

PATENT SPECIFICATION

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(54) PORTABLE DISPLAY SYSTEM

(71) We, EXTRAVERSION, INCORPORATED, a Corporation organised under the laws of the State of Delaware, United States of America, of 229 S. State Street, Dover, Delaware, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a portable display system.

Today's competition requires that many businesses display their wares at trade shows, symposiums, and the like. The wares are often attractively displayed in booths or stalls together with advertising literature and the like.

Most display stalls presently in use consist of basically two types. One is a rather large, heavy display that is structurally sound but which requires extensive on-site preparation and is difficult to transport. The other display system is the type that is carried by a salesman and thus is lightweight, but which does not lend itself to large display requirements. Both systems have limited versatility of use. The more permanent display system is not ordinarily assembled and disassembled with ease, while the portable ones are not often structurally sound or sufficiently large to define a significant area of display. Neither system is ordinarily versatile with respect to possible display configurations.

Several patents exemplify the prior art. Wilson, U.S. Patent No. 956,252 shows a display folder having foldable members which are creased on opposite faces and secured together at their creases by a securing means. In Wiltz, U.S. Patent No. 1,076,257 is shown an amusement device having a flat square member divided by perpendicular lines into four corners, and four hinged panels, each panel being hinged at one edge along one of the perpendicular lines. In Swanson, U.S. Patent No. 3,269,043, a display device is shown having a plurality of panels and stiffener plates which are covered by a cloth cover-

ing which foldably connects the stiffener plates together, width edge to width edge, to provide a string of rectangular panels. In Rhude, U.S. Patent No. 3,325,934 is shown a portable display case for storing, transporting and displaying visual aid materials. In R. E. Hartz, U.S. Patent No. 3,481,060 a vehicle sign assembly is shown having a plurality of inter-leaved hinged placards on small parallel hinged axes.

In contrast to these prior arrangements, the present invention provides a portable display system comprising a plurality of panel assemblies connected to one another by means of hinging devices, the panel assemblies each comprising first and second boards held in a confronting relationship by support means at the peripheries of the boards, the support means comprising a border strip including longitudinal channels receiving edges of the boards respectively, said strip also including a longitudinal slot, and means received in the slots of the strips of adjacent ones of the panel assemblies and mounting said hinging devices.

The present invention thus comprises a portable display system in which the panel assemblies are hinged together so that they may be opened and closed into various display configurations. When closed, the entire display may be similar in appearance to a suitcase, and affords the user a highly portable display device. When fully opened, the display system may, in one embodiment, be configured in the shape of a substantially high wall of approximately six feet, with a width of approximately eight feet. It can be appreciated by those skilled in the art that the display device described herein is not limited to a six by eight foot dimension but in fact may be larger or smaller depending upon the user's needs. The display system may be partially opened or closed to cover a shorter or narrower display area, as needed. For aesthetic reasons, the display system can be formed in the shape of an accordion, or may be formed in numerous other configurations.

In the preferred embodiment described herein there are eight panel assemblies.

Each panel assembly has a front surface board and a rear surface board which are held together by a plurality of the border strips. The border strips are positioned to completely surround the perimeter of each panel assembly. Additionally, the border strips provide a panel assembly which is structurally sound and relatively light-weight since the interior portion of the panel assembly between the front surface board and rear surface board is hollow. The front and rear surface boards are lightweight and strong panels which, in a preferred embodiment, are approximately three feet high and two feet wide.

The various panel assemblies are hinged together in a specific arrangement to form two panel assembly groups. In a preferred embodiment described herein, each panel assembly group is identical in size and configuration to the other. Each group consists of four panel assemblies arranged in a rectangular configuration when fully opened. When partially opened, each panel assembly group appears rectangular, having half the width of the fully opened group. Thus, each panel assembly group closes along an edge representing the vertical bisector of the rectangle. To completely close each panel assembly group, the upper panel assembly is lowered to meet the lower panel assembly. When completely closed, each panel assembly group is a rectangle 1/4 the size of the completely open panel assembly group. Thus, when fully closed, each panel assembly group is the size of one panel assembly in height and width.

