June 11, 1968 W. T. WERNER 3,387,394

SIGN CONSTRUCTION

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FIG. 1

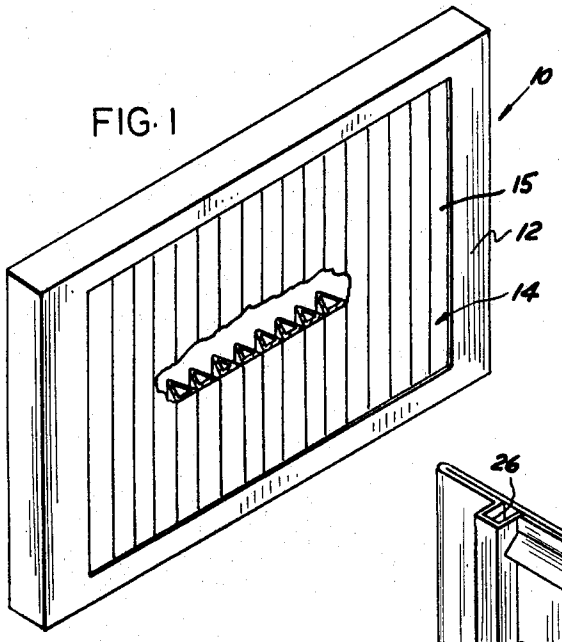


FIG. 6

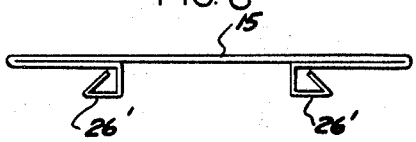


FIG. 5

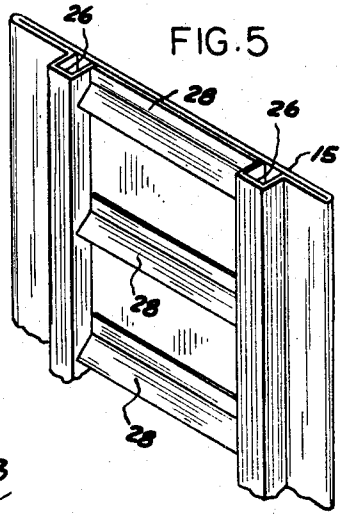


FIG. 4

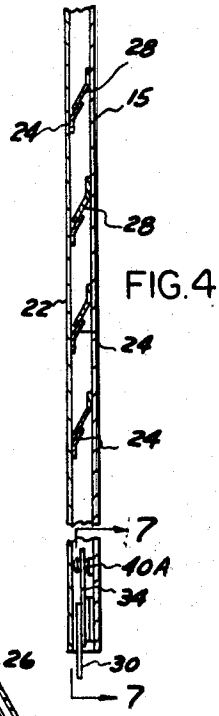
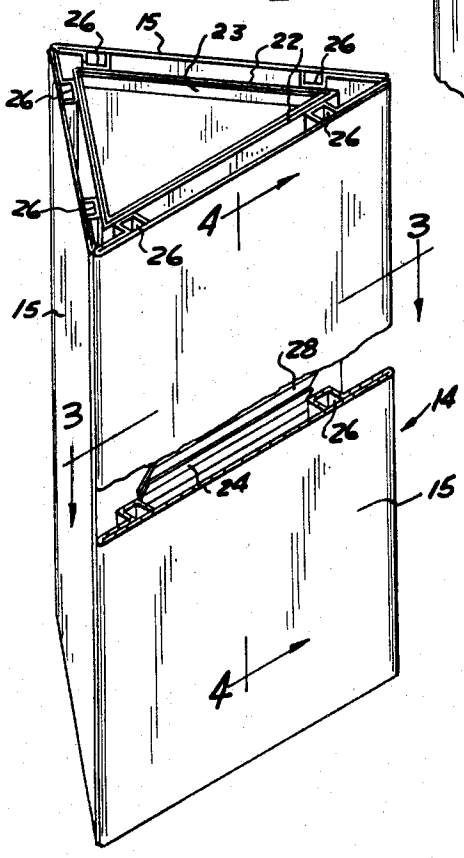


