

Jan. 19, 1971

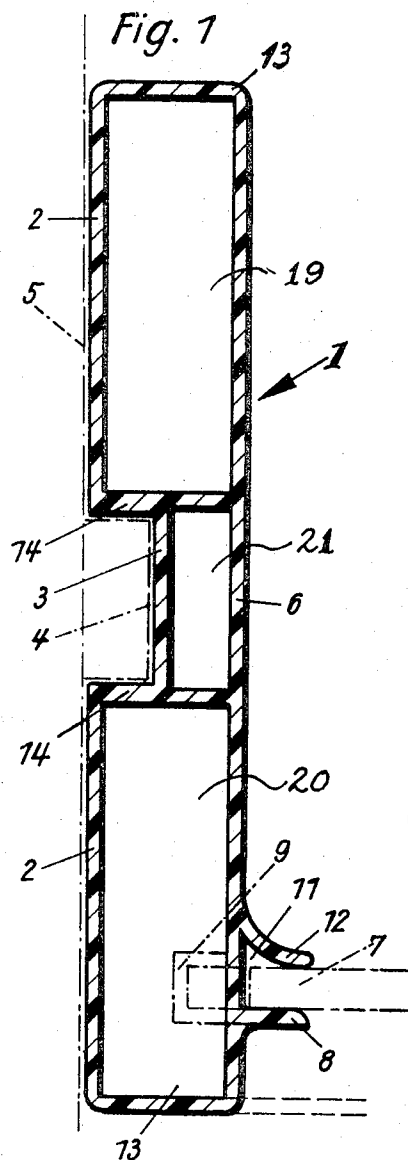
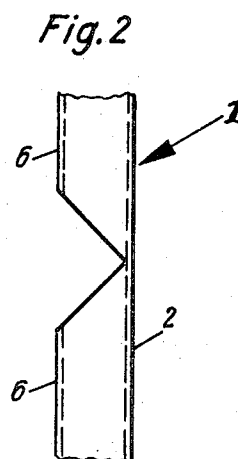
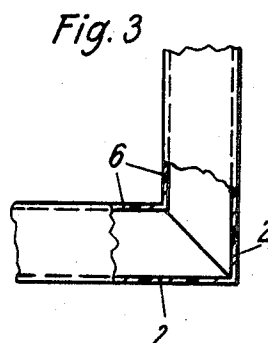
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3,556,626

PLASTIC FRAME FOR ARTICLES OF BOX-LIKE CONFIGURATION, SUCH
AS FURNITURE, DRAWERS AND THE LIKE

Original Filed Dec. 2, 1964

5 Sheets-Sheet 1



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Fig. 5

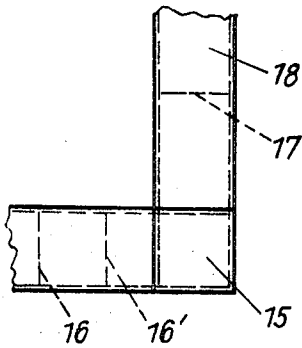


Fig. 6

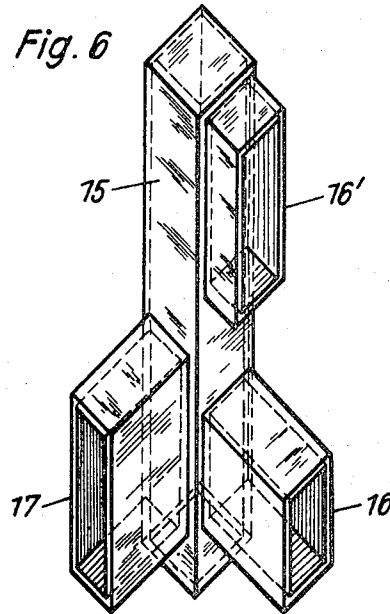
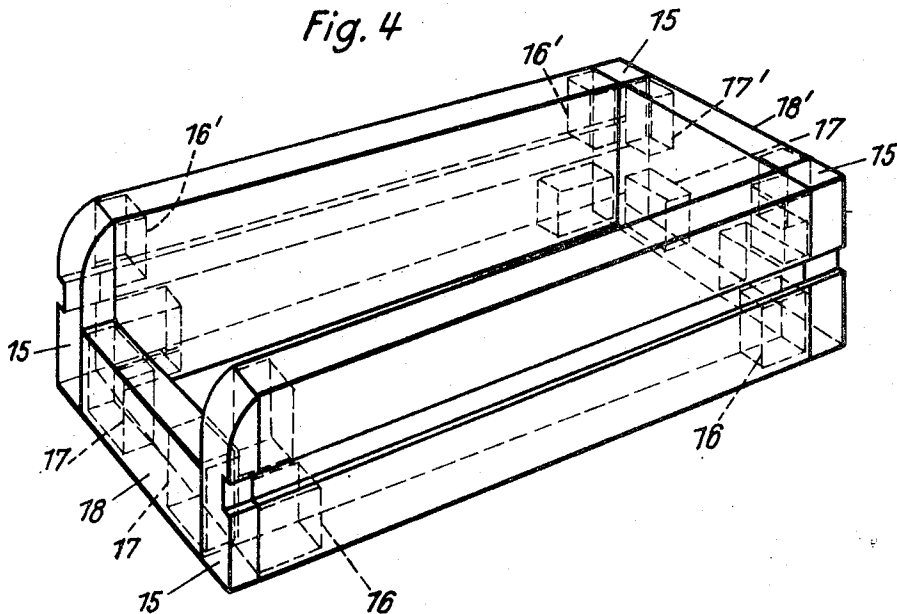


