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(71) Applicant: **SIGNTECH INC.**
7515 Kimbel Street
Mississauga Ontario L5S 1A7(CA)

(72) Inventor: **Gandy, James**
7515 Kimbel Street
Mississauga Ontario L5S 1A7(CA)

(74) Representative: **Smith, Philip Antony et al**
REDDIE & GROSE 16 Theobalds Road
London WC1X 8PL(GB)

(54) **Illuminated signs.**

(57) The sign has a housing 210 containing fluorescent tubes and having a front cover 205 hinged at 307 and secured by screws 309. A translucent sign sheet 222 is stretched across the opening of the frame 240 of the cover by tightening screws 262. Bracing members for withstanding the tension of the sheet 222 comprise inclined bracing elements 311 sliding into recesses 256 of the frame and bolted at their opposite ends to a vertical tubular bracing element 316.

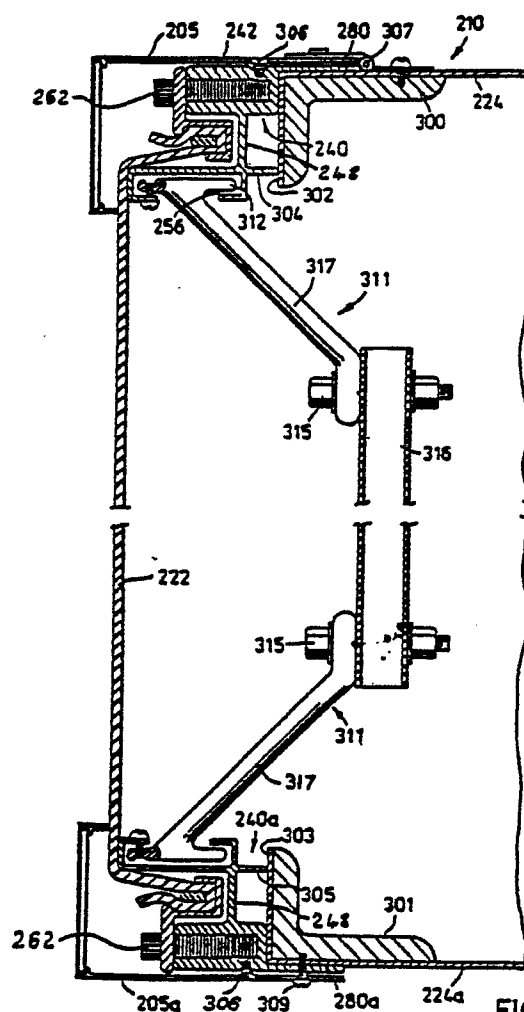


FIG. 7

EP 0 268 308 A2

ILLUMINATED SIGNS

The present invention relates to signs.

One type of sign which is in use at the present time has a housing provided with an open front or an open front and an open rear and containing within the housing a fluorescent light fitting. The open front of the housing is provided with a cover in the form of a frame, which is pivotally connected along the top of the frame to the top of the housing, and a screen of rigid sheet material covering an opening defined by the frame, the periphery of the sheet material being secured to the frame. The frame is made of extruded metal sections which are connected together, at the corners of the frame, by L-shaped connectors engaging in the extruded metal sections. The rigid sheet material of the screen is light-transmitting and has either opaque insignia thereon or an opaque zone surrounding light-transmitting insignia. In the case of the housing having an open rear, a similar frame and screen are provided at the rear of the housing. Such screens are normally made of glass.

The use of glass for the screens of such signs is expensive and, moreover, glass sign screens are fragile and can easily be broken by accident or by vandals.

U.S. Patent Specification No. 3,934,965 describes a sign comprising a rigid peripheral frame, a sheet of flexible translucent sign sheet material extending across the opening, a series of separate sheet tensioning devices along two sides of the frame for tensioning the flexible sign sheet across the opening, bracing means extending between opposed sides of the frame intermediate their ends to brace the frame against tension in the flexible sign sheet, and means for lighting the sign.

In that specification the bracing means are behind the fluorescent tubes for lighting the sign and thus spaced from the plane of the translucent sheet and its tensioning devices.

The present invention is characterized in that the sign lighting means is located behind the bracing means, and that the bracing means comprises first and second bracing members extending from respective opposite sides of the frame in a direction inclined rearwardly from the plane of the flexible sign sheet and a third bracing member extending in parallel spaced relationship to the flexible sign sheet and secured to the first and second bracing members.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more readily understood from the following description of embodiments thereof given, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows a view in perspective of an illuminated sign according to the present invention having a front cover in a partially opened position;

Figure 2 shows a view taken in cross-section along the line 2-2 of Figure 1 with the cover shown in the closed condition;

Figure 3 shows a broken-away view in perspective of parts of the sign of Figure 1;

Figure 4 shows a broken-away view in front elevation of parts of one corner of the sign of Figure 1 with the parts separated as during assembly of the sign;

Figure 5 shows a view in perspective of a corner bracket for connecting together parts of the sign of Figure 1;

Figure 6 shows a view taken in cross-section through part of the housing of an illuminated sign of modified construction, and

Figure 7 is a view similar to Figure 2 of a further embodiment of the invention for use with a housing made of sheet metal.

