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(54) **Box sign.**

(57) A box sign has a rectangular housing and a rectangular frame for a front panel (14). One or more frame members (16,18) have an elongate recess (22) which co-operates with an elongate rib (24) at the edge of the housing so that the frame is a snap fit onto the housing. The frame may be hinged to the housing by an internal linkage (26,28,30,32) which causes the frame, on detachment, initially to move in the direction away from the hinge (D' to D), a rib (24) and recess (22) being provided on the side (12) remote from the hinge, and optionally also on the side (10) adjacent the hinge.

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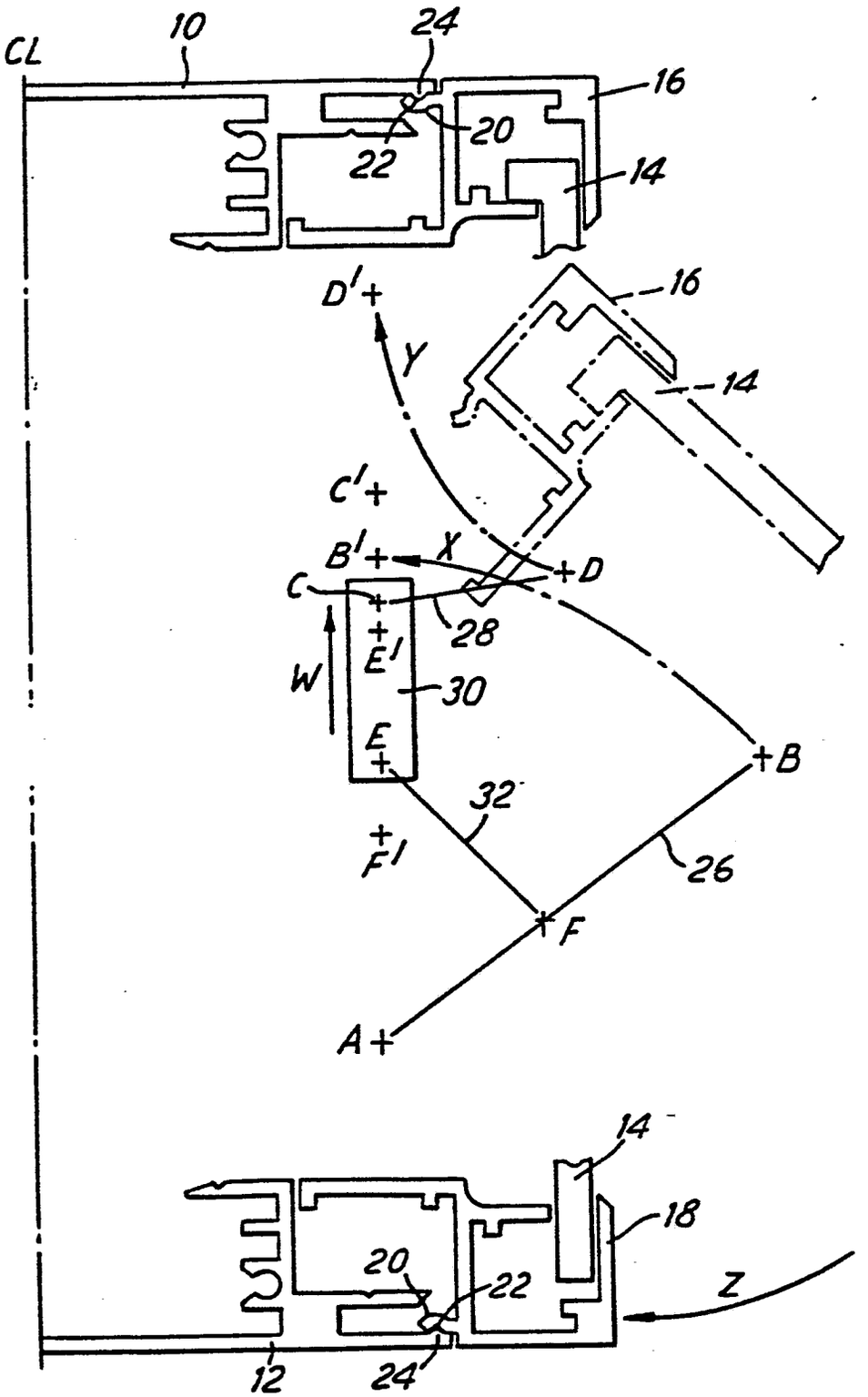
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BOX SIGN

This invention relates to box signs, and especially to internally illuminated box signs.

