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3,358,397

DISPLAY DEVICE

Filed Nov. 12, 1965

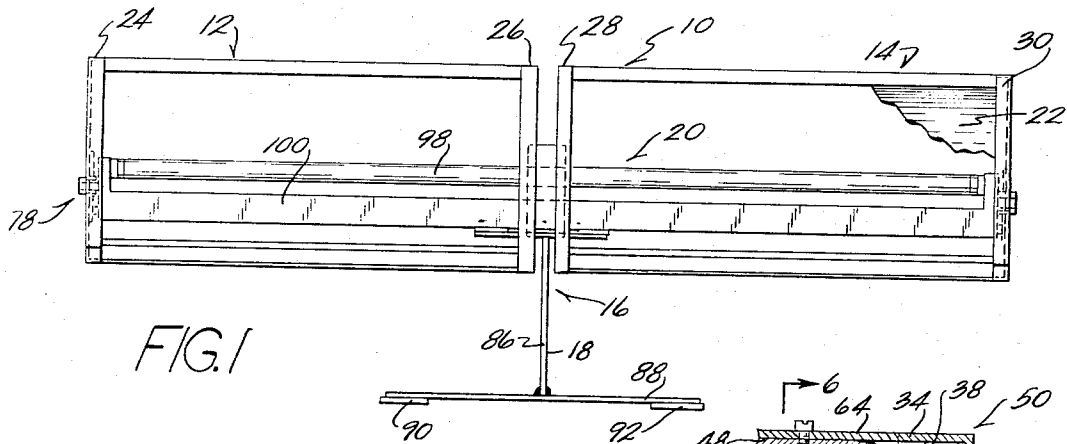


FIG. 1

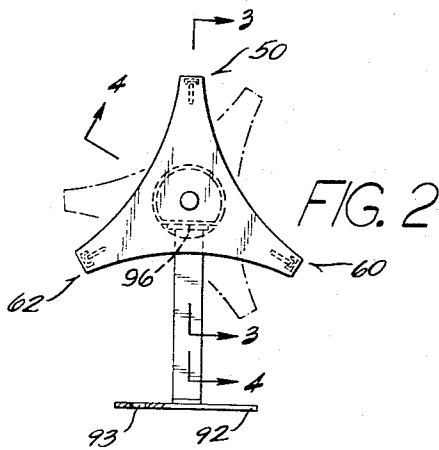


FIG. 2

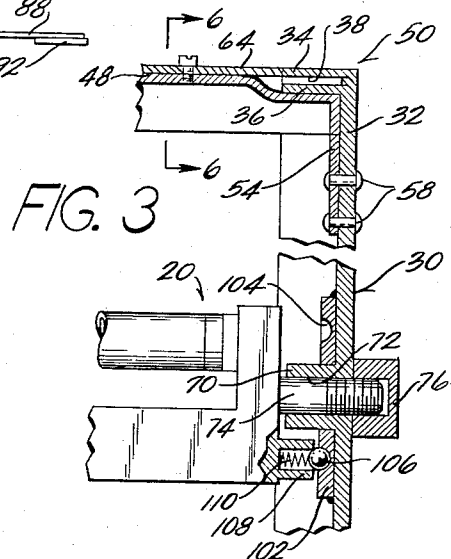


FIG. 3

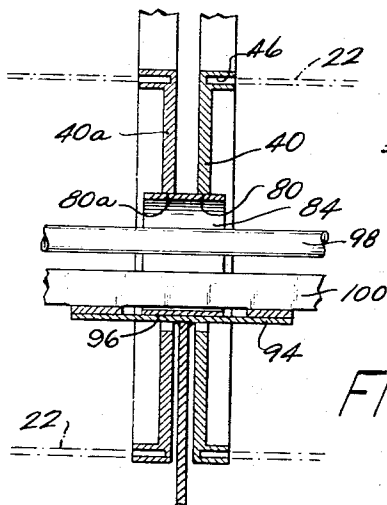


FIG. 4

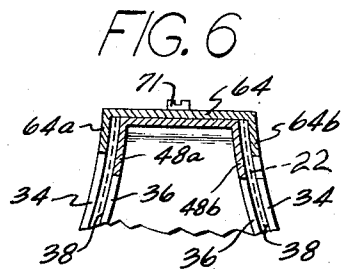


FIG. 6

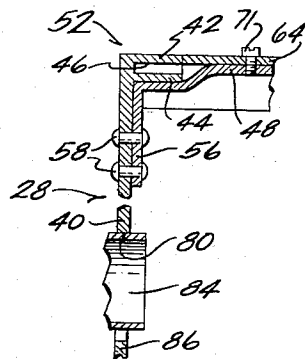


FIG. 5

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DISPLAY DEVICE

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ABSTRACT OF THE DISCLOSURE

This disclosure relates to a display panel assembly wherein a number of panel holders are arranged end-to-end on a common support. An elongated light assembly extends through the interior of the panel holders and is part of the support frame for the panel holders. Each panel holder includes a pair of spaced end caps between which the display panels are supported. The end caps include inner openings the walls of which engage bearing surfaces on the light assembly and provide a bearing support upon which the panel holders are free to rotate.

This invention relates to display devices and, more particularly, to such devices as are adapted to carry a number of display panels and are capable of rotating to change the panel exposed for view.

A general object of this invention is to provide an improved and versatile display device offering an increased number of available panel displays.

Another object of this invention is to provide this versatility and latitude of available displays in a display device having a simplified and economical construction.

A further more specific object of this invention is to provide a simplified and improved arrangement capable of supporting a plurality of multiple display panel holders for independent movement relative to each other.

Other objects and advantages will be pointed out in, or be apparent from, the specification and claims, as will obvious modifications of the embodiment shown in the drawings, in which:

FIG. 1 is a front elevation of a display device constructed in accordance with this invention;

FIG. 2 is an end view thereof illustrating two available positions of the display panel holders;

FIG. 3 is a section view taken generally along line 3—3 of FIG. 2;

FIG. 4 is a section view taken generally along line 4—4 in FIG. 2;

FIG. 5 is an exploded section view of the end of the display holder opposite to the end illustrated in FIG. 3; and

FIG. 6 is an enlarged section view taken along line 6—6 of FIG. 3.

With reference to the drawing, display device 10 includes a pair of display panel holders 12 and 14 mounted on a frame 16 for independent rotation. Frame 16 includes base 18 and panel holder support 20. In a manner to be described more completely hereinafter, each panel holder is capable of carrying a number of display panels 22 but for convenience only a portion of one panel is illustrated in the drawing.

