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Mazzocco, Sr.

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[54] **CONTINUOUS DISPLAY DEVICE**

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[52] **U.S. Cl.** **40/32**, 40/96

[51] **Int. Cl.** **G09f 11/28**

[58] **Field of Search** ..... 40/32, 43, 48, 118, 96–99, 40/77.6, 77.7, 78.07, 78.09, 100, 28 R, 28 A, 28 B, 28 C, 28 D; 272/39–45

[56] **References Cited**

UNITED STATES PATENTS

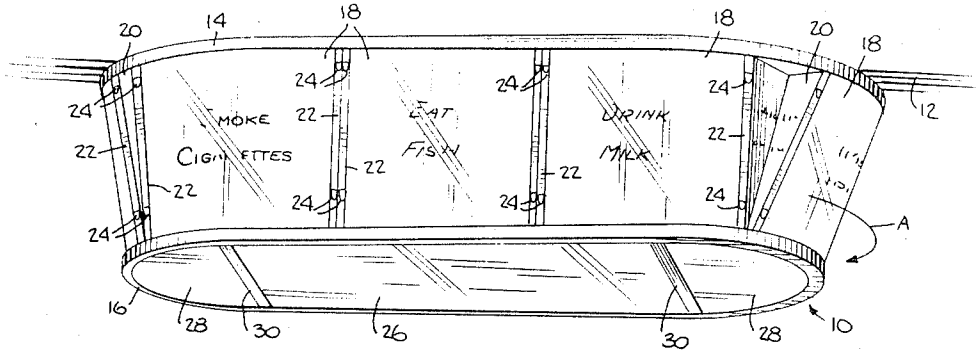
1,018,975	2/1912	Johnson	40/32
2,782,538	2/1957	Peretti	40/96.5
3,336,687	8/1967	Fontaine	40/32
3,735,513	5/1973	Constant et al.	40/32

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Assistant Examiner—A. Heinz
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[57] **ABSTRACT**

An illuminated continuously moving display device which is suspended from a ceiling and having a series of panels each containing separate visual displays, the panels being arranged to follow one another in series about a closed loop of oval configuration with the panels being tilted slightly with respect to the vertical for ease in viewing. Special belt drive means and special track and panel means are provided to allow the individual panels to move in proper position for display at all times and to separate so as to accommodate the difference in path lengths which is required to maintain the panels at their proper tilted position.