Conventional box signs generally comprise a housing having top, bottom and side walls, and detachable front panel holding beads. There may be similar panel holding beads at the back, or there may be a fixed wall or other structure at the back, depending upon whether the sign is to have two illuminated panels or just one. The detachable beads are usually held to the housing by means of screws. Thus, when it is desired to gain access to the housing, for example to change the sign or to service the lighting equipment inside, it is necessary to undo the screws and remove the beads. Since such signs are usually located high up, the operator will normally have to perform this function while standing at the top of a pair of stepladders or the like, and the procedure can be somewhat hazardous, particularly if the beads do not detach easily from the housing, or if it proves unexpectedly heavy. Furthermore, the operator sometimes drops the screws, and frequently does not bother to find them and put them back, so that the detachable bead is less securely held in place afterwards.

According to the present invention there is provided a box sign comprising a rectangular housing of top, bottom and side walls joined together, and a rectangular frame for a front panel detachably fitted to the housing and comprising elongate top, bottom and side members joined together, the frame being a snap fit onto the housing by means of an elongate rib carried by one of a co-operating wall and frame member engaging in an elongate recess in the other of the wall and frame member, the rib and recess carrying elements being

relatively resiliently deformable to allow the snap fit of the frame to the housing. Such interlocking ribs and recesses may be provided along two opposite walls of the housing and frame members particularly if the frame is to be completely detachable from the housing. Preferably, however, the frame is hinged to the housing and a said snap fitting rib and recess are provided along the wall and frame member remote from the hinge. The hinge is preferably provided at each side of the frame by a pair of arms pivotally connected at opposite ends to the frame member and adjacent wall, one of said pivotal connections being via a slider, so that as the frame is opened the frame member adjacent the hinge (i.e. opposite the one remote from the hinge) moves initially towards the opposite housing wall and then outwardly from the front of the housing. An interlocking rib and recess are preferably provided along the wall and frame member adjacent the hinge, said initial movement of the frame member on opening serving to take the rib and recess out of engagement.

In order that the invention may be more clearly understood, one embodiment will now be described with reference to the accompanying drawing, which shows a cross-sectional side view through part of the box sign.

Referring to the drawing; the box sign comprises a housing having a top wall 10, bottom wall 12 and two side walls, all of identical cross-section, and conveniently extruded from aluminium. Only one half of the box sign is shown, the other half, on the opposite side of the centre line CL, can be identical or similar in construction, or of any other desired construction. The walls are secured together at their corners in any convenient and conventional manner. To the front of the housing is detachably mounted a frame for supporting a translucent front panel 14, the frame comprising elongate

top and bottom frame members 16,18 respectively, and opposite end frame members. The frame members are of identical cross-section, except as hereinafter specified, and again are conveniently extruded from aluminium and secured together at the corners in conventional manner. The top and bottom frame members are provided with rearwardly directed ribs 20 shaped to provide mutually outwardly directed recesses 22. These engage mutually inwardly directed lips 24 formed on the inside surfaces of the top and bottom panels 10,12 of the housing. It will be apparent that if the walls and frame members are extrusions, the ribs 20 and lips 24 will extend along the length of their respective components, unless they are cut short at any point for constructional purposes. The lips 24 have an assymetric V or dogtooth formation to make it easier to achieve a snap fit engagement of the frame within the housing than disengagement of the frame from the housing. The side members of the front panel supporting frame are preferably formed without the rib 20 (or at any rate without the channel 22), at least in the embodiment in which the front panel supporting frame is hinged to the housing.

