

April 18, 1967

C. E. PLASTOW

3,314,551

DISPLAY DEVICE

Filed March 11, 1965

3 Sheets-Sheet 1

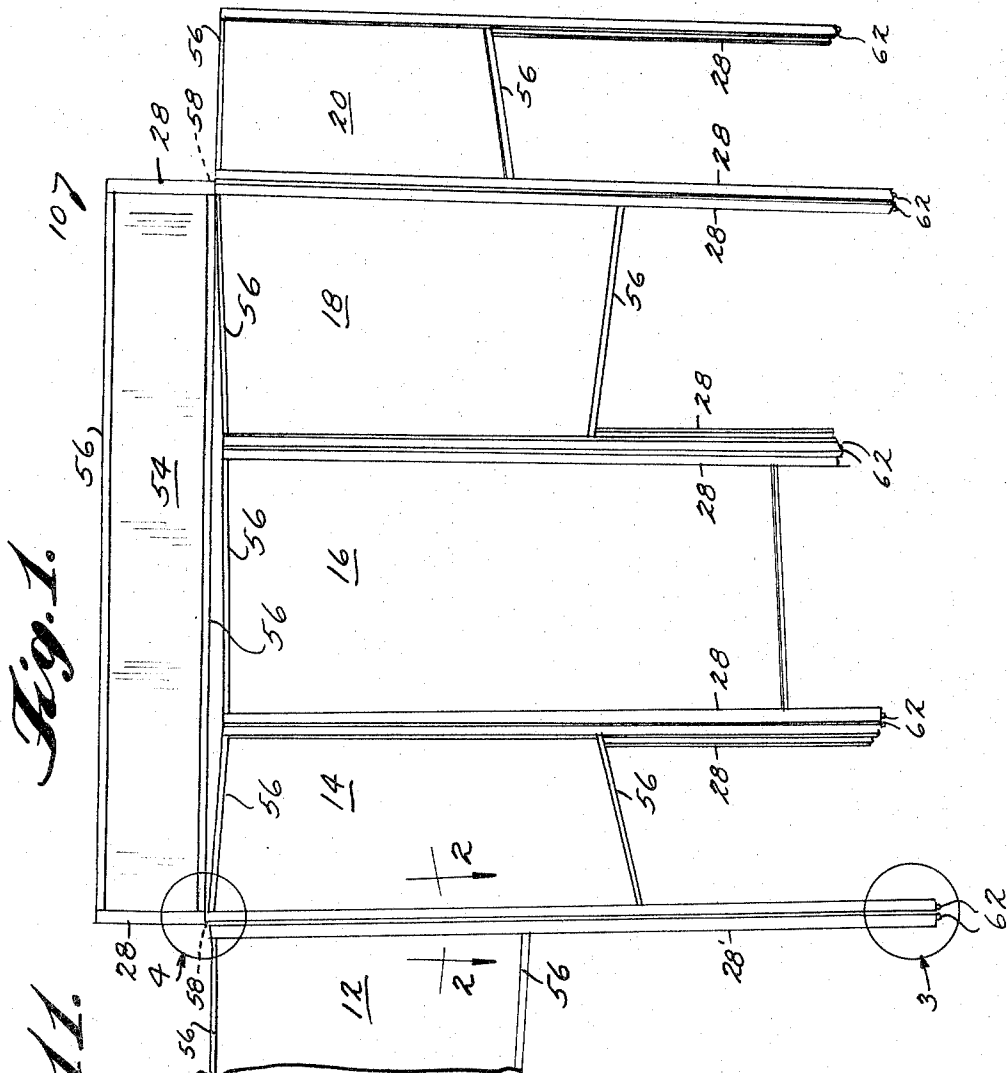


Fig. 1.

Fig. 11.

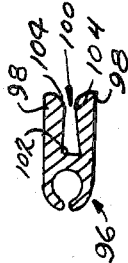
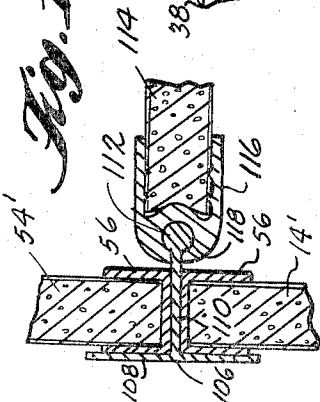


Fig. 10.

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Fig. 2.