Although the preferred embodiment shows just two panel assembly groups, it can be appreciated by those skilled in the art that a larger number of panel assembly groups may be utilized for specific applications. This can be accomplished by either hinging several panel assembly groups together, or by providing detachable connecting means so that the groups can be detached or connected to each other to form a display system of several panel assembly groups. Further, it can be appreciated that the panel assembly groups need not all be of the same size.

As can be seen, the above described display system is not only useful for displaying one's goods or business wares, but it is also useful in the entertainment field for quick fabrication of sets and backdrops. An added advantage of this display system is that it can be folded into a suitcase configuration and carried off easily. The fully opened, fully closed positions described above for each panel assembly group can be altered to suit the user's needs. Thus, various display systems can be established by altering the arrangement of panel assemblies.

The border strips may comprise two types of strips, each of which have mitred corners which form a neat and smooth corner connection. For those edges of the panel assemblies to which a hinging device is attached, a border strip having a slot along its outermost surface is utilized. Inserted into the border strip slot are holding inserts to which the hinging devices are connected. For those edges of the panel assemblies that have no hinging devices attached to them, a border strip device may be utilized which has a channel to attach each panel with supporting center means and does not have a slot for the hinging devices.

Along the upper horizontal edges of each panel assembly there may be used the non-hinging border strip device, whose outermost portion is detachable from its center support portion. The outermost portion is the elongated strip visible to a viewer, and encloses the edges of both wallboards of each panel assembly. The detachable nature of the upper edge border strip device provides for easy insertion and removal of each wallboard into the remaining three-sided border strip frame. Thus, the wallboards forming the front and rear surfaces of each panel assembly can be easily removed and inserted with new wallboards containing new display information. This preferred feature allows the display system to be flexible in that several themes of display can be displayed merely by changing the wall boards within the device. A more detailed description of the border strip devices is set forth below.

And, in order that the invention may be more fully understood and readily carried into effect, an embodiment of the display system will now be described by way of illustrative example with reference to the accompanying drawings wherein:

FIG. 1A is a perspective view of the display system in its closed position.

FIG. 1B is a perspective view of the display system showing two panel assembly groups, each in a substantially closed position.

FIG. 1C is a perspective view of the panel display system, having each panel assembly group partially opened.

FIG. 1D is a perspective view of the panel display system having each panel assembly group opened to a greater extent than that shown in FIG. 1C.

FIG. 1E is a perspective view of the panel display system wherein each panel assembly group is opened to form an accordion type display system.

FIG. 1F is a front view of the panel display system showing the system completely opened.

FIG. 2 is a perspective view of the display system.

play system wherein each panel assembly group is partially opened to form a display system having a shelf.

FIG. 3 is a perspective view of a corner hinging device with its slot inserts and corresponding border strip.

FIG. 4 is a perspective view of a two-way hinging device and corresponding slot inserts.

FIG. 4A is a perspective view of two panel assemblies having border strips along their confronting surfaces.

FIG. 5A is a perspective view of a border strip device having a longitudinal slot for connection to a hinging device.

FIG. 5B is a perspective view of a border strip device without a longitudinal slot.

FIG. 6 is a perspective view of a locking device for use with the border strip devices.

In Fig. 1A is shown the portable panel display system, shown generally as 10, having eight panel assemblies 11 through 18 inclusive, in a completely closed position. Fig. 1B shows the panel display system 10 partially opened to form two panel assembly groups, shown generally as 20 and 21. Panel assembly group 20 comprises panel assemblies 11, 12, 13 and 14, and similarly, panel assembly group 21 comprises panel assemblies 15, 16, 17 and 18. It can be appreciated by those skilled in the art that each panel assembly group may consist of more than four panel assemblies.