FIG. 2



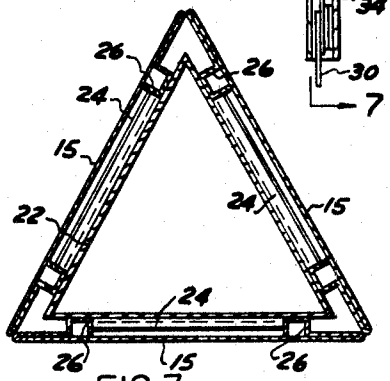


FIG. 3

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FIG. 8

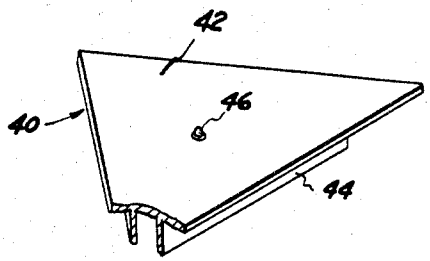


FIG. 9

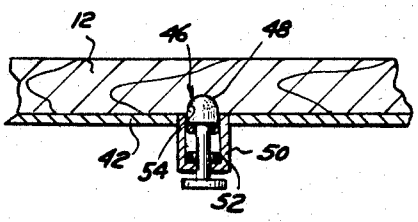
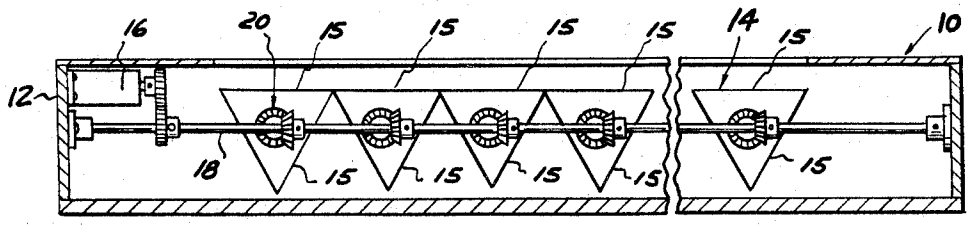


FIG. 10



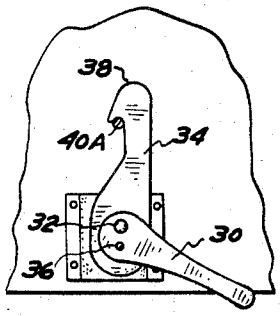


FIG. 7

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FIG. 11

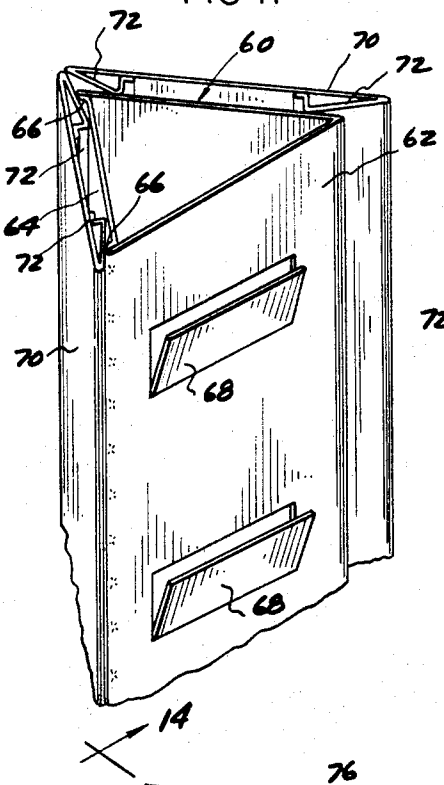
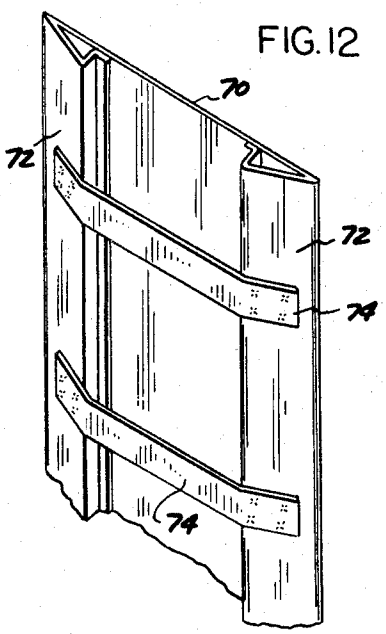


