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3,159,440

CABINET WALL PANELS AND CONNECTING MEANS THEREFOR

Filed March 14, 1963

2 Sheets-Sheet 1

Fig. 1

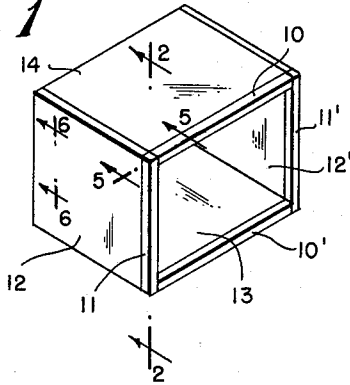


Fig. 2

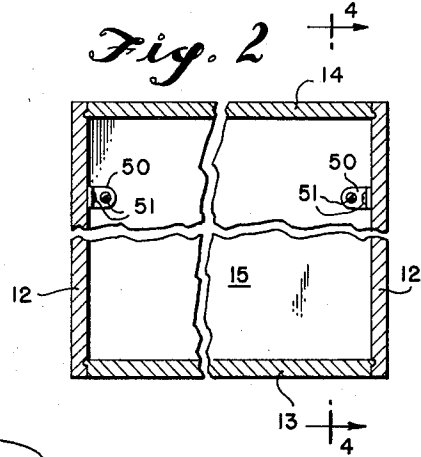


Fig. 3

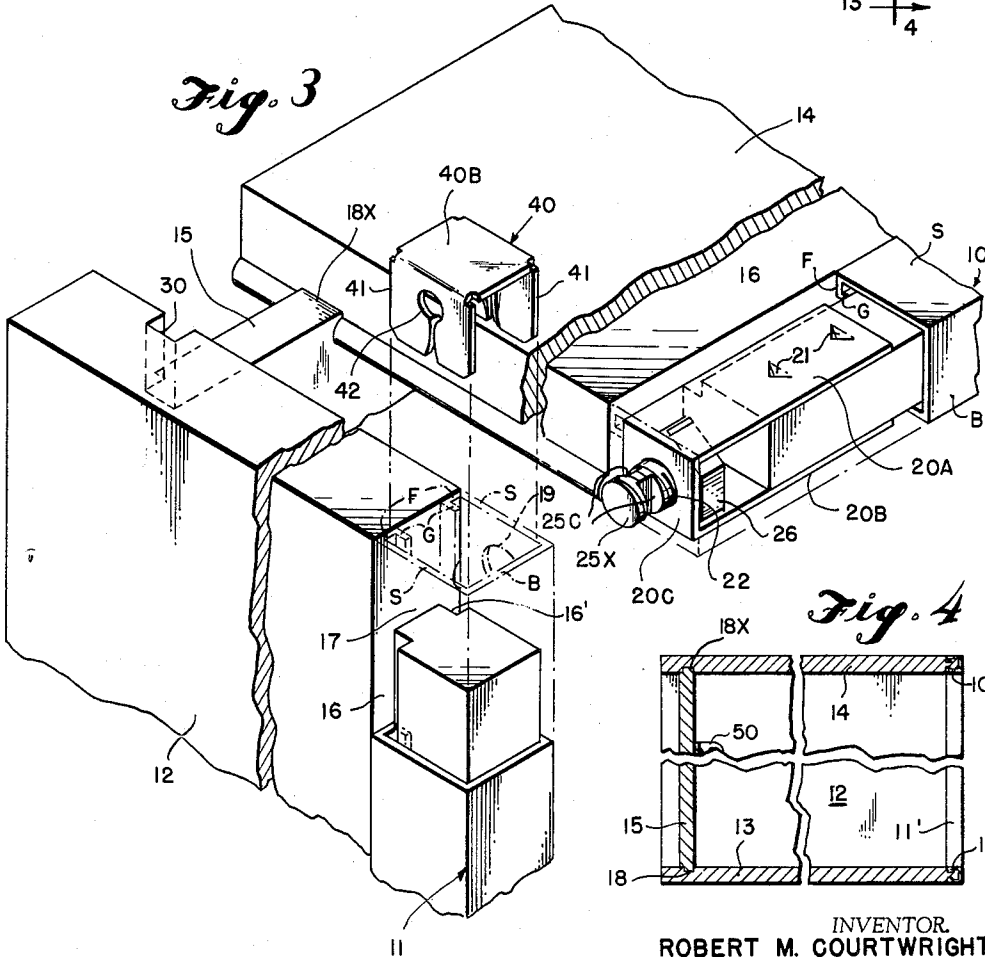
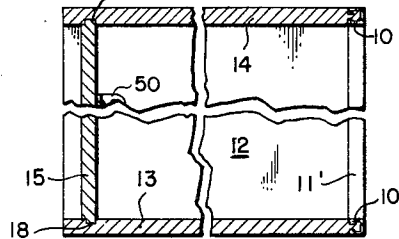


