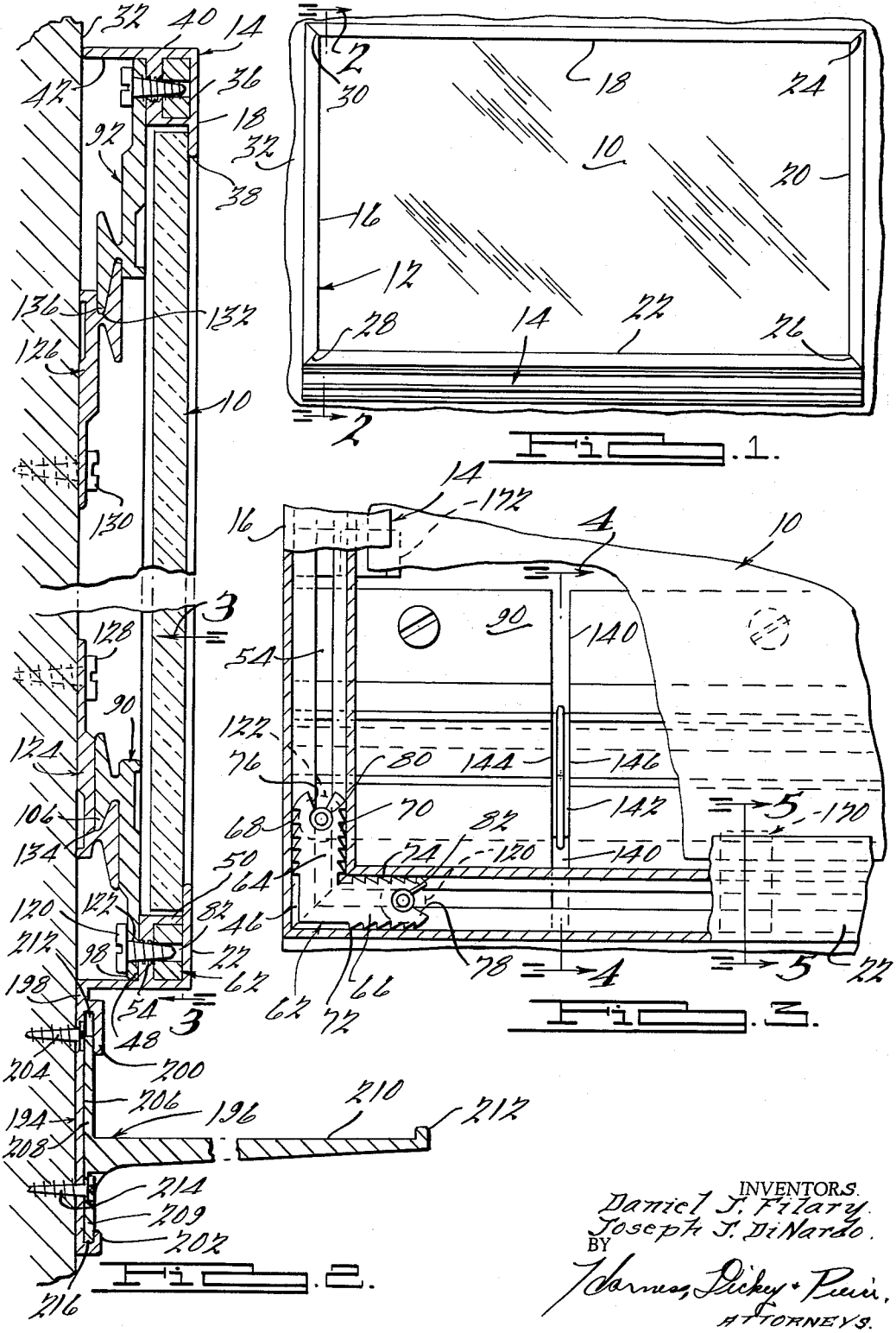
June 7, 1966 D. J. FILARY ETAL 3,254,438

SECURING MEANS

Filed March 19, 1963 2 Sheets-Sheet 1



INVENTORS.
Daniel J. Filary.
Joseph J. DiNardo.
BY
Barnes, Dickey & Penn.
ATTORNEYS.

