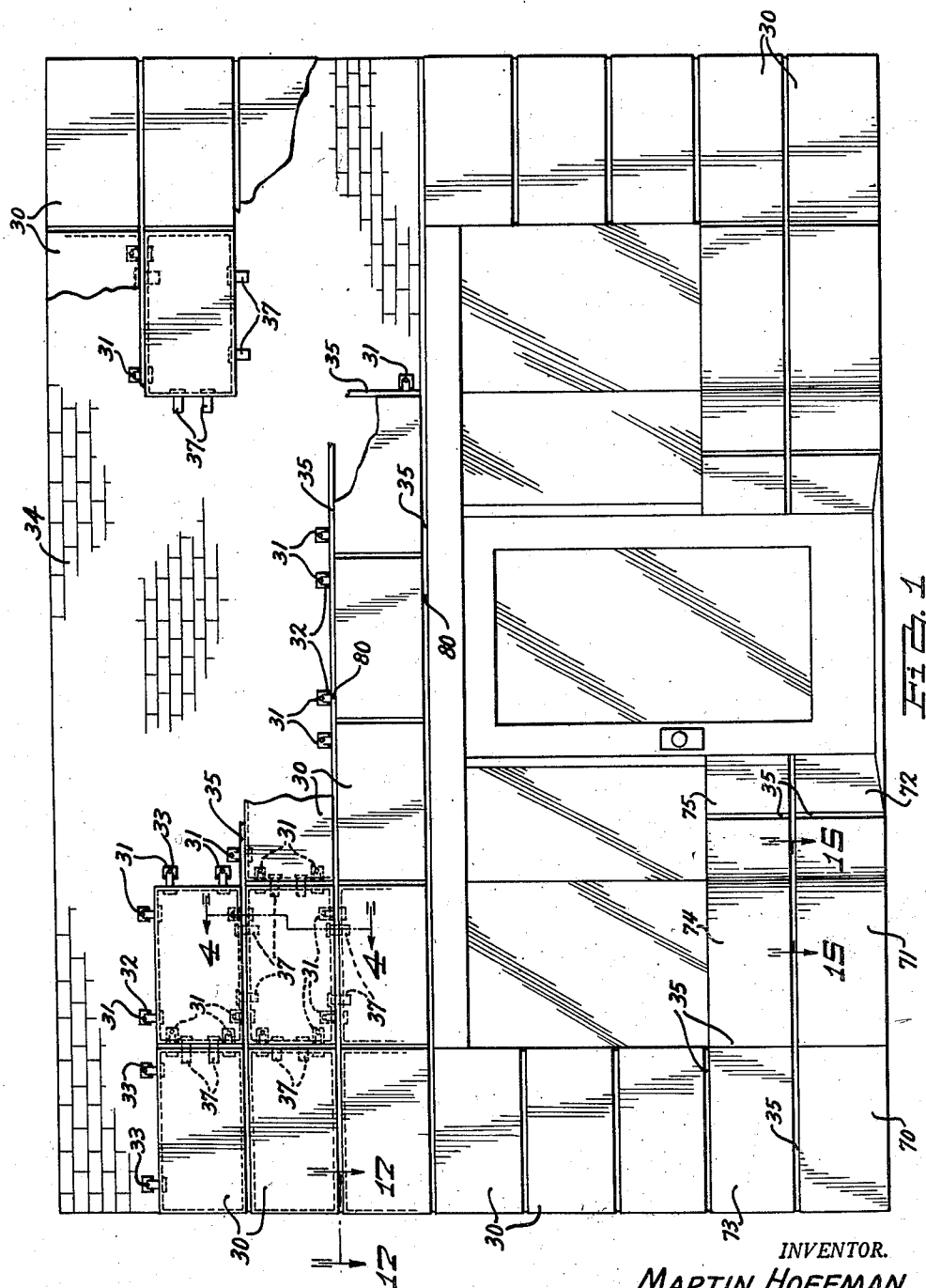
April 27, 1954

M. HOFFMAN
BUILDING STRUCTURE

2,676,481

Filed Aug. 25, 1949

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

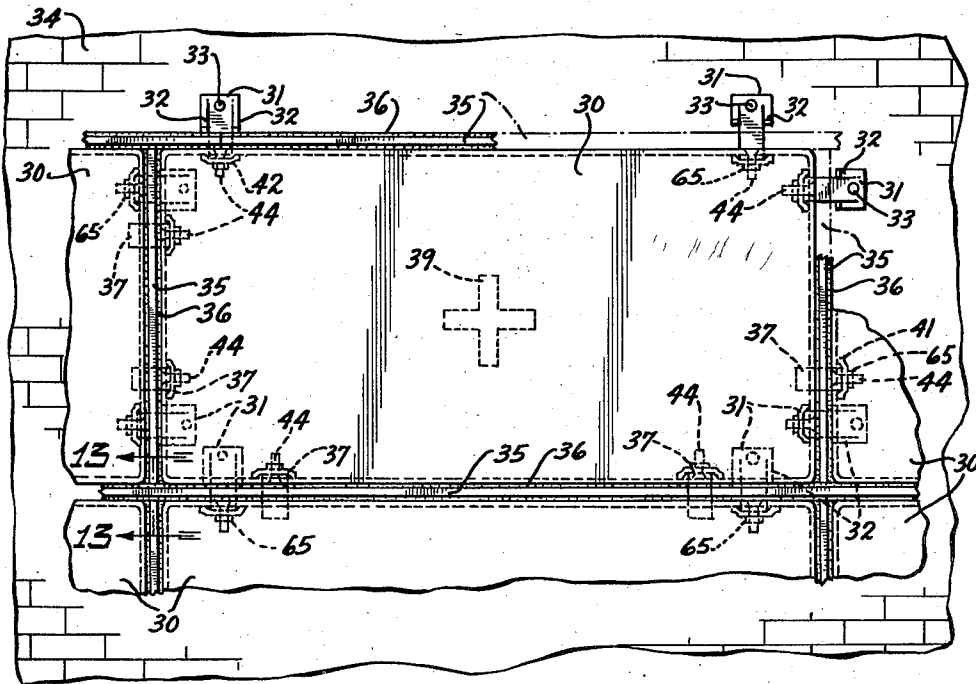


FIG. 2

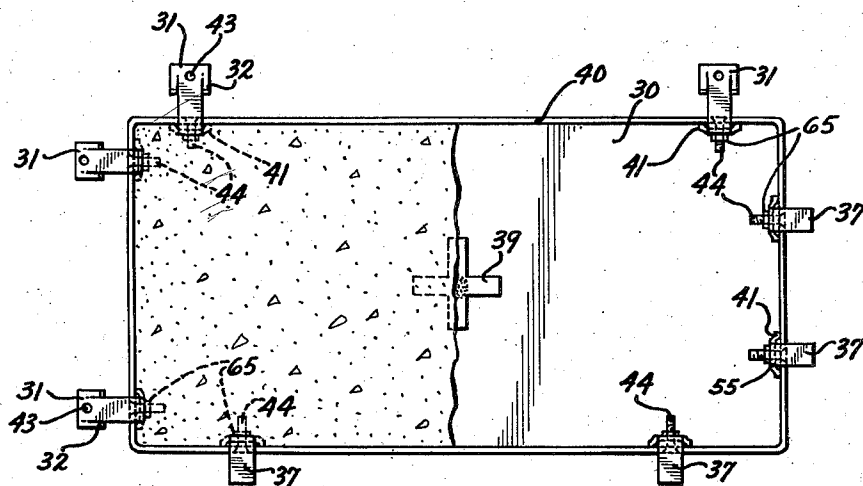


FIG. 3

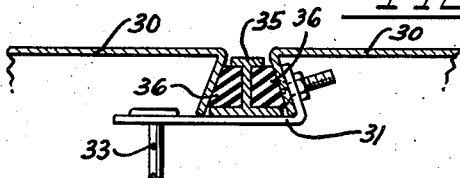