Fig. 4



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Fig. 5

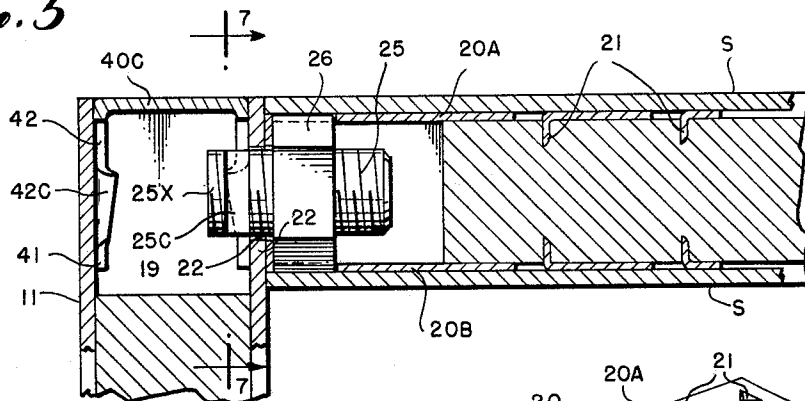


Fig. 8

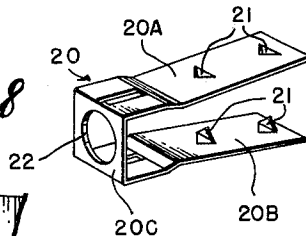


Fig. 6

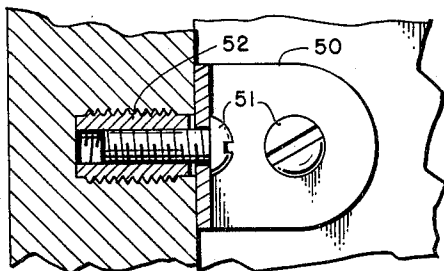


Fig. 7

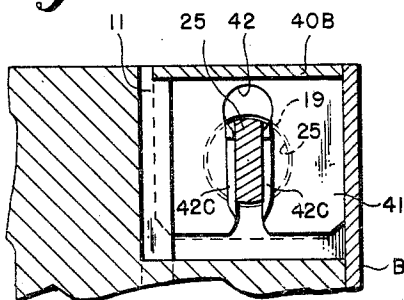
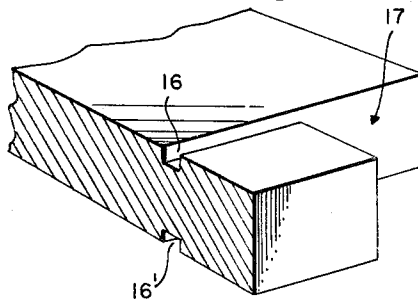


Fig. 9



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CABINET WALL PANELS AND CONNECTING MEANS THEREFOR

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5 Claims. (Cl. 312-263)

This invention relates to improvements in cabinet, bookcase, desk and table construction. More particularly, it relates to the fabrication of articles of manufacture wherein frame members of metal are combined with wall panels manufactured from wood products such as plywood, "chipboard" or various lightweight soft woods.

It is the principal object of this invention to provide articles of manufacture of the type or character of those above named, that may be shipped on a knocked down or flat panel condition, and later rigidly assembled at the point of use with a minimum of equipment and labor.