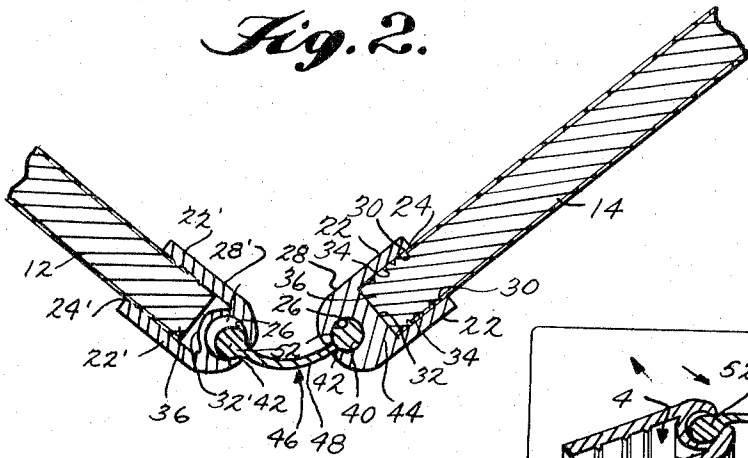


Fig. 3.

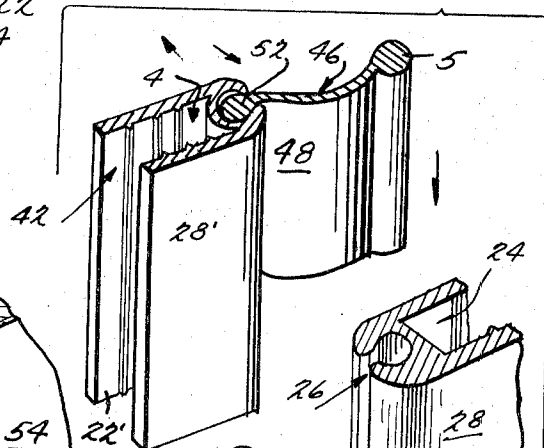


Fig. 4.