FIG. 21

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4 Sheets-Sheet 3

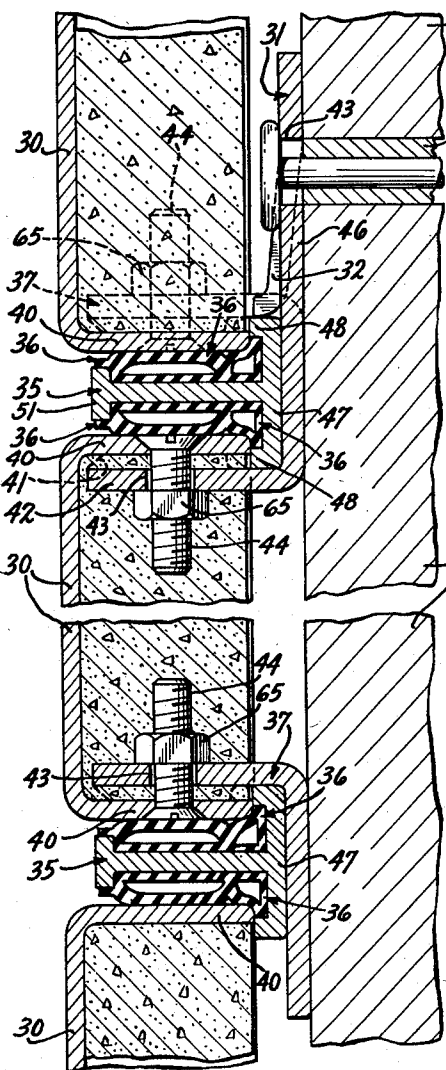


FIG. 4

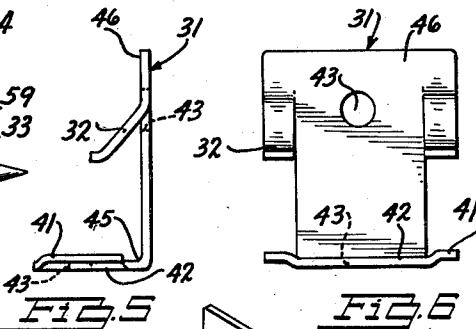


FIG. 5

FIG. 6

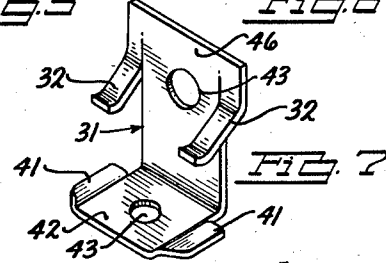


FIG. 7

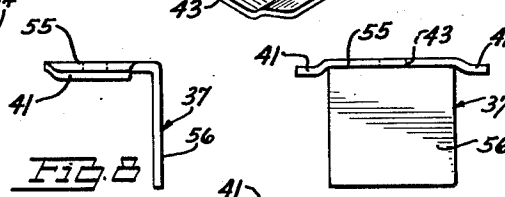


FIG. 8

FIG. 9