The sign shown in Figure 1 has a housing, which is indicated generally by reference numeral 10 and has an open front 12, and a front cover, which is indicated generally by reference numeral 14 and which is peripherally connected along its top to the housing 10, as described in greater detail below.

The housing 10 contains holders 16 for fluorescent light tubes 18, and the front cover 14 comprises a frame 20 defining an opening and a screen in the form of a sheet 22 of flexible, light-transmitting display material extending across and covering the opening formed by the frame 20.

Referring now to Figure 2, the housing 10 has a top 24 and a bottom 24a, which is formed of similar metal extrusions. However, it is at this point mentioned that the present invention is not restricted to housings made of extrusions but, on the contrary, it is readily applicable to sign housings made of sheet metal.

The housing top 24, as viewed in Figure 2, comprises a main horizontal web 26 and a vertical web 28 extending downwardly, and thus inwardly of the housing, from the web 26, the web 28 being spaced rearwardly, i.e. to the left as viewed in Figure 2, from the front of the web 26, at which a shallow vertical web 30 projects inwardly of the housing so as to define a recess 33 between the

webs 28 and 30, the recess 33 facing inwardly of the housing.

The web 28 is also formed with a forwardly extending ledge projection 34 along the length thereof, an elongate elastomeric seal member 36 being partially recessed in the ledge projection 34.

The innermost portion of the web 28 terminates in an inner edge 38 of U-shaped cross-section.

The frame 20 comprises, as viewed in Figure 2, upper and lower frame members indicated generally by reference numerals 40 and 40a, respectively, which are connected at opposite ends thereof by side frame members 40b and 40c (Figure 1).

The upper frame member 40 comprises an elongate body portion 42, an elongate, forwardly-open slot 44 being formed in the body portion 42 along the length thereof and the opposed side walls of the slot 44 being formed with longitudinal ribs 46.

A web 48 depends from the body portion 42 and a horizontal web 50 projects forwardly from the web 48 and terminates in an end portion 52 of U-shaped cross-section which, together with an end portion 54 of L-shaped cross-section at the inner end of the web 48, defines a partially downwardly or inwardly open recess 56 of rectangular cross-section.

The end portion 52 presents a flat vertical front face 58 which is directed towards the front of the sign.

Upper and lower elongate screen retainer members indicated generally by reference numerals 60 and 60a are secured to the upper and lower frame members 40 by bolts 62.

The upper screen retainer member 60 comprises vertical web 64, which is adjustably secured by the uppermost bolts 62 to the body portion 42 of the upper frame member 40, the bolts 62 having threaded shanks 66 screwed into engagement with the ribs 46 of the slot 44. As will be readily apparent, further tightening of the bolts 62 will serve to displace the upper screen members 60 in a rearward direction to adjustably tighten the screen 22 across the opening defined by the faces 58.

The upper screen retainer member 60 also has a rearwardly extending horizontal web 68 which bears in sliding engagement with the flat underside 70 of the body portion 42 of the upper frame member 40, a vertical rear web 71 depending from the rear of the web 68 and a horizontally and forwardly extending web 72 projecting from the bottom or innermost portion of the web 70. A web extension 74 depends vertically from the web 64 at the front side of the upper screen retainer member 60.

The webs 68, 71 and 72 and the web extension 74 define an elongate recess 76 of substantially rectangular cross-section extending the length of

the upper screen member 60, the web 72 and the web extension 74 being so dimensioned as to define therebetween a gap 78, so that the recess 76 is partially open at a side thereof facing inwardly of an opening defined by the frame 14.

As can be seen from Figure 2, the housing top 24 and bottom 24a, the upper and lower frame members 40 and 40a and the upper and lower screen retainer members 60 and 60a, which are all metal extrusions, have, respectively, the same shapes, and therefore it is necessary to describe the lower housing portion 24a, the lower frame member 40a and the lower screen retainer member 60a in greater detail herein.

However, the rearmost portion of the upper frame member 40 differs from that of the lower frame member 40a.

More particularly, referring first to the upper frame member 40, a horizontal flange 80 extends rearwardly from the body portion 42 and is spaced downwardly from the top of the body portion 42 to define an upwardly open recess 82 in conjunction with a vertical web 84 upstanding from the rear of the web 80. The upper edge of the web 84 is formed with a rounded portion 86 which is received within the recess 33 and serves as a pivot to allow pivotation of the cover 14 from the closed position, in which it is shown in full lines in Figures 1 and 2, to the partially open position, indicated by a dot-dash line 14a in Figure 2, and beyond. However it is at this point emphasized that the present invention is not limited to this type of pivotal connection between the upper frame member 40 and the housing top 24.