23 Claims, 9 Drawing Figures



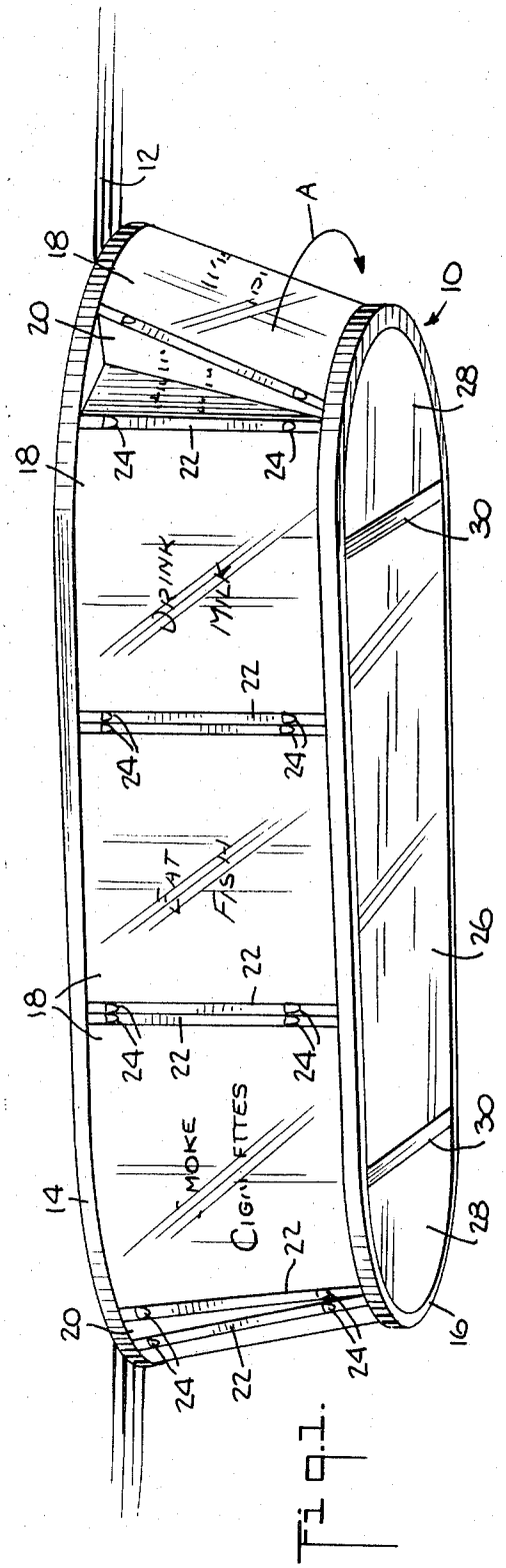

A
10
12
14
16
18
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24
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28
30
DRINK
MILK
FAT
FISH
SMOKE
CIGARETTES

Fig. 1.

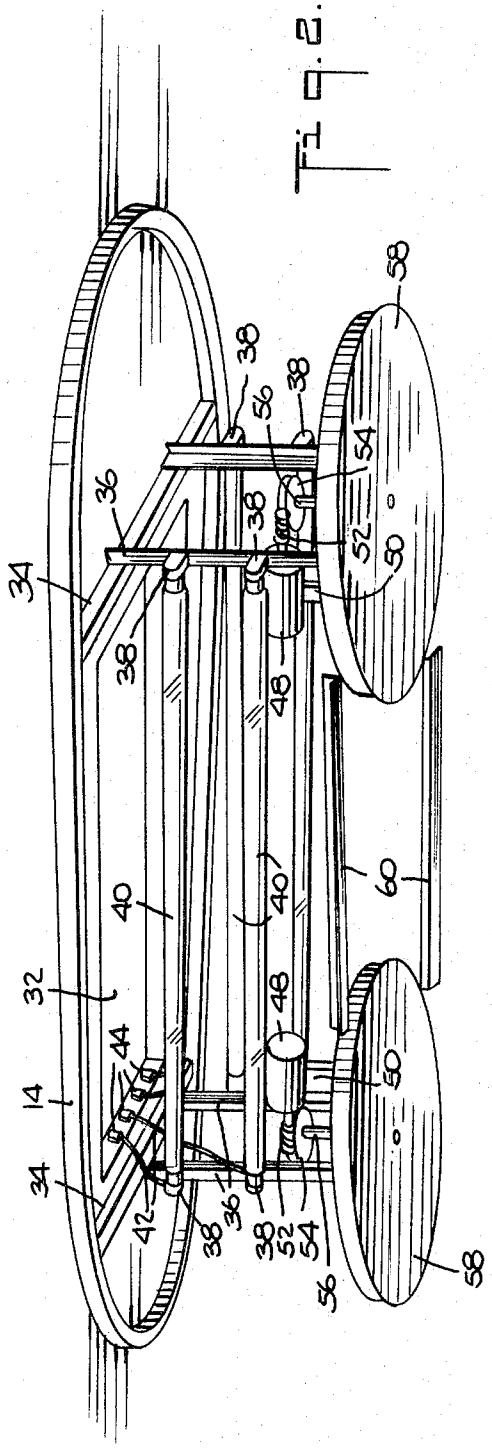

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Fig. 2.