Other objects and advantages of the invention reside in the specific details of formation of the frame members and in the grooving and cutting of their companion wall forming panels for their assembly and securement there-
to.

Still further objects reside in the formation and application to the panels and frame members of novel holding clips that may be applied in such manner as to obtain and maintain the desired rigidity of construction and utility of the fabricated articles.

In accomplishing the above mentioned and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

FIG. 1 is a perspective view showing, in a reduced scale, one form of cabinet or case embodying the present invention.

FIG. 2 is an enlargement, taken vertically through the cabinet, as on line 2—2 in FIG. 1, showing the assembly of its wall panels; parts of the panels being broken away to reduce the size of the view.

FIG. 3 is an enlargement, showing in perspective and in separated relationship, portions of the top panel and a side wall panel as assembled with corresponding frame members.

FIG. 4 is a horizontal sectional detail, taken on line 4—4 in FIG. 2, showing the assembled relationship of wall panels.

FIG. 5 is an enlarged sectional detail on line 5—5 in FIG. 1 showing the joining of frame members comprised in a front corner assembly.

FIG. 6 is an enlarged sectional detail on line 6—6, in FIG. 1, showing one of the anchoring means applied for joining the side wall panels to the back panels.

FIG. 7 is a cross-section on line 7—7 in FIG. 5, showing one of the locking clips as applied.

FIG. 8 is a perspective view of one part of a frame joining clip.

FIG. 9 is a perspective view showing an edge portion of a wall panel as prepared for the application of a metal frame member to its forward edge.

Referring more in detail to the drawings—

The present use of metal frame forming members and manufactured wall panels of light weight materials, is

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herein shown as employed particularly in the fabricating of such articles as desks, bookcases, tables and cabinets but can be advantageously employed for the building of book shelves and various forms of display cases. The box-like cabinet shown in FIG. 1 is typical of the various forms of articles embodied by this invention. Cabinet dimensions may be changed to suit requirements or desires without departing from the invention as herein set forth.

The rectangular article shown in FIG. 1 is one section or unit with an open front, that may or may not be assembled with others of like kind. It comprises a metal frame structure made up of two channel-like, horizontal rails 10—10' and two vertical end members or posts 11—11' of like formation; these frame parts being shown to be joined at their ends in such manner as to define the rectangular front opening of the cabinet. Assembled with these frame members 10—10' and 11—11' are opposite end wall forming panels 12 and 12'; a bottom wall panel 13; top wall panel 14 and a back wall forming panel 15, as best seen in FIG. 4. In the present instance, the channel-like rails 10—10' and posts 11—11' are aluminum extrusions and the wall forming panels are of the material known in trade as "chipboard" which has been pressed to substantial solidity to give it the required durability and provide the necessary rigidity in the cabinet construction.

In the preparing of the various wall panels, those that are to form the top wall 14 and bottom wall 13 of the unit are rectangular and have the same dimensions of length and width. Also, each is formed completely across its forward edge portion, parallel with and equally spaced from its front edge, in the top and bottom surfaces thereof as best seen in FIG. 9, with square cut channels 16 and 16' and each of the forward corners of these panels are square notched, as at 17 in FIG. 9 by cutting out the forward edge or lip portion back to the inside edges of the two channels 16—16'. Also, across the rear edge portion of the top surface of bottom panel 13, a channel 18 is cut and a like channel 18x is similarly cut in and across the bottom surface of the top panel 14, as in FIG. 4, for a purpose presently explained. Furthermore, the thickness of the forward portions of panels 13 and 14 are slightly reduced by planing off the top surface of the forward edge or lip of the top panel and the bottom surface of the lip of the lower panel for a purpose later apparent.

The forward edge lip of each of these two wall panels 13 and 14 is then equipped at each end adjacent the notched corner with an anchoring clip 20 designed for joining of the frame members. Each clip is formed from a flat strip of resilient sheet metal bent to the U-shaped formation shown best in FIG. 8, thus providing it with a pair of leg portions 20a—20b and a flat base or end wall 20c. The two leg portions of the clip have sharpened teeth 21 struck or punched inwardly therefrom and the base wall 20c is formed centrally with a bolt passing hole 22, as shown in the detailed view of FIG. 8.