A web 88 depending from the underside of the horizontal flange 80 abuts the elastomeric seal member 36, when the front cover 14 is in its closed position as shown in Figure 2, to provide a seal between the front cover 14 and the housing 10.

Referring now to the lower frame member 40a, it will be seen that a rearwardly extending horizontal flange 80a is provided which is shorter than the flange 80 and which terminates at an upstanding web 88a co-operating with an elastomeric seal member 36.

The side frame members 40b and 40c are similar to the lower frame member 40a.

The housing top and bottom 24, 24a are connected to housing sides 24c, 24d, which are extrusions having same cross-sectional shape as the housing top and bottom 24, 24a, by L-shaped corner brackets, one of which is shown in Figure 5 and illustrated by reference number 90. These corner brackets are of known construction and are therefore not described in detail herein. Such brackets are inserted into the U-shaped inner edge 38 and between the web 28 and the ledge projec-

tion 34 of the housing top 24, and the corresponding parts of the lower and side frame members 24a, 24c and 24d, to secure these frame members together.

Figure 4 illustrates the connection of the upper frame member 40 and the side frame member 40c at one of the corners of the frame, the frame members being suitably connected at the other corners of the frame.

As shown in Figure 4, a pair of L-shaped brackets 91 are engaged in the upper frame member 40, and more particularly are secured in the recess 56 and the slot 44 (Figure 3) by screws 92 and 93 and are about to be inserted into the corresponding recess and slot in the side frame member 40c and secured therein by further screws 92 and 93.

As mentioned previously, it is not essential that the housing 10 be formed from extrusions such as those described above, and an embodiment of the invention for use with a housing made of sheet metal is illustrated in Figure 6.

As shown in Figure 6, an angle member 94 is provided in a top corner of a housing, which is not shown in detail, between a sheet metal top 96 and a sheet metal front 98 of the housing, and a front cover support member indicated generally by reference numeral 100 is secured to the top and front outer surfaces of the housing corner by means of a screw 102 extending through the support member 100 into threaded engagement with the angle member 94.

The support member 100 has a top, horizontal web 104, which is seated on the top surface of the housing and through which the screw 102 extends. The horizontal web 104 corresponds to the main horizontal web 26 of the housing top 24 illustrated in Figure 2 and, for comparison of Figures 2 and 6, it can be seen that the remaining parts of the support member 100, which have been indicated by reference numerals corresponding to those employed in Figure 2 but increased by 100, are similar to the above-described parts of the front portion of the housing top 24 and are not described in detail herein. As will be readily apparent, the vertical web 84 and the rounded portion 86 of the upper frame member 40 can be pivotally engaged in the recess 32 of the support member 100 for pivotally connecting the front cover 14 to the support member 100.

As shown in Figures 2 and 3, the flexible light-transmitting material sheet 22 has marginal edge portions which are wrapped around retainer bars 106 within the recess 76 in the upper screen retainer member 60 and corresponding recesses in the lower screen retainer member 60a and corresponding retainer members which are secured to the side frame members 40b and 40c and one of

which is indicated by reference numeral 60c in Figure 3. These retainer bars are formed as extrusions of rectangular cross-section and serve to secure the marginal portions of the sheet 22.

During assembly of the front cover 14, the marginal portions of the sheet 22 are wrapped around the retainer bars such as the retainer bar 106 and the latter are then inserted into the recesses in the retainer members through the gap 78 of the upper retainer member 60 and the corresponding gaps in other retainer members. In this way, the sheet 22 is stretched over the opening defined by the web end portion 52 of the upper frame member 40 and the corresponding end portions of the other frame members. The flat vertical front face 58 of the upper frame member 40 and the corresponding flat vertical faces of the other frame members, over the sheet 22 is stretched, prevent the formation of wrinkles in the sheet 22, particularly when the bolts 62 are tightened in order to tighten the sheet 22 across these flat front faces. As will be readily apparent, the provision of the slots 44 for receiving the bolts 62 enables the bolts 62 to be positioned anywhere around the frame without any need to drill holes into the frame for receiving the bolts 62. The sheet 22 can therefore be retained anywhere around the frame without drilling and, moreover, can be tightened at any position around the frame, so that it is a simple matter to secure the flexible screen 22 in a flat, wrinkle-free condition over the opening defined by the frame.

When the screen 22 has been installed and adjusted, cover members 105 connected at the corners of the frame by L-shaped bracket 107 are secured around and in front of the frame members 40, 40a, 40b, and 40c by screws 107. The cover members 105 extend in front of the frame members and thus conceal the frame members, the marginal portions of the sheet 22 and the bolts 62 and other above-described components employed for securing the sheet 22.