Fig. 4



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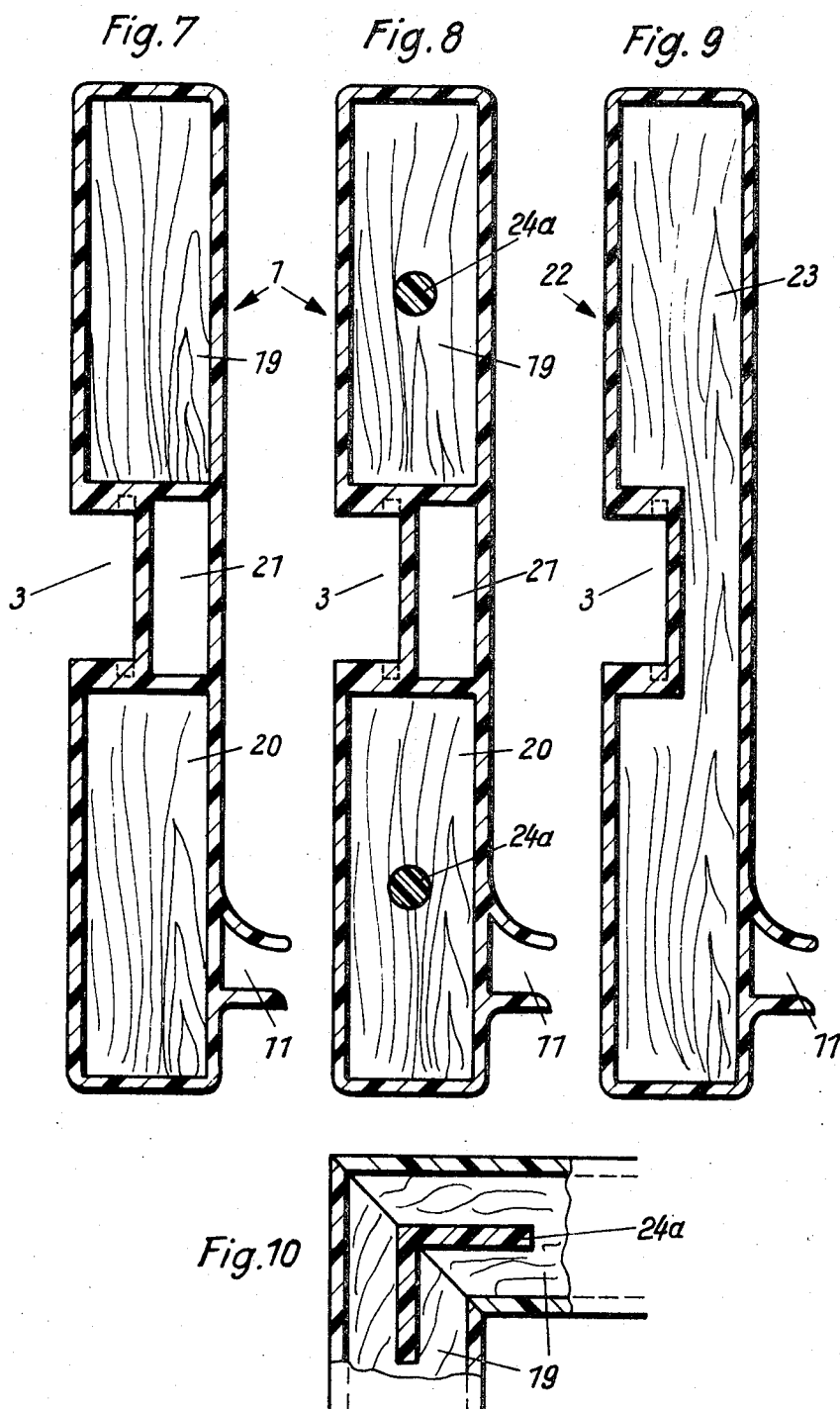
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PLASTIC FRAME FOR ARTICLES OF BOX-LIKE CONFIGURATION, SUCH
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Fig. 12