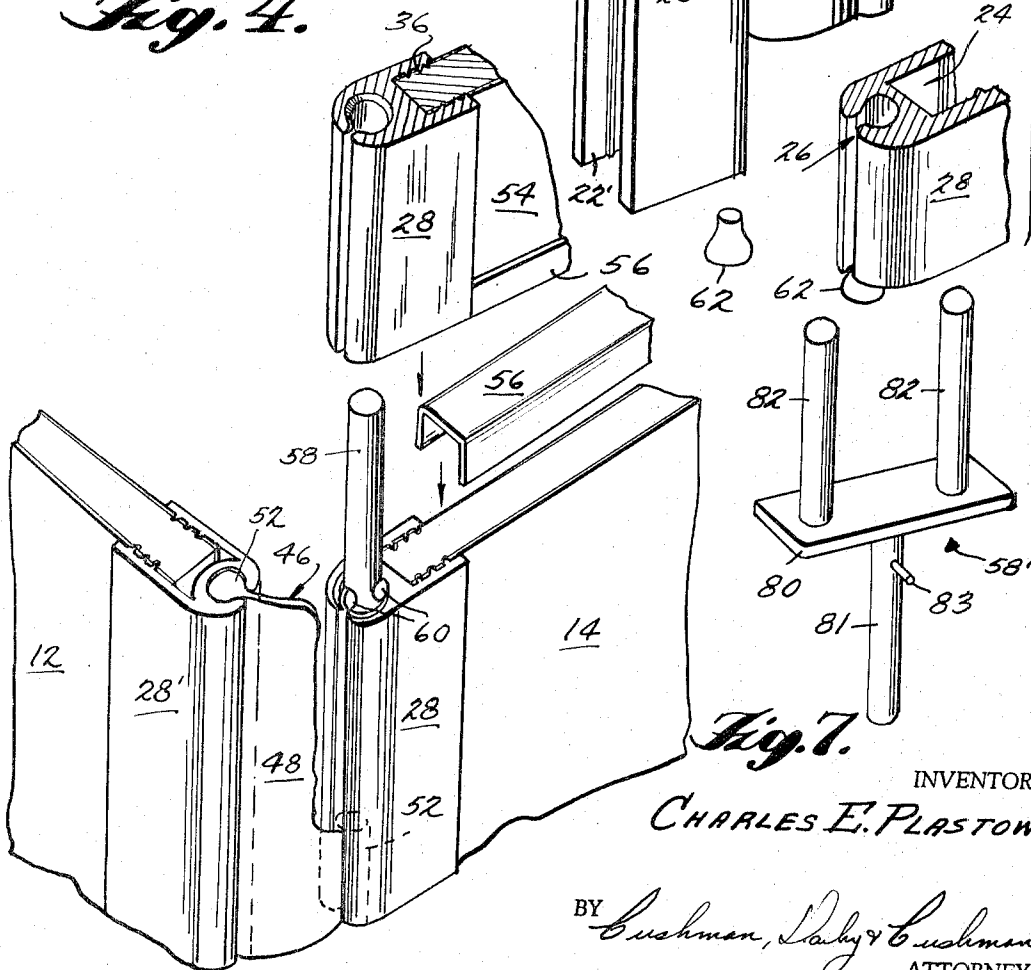


Fig. 7.

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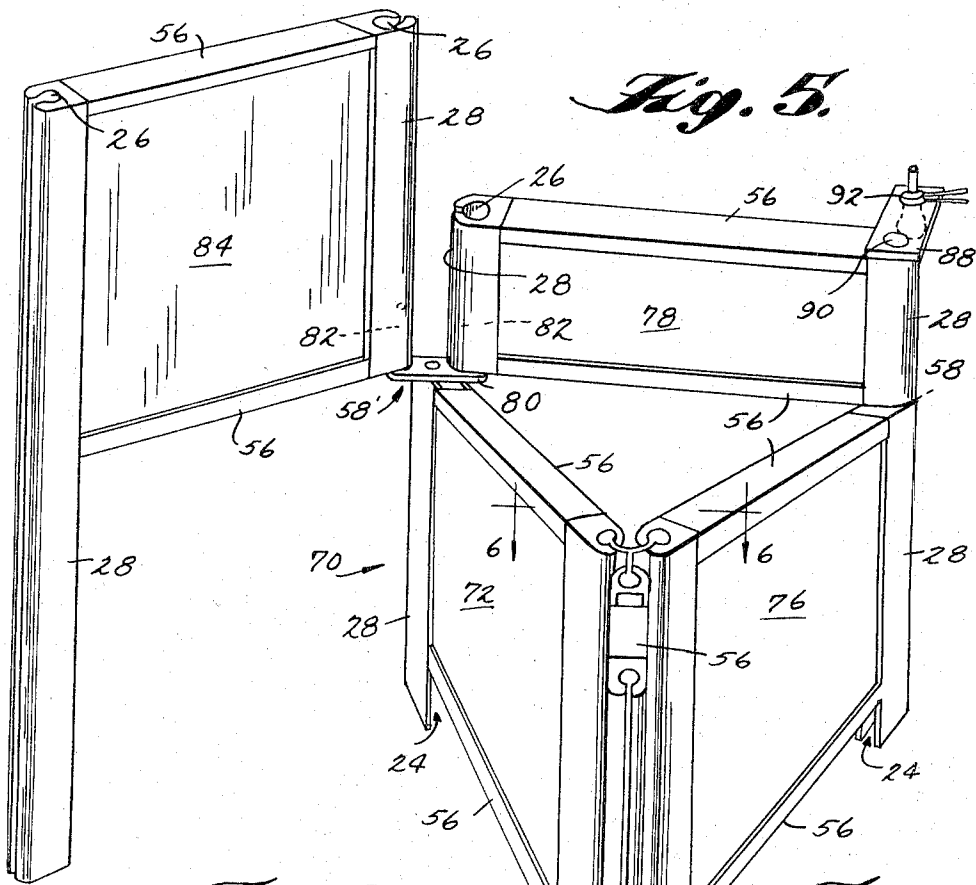
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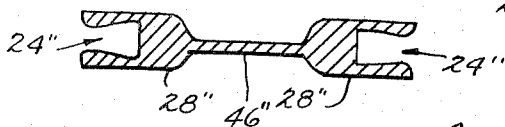
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3 Sheets-Sheet 3

