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Ludwig

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[54] **VISUAL DISPLAY APPARATUS**

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[52] **U.S. Cl.** **40/36**; 40/106.53; 40/137

[51] **Int. Cl.** **G09f 11/00**; G09f 19/14

[58] **Field of Search** .....40/106.51-106.54, 137, 40/133 A, 36

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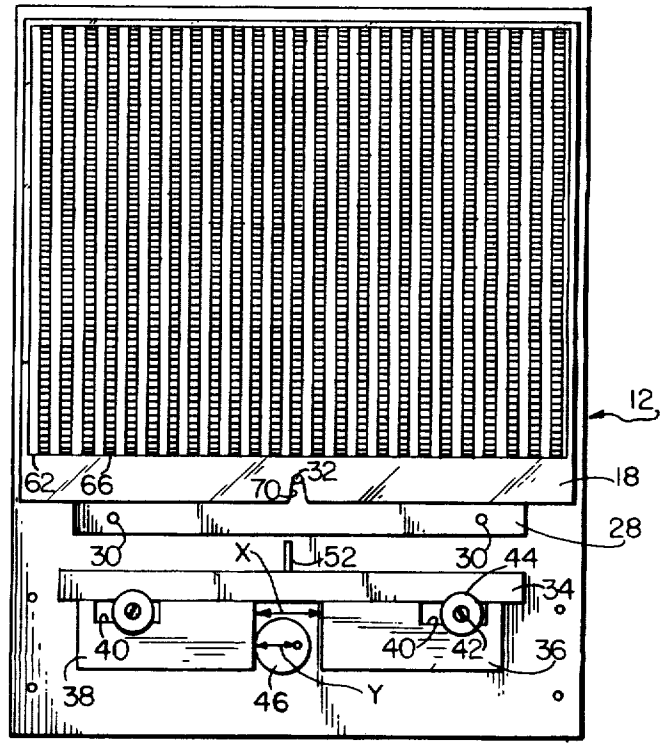
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Assistant Examiner—John F. Pitrelli
Attorney, Agent, or Firm—Roylance, Abrams, Berdo & Kaul

[57] **ABSTRACT**

A visual display apparatus providing a readily changeable message. The apparatus includes a base, a first member fixedly supported on the base, a second member supported on the base for translational movement relative to the first member, and a mechanism for providing such translational movement, the members having thereon various colored stripes and transparent spaces so that in a first relative position no message is clearly displayed, but in a second relative position the desired message is visible. Each member is removably secured to the base by means of a slot and bar arrangement. In one embodiment, a motor and eccentrically rotatable disc provide movement to the second member relative to the first member. In a second embodiment, the movement is provided by means of a relay and switch, and in a third embodiment the movement is provided by an eccentrically mounted disc actuated by turning a key. The required movement is very small so that the sign can be effectively turned "ON" and "OFF" quickly and easily. The message content can be easily changed by removing and replacing at least one of the first and second members.