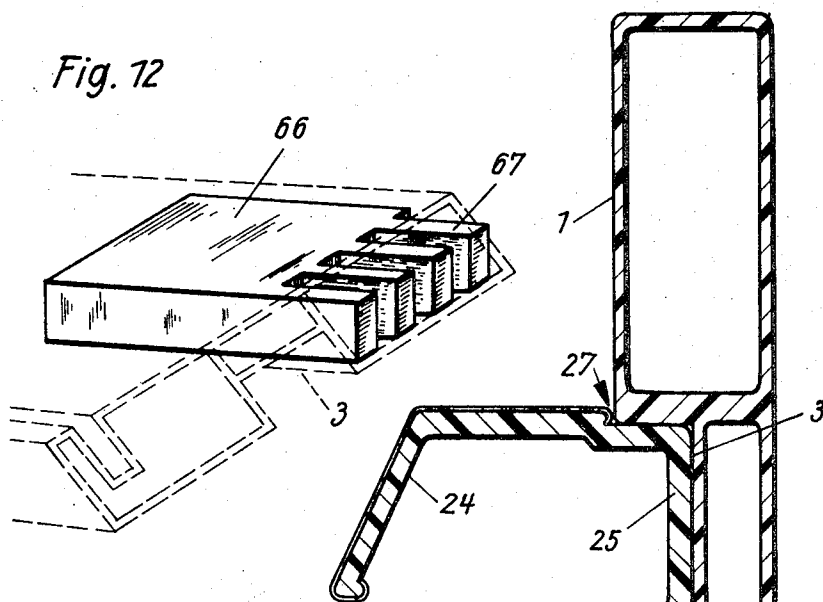


Fig. 13

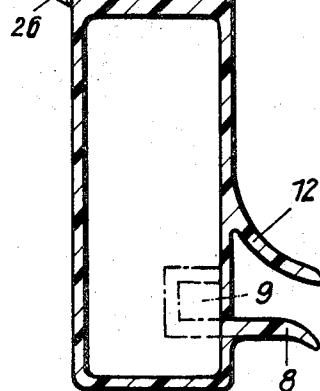
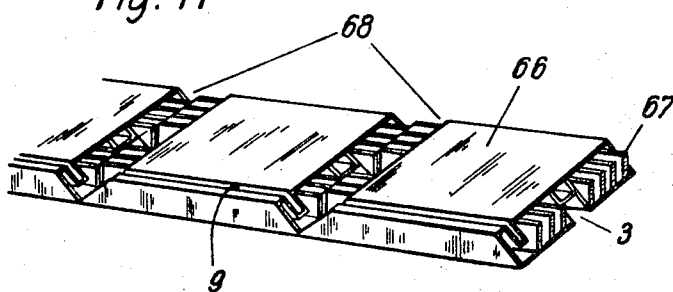


