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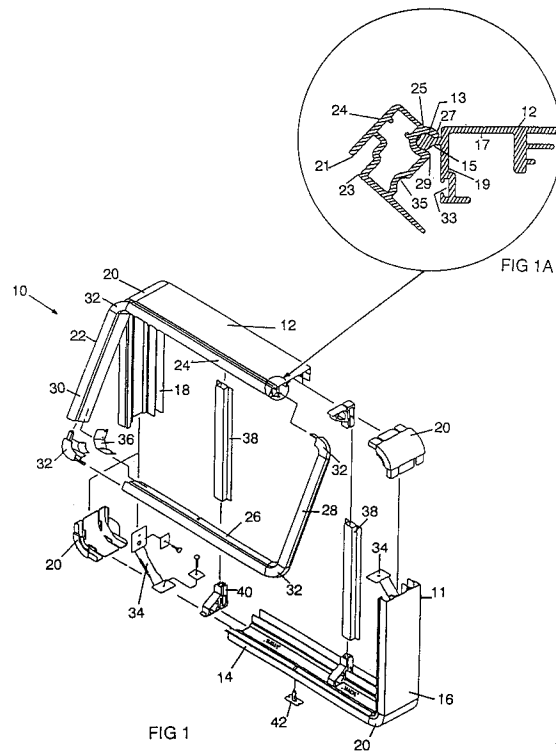
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54 **Hingeless enclosure for a display system.**

57 A hingeless assembly for a protective enclosure is incorporated as part of a modular display system. The protective enclosure (10) features a main frame (11) and an open face panel frame (22). While the main frame (11) and the open face panel frame (22) are assembled from standardized extrusions and joints (20), an elongated cylindrical bead (13) along one of the external edges of the main frame (11) and a semi-cylindrical elongated groove (25) along a corresponding edge of the open face panel frame (22) are slidably fitted over one another to form a modular enclosure. A gasket is disposed along the hingeless assembly to weather-proof the enclosure (10). The hingeless assembly of the enclosure (10) not only allows the open face panel to be opened for easy access, but also seals the interior of the display system from the elements when the open face panel is closed.



EP 0 637 006 A1

The present invention relates to enclosure for a display system and in particular to a hingeless assembly for a protective enclosure as part of a modular display system.

It is often necessary to provide protective enclosures for display systems such as office directories or commercial signages. However, the requirements in terms of geometric configurations for such enclosures are so varied such that mass production of enclosures are hitherto not economical. As the contents of the display systems require frequent updating, the ideal enclosure should be light and versatile to permit easy access to the display system. Yet exposure of the display systems to the elements generally require the protective enclosures to be sturdy, durable and weather-proof.

Prior art hingeless assembly for a display system addresses partially the requirements of a modular display system that is economical, durable and versatile. U.S. Patent No. 4,968,171 teaches a hingeless extrusion which combines with other hingeless extrusion to form a multiple positionable, self-standing modular display system.

The present invention discloses a hingeless assembly for a protective enclosure incorporated as part of a modular display system. The protective enclosure features a main frame and an open face panel frame. While the main frame and the open face panel frame are assembled from standardized extrusions and joints, an elongated cylindrical bead along one of the external edges of the main frame and a semi-cylindrical elongated groove along a corresponding edge of the open face panel frame are slidably fitted over one another to form a modular enclosure. A gasket is disposed along the hingeless assembly to weather-proof the enclosure. The hingeless assembly of the enclosure not only allows the open face panel to be opened for easy access, but also seals the interior of the display system from the elements when the open face panel is closed. As various components of the present invention are standardized and interchangeable, economy of scale in manufacturing the enclosure is achieved notwithstanding the myriad geometric configurations of display systems.

For a better understanding of the present invention and as to how the same may be carried into effect, reference will now be made by way of example to the accompanying drawings.

FIG 1 is an exploded, perspective view of an enclosure incorporating the present invention.

FIG 1A is a front, right side, cross-sectional view of a hingeless assembly for a display system in accordance to the preferred embodiment of the present invention.

