

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN OR RELATING TO DISPLAY DEVICES

(71) We, VANGO MEDIA, INC., a corporation organised and existing under the laws of the State of New York, United States of America of 919 Third Avenue, New York, State of New York, 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 display devices. In advertising various products, automobiles and other similar vehicles have been employed for carrying and displaying the advertisements. On automobiles these advertisements have typically been a single panel attached to the roof of the automobile and extending substantially in a single plane from the front to the rear of the roof. To enhance the display of the advertisements the support structure for the panels have included devices for maintaining light bulbs to illuminate the panel. These light bulbs have been located exterior to and along the periphery of the panel which results in the panel being inadequately lighted. Light bulbs supported in this manner create shadows on the panel, detracting from its advertising effectiveness. Further, such external light bulbs are easily damaged by weather and other wear including vandalism to which these devices are often subjected. Also, by having the panels extend substantially in a single plane they cannot be properly viewed until the viewer is almost perpendicular to the plane of the panel.

The invention relates to a display device having at least one surface exposed for viewing by the general public and illuminated by back or rear illumination. More specifically advertising information is to be placed on surfaces of the device defined by side portions having a slightly convex configuration relative to each other to provide easy view-

ing in a multitude of directions. The side portions are supported between two end members, a top portion and a bottom portion and sloping generally away from each other toward the bottom portion. Illuminating means is located approximately midway between the top and the bottom portion of the device and the convex sides.

The bottom portion of the device is provided with attachment means which allow the display device to be secured to the roof of an automobile.

According to one aspect of this invention there is provided a display device for displaying information bearing materials for viewing comprising:

(a) a first end member defining a front end;

(b) a second end member defining a rear end, each said first and second end members including a surface for supporting said information bearing materials, sections of which surface cooperate with end illuminating means arranged for illuminating said sections independently of each other such that as one section is illuminated, another section is generally unaffected by the section which is illuminated;

(c) a pair of side members supported between said first and second end members, said side members being disposed at an angle one to the other and each having a surface for supporting said information bearing materials, and each said side surface being generally outwardly convex between upper and lower edges;

(d) a bottom member secured to each said side member and to said first and second end members;

(e) a top portion likewise secured thereby defining a substantially closed chamber in said display device;

(f) illuminating means disposed in said chamber and comprising a source of illumination extending substantially continuously

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from said front end to said rear end and located substantially midway between said members and top portion for rear illumination of said side surfaces by a substantially even distribution of lumens for ease in viewing the same and said information bearing materials thereon from a multitude of attitudes; and

(g) attachment means for attaching said display device to the roof of a vehicle, said attachment means being carried by said bottom member.

According to another aspect of this invention there is provided a display device for displaying light-transmissive advertising material and including spaced light-transmissive end members and light-transmissive side members extending between said end members, said side members being outwardly convex transversely to their lengths and sloping away from each other towards the bottom of the display device, first illuminating means being provided between, to provide light for transmission through, the side members and a plurality of second illuminating means being provided adjacent each of said end members and being independently operable to provide light for transmission independently through respective portions of the adjacent end member, means being provided on the bottom of the display device for attachment of the display device to the roof of a vehicle.

An embodiment of this invention will now be described, by way of example, with reference to the accompanying drawings wherein:-

Fig. 1 is a perspective view of an illuminated display device embodying this invention and shown secured to a roof of a taxicab;

Fig. 2 is an elevation of the front end of the display device shown in Fig. 1;

Fig. 3 is a side view of part of the display device shown in Fig. 1 with a portion cut away to expose internal components of the device;

Fig. 4 is an elevation of the rear end of the device shown in Fig. 1; and

Fig. 5 is a sectional view of the device taken along line 5-5 in Fig. 3.

The display device as shown in Fig. 1 is located on the roof of a taxicab such that the identifying information relating to the cab, including information relating to whether the cab is "off duty" or in use and the medalion number, is provided on surfaces facing forwardly and rearwardly relative to the cab. A more expansive portion of the device for supporting an advertisement extends laterally for easy viewing by the public.

