Sept. 6, 1955 S. E. MAUTNER 2,717,093

SHIPPING CASE OR THE LIKE

Filed Oct. 28, 1950

FIG. 1.

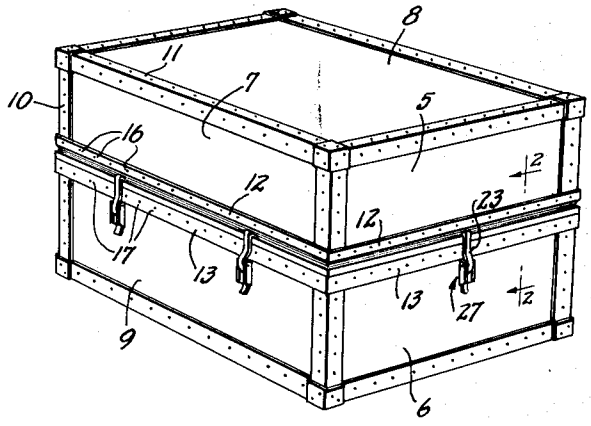


FIG. 2.

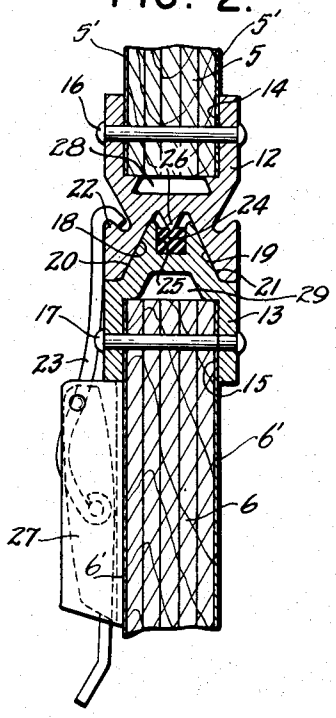


FIG. 3.

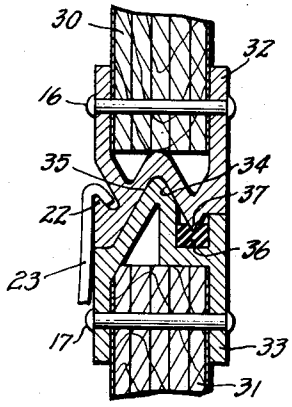


FIG. 4.

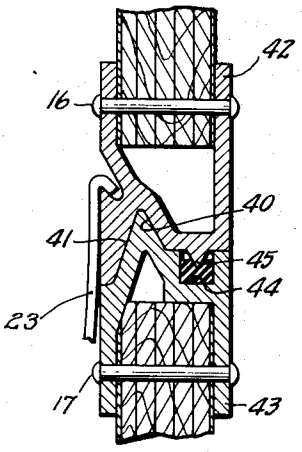


FIG. 5.

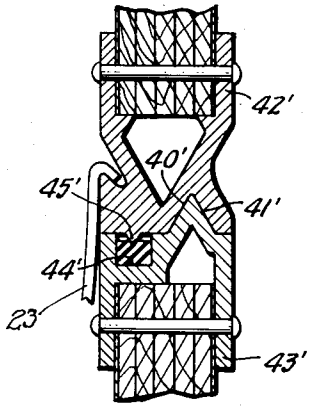


FIG. 6.

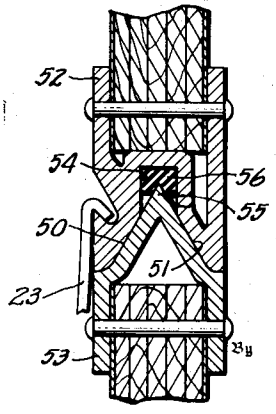
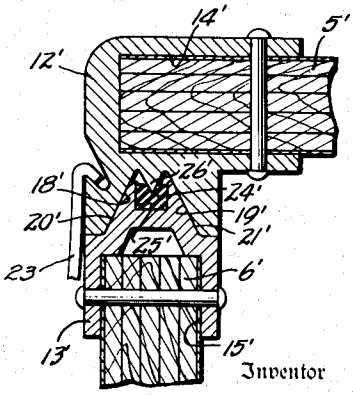


FIG. 7.