June 7, 1966 D. J. FILARY ETAL 3,254,438

SECURING MEANS

Filed March 19, 1963 2 Sheets-Sheet 2

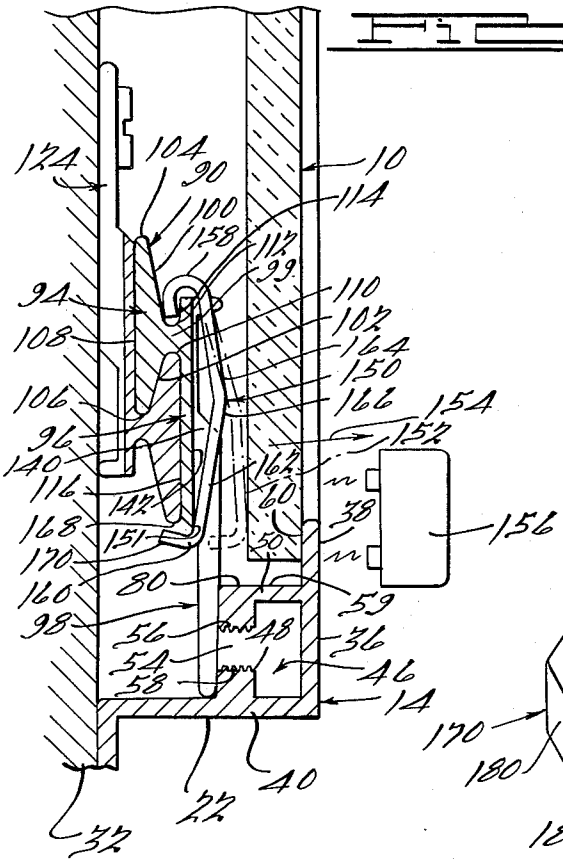


FIG. 4.

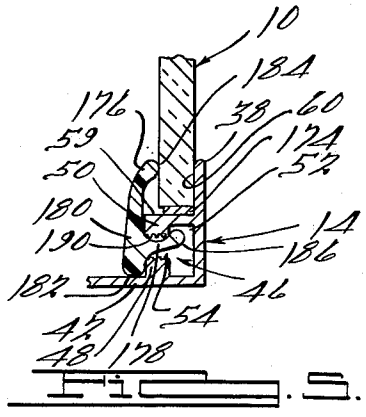


FIG. 5.

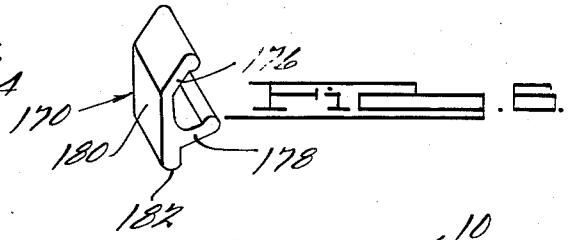


FIG. 6.

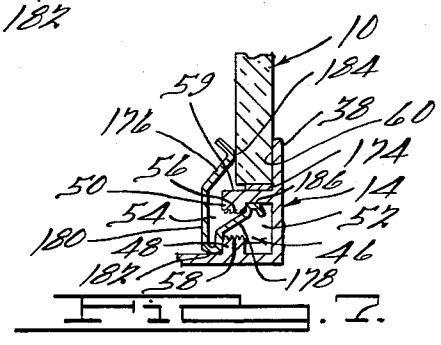


FIG. 7.

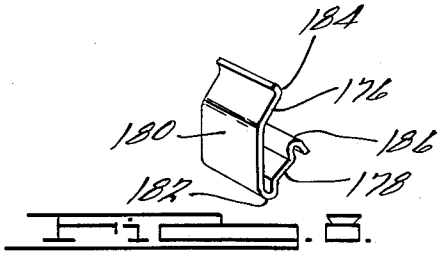


FIG. 8.

INVENTORS.
Daniel J. Filary,
Joseph J. DiNardo
BY
Carmody, Dickey & Penis
ATTORNEYS.

United States Patent Office

3,254,438

Patented June 7, 1966

3,254,438

SECURING MEANS

Daniel J. Filary, Rochester, and Joseph J. Di Nardo, Roseville, Mich., assignors, by mesne assignments, to The Engineered Products Company, Flint, Mich., a corporation of Michigan

Filed Mar. 19, 1963, Ser. No. 266,269
17 Claims. (Cl. 40—156)

This invention relates generally to a method and apparatus for supporting a panel such as mirror glass on a wall. The inventive principles are specifically embodied in an assembly comprising frame means which surround and enclose panel means, spring clip means for securing the panel means in the frame means, hanger means for mounting the frame means on a support wall or the like, internally disposed tamper-proof latch means to secure the frame means in supported position on the hanger means, and a metthod of latching and unlatching the internally disposed latch means by manipulation externally of the assembly.

A particular feature of the present invention is the provision of latching means which are completely enclosed between the panel means, the frame means, and the support wall with no entryways or access openings provided in the frame means or the panel means. The latch means is adapted to be automatically operable between a latched position and an unlatched position during mounting of the panel means and the frame means on the wall so that, when the panel means and the frame means are mounted by the hanger means on the wall, the latching means is in the latched position and the panel means and the frame means cannot thereafter be removed from the mounted position on the wall by unauthorized persons without special knowledge and latch manipulating tool means. The latching means is adapted to be manipulated by tool means used completely exteriorly of the panel means and the frame means. To this end, the latching means incorporates magnetic material and is movable from the latched position to the unlatched position under the influence of magnetic forces. The latching means is movable from the latched position to the unlatched position by applying magnetic forces to the latching means through the panel means and/or the frame means at particular locations on the outer periphery of the panel means or the frame means adjacent the latching means.