Specifically, the display device 1 has a front end member 2 and a rear end member 3 which are generally triangular in configuration. A first side 4 and a second

side 5 are supported between the front and rear end members 2, 3. The device has a top portion 6 and a bottom portion 7. Each side 4, 5 has an upper edge 8 which is joined to the top portion 6 of the device and a lower edge 9 which is joined to the bottom portion 7 of the device. Each side 4, 5 is supported by the front and rear end members along edges 10. As can be seen in Figs. 1, 2 and 4 the sides 4, 5 slope generally away from each other toward the bottom portion 7. These sides 4, 5 have a convex configuration between the upper edge 8 and the lower edge 9, as seen in Figs. 2 and 4, which enhances the view of the sides for the public. With this configuration the advertisement can be secured on to the sides 4 and 5 by means of adhesive and displayed to the general public as the taxicab goes about its commercial activity.

A fluorescent tube 11 is located approximately midway between the top portion 6 and the bottom portion 7 and midway between the two sides 4, 5. The fluorescent tube is connected to an appropriate power source which is remotely controlled so that the fluorescent tube can be turned on and off as desired. The particulars of the power source and its remote control are not disclosed in the drawings as they can be readily incorporated by one skilled in the art without further discussion. By having the fluorescent tube 11 located in this manner the advertisements which are supported on the surfaces of sides 4, 5 are illuminated from behind and are provided with substantially equal amounts of illumination over every portion of the surfaces of sides 4, 5 (i.e., an even distribution of light is achieved). This configuration ensures that every portion of the surfaces can be well illuminated to enhance viewing of the advertisement by the general public. Although in the embodiment shown a fluorescent tube is used, any elongate illuminating means can be employed to achieve the desired distribution of light.

A bracket 12 is located at each end of the display device and defines means for supporting the fluorescent tube 11 as well as means for illuminating the front and rear end members 2, 3. The bracket 12 includes a vertical support 13 which defines a socket 14 for receiving the ends 11a of fluorescent tube 11. Extending from the bracket 12 is a bracket flange 15 which is secured to the bottom portion 7 as can be seen in Fig. 3. The bracket 12 also defines box-like enclosures such as 16 configured to receive illuminating means for illuminating information bearing surfaces on the front and rear end members 2, 3 of the device. As can be seen in Fig. 5, there are three enclosures, 16, 16a, 16b, the larger enclosure 16 being in the center with the two smaller enclosures

16a, 16b extending from each side of the enclosure 16. Each of these enclosures has one side which is completely open and registers with the information on the front and rear end members 2, 3 of the display device.

In viewing Fig. 2 and Fig. 5 together it can be seen that the larger enclosure 16 registers with the term "taxi" in the center section of the front end portion while the smaller enclosures register with the terms "off duty" at flanking sections of the front end member. A similar registration of the enclosures occurs with respect to the rear end member of the display device except that the larger enclosure 16 registers with the medallion number of the cab. The enclosures 16, 16a, 16b provide light sockets 17 in the rear wall 18 opposite the open side for receiving light bulbs 19 as shown in Fig. 3. As with the fluorescent tube 11, the light sockets 17 are connected to appropriate power sources and remote control means such that the light bulbs 19 in the center enclosure 16 can be operated independently of the light bulbs in the smaller enclosures 16a, 16b. In this manner, some items of information can be illuminated independently of the others since the light generated by the bulbs can not pass from one enclosure to another. Thus, when the "taxi" sign is illuminated the "off duty" sign can be off and vice versa. In the alternative the power source and control means can be incorporated to provide power to all the bulbs simultaneously or any other combination desired. In the preferred embodiment described herein the bracket 12 with the enclosures 16, 16a, 16b and the vertical support 13 are of a unitary moulded structure which is economical to manufacture and facilitates assembly.

The display device includes means for conforming the display device to the shape of the roof of an automobile to which it is secured so as to ensure a snug fit between the roof and the device. Depending from the bottom portion 7 of the device is a skirt 20 which is slightly concave and configured to the shape of the roof of the automobile such that it will generally conform to the slightly convex surface of the roof when secured thereto. Depending from this skirt 20 is a flexible roof gasket 21 which is pressed against the roof of the car when the device is secured to the latter. This prevents moisture and other elements from entering the device. The bottom portion 7 of the display device includes a bottom plate 22 whose edges 23 are parallel to and in close proximity with internal surfaces 24 of the skirt. Skirt gasket 25 is secured at the interface of the edges 23 and the internal surfaces 24 of the skirt. The gasket 25 is configured to engage the internal surface 24 snugly to aid further in preventing moisture and other

materials from penetrating the device and possibly impairing its operation.