Inventor

STEVEN E. MAUTNER

By Mitchell & Bechert

Attorneys

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2,717,093

SHIPPING CASE OR THE LIKE

Steven Etienne Mautner, Port Jervis, N. Y., assignor to Skydyne, Inc., Port Jervis, N. Y., a corporation of New York

Application October 28, 1950, Serial No. 192,707

5 Claims. (Cl. 217—56)

My invention relates to a packing case or the like and more particularly to a case which is built up of panels held in metal frame members. The invention is in the nature of an improvement over the disclosure in my copending application Serial No. 160,172, filed May 5, 1950.

It is an object of my invention to provide an improved case of the character indicated which is easy to assemble, which is mechanically strong, and which may be substantially water-tight, and air- and moisture-proof.

It is another object to provide improved means for sealing the joint between a case and a lid.

It is also an object to provide an improved means for rigidly removably joining two panels.

A still more specific object is to provide an improved means for finishing adjacent edges of panels to be fitted together, whereby the panels may be reinforced against lateral deflection when fitted together.

Another object is to provide self-reinforcing and sealing means at the adjacent edges of panels to be removably fitted together.

Other objects and various further features of novelty and invention will be pointed out or will occur to those skilled in the art from a reading of the following specification in conjunction with the accompanying drawings. In said drawings, which show, for illustrative purposes only, preferred forms of the invention:

Fig. 1 is a perspective view of a box or case including frame members incorporating features of the invention;

Fig. 2 is an enlarged fragmentary sectional view taken in the plane 2—2 of Fig. 1;

Figs. 3, 4, 5, and 6 are sectional views of alternative constructions; and

Fig. 7 is a sectional view of a construction generally resembling that of Fig. 2 but adapted to the joining of mutually perpendicular panels.

Briefly stated, the invention contemplates an improved means for finishing adjacent edges of abutting panels, as in the case of adjacent panels in a box, case, or trunk. In particular, the invention concerns cooperating frame members at the joint between removable panels, as on the case body and on the lid. Each of the frame members may have panel-receiving channels. One frame member may have a gasket-receiving channel while the other frame member has a tongue to engage the sealing gasket. In addition, rigidity of the joint may be promoted by means of interfitting converging walls on the two frame members. Thus, two recessed converging walls may be formed in one frame member, and two similar, but projecting, converging walls may be formed in the other frame member. The sealing projection and gasket groove may be formed at the convergence of the recessed and projecting walls or laterally spaced therefrom. As in the case of the above-identified copending application, one of the frame members may be formed with a longitudinally extending keeper projection and recess to receive a clamp keeper, the clamp being mounted on the other

frame member or upon the panel to which said other frame member is attached.

While the invention will be described in connection with a case comprising a lower or body portion and an upper or lid portion, it is to be understood that, in certain arrangements designed to carry heavy instruments and the like, what is normally the lid forms the bottom of the case and the body of the case may then lift off from the bottom or lid so as to expose the heavy contents or load. However, where the term "lid" is used herein, it is understood that the term refers to either a conventional lid or to the bottom of the case, in which circumstance the body of the case would be in the nature of a cover.

The panels may be of sandwich construction with a relatively light inner core, such as the plywood shown at 5—6 in Fig. 2, and with relatively tough sheaths, such as the metallic coverings 5'—6'. In some cases, it may be preferred to form the panel edges of somewhat lesser thickness so as to fit into the panel-receiving channels, as shown in the above-identified application, so that the main body of the panel will be of about the same thickness as the outside thickness of the channel which receives the panel. But in the forms shown, the panels are of the thickness or width of the panel-receiving channels.

In Fig. 1 of the drawings, my invention is shown in application to a rectangular case formed of sandwich panels, as 5—6. The panels 5—6 are shown as end skirts of upper and lower halves of the case. The upper half may further include a side skirt 7 and a top panel 8, while the lower half includes a side skirt 9 abutting or adjacent to the skirt panel 7. The various panels in the respective halves of the case may be held together by means of frame members 10—11 of a construction previously described in the said copending patent application.