The front panel supporting frame can be completely detachable from the housing and, as indicated above, can be a snap fit on the housing by means of the recesses 22 and lips 24. Preferably, however, the front panel supporting frame is hinged to the housing. A suitable form of hinge is shown diagrammatically in the drawing. It comprises, at each side of the frame, a longer lower arm 26 and a shorter upper arm 28, each pivotally interconnecting the side frame member with the adjacent side wall of the housing. The lower arm 26 is pivoted at fixed points to the side wall and frame member, and the upper arm 28 is pivoted to a fixed point on the frame

member, but at its other end to a slider 30 which travels up and down a track fixed to the side wall of the housing. A third arm 32 pivotally connects the slider 30 with the lower arm 26. These link arms are shown in a typical open position of the front panel supporting frame. In this position, the lower arm 26 extends between pivot point A on the side wall of the housing and its pivot B on the side frame member, while the shorter arm 28 extends between its pivot point C on the slider and its pivot point D on the side frame member, and the arm 32 extends between its pivot point E on the slider and its pivot point F on the arm 26. The position of the open front panel 14 and its supporting frame is shown in dot-dash lines, from which it will be seen that it provides access from below to the interior of the housing. When the front panel is swung into the closed position, the slider 30 moves upwards in the direction indicated by the arrow W so that the pivot points C,E move to positions C',E' respectively. The point B moves arcuately as indicated by the arrow X to the point B', while the point D moves along a different upwardly sweeping arc as indicated by the arrow Y to the point D'. The lower frame member 18 moves arcuately into the position shown in full lines as indicated by the arrow Z. In the closed position, the three arms 26,28,32 lie along substantially a common line between the lower and upper frame members. From the arrows Y and Z it will be seen that the rib 20 of the upper frame member 16 moves inwardly and upwardly to engage the lip 24 without any snap action, whereas the rib 20 on the lower frame member 18 meets and engages with a snap action the lip 24 in a direction substantially at right angles to the direction of engagement of the rib on the upper frame member. Thus, the only snap action occurs at the bottom of the frame,and this is the only point at which force need be

applied to the front panel supporting frame to open the front panel.

If the box sign is double sided, that is to say it has a translucent panel on both sides, the translucent panel on the other side can be similar to that shown in the drawing. However, for simplicity of construction it may be preferred to have a different method of attachment on that side since it will seldom be necessary to have ready access to the interior of the housing from both sides. In that case, therefore, the panel supporting frame members can be screwed to the housing walls in conventional manner.

CLAIMS:

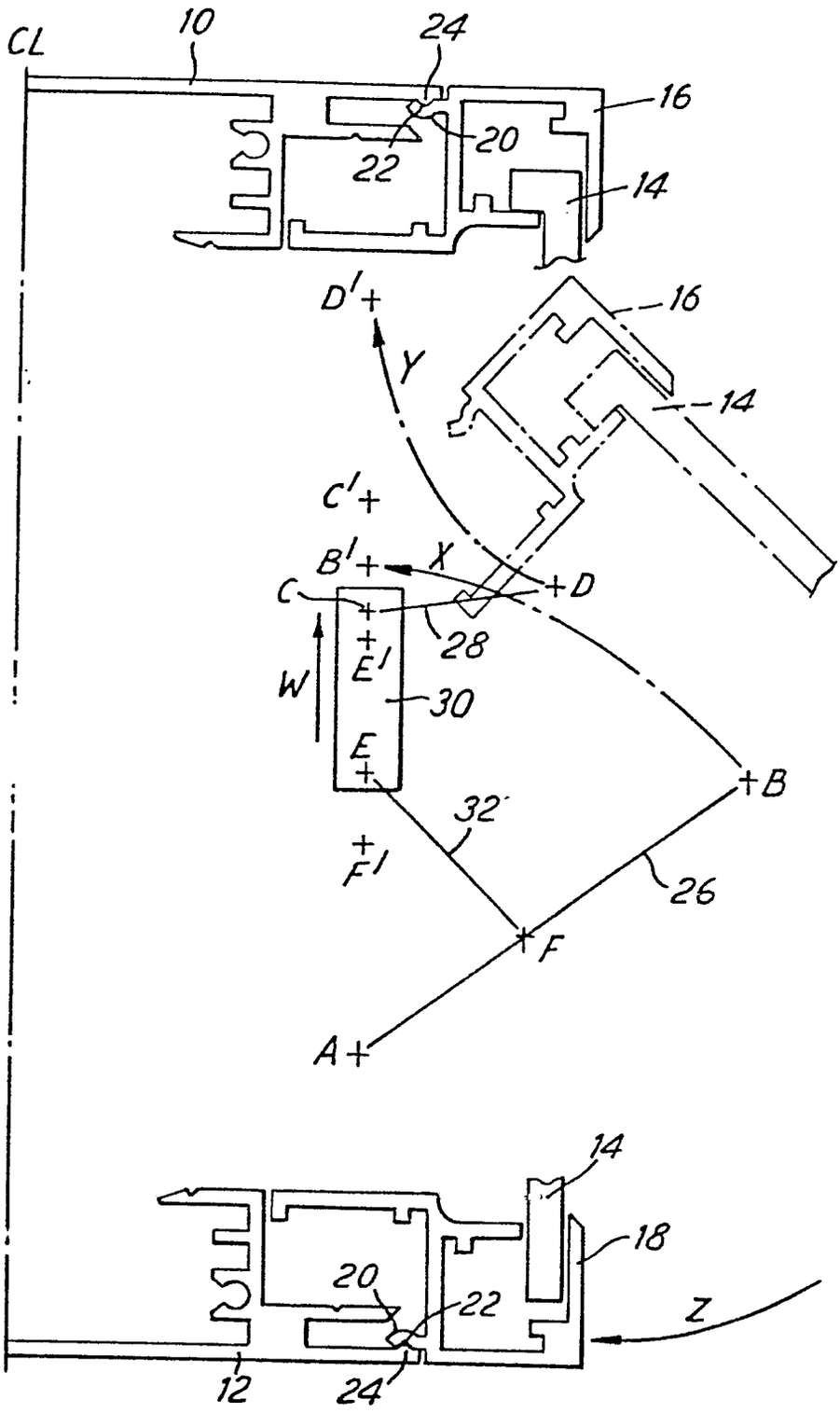
1. A box sign comprising a rectangular housing of top (10), bottom (12) and side walls joined together, and a rectangular frame for a front panel (14) detachably fitted to the housing and comprising elongate top (16), bottom (18) and side members joined together, characterised in that the frame is a snap fit onto the housing by means of an elongate rib (24) carried by one of a co-operating wall (12) and frame member (18) engaging in an elongate recess (22) in the other of the wall and frame member, the rib and recess carrying elements being relatively resiliently deformable to allow the snap fit of the frame to the housing.

2. A box sign according to claim 1 wherein said interlocking ribs (24) and recesses (22) are provided along two opposite walls (10,12) of the housing and frame members (16,18).

3. A box sign according to claim 1 wherein the frame is hinged to the housing and a said snap fitting rib (24) and recess (22) are provided along the wall (12) and frame member (18) remote from the hinge.

4. A box sign according to claim 3 wherein the hinge is provided at each side of the frame by a pair of arms (26,28) pivotally connected at opposite ends to the frame member and adjacent wall, one of said pivotal connections (C) being via a slider (30), so that as the frame is opened the frame member (16) adjacent the hinge (i.e. opposite the one (18) remote from the hinge) moves initially towards the opposite housing wall (12) and then outwardly from the front of the housing.

5. A box sign according to claim 4 wherein an interlocking rib (24) and recess (22) are provided along the wall (10) and frame member (16) adjacent the hinge, said initial movement of the frame member on opening serving to take the rib and recess out of engagement.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Application number
EP 80 30 1655

European Patent Office

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	US - A - 3 862 505 (RUDOLF JEROMA) * Claims 1-4; column 3, lines 19-36; figures 1-3 * & DE - A - 2 332 360	1
	US - A - 2 120 449 (GRAND RAPIDS STORE EQUIPMENT COMPANY) * Claims 1-2,4-6; page 1, lines 1-28; page 2, lines 55-72; figures 1-4 *	1,4
A	US - A - 3 863 372 (JOHANN STILLING) * Claim 1; figures 1-2 *	1
A	CA - A - 878 617 (SAMUEL MARKLE) * Claims 1,4; figures 1,3,6 *	1

CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)

G 09 F 13/04
15/00
F 21 V 17/00

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

G 09 F 13/04
15/00
13/10
F 21 V 17/00

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	29-08-1980	FRANSEN