Another feature of the present invention is the provision of improved and simplified hanger means for securing a panel-frame assembly on a wall or the like. All of the hanger means are formed by identically shaped pieces of extruded aluminum or the like provided with interlockable dovetail portions which are associated by a wedging action during assembly and are maintained in rigid engagement after assembly by the weight of the assembly. In the preferred embodiment, four elongated strips of the extruded material form the hanger means with one pair of strips reversely parallelly mounted on the wall and the other pair of strips reversely parallelly mounted on the frame means. The mirror assembly is adapted to be mounted on the wall by a simple linear movement of the frame means and the hanger means thereon vertically downwardly from a position above the hanger means on the wall. The dovetail portions are gradually guided into interlocked engagement by mating tapered surfaces. The latch means are integrated with the hanger means for automatic manipulation to the latch position during the mounting movement.

Another feature of the present invention is the provision of new and improved frame means of simplified construction requiring a minimum number of parts and a minimum of precision manufacturing to enable assembly. The frame is preferably formed from a plurality of sections of extruded aluminum or the like which may be cut from common stock to form a miter joint at corners of the frame in a new and improved manner. Each of the frame sections are identical in construction and adapted to permit mounting of the hanger means and the panel means with a minimum of time and measurements and without requiring accurate alignment of assembly parts. To this end each frame section is provided with intersecting wall portions adapted to form a panel enclosing rim and a wall engaging rim. Internal groove means are integrally formed in the frame section by inwardly extending flange means adjacent the intersection of the wall portions. The groove means extend continuously the length of the frame sections and have a substantially T-shaped cross section. The innermost portion of the groove opens inwardly of the frame means through a relatively narrow passageway portion. Opposite faces of the narrow portion of the groove are provided with continuous parallelly extending serration means adapted to receive and hold all fastening elements of the assembly. In this manner, screw means which are utilized to attach the hanger means to the frame sections may be threaded through the narrow portion of the groove at any point along the entire length of the frame sections without requiring the usual alignment of threaded holes for fasteners in separate parts. In addition, spring clip means utilized to secure the panel means in the frame means are adapted to be sprung in the groove means and may be located at any desired position along the frame sections. Furthermore, corner key means utilized to secure the frame sections to one another, are mounted in the groove means and secured in place by screw means which are threadably receivable in any position between the narrow portions of the T-groove means.

A further feature of the invention resides in improvements in the corner key means for securing sections of the frame means to one another. In the preferred embodiment, the corner key means is in the form of a right angle member having leg portions extending at 90° to one another. Opposite side surfaces of the leg portions are serrated to form tooth means. The sides of the tooth means may be inclined toward the juncture of the leg portions so that the leg portions are slidable into the grooves in the frame sections. The key element has a width causing frictional binding engagement of the tooth means with the side walls of the groove means and preventing withdrawal of the corner keys from connecting association with the frame sections. In order to provide means of positively securing the frame members on the corner keys in a manner preventing subsequent looseness from occurring after assembly, the leg portions of the corner keys are slit longitudinally so that they may be outwardly expanded into biting engagement with the frame sections. Wedging means in the form of the screw means used for securing the hanger means to the frame are adapted to be received in an aperture of smaller diameter provided along the longitudinal slit for expansion of the leg portions during threaded attachment of the screw means. Thus, the fastening means serve the multiple functions of securing the hanger means to the frame means, locking the corner keys to the frame means, and expanding the split end portions of the key outwardly into biting engagement with the side surfaces of the groove. The continuously serrated narrow portion of the groove means permits the frame sections to be assembled into abutting engagement without necessity for alignment of the wedging holes in the corner keys in any particular position.

An additional feature of the present invention is the provision of resilient spring clip means adapted to be re-

tainingly received in the groove means to hold the panel means in the frame means on a seat extending around the inner periphery of the frame means. The spring clip means comprises an integral member having opposite ends bent out of the plane of the main body portion in the same general direction to form, at one end, a panel-abutting foot, at the other end, a retaining foot adapted to be received in the groove means in the frame sections. The spring clip means is connectible to the frame means by simple linear force application transverse to the plane of the panel means causing the retaining foot to seat in the groove means and the panel abutting foot to seat against the panel means to secure the periphery of the panel means in abutting engagement with the frame means.