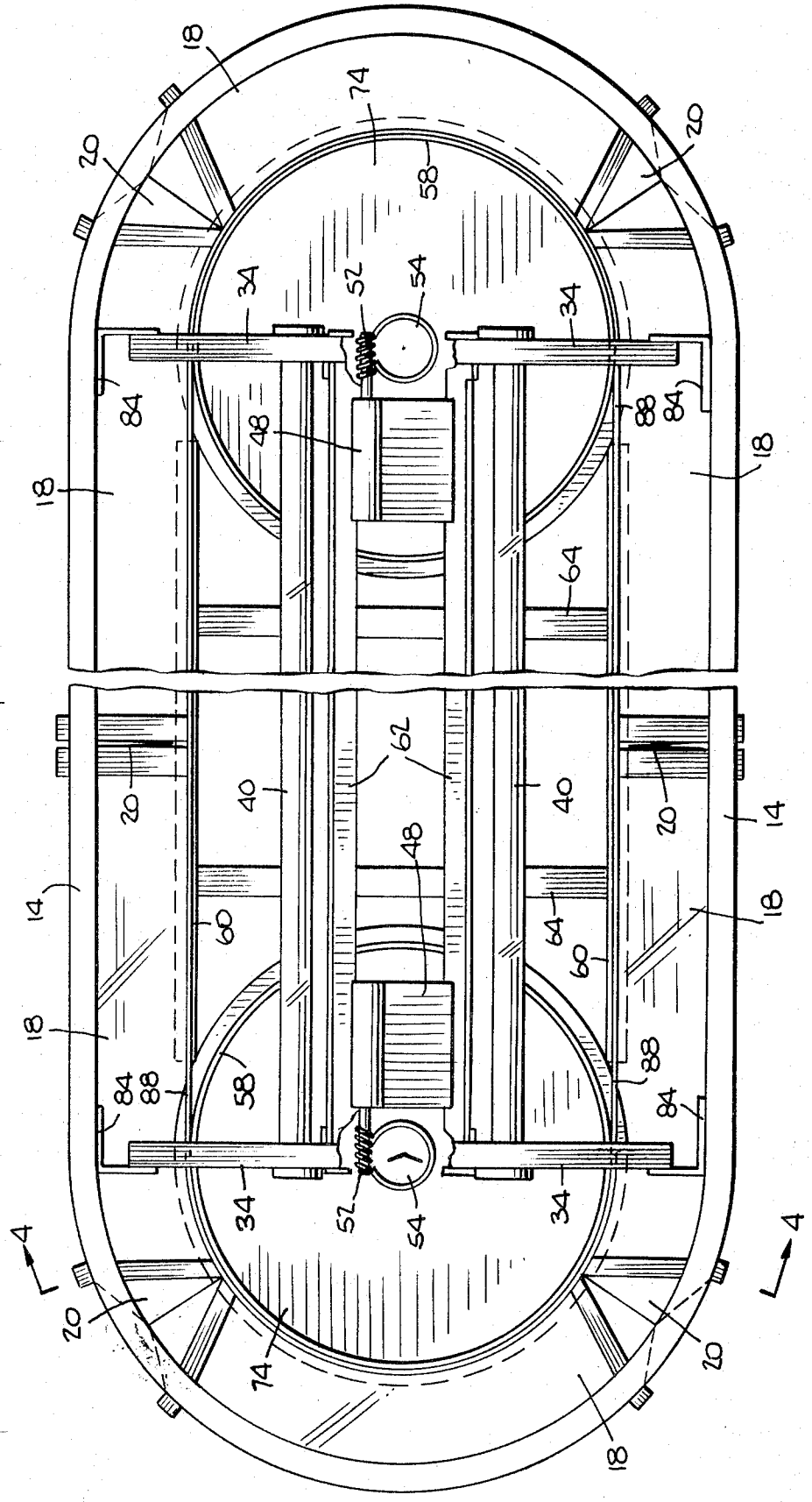


Fig. 3.

