United States Patent

Dulaney

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[54] PANEL MOUNTING APPARATUS

[72] Inventor: **Thomas J. Dulaney,** 4901 N. Cooper, Oklahoma City, Okla. 73118

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[51] **Int. Cl.**.....**E04b 1/62,** E06b 1/04

[58] **Field of Search**.....52/730–732, 501–502, 52/396–402

[56] **References Cited**

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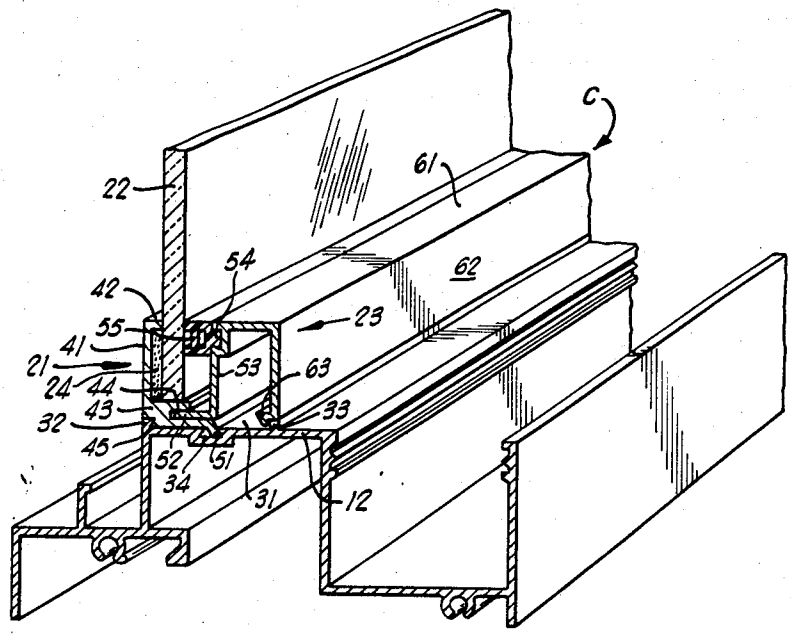
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Primary Examiner—Frank L. Abbott
Assistant Examiner—James L. Ridgill, Jr.
Attorney—Dunlap, Laney, Hessin & Dougherty

[57] **ABSTRACT**

Apparatus for mounting panels, such as windowpanes and the like for either inner or outer glazing. One form of the apparatus may comprise a base rail having formed therein a relatively wide dovetail groove together with a second dovetail groove in approximately the center of the first such groove. An outer rail seats slidably on the base rail and has a projection which engages a portion of the inner dovetail groove and an additional projection which engages one element of the outer dovetail groove whereby the outer rail is secured thereto. A glazing rail is secured to the other portion of the first dovetail groove formed in the base rail and is likewise secured in a recess carried by the outer rail. A space is left between the glazing rail and outer rail in which panels, such as window glass and the like, may be inserted. The securing portions of the glazing rail and the outer rail are fashioned so that they may be reversed in their relationship to the base rail should conditions warrant.