The advantages and constructional details of the presently preferred embodiment of the aforementioned features, and other features, will be more fully understood by those skilled in the art to which this invention relates by reference to the following detailed description and accompanying drawing wherein:

FIGURE 1 is a front elevational view of an assembly incorporating the principles of the present invention;

FIGURE 2 is a side elevational view, in section, taken along the line **2—2** in FIGURE 1;

FIGURE 3 is a partial front elevational view of the apparatus shown in FIGURES 1 and 2, with portions broken away along the line **3—3** in FIGURE 2;

FIGURE 4 is a partial sectional view taken along the line **4—4** in FIGURE 3;

FIGURE 5 is a partial sectional view taken along the line **5—5** in FIGURE 3;

FIGURE 6 is a perspective view of spring clip means for use as shown in FIGURE 5;

FIGURE 7 is a partial sectional view of an alternative embodiment of the spring clip means shown in FIGURE 5; and

FIGURE 8 is a perspective view of the spring clip means shown in FIGURE 7.

In the preferred embodiment of the invention, the panel means is shown illustratively in the form of a glass mirror. As will be apparent, the panel means may equally well take the form of a metallic mirror, a bulletin board, chalk board, etc. Panel means of the general class described are often used in public places such as schools, clubs, gas stations, penal institutions and the like, and are often subjected to unauthorized efforts to remove or dismantle the mirrors and/or associated structure.

So-called theft-proof mirror assemblies have previously ben proposed which incorporate special fastening means located internally of the mirror assembly and accessible through side openings in the mirror frame by means of special tools for removal by internal manipulation. Although previous theft-proof mirror assemblies have eliminated the exposure of screws and removal by use of a screwdriver or the like, the assemblies still have been subject to unauthorized dismantling by simple manipulation of commonly available tools in the access openings provided in the mirror assembly. Furthermore, the provision of openings in the mirror assembly encourages attempts to dismantle the mirror by insertion of improper tools into the openings and by prying within the internal structure. Such actions often lead to substantial damage to the assembly even if the mirror is not actually removed from the wall.

Therefore, it is a primary object of the present invention to provide a panel assembly in which the panel is completely enclosed in the assembled position without provision of external access holes or apertures or manipulative means of any sort. To this end magnet means are adapted to be utilized externally to operate internal latch means. Repairmen and other authorized personnel are provided with a small permanent magnet which may be positioned in a particular location on the mirror assembly to unlatch the latching means.

Referring now to FIG. 1, the present invention is shown to comprise, in general, a panel **10** which is mounted in frame means **12** and is provided with a shelf **14** therebelow. The panel **10** may be formed of glass, stainless steel, or other material for mirror purposes, or may be in the form of a wood or composition material for use as a bulletin board or the like. In the broadest aspects of this invention the particular material or use of the panel **10** is immaterial, and the panel is hereinafter referred to generically as a panel means which may be of one or a plurality of elements. The frame means **12** is shown to comprise four separate frame sections **16, 18, 20, 22** which are joined together at right angles by miter joints **24, 26, 28, 30**. The mirror-frame assembly is adapted to be hung on a wall **32** or similar vertically extending support structure.

The frame sections are preferably of identical construction and cross sectional configuration and, in the preferred embodiment, are made from an extruded material such as aluminum or the like. Referring now to FIG. 2, the frame means defines a front facing inwardly extending wall portion **36** which terminates in a rim portion **38** adapted to overlie the front peripheral edge of the panel means and form an abutment or seat therefore. A side facing rearwardly extending wall portion **40** extends rearwardly from the front wall **36** and terminates in a support wall-engaging rim **42** which is adapted to abuttingly engage the support wall **32**, or otherwise be closed relative thereto, around the entire periphery of the assembly. In the preferred embodiment, the configuration of the outer periphery of the frame sections is shown to be substantially right angled with the walls **36, 40** having flat outer surfaces. However, other configurations may also be utilized such as where, for example, design considerations may dictate the adding of embossments or other decorative means on the outer surfaces.

Retaining means are integrally formed in the frame sections, and, in the preferred embodiment, take the form of a rectangular groove means **46** extending longitudinally of the frame sections and defined, in part, by the wall portions **36, 40**. Flange means **48, 50** extending inwardly from the wall portions **36, 40** to form from the other sides of the groove means **46**. Slot means **54** having spaced oppositely facing surfaces **56, 58** are formed in the flange means and open into the internal cavity defined by the frame-panel assembly and the support wall for purposes to be hereinafter described in detail. In the preferred embodiment, the slot means **54** extend coextensively and continuously with the groove means **46** whereby the frame sections may be extruded and assembly operations may be vastly simplified. Gripping means are formed on the surfaces **56, 58** by longitudinally extending ridges and grooves which may be integrally formed in the frame sections during the extrusion process. In the preferred embodiment, the ridges and grooves may take the form of acme threads for a purpose to be hereinafter described. The side surface **59** of the flange **50** defines a peripheral seat for the panel member **10** in conjunction with the inner surface **60** of the rim portion **38**.

