March 14, 1944. F. L. MICHAELS 2,344,161

EXHIBITION CASE CONSTRUCTION

Filed Jan. 28, 1941 2 Sheets-Sheet 1

Fig 1

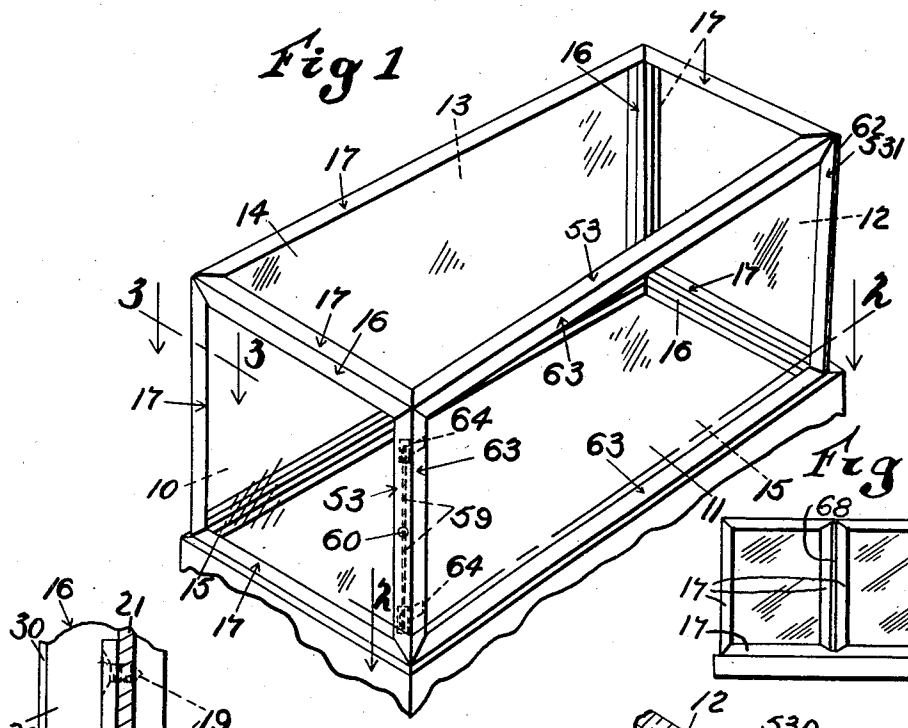
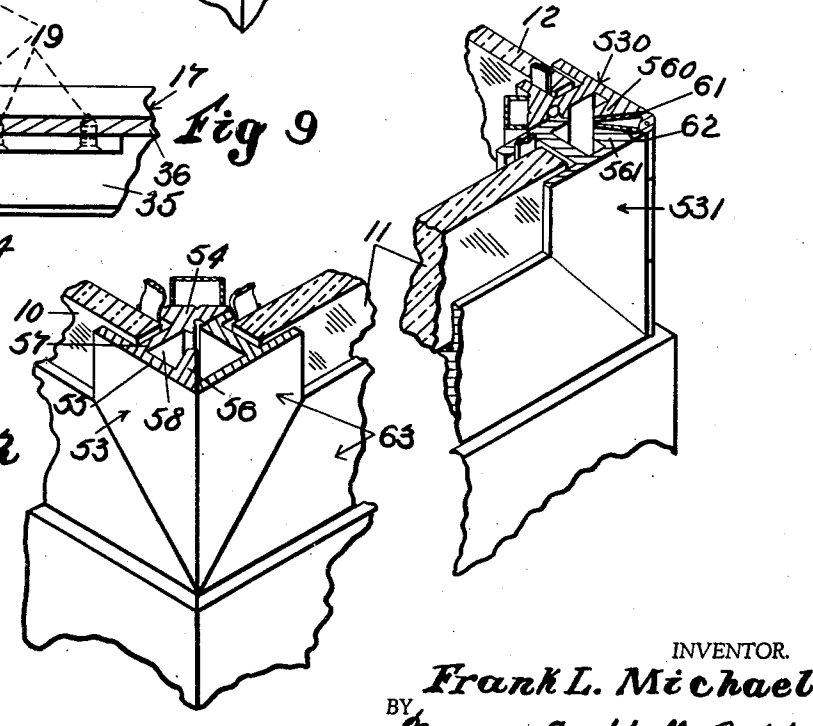