4 Claims, 9 Drawing Figures



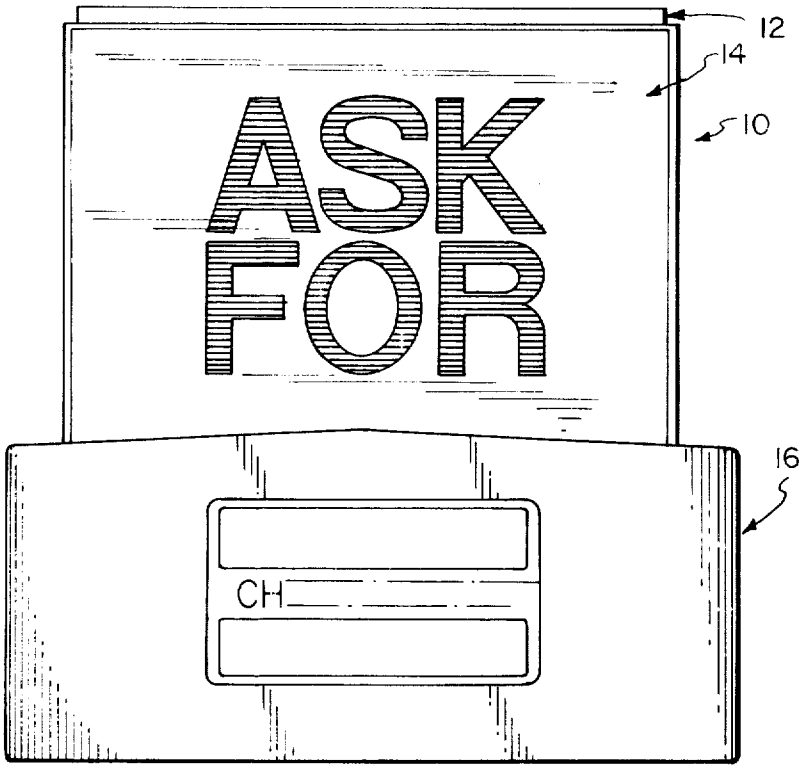


FIG. 1

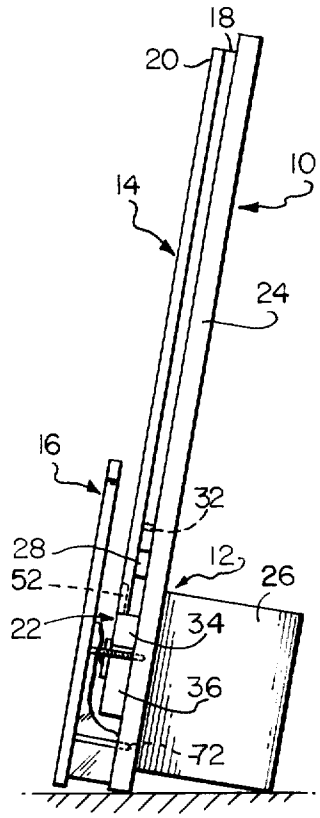


FIG. 2

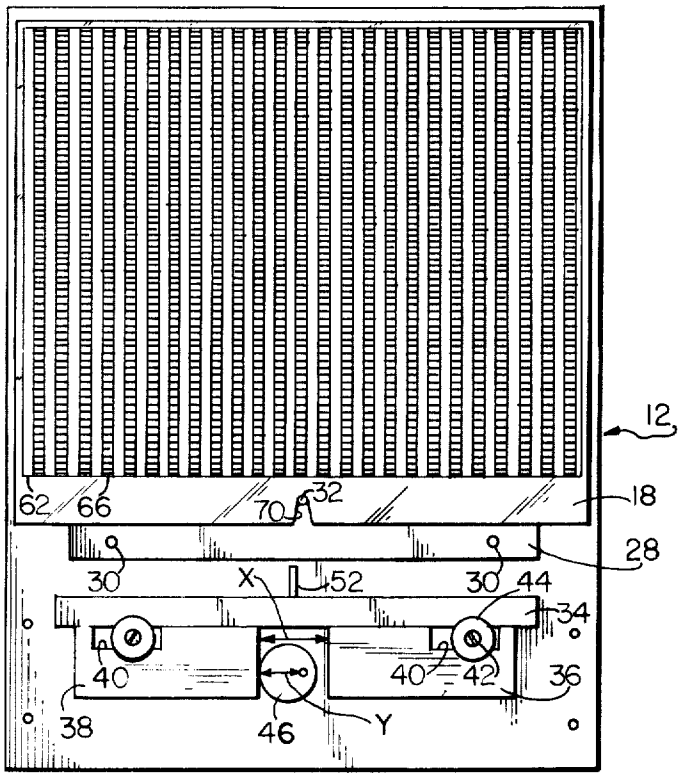


FIG. 3

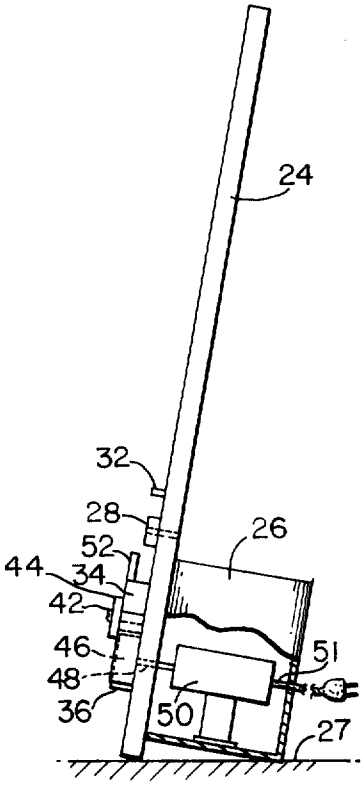