The frame sections **16, 18, 20, 22** are adapted to be secured together by the provision of key means as shown in FIG. 3. The key means take the form of right angle corner key members **62** having leg portions **64, 66** extending at right angles to one another. The opposite edges **68, 70, 72, 74** of the leg portions of the keys are provided with serrations or tooth means formed by outer surfaces which are inclined toward the key corners so that the frame section grooves may slidably receive the leg portions during assembly. The width of the key members **62** between the opposite faces **68, 70** and **72, 74** is substantially equal to the corresponding dimension of the groove means **46** to obtain frictional engagement therebetween to hold the frame sections on the key members. The ends of each of the leg portions **64, 66** are bifurcated by the provision of longitudinally extending slots **76, 78**

which terminate in expansion means in the form of apertures **80, 82** located in alignment with the slot means **54** when the key members are in assembled position as shown in FIG. 2.

The frame means is assembled by relative sliding movement between the corner keys and the frame sections locating the keys in telescoped relationship in the groove means **46**. When the ends of the frame sections are in abutting relationship to form a miter joint at the corners, wedging means are inserted into the apertures **80, 82** to cause the bifurcated leg portions to be expanded and wedged outwardly to positively bitingly engage the tooth portions with the adjacent side walls of the frame sections.

Hanger means **90, 92** are provided for mounting the panel-frame assembly on the wall **32** and are formed from extruded aluminum stock. The hanger means have lengths sufficient to extend substantially from side to side of the frame assembly with the ends terminating adjacent the inner surfaces of the wall portions **42** of the frame sections **16, 20** as shown in FIG. 2. Since the hanger means are identical, but reversely positioned, only hanger **96** is described in detail by reference to FIG. 4 and comprises a dovetail portion **94**, a base portion **96** and a mounting flange portion **98**. The dovetail portion **94** is connected to the base portion by a relatively narrow neck portion **99** and is defined by outwardly diverging abutment surfaces **100, 102** which terminate in rounded shoulders **104, 106**. A flat abutment surface **108** extends between the shoulders. Rounded seats **110, 112** are formed at the neck portion **99**. Flat abutment surfaces **114, 116** are formed on the base portion adjacent the neck portion opposite the diverging abutment surfaces **100, 102**. The mounting flange **98** extends from the base portion **96** opposite the dovetail portion **94** for abutting engagement with the flange portions **48, 50** of the frame sections across the slot **54**.

Suitable fastener receiving holes are provided in each end of the hanger means adjacent the corners of the frame means to permit the hanger to be fixedly secured to the frame by means of flat-headed screws **120, 122** or the like as shown in FIG. 3. The fastener holes are located for alignment with the wedging apertures **82, 84** in the corner keys and are threadably received by the holding means formed along the surfaces of the slots **54**.

Hanger elements **124, 126** identical in construction to the hanger elements **90, 92** are mounted on the support wall **32** reversely relative to one another and reversely relative to the hanger elements **90, 92**, respectively. The hanger elements **124, 126** are securely fastened to the wall in parallel relationship in horizontally extending positions by suitable fastening means **128, 130** such as binding head machine screws. The vertical spacings of hanger elements **90, 92** and **124, 126** are such that the distance between the upwardly facing rounded seats **132, 134** of the wall hangers **124, 126** is equal to the distance between the downwardly facing rounded shoulders **106, 136** of the frame hangers **90, 92**. Consequently, the rounded shoulders **106, 136** of the frame hangers **90, 92** are adapted to be securely seated on the upwardly facing rounded seats **132, 134** of the wall hangers **124, 126** by a vertical downward linear movement of the panel-frame assembly from a position spaced vertically above the wall hangers a distance sufficient to clear the dovetail portions of the hangers and may be removed from supported engagement thereon by vertical upward movement.

In the hung position, corresponding abutment surfaces of the dovetail portions of hanger means **90, 124** and **92, 126**, respectively, are in abutting engagement. Thus, the diverging surfaces **100** of hangers **92, 126** are engaged and the parallel vertically extending abutment surfaces **108** and **114** on the dovetail portions are abuttingly engaged. On hanger means **90, 124**, the divergent surfaces **102** are engaged and the parallel vertically extending abutment surfaces **108** and **116** are engaged. By referring to FIG. 2, it may be seen that the total area of surface engagement between the hanger means **90, 124** is greater than the total area of surface engagement between the hanger means **92, 126**. Furthermore, the upper pair of hanger means **92, 126** have maximum surface engagement in a plane normal to the most likely direction of maximum unauthorized removal forces and normal to the direction of gravity forces. These forces are applied in a direction substantially normal to the plane of engagement of the surface **100** since movement of the upper portion of the panel-frame assembly under the effect of gravity or pulling by a person standing in front of the assembly would tend to be pivotal movement away from the wall about hanger **124**. Similarly, forceful movement of the upper portion of the assembly away from the wall results in force application in an opposite direction at the bottom of the assembly. Therefore, maximum surface engagement in vertical planes between surfaces **108** and **116** is provided. The hanger arrangement is such that vertically downwardly directed forces cause maximum gripping retention between the abutting diverging surfaces **100, 102** and increases in vertically downwardly applied forces increase the frictional engagement of the hanger means. The divergent surfaces also facilitate mounting and dismounting of the panel-frame assembly since tapered guideways are formed by the divergent surfaces to effectively guide the rounded shoulders onto the rounded seats.

