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[21] **820,123**
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[54] **SEAM LOCK FOR INDIVIDUAL PLASTIC FACE PANELS OF INTERNALLY ILLUMINATED SIGN BOX**
12 Claims, 3 Drawing Figs.

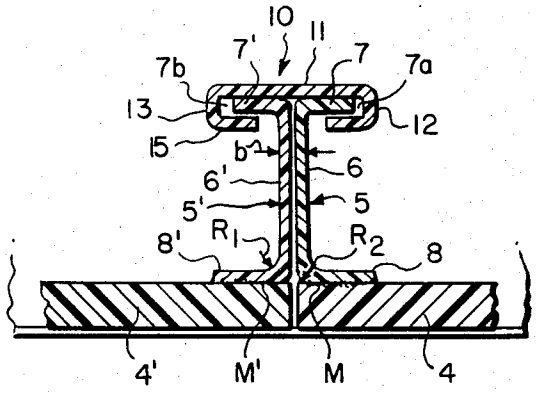
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[50] **Field of Search** ..... 350/319; 52/584; 40/125 (F), (HK); 267/(Inquired); 160/(Inquired); 40/125

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ABSTRACT: A channel seam lock for removably securing together panels of an internally illuminated sign box or the like.



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Fig. 1.

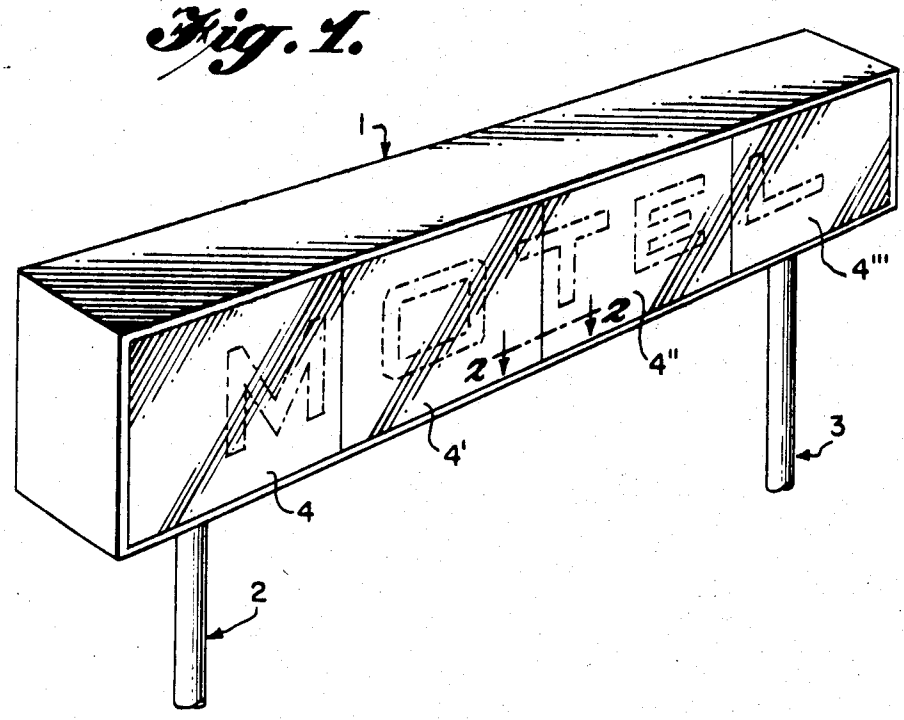


Fig. 3.

