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Pietsch

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[54] **MOUNTING STRUCTURE FOR MIRRORS AND THE LIKE**

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[52] **U.S. Cl.**.....**248/475,** 248/203

[51] **Int. Cl.**.....**A47g 1/16**

[58] **Field of Search**.....248/203, 466, 468, 475; 52/510, 511; 40/152.1, 151.2

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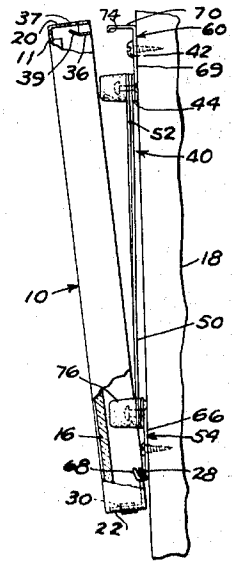
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[57] **ABSTRACT**

A structure for mounting a panel such as a mirror to a wall having a peripheral frame which receives the panel to be mounted from the rear or wall side thereof. The frame with the panel loosely retained therein is positioned to overlie a wall-mounted hanger structure and is pushed toward the wall to bring the frame into locking engagement with the hanger structure. Resilient bumpers on the hanger structure engage the rear panel surface to force the panel against the frame. The action of the bumpers with the panel also maintains a spring clip on the frame in locking engagement with a locking tab on the hanger structure to rigidly maintain the frame on the wall. Peripheral flanges on the frame extend rearwardly to the wall surface so as to conceal the attaching structure. A tool may be inserted through a small access hole in one of the flanges opposite the spring clip to bodily deflect the spring clip out of locking engagement with the locking tab so that the frame may be removed from the wall.