Fig. 1 is an exploded, perspective view of a display system incorporating a protective enclosure

according to the preferred embodiment of the present invention. The enclosure 10 comprises a main frame 11 and an open face panel frame 22. The main frame 11 further comprises a top main frame 12, a bottom main frame 14, and side main frames 16 and 18. In the preferred embodiment of the invention, all the frames are made of aluminium extrusions or any suitable light weight material. It should be understood by one skilled in the art that the main frames 14, 16 and 18 are preferably standardized and interchangeable. The frames of the main frame 11 are coupled with a plurality of main frame joints 20 to form a substantially rectangular configuration. Even though the main frames 12, 14, 16 and 18 are shown be single sided (having one elongated cylindrical bead on only one side edge of the frame), it should be understood by one skilled in the art that the present invention is equally applicable to a double sided main frame (having one elongated cylindrical beads on each side edge of the frame). The main frame joints 20 are standardized and interchangeable. Preferably the main frame joints are made of either aluminum, or other suitable weather-proofing materials. Although the main frame joints 20 are illustrated as rounded, it should not be taken as a limitation upon the present invention. For example, a right angle joint may be substituted for the round joint 20.

Referring again to Fig. 1, the open face panel 22 further comprises a top panel frame 24, a bottom panel frame 26, and side panel frames 28 and 30. Just as the main frame, the panel frames are made of aluminum extrusions or any suitable light weight material. It should be understood by one skilled in the art that the panel frames 24, 26 and 28 are preferably standardized and interchangeable. The frames of the open face panel frame 22 are coupled with a plurality of panel frame joints 32 to form a substantially rectangular configuration. Like the main frame joints, the panel frame joints 32 are also standardized and interchangeable. In the preferred embodiment of the present invention, the panel frame joints are made of suitable weather-proofing materials. Although the main frame joints 32 are illustrated as rounded, it should not be taken as a limitation upon the present invention. For instance, a right angle joint is interchangeable with the round joint 32. It is also understood that the open face panel frame 22 encloses a transparent panel which is not shown in order not to obscure the presentation of the present invention.

It follows from the prevalent use of standardized and interchangeable extrusions and joints in the display system that a modular enclosure fitting a large variety of display system may be manufactured economically. It should be understood by one skilled in the art that the present invention is versatile as the enclosures are easily assembled and

disassembled. One further advantage of the present invention will be described below in connection with the description of the hingeless assembly.

The main frame 11 and the open face panel frame 22 are coupled in the manner illustrated in Fig. 1A where a front, right side, cross-sectional view of a hingeless assembly in accordance with the preferred embodiment of the present invention is illustrated. The top main frame 12 is shown having an L-shaped cross-section having a horizontal edge 17 and a vertical side edge 19. An elongated cylindrical bead 13 and an elongated extending portion 15 extend outwards from the side edge 19 for slidably engaging an elongated semi-cylindrical groove 25 of the top panel frame 24. The side edge 19 terminates in a elongated recess channel 33 for receiving the base of a gasket (not shown). The gasket is used for sealing the interior of the enclosure from the elements. The gasket is preferably made from silicon, rubber or other suitable weather-proofing materials.

In Fig. 1A the top panel frame 24 has a substantially rectangular cross section. It should be understood by one skilled in the art that a large variety of cross-sectional configurations is possible for the top frame panel to have as long as it incorporates an elongated semi-cylindrical groove. For an example, see the U.K. design registration application No. 2032782 filed by the same applicant. As described briefly in the preceding paragraph, the top panel frame has a semi-cylindrical groove 25 disposed between the top edge and the edge facing the side edge 19 of the top main frame. The groove 25 terminates in edges 27 and 29 respectively. While the groove 25 receives the elongated cylindrical bead 13 in an interlocking manner, the edges 27 and 29 permit the open face panel frame 22 to rotate around an axis which is parallel to the longitudinal axis of the elongated cylindrical bead 13. The angle of rotation depends on (1) the depth of the groove edges 27 and 29, and (2) the thickness of the elongated extended portion 15. On the same edge facing the side edge 19 is disposed an elongated semi-circular channel 35 which cooperates with the elongated recess channel 33 to accommodate the gasket (not shown) along the hingeless assembly. When the hingeless assembly in Fig. 1A is closed, the gasket performs the weather-proofing function of the enclosure. The top panel frame 24 also has a flange 21 and interior edge 23 for receiving one section of a display panel (not shown). It follows from the above that the hingeless assembly permits easy access to the interior of the enclosure. At the same time, the gasket disposed along the hingeless assembly prevents dust, dirt and water from entering the enclosure.