FIG. 12



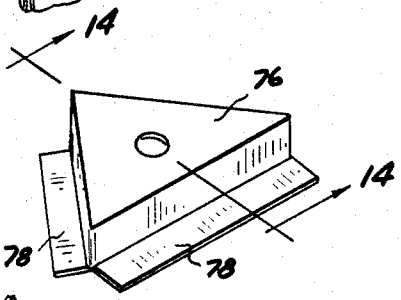


FIG. 13

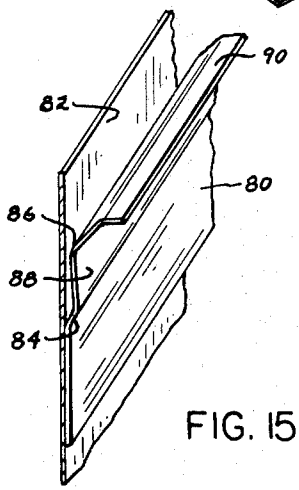


FIG. 15

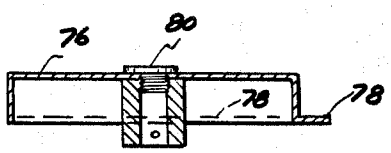


FIG. 14

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SIGN CONSTRUCTION

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Filed Sept. 15, 1965, Ser. No. 487,401
8 Claims. (Cl. 40—76)

ABSTRACT OF THE DISCLOSURE

A display sign of the type in which three different advertising messages are presented in sequence by rotation of a plurality of three-sided louvers and in which panels are secured to core members to make up the louvers by means of brackets and clips which secure these members together upon relative movement in one direction, a lock between the core members and panels to prevent movement in a direction permitting disengagement and a spring biased pin carried by the louvers to snap into engagement with a frame to rotatably support the upper end of the louvers.

This invention relates to advertising or display structures and more particularly to improvements in louvered types of signs in which polygonal shaped vertically extending members are rotated and indexed in such a way that a plurality of different advertising messages may be sequentially or alternatively displayed in a single sign location.

A major problem associated with this type of sign construction is that it is difficult and costly to change or replace the advertising messages. Normally the sign picture or message is formed on paper cut into strips and pasted to the respective louvered panels; alternatively, the message may be painted directly upon the panels. However, the message is normally subjected to wear and damage from wind, rain and other elements, consequently requiring frequent repair or replacement.

In my prior U.S. patent application Ser. No. 416,346, filed Dec. 7, 1964, and now Patent No. 3,313,131, issued Apr. 11, 1967. I disclosed a removable transparent cover which could easily be mounted on each panel, thereby protecting the message from the elements and yet leaving it exposed to view.

A primary object of the present invention is to provide a louvered sign construction wherein such covers are not necessary, but yet may be used where desired, and wherein the individual panels may be removed easily and quickly for change or repair, or for replacement of the advertising message.

A further object of the present invention is to provide a sign construction of this type which is simple in construction, and economical to manufacture.

Another object of the present invention is to provide removable panels of this type in which any one of the panels may be removed and replaced without disturbing the remainder of the panels.

Yet another object of the present invention is to provide a louvered sign construction of this type in which the individual panels are individually locked in place while in use.

Other objects and advantages of the present invention will be more readily apparent from the following detailed description of several preferred embodiments of the invention. The description makes reference to the accompanying drawings in which like reference characters refer to like parts throughout the several views and in which:

FIG. 1 is a perspective diagrammatic view of a preferred louvered sign or display structure embodying the present invention.

FIG. 2 is a fragmentary perspective view of a single louver embodying one modification of the present invention.

FIG. 3 is a cross-sectional view taken substantially on the line 3—3 of FIG. 2.

FIG. 4 is a fragmentary cross-sectional view taken substantially on the line 4—4 of FIG. 2.

FIG. 5 is a fragmentary perspective view of the rear or inner structure of one of the panels shown in FIGS. 1 through 4.

FIG. 6 is a top edge view of a panel of slightly different construction.

FIG. 7 is a fragmentary cross-sectional view taken substantially on the line 7—7 of FIG. 4 and showing a preferred type of lock mechanism which helps to secure each panel in place.

FIG. 8 is a perspective view of a top or lid adapted to fit on the upper end of a louver.

FIG. 9 is a fragmentary cross-sectional view taken through a plunger assembly on the upper surface of the lid pivotally securing the louver in place.