FIG. 4

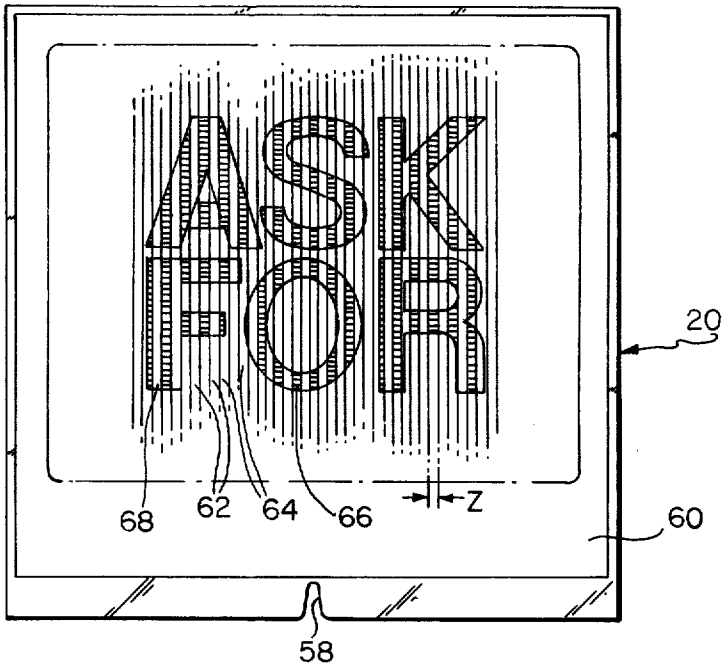


FIG. 5

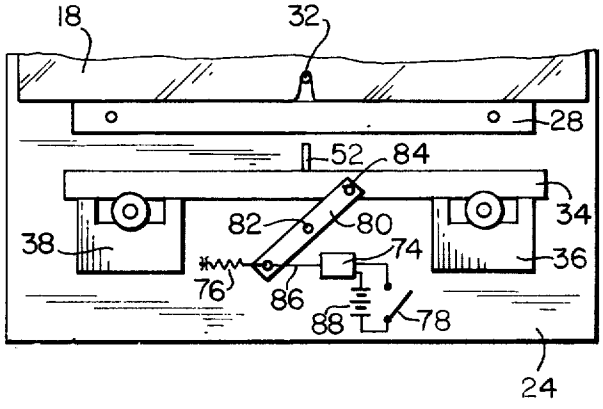


FIG. 8

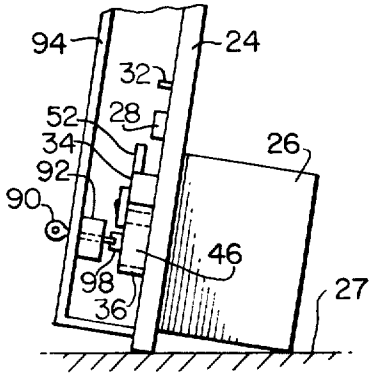


FIG. 9

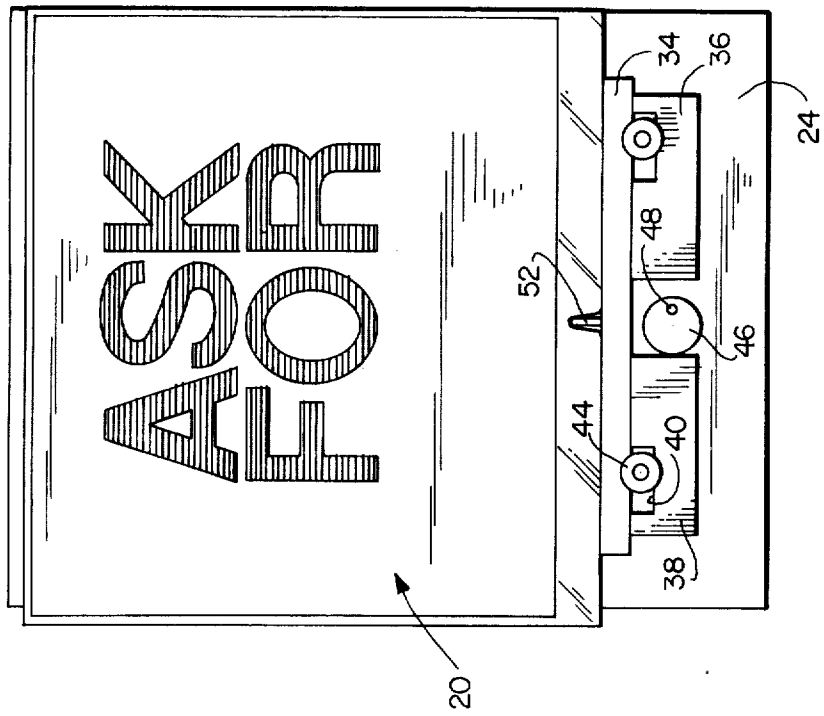


FIG. 7