10 Claims, 3 Drawing Figures



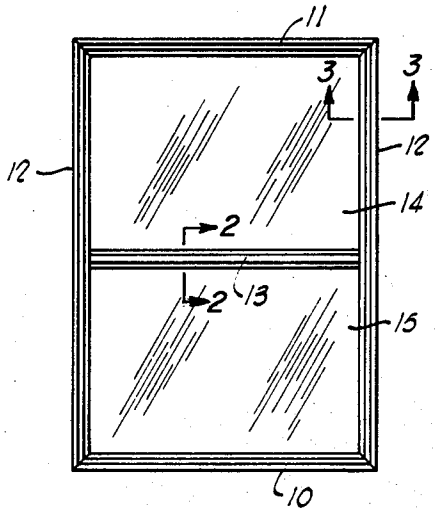


FIG. 1

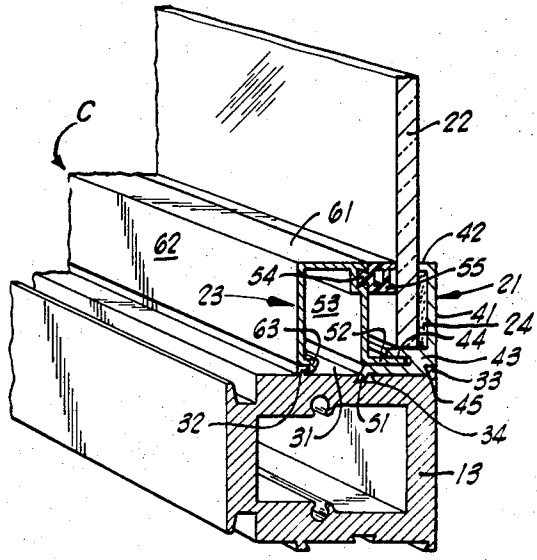


FIG. 2

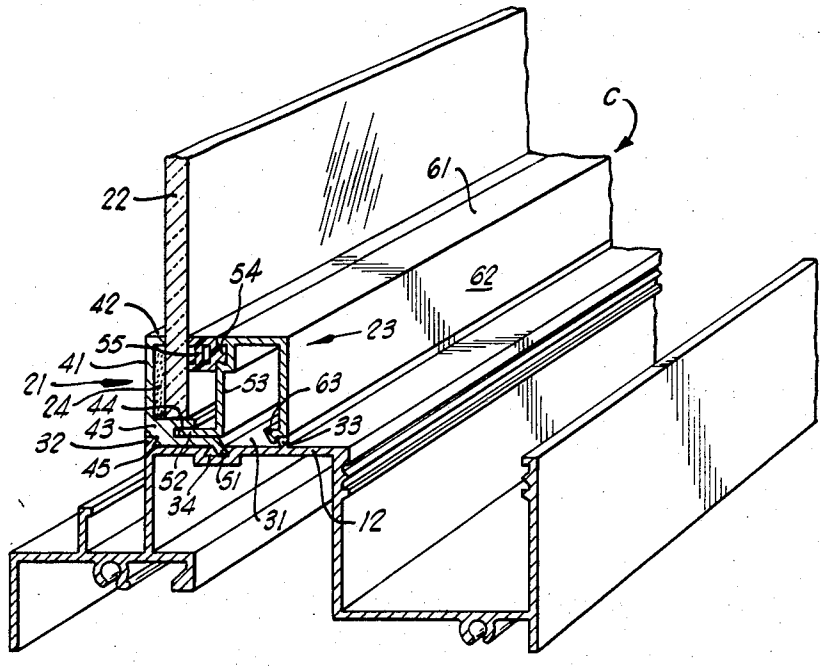


FIG. 3

INVENTOR
THOMAS J. DULANEY

BY
Dunlap, Laney, Hessin & Dougherty
ATTORNEYS

PANEL MOUNTING APPARATUS

BACKGROUND OF THE INVENTION

The present invention was designed to provide apparatus which can be used to mount panels and especially window glasses in circumstances which require outside glazing, as well as in circumstances which require inside glazing.

In ordinary single-story or even two-story building structures, it has long been the custom to seal or glaze windows and doors in the structure from the outside. In such conditions the glazing work was not often a major problem when it became necessary to replace the window glass, since all that was necessary to reach the window for glazing was, at most, stepladders, and in many cases glazing could be accomplished from the ground.

Circumstances are quite different, however, when high-rise buildings are considered. Here, if windows are glazed from the outside a substantial amount of equipment must be used in glazing replaced windows should this kind of activity become necessary. Recognizing this problem and the dangers attendant to outside glazing in elevated windows, many building codes now require that windows above the third floor or even above the second floor be glazed on the inside.

In view of these building restrictions, and further in view of the fact that it is still desirable to glaze on the outside when conditions and imposed restrictions allow, builders and warehousemen have found it necessary to stock two different kinds of window mounts for alternate usage, depending upon whether the glazing will be on the inside or on the outside. This redundancy in inventories has the obvious disadvantage of increasing costs and also introduces the possibility of mistakes in installation of window framing. Moreover, the cost of extrusion dies for manufacturing the various rails is necessarily high, since the rails necessary for inside glazing are of different geometry than those used for outside glazing. The advantages of window framing which could be used for both inside and outside glazing are, in view of this explanation, at once apparent, although until the present invention, totally satisfactory apparatus for achieving this desired result had long remained an elusive desideratum. It is therefore an object of the present invention to provide panel mounting means which may be used for both inside and outside glazing.

Another object of the present invention is to provide panel mounting apparatus which is relatively simple to install and is of universal application.

Still a further object of the present invention is to provide panel mounting apparatus which can be extruded from molten aluminum and which can be produced relatively economically.

Yet a further object of the present invention is to provide apparatus for mounting panes of glass in buildings which is easy to install, relatively rigid in construction, and pleasing to the eye. These and other objects of the present invention will be readily apparent from a careful examination of the following written specification which is to be read in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic elevational view of a window showing the relationship of the structures embodying this invention to the window panes.

FIG. 2 is a partial cross-sectional view taken along line 2—2 of FIG. 1 showing one way in which panel mounting apparatus embodying this invention may be assembled.

FIG. 3 is a cross-sectional view taken along line 3—3 of FIG. 1 similar to FIG. 2 in which elements of the panel mounting apparatus have been reversed and a different type of supporting rail is utilized.