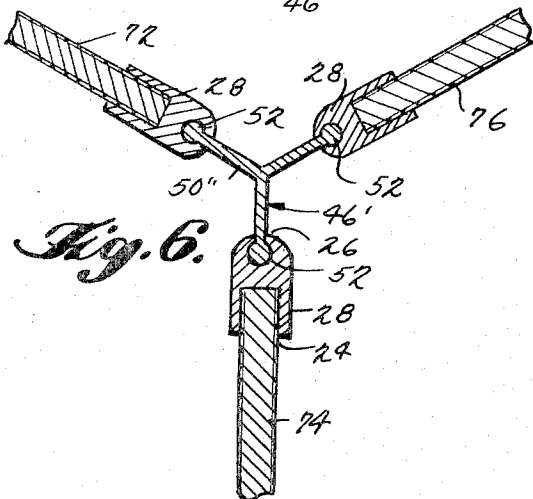
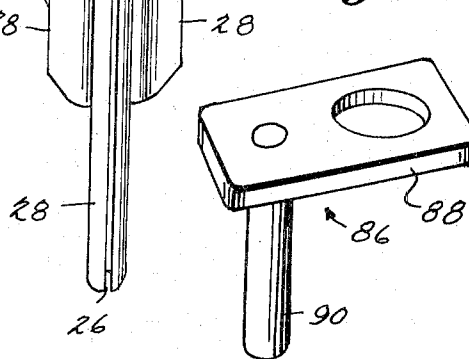


*Fig. 5.*

*Fig. 9.*



*Fig. 8.*



*Fig. 6.*

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DISPLAY DEVICE

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15 Claims. (Cl. 211-178)

The present invention relates to displays and more particularly to self-supporting multi-panel portable modular displays.

The practice of providing public information on labyrinth-like displays or kiosk-like bulletin boards has increased significantly as various governmental bodies and commercial enterprises have seen more of a need to place before the public in an attractive setting pictorial and other material illustrating the accomplishments and goals of the organization concerned. Such displays are also often used to spur public action such as to prevent waste and accidents and to display cultural media such as paintings, photographs and student's art work, themes and other work assignments having noteworthy merit.

It is the primary object of the present invention to provide displays of the type described which are flexible insofar as the modules which comprise the displays can be associated in various numbers and orientations to tailor the display to the volume and character of the materials to be displayed.

Another object of the invention is to provide such displays which are easily portable by virtue of the components thereof being rapidly disassociable.

A more specific object of the invention is the provision of a display comprising a plurality of panels framed at their lateral borders by channel members which also constitute the legs and hinge plates of the display.

Yet another object of the invention is the provision of a display of the type described which includes means for dissociably securing one or more headliners suprajacent the main display panels of the display and means for mounting an illuminating device adjacent the display panels.

A further object of the invention is the provision in displays of the type described, of flexible hinges received between the combination lateral borders and legs of adjacent display panels to provide for variable angularity between adjacent display panels.

These and further objects of the invention as well as its principles and scope of applicability will become more clearly apparent during the course of the following detailed explanation relating to the illustrative embodiments of the invention shown in the accompanying drawings.

In the drawings:

FIGURE 1 is a perspective view of an exemplary display embodying the principles of the present invention;

FIGURE 2 is an enlarged sectional view taken along line 2-2 of FIGURE 1;

FIGURE 3 is an enlarged fragmentary exploded perspective view of the region within the phantom line circle numbered 3 in FIGURE 1;

FIGURE 4 is an enlarged fragmentary exploded perspective view of the region within the phantom line circle numbered 4 in FIGURE 1;

FIGURE 5 is a perspective view of a second exemplary display embodying the principles of the present invention;

FIGURE 6 is an enlarged fragmentary sectional view taken substantially along line 6-6 of FIGURE 5;

FIGURE 7 is an enlarged perspective view of the double banner support pin assembly shown in FIGURE 5;

FIGURE 8 is an enlarged perspective view of the lamp support pin assembly shown in FIGURE 5;

FIGURE 9 is a transverse cross-sectional view of a modified hinge.

FIGURE 10 is a transverse cross-sectional view of a modified leg; and

FIGURE 11 is a vertical sectional view of a display incorporating a shelf assembly.

In the display 10 shown in FIGURES 1 through 4, a plurality of display panels 12, 14, 16, 18 and 20 are each bordered by extruded metal members 28 which also comprise the legs of the display.