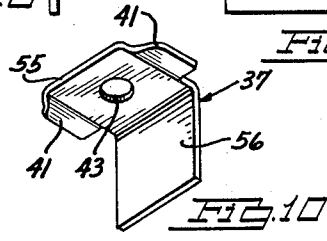


FIG. 10

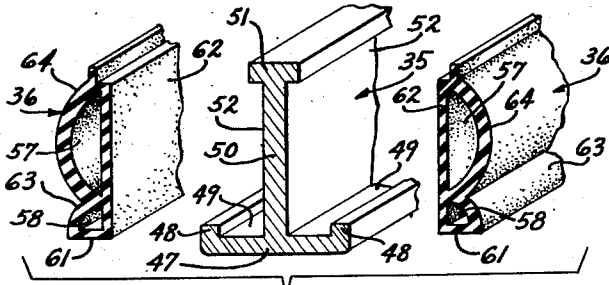


FIG. 11

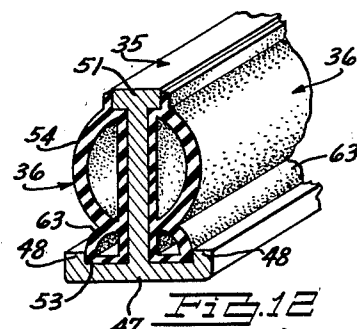


FIG. 12

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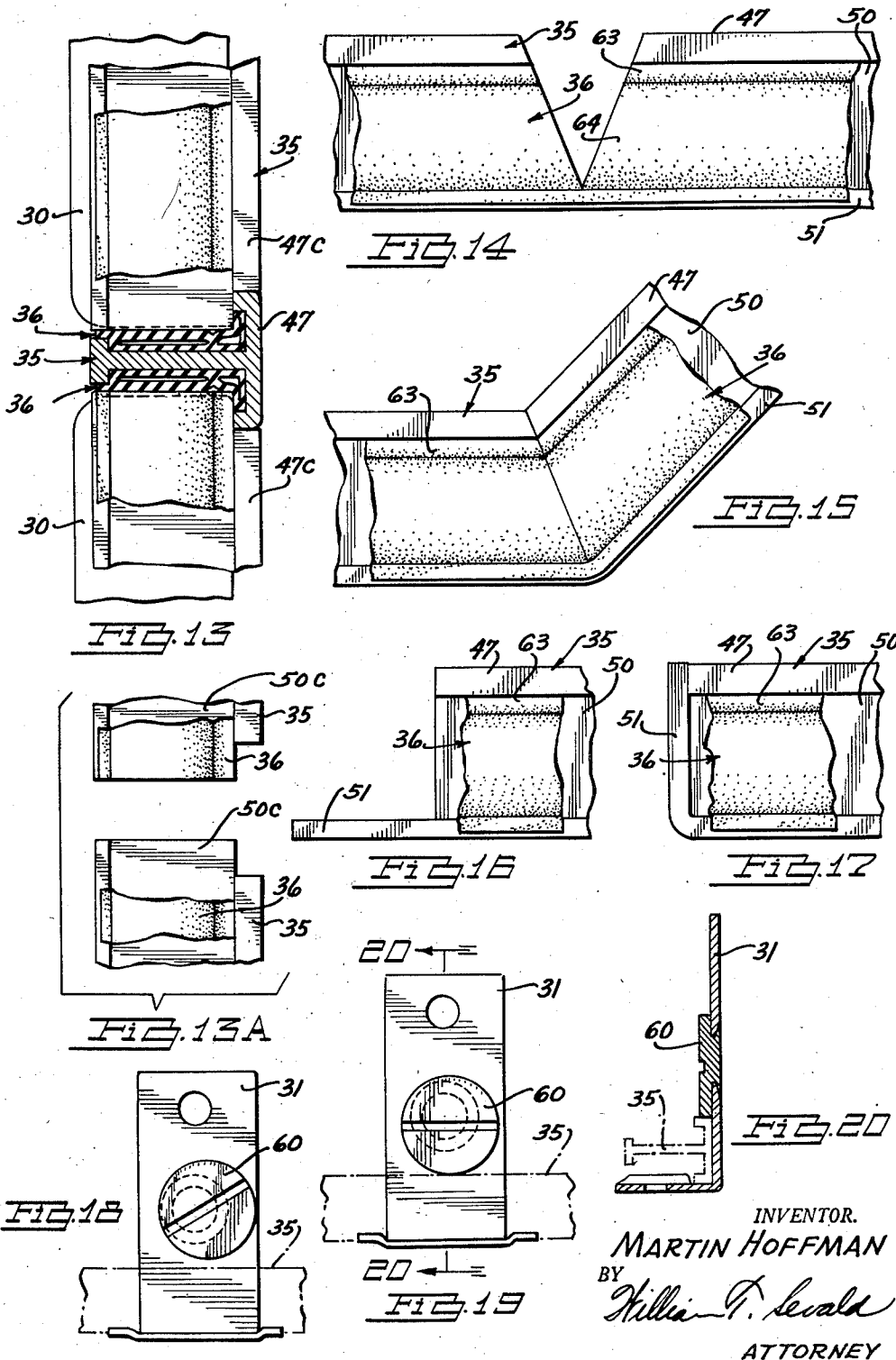
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4 Sheets-Sheet 4