DESCRIPTION OF AN EMBODIMENT OF THE INVENTION

The present invention has utility in many types of construction environments. One such type is shown in FIG. 1 wherein there is disclosed a double hung window of generally standard design. The double hung window includes the usual foot rail **10** and head rail **11** which intercept a pair of parallel jamb rails **12** to form a rectangular window frame. The central portions of jamb rails **12** are connected by a meeting rail **13** to divide the rectangular frame into an upper and lower portion. Window panes **14** and **15** are secured within the upper and lower portions respectively by the apparatus disclosed hereinafter.

An important characteristic of the present invention is the fact that, although the basic structure of the head rail, foot rail, jamb rail, and the meeting rail may be different, the apparatus embodying the present invention may be used with each type of rail without change in the form of the apparatus.

In FIG. 2, for instance, there is shown a portion of a meeting rail **13** on which structure embodying the invention is mounted. In general, this structure includes a longitudinally extending outer rail **21** on which is seated a window pane **22**. Lying opposite the rail **21** is an elongated glazing rail **23** which likewise seats upon the meeting rail **13**. Putty or glazing material **24** is used to seal between the outer rail **21** and the window pane **22** in the manner shown. An important feature of the present invention resides in the fact that outer rail **21** and glazing rail **23** may be reversed with respect to base rail **11** so that glazing material **24** may appear to the right as viewed in FIG. 2 rather than to the left. This may be done without disturbing the position of meeting rail **13**. An example of this arrangement of elements is disclosed in FIG. 3 which will be discussed in more detail hereinafter.

As pointed out earlier, the supporting or base rail may take any one of several different forms whether it be head, jamb, or meeting rail. In any event, however, the base rail is characterized by a longitudinally extending flat **31** on both edges of which there are provided parallel longitudinal dovetail projections **32** and **33**. These dovetail projections are undercut in the standard manner to receive portions of the outer rail and glazing rail whereby these members are secured to base rail **10**. In viewing the cross-sectional configuration of this portion of the apparatus as shown in FIG. 2, it will be appreciated that projections **32** and **33** are oppositely faced and together define a relatively shallow, wide dovetail groove, the bottom of which is flat **31**. The second dovetail groove **34** is located in the center of flat **31** and extends parallel to dovetail projections **32** and **33**. Groove **34** functions to receive a portion of outer rail **21** whereby rail **21** is secured to the surface of base rail **10** by the cooperative action of dovetail projection **33** and groove **34** in a manner to be hereinafter

described. After the outer rail 21 is placed in the illustrated position, it is often desirable to peen the base flange thereof overlying the flat 31 so that it is retained against longitudinal sliding movement on the base rail.

Outer rail 21 comprises an outer web 41 which extends the length of rail 21. At the upper edge of web 41 there is provided a lip 42 which projects inwardly toward window pane 22 and engages the window pane to provide bracing and stability thereto. At the lower edge of web 41, a thickened base flange 43 extends in a direction parallel to lip 42. Base flange 43 is divided into an upper and lower portion by a recess 44 which opens outwardly in a direction toward glazing rail 23 and receives a projection of the glazing rail. The upper portion of base flange 43 serves as a base support for window 22 while from the bottom of this flange there projects a triangular dovetail bead 45. Bead 45 extends the length of rail 21 and is located at the edge of the plane including the inside face of outer web 41. As shown in FIG. 2, bead 45 engages dovetail projection 33 to aid in locking outer rail 21 to the surface of meeting rail 13.

Additional securing means are also carried by the under portion of base flange 43. This additional securing means is in the form of a longitudinally extending toe 51 which projects outwardly and downwardly from the outside edge of base flange 43, and which has an outer surface approximately parallel to one of the downwardly facing surfaces of dovetail groove 34.

Glazing rail 23 serves to provide stability to window pane 22. The glazing rail includes an elongated locking flange 52 which projects into recess 44 whereby this portion of the glazing rail is restricted against motion toward and away from the meeting rail 13. An inner web 53 is formed on the edge of locking flange 52 opposite recess 44. In the upper portion of web 53 (as viewed in FIG. 2), there is carried a deep groove 54 into which projects a portion of a sealing bead 55. Bead 55 is formed of resilient material, such as rubber and the like, and functions to reinforce the seal between window 22 and glazing rail 23. The upper portion of web 53 is held in rigid relationship to the meeting rail 13 by means of a connecting assembly C which includes an elongated rectangular-shaped connecting member 61 which projects in a horizontal direction from the top edge of web 53 away from sealing bead 55. A vertical leg 62 extends in a direction normal to the plane of connecting member 61 and parallels inner web 53 to form a member having a generally U-shaped cross-sectional configuration. Along the edge of leg 62 opposite connecting member 61, there is mounted a triangular-shaped, outwardly opening dovetail bead 63 which engages the under side of dovetail projection 32. By the cooperating action of dovetail bead 63 and locking flange 52 and their corresponding elements, meeting rail 13 and outer rail 21, respectively, the glazing rail 23 is maintained in a rigid position with respect to the other elements of the structure.