The panels 12 through 20 are preferably composed of light, durable material to which varied display material can be easily secured such as by stapling, thumb-tacking, taping, gluing or stenciling. A preferred material comprises a laminated board having a foam plastic core between cover sheets of paper, cloth, metal foil or unfoamed plastic sheet. The core material may comprise polystyrene, polyurethane, regenerated cellulose or any slightly resilient substantially rigid foamed plastic material. Alternately, the panels 12-20 may comprise corrugated paperboard, cardboard, or the like wherein the exterior surfaces of the panels may be coated with a plastic material such as polymerized vinyl resin or paint to improve the durability and appearance of the panels. Other panel materials may include boards composed of particulate or granular cellulosic material such as sawdust or cork particles together with a suitable binder which may include a pigment including boards which are relatively soft, such as "Homasote" and relatively hard such as "Masonite."

The legs as shown best in FIGURES 2 and 3 preferably comprise extrusions of a light durable metal such as aluminum, magnesium or the like or of extruded plastic material and in the transverse cross-section of FIGURE 2 are seen to have a pair of oppositely laterally outwardly opening, longitudinally extending channels 24 and 26. Each channel 24 is defined between a pair of generally planar, parallel, laterally, outwardly extending legs 22 having a distance between their facing surfaces 30 equal to slightly less than the unconfined thickness of the panel to be received therein. The laterally inner extent of the channel 24 is shown comprised by a wall 32 joining the laterally inner extent of the legs 28. In the preferred form of the invention, a plurality of laterally spaced, longitudinally extending ribs 34 are formed on the facing surfaces 30 of the legs 28 to locally restrict the width of the channel 24 and so grip the panel 12-20 received therein.

The panels 12-20 are received in the channels 24 by determining the desired height of the particular panel from the floor and then forcing each lateral border region 36 of a panel 12-20 laterally into the channel 24 of a leg 28, or, alternatively sliding each lateral border region 36 longitudinally into a channel 24.

Once in the channel 24, the ribs 34 prevent the panel 12-20 concerned from slipping laterally therefrom or moving longitudinally with respect thereto on its own accord. Preferably the ribs 34 are employed only on channels 24 intended to receive relatively soft, resilient material such as "Homasote."

As seen in FIGURE 1, each panel 12-20 is located so that its upper edge 38 is even with the upper end of each leg 28. Alternatively the panels could be positioned intermediate the upper and lower extent of the legs, flush with the lower extent of the legs, coextensive with the legs or each in different relative positions with respect to the legs to create a stepped or pyramidal effect.

The channel 26 of each leg 28 is shown having a larger internal cross-section at 40 than mouth width at 42, the particular portion 40 being shown as generally circular in cross-section although this particular shape is not considered essential. It should be apparent that the legs 28 could be formed from sheet metal, for instance, bent into a generally U-shaped cross-section to form the channels 24 then deformed inwardly at the lower extent of the

U to form the channels 26. To save material in an extruded shape, such as that shown, the extrusion die could be configured so as to eliminate the material in the regions 44 of the legs 28 as exemplified by the leg 28' of FIGURES 1-4. The mouth 42 of the channel 24 or 24' can be convergent when unconfined so as to preclude a resilient grip on the panel received therein as shown best in FIGURE 10.

As best seen in FIGURES 2 and 3 the hinge 46 of the display comprises an elongated flexible strip 48 of thermoplastic material or the like having a relatively thin central region and enlarged, longitudinally extending beads 52 at each lateral edge thereof. The strip 48 is preferably extruded from a flexible thermoplastic material such as polyethylene, polypropylene, polyoxymethylene, nylon, polyethylene, terphthalate, or a flexible rubbery material such as polyisobutylene, acrylonitrile-butadiene-styrene copolymers and the like.

The hinge 46 is removably associated with the legs 28 by sliding the two beads 52 of a hinge 46 into the channels 26 of adjacent legs 28. Preferably the hinges 46 are cut to lengths approximating those of the legs 28 with which they are to be associated in order to give uniform pivotability to the adjacent leg supported panels.

The display 10 of FIGURES 1 through 4 is shown completed by a headliner panel 54. This panel has a leg channel 28 received on each lateral edge region thereof and extending from the top to the bottom of the panel 54. Additionally, upper and lower borders in the form of squared off U-shaped channels 56 are shown received on the upper and lower edge regions of the panel 54. The channels 56, alternatively to being composed of extruded metal sections, may conveniently comprise cast or extruded thermoplastic material such as transparent polyethylene terephthalate having anodized metal foil embedded therein. The channels 56 serve with the legs 28 to completely frame the panel 54 and thus conceal the raw edges of the panel 54 from view. It should be realized that such edge finishing material could also be received on the upper and lower edge regions of the panels 12-20.