Referring again to Fig. 1, reinforce bracket assemblies 34 and 36 are optionally employed to provide additional stability to the structure of the main frame 11 and the open face panel frame 22 respectively. Furthermore, an assembly consisting of a stiffener 38 and stiffener holder 40 may be used to provide rigidity to the enclosure 10. Finally a lock 42 may optionally be added to the bottom main frame 14 in order to secure the open face panel frame 22 to the main frame 11 and to prevent unauthorized access to the display system.

While the present invention has been described particularly with reference to Figs. 1 to 1A with emphasis on a hingeless assembly for a protective enclosure for a display system, it should be understood that the figures are for illustration only and should not be taken as a limitation on the invention. For example, the hingeless assembly of the enclosure can be located along the side main frames or even the bottom main frame. Thus, the open face panel frame may be opened from the side or from the bottom as opposed to from the top frame as illustrated in Figs 1 to 1A. In addition, it is clear that the apparatus of the present invention has utility in many applications where versatile, modular and durable enclosure is required. It is contemplated that many changes and modifications may be made by one of ordinary skill in the art without departing from the scope of the invention as described.

Claims

1. A protective enclosure for a display system, said enclosure comprising:
 - a main frame, said main frame further comprising at least a top main frame, a bottom main frame, a pair of side main frames;
 - a panel frame for enclosing at least one open face of said enclosure, said panel frame further comprising at least a top panel frame, a bottom panel frame, a pair of side panel frames;
 - a hingeless assembly having an elongated cylindrical bead extending from any one of the external edges of said main frames, said hingeless assembly further having an elongated semi-cylindrical groove extending from any one of the edge facing said external edges of said main frames, said groove being slidably fitted with said bead;
 - such that said panel frame rotates around an axis parallel to the longitudinal axis of said bead.
2. The enclosure according to claim 1 wherein said main frame and said panel frame forms a self-standing enclosure when said panel frame

is closed over at least one open face of said main frame.

3. The enclosure according to claim 1 or 2 wherein said groove further has two extending ends for retaining said bead within said groove. 5

4. The enclosure according to claim 1, 2 or 3 wherein said hingeless assembly further having an elongated gasket disposed along said hingeless assembly such that the enclosure is protected against the elements. 10

5. A method for protecting a display system with an enclosure, said method comprising: 15
 - enclosing the side space of a display system with a main frame, said main frame further comprising at least a top main frame, a bottom main frame, a pair of side main frames;
 - enclosing the open face space of a display system with a panel frame, said panel frame further comprising at least a top panel frame, a bottom panel frame, a pair of side panel frames; 20
 - closing the side space and the open face space of a display system with a hingeless assembly, said assembly having an elongated cylindrical bead extending from any one of the external edges of said main frames, said hingeless assembly further having an elongated semi-cylindrical groove extending from any one of the edge facing said external edges of said main frames, said groove being slidably fitted with said bead; 25 30
 - such that said panel frame rotates around an axis parallel to the longitudinal axis of said bead. 35

6. The method according to claim 5 wherein said main frame and said panel frame forms a self-standing enclosure when said panel frame is closed over at least one open face of said main frame. 40

7. The method according to claim 5 or 6 wherein said groove further has two extending ends for retaining said bead within said groove. 45

8. The method according to claim 5, 6 or 7 wherein said hingeless assembly further having an elongated gasket disposed along said hingeless assembly such that the enclosure is protected against the elements. 50

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EUROPEAN SEARCH REPORT

Application Number
EP 94 30 3679

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	US-A-4 873 776 (HOFFART) * column 3, line 64 - column 5, line 30; figures 4-10 * ---	1-3,5-7	G09F15/00 G09F1/12
A	GB-A-2 136 624 (SMART) * page 1, line 56 - page 2, line 57; figures 1-8 * ---	1,5	
A	GB-A-2 005 535 (MARKETING DISPLAYS INC.) * page 1, line 65 - page 2, line 88; figures 1,3 * -----	1,5	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G09F A47G
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
BERLIN		23 August 1994	Taylor, P
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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