FIG. 3 shows the identical outer and glazing rails disclosed in FIG. 2 in cooperative engagement with a jamb rail 12. The jamb rail 12 has an upper portion constructed identically to the upper portion of the meeting rail 13. In FIG. 3, however, the positions of the outer rail and glazing rail are reversed with respect to the glazing rail 12, which here constitutes the base or support rail, whereby glazing material 24 appears on the right hand portion of the figure rather than the left. Here it will be noted that dovetail bead 45 which forms a portion of the outer rail cooperates with dovetail projection 32 rather than with projection 33 as in FIG. 2. Moreover, toe 51 carried by the outer edge of flange 43 projects downwardly into the opposite side of dovetail groove 34 in FIG. 3. Aside from these differences, however, the manner in which the two upper rails are secured to the base rail is identical in both figures.

It will be obvious that a number of changes and alterations may be made in the structure shown in the drawings without departing from the spirit and scope of the present invention. Embodiments described herein are presented by way of an example only and the invention is to be limited only by the appended claims.

What I claim is:

1. A window mounting assembly which comprises:
- a longitudinally extending base rail having a pair of parallel inwardly facing dovetail projections formed on the outer edges thereof whereby a first dovetail groove is formed, said base rail further being characterized by a second dovetail groove formed in the center thereof parallel to the first dovetail groove;
- a longitudinally extending outer rail which comprises:
  - an outer web;
  - a lip projecting from an edge of said outer web;
  - a base flange projecting from the opposite edge of said outer web in a plane parallel to the plane of projection of the lip;
  - a first dovetail bead carried by the base flange in a position to engage a first one of said pair of dovetail projections;
  - a recess formed in said base flange, said recess opening in a direction away from the web; and
  - a securing toe projecting from the outer edge of the flange in a direction away from the outer web into the second dovetail groove formed in the base rail; and
- a glazing rail which comprises:
  - an inner web having formed thereon along an edge thereof a groove opening toward the outer rail;
  - a locking flange projecting from an edge of the inner web into the recess formed in the base flange;
  - a connecting assembly secured to the edge of the inner web opposite its edge from which said locking flange projects; and
  - a second dovetail bead carried by said connecting assembly in engagement with the second dovetail projection formed in the base rail.

2. The apparatus defined in claim 1 wherein said connecting assembly comprises:
- a leg parallel to the inner web and having said second dovetail bead on one edge thereof; and
- a connecting member perpendicular to said leg and to said inner web and connected to an edge of each.

3. Panel mounting means comprising:
- an outer rail which comprises:
  - an outer web;
  - a base flange connected to and projecting perpendicularly from one edge of the outer web;

a dovetail head on said base flange at a position adjacent the outer web, for securing said outer rail to a base;

a recess formed in said base flange, said recess opening in a direction away from the outer web; and

securing means projecting from the outer edge of the flange in a direction away from said recess and angled to the planes of the outer web and of the flange; and

a glazing rail which comprises:

an inner web;

a locking flange projecting from an edge of the inner web into the recess formed in the base flange;

a connecting assembly secured to the inner web; and

a second dovetail bead carried by said connecting assembly in a position parallel to the first dovetail bead for securing said panel mounting means to a base.

4. The apparatus defined in claim **3** wherein said connecting assembly comprises:

a leg parallel to the inner web and having said second dovetail bead on one edge thereof; and

a connecting member perpendicular to said leg and to said inner web and connected to an edge of each.

5. The apparatus defined in claim **3** and further characterized by a lip projecting from an edge of the outer web in a plane parallel to the plane of the base flange.

6. The apparatus defined in claim **3** wherein the inner web has formed therein a deep groove opening toward the outer web and further characterized by a sealing bead secured in said deep groove and projecting therefrom.

7. The apparatus defined in claim **6** wherein said sealing bead is formed of rubber.

8. The apparatus defined in claim **6** wherein the groove receiving said bead is a dovetail slot.

9. The apparatus defined in claim **8** and further characterized by a lip projecting from an edge of the outer web in a plane parallel to the plane of the base flange.

10. The apparatus defined in claim **9** wherein said connecting assembly comprises:

a leg parallel to the inner web and having said second dovetail bead on one edge thereof; and

a connecting member perpendicular to said leg and to said inner web and connected to an edge of each.

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