15 Claims, 7 Drawing Figures



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SHEET 1 OF 2

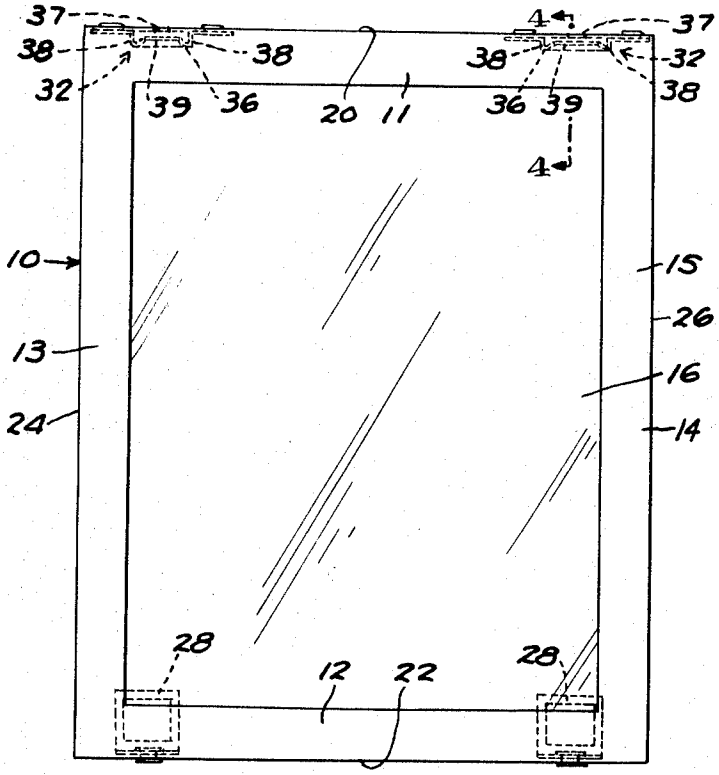


FIG. 1

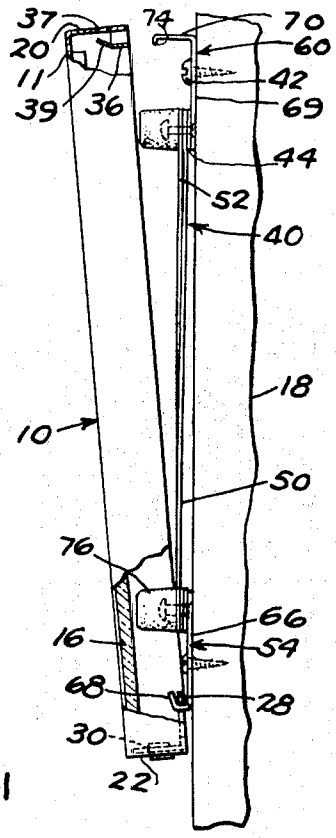


FIG. 3

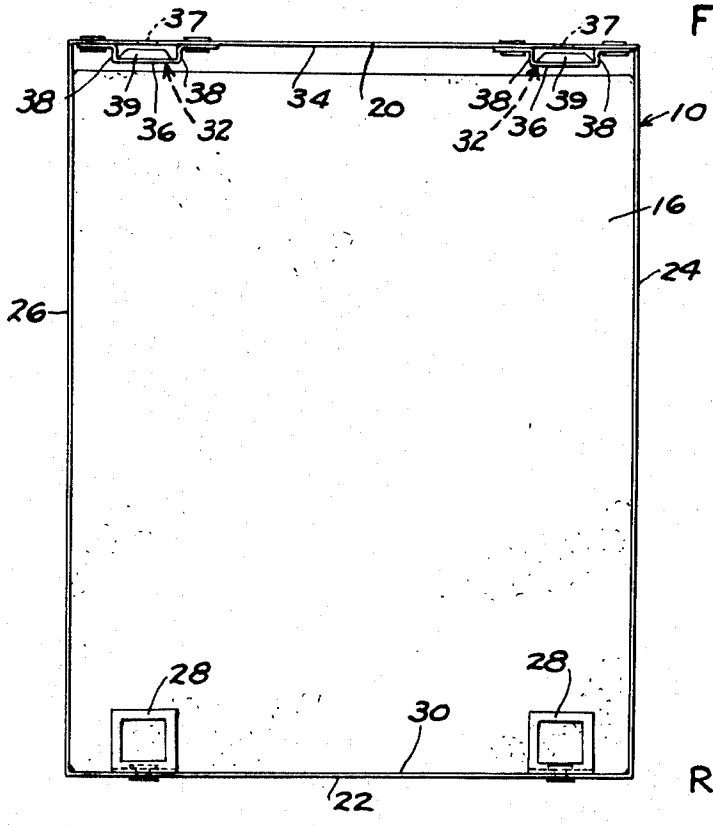


FIG. 2

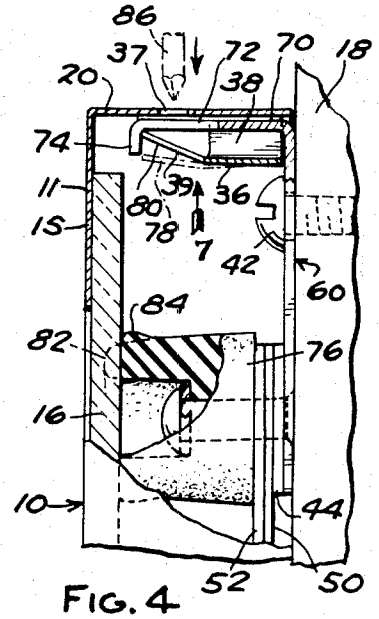


FIG. 4

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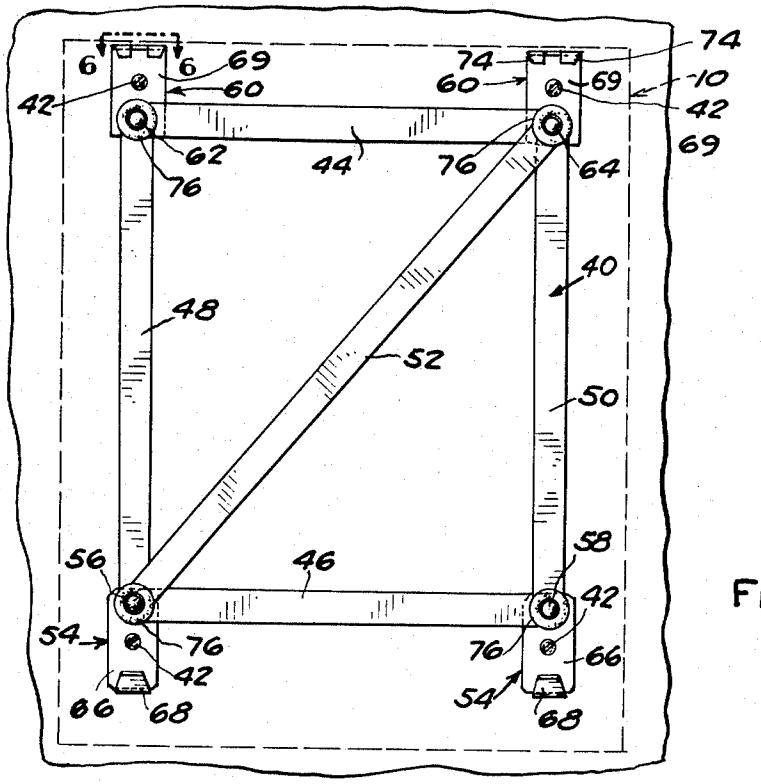


FIG. 5

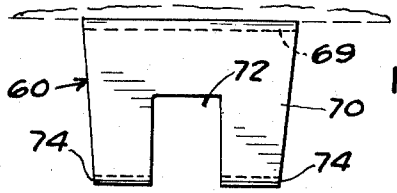


FIG. 6

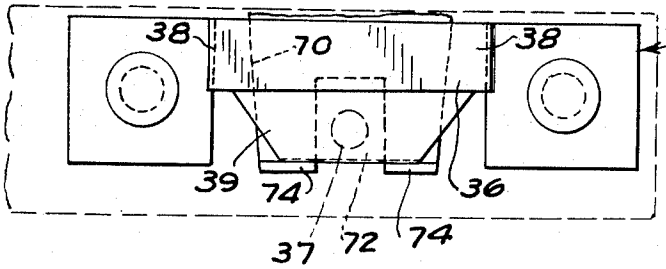


FIG. 7

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MOUNTING STRUCTURE FOR MIRRORS AND THE LIKE

This invention relates to mounting structures for panels such as mirrors and the like.

In general, such mounting structures comprise a frame for retaining the panel to be mounted and a wall-mounted hanger structure to which the frame is attached. In order to achieve a sturdy mounting for the panel, either the panel is secured to the frame by means of clips or the like, or else a filler is inserted between the panel and the wall to takeup the free space therebetween. Both of these constructions are wasteful of assembly time and materials. In the first situation, a large number of clips are often required to retain the panel to the frame, while in the second case, the correct thickness of the filler must be determined by a cut-and-try method.

A further problem with such structures arises when the attaching members are exposed and readily accessible. This is particularly serious when such structures are installed in public locations since they are susceptible to unauthorized removal. To alleviate this problem, mounting structures have been devised which have fully concealed attaching members. In general, such mounting structures once installed may be removed by one of two methods: either by destruction or by inserting a tool within a small opening in the structure to thereby release or undo a concealed attaching member.

One of the principal objects of this invention is the provision of an improved and simplified panel mounting structure.

It is another object of this invention to provide an improved panel mounting structure in which the attaching members are concealed.

Still another object of this invention is the provision of a panel mounting structure which may be easily and quickly installed on a wall.

It is also an object of this invention to provide an improved wall-mounted hanger structure for mounting a panel retaining frame thereon in which compressible, resilient bumpers thereon engage the panel so as to forcibly maintain it within the panel retaining frame.

Yet another object of this invention is the provision of an improved panel mounting structure having concealed attaching members which may be released from locking engagement through small access holes in the structure.

Other objects and features of the invention will become apparent in the following description and drawings in which:

FIG. 1 is a front elevational view of the mounting frame unit of the present invention.

FIG. 2 is a rear elevational view of the unit of FIG. 1.

FIG. 3 is a side elevational view of the unit of FIG. 1 having portions broken away and showing the unit being moved toward locking engagement with a wall-mounted hanger assembly.

FIG. 4 is a sectional view taken along line 4—4 in FIG. 1.

FIG. 5 is a front elevational view of the wall-mounted hanger assembly of the present invention.