The panel holders being independently rotatable and each being capable of carrying more than one display panel provides, in addition to an increased number of available display panels, a greater variety of available display panel combinations. The display device constructed in accordance with this invention achieves this versatility of display with an efficient use of a minimum number of structural elements by combining multiple functions in various structural elements.

Structurally each panel holder includes a triangular

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shaped end cap 24 and 26 in panel holder 12 and 28 and 30 in panel holder 14. End caps 24 and 30 are of identical construction and end caps 26 and 28 are of identical construction. End cap 30 is illustrated in FIG. 3 and includes a planar plate 32 having turned flanges 34 and 36 extending around the periphery thereof and spaced from each other to provide an inwardly facing groove 38. Similarly, end cap 28 (see FIG. 5) includes a planar plate 40 having relatively spaced flanges 42 and 44 extending around the periphery of end caps 28 and providing a groove 46 facing inwardly toward groove 38. Connector strip 48 extends between the corners 50 and 52 of the end caps and has turned ends 54 and 56 fixed to plates 32 and 40 by means of rivets 58. Identical connector strips extend between corners 60 and 62 of end cap 30 and corresponding corners in end cap 28 to complete a connection between caps 28 and 30.

The structure of end cap 30 is repeated in end cap 24 and that of end cap 28 is repeated in end cap 26 and end caps 24 and 26 are connected by an identical connector strip arrangement extending between corresponding pairs of end cap corners. This completes the panel holder assemblies with the ends of each panel holder being provided with opposed sets of inwardly facing grooves spaced around the periphery of the panel holders to receive and hold a number of elongated display panels therebetween. More particularly, a rectangular display panel can be positioned with an edge in the groove between corners 50 and 60 of end cap 30 and also between corners 60, 62 and 62, 50 thereof, and of course each panel extends across to end cap 28 where the opposite edges thereof are received in groove 44 between corresponding corners of end cap 28. A similar panel arrangement is provided in display panel holder 12.

As is perhaps best illustrated in FIG. 6, the connecting strips are generally channel shaped in cross section so that the longitudinal ends of the display panels extending between end caps 24 and 26 rest against the legs thereof, for example legs 48a and 48b as illustrated in FIG. 6. To complete the connection of the display panels in the panel holders a clamping strip 64 is provided and is also channel shaped in cross section to fit over strip 48 so that the longitudinal display panel edges are clamped between legs 64a and 48a and between legs 64b and 48b. Strips 48 and 64 each include openings 66 and 69 which are aligned when the strips are engaged and receive self-tapping screw 71 to connect the strips.