In the display 10, panel 16 is a central panel from the lateral edges of which the panels 14 and 16 extend somewhat forwardly. The panels 12 and 20 extend somewhat backwardly from the laterally outer side edges of the panels 14 and 16 respectively. This "zig-zag" arrangement causes the display 10 to be self-sustained on the legs 28 without need for external braces.

The headliner-panel 54 is shown (FIGURE 4) joined to the remainder of the display 10 by two centrally bifurcated dowels 58. One dowel is slidably received in the left channel 26 of the panel 14 leg 28 at the upper end thereof and in the left channel 26 of the panel 54 leg 28 at the lower end thereof. The other dowel 58 is slidably received in the right channel 26 of the panel 18 leg 28 at the upper end thereof and in the right channel 26 of the panel 54 leg 28 at the lower end thereof. The enlargement or bifurcation 60 centrally of each dowel 58 prevents it from slipping beyond reach in the channel 26. The channels 26 are preferably counterbored or countersunk adjacent their longitudinal ends so that the enlargement or bifurcation 60 is received in this enlarged region, thus hiding the dowels from view. Alternatively, the legs 28 may be notched to receive the bifurcations 60. When dowels 58 are to be received in channels 26 also containing hinges 46, the hinges are preferably terminated somewhat short of the upper extent of the channels 26 to allow reception of the dowels therein.

Because the panel 54 is of less lateral extent than the combined lateral extent of the panels 14, 16 and 18, these panels when associated as shown form a trapezoidal structure as seen in plan, thus increasing the stability of the display 10. In the embodiment shown, the panels 12 and 20 may be freely rotated about the hinges 46.

To prevent damage to floors, resilient pegs or feet 62

may be received in the lower ends of the channels 26 of the legs of the panels 12 through 20 as best seen in FIGURE 3.

Display material of the type described can be applied or affixed to the front as well as rear surfaces of the panels 12 through 20 and 54. The display 10 is also particularly well adapted for rapid knock-down and set up. To disassemble the display 10 so that it can be shipped and set up in another location, the panel 54 is first lifted clear of the dowels 58, the dowels 58 collected, and the hinges 46 pulled longitudinally from the channels 26. The individual panels 12-20 and 54, feet 28 still attached, can then be stacked flat and shipped. Reassembly is accomplished using the reverse of the procedure just described.

The display 70 shown in FIGURES 5 and 6 illustrates the scope of applicability of the present invention and the versatility of the displays providable, utilizing the principles thereof. Because the display 70 is relatively small compared to the display 10, the legs 28 channels 56 and hinge 46' appear proportionately larger with respect to the display panels thereof.

The display 70 is shown comprising 3 panels 72, 74, 76 similar in composition to the panels 12-20 and 54 of the display 10. A leg 28 is received on each lateral edge region of the panels 72-76. One leg 28 of each panel 72-76 is positioned centrally of the display and a hinge 46' similar to the hinge 46 of FIGURES 1-4 but for having three beads 52 at the radially outer extent of the triangularly radiating legs of the central strip 50'. Each bead 52 is received in a channel 26 of the adjacent legs 28 of the panels 72-76 so that the panels 72, 74, 76 form a triangularly radiating array.

Clearly, the hinge 46 or 46' of the displays 10 or 70 could be formed to have 4 or 5 or more legs and beads 52 to facilitate the accommodation of a plurality of panels about a common axis.

The upper and lower edge regions of the panels 72, 74 and 76 are shown being finished by receiving squared-off U-shaped channels 56. A headliner panel 78, similar to the headliner panel 54 is shown supported by dowels 58 and 58' on the upper ends of the outer legs 28 of the panels 74 and 72 respectively. Legs 28 and decorative U-shaped channels 56 are shown received on the headliner 78.

The dowel assembly 58' rather than being centrally bifurcated is enlarged centrally at 80 and has two laterally spaced pins 82 projecting upwardly therefrom one pin 82 is shown received in the channel 26 of the leg 28 of the panel 78. The other pin 82 is shown received in the channel 26 of one leg 28 of a side panel 84. The opposite lateral edge of the side panel 84 receives a leg 28 which extends downwardly beyond the lower extent of the panel 84 to be even with the lower extent of the legs 28 of the panels 72, 74 and 76. Accordingly, the panel 84 is pivotable about the pin 82 on which it is mounted.