FIG. 6 is a view taken along line 6—6 in FIG. 5.

FIG. 7 is a view taken in the direction of arrow 7 in FIG. 4.

Referring more particularly to FIGS. 1, 2 and 3, the mounting frame unit 10 of the present invention comprises parallel upper and lower members 11 and 12, respectively, and vertically extending side members 13 and 14 which are connected together at their ends to define a rectangular frame 15 for retaining a panel 16 such as a mirror. Members 11, 12, 13 and 14 are turned inwardly or rearwardly at their outer edges to define peripheral flanges 20, 22, 24 and 26, respectively. When frame 15 is mounted on a wall 18, the peripheral flanges extend rearwardly to wall 18 to conceal the attaching members. A pair of square-shaped mounting rings 28 are attached to inner face 30 of bottom flange 22. A pair of spring retaining clips 32 are likewise attached to inner face 34 of top flange 20. Each clip 32 comprises a spring tab 36 supported from the underside or inner face of flange 20 by means of legs 38 at lateral ends thereof. The forward portion of each tab 36 is defined by a leaf spring 39 which inclines upwardly in the forward direction. Each leaf spring 39 is spaced slightly below flange 20 and vertically aligned with one of two small access openings 37 therein.

Referring now to FIGS. 3, 4 and 5, a hanger assembly 40 is shown attached to wall 18 by means of screws 42. Hanger assembly 40 is defined by a pair of rigid horizontal straps 44, 46 and a pair of vertical straps 48, 50 which are connected at their ends and maintained in rectangular form by a diagonally extending brace 52. Hanger assembly 40 further includes hanger brackets 54 rigidly attached to the two lower corners 56, 58 thereof and striker brackets 60 which are secured to the upper corners 62, 64. Hanger bracket 54 comprises a downwardly extending strap 66 having an upwardly curved hook 68 at the lower end thereof which is slightly inclined relative to wall 18. Referring also to FIG. 6, striker bracket 60 comprises an upwardly extending strap 69 having a striker leg 70 extending horizontally forwardly from wall 18. The forward edge of leg 70 is formed with a notch 72 centrally thereof and with depending locking tabs 74 laterally adjacent the forward end of notch 72.

Four compressible resilient bumpers 76, preferably formed of rubber, are mounted at the four corners of hanger assembly 40. Hanger assembly 40 is readily fabricated on a mass production basis and constructed to maintain hanger brackets 54 and striker brackets 60 in fixed spatial relationship. Thus, at installation there is no need to accurately lay out mounting dimensions on wall 18.

The steps involved in mounting frame unit 10 on wall 18 are best described with reference to FIG. 3. First, panel 16 is loosely inserted within frame 15. The dimensions of panel 16 are such that its lower edge may first be inserted between the inner or rear face of lower frame member 12 and rings 28, and its upper edge then tipped forwardly within frame 15 to clear retaining clips 32. After hanger assembly 40 has been attached to wall 18 by screws 42, frame unit 10 is positioned to overlie hanger 40 at a slight inclination relative to wall 18. Rings 28 are slipped over hooks 68 which are slightly inclined to wall 18 for guiding lower frame member 12 toward wall 18 as frame unit 10 is lowered onto hooks 68. With the weight of frame unit 10 being borne by hooks 68, the upper portion of frame unit 10 is pushed toward wall 18 to bring leaf springs 39 into

abutment with locking tabs **74** of striker brackets **60** (see FIG. **4**). As frame unit **10** is further urged toward wall **18**, leaf springs **39** of clips **32** are deflected downwardly as at **78** by the camming action of tabs **74** until they slip in behind locking tabs **74**. Thereafter, springs **39** flex upwardly as at **80** and lock spring retaining clips **32** to striker brackets **60** (see FIGS. **4** and **7**). Simultaneously, as the upper end of frame unit **10** is being moved toward wall **18**, bumpers **76** engage the rear surface of panel **16**. Continued movement of frame unit **10** into locking engagement with hanger assembly **40** causes bumpers **76** to axially compress and urge panel **16** forwardly into engagement with the inner face of frame **15**. The configuration of bumpers **76** before and after mounting frame unit **10** is indicated in FIG. **4** at **82** and **84**, respectively.