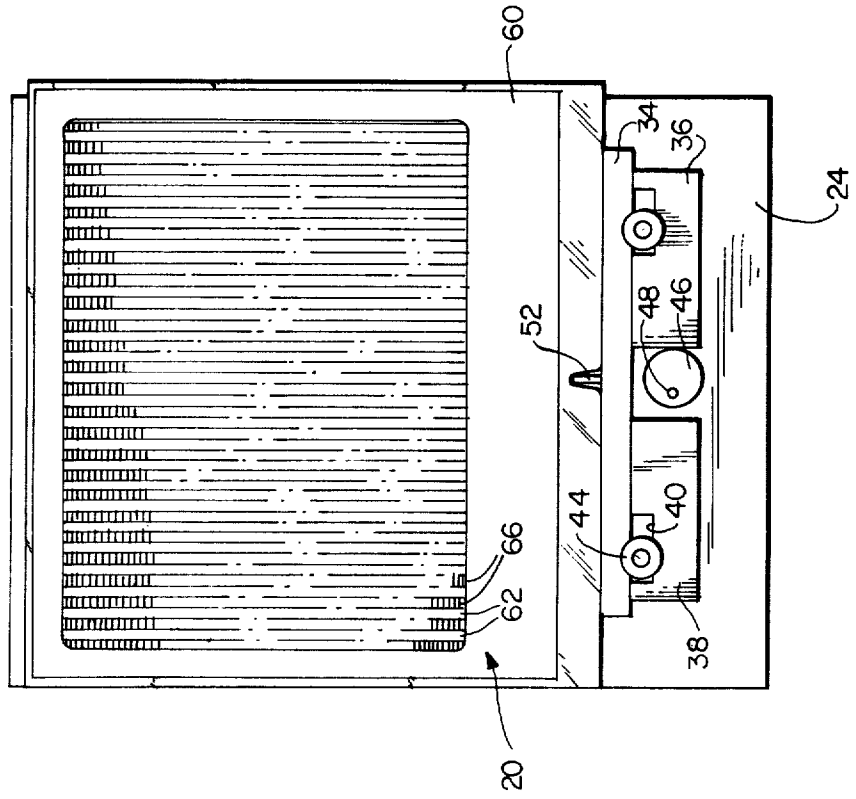


FIG. 6

VISUAL DISPLAY APPARATUS

This invention relates to visual display apparatus, and more particularly to a display apparatus wherein the content of the message to be displayed is readily changed.