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BUILDING STRUCTURE

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Application August 25, 1949, Serial No. 112,284

8 Claims. (Cl. 72-19)

1

This invention relates to building structures and in particular to improvements in means for sealing, mounting, and garnishing porcelain coated metal pans or tile on a building such as a store front, a school corridor or a bathroom.

Metal tile of the type applicable to the invention is pre-formed into pans of the desired shape and size equipped with flanges for securing the tile to the building. The pans are then coated with various colored coatings, sometimes filled with concrete, and then mounted on the building by various means. The spaces between the pans have heretofore been caulked with a cementitious material to effect sealing against the permeation of air and water.

The pans or tile themselves have been highly satisfactory in use and are generally accepted as commercially successful but the accepted manner and means of attachment have been found unsatisfactory and the cementitious caulking between the tiles or pans has been found to be highly unsatisfactory due to relatively fast deterioration necessitating replacement including the leakage of air and water, and from the standpoint of an unsatisfactory appearance in that the caulking presents a poor contrast to the tile and in itself appears rough and unfinished. Various substitutes for caulking or cementitious mastic have been tried but without success heretofore.

Tiles and pans are also equipped with metal heads or edges to enhance their appearance and these edges have been commonly flush with the face of the tile or pan or raised above the plane of the face of the tile or pan. Beads or edges of this type are used in a vain attempt to conceal the cementitious or mastic joint between the pan or tiles and to give the pans the specious and false but desirable aspect of having a contrasting metal molding centrally disposed between the tiles. These metal moldings have never been centrally disposed between the tile nor set below the plane of the face of the tiles to give the tiles an appearance of depth, but rather previous moldings gave the pans or tiles a shallow appearance by being disposed at or above the plane of the face of the tile or pan.

With the foregoing in view, the primary object of the invention is to provide means for centrally occupying the space between the tile or pans which effects a seal therebetween; which are harmoniously beautiful in relation to the tile or pans; relatively permanent as compared to caulking or mastic; easily and efficiently annexed to the tile or pans; and which lie below the plane

2

of the face of the tile to give the tile the appearance of depth.

5 An object of the invention is to provide a metal molding for occupying the space between the tile or pans which is pleasing in aspect relative to the tile or pans which structurally cooperates with the tile or pans to effect sealing therebetween at the sides of the pan flanges and at the back edges thereof.

10 An object of the invention is to provide sealing strips which cooperate with the interdisposed molding and the adjacent pans to effect sealing therebetween at the sides and back edges of the flanges on the pans.

15 An object of the invention is to provide clips for annexing the pans on a building structure which also secure the interdisposed molding.

20 Another object of the invention is to provide means for integrating the pans, moldings, and sealing strips as the pans are mounted on the building structure.

25 Another object of the invention is to provide molding which is conducive to being adapted to turn corners, close endings and make joints.

30 A further object of the invention is to provide attaching clips which are easily operable to secure the molding in position.