In applying one of these securing clips 20 to the lip of a wall panel, the leg portions thereof are sprung slightly apart and applied, as in FIG. 3, along opposite sides of the lip portion of the panel, parallel with its forward edge and with the base end of the clip projecting across the corner notch and even with the end edge of the

panel as in FIG. 3. The teeth 21 of paired legs are then pressed into the top and bottom surfaces of the panel lip.

A securing bolt 25 is then applied inwardly through the bolt hole 22 in the base of the clip and threaded into a lock nut 26 that is located in position within the base end of the clip between the two leg portions as well shown in FIGS. 3 and 5.

The outer end portion of each bolt 25 is vertically channeled in opposite sides, as at 25c in FIGS. 3 and 5, thus to provide the bolt with an anchoring head 25x for a purpose presently to be explained.

After the clip members 20 of FIG. 8 have been applied to the ends of the lip edges, the frame rails 10—10' are slipped endwise over the lips to their full lengths; the flanged edges of the rails being slidably received in the channels 16—16' as shown in FIG. 3. It is to be noted that these rails come flush with the end edges of the two panels.

The end rails or posts 11—11' are similarly applied to the forward lip edges of the wall panels 12 and 12' and brought flush at its ends therewith.

It will be understood, by the showing in FIG. 3, that when the rails 10 and 10' are slipped into position on the lip portions of the panels 13 and 14, they will tightly overlie the leg portions of the clips 20 to press and hold their teeth 21 firmly on and against release from the panel lips.

The channel-like frame members 10—10' and 11—11' are all of the same cross-sectional dimensions. Each has a flat base or bottom wall B and flat opposite side walls S—S at right angles to the bottom wall. The side walls have intumed flanges F at their edges that terminate in outturned flanges G. In applying the members 11—11' to the forward edges of wall panels 12—12', the open side of each member is slipped endwise onto the lip portion with the flanges F—G moving into and along the channels 16—16'.

It is to be observed that the side walls of the frame members 11—11' are provided in their end portions with holes 19 for passing of the bolt heads 25x therethrough in the assembling of the frame members. This will presently be more fully explained.

After the frame members have been applied to the lip portions of the wall panels, the panels are assembled by bringing the panels into a joining relationship and projecting the head portions of the anchoring bolts 25 as secured in the clips 20x applied to the lip of the horizontal panel 14, into the upper end holes 19 of the vertical end frame members 11—11', and likewise applying the heads of the anchoring bolts 25 of the clips as applied to the lip of the lower wall panel 13 into the lower end holes 19 of the end posts, and then securing the bolt heads 25x to the posts 11—11' by the application of holding clips 40 into the open ends of the end posts to engage and lock with the bolt heads as seen in FIG. 5.

Each of the securing or holding clips 40 is of squared U-shape as shown best in FIG. 3 and is formed with a flat base wall 49b and parallel opposite side leg portions 41 that are adapted to be received snugly within the open ends of the channel-like posts between its side walls. Each leg 41 is formed with a slot 42 so positioned as to receive the neck portion of the anchoring bolt as extended into the vertical frame member through the side wall hole 19.

In the formation of the neck receiving slots 42 in the legs of the holding clips the metal of the leg is turned inwardly along the opposite edges of the slot to provide wedges 42c that will engage the bolt head 25x with drawing effect that pulls the end of the horizontal rail tightly against the side walls of the vertical rail 11. It is desirable, from the standpoint of appearance, that the holding clips 40 be pressed into the open ends of the rails 11—11', as seen in FIGS. 5 and 7.

Before the final joining of wall panels 12—12', and 13—14 the back wall panel 15 is positioned with its longitudinally top edge seated in the rear edge groove 18x of

the top wall panel 14 and its bottom edge seated in the groove 18 that is formed across the top surface closely adjacent the back edge of bottom wall panel 13.

