ADJUSTABLE STRUCTURES THAT FRAME OR SUPPORT PICTURES OR PANELS OF VARIOUS DIMENSIONS


Filed: Sept. 7, 1972

Appl. No.: 287,058

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ABSTRACT

These structures have been designed for the purpose of easily framing or supporting pictures or panels, such as paintings, posters, prints, canvas, cardboard, photos, signs, etc.

The primary goal in the design has been to embody several desirable features and advantages in a single frame, thereby producing the "optimum" design. One of these features and advantages is the ability to frame panels which vary in all three dimensions—length, width, and thickness. This eliminates the need for the retailers to maintain a large inventory of section sizes, and eliminates the need for the customer to measure the exact dimensions of his panel. Other characteristics include the relative ease of assembly, low cost and attractive appearance.

This is accomplished by providing 4 sides whose lengths may be adjusted by breaking, sawing, cutting, or otherwise severing, and by providing 4 corners which cover up any mismatch or ragged edges where the sides meet caused by the severing process. The corner pieces are also designed to provide structural integrity to the frame.

1 Claim, 6 Drawing Figures
ADJUSTABLE STRUCTURES THAT FRAME OR SUPPORT PICTURES OR PANELS OF VARIOUS DIMENSIONS

SUMMARY OF INVENTION

One of the principal objects of this invention is to provide side structures for securing the edges of the panel that are inherently adjustable for various thickness panels, without any additional pieces or mechanical adjustment. This is accomplished by means of flexible "leaves" which are part of the side structures, that flex to accommodate panels of various thicknesses.

Another object of this invention is that these side structures may be easily severed at 45° angles in order to accommodate various length and width combinations of panels. This is accomplished by perforations, cuts, slits, or other means, (at 45° angles and spaced at several convenient intervals) to act as mitre guides for breaking, sawing, cutting, or otherwise severing the material.

Corner structures are provided to serve a two-fold purpose. The first is to provide structural support, rigidity, and torque resistance to the frame, especially in cases where the panel to be framed is particularly large and/or thin, with no inherent rigidity of its own. The preferred method of accomplishing this is by means of male protrusions in the corners which mate with complementary female indentations in the sides with a press fit. Of course, any variation in the mating method which uses frictional means or press fit methods may also be used. The second purpose of the corner structures is to cover and conceal any mismatch where the side structures meet, due to the inaccurate severing of the side structures.

An added feature exists in the design of the corner structures. If it is desired that the frame be assembled so that the corner structures are not visible, then that portion of the corner structure which would be visible, may be broken or cut off and discarded, leaving only that portion of the corner structure necessary for support.

These features will become apparent in the detailed description and the figures.

DRAWINGS

FIG. 1 is an isometric view of the visible portion of the assembled framing structure and panel with one corner structure removed.

FIG. 2 is an isometric view of one corner portion of the rear of an assembled framing structure and panel.

FIG. 3 is a plane view of a section taken along line 3—3 of FIG. 1 showing the cross section of one of the sides. FIG. 3' is identical to FIG. 3 except that it illustrates the flexing of the leaf structure because of a thicker panel.

FIG. 3a is an isometric view of FIG. 3.

FIG. 4 is a plane view of the rear of side structure.

DESCRIPTION OF THE INVENTION

The preferred form of the structure is shown, however various modifications may be made within the scope of the claims here to appended, without departing from the overall concept of the invention.

The preferred material for this structure is plastic, but any material or combination of materials having suitable flexing, breaking, and appearance characteristics may be used. The material to be used would also be determined by the ease of assembly, cost of manufacturing, and aesthetic appearance.

The invention consists of four corner structures 5 and four side structures 6. Although only the preferred design is shown, any variation of these structures having aesthetic appeal and functional form, may be used. The total assembled structure and panel 7 are shown in FIG. 1.