35 A further object is to provide molding which is locked in its clip secured position by the pans themselves overlying in a portion of the molding.

40 Other objects of the invention will become apparent by reference to the following description of an integrated pan, molding, sealing strip and clip combination embodying the invention taken in connection with the accompanying drawings, in which:

45 Fig. 1 is a front elevational view of a store front employing the invention, parts being broken away to show the various components of the invention.

Fig. 2 is an enlarged front elevational view of a pan to better illustrate the various parts in relation thereto.

Fig. 3 is a rear elevational view of a tile or pan fitted with clips and filled with concrete.

Fig. 4 is a greatly enlarged cross-sectional view taken on the line 4-4 of Fig. 1.

Fig. 5 is a side elevational view of the clip attaching means.

50 Fig. 6 is a face elevational view of the clip.

Fig. 7 is a perspective view of the clip.

Fig. 8 is a side elevational view of the sliding clip attaching means.

Fig. 9 is a face view of the sliding clip.

55 Fig. 10 is a perspective view of the sliding clip.

Fig. 11 is an exploded perspective view of the molding and the sealing strips.

Fig. 12 is an assembled perspective view of the molding and the sealing strips.

Fig. 13 is a side elevational view of a joint, partly in cross-section, illustrating the manner in which the molding joints at junctures taken on the line 13—13 of Fig. 2.

Fig. 13A is a view similar to Fig. 13 with some parts removed and others broken away to better illustrate the configuration of the molding at junctures.

Fig. 14 is a side elevational view of a piece of molding together with sealing strips embodying a notch to facilitate turning a corner.

Fig. 15 is a view similar to Fig. 14 taken on the line 15—15 of Fig. 1 of the molding having been notched and bent around a corner.

Fig. 16 is a side elevational view of a piece of molding prepared for accomplishing an open or exposed ending.

Fig. 17 is a view similar to Fig. 16 showing the piece of molding bent to accomplish an open or exposed ending taken on the line 17—17 of Fig. 2.

Fig. 18 is a face elevational view of a clip embodying a modification showing the molding in relation thereto in dotted lines.

Fig. 19 is a view similar to Fig. 18 showing the molding locked to the clip by the modified cam means.

Fig. 20 is a cross-sectional view of the modified clip taken on the line 20—20 of Fig. 19, and

Fig. 21 is a cross-sectional view of a modification of the device.

Referring now to the drawings wherein like numerals refer to like and corresponding parts throughout the several views, the illustrative preferred embodiment of the invention shown in the drawings comprises steel porcelain coated tile or pans 30, a wall attaching and fastening clip 31 secured to the pans 30 and adapted to be fastened by nails 33 to the wall 34 of a building, an anchor trim rail molding 35 adapted to lie between adjacent pans 30 and be secured therebetween via being mounted on the fastening clips 31, seals or sealing strips 36 disposed and secured between the molding 35 and the pans 30 effecting a seal therebetween, and slip fitting or sliding clips 37 secured to the pans 30 for slidably locking behind a previously mounted anchor trim rail or molding 35 secured to the next adjacent pan 30 via the attaching clips 31 thereon.

Referring in greater detail to the various parts and components of the invention, the sheet metal pans 30 are preformed to the desired shape and size and angular variation with surrounding flanges 40, Figs. 1, 2 and 3, having apertures formed therein for receiving attaching means; the pans being then coated with baked porcelain enamel or any other suitable attractive and protective coating material.

The clip 31, Figs. 5, 6 and 7, comprises a flange attaching arm 42 and a wall attaching arm 46 with the arm 42 being equipped with off-set ears 41 or an off-set bent portion in the arm 42 for spacing the portion of the arm 42 outside the flange away from the plane of the pan flange to which the arm 42 is attached to receive the edge of a molding member therebetween; however, other means can be used for spacing the arm 42 from the pan flange, such as a washer or spacer. The arm 46 of the clip 31, Fig. 4, is adapted to join with the arm 42 at a point slightly removed from the edge of the pan flange when the arm 42

is thereto attached so that a space between the edge of the pan flange and the arm 45 and back of the pan flange will exist when the clip 31 is attached to a pan flange 40 for receiving the edge of a molding therein, as seen in Fig. 4. The arm 46 also carries pressure tabs or cams 32 of the type seen in Fig. 7 or a cam 60 as seen in Fig. 19 for gripping a molding member between the cams 32 or 60 and the arm 42 of the clip 31 for securing and supporting the molding member while an aperture 43 is provided in the arm 46 for attaching the clip to a building structure wall by means of a nail or screw.

The clip 37, Figs. 8, 9 and 10, is similarly formed to the clip 31 in that it is equipped with a flange attaching arm 55 having off-set ears 41A or a bent portion in the arm 55 for spacing a portion of the arm 55 lying beyond a pan flange away from the plane of a pan flange to receive a molding member therebehind, while the arm 56 joins the arm 55, Fig. 4, at a point so that a space will be provided between the arm 56 and the edge of a pan flange to receive a molding member therein. Separate pan hangers and molding clamps can also be used or deleted.