Fig 11

Fig 9

Fig 2



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EXHIBITION CASE CONSTRUCTION

Filed Jan. 28, 1941 2 Sheets-Sheet 2

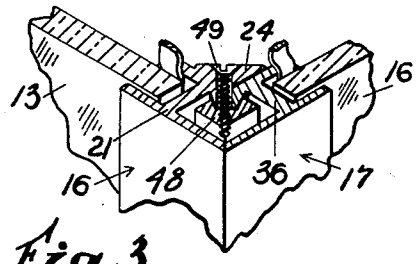


Fig 3

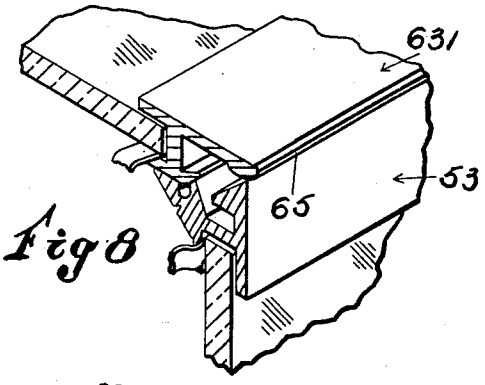


Fig 8

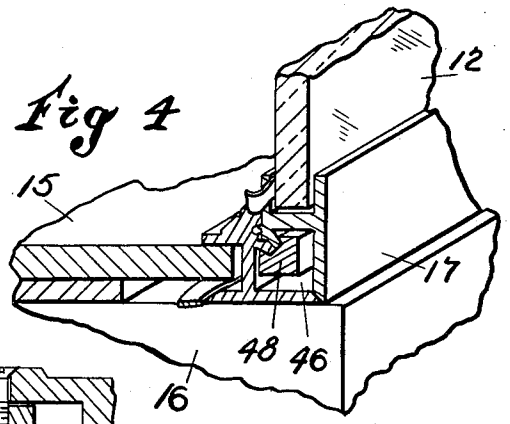


Fig 4

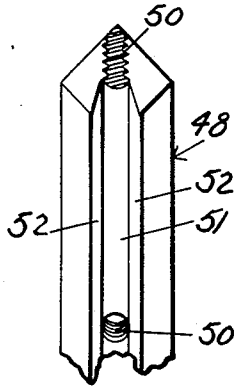


Fig 6

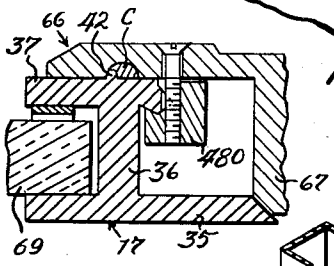


Fig 10

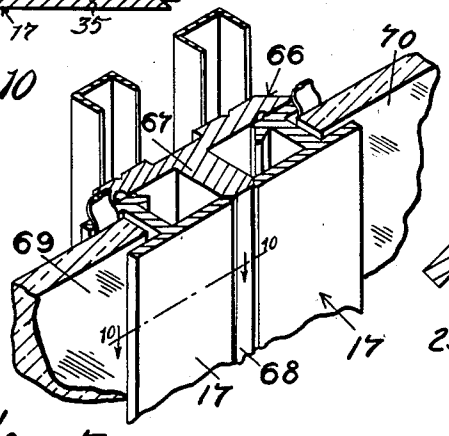


Fig 7

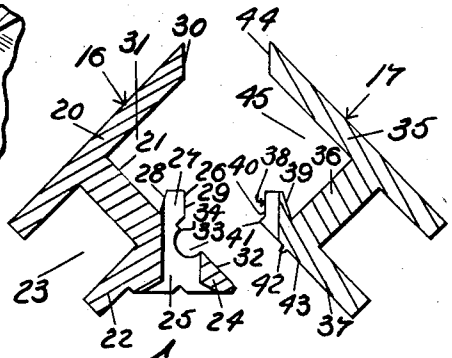


Fig 5

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UNITED STATES PATENT OFFICE

2,344,161

EXHIBITION CASE CONSTRUCTION

Frank L. Michaels, Fort Thomas, Ky.

Application January 28, 1941, Serial No. 376,357

11 Claims. (Cl. 312—140)

This invention relates to exhibition cases to protect objects against handling and against the effects of dust, moisture and detrimental action of the atmosphere.

An object of the invention is to provide an efficient, relatively light weight and strong panel frame and joint construction for cases of this character.

Another object of the invention is to provide frame construction members that may be fabricated in sizes and materials of considerable strength and in slender proportions affording maximum visibility for the contents of the case and protection against the passage of dust and vermin through the joints of the case structure.

An important additional object of the invention is the provision of construction or frame members which form between them a hollow internal way for housing the securing means for the joint so that the connected member are invisibly reenforced and secured without externally accessible operating parts.

These and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Fig. 1 is a perspective view of an exhibition case embodying the invention.

Fig. 2 is a perspective view showing the case cut away on section line 2—2 of Fig. 1, part being broken away.

Fig. 3 is a fragmental perspective view showing the case cut away on line 3—3 of Fig. 1.

Fig. 4 is a perspective view, partly in cross-section, showing a preferred form of joint connection between bottom and side wall panels.

Fig. 5 is a cross-sectional view, showing on enlarged scale the companion case frame members with the reenforcing member removed.

Fig. 6 is a perspective view showing a section of the securing member.

Fig. 7 is a perspective view, partly in cross-section, showing the details of a mullion for a divided panel.