In order to fixedly secure the panel-frame assembly in position on the hanger means, at least one of the hanger means is further provided with at least one specially formed slot **140**, as seen in FIG. 3, which extends transversely completely through the mounting flange portion **98** and partially through the base portion **96**. The slot, therefore, is defined by a back wall portion **142** in the base **96** and side wall portions **144, 146**. For convenience of installation and standardization of parts, the slot may be formed in each of the hanger means.

Latch means, in the form of a wire clip **150** or the like, made from a magnetic material, such as iron or steel, is adapted to be swingably mounted on the hanger means in the slot **140**. The latching means is movable from a normal latched position in abutting engagement with the back wall, shown at **151** in FIG. 4, to an outwardly displaced unlatched position, shown in phantom at **152**, by application of transversely directed forces in the direction of the arrow **154**. In the preferred embodiment, transverse forces for moving the clip **150** to the unlatched position after the panel-frame assembly has been hung are adapted to be exerted completely exteriorly of the mirror assembly by means of a small permanent magnet **156** which may be selectively placed adjacent the front of the panel-frame assembly to cause the latch means to be magnetically attracted toward the unlatched position **152**.

Referring to FIG. 4, the clip **150** comprises spaced hook portions **158, 160** which are connected by outwardly inclined leg portions **162, 164** which intersect centrally of the clip as at **166**. The hook portion **158** is adapted to be received on a retaining leg formed by the body portion **96** of the hanger means between the surfaces **112, 114**. The end of the hook portion is received between the surfaces **114** and **100** on or adjacent the rounded seat **112**. Hook portion **160** is adapted to be positioned in spaced relation beneath the lower end of the base portion **96** and the adjacent rounded corner **168** of the hanger means **124** attached to the support wall **32**. The design of the latch means is such that the center of gravity is located in a position normally causing the clips to swing rearwardly into the latched position shown. The lowermost edge **170** of the hook portion **160** is upwardly inclined to form a cam surface designed to move the clip to the unlatched position at **152** when vertical forces are exerted upwardly against the cam surface **170**.

Mounting of the panel-frame assembly in spaced relation above the hanger means **124, 126** is accomplished

by first locating the assembly over the hanger means **124**, **126** with the hanger means **90**, **92** spaced thereabove and with the ends of the frame flanges **42** in abutting engagement with the adjoining wall surface **32** which automatically horizontally aligns the mating hanger surfaces. Then, the assembly is moved vertically downwardly relative to the hanger means **124**, **126** to bring corresponding parts of the hanger means **92**, **126**, and **90**, **124** into dovetailed supporting engagement with one another. As the assembly is moved vertically downwardly, the bottom surface **170** of the clip engages the upwardly facing rounded shoulder **110** of the hanger means **124** and is cammed outwardly thereby to a position substantially corresponding to that shown at **152**. The lower end of the retaining clip rides along the wall **142** of the slot during further downward movement. When the assembly reaches its lowermost position with the dovetailed portions seated on one another, the lower end **160** of the clip clears the lower end **168** of the hanger means **124** and automatically swings inwardly toward the wall **32** to the latched position under the influence of gravity. Thereafter, any upward movement of the assembly is prevented by engagement of the hook portion **160** with the rounded corner **168** at the lower end of the dovetail portion of the wall hanger **124**. Consequently, the panel-frame assembly is permanently retained in place on the hanger means until such time as outwardly directed forces are applied to the clip to move it to the unlatched position. In order to provide a complete tamper-proof assembly having no peripheral openings adapted to receive a manipulating tool, or the like, for moving the clip to an unlatched position, the latch means is made from magnetic material or associated with magnetic means so as to be responsive to a small permanent magnet **156**, or the like, placed against or adjacent to the outer face of the panel-frame assembly to move the latch means to an unlatched position.