The molding 35, Figs. 11 and 12, is substantially T-shaped in cross-section and comprises a head portion 47, projections 48 at the tips of the head section 47, a stem 50 centrally positioned in the head 47 and a cross-foot 51 on the stem 50 constituting a bead for substantially filling the space between adjacent pans. It will be noted that the cross-sectional shape of the molding 35 provides a head channel on either side of the stem 50 formed by the head 47, the projection 48 and the stem 50; and side channels 52 on either side of the molding formed by the cross-foot 51, the stem 50, and the head 47. The channels 49 and 52 are provided for receiving the face portion and the side portion respectively of a sealing member in confining relation in conjunction with the adjacent pans. However, any simplified T-shaped or cross-armed member will be operative in the assembly and is considered to be within the scope of the invention.

The Vinylite sealing strip 36, Figs. 11 and 12, is preferably formed with a face portion 53 and a side portion 54 for cooperating with the channels 49 and 52 respectively in the molding 35. Referring to Fig. 11, a sealing strip compression and expansion side chamber 57 and a sealing strip face compression and expansion chamber 58 are embodied therein by the surrounding structure of the sealing strip 36 which comprises a flat base portion 61, a flat back portion 62, a curved face portion 63, and a larger curved face portion 64. However, a sponge material may be used to make the sealing strip and the cross-sectional configuration of the strip may be such as to cooperate with the molding and the adjacent pan so that the combination retains the strip.

Referring to sub-assembly, Fig. 3, the clips 31 and 37 are attached to the pan flanges 40 by means of bolts 44 and nuts 65 and it is preferable to bolt these pieces together after the pans 30 have been enameled and the clips 31 and 37 have been treated with a rust preventive and it is preferable to use brass bolts. After the clips 31 and 37 have been attached to the pan flange 40, the bolt ends constitute dowel-like studs so that when the pan 30 is filled with concrete or any other cementitious material to maintain the pans in a rigid and flat condition and to provide sound deadening qualities in the pan 30, the bolt

5

ends are also embedded and constitute a mechanical interlock between the pans and the concrete. It will be noted that the clips 31 are usually attached to two adjacent sides of a pan 30 and the clips 37 are attached to the other two adjacent sides of the pan 30 so that the clips 37 may be slid behind previously mounted members, Fig. 2, to secure two sides of the pan 30, leaving the clips 31 exposed so that they may be secured to the wall of the building structure 34 by means of a nail 30, Fig. 4, driven into a lead liner 59 in an aperture in the building structure 34. However, it has been found practical to use the clips 31 on one side of a pan 30 and the clip 37 on the opposite side thereof only and other adaptations are of course apparent.

In mounting the pans on the face of a building, the pans 30 being previously equipped with clips 31 and clips 37 and filled with concrete, Fig. 3, and the sealing strips having been cemented to the molding, Fig. 12, the first pan is set and secured with the clips 37 being slidably inserted behind a previously mounted molding 35, a metal band or a similar securing item is suitable if an adjacent pan and molding are not available such as in securing the first pans, and the exposed clips 31 then fastened to the building structure by nails 33 or similar fastening means. Obviously, the applicator will decide the most suitable pan to set first to facilitate his setting of the remaining pans.

At this point, as the cams 32 or 60 on the clips 31 are opened, the applicator positions the molding 35 and the sealing strip 36 at the side of the pan and fastens same in place by depressing the cam 32 or turning the cam 60 to engage the molding 35. The next adjacent pans can then be set by sliding their attached clips 37 behind the mounted pan and attached molding and by then nailing the clips 31 on the newly set pan 30.

Usually the pans are set side by side with short pieces of molding between them and after they have been set, a long piece of molding is fastened at the tops of all the pans. As the long pieces of molding are not usually long enough to extend the whole distance across a building face, joints are accomplished by butting the ends of the lengths of molding at a clip 31 and then using one cam 32 of the clip 31 to secure each abutted end of the two lengths of molding as at 80 in Fig. 1.

It will be noted that the pans 71 and 74 embody a 45 degree angle which must be matched by the interposed molding 35 and the sealing strips 36 lying adjacent thereto and this is facilitated by notching the molding 35 and the strips 36, Fig. 14, up to but not including the cross-foot or bead 51 of the molding 35 and then bending the molding 35, Fig. 15, to accomplish the desired 45 degree angle therein. Obviously, this angle may be varied by the size of the notch cut into the molding and sealing strips.