FIG. 10 is a diagrammatic bottom view of the sign assembly of FIG. 1 with the lower cover structure removed for clarity.

FIG. 11 is a fragmentary perspective view of a louver embodying another modification of the invention and with one side panel removed from the core for clarity.

FIG. 12 is a fragmentary perspective view of the inner face of a panel adapted for assembly with the core of the louver of FIG. 11.

FIG. 13 is a perspective view of a base support for the louver of FIG. 11.

FIG. 14 is a cross-sectional view taken substantially on the line 14—14 of FIG. 13, and

FIG. 15 is a fragmentary perspective view of the face of a louver core showing another preferred construction.

Referring to the drawings in detail, FIG. 1 shows a sign structure **10** as comprising a frame assembly **12** supporting a plurality of triangularly cross-sectional shaped louvers **14** each having three face panels **15** and vertically positioned and disposed in close relationship with each other such that in one indexed position, one set of panels **15** will lie in a common plane. In this manner an advertising message may be displayed as a whole, covering the entire set of panels. As shown in FIG. 10, a motor **16** or the like is preferably provided to operate a drive shaft **18** intermittently or selectively to rotate the louvers **14** by suitable gearing **20** or other means, so that a second set of panels **15** may be positioned to lie in the aforesaid common plane to display a second advertising message. A third advertising message would be displayed when the third set of panels **15** is rotated into position in the common plane. It is to be understood that while a three-sided louver is shown and described, the louvers might have other numbers of sides as are desired, and mechanism for positioning them may be different.

The drive and indexing mechanism and the frame structure, size and shape, may vary depending on preference, and since this is not an integral part of the present invention, a full description of such mechanism and structure is not provided herein.

FIG. 2 shows one preferred construction of a louver **14** in which a hollow central core **22**, preferably reinforced with edge strips **23** and of triangular cross-section, is vertically disposed within the enclosure formed by the three panels **15**.

As illustrated in FIGS. 2–4, the outer face of each side of the core **22** includes horizontally extending brackets **24** formed of an elongated strip of metal or other suitable material fastened by any suitable means along its lower edge to the face of the core **22** and projecting outwardly and inclined upwardly at its upper edge away from the core. These brackets **24** are preferably mounted at equally spaced points along the face of each side of

the core 22 and extend horizontally for a distance equal to less than the full width of each face of the core 22.

FIGS. 2, 3 and 5 show a preferred construction of the outer panels 15. At the rear or inner face of each panel 15 a pair of vertically extending ribs 26 of rectangular cross-section are disposed in spaced relation. The distance between the opposing sides of the ribs 26 is equal to the length of the brackets 24 on the outer faces of the core 22. The ribs 26 and the front portion of the panel 15 may be formed of a single sheet of metal or other similar material by suitably folding and forming the metal as indicated in FIG. 5.

The interiorly facing portion of each panel 15 includes horizontally extending vertically spaced stiffener clips 28 which are formed of elongated strips of metal or other suitable material fixed along their upper edges to the rear face of the panel 15 and having their lower edges sloped away from the panel at an acute angle. The slope is substantially equal to the slope of the brackets 24. The spacing of the clips 28 is preferably equal to the spacing of the brackets 24 such that the panel 15 may be mounted upon the core 22 by moving the panel downwardly in such fashion that the clips 28 are supported upon the upper edges of the brackets 24 in the manner shown in FIG. 4. The ends of the clips 28, adjacent to the ribs 26, will prevent lateral displacement of the panels 15 with respect to the faces of the core 22. It can be seen that the panel may thereafter be removed simply by pulling it upwardly and outwardly away from the core 22.

FIG. 7 illustrates a type of locking device which can be used to secure each panel 15 in place after it is mounted upon the core 22. This locking device comprises a handle 30 rotatably mounted about a pivot 32 extending horizontally outward from the lower portion of the face of the core 22. An arm 34 is pivotally connected to the handle 30 by means of a pin 36 which is vertically displaced from the pivot 32 and which extends through an elongated slot in the arm. The outer end of the arm 34 includes a hook-shaped portion 38 which is adapted to engage a pin 40A which projects inwardly from the adjacent surface of the panel 15. The locking device is in lock position in FIG. 7 and may be unlocked by moving the handle 30 in a clockwise direction. Thus the panel 15 may be removed simply by rotating the handle 30 in a clockwise direction until the hook 38 is disengaged from the pin 40A, and then lifting the panel 15 upwardly and outwardly away from the core 22. It can be seen that the relative location of the handle 30 and bracket 34 may be varied as desired, e.g., the pin 40A may be mounted on the core 22 with the remainder of the locking device mounted upon the interior face of the panel 15. In addition, the present lock is intended to be suggestive only, there obviously being a number of locking devices adaptable to produce substantially the same result.