It should be noted that bumpers **76** also make the manufacturing tolerances in spring clips **32** and striker brackets **60** less critical. Thus, even if there is slight clearance between frame unit **10** and hanger assembly **40** which would otherwise allow the former to be manually pushed rearwardly toward wall **18** after it is locked to the latter, frame **10** is nonetheless sturdily mounted because bumpers **76** forcibly maintain springs **39** in locking engagement with tabs **74**.

The dimensions of hooks **68** are such that even if frame unit **10** is moved upwardly relative to hanger assembly **40** until tabs **36** abut the underside of striker brackets **60**, frame **10** cannot be removed from its mounting.

The only non-destructive way in which frame unit **10** can be removed from hanger assembly **40** is by inserting pins **86** through openings **37** and downwardly through notches **72** to bodily deflect springs **39** downwardly out of locking engagement with tabs **74**. With springs **39** clear of tabs **74**, frame unit **10** may be removed in the reverse manner from which it was installed. Springs **39** are preferably mounted on upper frame member **11** since this frame member would normally be located above eye level, and the access openings **37** would therefore not be readily visible.

I claim:

1. A panel mounting structure comprising a hanger structure adapted to be mounted flat against a wall surface, an open center frame comprising a plurality of connected frame members shaped to form a peripheral recess on the rear side thereof for receiving a panel from the rear or wall side of the frame, said frame being dimensioned to overlie said hanger structure and means on said hanger structure and frame for interlocking the frame to the hanger structure when the frame is applied to a wall by pushing the frame directly against the wall in a position overlying the hanger structure, said interlocking means comprising a forwardly projecting abutment on said hanger structure having a rearwardly facing shoulder thereon spaced forwardly from the wall surface, a spring clip mounted on one of said frame members within said recess and having a generally rigid body portion and a resilient tab connected with said body portion along a line of flexing, said resilient tab extending forwardly from said line of flexing and being inclined at an acute angle to a plane perpendicular to the wall surface, said spring clip being positioned on said frame so that the inclined tab is resiliently flexed by said abutment in a direction toward a plane perpendicular to the wall surface when the frame is pressed toward the wall in a position overlying the hanger structure, said resilient tab having a forwardly facing portion disposed to clear said shoulder and enable the tab to resiliently return toward said inclined position and engage behind said shoulder when the frame is pressed fully against said wall.

2. The structure called for in claim **1** wherein said abutment comprises a forwardly projecting leg having said shoulder on the forward end thereof.

3. The combination called for in claim **2** wherein said shoulder comprises a locking tab extending transversely of said leg in a direction inwardly of the periphery of the frame.

4. The combination called for in claim **3** wherein said leg is perpendicular to the wall and said locking tab is disposed perpendicular to said leg.

5. The combination called for in claim **1** including an opening in said frame member through which a tool may be inserted to flex said resilient tab out of engagement with said shoulder.

6. The combination called for in claim **5** wherein said opening is aligned with said resilient tab.

7. The combination called for in claim **6** wherein said abutment is spaced between said frame member and said resilient tab and including a notch in said abutment aligned with said opening and said resilient tab.

8. The combination called for in claim **1** wherein said frame members comprise rearwardly extending flanges adapted to conceal said interlocking means when said frame is mounted on said wall.

9. The combination called for in claim **1** including means interengaged between said wall and said frame comprising resilient bumper means for forcibly engaging the forward portion of said spring tab with said shoulder when said frame is mounted on said wall.

10. The combination called for in claim **9** wherein said bumper means is mounted on said hanger structure.

11. The combination called for in claim **1** including means on another of said frame members and said hanger structure for vertically supporting the weight of said frame on said hanger structure.

12. The combination called for in claim **11** wherein said weight supporting means comprises hook means and hook receiving means.

13. The combination called for in claim **12** wherein said hook means is on said hanger structure and said hook receiving means is on said another frame member.

14. The combination called for in claim **12** wherein said hook means and said hook receiving means are dimensioned such that movement of said frame relative to said hanger structure prevents disengagement of said resilient tab with said shoulder.

15. The combination called for in claim **12** wherein said hook means is inclined relative to said wall.

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