Fig. 11



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Fig. 14

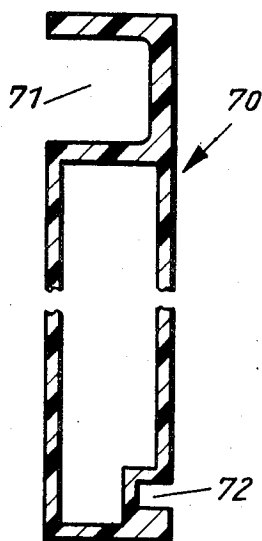


Fig. 15

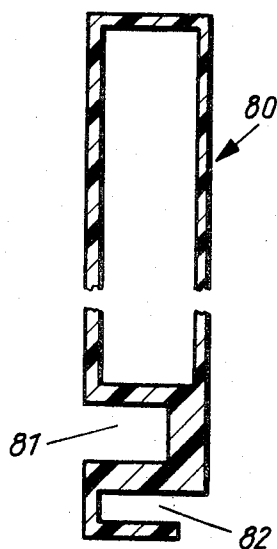
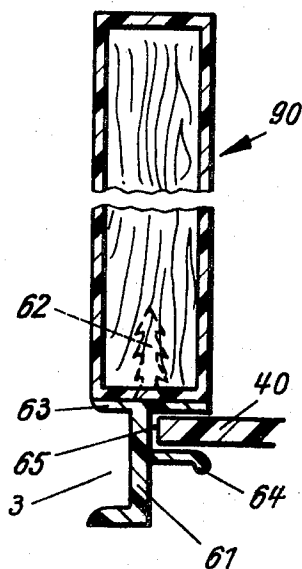


Fig. 16



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PLASTIC FRAME FOR ARTICLES OF BOX-LIKE CONFIGURATION, SUCH AS FURNITURE, DRAWERS AND THE LIKE

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Continuation of application Ser. No. 415,439, Dec. 2, 1964. This application Sept. 18, 1967, Ser. No. 668,720
Int. Cl. A47b 88/00

U.S. Cl. 312—330

11 Claims

ABSTRACT OF THE DISCLOSURE

To make drawers or the like having the sharp corners characteristic of wood drawers, hollow plastic extrusion which have wider side walls than their edge walls are produced flat with miter cuts or notches formed through one side wall and the two edge walls. The furniture manufacturer bends these flat shapes using the unnotched side wall as a hinge to form the sharp corners.

This is a continuation of application Ser. No. 415,439, filed Dec. 2, 1964, and now abandoned.

This invention relates generally to furniture pieces, such as drawers, trays and the like, including box-like frames the sections of which comprise hollow extruded plastic members

In the past, various articles of furniture, such as wall cabinets and the like, have been constructed from solid synthetic plastic elements. More particularly, cabinet drawers have been constructed in the form of a solid plastic body or in the form of a double-walled plastic unit. In both cases the drawer sections are "deep drawn" in the form of a bowl, and in the case of a double-walled drawer, a first bowl is placed in spaced relationship within a larger bowl, and the two bowls are then rigidly secured together.

The known constructions have the drawback that articles assembled from solid plastic components require a large amount of relatively expensive plastic material, and articles of the aforementioned double-walled design require molds of different size and complicated assembly techniques.

A primary object of the present invention is to provide a more inexpensive plastic box-like frame for use in constructing articles of furniture.

To summarize the invention, such an article is made of interconnected, linear extruded-plastic wall sections. The extruded plastic sections are hollow and contain at least one longitudinal cavity of rectangular cross-section. Furthermore, the sections are provided with integral means for supporting another drawer element (specifically, the drawer bottom member). These supporting means are arranged adjacent the lower portion of the inside surfaces of the frame sections and are either in the form of a pair of parallel, spaced external flanges that define a longitudinal channel, or in the form of recessed longitudinal channels or grooves contained in the inside side wall surfaces of the frame. The recessed channel embodiment is preferably where the side and rear frame sections are initially connected as a unit and the bottom member of the drawer is subsequently slid horizontally into the recessed channels in the three sections. Although additional securing means are normally not required, if the bottom securing means on each section comprises merely a single flange, the bottom may be lowered between the walls of the frame and secured to the integral flanges by glueing.

One advantage of the three-sided drawer frame con-

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struction mentioned above is the fact that the front section, which is attached later, may be selected to match—in color, style and decor—the remainder of the furniture piece.

Further, the three- or four-sided frames that are formed from a single extruded-plastic section one side of which contains a plurality of longitudinally-spaced notches. In the case of three and four sided frames, the plastic section contains two and three identical notches, respectively, each having in horizontal cross-section a right-angled profile. Following notching of the single plastic section, the parts defined between the notches are folded into the form of the box-like frame and the abutting mitered edges at the corner joints are rigidly connected with each other (for example, by an adhesive bond).