Although there are many prior art devices which are directed towards providing an animated or changeable visual display apparatus for use in advertising or as signs for any other purpose, many of these prior art devices have been very complicated in their construction. This results in an expensive apparatus and one that is difficult to maintain and repair. Additionally, many of these prior art devices have been restricted to only one message and have, therefore, limited versatility.

To the contrary, the present invention provides a display apparatus which is simple, efficient, and inexpensive to produce, and which is easily maintained. Moreover, since the design information to be displayed is contained on flat members which have no hardware attached to them, flat members with new design information thereon may be easily shipped to existing installations of the apparatus, whereby the new members containing the new design information may be exchanged for old members containing obsolete or unwanted design information thereon.

It is, therefore, a specific object of the present invention to provide a cheap, efficient, attractive and easily maintained visual display apparatus.

It is a further object of the present invention to provide a visual display apparatus which can display a message, and wherein the message content can readily be changed and therefore the apparatus can display a variety of messages as desired or required.

A further object of the present invention is to provide a visual display apparatus wherein the message displayed thereon is readily changeable without the necessity of a high degree of skill or elaborate tools.

These foregoing objects are attained by providing an apparatus which includes a base; a first member having stripes thereon, the stripes being alternately of a design color and a background color; a second member having thereon spaced stripes of the background color and transparent spaces between the spaced background stripes, the second member further bearing design information comprising a plurality of spaced design colored stripes located in some of the transparent spaces, and a plurality of spaced transparent portions located in some of said background stripes; means, coupled to the base, for supporting the first and second members adjacent each other for relative movement; and means for moving the members relative to each other between a first position wherein the design colored stripes of the first member are aligned with the design colored stripes on the second member and a second position wherein the design colored stripes of the first member are between the design colored opaque stripes of the second member, whereby, in the first position, the design is visible and in the second it is not.

Other objects, advantages and salient features of the present invention will become apparent from the following detailed description which, taken in conjunction with the annexed drawings, discloses preferred embodiments of the present invention.

Referring now to the drawings which form a part of this original disclosure:

FIG. 1 is a front elevational view of the apparatus forming the present invention;

FIG. 2 is a side elevational view of the apparatus of FIG. 1;

FIG. 3 is a front elevational view of the apparatus shown in FIG. 1 with the second member and other parts removed therefrom;

FIG. 4 is a side elevational view of the apparatus shown in FIG. 3;

FIG. 5 is a front elevational view of the second member;

FIG. 6 is a front elevational view similar to FIG. 3 but having both members supported on the apparatus in a position wherein the message is undiscernible;

FIG. 7 is a front elevational view similar to FIG. 6 but showing the desired message clearly in view;

FIG. 8 is a partial front elevation view of the mechanism of a second embodiment of the present invention; and FIG. 9 is a partial side elevational view of the mechanism of a third embodiment of the present invention.

Referring now to the drawings in further detail, the apparatus shown in FIGS. 1 and 2 is generally designated **10** and includes a base **12**, a movable message assembly **14** and a static message assembly **16**.

The movable message assembly **14** includes a first member **18**, a second member **20** and a support assembly **22** for supporting the first and second members adjacent each other on the base **12** and for moving these members relative to each other.

As best seen in FIGS. **3** and **4**, the base **12** is comprised of a rectangular, planar plate **24** rigidly connected on its lower rear surface to a hollow block **26**. Preferably, the block **26** is connected to the plate **24** at a position above the bottom edge of the plate. Thus, when the block and plate are supported on a generally flat surface, indicated by **27**, the plate **24** is not perpendicular to the flat surface but has an angle between its rear surface and the surface **27** of less than 90°. Mounted to the front surface and parallel to the bottom edge of the plate **24** is a first elongated bar **28**. This bar is rigidly secured to the plate approximately in the middle thereof by means of screws **30** passing through the bar and secured in the plate. Mounted to the plate **24** a small distance above the center of the first bar **28** and along the vertical centerline of the plate is a pin **32** which extends perpendicularly from the plate a distance substantially equal to the width of the bar **28** as seen in FIG. **4**.