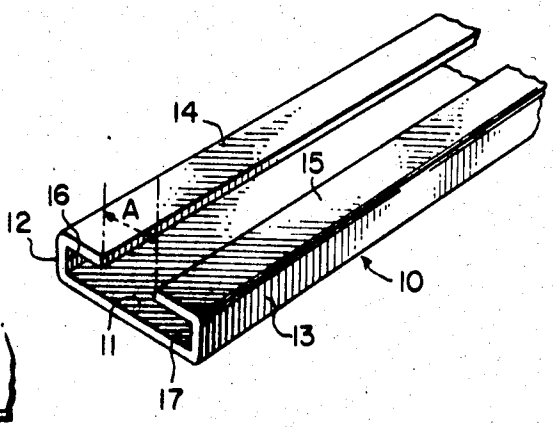
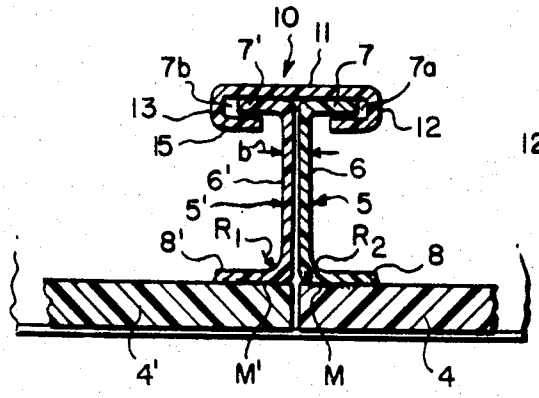


Fig. 2.



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SEAM LOCK FOR INDIVIDUAL PLASTIC FACE PANELS OF INTERNALLY ILLUMINATED SIGN BOX

BACKGROUND OF THE INVENTION

This invention relates to devices for holding together the panels of internally illuminated sign boxes. It is not unusual for these sign boxes to be 40 feet long or more and due to the limited size of the panels used in the face of the signs, it is necessary to use a plurality of transparent or translucent panels held in edge abutting relationship in order to make up a complete face for the sign. This means that in these signs there will be at least two panels making up the face of the sign and at least one seam across the face of the sign where the panels abut. Various methods have been used in the past to secure these panels in place, but they have not proven satisfactory for one reason or another. One such method, for example, was to place two panels in edge abutting relationship and then cement or otherwise fix a strip or plate of reinforcing material along the juncture of the two panels thus covering the back of the seam and holding the panels in place. The resulting structure was unsatisfactory because the rigid seam did not compensate for contraction and expansion of the panels due to changes in ambient temperature, it being necessary to provide for such contraction and expansion at the outer edges of the complete face of the sign, which caused cracking and breaking of the rigidly held panels. As a consequence of the resulting strain on the rigid seam, they frequently failed, enabling wind, rain etc. to enter the seam and bulge the sign face outwardly, destroying the sign. Also, if one panel was damaged, it was generally necessary to replace the entire face of the sign since the panels could not be readily separated. This same disadvantage necessitated removal of the entire sign face for normal periodic service and maintenance. Further, the flat plate cemented across the back of the seam caused light refraction resulting in localized shadows and discoloration on the sign face.

OBJECTS OF THE INVENTION

It is an object of this invention to overcome these disadvantages and provide a new and unobvious structure for holding together panels of various sizes including large panels constituting the face of illuminated sign boxes and other such uses.

It is another object of this invention to provide a unique prefabricated seam lock for the panels of an internally illuminated sign box or the like.

It is yet another object of this invention to provide a means for removably and replaceably holding together the panels of an internally illuminated sign box, thus allowing the panels to be readily assembled and disassembled.

A further object of this invention is to provide a seam lock for an internally illuminated sign box wherein the seam lock does not cause shadows or discoloration on the panels constituting the face of the sign box.

It is still a further object of this invention to provide a seam lock for an internally illuminated sign box wherein the edges of the adjacent panels are movably held in spaced relation to compensate for contraction and expansion of the panels of the sign box due to changes in ambient temperature.

It is also an object of this invention to provide a seam lock for the panels of an internally illuminated sign box which comprises prefabricated channels of extruded or molded plastic material.

An even further object of this invention is to provide a seam lock for the panels of an internally illuminated sign box which is dependable and which is simple and economical to manufacture.

It is still a further object of this invention to provide a panel seam lock for internally illuminated signs which can be readily assembled or disassembled in any position, such as flat on a horizontal surface or vertically in a sign.

Still another object of this invention is to provide a panel seam lock for internally illuminated signs wherein the seam lock can be made in the form of standard lengths that may be cut in lengths as needed.

Other objects and advantages of the invention will become apparent from a study of the following detailed description of the invention and of the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective of an assembled sign embodying the principles of the present invention.