In one embodiment, a plurality of separate sections are mitered at their ends and are adhesively secured to each other at the mitered corner joints. According to another embodiment of the invention, the connecting means comprise corner pieces having horizontal plugs extending at right angles therefrom, said plugs being arranged to extend into the respective cavities in the frame sections. If desired, the plugs may be rigidly secured to the sections by an adhesive bond.

The hollow plastic sections may be filled with a filler material subsequent to extrusion, or as is known in the art, the section may be produced by forming the plastic shell upon rigid filler members. In view of the large contact area afforded at the corner joints of filled sections, when the frame is formed by bending the parts of a section containing longitudinally-spaced notches as mentioned above, the mitered surfaces may be readily bonded to each other to form a rigid, strong corner joint.

The sections' ends may be connected by dovetail connecting pieces made of wood or the like. The short wooden connecting pieces are secured at one end in the section cavities, and the dovetail projections on one element extend outwardly for interengaging connection with the dovetail projections on a corresponding part mounted in the cavity of another section. In the event that the dovetail projections on the two parts are glued to each other, a particularly strong and unbreakable connection is obtained.

In accordance with another feature of the invention, extruded plastic sections having the same cross-sectional profile may be used as either front, rear or side walls of the frame. When used as a front wall, handle means are secured (by screw means, an adhesive, or the like) to the front surface of the section. In the event that the outside of each section is provided with a horizontal guide groove, the handle means may be connected with the front section by means of the guide groove. Consequently, the advantage is afforded that all four frame sections are extruded simultaneously and have the same cross-sectional profile.

Normally the guide grooves for mounting the drawer in the cabinet are centrally arranged in the outer walls of the side sections of the frame. In the alternative, however, these guide grooves may be arranged adjacent the top or bottom edges of the side sections.

Other objects and advantages of the invention will become apparent from a study of the following specification when considered in conjunction with the accompanying drawing, in which:

FIG. 1 is a vertical sectional view of a hollow, extruded-plastic section formed in accordance with the present invention;

FIGS. 2 and 3 are fragmentary top plan views illustrating the manner in which a unitary extruded-plastic section is notched and bent to form a corner joint;

FIG. 4 is a perspective view illustrating one manner

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of interconnecting four extruded-plastic sections to define a drawer frame;

FIG. 5 is a fragmentary top plan view of the front corner construction of FIG. 4;

FIG. 6 is a perspective view of one of the rear corner connecting elements of FIG. 4;

FIGS. 7-9 are vertical sectional views of modifications of the plastic section of FIG. 1 the hollow cavities of which are filled with a filler material;

FIG. 10 is a fragmentary partially sectioned top plan view of a corner construction including two of the sections of FIG. 8;

FIGS. 11 and 12 are perspective views illustrating the use of dovetail means for connecting the corners of a plurality of extruded-plastic sections;

FIG. 13 is a vertical sectional view of a plastic section used as a front member of the frame; and

FIGS. 14-16 are vertical sectional views of three other modifications of the plastic section of FIG. 1.

Referring first more particularly to FIG. 1 the frame 1 comprises an extruded-plastic body of generally rectangular profile containing longitudinally-extending cavities 19, 20 and 21. The outer wall 2 of the plastic section is formed to define a channel 3 adapted to slidably receive a guide rail 4 mounted on a cabinet 5 as shown by the broken lines in FIG. 1.

Adjacent the bottom portion of the inner wall surface 6, the plastic section 1 is provided with means for supporting the edge portion of a bottom member 7 of the drawer. In the illustrated embodiment these bottom supporting means comprise a horizontal supporting flange 8 that is integral with the inside wall 6 and extends outwardly therefrom. A second flange 12, that is also integral with the inside wall 6, is vertically spaced above the first flange 8 to define a clamping groove 11 that receives the edge portion of the drawer bottom member 7. In the event that the upper flange 12 is omitted, the bottom member 7 may be merely inserted downwardly between the front, rear and side sections of the frame onto the flanges 8. The bottom member 7 may be formed of plastic, plywood, hardboard or the like.

As is customary with drawers formed of wood, the frame of the present invention includes four sections only the front one of which is normally exposed to view. Consequently, it is desirable that the front sections of the various drawers be matched in color. To this end, in accordance with the present invention, during manufacture of a drawer frame, the side and rear members are assembled first and the front section is attached later. In such a construction, prior to the connection of the front member the bottom member 7 is inserted rearwardly in the clamping grooves defined on the side and rear sections by the flanges 8 and 12. The upper flange 12 may be downwardly inclined, as shown in FIG. 1, or may be horizontal.