Fig. 8 is a fragmental perspective view showing a section through a table case lid and an adjacent sidewall.

Fig. 9 is a fragmental sectional view showing the corner construction of a panel frame of a case of the invention.

Fig. 10 is a sectional view taken on line 10—10 of Fig. 7.

Fig. 11 is a front elevational view of a case of the invention having a mullioned wall.

In the construction of museum and exhibition cases the glass panels are now usually in metal frames which are connected along their edges to form the corner frames of the cases. Depending upon the intended location of the case in use, the floor and sometimes one or more sidewalls may be of material that is opaque and stronger than glass. Such members are frequently made of plywood or a suitable composition material, and in the present invention they are framed in the same manner as the glass panels.

Heretofore, the fastening means for connecting the panel frames have been applied at least in part from the exterior of the cases and, to that extent, marred the simple beauty of the framing and afforded opportunity for some degree of tampering which might loosen the dust-tight joints, even though unauthorized access was baffled.

By the present invention these disadvantages are eliminated and any desired type or design of case may be constructed using the sturdy and light weight panel framing and joint forming strips of the invention.

Referring to the drawings, the sidewall panels 10, 11, 12 and 13 and the top panel 14 are of plate glass while the floor or base panel 15 is of plywood or some suitable composition material. Each of the aforesaid panels is mounted in a frame, the members of which are sections of strips 16 or 17 (see Fig. 5) miter jointed at the connected ends and secured at the corners by means of angle brackets 18 which are fastened to the strips by suitable means such as screw 19. The choice of strips 16 or 17 on a given edge of any panel is such that an adjacent edge of an adjacent panel in the case carries a complementary strip and not a similar strip.

Strips 16 and 17 are of extruded metal, such as bronze or aluminum alloy and are in some respects similar, particularly in external appearance and in certain dimensions so that the bounding members about any panel may be entirely of strips 16 or entirely of strips 17 or partly of each of the strips 16 and 17.