FIG. 6 shows an alternative construction for the panel 15 in which ribs 26' are of substantially triangular cross-section rather than rectangular as is the case in FIG. 5. Since the function of the ribs 26 or 26' is to strengthen the panels 15 mounted upon the core 22 and to locate the panels laterally, it can be seen that various configurations for these ribs may be employed. Further, the ribs could be separate members secured in any preferred fashion to the panels 15.

FIG. 8 shows a top or lid 40 which may be used to enclose the upper end of each louver 14. The lid 40 is formed of a triangular section 42 of metal or other suitable material having downwardly projecting walls 44 along its lower surface, said walls forming a triangular enclosure of smaller dimensions than the upper section 42. The outer dimensions of the section 42 will be less than the outer dimensions of the louver 14 so that they will not interfere on removing the panels. The outer dimensions of the lower walls 44 are equal to the dimensions of the enclosed space bounded by the core 22; thus the walls 44 project interiorly into the core 22 with the upper portion 42 abutting the upper edges of the core.

The cover 40 also includes a plunger 46 at the center of its upper surface. This plunger 46 may be of any conventional design, that shown in FIG. 9 being for illustrative purposes only. The outer end 48 of the plunger 46 protrudes from an opening formed by a small cup-shaped portion 50 of the section 42. The plunger 46 is urged outwardly by coil spring 52 which is seated between the lower surface of the cup 50 and the lower edge of the outer end 48. The spring 52 normally forces the outer end 48 of the plunger 46 into a detent 54 provided in an adjacent portion of the frame assembly 12. With the end 48 thus engaging the frame assembly 12, the entire louver 14 is permitted to rotate about a vertical axis passing through the plunger 46. The lower end of each louver is suitably mounted upon the gearing 20 such that actuation of the motor 16 causes the louver to rotate about a vertical axis passing through the center of the core. The plunger 46 may be released by inserting a suitable tool between the frame 12 and lid 40 and forcing the plunger 46 downwardly against the force of the spring 52.

FIGS. 11 through 14 illustrate another modification of the invention in which a core is made in two parts, namely a V-shaped member 62 and a flat member 64 having outwardly bent edge flanges 66 which are readily spot welded to the edges of the V-shaped member 62 as shown. Bending of such parts is generally easier than forming a one-piece triangular core, and the welded edges provide good vertical stiffness to the core. The core still has three faces, and in each is provided vertically spaced punched-out brackets 68 sloping outwardly and upwardly as shown in FIG. 11.

Panels 70 are formed as shown in FIG. 12 with inwardly bent and flanged ribs 72. Vertically spaced laterally extending straps 74 are spot-welded or otherwise secured to the ribs 72 as shown, to span the space between them. These straps are adapted to engage over the brackets 68 to removably hold the panels 70 to the core 60. The ends of the brackets 68 are dimensioned to fit between the ribs 72 to prevent lateral displacement. The straps 74 will not necessarily bottom completely between the brackets 68 and the surfaces of the core 60, but will maintain a wedged engagement, so that spacing dimensions are not as critical as in the modification of FIGS. 2–6. The outer edges of the adjacent panels 70 will meet as indicated in FIG. 11.

The straps 74 not only provide means of engaging the core 60 but also serve to bind the ribs 72 of the panels 70 together, providing strength and rigidity for the panels 70.

FIGS. 13 and 14 illustrate a preferred base element 76 for the louver of FIG. 11, comprising a triangular stamping member adapted to fit within the core 60 and having flanges 78 which engage the lower edges of the score 60. A hub 78 is secured by any means such as a nut 80 to the central axis of the base element 76, and is adapted to be secured to the shaft of the driven gear 20 of FIG. 10.

It can be seen that the panels 15 and 70 described above and shown in the drawings may be provided with advertising messages in the usual manner. In the event that the panels are damaged or the advertising message is to be changed, any individual panel 15 or 70 may be removed simply by unlocking the locking mechanism with the handle 30, and lifting the panel upwardly and away from the core 22 or 60. The panel can be replaced by reversing the order of these steps.