The display device is secured to the roof of the automobile by an adjustable U-clamp 26 which can be secured to the bottom plate 22 at any desired position. As seen in Fig. 3 the bottom plate has an upper surface 27 and a lower surface 28. The U-clamp has a convex portion 29 which is secured against the lower surface 28 by bolt 30. Depending from the U-clamp are vertical sides from which extend flanges 31 bolted to the roof of the automobile. Intermediate the flanges 31 and roof are rubber pads or cushions 32 for absorbing shock and vibration during the operation of the automobile and preventing excessive damage to the roof.

Above the information bearing portion on each of the front and rear end members 2, 3 of the device there is fixed a shield 33 which extends outwardly from the end member 2, 3. The shields protect the information on the front and rear end members from sun light or other glare to render the information more readily viewable by the general public.

In the embodiment described herein the front and rear end members 2, 3, the top portion 6, bottom portion 7 and the side portions 4 and 5 along with the skirt 20 are combined in a single unitary structure moulded from a plastics material, such as a polyvinyl chloride or other similar material. This one piece structure and its cooperation with the gaskets 21 and 25 make it almost impossible for water, dirt or other particles to penetrate to the internal components of the device. Thus, the operative life of the display device is optimised due to the protection provided from weather, tampering or other elements which might interfere with normal operation of the device.

In securing the device to the top of the automobile, holes are drilled in the roof of the automobile to register with holes in the flanges of the U-clamp 26. The bottom plate 22 is then secured to the convex portion 29 of the U-clamp 26 by bolts 30. The unitary structure is then bolted to a peripheral portion of the plate by bolts 34 as shown in Fig. 1. The attachment of the device to the automobile in this manner is efficient and provides enhancement of the advertisement being supported on surfaces 4 and 5 and provides protection to the internal components of the device.

The display device described above is one which is economical and efficient to manufacture and assemble and enhances the viewability of the information on the surfaces of the device. Further, the configuration is one which allows the device to be secured to a vehicle without fear of moisture or other matter penetrating into the device and impairing its operation. By having the illuminating means located within the dis-

play device, not only is the advertisement displayed enhanced by the even distribution of the light, but also the components of the display device are protected from tampering. Thus the above described display device has desirable advertising qualities as well as economy, simplicity and efficiency in operation.