In accordance with the invention, I provide improved frame members 12—13 carried by the adjacent edges of the top and bottom halves of the case. These frame members may be continuously longitudinally formed of constant cross-section, as of extruded aluminum or the like. Each may include a panel-receiving channel, such as the channel 14 in member 12 to receive the panel 5, and the channel 15 in panel 13 to receive the panel 6. The panels may be of a width to fit the grooves 14—15, and sealing compound applied in the channels 14—15 before insertion of the panels may insure a proper fit between the same. If desired, pins or rivets 16—17 passing through the sides of channels and through the panels may assure permanent mechanical anchorage of the parts.

As indicated generally above, the interfitting sides or edges of the frame members 12—13 may be contoured for tight mechanical reinforcement by employment of converging walls. In the form shown in Fig. 2, the upper frame member 12 is formed with a generally V-shaped recess defined by converging side walls 18—19, and projecting side walls 20—21 on the lower frame member 13 are of substantially the same slopes as walls 18—19, so as closely to fit the recessed side walls 18—19. One of the frame members (in the form shown, the upper frame member 12) may additionally be formed with longitudinally extending projecting clamp-keeper means 22, for locking engagement by the keeper 23 of a suitable spring clamp 27 mounted upon the lower frame member 13 or upon the panel 6 fitted thereto. It will be appreciated that, when the clamp 24 has been set so as to hold the frame members 12—13 together the nature of the fit at 18—20 and at 19—21 may be such as to provide well-reinforced abutment of the frame members, so as to resist any mechanical dislocation of the parts and so as to provide utmost strength for reinforcement against lateral deflection. When clamped in the manner indicated, the frame members 12—13 may in effect form a single rigid

member resembling an I or H-beam, reinforcing the panel area represented by both panels 5 and 6.

In accordance with a further feature of the invention I also provide sealing means to maintain air and water tightness of the joint between members 12 and 13. Such sealing means may comprise a gasket 24 seated in a gasket groove or recess 25 in one of the frame members, and a projecting portion 26 carried by the other frame member 12 and extending into stressing engagement with the gasket 25 when the members 12—13 are clamped together. In the form shown, the sealing projection 26 is at the bottom or convergence of the recess walls 18—19 while the gasket groove 25 is at the outer limit or convergence of the projecting walls 20—21.

In the arrangement of Fig. 3, two panels 30—31 are shown joined together by frame members 32—33, generally resembling those described in connection with Fig. 2. In Fig. 3, the mechanically interfitting recessed and projecting converging side walls at 34—35 are again formed centrally of the cross-section of the frame members, but the sealing means is to one side of the center of the cross-section. As shown, the gasket groove or recess 36 is on the inner side and adjacent the projecting converging walls, and the sealing projection 37 is formed on the inner side of the fitted edge of the other frame member 32. Again, one of the frame members (32) may be formed with a clamp-keeper-receiving projection 22, so that clamping may be essentially the same as has been described.

In the arrangement of Fig. 4, the general organization of contours is similar to that of Fig. 3. In Fig. 4, however, the interfitting converging wall portions 40—41 are located to one side of the center of the cross-section of frame members 42—43, and the gasket groove 44 and sealing projection 45 are located to the other side of the center of the cross-section, the gasket or sealing means being located on the inner side of the fitted edges of the panels being joined.

In the arrangement of Fig. 5, the contour organization is essentially the reverse of that shown in Fig. 4. In Fig. 5, the converging wall portions 40'—41' are located on the inner side of the center of the cross-section of frame members 42'—43', and the gasket or sealing groove 44' and projection 45' are formed on the outer side of the center of the cross-section, thus assuring that no moisture or other impurities from the atmosphere will collect between the tight-fitting locating surfaces at 40'—41'.

In Fig. 6, I show a further arrangement, which is in some respects the reverse of that shown in Fig. 2. In Fig. 6, the mechanically interfitting converging walls at 50—51 are located generally centrally of the cross-section of the frame members 52—53, but the gasket groove 54 is formed at the bottom of the reces defined by these converging walls, while the convergence or projecting tip 55 of these walls on the other member 53 is caused to extend into resilient sealing engagement with the gasket 56.