FIG. 15 illustrates another type of bracket 80 which may be welded to the outer surface of a core face 82 replacing the punched out bracket 68 shown in FIG. 11. The bracket 80 is bent as at 84 and 86 to provide a portion 88 spaced from the core face 82 but inclined partially toward it, and a portion 90 inclined away from the core face 82. The straps 74 of the panel 70 shown in FIG. 12 will be readily engaged behind the bracket 86, the portion 88 thereof clamping the strap 74 to the core face 82.

If desired, the present sign construction may be used in combination with the transparent covers disclosed in my aforementioned patent. If this is desired, the panels **15** or **70** may be constructed so as to leave a small gap at each apex of the triangle formed by the three panels **15** or **70**. Covers of the types shown in my aforementioned patent might then be easily clipped on over the panels **15** or **70**, thereby protecting the messages upon the panels from the elements but permitting the message to be viewed. If desired, the cover itself could be provided with the artwork comprising the advertising message.

It will be apparent to one skilled in the art to which this invention pertains that various changes and modifications may be made therein without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. In a display structure, the combination comprising:

(a) a plurality of parallel spaced rotatable cores, each of said cores having a plurality of planar faces uniformly disposed about the axis of rotation of said core,

(b) a plurality of planar panels each adapted to display a message or the like,

(c) a plurality of parallel spaced, transversely extending brackets on each face projecting at an acute angle away from the axis of its core,

(d) a plurality of parallel spaced stiffener clips on each panel extending transversely for at least one-half the width of said panel and projecting at an angle substantially complementary to the acute angle of said face brackets toward the axis of its core and adapted to coextensively engage respective ones of said brackets on said face so as to releasably secure said panel to said face upon movement of said panel relative to said face in one direction,

(e) means carried by said panel and said face and selectively operable to lock said panel to prevent movement of said panel relative to said face in a direction opposite to that releasably securing said panel to said face.

2. The display structure as defined in claim **1** and in which each of said panels includes a pair of parallel spaced longitudinally extending ribs normally disposed between said face and said panel, each said rib positioned respectively adjacent to the ends of said panel stiffener clips carried by said panel.

3. The display structure as defined in claim **1** having:

(a) a frame structure enclosing said cores,

(b) a triangular top adapted to fit within the opening formed at one end of said cores, said top being disposed between said core and the adjacent portion of said frame, and

(c) spring biased locating means on said top adapted to engage said frame so as to releasably rotatably secure said core within said frame.

4. The display structure as defined in claim **2** and in which each said panel and its associated ribs comprise a single sheet of metal wherein said ribs are formed by the return bending of the sheet metal adjacent its longitudinal edges.

5. In a display structure, the combination comprising,

(a) a plurality of vertically extending parallel spaced rotatable cores of triangular cross section, each of said cores having three vertical faces disposed uniformly about the axis of rotation of said core,

(b) a plurality of planar panels each adapted to display a message or the like,

(c) a plurality of vertically spaced horizontally extending brackets on each face projecting upwardly at an acute angle away from the axis of its core,

(d) a plurality of vertically spaced stiffener clips on each panel extending horizontally for at least one-half the width of the panel projecting downwardly at an angle substantially complementary to the acute angle of said face brackets toward the axis of its core and adapted to coextensively engage respective ones of said brackets on said face so as to releasably secure said panel to said core face upon downward movement of said panel with respect to said core face, and

(e) means carried by said panel and said face and selectively operable to lock said panel to prevent upward movement of said panel relative to said face.

6. The display structure as defined in claim **5** and in which each of said panels includes a pair of horizontally spaced vertically extending ribs normally disposed between said face and said panel, each said rib positioned respectively adjacent to the ends of said panel stiffener clips carried by said panel.

7. The display structure as defined in claim **5** having:

(a) a frame structure enclosing said cores,

(b) a triangular top adapted to fit within the opening formed at the upper end of each of said cores, said top being disposed between said core and the upper portion of said frame, and

(c) spring biased locating means on said top adapted to engage said frame so as to releasably rotatably secure said core within said frame.

8. The display structure as defined in claim **6** and in which each said panel and its associated ribs comprise a single sheet of metal wherein said ribs are formed by the return bending of the sheet metal adjacent its vertical edges.

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