The dowel or banner support pin assembly 58' as shown in FIGURE 7 also includes a lateral projection 83 on the downwardly projecting pin 81. The projection 83 extends laterally outwardly of the channel 26 mouth 42 to prevent rotation of the assembly 58' with respect to the leg 28 of the panel 72 on which it is mounted when the panel 84 and its outer leg 28 is rotated.

The display 70 is shown completed by a lamp bracket 86 shown also in FIGURE 8. The lamp bracket 86 includes a platform 88 having a dowel 90 projecting downwardly therefrom and receivable in the upper end of any leg channel 26. The platform 88 is shown apertured to receive a lamp socket and lamp assembly 92 for illumination of the display 70 or portions thereof.

In FIGURE 9, an alternative hinge and leg assembly 94 is shown in transverse cross-section. It is similar to in purpose to two legs 28 and a hinge 46 but formed for instance by extrusion, as a unit from materials such as the more rigid of those discussed in regard to hinge 46. Ele-

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ments of the assembly 94 comparable with those of the hinge 46 and the legs 28 are numerated similarly as 24', 28" and 46'.

A modified leg 96 is shown in transverse cross-section in FIGURE 10. The leg 96 is primarily adapted to grip and support panels of hard, thin material such as "Masonite," between the opposed flanges 98. Although the channel 100 defined between the flanges 98 is substantially as wide at its base 102 as the hard board to be gripped, the facing surfaces of the flanges 98 are somewhat bulbous at 104 near the channel's mouth so that primarily only the outer region of the flanges 98 must flex away from one another in order to accommodate a hard board panel in the channel 100. This modification was made upon finding that when hard board is to be accommodated by a leg, such as the legs 28 or 28' where the channel width is preferably slightly less than the thickness of the material to be accommodated the force of the hard board against the flanges near their base would often be sufficient to deform the flanges away from one another so that the leg employed could not be dependably reused. However, where the channel is made narrower than the thickness of the board to be supported only in the region thereof near the channel mouth such permanent deformation has been found not to occur.

In FIGURE 11, a hinge assembly is shown mounted between a lower panel 14' and an upper panel 54' which are identical to the panels 14 and 54 of FIGURE 1 and identically mounted with respect to one another by legs 28 and dowels 58 (not shown) but rotated so that both panels are in the same plane. A hinge 106 having a web of generally T-shaped transverse cross-section is received between the panels 14' and 54' so that its base 108 abuts the back of the panels 14 and 54', the horizontal portion 110 extending forwardly between the panels 14 and 54' and terminating in front thereof in a horizontally extending bead 112. Preferably the hinge is made of material similar in composition to the hinges 46, 46'. A shelf 114 of board material similar to that of the panels 12-20 including either soft or hard board material is shown receiving a channel member 116 identical structurally to the leg of FIGURE 2, 28' at its margin. The channel member 116 undercut channel 118 receives the hinge member enlarged bead 112 to support the shelf 114. To stabilize the shelf 114 against tipping down it may be supported by any means such as a depending foot (not shown) or a similar hinge and channel arrangement secured to another floor supported panel such as 14' positioned at the outer end of the shelf 114, along one or both sides thereof at right angles to the panels 14', 54' shown, or the like. It is of primary importance to notice that the structure just disclosed provides for the accommodation of a shelf in a display of the type disclosed, without the necessity of the employment of screws or any other similar fasteners which would permanently deface the display modules.

It should now be clearly apparent that the embodiments of the invention discussed fully and efficiently accomplish the objects of the invention as set forth at the outset of this specification. Inasmuch as the embodiments shown and described can be modified somewhat without departing from the principles of the invention as they have been elucidated herein, the invention should be considered as encompassing all such modifications as are within the spirit and scope of the following claims.

I claim:

1. A display comprising: a first panel of sheet material, a second panel of sheet material; first means defining a channel received on one lateral edge region of the first panel; second means defining a channel received on one lateral edge region of the second panel; the first and second channel defining means extending substantially below the lower extent of said first and second panels and comprising legs for the display; and a flexible web extending between the channel means to secure said channel means

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to one another and provide pivotability between said panels.

2. A display device as set forth in claim 1 wherein said first and second channel defining means each comprise a pair of generally parallel sidewalls, a bottom wall joining said sidewalls and means defining an undercut channel extending along the opposite side of said bottom wall from said sidewalls and opening outwardly of said bottom wall; said web including a relatively thin strip, and means defining an enlarged longitudinally extending rib at each lateral edge of said strip, the beads being slidably received in the undercut channels of said first and second channel defining means.