Figure 7 shows a further embodiment of the invention for use with a housing made of sheet metal and in this figure parts which correspond to those of Figure 2 have been indicated by corresponding reference numerals in the 200 series.

In this embodiment, the housing, indicated generally by reference numeral 210, has a top 224 and a bottom 224a of sheet metal, which are secured to respective angle members 300 and 301, and sheet metal facings 302 and 303 extending in front of the angle members 300 and 301.

Upper and lower frame members 240 and 240a have webs 280 and 280a seated on the housing top and bottom 224 and 224a, respectively, and webs 304 and 305, projecting rearwardly of the webs 248, in abutment with the sheet metal facings

302 and 303. The webs 280 and 280a differ from the webs 80 and 80a of Figure 2 by being displaced outwardly to the periphery of the frame formed by the frame member 240 and 240a and by the side frame members, which are not shown. Otherwise, the frame members of Figure 7 are similar to those of Figure 2.

Cover members 205 and 205a are secured by screws 306 to the upper and lower frame members 240 and 240a and the upper frame member 240 is pivotally secured to the housing top 224 by a hinge 307, while the lower frame member 240a is releasably secured to the housing bottom 224a by screws, one of which is shown and indicated by reference numeral 309. By removal of these screws securing the lower frame member 240a to the housing bottom 224a, screen 222 and its frame, together with the cover members, can be pivoted upwardly about the axis of the hinge 307 to provide access to the interior of the housing, e.g. for maintenance purposes.

Frame support members indicated generally by reference numerals 311 are engaged with the upper and lower frame members 240 and 240a to brace and to resist pulling together of the latter as bolts 262 are tightened to tension the screen 222.

The frame support members 311 are formed at their outer ends with flanges 312, which are secured within longitudinal recesses 256 in the frame members, and are secured at their opposite ends by bolts 315 to opposite ends of a vertical length of tubing 316, the frame support members 311 having bar-shaped intermediate portions 317 inclined inwardly and rearwardly from the frame, i.e. away from the screen 222. Corresponding horizontal frame support members and tubing may if required be provided between the side frame members and the horizontal and vertical tubing may, e.g. be welded together at points of intersection thereof.

The frame support members 311 and tubing 316 are also provided in the embodiment of the invention illustrated in Figure 2.

In all of the above-described embodiments of the invention, the screen is made of polyester reinforced vinyl film and is preferably translucent white, graphics (not shown) being provided on the screen as desired by spraying, silk screening or heat transfer process, and the extrusions are aluminum.