In Fig. 1A through 1F is shown various hinging devices 30 and 31, which allow the display system 10 to open in accordance with the sequence portrayed in Figs. 1A through 1F. The hinging devices 30 and 31 along with their corresponding border strip devices, will be explained in greater detail below.

To increase the size of the display arrangement shown in Fig. 1B, panel assemblies 11 and 12 of group 20, as well as panel assemblies 17 and 18 of group 21 are shown in their movable state in Fig. 1C. These panel assemblies, 11, 12, 17 and 18 can be raised to a vertical position as shown in Fig. 1D. The panel assembly arrangement in Fig. 1D provides a display system wherein height and not width is the desired display requirement. To open the panel assemblies further, assemblies 12, 13 and 17, 16 can be moved outward. This so-called accordion style panel arrangement is shown in Fig. 1E.

In Fig. 1F the panel display system 10 is shown completely open so that panel assemblies 11 through 18 inclusive form a rectangular display system four panel assemblies wide and two panel assemblies high. Also, hinging devices 30 and 31 are schematically shown throughout the display system. Between panel assemblies 11, 18 and 14, 15 respectively are holding alignment devices

32 which prevent the upper panel assemblies from slipping off the supporting lower panel assemblies 14 and 15.

Fig. 2 shows a preferred embodiment of the panel display system wherein panel assembly group 20 is arranged at a 90° angle relative to panel assembly group 21. Panel assemblies 14 and 15 are shown protruding from the remaining panel assemblies and thus form a shelf area 19. This configuration of panel assemblies provides the necessary display area as well as providing a shelf for the display of particular products and the like. The shelf that fits into shelf area 19 is a common shelving device not shown in Fig. 2. It can be appreciated by those skilled in the art that the panel assemblies can be positioned to form various display configurations not shown in Fig. 1A-F and Fig. 2.

In Fig. 3 is shown a perspective view of hinging device 31 which is attached to slot insert 32. Slot insert 32 is inserted into slot 51 of border strip 50 as more fully detailed below. Hinging device 31 is attached to slot insert 32 by screw means, not shown, known to those skilled in the art. Hinging device 31 is located along the upper edge of panel assemblies 12 and 13, and similarly between panel assemblies 16 and 17. These hinging devices 31 provide the necessary movable support means by which the panel assemblies are enabled to be moved upward or downward.

Hinging device 30, shown in Fig. 4, with its corresponding slot inserts 32, is mounted on the vertical edges of the panel assemblies so that each panel assembly is able to move horizontally outward from its confronting panel assembly. For example, the movement of panel assemblies shown in Fig. 1D, 1E and 1F utilizes hinging device 30.

In Fig. 4A is shown two substantially parallel and confronting panel assemblies having border strip devices 50 confronting each other. The slot portions 51 of border strip 50 extend substantially the entire length of border strip 50 and receive the slot insert 32 shown in Fig. 4. Mounted to each slot insert 32 is hinging device 30, in a conventional manner. Thus, the hinging device 30 is positioned between the confronting border strips 50 of each panel assembly as shown in Fig. 1A-F.

In Figs. 5A and 5B are shown two preferred embodiments of the bordering strip devices as mentioned above. In Fig. 5A is shown bordering strip device 50 having a slot portion 51, a centre support portion 52, and channels 53 and 54. This particular border strip 50 is utilized on those edges of the panel assemblies which require the presence of hinging devices 30. Within channels 53 and 54 are positioned wall boards 55 and 56 respectively, which form each panel

assembly in the display system. Each panel assembly is made up of two parallel and confronting wall boards with a border strip device positioned along the four sides of the wall board. The center support 52 provides structural support to maintain the recess or separation between the wall boards so that each panel assembly structure has greater depth and thus is stable as well as lightweight.

The slot portion 51 of border strip device 50 not only provides a means for attaching hinging devices 30 to the border strip, but can also be utilized to attach other devices to the display system, such as spot lights and the like. Such devices would have appropriate slot inserts and means to attach the devices to the slot inserts as known by those skilled in the art.