WHAT WE CLAIM IS:-

1. A display device for displaying information-bearing materials for viewing comprising:
 - a) a first end member defining a front end;
 - b) a second end member defining a rear end, each said first and second end members including a surface for supporting said information bearing materials, sections of which surface cooperate with end illuminating means arranged for illuminating said sections independently of each other such that as one section is illuminated, another section is generally unaffected by the section which is illuminated;
 - c) a pair of side members supported between said first and second end members, said side members being disposed at an angle one to the other and each having a surface for supporting said information bearing materials, and each said side surface being generally outwardly convex between upper and lower edges;
 - d) a bottom member secured to each said side member and to said first and second end members;
 - e) a top portion likewise secured thereby defining a substantially closed chamber in said display device;
 - f) illuminating means disposed in said chamber and comprising a source of illumination extending substantially continuously from said front end to said rear end and located substantially midway between said members and top portion for rear illumination of said side surfaces by a substantially even distribution of lumens for ease in viewing the same and said information bearing materials thereon from a multitude of attitudes; and
 - g) attachment means for attaching said display device to the roof of a vehicle, said attachment means being carried by said bottom member.
2. A display device according to claim 1 wherein each said end illuminating means includes at least two chambers located behind and adjacent to each of said front and rear ends, said chambers being arranged so that illumination of one chamber can be effected without affecting the adjacent chamber.
3. A display device according to claim 2 wherein each said end illuminating means includes three chambers each of which is generally cubical in configuration, having five closed sides and an open side adjacent said information bearing surface, one chamber being larger than the other two chambers and being located between the smaller chambers.
4. A display device according to claim 3 wherein the chambers are carried by a bracket having sockets for light bulbs to illuminate each information bearing surface, each said socket being arranged for connection to remote controlled power sources for operating the light bulbs independently of each other.
5. A display device according to claim 4 wherein a vertical bracket is attached to the back of said one chamber of each end illuminating means for supporting a main socket, said main sockets providing support for a fluorescent tube comprising said side illuminating means.
6. A display device according to claim 5 wherein the vertical bracket and the three chambers are of a unitary construction secured to the bottom member of the display device.
7. A display device according to any one of the preceding claims wherein a skirt member extends vertically from the bottom member of the display device and is arranged to conform to the shape of the roof of said vehicle whereby the display device can be attached to any vehicle having a roof for supporting the display device.
8. A display device according to claim 7 wherein a flexible roof gasket member extends downwardly from said skirt member for snugly engaging the roof surface of the vehicle when said display device is attached thereto and for preventing moisture from entering into the display device along the areas of engagement between the roof gasket member and the roof.
9. A display device according to claim 8 and including a bottom plate of said bottom member that extends toward said skirt member, and a flexible skirt gasket member, said flexible skirt gasket member being supported on the bottom plate and being disposed between the bottom plate and the skirt member for inhibiting the entry of moisture into the display device.
10. A display device according to claim 9 wherein said rear end, said front end, said side members, and said skirt member are of a unitary structure made of a polyvinyl chloride, said unitary structure being secured to said bottom plate and cooperating with said flexible skirt gasket member to isolate internal components of the display device from external elements when the display device is secured to the roof of a vehicle.
11. A display device according to any one of the preceding claims wherein said means for attaching said display device to the roof



play device, not only is the advertisement displayed enhanced by the even distribution of the light, but also the components of the display device are protected from tampering. Thus the above described display device has desirable advertising qualities as well as economy, simplicity and efficiency in operation.

WHAT WE CLAIM IS:-

1. A display device for displaying information-bearing materials for viewing comprising:

a) a first end member defining a front end;

b) a second end member defining a rear end, each said first and second end members including a surface for supporting said information bearing materials, sections of which surface cooperate with end illuminating means arranged for illuminating said sections independently of each other such that as one section is illuminated, another section is generally unaffected by the section which is illuminated;

c) a pair of side members supported between said first and second end members, said side members being disposed at an angle one to the other and each having a surface for supporting said information bearing materials, and each said side surface being generally outwardly convex between upper and lower edges;

d) a bottom member secured to each said side member and to said first and second end members;

e) a top portion likewise secured thereby defining a substantially closed chamber in said display device;

f) illuminating means disposed in said chamber and comprising a source of illumination extending substantially continuously from said front end to said rear end and located substantially midway between said members and top portion for rear illumination of said side surfaces by a substantially even distribution of lumens for ease in viewing the same and said information bearing materials thereon from a multitude of attitudes; and

g) attachment means for attaching said display device to the roof of a vehicle, said attachment means being carried by said bottom member.

2. A display device according to claim 1 wherein each said end illuminating means includes at least two chambers located behind and adjacent to each of said front and rear ends, said chambers being arranged so that illumination of one chamber can be effected without affecting the adjacent chamber.

3. A display device according to claim 2 wherein each said end illuminating means includes three chambers each of which is generally cubical in configuration, having

five closed sides and an open side adjacent said information bearing surface, one chamber being larger than the other two chambers and being located between the smaller chambers.

4. A display device according to claim 3 wherein the chambers are carried by a bracket having sockets for light bulbs to illuminate each information bearing surface, each said socket being arranged for connection to remote controlled power sources for operating the light bulbs independently of each other.

5. A display device according to claim 4 wherein a vertical bracket is attached to the back of said one chamber of each end illuminating means for supporting a main socket, said main sockets providing support for a fluorescent tube comprising said side illuminating means.

6. A display device according to claim 5 wherein the vertical bracket and the three chambers are of a unitary construction secured to the bottom member of the display device.

7. A display device according to any one of the preceding claims wherein a skirt member extends vertically from the bottom member of the display device and is arranged to conform to the shape of the roof of said vehicle whereby the display device can be attached to any vehicle having a roof for supporting the display device.