As can be best seen in Fig. 5, the strip 16 comprises an outer leg 20 with a web 21 perpendicular thereto intermediate the longitudinal edges. An inner leg 22 extends parallel to leg 20 and perpendicularly from web 21 so that a panel-receiving groove 23 is formed in one edge of said strip 16. An integral abutment rib 24 of substantially triangular cross-section extends along one side of leg 22 and the edge of web 21 and through this rib are bores 25 disposed at intervals along the length of the rib and extending at forty-five degrees (45°) to the planes of said legs and web. A longitudinal lip 26 is formed integrally with web 21 and the continuation of bore 25 forms a transverse groove 27 in the lip. The longitudinal face 28 of lip 26 is disposed at a wedging angle to the face 29 of said lip. It should be noted that the edge 30 of leg 20 lies in a common plane with the face 29 and that a substantially triangular elongated way 31 lies between said face 29 and edge 30. The face 32 of rib 24 has a groove 33 therein for receiving a suitable dust-tight and vermin-proof packing cord, for example as shown

at C in Fig. 10, and the adjacent side of rib 26 has a shallow shoulder groove 34 therein.

A comparison of strips 16 and 17 (see Fig. 5) will show that strip 17 is in part identical with strip 16 and in part complementary thereto. Outer leg 35, web 36 and inner leg 37 are identical with the corresponding parts 20, 21 and 22 of strip 16. The lip 38 has a face 39 corresponding to wedging face 28 of strip 16 and a face 40 which abuts face 29 when the strips are placed together. Rib 41 seats snugly in the shoulder groove 34 and rib 42 rides into the opposite side of groove 33 to compress a packing cord (not shown) which may be placed in the said groove. The face 32 of rib 24 on strip 16 forms a solid abutment for the plane face 43 which is a continuation of the face of leg 37. Mitered edge 44 abuts the edge 30 when the strips are placed together and the triangular elongated way 45 facing the way 31 forms with it a concealed closed internal way, as indicated generally at 46 in Fig. 4. When the strips are placed together, the grooves 47 in lip 38 complements groove 27 in lip 26 as an extension of bore 25 in the rib 24.

As can be best understood from an inspection of Figs. 3 and 5, and 6, strips 16 and 17 are removably connected by means of a suitable section of the grooved clamping bar 48 (see Fig. 6) which is housed for limited movement in the concealed away 46 by means of screws, such as 49 (see Fig. 3) which pass through bores 25 and threadedly engage in the threaded bores 50 in said clamping bar. Bar 48 may be formed of a length of structurally strong metal of initially square cross-section by cutting a longitudinal groove 51 therein with inclined sides 52, so spaced and so inclined as to receive the abutting lips 26 and 38 between them in tightly clamped relation when said bar is drawn down tightly by screws 49 passing through the bores 25 and into the threaded bores 50 in the bottom wall of the groove 51.

The clamping action draws edges 30 and 44 together so tightly as to make an invisible external joint between the strips. Faces 28 and 39 are likewise tightly drawn together. Rib 41 is similarly tightly seated in shoulder groove 34 and the faces 32 and 43 are also tightly clamped. In addition to the plurality of spaced tightly clamped joints, a packing cord which is received in groove 23 is tightly compressed and is tucked in by the rib 42 which enters and binds on the side of groove 33.

The air-tight, dust-tight and moisture-proof joints, as before described, are used in all parts of the case save for removable access panels or hingedly mounted access doors or mullion strips. The strips for framing the door panel and the complementary meeting edges on the case are illustrated in cross-section in Fig. 2 wherein the strip 53 has certain essential structural details of the strip 16 of Fig. 5, including the abutment rib 54. The outer leg 55 of strip 53 has another rib 56 in spaced relation to web 57 to provide a slot 58 which serves to slidably support suitable lock bolt members 59 movable by a key-controlled lock mechanism 60 which is sunk flush with the outer face of leg 55. The strip 53 is used on the forward edge of panel 10 and it is also used on the corresponding edge of top panel 14 and bottom panel 15 with or without the lock bars 59 and lock 60 as desired. Strip 530 on the panel 12 differs from strip 53 only in that rib 560 is faced off sufficiently to accommodate the piano hinge leaf 61.