It will be appreciated that three such connecting and clamping strip combinations are provided in each panel holder with one combination extending between each corresponding pair of corners of the end members. This arrangement securely positions the display panels in the panel holders without interfering with the copy on the panels. The above description is equally applicable to panel holders 12 and 14 and to each corresponding pair of corners and display panel holding arrangements.

An effective and simple support arrangement is provided for the panel holders. Plate 32 of end cap 30 includes a central hub 70 defining a through hole 72 in the end cap. Panel holder support 20 of frame 16 includes a threaded stud 74 extending from one of its opposite ends. Stud 74 extends through hub 70 and opening 72 and receives nut 76 which secures end cap 30 to support 20 while leaving the panel holder free to rotate about stud 74. This bearing support is repeated at 78 in connection with end cap 26 of panel holder 12 thereby providing a bearing support for the outer, oppositely facing ends of the display panel holder.

At the inner adjacent ends of each of panel holders 12 and 14 (end members 26 and 28) plates 40 and 40a are provided with co-axial, aligned openings 80 and 80a

which are also coaxially arranged with stud 74 and opening 72. The walls of opening 80, 80a and 72 providing bearing surfaces. Base portion 18 includes hub 84 which fits into both openings 80 and 80a of end caps 40 and 40a to engage and support the end caps 40 and 40a while leaving them free for rotation. Hub 84 and stud 74, one at each axial end, provide bearing surfaces engaging the walls of openings 80, 80a and 72 upon which the panel holder rotates.

In this manner the panel holders are securely mounted on frame 16 and are supported for independent rotation with respect to each other by an arrangement located wholly within the display holders leaving the exterior thereof unobstructed to receive the display panels.

Structurally base 18 of the frame includes leg 86 extending between panel holders 12 and 14 and having cross member 88 attached to the lower end thereof. Mounts 90 and 92 are connected to cross member 88 on both sides of leg 86, preferably adjacent the opposite ends of cross member 88. Mounts 90 and 92 are provided with keyhole-shaped holes 93 so that display device 10 can be placed either on a horizontal support surface in the manner illustrated in FIG. 1 or can be hung on a wall.

A second cross member 94 is connected to the opposite end of leg 86 and provides a point for attaching panel holder support 20 to base 18 as illustrated in FIG. 4. Hub 84 is also attached to cross member 94 and in this regard, and to facilitate attachment, hub 84 is not completely cylindrical but includes a flattened portion 96 in engagement with cross member 94.

Preferably panels 22 are transparencies, made of translucent material and panel holder support 20 takes the form of a light fixture to enhance the visual effect achieved with the display. Preferably support 20 is a fluorescent fixture including fluorescent bulb 98 and a support housing 100. Where the light fixture is used it forms the panel holder support 20 to thereby make most effective use of the basic structural elements of the display device.

Preferably an indexing mechanism is provided to hold each panel holder in a desired angular position. With reference to FIG. 3, index plate 102 is attached to plate 32 of end cap 30 and includes a number of indentations 104 spaced around the plate on the same radius. A spring biased ball 106 is positioned in projection 108 on the support frame and spring 110 urges the ball toward the index plate whereby the ball will seat in a particular depression to set the display holder in the desired angular position. An identical index mechanism is provided at end 24.

The display device constructed in accordance with this invention provides a versatile arrangement with a simplified construction by making maximum utilization of the structural elements. For example, the end caps not only cooperate in mounting the display panels in the panel holders but also cooperate in providing the bearing support for the panel holders and the light fixture, when used, forms a part of the support structure and bearing support for the panel holders. Moreover, the support and bearing arrangement is disposed interiorly of the display panel holders leaving the exterior thereof free and unobstructed for receipt of display panels. It will also be appreciated that more than two display holders can be mounted using the same type of arrangement, the inner adjacent end caps being supported on bearings such as hub 84 and the outermost end caps engaging the frame.