Mounted below the first bar for translational movement across the surface of the plate **24** is a second elongated bar **24** having a thickness equal to about twice the thickness of the first bar **28**. This bar **34** has depending therefrom rectangular extensions **36** and **38**, one at each end with a distance, designated X, therebetween. Each of these extensions has a slot **40** defined therein along the connection of the extension with the second bar. Received in each of these slots is a mounting screw **42** which is received in a suitable threaded bore in the plate **24** and which has an enlarged washer **44** at its distal end. As seen in FIG. **4**, the washer **44** lies adjacent to the outside surfaces of the extensions and the bar **34**. The thickness of the slots **40** in the vertical direction is slightly greater than the diameter of the mounting screws so that the bar **34** can be moved relative to the mounting screws.

Mounted below the second bar **34** and between the two facing ends of extensions **36** and **38** is a disc or camming member **46.** This disc is rotatably and eccentrically mounted at a point spaced from the center of the disc by means of a shaft **48.** This shaft is fixed to the disc and passed through a suitably provided bore in the plate **24** and is connected to a motor **50** supported in the block **26.** The longer distance between the center of the disc's rotational axis along a diameter to the periphery of the disc is designated Y. The motor **50** is an electrical motor and has a connection by line **51** to a suitable power source (not shown). Preferably, the rotational speed of the motor is 36 rpm, however, any desired speed may be used. The shaft **48** is preferably mounted along the vertical centerline of the plate **24.**

The distance X between the two facing ends of the extensions **36** and **38** is less than twice distance Y so that on rotation of the disc the bar **34** connected to the extensions has provided thereto translational movement to the right and to the left as shown in FIG. **3.** In this regard, the longitudinal length of the slots **40** need be only long enough to provide for such longitudinal movement. Additionally, the diameter D of the disc is chosen so that on rotation thereof the extensions **36** and **38** will be alternately moved a specified distance Z. This specified distance is coordinated with the distance the two members must be moved relative to each other to change from a first position to a second position. Thus, the specified distance Z is equal to 2 times Y minus X.

Rigidly mounted perpendicularly to the top of the center of the second bar **34** is an arm **52** as best seen in FIGS. **3** and **4.**

Turning now to FIG. **5,** the second member **20** is shown in an elevational view. Member **20** is a thin, rectangular plate having a slot **58** extending upwardly and inwardly from the midpoint of its bottom edge. Preferably, the depth of this slot is equal to the distance between the top of the arm **52** and the top of the second bar **34.** The thickness of the second member is preferably equal to one-half the thickness of the second bar, and it is formed from transparent material such as clear plastic or glass and has painted or otherwise affixed to its back surface a border **60** of a background color and a series of spaced background colored stripes **62** located within the border **60.** The spaces defined between these background stripes are transparent spaces **64.** As seen in FIG. **5,** certain of the transparent spaces **64** have contained therein stripes **66** of a design color. Additionally, located in some of the background stripes **62** are transparent portions **68.** These last mentioned stripes and portions form the design information. Although the two words ASK FOR are shown in FIG. **5,** this is only by way of example and any word or series of words having any desired juxtaposition can be used. The background color can be any color as desired as long as it contrasts with the design color; however, by way of example, as shown in the attached drawings, the background color is white and the design color is blue. As used herein, "stripes" are defined to include lines both straight and curved as long as adjacent edges are parallel. The distance between edges of adjacent stripes of the same color is the specified distance Z.