The door panel 11 is bounded on its hinge side by a strip 531 which is complementary to strip 530 and has a rib 561 to receive the piano hinge leaf 62. The remaining edges of door panel 11 are bounded by strips 63 (see Fig. 2). When the lock member is used in the complementary strip 53, the strip 63 has keepers 64 attached to the web portion of the strip for receiving the bolt members in order to lock the complementary strips together in dust-tight and air-tight relation.

Fig. 8 shows a characteristic embodiment of the invention as applied to a top closing lid case wherein the sidewall is provided on its top edge with strip 53 (with or without the locking member) and the lid is bounded by a strip 631, similar to strip 63 save that it has an overhanging bead 65.

As shown in Fig. 7, a mullion 66 is provided for case structures wherein a side wall of the case is made up of several panels. The mullion 66 is T-shaped in cross-section and the leg 67 presents its longitudinal edge 68 to the outside of the case and has the corners beveled or chamfered complementary to the edges 44 of strips 17 which bound adjacent edges of adjacent panels 69 and 70. A bar 480, shaped like bar 48 (Fig. 6), has threaded bores disposed at 45° to those shown in Fig. 6, so that the clamping pull of tightening screws will draw the strips against the underside of the mullion, thus utilizing the effective clamping, as heretofore explained in connection with strips 16 and 17, but at a different angle to accommodate the difference in the relation of the panels.

Cases of various sizes and designs may be constructed utilizing the strips to form strong but lightweight panel-binding and case frame members. The details of providing a dust-tight seal of the glass or other panels in the grooves 23 form no part of this invention. Likewise, the specific means of mounting shelves in the cases may be carried out in any approved manner.

The invention herein is not to be regarded as limited to the specific structure disclosed since the same may be modified within the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. In an exhibition case structure, the combination of a pair of removably connected binding strips, integral lips on the respective strips providing a pair of complementary abutting miter joint faces, said strips also having a second complementary pair of abutting miter joint faces in spaced parallel relation to the miter joint faces on the said lips, said lips having opposed transverse grooves in the meeting miter joint faces thereof, an abutment rib on one of said strips extending across the plane of the miter joint faces, a movable bar having a longitudinal groove having inclined sidewalls seating over said abutting lips and screws extending from said abutment rib to said bar and through the opposed grooves in said lips for releasably compressing the several pairs of complementary abutting faces together.

2. In a structure of the class described, a pair of complementary strips binding adjacent edges of adjacent panel members, said strips having grooves therein forming a hollow way between said strips, abutting lips on the respective strips disposed within the way, a bar in said way having a groove therein for receiving the said lips therein and threaded members actuatable from the inside of the case for effecting mutual binding

relation between the sides of the lips and the sides of the groove in said bar.

3. In an exhibition case structure, the combination of a pair of removably connected strips formed to provide between them a concealed longitudinal way, integral abutting lips on said strips extending longitudinally within said way, a movable bar housed within the way and having a longitudinally extending groove with inclined sides for receiving between them the outer faces of the said abutting lips, and screw members passing through one of said strips and threadedly engaging in said bar for clamping and loosening said bar on said lips.

4. In an exhibition case, the combination of wall panels for the case, strips each having a groove for receiving an edge of a panel, the strips on adjacent edges of adjacent panels being complementary and forming between them a hollow way, said strips having laterally abutting lips integral therewith and extending along said way, a bar having a groove with inclined side walls for receiving the sides of said abutting lips in wedging relation, and screws passing through one of said strips and substantially in the plane of the abutting faces of the lips and threadedly engaging in said bar for effecting and releasing the wedging action of said bar on the lips and between abutting faces of the complementary strips.