Again referring to Fig. 1, it will be noted that the end of the molding 35 is adjacent the exposed side of the pans 70 and 73 and the molding is closed adjacent the exposed side of the pans 70 and 73 by cutting the molding to the bead 51, Fig. 16, so that the bead or cross-foot 51 of the molding 35 may be bent around the end of the molding 35, Fig. 17, to tastefully close the exposed end thereof.

Relative to intersections between strips 35, Figs. 1, 2, and 13, it will be noted that the horizontal molding 35 intersects the vertical moldings 75

6

35 and this is accomplished by cutting off the cross-head 47C, Fig. 13, adjacent and cross-head 47 on the molding 35 so that the cross-heads 47C abut the cross-head 47 at right angles thereto while the molding stems 50C and the sealing strips 36C intersect and lie closely adjacent to the sealing strips 36 adjacent the molding 35 so that the joint or juncture therebetween is sealed.

Considering expansion and contraction in the pans, due to heat and cold, relative to the concrete filling in the pans, it has been found advisable to provide interlocking means 39 on the pan in the center thereof to be imbedded in the concrete filling, and, as the clips are bolted to the pans prior to filling, the clip attaching bolts provide edge anchoring means axially aligned in the concrete filling with the direction of expansion and contraction so that any difference in expansion and contraction between the pan itself and the concrete filling is absorbed by the concrete filling sliding on the axially aligned bolt ends.

In mounting the pans, clips, moldings and seal strips on a building, a step by step process or method is pursued by the applicator, such as in mounting any certain pan, the attached clips 37 are slidably inserted behind previously mounted retaining means and the clips 31 are then nailed or screwed to the building with their cams or pressure tabs 32 or 60 in open condition. A molding 35 optionally but preferably having the sealing strips cemented thereto is then placed in position beside the pan and the cams 32 or 60 brought into closed condition against the molding 35, thereby securing it in place. The next pan is then placed adjacent the already mounted pan 30 and attached molding 35 with the clips 37 of the next pan slidably positioned behind the mounted pan and secured molding and the clips 31 of the next pan are then nailed or screwed to the building and a molding attached thereto by the cams 32 or 60. This step by step process or method is efficiently pursued until all the pans are mounted with moldings and sealing strips between them, sealing the joints and garnishing the intersections between the pans.

When the pans are mounted on the outside of a building, such as a store front, they are subject to great variations in temperature and as they are relatively large in area, they appreciably expand and contract under the influence of heat and cold. As the clips 37 are slidably mounted, the pan is allowed to expand and contract by sliding the clips 37 behind their securing means and as the sealing strips are compressible and self-expandable, they maintain a seal by being compressed when the pan expands and by expanding when the pan contracts under the influence of heat and cold. Due to the fact that the pans are made of metal, they get much hotter than ordinary tile in the sun's rays and also expand much more than ordinary tile, and also, as they are made of metal, they liberate their heat and contract much faster than ordinary tile, and if the sealing means between the tiles is not resilient, the expanding and contracting pans will work the sealing means out of the joint or at least squeeze it out under heat and draw away from it under cold, which action will destroy caulking or cementitious mastic. However, the instant invention completely overcomes this problem.

While the face bead of the molding may be

set at or above the plane of the face of the tile, it is preferable to locate the face bead of the molding slightly below the plane of the face of the tile and to provide a radius connection between the face of the pan and the pan flange to give the tile or pans the appearance of depth and beauty and to allow the molding to contribute to this effect on the eye appeal of the pans or tile.

Although but one preferred embodiment of the invention has been shown in the drawings and described in detail herein, it is obvious that many changes and modifications may be made in the size, shape, arrangement and detail of the various elements of the invention and additions and deletions can be made without departing from the spirit of the invention and it is not intended to limit the scope of the invention, other than by the terms of the appended claims.

I claim:

1. In combination a building facing pan, a flange on said pan, a building structure attaching clip, a first arm on said clip annexed to said flange, a second arm on said clip joining said first arm at an angle thereto at a point spaced away from the edge of said flange, means on said second arm securing said second arm to a building structure for supporting said pan, a molding adjacent said flange, a head portion on said molding lying parallel to said second arm with the end of said head lying behind the edge of said flange adjacent said first arm, a cam on said second arm securing said molding head between said cam and said first arm, a stem portion attached to said head portion lying parallel to said flange, a sealing strip, a foot portion on said sealing strip sealably disposed between said molding head and said flange edge, and a side portion on said sealing strip sealably disposed between said molding stem portion and said flange.

2. In a device as set forth in claim 1, a second flange on said pan, a second clip, a first arm on said second clip fixed to said second flange, a second arm on said second clip joining said first arm of said second clip at an angle thereto at a point spaced away from the edge of said second flange; said second arm on said second clip being interposed behind a previously secured molding member with the end of the head portion of the previously mounted molding lying behind the edge of said second flange in locked condition, and a sealing strip interposed between said second flange and the previously mounted molding.