8. A display device according to claim 7 wherein a flexible roof gasket member extends downwardly from said skirt member for snugly engaging the roof surface of the vehicle when said display device is attached thereto and for preventing moisture from entering into the display device along the areas of engagement between the roof gasket member and the roof.

9. A display device according to claim 8 and including a bottom plate of said bottom member that extends toward said skirt member, and a flexible skirt gasket member, said flexible skirt gasket member being supported on the bottom plate and being disposed between the bottom plate and the skirt member for inhibiting the entry of moisture into the display device.

10. A display device according to claim 9 wherein said rear end, said front end, said side members, and said skirt member are of a unitary structure made of a polyvinyl chloride, said unitary structure being secured to said bottom plate and cooperating with said flexible skirt gasket member to isolate internal components of the display device from external elements when the display device is secured to the roof of a vehicle.

11. A display device according to any one of the preceding claims wherein said means for attaching said display device to the roof



of the vehicle includes a U-member which defines a convex portion and vertical portions which extend downwardly from said convex portion and define at their ends horizontal flanges, the bottom of each said flange having a rubber cushion attached thereto for providing cushioning between said flange and the roof of the vehicle, each said flange having bolt means for securing the U-member to the roof of the vehicle, and means for attaching the U-member to the lower surface of the bottom plate.

12. A display device according to any one of the preceding claims wherein the front end and the rear end of the display device have shields which extend outwardly from the display device and protect the information bearing surfaces from extraneous reflections so that they can be more easily read.

13. A display device for displaying information-bearing materials for viewing and comprising:

a) a front end member of a generally triangular configuration;

b) a rear end member of a generally triangular configuration spaced from said front end member;

c) two side portions being supported by and extending between said front and rear end members, said side portions being generally convex in configuration and each having a surface for supporting advertising materials to be viewed;

d) a top portion and a bottom portion, said side portions being joined to each other at the top portion of the display device and sloping generally away from each other towards the bottom portion of the display device;

e) a skirt which depends from the bottom portion, extends entirely around the display device and is arranged to conform with the roof of a vehicle to which the display device can be secured;

f) a fluorescent tube supported midway between the side portions and between the top and bottom portions of the display device and extending substantially the entire length of the display device;

g) said fluorescent tube being supported at each end by a bracket having a vertical support member which defines a socket for receiving the end of the fluorescent tube; said bracket further comprising three chambers, each chamber being open along information bearing surfaces of the front and rear end members and each chamber having a socket for receiving a light bulb in a wall opposite the information bearing surface; each said socket being arranged for connection to a power source and control means for operation of the light bulbs;

h) said bottom portion of said display device having a plate whose edges are adjacent and parallel to the internal surface of said skirt, said skirt having depending therefrom a flexible roof gasket for engagement with the roof of the vehicle to inhibit moisture and other materials from entering into the display device through the interface defined by the roof and flexible roof gasket, a skirt gasket being attached to the edges of said plate and engaging the internal surface of said skirt to further inhibit moisture and other materials from entering into the display device;

i) said display device having attaching means for allowing said display device to be secured to the roof of any vehicle, said attaching means including U-members each having a convex surface which can be secured at any desired location to a bottom surface of said plate, said U-members having vertical sides from which extend horizontal flanges, the bottom of each said horizontal flange having a rubber cushion attached thereto for providing cushioning between said horizontal flange and the roof of said vehicle, each said horizontal flange having means for securing the U-member to the roof of the vehicle; and

j) said front end member, said rear end member, said side portions, said top portion and bottom portion and said skirt being of a unitary structure formed of a polyvinyl chloride.

14. A display device for displaying light-transmissive advertising material and including spaced light-transmissive end members and light-transmissive side members extending between said end members, said side members being outwardly convex transversely to their lengths and sloping away from each other towards the bottom of the display device first illuminating means being provided between, to provide light for transmission through, the side members and a plurality of second illuminating means being provided adjacent each of said end members and being independently operable to provide light for transmission independently through respective portions of the adjacent end member, means being provided on the bottom of the display device for attachment of the display device to the roof of a vehicle.

15. A display device for displaying information-bearing materials for viewing, and substantially as described herein with reference to the accompanying drawings.

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