Panel **10** is adapted to be maintained in flush engagement with the inner surface **60** of the rim portion **38** by means of suitably spaced spring clip means **170**, **172** as shown in FIG. 3. The panel **10** may also be supported peripherally on the surface **59** by any suitable spacer means **174** illustrated in FIGS. 5 and 7. In the preferred embodiment, the spring clip means comprises a jaw shaped member made from a continuous solid integral piece of material and requiring no apertures, slits, tangs, or the like, to obtain the necessary resilient holding engagement with the panel member. In general, as shown in FIGS. 5–8, the clip comprises spaced resilient leg portions **176**, **178** which are connected by a base portion **180**. A rounded rocking surface **182** is provided at the end of the base portion and the ends **184**, **186** of the leg portions **176**, **178** may be preferably rounded to facilitate assembly. The leg portion **176** and the leg portion **178** are inclined outwardly from the base portion **180** in similar directions. However, the leg portions **176** is inclined a lesser degree than the leg portion **178**. The leg portion **176**, in the preferred embodiment, is inclined at an angle of approximately 30° relative to the plane of the base portion **180** and the leg portion **178** is inclined at an angle of approximately 65° relative to the plane of the base portion **180**. The leg portion **176** and the leg portion **178** define a jaw cavity. In the embodiment shown in FIGS. 5 and 6, the clip is formed from plastic material, or the like, and is provided with a rounded seat **190** between the leg portions. In order to mount the clip, the lower leg portion **178** is flexibly inserted through the slot **54** in the frame sections until the rounded end portion **188** is received in the groove means **46**. With the end of the leg portion **178** sprung into position in the groove means behind the flange portion **50** and the base portion **182** secured against the flange portion **58**, the upper leg portion **176** is resiliently deflectable and rockable rearwardly from the surface **60**. The space between the end **184** of the leg portion **176** and the surface **60** is normally less than the width of the panel **10**. The leg **176** is flexible and movable under stress to the position shown in FIG. 5 to exert a resilient bias against the back of the panel **10** and hold the panel in firm engagement on the surface **60**. The longitudinally extending holding means in the opposing faces **56**, **58** are adapted to have a biting engagement with the upper and lower surfaces of the leg portion **178**. Accordingly, the spring clip is maximumly retained in the slot against inward forces directed transversely to the plane of the panel **10**. In FIGS. 8 and 9, an alternative clip arrangement is shown which has the same basic design but is formed by a piece of sheet metal, or the like. The hanger means may be slotted as necessary to accommodate the spring clip means. As may be noted by reference to FIG. 2, the adjacent surfaces of the hanger means are spaced relatively closely to the back of the panel **10** so that rearward displacement of the panel is positively limited and the panel cannot be removed intact from the front of the assembly.

The shelf means **14** comprises a bracket member **194** and a shelf member **196**. In the illustrative embodiment of FIG. 2, the bracket member is shown to be integrally connected to the lower frame section **22** by a depending flange **198**. However, preferably, the bracket member is separately formed and abutted against the bottom of the lower frame section during assembly. Reversely bent retaining flange means **200**, **202** are formed in the bracket at the upper and lower ends and define a bracket space therebetween. Flat headed screw means **204** may be used to secure the shelf bracket on the wall support **32** with the screw heads mounted in countersunk holes so that the outer face **206** is flat. The shelf comprises upper and lower support plate portions **208**, **209** and a forwardly extending shelf-forming portion **210** which may terminate in a transversely upwardly bent rim portion **212**. The upper support plate portion extends a substantial distance further above the shelf portion than the lower support plate portion extends below the shelf. The shelf is secured between and behind the retaining flanges **200**, **202** by screw means **214**, or the like, which extend through the bracket **194** into the wall portion **32**. The screw hole is countersunk and located as closely adjacent the lower surface of the shelf portion **210** as possible so as to be relatively inaccessible and hidden from view. Preferably, the screws are also provided with a head construction requiring special manipulating tools.

The shelf is assembled on the bracket by inserting the upper support plate portion behind the retaining flange **200** and sliding the upper plate portion upwardly until the lower support plate portion clears the retaining flange **202**. Then the lower support plate portion is slid downwardly behind flange **202** until it seats at **216**. The edges of the upper plate portion and the retaining flange may be beveled to facilitate assembly. Then the screw means are inserted beneath the shelf.

It will be obvious to those skilled in the art to which this invention relates that the various features of the invention may be readily incorporated in alternative embodiments, and used separately and in various combinations. Therefore, the scope of this invention as defined by the appended claims is intended to include alternative consrtuctions which embody the inventive principles.

What is claimed is:

1. A panel-frame assembly for mounting a panel such as a mirror on a wall in a tamper-proof manner comprising completely closed outer peripheral surfaces, latch means mounted internally of said panel-frame assembly to secure said assembly on a wall, and latch operating means operable in response to magnetic force to unlatch said assembly for removal from said wall.

2. In a frame assembly formed from a plurality of frame sections mounted in abutting realtionship to form an enclosure, corner key means securing said frame sections in said abutting relationship, said corner key ele-

ments comprising leg portions extending at right angles to one another, tooth means formed on said leg portions and engaging portions of said frame, said leg portions being bifurcated in a direction lengthwise thereof to provide outwardly wedgeable legs, and wedging means received between said wedgeable legs to outwardly displace said tooth portions into retaining engagement with said frame sections.