Instead of forming the clamping groove 11 between a pair of generally horizontal flanges, the inside wall 6 may be formed to define a channel recess 9 (as shown by the dotted lines in FIG. 1) for receiving the edge portion of the drawer bottom member 7. In this case, the bottom may be secured within channel 9, preferably by glueing.

The drawer frame may be produced from the four extruded plastic sections in several different ways. For example, the sections could be mitered at each end and secured to each other by glueing.

Another advantageous method of manufacturing the frame is illustrated in FIGS. 2 and 3, wherein the inside wall 6 of the unitary section 1 contains a right-angled notch, the outside wall 2 being continuous. The parts of the notched section of FIG. 2 are bent at right angles and the abutting edges are glued together to obtain the rigid corner construction illustrated in FIG. 3.

In the event that the drawer merely slides on a horizontal supporting portion of the cabinet 5 rather than

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on guide rails 4 as shown in FIG. 1, the outer wall 2 of the section 1 may be planar. In this case, the extruded plastic section may include horizontal transverse walls 14 that strengthen the central portion of the section. Furthermore the sections may be provided with grooves for receiving sliding doors or panels, or with a surrounding edge portion that serves as a stop for a hinged door.

As shown in FIG. 4, the drawer may be in the form of "English drawers" or trays for office use having three wall members of one height and a front wall of smaller height that are interconnected by means of corner connecting elements 15. These corner connecting pieces 15 include a vertical body portion having a square cross-sectional profile that supports at right angles lower and upper connecting plugs 16, 17 and 16', 17' respectively. These plugs are horizontally arranged to extend into the corresponding cavities contained in the respective extruded plastic sections, and preferably the plugs are secured within the cavities by an adhesive bond. Thus, as shown in FIG. 4, for connecting the rear wall 18' with the side walls of the tray, the corner connecting pieces 15 include horizontal plugs 16 and 16' that extend into the cavities contained in the side walls, and horizontal plugs 17 and 17' that extend into the corresponding cavities in the rear wall 18'. At the front end of the tray, the connecting means 15 (FIG. 6) includes a horizontal plug 17 that extends into the corresponding single cavity contained in the front wall section 18, and vertically spaced plugs 16 and 16' that extend into corresponding cavities in the side wall sections. The plugs have rectangular configurations corresponding with the rectangular cross-sectional configurations of the respective cavities. Since the upper plugs serve primarily to stabilize the frame and to prevent relative displacement of the upper portions of the side and rear wall members, the lower connecting plugs 16 and 17 are preferably longer than the upper plugs 16' and 17'. The plugs 16, 17, 16' and 17' and the vertical body member 15 are preferably formed as hollow extruded-plastic components.

Referring to FIGS. 7 and 8, the upper and lower cavities 19 and 20 of the hollow plastic section are filled with a suitable filler material, such as wood, hardboard, plywood, plastic foam or the like. This filler material may be inserted subsequent to or concurrently with the formation of the extruded plastic sections.

In the embodiment of FIG. 9 the plastic section 22 contains a single cavity 23 that is filled with the filler material as described above.

In accordance with the manner described above with reference to FIGS. 2 and 3, the sections of FIGS. 7-9 may be notched and bent so that the side wall sections are integrally connected with, and are at right-angles with respect to, the front and/or rear wall members. On the other hand a plurality of separate sections may be mitered and secured at their ends by glueing. In the embodiment of FIGS. 8 and 10 the ends of the sections are mitered and are reinforced by right-angle connecting pins 24a that extend into and are glued within corresponding bores contained in the cavity filler material.

As shown in FIGS. 11 and 12, additional dovetail connecting pieces may be utilized for strengthening the corner joints. Thus, as shown in FIG. 11 the unitary extruded plastic section is notched, the dovetail connecting pieces 66 are inserted into the respective cavities and the side sections are then bent relative to the intermediate section to effect interlocking of the dovetail projections 67 of the various connector pieces 66. The connector pieces are preferably formed as solid members (generally of wood or plastic). The interlocking dovetail projections 67 of the various pieces 66 are preferably glued to each other to strengthen the corner joint. As shown in FIG. 12, the dovetail connecting pieces need be mounted in only one cavity of each of the sections if desired. In

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the embodiment of FIG. 11, dovetail connecting pieces are mounted in both cavities of each section.