FIG. 2 is a cross-sectional end view taken along the line 2–2 of FIG. 1, showing the present invention assembled on adjacent plastic panels.

FIG. 3 is a partial inverted perspective view of the locking sleeve used in the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention is illustrated in FIGS. 1 through 3 of the drawings wherein like reference numerals refer to like parts throughout the several views.

Referring to FIG. 1, the present invention is shown embodied in a sign comprising a hollow housing 1 constructed in a well-known manner and having attaching or supporting legs 2 and 3 depending therefrom. The sign face is made up of a plurality of flat transparent or translucent rectangular or of any other desirable shape plastic sheets or panels 4, 4', 4'', 4''' which as shown are assembled in side-by-side relationship or any other suitable arrangement according to the present invention.

Referring now to FIGS. 2 and 3, the details of the panel seam lock of the present invention are seen. The panel seam lock of the present invention comprises, as shown, a pair of substantially identical plastic U-shaped channel members 5 and 5', each having a similar web 6, 6' with inner similar flanges 7, 7' extending outwardly at substantially right angles to said web 6, 6', the opposite edge of said web, 6, 6' having substantially similar outer right angularly extending flanges 8 and 8'; the flanges 7 and 7' being of less width than the flanges 8, 8', said flanges being substantially coextensive in length with their respective webs 6, 6'. The outer faces of each outer flange 8, 8' of the channel members 5, 5' is secured by an adhesive or other suitable securing means to adjacent marginal portions M, M' of each panel 4, 4' and with the webs 6, 6' substantially in back-to-back contact with each other. The outer surface of terminating bight portions of each inner and outer flange is in substantially in the plane of end edges of each panel. A plastic C-shaped locking channel member 10 or other suitable locking means is comprised of an outer wall 11 of greater overall width than the combined width of flanges 7, 7', thus providing spaces 7*a* and 7*b* allowing for expansion of the seam, and with similar downwardly extending sidewalls 12 and 13 extending at right angles from opposite edges thereof, with inwardly directed flanges 14 and 15 extending at substantially right angles from the sidewalls 12 and 13 and terminating short of each other, leaving a gap A between the side edges thereof. This gap A is substantially twice the combined cross-sectional thickness *b* of the webs 6, 6' of two adjacently placed U-shaped channel members 5, 5'.

When assembled, the flanges 7, 7' of U-shaped channel member 5, 5' on adjacent edges of the panel members 4, 4' are slidably received in recesses 16 and 17 of locking channel member 10, thus releasably locking adjacent channel members 5, 5' and their associated panel members 4, 4' together. The tolerances or differences in dimension permit the seam to move a restricted amount in the assembled device when the panels 4, 4' expand or contract due to ambient temperature changes and thus relieve any stresses which might otherwise occur, but at the same time, the seam lock of the present invention provides a secure fastening means for safely holding together the plurality of panels used in a multiple panel sign face.

An important aspect of this invention is the selection of radii R_1 and R_2 at the juncture of flanges 8, 8' with the webs 6,

6' on the U-shaped channel members, these radii being selected such that the refraction and diffusion of light passing through the combined flanges 8, 8' and panels 4, 4' is minimized. A specific example is a web and flange thickness of one-sixteenth inch, an inside radius R_1 of one-eighth inch and an outside radius R_2 of one-sixteenth inch.

The various elements comprising the present invention may be selected from any suitably rigid and transparent or translucent plastic material or any other suitable material but the material as used in one embodiment are clear acrylic for the U-shaped channel members 5, 5' white acrylic for the C-shaped locking channel member 10 and plexiglas for the panel members 4, 4'. The use of clear acrylic for the U-shaped channel members 5, 5' diminishes the possibility of light diffusion and discoloration in the panels 4, 4' comprising the sign face and the use of white acrylic for the C-shaped locking channel member 10 serves to back up the opening between adjacent panel members 4, 4', thus providing a continuous, unbroken white coloration in the sign face.

SUMMARY

The seam lock for panels on an internally illuminated sign box as defined by the present invention provides a new, useful and unobvious means of releasably securing together the panels making up the face of the sign in a manner to enhance the esthetics of the sign, make the sign easy to service and repair, reduce discoloration and shadowing of the sign face, provide for expansion and contraction of the panels due to ambient temperature changes, and practically eliminate danger of the panels blowing off due to wind and other elements entering the seams.