5. In a case-forming structure, the combination of a pair of adjacent wall panels, a formed strip bounding each edge of each panel, means connecting the ends of the strips together at each corner of each panel, each strip comprising an outer leg, a web perpendicular thereto intermediate the longitudinal edges of the outer leg, and an inner leg extending parallel to the outer leg on one side of said web whereby a panel-receiving groove is formed, an edge of each outer leg being mitered, the edges of the strips on adjacent edges of adjacent panels being complementary and forming between the webs and the legs a hollow way, the respective complementary strips having integral abutting lips presenting oppositely tapered faces interiorly of the way, an abutment rib on one strip on the outside of its inner leg whereon the outside of the inner leg of the complementary strip abuts, screws extending through the abutment rib, between abutting lips and into the hollow way, and a bar having an inclined walled groove threadedly engaged by said screws whereby rotation of the screws serves to move the inclined walls of the groove to effect simultaneous binding abutment between themselves and the lips and between all of the remaining aforesaid complementary abutting portions of said strips.

6. In a separable joint structure, the combination of a pair of formed strip members forming a concealed hollow way between them, a bar movably supported in the way and having a longitudinally extending groove with inclined sidewalls, integral lips on said respective strips in abutment with one another within the hollow way and having exposed inclined faces for slidably receiving the inclined sidewalls of the groove in the bar, and means comprising spaced apart screws operable from one side of one of said strips for positively moving said bar laterally only across the way for seating the said walls of the groove in binding relation on the inclined faces of the lips.

7. A strip for exhibition cases and the like comprising an outer leg, a web perpendicular to one face of said leg intermediate the side edges of the leg, one of said edges being miter beveled, a lip along the edge of the web with a face thereof in a common plane with the miter edge of the outer leg, an abutment rib along the outer edge of the web and having a face thereof in a plane with the side of the web, said face having a packing cord groove therein along the base of the lip.

8. A strip for exhibition cases and the like comprising an outer leg, a web perpendicular to one face of said leg intermediate the side edges thereof, one of said edges being miter beveled, and a lip along the edge of the web and having a face thereof in a common plane with the mitered edge of said outer leg, said lip being angularly undercut on the side opposite the said face.

9. A mullion joint structure for exhibition cases and the like comprising a formed strip of T-shaped cross-section forming a table and a leg, the free corner edges of said leg being miter beveled for seating a complementary beveled edge of a panel-binding strip on each side of the leg, the table having in its face a packing groove adjacent each edge adapted to be closed by the said panel-binding strips, a panel binding strip having a miter beveled edge seating on the miter beveled portion on one of said free corner edges of said leg, and a non-adjacent portion seating over the packing groove in said table, the strips together forming between them a hollow way, the panel binding strip having a lip projecting into said hollow way, and means comprising screws operable from the face of the table and effective on said lip in the hollow way for binding the panel binding strip against said leg and table.

10. In a structure of the class described, a binding strip for a panel comprising an outer leg, a web perpendicular thereto intermediate the side edges thereof, one of said side edges being mitered, an inclined lip along the edge of the web and a rib along the end of the web, a complementary strip comprising angularly related portions one of which has a mitered edge for abutting the mitered edge on the outer leg, the other of which has a packing cord groove receiving the rib on the web, a bar having an inclined walled groove engageable over the inclined lip of the binding strip, and a screw passing through the said complementary strip and threaded into said bar whereby the bar is drawn into clamping relation with the lip for releasably mounting the binding strip to the complementary strip.

11. In combination, a pair of formed strip members each presenting a pair of spaced apart miter faces to the other, said strips being grooved intermediate said faces whereby a concealed hollow way is provided between said strips, the wall of each groove being undercut along one side forming integral lips on the respective strips, one of the aforesaid miter faces being on each lip whereby the lips are in lateral abutment disposed longitudinally within said way, a clamping member in the way, and releasable means for holding the clamping member in wedging relation to the non-abutting sides of said lips.

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