Although but one embodiment of the present invention has been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

I claim:

1. A display device comprising, in combination, a plurality of elongated display panel holders arranged end-to-end in general alignment,

each of said panel holders including a plurality of sets of panel receiving means, said sets relatively spaced along the longitudinal axis of said panel holders and the panel receiving means of each set relatively spaced around said axis to receive and support a plurality of display panels on each of said panel holders,

a support frame for said panel holders including panel holder engaging means and a base portion, said panel holder engaging means comprising a light assembly extending generally coextensively through said display holders and extending longitudinally of said display device within and through the areas defined by each of said sets of panel receiving means, means connected to and providing support for each set of said panel receiving means and defining first bearing means spaced longitudinally in said panel holders and disposed within the areas defined by said panel receiving means, and

said panel holder engaging means including means defining second longitudinally spaced bearing means connected to said light assembly and engaging said first bearing means and supporting said panel holders for independent rotation.

2. The display device of claim 1 wherein each of said panel holders include relatively spaced end cap means and are arranged with adjacent end cap means of adjacent panel holders facing toward each other and the outer end cap means of the outermost of said panel holders facing oppositely, said end cap means defining said first bearing means and said display panel receiving means provided on said end cap means and spaced radially outwardly from and around said first bearing means, and including means extending between and connecting the end cap means of each of said panel holders for joint rotation.

3. A display device comprising, in combination, a plurality of elongated display panel holders arranged end-to-end,

each of said panel holders including plate means spaced longitudinally in said panel holders and extending transversely of the longitudinal axis of said panel holders, each of said plate means including means defining an inner opening to provide first bearing means for said panel holders,

a plurality of display panel receiving means on each of said plate means and relatively spaced circumferentially with respect to said first bearing means openings,

a support frame for said panel holders and including panel holder engaging means comprising a light assembly extending generally coextensively through said display holders and extending longitudinally of said panel holders and also including means defining longitudinally spaced second bearing means connected to said light assembly and engaging said first bearing means to support said plate means for rotation,

and means extending between and connecting the plate means of each holder for joint rotation so that the plate means of each panel holder are jointly rotatable and said panel holders are rotatable independently of each other.

4. The display device of claim 3 wherein said plate means define the longitudinal ends of each of said panel holders and said panel holder engaging means extends through the first bearing means openings in the inner adjacent plate means of adjacent panel holders and project into the first bearing means openings in the outer plate means of the outermost of said panel holders.

5. The display device of claim 4 wherein said display panel receiving means are spaced radially outwardly from said first bearing means openings and are relatively spaced circumferentially with respect to said first bearing means openings and around the periphery of said plate means

so that a plurality of display panels can be spaced around the periphery of said panel holders.

6. The display device of claim 5 wherein said panel holders comprise first and second panel holders,

said support frame also includes a base portion connected to and extending from said light assembly at a point intermediate said first and second panel holders,

and said second bearing means including a generally cylindrical hub co-axial with, engaged in, and extending between the first bearing means openings of the inner adjacent end plate means of said first and second panel holders, said hub connected to one of said light assembly and said base portion, and said second bearing means also including bearing projections at the opposite ends of said light assembly extending into and engaging the outer, oppositely facing plate means of the outermost of said panel holders.

7. The display device of claim 6 including indexing means connected between said support frame and each of said panel holders and operative to hold each of said panel holders in a desired angular position.

8. The display device of claim 5 wherein said display panel receiving means are in the form of grooves extending around each of said plate means and opening toward each other from the plate means of each of said panel holders so that a display panel can be engaged between the grooves of the plate means in each of said panel holders,

said means extending between and connecting the plate means of each panel holder for joint movement comprising a plurality of elongated members relatively spaced around said grooves and defining therebetween support areas for display panels,

and clamping members releasably connected to said elongated plate means connecting members for clamping a display panel therebetween.

9. A display device comprising, in combination, a plurality of elongated display panel holders arranged end-to-end,

each of said panel holders including plate means spaced longitudinally in said panel holders and extending

transversely of the longitudinal axis of said panel holders, each of said plate means having a radial extension terminating in wall means defining an inner opening, said inner opening walls providing first bearing means for said panel holders,

a plurality of display panel receiving means on each of said plate means and relatively spaced circumferentially with respect to said first bearing means openings,

a support frame for said panel holders including panel holder engaging means extending longitudinally of said panel holders and including means defining longitudinally spaced second bearing means disposed in said plate means openings and engaging the walls thereof, engagement between said second bearing means and said walls providing rotational support for said panel holders,

and means extending between and connecting the plate means of each holder for joint rotation so that the plate means of each panel holder are jointly rotatable and said panel holders are rotatable independently of each other.

10. The display device of claim 9 wherein said support frame includes hub means having a generally circular outer periphery and an axial extension in said display device, said hub means extending between and engaging the inner opening walls of adjacent plate means of adjacent panel holders whereby said hub means provides at least a part of said second bearings means.

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