It should be understood that the specific preferred embodiment of the invention as described herein is not intended to be limiting in any sense but that various modifications in structure and different uses of the inventive concepts involved are contemplated which come within the scope and incorporate the novel principles of the present invention. For example, the same inventive principles might be employed in hanging paneling when decorating walls, or in applying decorative faces to buildings, or in applying automobile trim etc.

It is intended that the present invention be limited only by the scope of the appended claims and all reasonable equivalents in structure and function thereof.

I claim:

1. A seam lock for releasably securing together adjacent panels arranged in edge-to-edge relationship comprising, a first locking member secured along adjacent marginal edges of each of a pair of adjacent panels and a second locking member releasably interfitted with said first locking members to hold said first locking members and their associated adjacent panels in assembled relationship, said second locking member including recess means therein, laterally projecting means on each of said first locking members received in said recess means, said recess means being larger than said laterally projecting means so as to enable said first locking members and their associated panels to move relative to one another and relative to said second locking member to allow for contraction and expansion of adjacent panels.

2. A seam lock for securing together a plurality of translucent panels arranged in edge-to-edge abutting relationship to form a sign face for an internally illuminated sign, comprising locking means on adjacent marginal edges of said panels for releasably locking adjacent panels together, said locking means comprising a material capable of passing light therethrough and constructed to minimize refraction and diffusion of light passing through said panels in the vicinity of said locking means to preclude shadows and discoloration and the like in said sign face.

3. A seam lock for securing together a plurality of panels as defined in claim 2, wherein said locking means is made of a translucent material and comprises channel members having preselected corner radii such as to minimize refraction and diffusion of light passing therethrough.

4. Seam lock for securing together a plurality of panels as defined in claim 2 wherein said locking means comprises first locking means carried by adjacent marginal edges of the panels and second locking means simultaneously interengaging and interlocking with said first locking means to releasably hold the panels in said edge-to-edge relationship, said first locking means comprising a web portion and an outer flange extending at substantially right angles from an edge of said web portion, the outer surface of said flange being affixed to the back of a panel adjacent a marginal edge thereof with the webs of adjacent locking means extending substantially perpendicularly and in back-to-back relationship from the back of adjacent panels, said second locking means interengaging and interlocking with said web portions.

5. Seam lock for securing together a plurality of panels as defined in claim 4 wherein said first locking means is generally U-shaped with an inner flange extending substantially perpendicularly from the opposite edge of said web, said inner flange being interengaged and interlocked with said second locking means.

6. Seam lock for securing together a plurality of panels as defined in claim 5, wherein said second locking means comprises a generally C-shaped locking channel member having an outer wall and two depending sidewalls extending substantially perpendicularly from opposite edges of said outer wall, each of said sidewalls having an inwardly directed flange means extending parallel to said outer wall and terminating short of each other, defining inwardly facing recesses, each of said recesses slidably receiving an outer flange of two adjacent generally U-shaped locking members thereby releasably holding said U-shaped locking member sin back-to-back relationship and their respective panels in edge-to-edge relationship.

7. Seam lock for securing together a plurality of panels as defined in claim 4, wherein the juncture of said outer flange with said web is radiused, the radii having been selected such that refraction and diffusion of light passing through said panel in the vicinity of said channel member is minimized.

8. Seam lock for securing together a plurality of panels as defined in claim 2, wherein said locking means is made of plastic.

9. Seam lock for securing together a plurality of panels as defined in claim 2, wherein said first means are clear acrylic, said second means is white acrylic, and said panels are plexiglas.

10. Seam lock for securing together a plurality of panels as defined in claim 7 wherein the inner radius at said juncture is approximately twice the outer radius at said juncture.

11. Seam lock for securing together a plurality of panels as defined in claim 6 wherein the combined length of a pair of adjacent inner flanges is less than the width of said outer wall whereby substantial clearance is provided at the ends of said outer flanges in said recesses.

12. Seam lock for securing together a plurality of panels as defined in claim 2 wherein, said first means is cemented to its respective panel.