3. In combination, a substantially T-shaped molding member garnishing and cooperating to seal the joints between flanged ornamental pans on a building structure comprising a head adjacent the edge of the flange on the pans, a stem parallel to the side of the flange on the pans, a cross-foot constituting a bead substantially closing the space between adjacent pans near the face of the pans, an attaching clip mounting the flanged pans on the building structure comprising a first arm secured to the inside of the pan flange, a second arm joining said first arm receiving said molding in locking relation between said clip and the adjacent pan flange, a compressible and expandable sealing strip sealing the space between the flanged ornamental pan and said adjacent substantially T-shaped molding comprising a portion abutting said head on said molding, a portion abutting said cross-foot on said molding, a portion abutting said stem on said molding, and a portion abutting the adja-

cent pan; said strip portions lying in locked condition between said molding and the pan flange.

4. In combination, a substantially T-shaped molding member garnishing the joints between flanged ornamental pans on a building structure and cooperating with sealing strips disposed between said molding and the flange on the pans comprising a head lying adjacent the edge of the flange on the pans, a stem lying parallel to the flange on the pans, a cross-foot constituting a bead substantially closing the space between adjacent pans; said head, said stem, and said cross-foot forming a channel receiving and retaining a sealing member for sealing the space between a pan flange and said molding, an attaching clip mounting the flanged ornamental pans on the building structure, a first arm on said clip lying on the inner side of the flange, means uniting said first arm to the pan flange, a second arm on said clip elbowed at an angle to said first arm securing said molding and extending outside the edge of the pan, and means securing said clip to a wall for supporting the pan and molding.

5. In combination, a T-shaped molding member garnishing the joints between flanged ornamental pans on a building structure and for cooperating with sealing strips disposed between said molding and the flange on the pans comprising a head lying behind the edge of the flange on the pans, a stem lying parallel to the flange on the pans, a cross-foot constituting a bead substantially closing the space between adjacent pans; said head, said stem and said cross-foot forming a side channel adapted to receive and retain a sealing member for sealing the space between the side of a pan flange and said molding; projections on said head; said projections, said head, and said stem forming a bottom channel receiving and retaining a sealing member between the edge of a pan flange and said molding; an attaching clip mounting said flanged pans on a building structure comprising an arm attached to the inside of the pan flange, means spacing said arm inwardly from the plane of said flange in the area of said arm outside said flange receiving said molding behind the pan flange, a second arm joining said arm at an angle thereto at a point spaced away from the edge of the pan flange receiving said molding between said clip and the pan flange; a cam on said second arm securing said molding member in fixed relation between said cam and said second arm, a sealing strip sealing the space between an ornamental pan and said adjacent garnish molding comprising a first portion constituting a compression and expansion member lying in said molding bottom channel between the edge of the pan and said molding for absorbing expansion and contraction in the pan due to heat and cold, and a second portion constituting a compression and expansion member lying in said molding channel between the side of the pan flange and said molding for absorbing expansion and contraction in the pan due to heat and cold.

6. A building facing comprising a tile-like pan, a peripheral flange on said pan at the edge thereof, wall attaching clips on said flange to support said pan on a wall, bolts securing said clips to said flange, a first leg on said clips adjacent said flange, a second leg on said clips extending outside said pan, an offset portion in said first leg spacing said leg inside the plane of said flange providing a space for receiving and retaining a molding; said second leg being spaced from the edge of said pan for cooperating with said offset

portion in said first leg for receiving and retaining a molding; pressure tabs on said second leg, a molding secured adjacent said pan flange by said clip and said pressure tabs thereon, a head on said molding lying between said clip and said flange in the space therebetween, projections on said head, a stem portion on said head; said head, said projections and said stem providing a base channel for receiving a sealing member at the edge of said flange; a cross-foot on said molding stem; said cross-foot, said stem and said head providing a side channel for receiving a sealing member at the side of said flange, a double chambered compression and expansion sealing strip interposed between said molding and said pan adapted to absorb expansion and contraction in said pan due to heat and cold, a base portion on said strip lying in the base channel of said molding for sealing against the edge of said flange and a side portion on said strip lying in the side channel of said molding for sealing against the side of said flange.

7. In combination, a building facing pan, a peripheral flange on said pan extending perpendicularly to the face of said pan, mounting clips, bolts extending through said flange inwardly of said pan parallel to the face of said pan and through said clips securing said clips to said pan, concrete filling said pan and enveloping the ends of said bolts, the ends of said bolts mechanically interlocking said pan and said concrete.

8. In combination, a building facing pan, a molding web adjacent the side of said pan in spaced relationship thereto, a head flange portion on said molding web extending behind said pan in secured relationship to said pan, a mounting clip supporting said pan and molding web on a building structure, and a sealing strip disposed between said pan and said molding web in sealing relationship; said molding head flange being trapped between said pan and said clip.

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