The side structures secure the panel 7 by means of a leaf 8, as shown in FIG. 3 and FIG. 3a. Although the form shown in the drawing uses only one leaf, several leaves may be used. When thicker panels 7' are to be framed or supported, as shown in FIG. 3', the leaf concept assures that the portion of the frame which is visible after assembly will not flex or distort.

The side structures are cut, sawed, broken by hand, or otherwise severed to the proper length, by means of cuts or perforations 9 or other means, as shown in FIG. 4. These cuts or perforations are to be part of the manufacturing process, and are to be spaced at regular intervals at an angle of 45° to enable proper mating of the side structures at the corners of the total structure. If the side structures are severed in such a manner that the edges are ragged, the corner structures 5 will serve to conceal the roughness or mismatch 10, as shown in FIG. 1.

The corner structures provide structural rigidity to the total assembly by means of protrusions 12 that mate with a press fit with indentations or grooves 13 as shown in FIG. 1 and FIG. 2. This mating is preferably on the portion of the total structure that will not be seen, as shown in FIG. 2, but this is not mandatory, and other shapes and arrangements of mating surfaces may be used.

If the cuts or perforations are used as a mitre guide for cutting, and the sides meet perfectly, then the visible portion of the corner structures can be removed and discarded by cutting along line 11 in FIG. 2. The remaining portion of the corner structure will be used only for structural rigidity.

As shown in FIG. 3, 3' and 3a, each of the side structures 6 comprises an elongated member of generally tubular cross section having a base portion adapted to bear against the wall or other support surface on which the frame is mounted. The grooves 13 are disposed in the base portion to confront the wall or other support surface. Along the external edge of the base portion, an exposed sidewall extends perpendicularly therefrom for a predetermined distance and terminates in an inverted flange providing a flat inwardly-directed surface adapted to engage the outer surface of the panel 7. The outwardly-directed surface of the flange is disposed at an angle to the exposed surface of the sidewall to provide a decorative effect. The leaf portion 8 extends from the base portion substantially parallel to the sidewall from the interior edge of the base portion. As shown, the leaf portion 8 has an arcuate form terminating in a free end portion which overlaps and is biased toward the outwardly-directed surface of the flange to resiliently clamp the peripheral margin of the panel member 7 or 7' between the flange and the free end portion. As shown, the elongated member 6 is preferably molded integrally of a material having a substantial thickness in the sidewall and flange and a thinness in the resilient leaf portion 8. In the frame illustrated in FIGS. 1 and 2, the elongated side members 6 are
straight and are disposed at an angle to one another to form a polygonal frame, in the present instance a rectangular frame having right angles at each corner. The ends of the members 6 are mitered at a 45° angle as set forth above. The corner pieces 11 are arranged so that the protrusions 12 thereof are formed in legs which are disposed at right angles at one another to form the 90° angles.

We claim:

1. A structure for framing or supporting any one panel member of a plurality of decorating panels of various thicknesses on a surface comprising a polygonal frame adapted to surround said panel to support the edges thereof, said frame comprising a plurality of straight elongated members of generally tubular cross section having a base portion adapted to bear against the supporting surface, an exposed sidewall rigidly mounted on said base portion and extending outwardly therefrom a predetermined distance, said sidewall terminating in an intumescence flange rigidly mounted at the outer extremity thereof and providing a flat inwardly-directed surface adapted to engage and support the outer surface of said decorative panel, said elongated member including a resilient flexible leaf portion extending from said base portion substantially parallel to the exposed wall and continuing arcuately outward from said supporting surface and toward said exposed wall and terminating in a free end portion generally parallel to said base portion and underlying and biased toward the inwardly-directed surface of said flange to a substantial degree to resiliently clamp the peripheral margin of said panel member between said flange and said free end portion, said straight elongated members being disposed at an angle to one another, said base portion of each member is provided with a pair of parallel grooves extending longitudinally thereof to confront the supporting surface, the ends of said members being mitered at a 45° angle and interconnected by corner pieces having a pair of protrusions disposed at right angles to each other and mating with and engaging in at least one of said grooves to interlock and provide structural rigidity to the assembled structure.

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