For those sides of each panel assembly which do not have a hinging device attached, border strip 60 is utilized as shown in Fig. 5B. Border strip 60 comprises channels 63 and 64 which hold wall boards 65 and 66 respectively in a parallel and confronting arrangement and form the outermost portion of the strip. Center support 62 serves the identical purpose as center support 52, shown in device 50. That is, it provides structural support to each panel assembly as well as allowing each panel assembly to be substantially hollow and thus lightweight. Accordingly, the existence of center support 62 provides a greater depth to each panel assembly and thus greater structural stability.

The outermost portion of border strip 60 comprising channels 63 and 64 is detachable from the center support portion 62 as shown by the sectional lines in Fig. 5B. It can be appreciated by those skilled in the art that there are numerous ways of providing detachable support means between the center and outermost portions of the strip. One such configuration is shown in Fig. 5B where the center portion 62 has an indented portion on both vertical walls while the outermost portion has a corresponding protruding portion. The outermost portion in border strip 60 is detached from center support 62 when used along the upper horizontal edge of each panel assembly. Thus, wall boards 65 and 66 can be removed and replaced with new wallboards merely by separation of border strip device 60.

Border strip devices 50 and 60 are typically made of a lightweight material such as aluminum or a clear plastic. Other materials are known which can be used by those skilled in the art.

The wallboards 55, 56 and 65, 66 are typically made of a flame-retardant lightweight cardboard material or the like upon which display information is printed or attached. Wood, plastic or other material

can also be used, depending upon the user's weight and structural requirements.

In Fig. 6 is shown a locking device 70 which is used to connect two border strip devices at their 90° corners. At each corner, the border strip 50 or 60 is mitered to form a strong and aesthetically pleasing corner. The device 70 is inserted into the center portion 52 or 62 of the mitered border strip and thus locks the two intersecting strips to each other. Along the edges of device 70 is a serrated pattern which increases the friction between the locking device and border strip.

WHAT WE CLAIM IS:—

1. A portable display system comprising a plurality of panel assemblies connected to one another by means of hinging devices, the panel assemblies each comprising first and second boards held in a confronting relationship by support means at the peripheries of the boards, the support means comprising a border strip including longitudinal channels receiving edges of the boards respectively, said strip also including a longitudinal slot, and means received in the slots of the strips of adjacent ones of said panel assemblies and mounting said hinging devices.

2. A display system according to claim 1 wherein the support means includes a border strip including said channels but not said slot.

3. A display system according to claim 1 or 2 wherein for each said panel assembly said border strip includes a longitudinally extending center support disposed between said boards, the boards being of a substantially rectangular configuration, separate portions of the border strip extending along edges of the boards, and including a locking device interconnecting adjacent portions of the border strip, the locking device extending into the center support of said adjacent border strip portions.

4. A display system according to claim 3 wherein said center support is removably mounted in the strip.

5. A display system according to any preceding claim wherein the hinging devices each comprise hinge plates hingedly connected to one another, and said slot-received means comprise slot inserts of a shape that fits intimately within the slots, said hinge plates being attached to the slot inserts in such a manner as to clamp the inserts within the slots.

6. A display system according to any preceding claim wherein said panel assemblies are of a rectangular configuration.

7. A display system according to claim 6 including first, second, third and fourth ones of said panel assemblies, the first and second said assemblies being hingedly connected to one another at side edges thereof about



assembly in the display system. Each panel assembly is made up of two parallel and confronting wall boards with a border strip device positioned along the four sides of the wall board. The center support 52 provides structural support to maintain the recess or separation between the wall boards so that each panel assembly structure has greater depth and thus is stable as well as lightweight.

The slot portion 51 of border strip device 50 not only provides a means for attaching hinging devices 30 to the border strip, but can also be utilized to attach other devices to the display system, such as spot lights and the like. Such devices would have appropriate slot inserts and means to attach the devices to the slot inserts as known by those skilled in the art.