In Fig. 7, I show the same arrangement of interfitting and sealing surfaces as disclosed in the case of Fig. 2, but these surfaces are applied to two frame members 12'—13' for joining mutually perpendicular panel members 5'—6', as in the case in which the panel 5' is a lid panel and the panel 6' is an upstanding side panel. The difference between the members in Figs. 2 and 7 resides in the frame member 12', which may be formed with a panel-receiving groove or channel 14' facing perpendicular to, rather than in alignment with, the panel-receiving groove 15' in the other frame member 13'.

It will be seen that I have disclosed a number of novel configurations for two frame members to be removably fitted together. In all these configurations, the contours of the frame members may provide mutual reinforcement so as to withstand maximum mechanical shock and load deflection. At the same time, the contours may be such as to receive resilient sealing gasket means so that impurities and contamination may be kept away from the contents of the box and from the directly abutting surfaces of the frame members. In all forms, the frame members may be of lightest-weight construction, leaving space pockets, as at 28—29 in Fig. 2, after insertion of the panels (5—6); if desired, these pockets may be filled with a sealing compound before panel assembly, to further improve sealing effectiveness, as will be understood.

While I have described my invention in detail for the preferred forms shown, it will be understood that modifications may be made within the scope of the invention as defined in the appended claims.

I claim:

1. In a case, two case members to be joined, one case member comprising a longitudinally extending metal frame member having a generally U-shaped longitudinally extending channel for receiving the edge of a case panel, said frame member having a longitudinally extending locking tongue of generally V-shape, a second longitudinally extending metal frame member having a generally U-shaped longitudinally extending channel for receiving the edge of a second case panel, said second metal frame member having a longitudinally extending locking groove of generally V-shape to receive said locking tongue to form a secure metal-to-metal tight wedging joint between said frame members, said first frame member having said V-shaped locking tongue having a longitudinally extending seal groove for a yielding gasket and formed at the convergence of the walls of said locking tongue and locking groove, said second frame member having said V-shaped locking groove having a longitudinally extending generally V-shaped seal tongue to project into said seal groove and engage a yielding gasket therein.

2. In a case, two case members to be joined, one case member comprising a longitudinally extending metal frame member having a generally U-shaped longitudinally extending channel for receiving the edge of a case panel, said frame member having a longitudinally extending locking tongue of generally V-shape, a second longitudinally extending metal frame member having a generally U-shaped longitudinally extending channel for receiving the edge of a second case panel, said second metal frame member having a longitudinally extending locking groove of generally V-shape to receive said locking tongue to form a secure metal-to-metal tight wedging joint between said frame members, said first frame member having said V-shaped locking tongue having a longitudinally extending seal groove for a yielding gasket, said second frame member having said V-shaped locking groove having a longitudinally extending generally V-shaped seal tongue to project into said seal groove and engage a yielding gasket therein, said gasket groove being formed near the convergence of said projecting converging locking tongue walls, and said sealing tongue projecting from the bottom of the recess defined by the converging walls of said locking groove.

3. In a case, a case body and a lid, said case body and lid having cooperating frame members at the joint between said case body and lid, each of said frame members including a channel for receiving a panel, one of said members having a V-shaped recess and the other of said members having a V-shaped projection closely fitting said V-shaped recess, one of said members having a seal groove facing the other of said members, and the other of said members including a projection extending into said seal groove when said members are fitted together, one of said members on the outside having a longitudinally extending groove extending throughout the length thereof, said groove sloping inwardly and toward the other frame member to provide an inclined keeper projection inside the plane of said outside of said one of said members, and a clamp associated with the other of said members and having a keeper engaged over said keeper projection to draw said frame members together and the sealing parts into tight engagement.

4. In the combination defined in claim 3, said seal groove and said projection extending into said seal groove being laterally spaced from said V-shaped recess and said V-shaped projection closely fitting said recess.

5. In the combination defined in claim 3, said seal groove and projection being at the juncture between the bottom of said V-shaped recess and the said V-shaped projection closely fitting said recess.

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