As shown in FIG. **3,** the first member **18** is a thin, rectangular plate having affixed on the front surface thereof a series of parallel stripes which alternate between background colored stripes **62** and design colored stripes **66.** The distance between stripes of the same color is the specified distance Z. In the center of the bottom edge of the first member **18** is a slot **70** for the reception of the pin **32.** The height of this slot should preferably be equal to the distance between the top of the pin **32** and the top of the first bar **28.** Preferably, the first member has a thickness equal to the thickness of the first bar.

In operation of the apparatus, the first member **18** is placed on top of the top surface of the bar **28** so that the pin **32** is received in the slot **70** as shown in FIG. **3** and the second member **20** is placed on top of the second bar **34** so that the arm **52** is received in the slot **58.** This is shown in FIG. **6** wherein the design colored stripes of the first member are aligned with the design colored stripes on the second member. In this first position, no message is clearly displayed by the combination of the first and second member. However, on actuation of the motor **50,** the disc **46** rotates from the position shown in FIG. **6** to that shown in FIG. **7.** Because the distance X between the facing sides of the two extensions **36** and **38** which surround the disc on two sides is less than the 2 times distance Y by a specified distance Z, the rotation of the disc causes a translational movement of the second bar from the right to the left the specified distance Z as viewed in FIGS. **6** and **7.** Because the second member is fixedly connected to the second bar by means of slot **58** and arm **52,** the movement of the bar to the left causes the second member to move to the left the specified distance so that the design colored stripes of the first member are interlaced between the design colored stripes of the second member. In this second position, the message formed by the first and second members is clearly discernible. If the motor **50** is continuously connected to a power source, the disc **46** continues to rotate and causes an alternation between the first and second positions described above. Therefore, the message is alternately discernible and undiscernible. When the message is undiscernible, merely a series of stripes are visible.

As shown in the drawings, the first and second members, when in the second position, display the two words ASK FOR. However, it is apparent that any word or combination of words may be provided by these members. As shown in FIG. **1** in conjunction with these two words ASK FOR, the static message assembly **16** may be connected to the support plate **24** by means of screws **72** as shown in FIG. **2** so that an advertiser's product or product name may be shown on the static assembly with the words ASK FOR being alternately visible about it. In an alternative form, the message on the static assembly may be eliminated so that the full message is provided only by the animated message assembly **14.** In this instance, the static assembly acts as a cover for the lower part of plate **24** to protect and cover the mechanism used to provide relative motion between the two members.

Moreover, the message alternately displayed by the relative movement of these two members need not be for a product or for advertising but could provide any message as desired. Thus, this apparatus might be used as a road sign to indicate a hazard further along the road such as ice, fog or snow.

It will be noted that the message content displayed by the apparatus is quite readily changed by merely changing the second member **20.** As long as the second mem-

ber has the proper stripes and spaces and design information which is coordinated with the stripes on the first member, the mere substitution of another second member changes the message to be displayed. Thus, to change the message the second member is removed from its position on the bar **34** and another put in its place.

In a second embodiment of the present invention shown in FIG. **8**, it is contemplated that a continuously repetitive movement from the first to the second position of the first and second members might not be necessary nor desirable. Therefore, there is provided a mechanism for controlling the relative movement of the first and second members such that the closing of a switch moves the members from the first position to the second position, as described above, and the opening of the switch allows the members to return to the first position.

More specifically as shown in FIG. **8**, the basic apparatus is the same as described above with the exception that the disc **46** is removed and replaced by a relay **74**, a spring **76**, a switch **78** and a lever arm **80**. The center of the lever arm **80** is pivotally mounted to the plate **24** on a rod **82** and is pivotally connected at one end by means of a rod **84** to the second bar **34**. The other end of the lever arm **80** is connected to one end of a spring **76** which is rigidly connected by any suitable means to the front of the plate **24**. A relay **74** is suitably attached to the front of the plate **24** and has an extension **86** connected to the end of the lever arm **80** such that, upon energization of the relay **74**, the lever arm is pivoted in a counter-clockwise direction as viewed in FIG. **8** so as to move the second bar **34** to the left. Thus, this causes the relative movement between the first and second members. The relay **74** is connected via a suitable conductor to a switch **78** which is in turn connected to a power source **88** which is in its turn connected back to the relay **74**.