For those sides of each panel assembly which do not have a hinging device attached, border strip 60 is utilized as shown in Fig. 5B. Border strip 60 comprises channels 63 and 64 which hold wall boards 65 and 66 respectively in a parallel and confronting arrangement and form the outermost portion of the strip. Center support 62 serves the identical purpose as center support 52, shown in device 50. That is, it provides structural support to each panel assembly as well as allowing each panel assembly to be substantially hollow and thus lightweight. Accordingly, the existence of center support 62 provides a greater depth to each panel assembly and thus greater structural stability.

The outermost portion of border strip 60 comprising channels 63 and 64 is detachable from the center support portion 62 as shown by the sectional lines in Fig. 5B. It can be appreciated by those skilled in the art that there are numerous ways of providing detachable support means between the center and outermost portions of the strip. One such configuration is shown in Fig. 5B where the center portion 62 has an indented portion on both vertical walls while the outermost portion has a corresponding protruding portion. The outermost portion in border strip 60 is detached from center support 62 when used along the upper horizontal edge of each panel assembly. Thus, wall boards 65 and 66 can be removed and replaced with new wallboards merely by separation of border strip device 60.

Border strip devices 50 and 60 are typically made of a lightweight material such as aluminum or a clear plastic. Other materials are known which can be used by those skilled in the art.

The wallboards 55, 56 and 65, 66 are typically made of a flame-retardant lightweight cardboard material or the like upon which display information is printed or attached. Wood, plastic or other material

can also be used, depending upon the user's weight and structural requirements.

In Fig. 6 is shown a locking device 70 which is used to connect two border strip devices at their 90° corners. At each corner, the border strip 50 or 60 is mitered to form a strong and aesthetically pleasing corner. The device 70 is inserted into the center portion 52 or 62 of the mitered border strip and thus locks the two intersecting strips to each other. Along the edges of device 70 is a serrated pattern which increases the friction between the locking device and border strip.

WHAT WE CLAIM IS:—

1. A portable display system comprising a plurality of panel assemblies connected to one another by means of hinging devices, the panel assemblies each comprising first and second boards held in a confronting relationship by support means at the peripheries of the boards, the support means comprising a border strip including longitudinal channels receiving edges of the boards respectively, said strip also including a longitudinal slot, and means received in the slots of the strips of adjacent ones of said panel assemblies and mounting said hinging devices.
2. A display system according to claim 1 wherein the support means includes a border strip including said channels but not said slot.
3. A display system according to claim 1 or 2 wherein for each said panel assembly said border strip includes a longitudinally extending center support disposed between said boards, the boards being of a substantially rectangular configuration, separate portions of the border strip extending along edges of the boards, and including a locking device interconnecting adjacent portions of the border strip, the locking device extending into the center support of said adjacent border strip portions.
4. A display system according to claim 3 wherein said center support is removably mounted in the strip.
5. A display system according to any preceding claim wherein the hinging devices each comprise hinge plates hingedly connected to one another, and said slot-received means comprise slot inserts of a shape that fits intimately within the slots, said hinge plates being attached to the slot inserts in such a manner as to clamp the inserts within the slots.
6. A display system according to any preceding claim wherein said panel assemblies are of a rectangular configuration.
7. A display system according to claim 6 including first, second, third and fourth ones of said panel assemblies, the first and second said assemblies being hingedly connected to one another at side edges thereof about



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5 a first axis, the third and fourth said panels being hingedly connected to one another at side edges thereof and about a second axis, and said second and fourth panel assemblies being hingedly connected at side edges thereof about a third axis, said third axis being disposed perpendicularly to said first and second axes.

10 8. A display system according to any preceding claim wherein the border strip is made of transparent plastics material.

9. A display system according to claim 1

wherein said slot extends the entire length of the border strip.

10. A portable display system substantially as hereinbefore described with reference to the accompanying drawings. 15

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