3. A display as set forth in claim 2 additionally comprising a resilient plug received in at least one of said undercut channels and extending longitudinally downwardly beyond the undercut channel to provide a foot for said display.

4. A display as set forth in claim 2 further comprising a third panel of sheet material; means defining a channel received on one lateral edge region of the third panel, said channel defining means comprising a pair of generally parallel sidewalls, a bottom wall joining said sidewalls and means defining an undercut channel extending along the opposite side of said bottom wall from said sidewalls and opening outwardly of said bottom wall; a dowel received in the undercut channel of said first channel defining means adjacent the upper end thereof and received in the undercut channel of the channel defining means on said third panel to mount said third panel and provide pivotability between said first and third panels.

5. A display as set forth in claim 4 wherein said dowel is enlarged centrally thereof to prevent slipping of the dowel past the enlargement into the undercut channel of said first channel defining means.

6. A display as set forth in claim 4 further including an upwardly projecting pin spaced laterally from the upper extent of said dowel and secured to said dowel intermediate the ends thereof.

7. A display as set forth in claim 6 further including a display panel pivotally mounted on said pin.

8. A display as set forth in claim 7 further including a pin projecting laterally from said dowel below the juncture of said upwardly projecting pin therewith, said pin projecting laterally outwardly of the undercut channel opening to prevent rotation of said dowel.

9. A display as set forth in claim 2 further comprising another leg secured to each panel at a point laterally spaced therealong from said first and second channel defining means and having the lower extent of each equal to the lower extent of said first and second channel defining means.

10. A display as set forth in claim 9 wherein the other legs each comprise a pair of generally parallel sidewalls, a bottom wall joining said sidewalls and means defining an undercut channel extending along the opposite side of said bottom wall from said side walls and opening outwardly of said other bottom wall; said legs being received on the lateral edge region of said first and second panels opposite from said first and second channel defining means, said lateral edge regions being received between said side walls.

11. A display as set forth in claim 10 additionally including means defining raised ribs on the sidewalls of said other legs and said first and second channel defining means for gripping said panels.

12. A display as set forth in claim 2 wherein the panels each comprise a foamed core of thermoplastic material and covering of unfoamed sheet material.

13. A combined lateral edge border and leg for a display, comprising a pair of generally parallel sidewalls; a bottom wall joining said sidewalls to form a longitudinally extending channel of generally U-shaped transverse cross-section, and means defining an undercut channel extending along the opposite side of said bottom wall from

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said sidewall and opening outwardly of said bottom wall; a resilient foot received in the undercut channel at the lower extent thereof and projecting longitudinally below said undercut channel; a dowel received in the undercut channel from the upper end thereof, a platform secured to said dowel; a lamp; and means adapted to support said lamp mounting said lamp on said platform for illuminating said display.

14. A combined lateral edge border and leg for a display, comprising a pair of generally parallel sidewalls; a bottom wall joining said sidewalls to form a longitudinally extending channel of generally U-shaped transverse cross-section, and means defining an undercut channel extending along the opposite side of said bottom wall from said sidewall and opening outwardly of said bottom wall; means defining a bulbous enlargement on each said sidewalls in the region thereof near its greatest extent from said bottom wall, said bulbous enlargements facing one another within said longitudinally extending channel and thereby reducing the width of the longitudinally extending channel near its mouth to provide greater frictional engagement of a display panel by said border and leg.

15. In combination: a first vertically extending display panel; a second vertically extending display panel positioned immediately above and substantially in the same vertical plane as said first display panel; said second display panel having a lower edge vertically adjacent an upper edge of said first display panel, said display panels each having means defining a back surface and means defining a front surface; a web having a generally T-

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shaped transverse cross-sectional shape including a vertical leg and a horizontal leg, said vertical leg abutting the rear surface of said display panels and said horizontal leg extending forwardly between said upper edge and said lower edge; means defining an enlarged longitudinally extending bead on said horizontal leg adjacent the foremost extent thereof; a generally horizontally extending shelf panel having means defining an undercut, rearwardly opening, generally horizontally extending channel thereon adjacent a rear edge thereof, said bead being longitudinally slideably received in said channel to vertically position said shelf with respect to said first and second display panels.

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