Claims

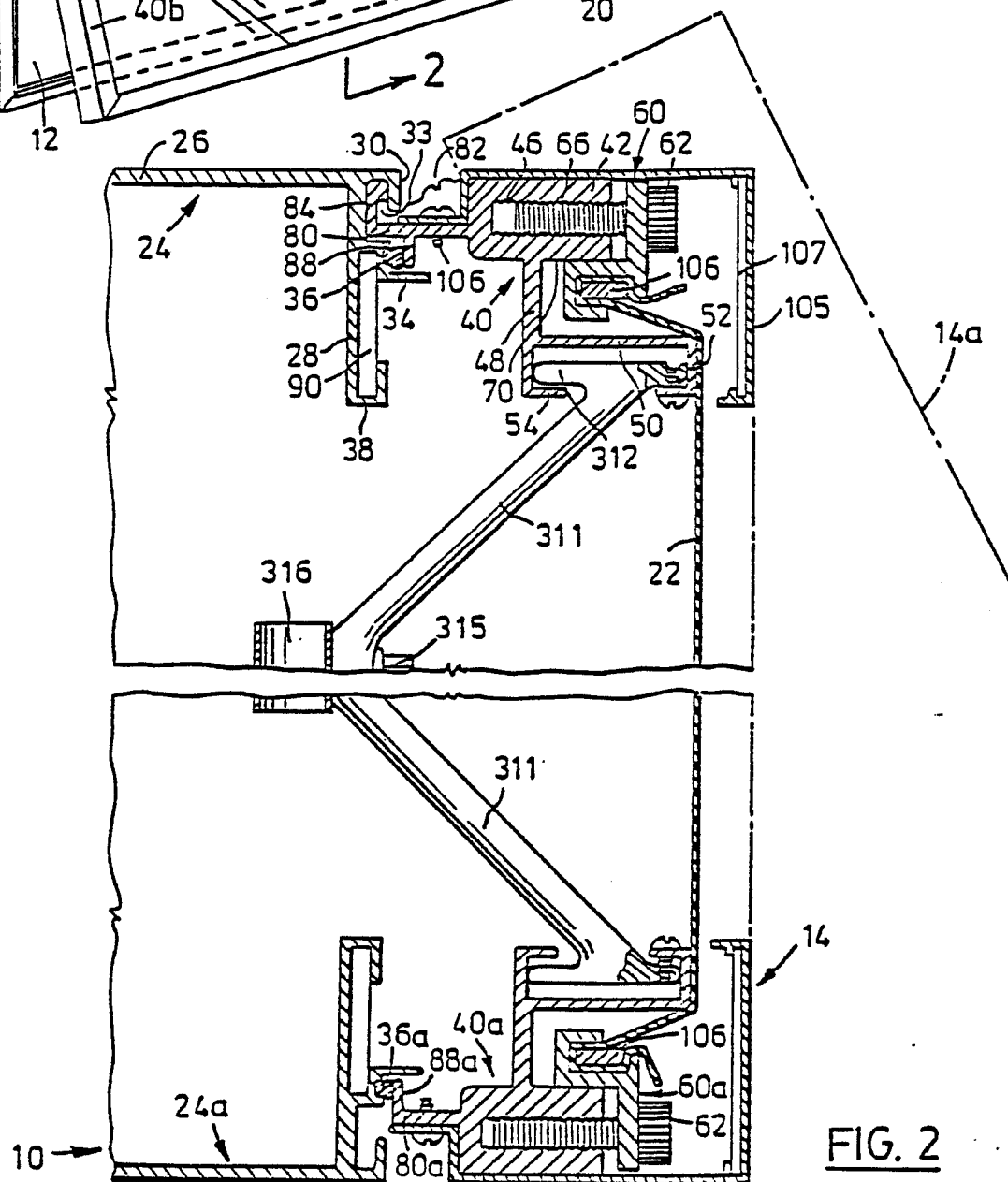
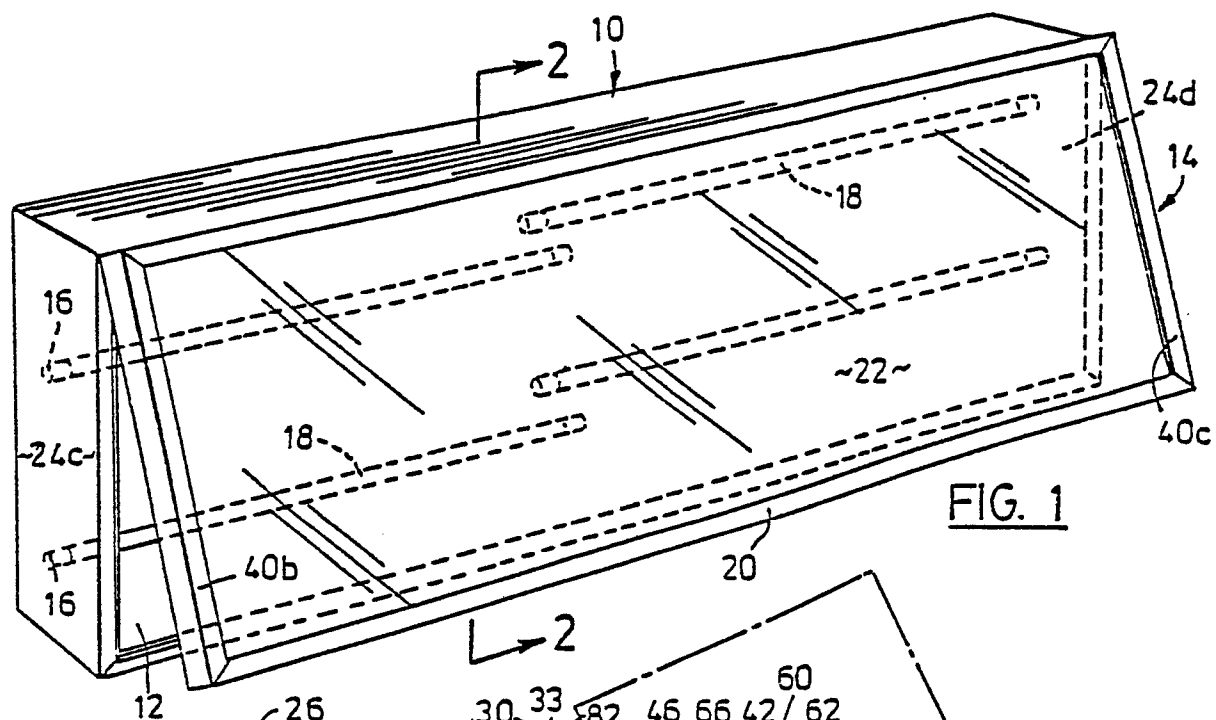
1. A sign comprising a fluid peripheral frame 20, a sheet (222) of flexible translucent sign sheet material extending across the opening, a series of separate sheet tensioning devices (240, 262) along two sides of the frame for tensioning the flexible

sign sheet across the opening, bracing means (311, 316) extending between opposed sides of the frames intermediate their ends to brace the frame against tension in the flexible sign sheet, and means (18) for lighting the sign, characterized in that the sign lighting means (18) is located behind the bracing means (311, 316), and that the bracing means (311, 316) comprises first and second bracing members (311) extending from respective opposite sides of the frame in a direction inclined rearwardly from the plane of the flexible sign sheet (22) and a third bracing member (316) extending in parallel spaced relationship to the flexible sign sheet (22) and secured to the first and second bracing members (311).