3. In a panel-frame assembly, hanger means for securing the assembly on a wall and comprising: a first pair of spaced parallel hanger means mounted on said wall, a second pair of spaced parallel hanger means mounted on said assembly for engagement with said first pair of hanger means, all of said hanger means being identically formed and including dovetailed portions adapted to be matingly engaged by vertical linear sliding movement, said dovetail portions providing a total surface area contact between the engaged hanger means at the lower end of the assembly greater than the vertical width of said hanger means and including engaged and abutting surfaces lying in planes parallel to the plane of the panel and surfaces inclined relative to the plane of the panel, and the surface engagement between said hanger means at the upper end of said assembly being primarily only in a single plane inclined relative to the plane of the panel to prevent movement of said assembly away from said wall, the hanger means in each pair being reversely positioned relative to one another and the engaged hanger means likewise being reversely positioned relative to one another.

4. In a hidden fastening device for a panel-frame assembly to be mounted on a wall, or the like, comprising: a frame, a panel mounted in said frame, fastening means mounted within said frame behind said panel to secure said assembly on said wall, said frame and said panel and said wall adapted to completely enclose said fastening means, and said fastening means being magnetic and responsive to magnetic forces for movement to an unfastened position by application of magnetic forces exteriorly of said frame and said panel.

5. In a panel-frame assembly, hanger means for supporting said panel-frame assembly, or the like, on a wall comprising: a first pair of elongated plate means attached to said panel-frame assembly in a horizontal attitude in vertically spaced parallel relationship, a second pair of elongated plate means attached to said wall in a horizontal attitude in vertically spaced parallel relationship, said elongated plate means being of identical construction, and dovetail portions of said first pair of elongated plate means being mateably engaged with corresponding dovetail portions of said second pair of elongated plate means, the elongated plate means in each pair being vertically reversed relative to one another and the engaged elongated plate means likewise being vertically reversed relative to one another.

6. The invention as defined in claim 5 and wherein abutment surfaces are formed on said plate means, the abutment surface area on the lower plate means being greater in a vertical plane than the abutment surface area on the upper plate means.

7. The invention as defined in claim 6 and wherein the abutment surface area on the upper plate means is greater in an upwardly outwardly inclined plane than in a vertical plane.

8. In a panel-frame assembly, a plurality of frame sections forming a frame, key means to secure said frame sections together to form said frame, hanger means to mount said panel-frame assembly on a wall, or the like, and common fastener means for securing said hanger means to said panel-frame assembly and for securing said key means relative to said frame sections.

9. The invention as defined in claim 8 and wherein common fastener receiving means are formed in said frame sections.

10. The invention as defined in claim 9 and wherein said common fastener receiving means comprises a slot extending coextensively with said frame section around the entire periphery of said frame.

11. In combination a panel-frame assembly comprising a frame enclosing a panel within its periphery, means on the rear side of the panel-frame assembly for mounting the assembly on a wall surface, a latch on the rear side of the panel-frame assembly movable from a latched position locking said mounting means to prevent removal of the panel-frame assembly on the wall to an unlatched position, said latch comprising a magnetic material and being oriented such as to be responsive to the magnetic forces of a magnet positioned on the front side of the panel-frame assembly to move from said latched to said unlatched position.

12. The combination called for in claim 11 wherein the latch is movable in a direction generally transverse of the plane of the panel-frame assembly.

13. The combination called for in claim 11 wherein the latch is pivotally mounted on said panel-frame assembly.

14. The combination called for in claim 11 wherein said mounting means comprise a mounting member fixedly supported on the rear side of the panel-frame assembly and a second mounting member adapted to be fixedly mounted on the wall and with which the mounting member on the panel-frame assembly is adapted to interengage for securing the panel-frame assembly to the wall, said latch in the latched position preventing disengagement of said two mounting members.

15. The combination called for in claim 14 wherein the latch is pivotally supported on one of the said mounting members.

16. The combination called for in claim 15 wherein the mounting members are adapted to be interengaged by vertical movement of the panel-frame assembly relative to the mounting member on the wall and said latch is responsive to gravity to move to the latched position upon interengagement of said mounting members.

17. The combination called for in claim 16 wherein the latch is pivotally supported for movement in a vertical plane about a horizontally extending axis, the latch having a hook portion remote from the pivotally supported portion thereof adapted to interengage with said other mounting member when the panel-frame assembly is shifted vertically upwardly from a position in which the mounting members are interengaged.

References Cited by the Examiner

UNITED STATES PATENTS

478,245	7/1892	Smith	70—276
2,581,843	1/1952	Edwards	40—155
2,601,734	7/1952	Couzinet	40—155
2,900,750	8/1959	Buelow	40—152.1
2,928,199	3/1960	Novak	40—152.1
3,095,723	7/1963	McKnight	70—276

EUGENE R. CAPOZIO, *Primary Examiner.*

JEROME SCHNALL, *Examiner.*

WENCESLAO J. CONTRERAS, *Assistant Examiner.*