In accordance with another feature of the invention the front wall of the frame may consist of a section having the same cross-sectional configuration as the side and rear sections. As shown in FIG. 13 the groove 3 contained in the outer wall is utilized for the connection of a handle having a forwardly extending, downwardly bent finger grip portion 24 and a rearward channel portion 25 adapted to be secured within the groove 3 and terminating at its lower forward end in a downwardly bent flange 26 that abuts the foremost surface of the front section. An ornamental cover plate may be provided that covers the upper portion of the handle 24 and extends into and fills a groove 27 defined between a shoulder on the handle and the foremost surface of the front section.

In the alternative, the securing portion 25 of the handle means may be in the form of a solid or hollow rectangular body the front wall portion of which is flush with the forward surface of the front section of the frame. The handle portion 24 extends laterally either entirely across the front section, or across only the central portion thereof.

In the embodiment of FIG. 14, the extruded plastic section 70 contains the guide groove 71 adjacent its upper end and the bottom receiving groove 72 adjacent its lower end. In the embodiment of FIG. 15 both the guide and bottom receiving grooves 81 and 82 are contained in the lower portion of the extruded plastic section 80.

Referring now to FIG. 16, the extruded plastic section 90 has secured to its lower end (by means of glueing, serrated pins 62, or the like) an extruded plastic element 61 having generally a T-shaped profile that defines on one side the guide groove 3. On the other side, flanges 63 and 64 define a channel 65 for supporting the edge of the drawer bottom member 40. The cavity of the hollow section is filled with a suitable filler material.

While in accordance with the provisions of the patent statutes the best forms and embodiments of the invention have been illustrated and described, it will be apparent to those skilled in the art that modifications may be made in the apparatus described without deviating from the invention defined in the following claims.

What is claimed is:

1. A commercial cabinet making construction such as a drawer or the like including two or more substantially flat panels having interjointed ends forming a sharp corner, the panels having mutually flush edge surfaces and flat side surfaces having materially greater transverse widths than do these edge surfaces; wherein the improvement comprises said panels being formed by a single hollow plastic extrusion having interspaced edge walls externally forming said panels' edge surfaces and interspaced side walls externally forming said panels' side surfaces, and said interjointed ends forming said sharp corners being provided by having one or more miter notches formed through one of the extrusion's side walls and its edge walls, the other of this extrusion's side walls being uncut and continuous and bent sharply with the notched side wall and edge walls in mutually abutting relationship and interconnected, one of said extrusion's side walls forming at least one channel extending inwardly towards the other of the extrusion's side walls, and which extrusion includes a web integral with its said side walls and extending from one of these walls to the other in substantial registration with said channel.

2. The product of claim 1 in which interengaging joint reinforcement elements are inserted inside of the hollow extrusion and extend into said miter notches, said elements swingingly interengaging upon bending of said uncut and continuous side wall of the extrusion.

3. A commercial cabinet making product in the form of a flat shape having edge surfaces and side surfaces having materially greater transverse widths than do these edge surfaces, for making a construction such as a drawer

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or the like including two or more substantially flat panels having interjointed ends forming a sharp corner, the panels having mutually flush edge surfaces and flat side surfaces having materially greater transverse widths than do these side surfaces; wherein the improvement comprises said shape being formed by a single hollow plastic extrusion having interspaced edge walls externally forming the shape's said edge surfaces and interspaced side walls externally forming the shape's said side surfaces and with one or more miter notches formed through one of the extrusion's side walls and its edge walls, the other of this extrusion's side walls being uncut and continuous and sharply bendable to form said sharp corner by abutting the extrusion's notched side and edge walls, and interengaging joint reinforcement elements inside of the hollow extrusion and extending into said miter notches, said elements swingingly interengaging upon bending of said uncut and continuous side wall of the extrusion.

4. The product of claim 3 in which at least one of said extrusion's side walls forms at least one channel extending inwardly and said extrusion includes a web integral with its side walls and extending from one of these walls to the other in substantial registration with said channel.