Likewise, the opposite end edges of the back wall panel are engaged in grooves 30 formed in the inside surface of the side wall panels 12—12'. After the wall panels have thus been assembled, angle clips 50, as shown in FIGS. 2 and 6 are applied in the required number within the rear corner angles of the enclosure, and secured thereto by screws 51 applied through the wings of the clip and threaded onto metal sleeves 52 that arc, in turn, threaded into the panels as seen in FIG. 6, to insure the holding of the screws 51.

When all panels and frame members have been assembled and properly joined, they provide a rigid and substantial case or cabinet. If desired, such cabinets may be assembled in multiples using a common panel between components, thereby eliminating duplication of wall panels common to both installations.

This invention is characterized by the joining of the metal frame members without welding, with concealed fasteners, rigidity of securement being effected by the wedging action of the clips 40 with the heads 25x of bolts 25 adjustably secured in the fasteners 20.

The application of the frame rails 10—10' over the clips 20 insures their securement to the horizontal panels, and the clips 40 applied to the ends of vertical frame rails 11—11' draws the parts tightly in rigid assembly.

It is to be understood that in the making of cabinets of the type illustrated in FIG. 1, the back edge could embody the same metal frame construction if this should be desired.

I claim:

1. In a knock-down cabinet construction; two panels assembled in right angular relationship with their forward edges even and with a side surface portion of one panel disposed flatly against the end edge surface of the other panel, a frame rail of channel form applied in a holding connection over and along the forward edge portion of each panel and terminating at their ends flush with the end edges of the corresponding panel; one of said rails being formed with a bolt hole in a side wall thereof, at a point in registration with the adjacent end edge surface of the other panel and rail, a bolt-holding clip secured to the end edge portion of said other panel and a bolt adjustably mounted by said clip and extended therefrom; said bolt having a head portion at its extended end applied through said bolt hole of the adjacent rail wall and means holdingly securing said bolt in the rail containing the bolt hole, thereby to join the panels in assembled relationship.

2. A cabinet construction according to claim 1 wherein the means for holdingly securing the bolt head portion in said rail containing the bolt hole comprises a locking clip inserted in the rail that receives the bolt head portion and is interlocked with the bolt head portion to secure the bolt head portion against withdrawal or looseness.

3. In a knock-down cabinet construction, two wall forming panels assembled in right angular relationship, with the end edge surface of one panel abutted flatly against a side surface of the other and flush with its end edge surface, and with their forward longitudinal even; said even longitudinal edges each being formed with a projecting tongue, the tongue of one of said panels terminating short of the end surface of that panel; each of said tongues being grooved in opposite faces to their full length, a channeled rail, telescopically fitted over each tongue, each rail having intumed flanges along edges of its side walls, said grooves slidably containing the rail flanges therein, a U-shaped clip with its legs applied against opposite sides of that tongue which terminated short of the end of the panel, and clamped thereagainst and holdingly engaged therewith beneath the opposite wall portion of the corresponding rail; a bolt having a head end portion secured adjustably in the base end wall of said clip with its head end portion extended outwardly therefrom, said rail as

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applied to that tongue of the other panel having a bolt receiving hole positioned to receive said bolt head portion therethrough and a bolt head portion engaging clip applied in the open end of the bolt receiving rail and holdingly engaged with said bolt head portion to retain said rails in holding connection.

4. A device according to claim 3 wherein the said bolt is threaded at its inner end into a holding nut that is secured by a said U-shaped clip, and wherein the head end portion of said bolt has cam slots formed thereacross at opposite sides, and said bolt head portion engaging clip is formed as a U-shaped clip with a leg portion recessed to embrace the head end of the bolt between them with camming effect, thus to draw the joined parts firmly together.

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5. A device according to claim 4 wherein the U-shaped clip for holding said bolt, as applied to said tongue has its opposite leg portions formed with short inwardly struck teeth that are pressed into and holdingly retained in the mounting tongue by the overlapping walls of the channeled rail as applied to the tongue.

References Cited by the Examiner

UNITED STATES PATENTS

10 2,096,942 10/37 Suters ----- 312—140

FOREIGN PATENTS

665,631 1/52 Great Britain.

15 FRANK B. SHERRY, *Primary Examiner.*