In this manner, the first and second members may be manipulated from the first position to the second position as desired by closing the switch, and may be kept in that position as long as desired. On opening of the switch **78**, the spring **76** pulls the lever arm **80** back to its initial position, thereby moving the first and second members from the second position to the first position where no message is displayed.

A third embodiment is contemplated which will allow manual minipulation of the first and second members from their first position to their second position by means of the turning of a key **90** which is connectable to a disc **46** as shown in FIG. **3**. Specifically, a lock **92** is fixedly mounted through a front plate **94** suitably secured to the front of the apparatus **10**. The apparatus shown in FIG. **3** would be the same except for the addition of an extension **96** rigidly connected to the front of the disc **46** at its rotational axis. This extension **96** has a slot **98** in its outermost surface for the reception of the end of the key **90** which passes through the lock **92**.

The operation of this third embodiment is similar to those described above insofar as the first and second members are to be manipulated from a first position where no message is shown to a second position where the message is displayed. The movement of the first and second members from the first position to the second position is accomplished by placing the key **90** into the lock **92** so that the end of the key fills the slot **98** in the extension **96**. The rotation of the key causes a concomitant rotation of the disc **46** and movement of the second bar, thereby causing relative movement between the first and second members.

The apparatus of the third embodiment can advantageously be used as signs on doors indicating whether or not entrance is allowable or signs on cabinets or on indoor or outdoor walls.

While three advantageous embodiments of the present invention have been described and shown, it will be understood by those skilled in the art that various changes and modifications can be made therein without departing from the scope of the invention as defined in the appended claims.

What is claimed is:

1. A visual display apparatus comprising:
- a substantially planar, upstanding base;
- a first member having stripes thereon, said stripes being alternately of a design color and a background color;
- a second member having thereon spaced stripes of the background color and transparent spaces between said spaced background stripes;
- said second member further having thereon design information comprising
  - a plurality of spaced design colored stripes located in some of said transparent spaces, and
  - a plurality of spaced transparent portions located in some of said background stripes;
- means, coupled to said base, for supporting said first and second members at a lower portion of said base and adjacent each other in overlying, upstanding arrangement for relative movement; and
- means for moving said members relative to each other between a first position wherein the design colored stripes of the first member are aligned with the design colored stripes on the second member and a second position wherein the design colored stripes of the first member are between the design colored stripes of the second member so that in the first position no message is displayed but in the second position a message is clearly displayed,
- said means for supporting said first and second members including
  - a first bar rigidly connected in substantially horizontal position to said base and upon which the bottom edge of said first member rests,
  - a second bar connected in substantially horizontal position to said base for translational movement and upon which the bottom edge of said second member rests, the lower of said bars projecting forwardly of said base a distance greater than the upper one of said bars,
  - a pin extending outwardly from said base at a position above said first bar, said first member having a slot extending inward from the bottom edge thereof for the reception of said pin, and
  - an arm rigidly connected to said second bar and extending upwardly therefrom, said second member having a slot extending inward from the bottom edge thereof for the reception of said arm.

2. A visual display apparatus according to claim **1**, wherein said means for moving includes
- a camming member mounted for rotation on said base, said camming member having a distance Y between the center of its rotation to the outer periphery of said camming member; and

two extensions coupled to said means for supporting in a position such that one is on each side of said camming member, adjacent sides of said extensions being spaced by a distance X which is less than twice distance Y.

3. A visual display apparatus according to claim 2, wherein the distance between said first and second positions is equal to twice distance Y minus distance X.

4. A visual display apparatus according to claim 1, wherein said means for moving includes a lever pivotally mounted to said base at the center thereof, said lever being pivotally mounted to said means for supporting at one end and coupled to a relay at its other end.

* * * * *