2. A sign according to claim 1 characterized in that the first and second bracing members (311) are slidably received in recesses (256) extending along the respective sides of the frame (20).

3. A sign according to claim 1 or 2 characterized in that the bracing means (311, 316) extend between upper and lower sides of the frame (20) and the lighting means comprises fluorescent tubes (18) extending parallel to said upper and lower sides.

4. A sign according to claim 3 characterized by horizontal bracing means extending between the vertical sides of the frame.



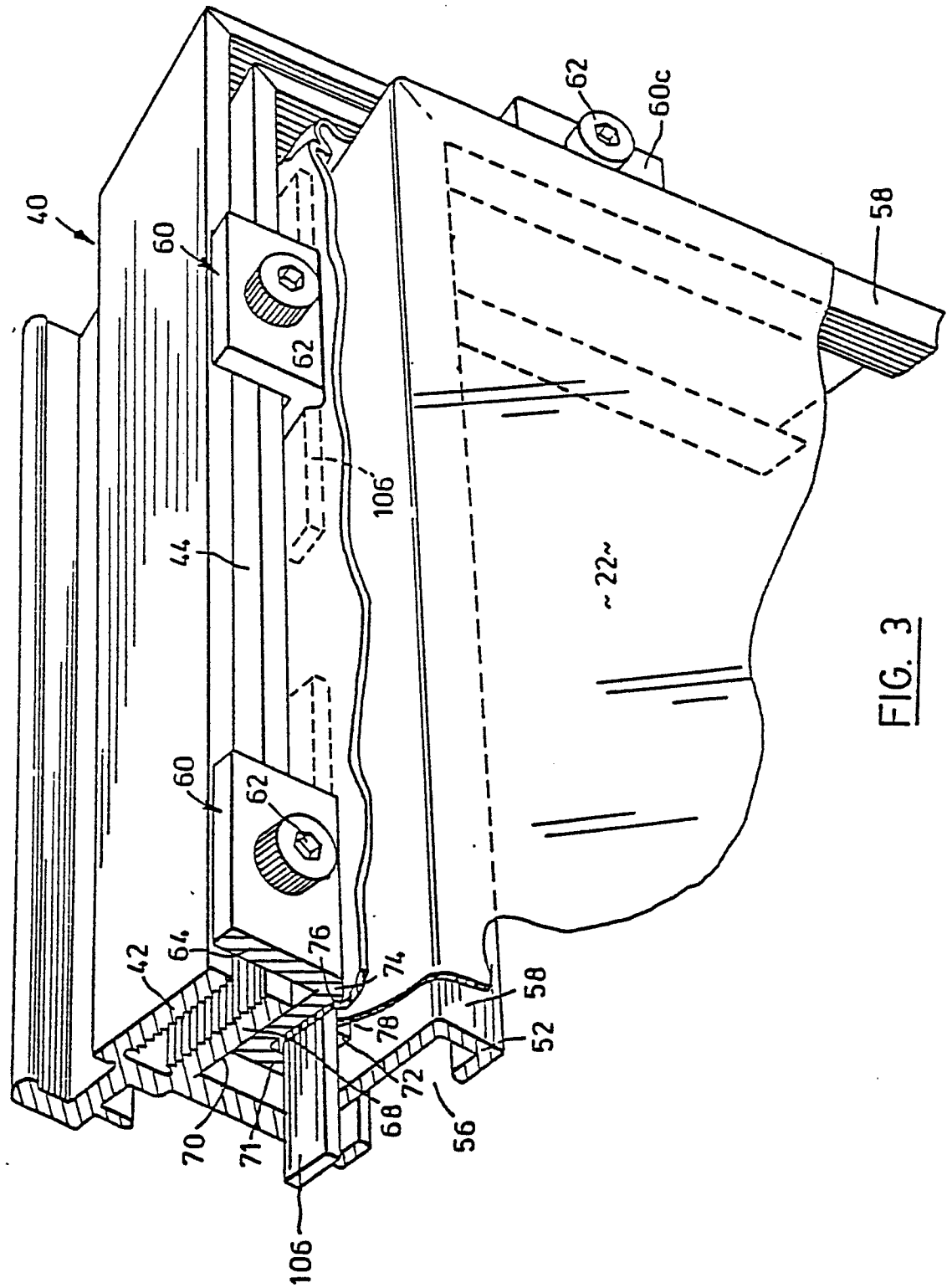


FIG. 3

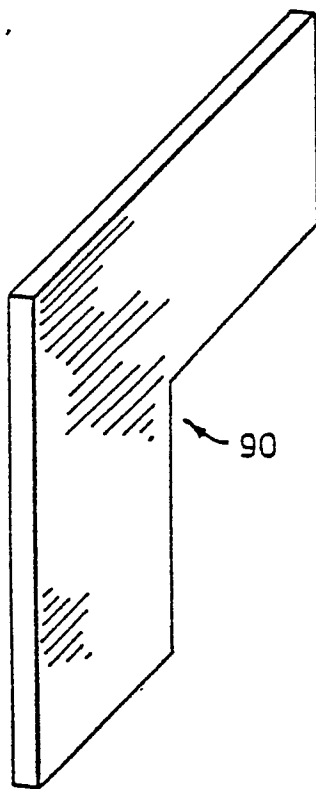


FIG. 5

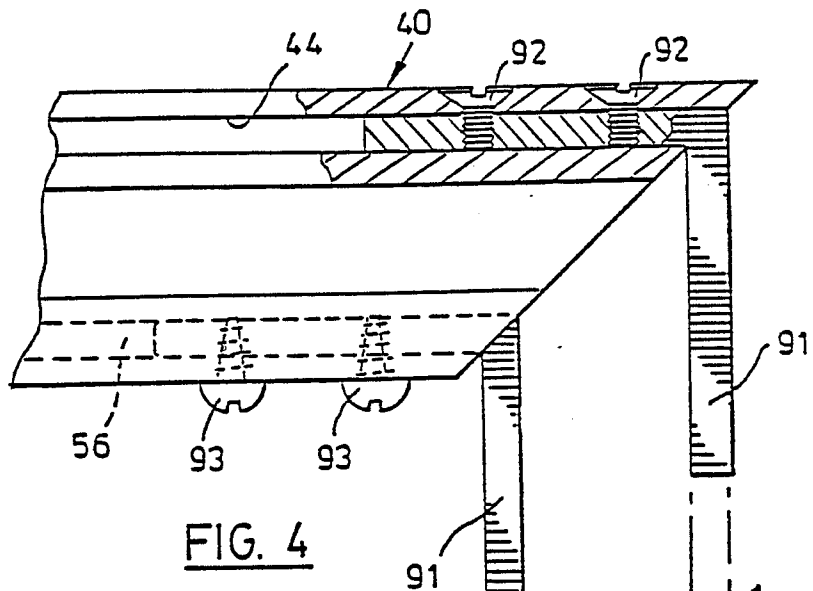


FIG. 4

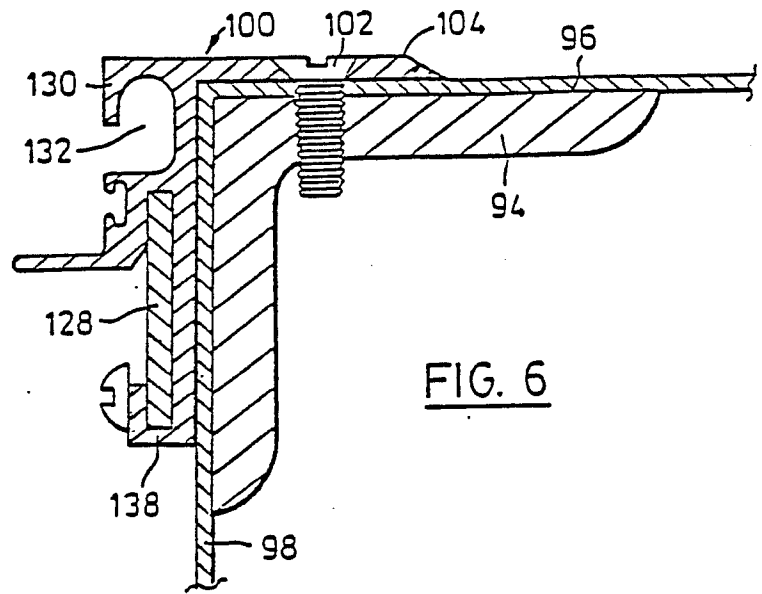
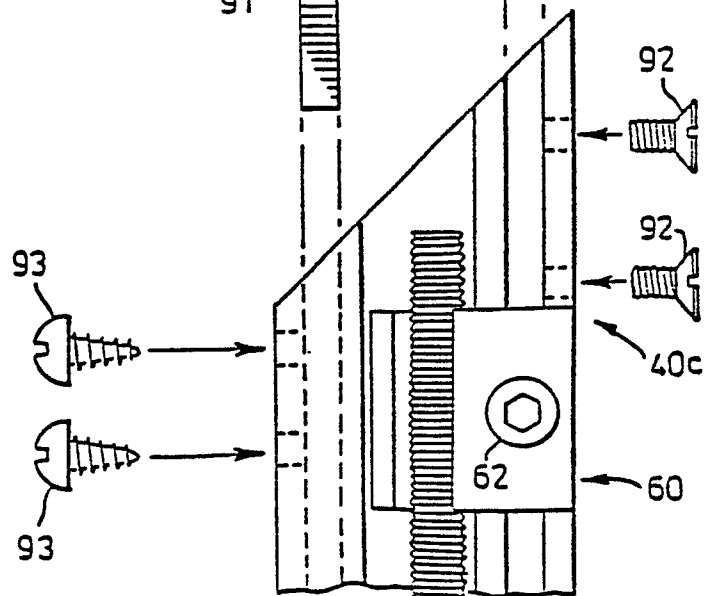