5. A plastic frame of box-like configuration adapted for use in constructing an article of furniture, such as a drawer, comprising at least three unitary horizontal extruded-plastic sections each containing a longitudinally-extending cavity of generally rectangular cross-section, a vertical wall portion of each section including means for supporting another section of said frame, said sections having the same cross-sectional profile and being arranged to define the rear and side portions of said frame, and further including means connecting the ends of said rear section with the corresponding ends of said side sections comprising pairs of cooperating dovetail connector elements mounted at one end in the cavities in said side and rear sections, respectively.

6. A plastic frame of box-like configuration adapted for use in constructing an article of furniture, such as a drawer, comprising at least three unitary horizontal extruded-plastic sections each containing a longitudinally-extending cavity of generally rectangular cross-section, a vertical wall portion of each section including means for supporting another section of said frame, said sections having the same cross-sectional profile and being arranged to define the rear and side portions of said frame, and further wherein said frame includes a fourth section arranged to define a front member the outer surface of which contains a horizontal guide groove, and further including handle means mounted in said guide groove, said handle means including a forwardly extending downwardly bent finger grip portion, and a rearward mounting portion secured in said groove.

7. A plastic frame of box-like configuration adapted for use in constructing an article of furniture, such as a drawer, comprising at least three unitary horizontal extruded-plastic sections each containing a longitudinally-extending cavity of generally rectangular cross-section, a vertical wall portion of each section including means for supporting another section of said frame, said sections having the same cross-sectional profile and being arranged to define the rear and side portions of said frame, and further including filler means mounted in the cavities in said three sections for wholly or partly filling same, and means connecting the ends of the rear section with the ends of said side sections comprising right-angled corner pins secured at each end in corresponding openings contained in the filler means of said rear and side sections.

8. A drawer comprising a pair of hollow side members, a hollow back member, and a hollow front member; each of said members having a uniform transverse cross-section and having ends formed to abut against complementary ends of adjacent members and to provide right-angle corners for the drawer, means for holding the abutting ends

of said members in engagement with each other at said corners, said cross-section of said members including an inner wall portion, an outer wall portion, a top portion and a bottom portion, said top and bottom portions joining the respective inner and outer wall portions adjacent the upper and lower edges of the wall portions, an upper web joining said wall portions beneath said top portion and forming an upper space within said members, a lower web joining said wall portions above said bottom portion and forming a lower space within said member; a recess in one of said wall portions and employing a part of the upper surface of said lower web as the lower face of said recess, and a member having its edge engaged within said recess and contacting the confronting surfaces of said recess.

9. A drawer as described in claim 8 wherein said upper and lower spaces have substantially identical cross-sections.

10. A drawer comprising a pair of hollow side members, a hollow back member, and a hollow front member, each of said members having a uniform transverse cross-section and having ends formed to abut against complementary ends of adjacent members and to provide right-angle corners for the drawer, a brace for holding the abutting ends of said members securely in engagement with each other and located in at least one of said corners, said cross-section of said members including an inner wall portion, an outer wall portion, a top portion and a bottom portion, said top and bottom portions joining the respective inner and outer wall portions adjacent the upper and lower edges of the wall portions, an upper web joining said wall portions beneath said top portion and forming an upper space within said members, a lower web joining said wall portions above said bottom portion and forming a lower space within said members; a recess in one of said wall portions and employing a part of the upper surface of said lower web as the lower face of said recess, and a member having its edge engaged within said recess and contacting the confronting surfaces of said recess; said brace being of right-angle form and having legs extending normal to each other and adapted for

retention in either of the corresponding upper spaces or the corresponding lower spaces of abutting members.

11. A drawer comprising a pair of hollow side members, a hollow back member, and a hollow front member, each of said members having a uniform transverse cross-section and having ends formed to abut against complementary ends of adjacent members and to provide right-angle corners for the drawer, a brace for holding the abutting ends of said members securely in engagement with each other and located in at least one of said corners, said cross-section of said members including an inner wall portion, an outer wall portion, a top portion and a bottom portion, said top and bottom portions joining the respective inner and outer wall portions adjacent the upper and lower edges of the wall portions, an upper web joining said wall portions beneath said top portion and forming an upper space within said members, a lower web joining said wall portions above said bottom portion and forming a lower space within said members; a recess in said inner wall portion facing the interior of said drawer, and a floor member having its peripheral edge engaged within said recess, said brace being of right-angle form and having legs extending normal to each other and adapted for retention in either of the corresponding upper spaces or the corresponding lower spaces of abutting members.

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U.S. Cl. X.R.

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