FIG. 6



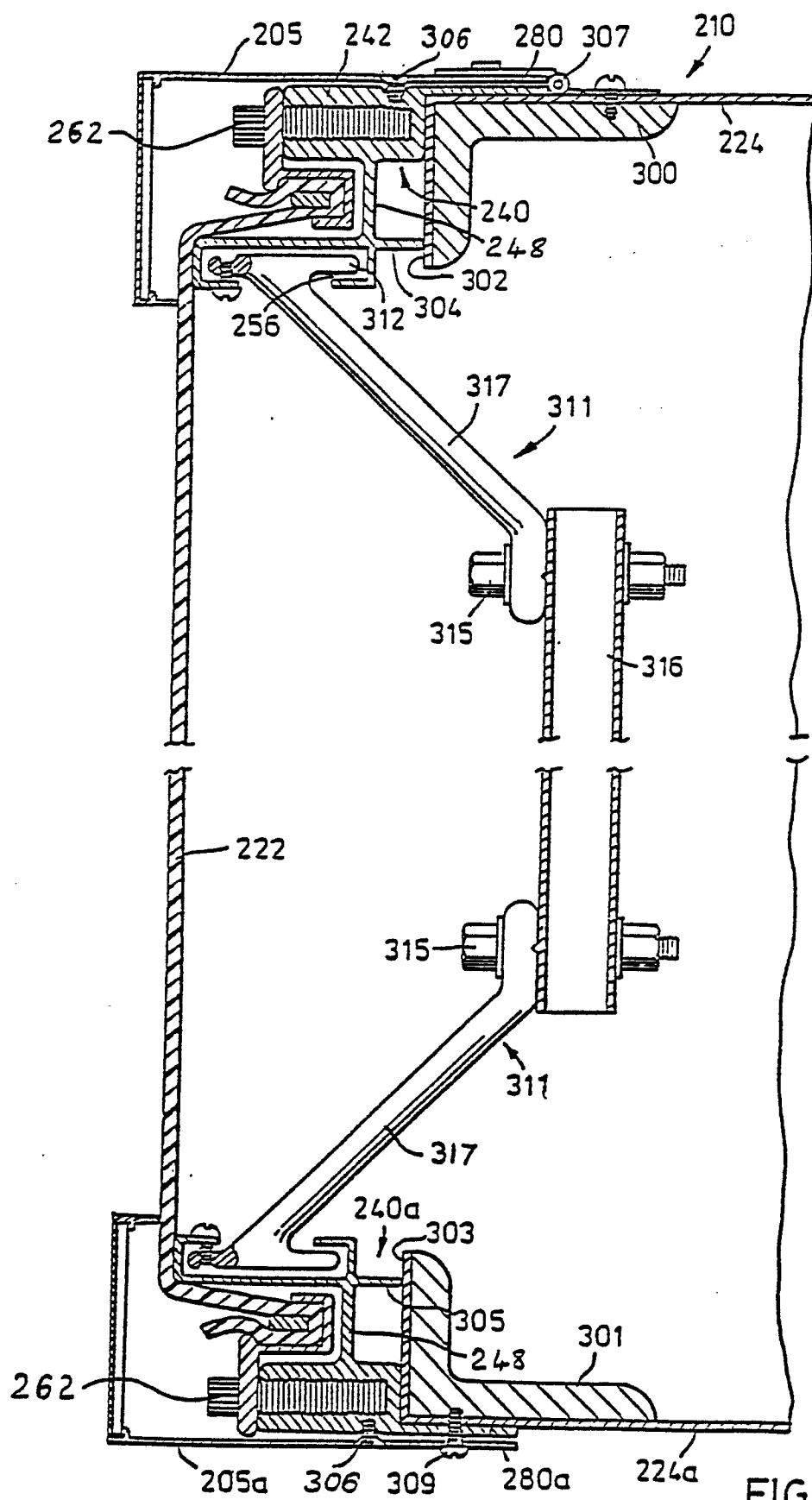


FIG. 7