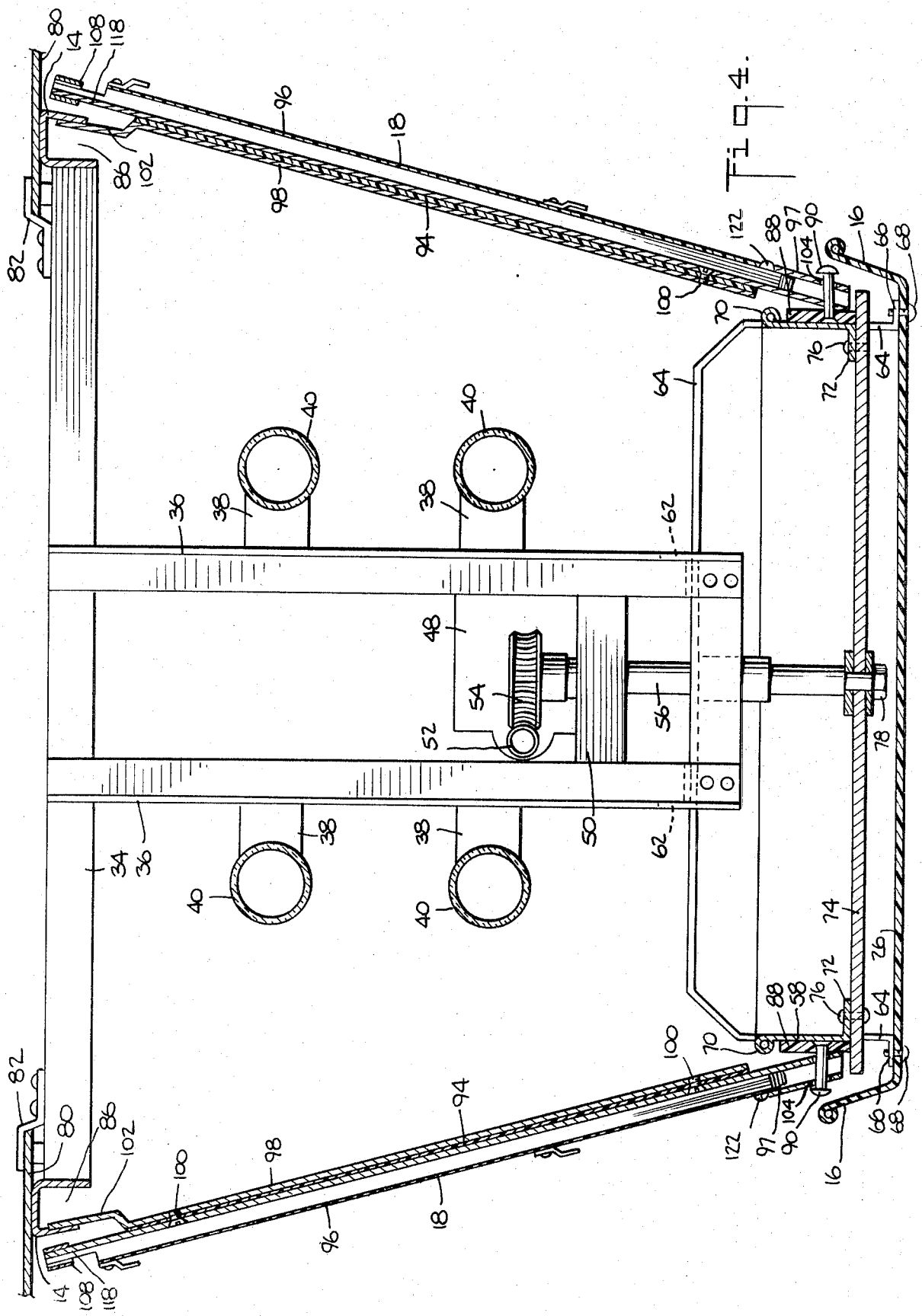

80
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Fig. 4.

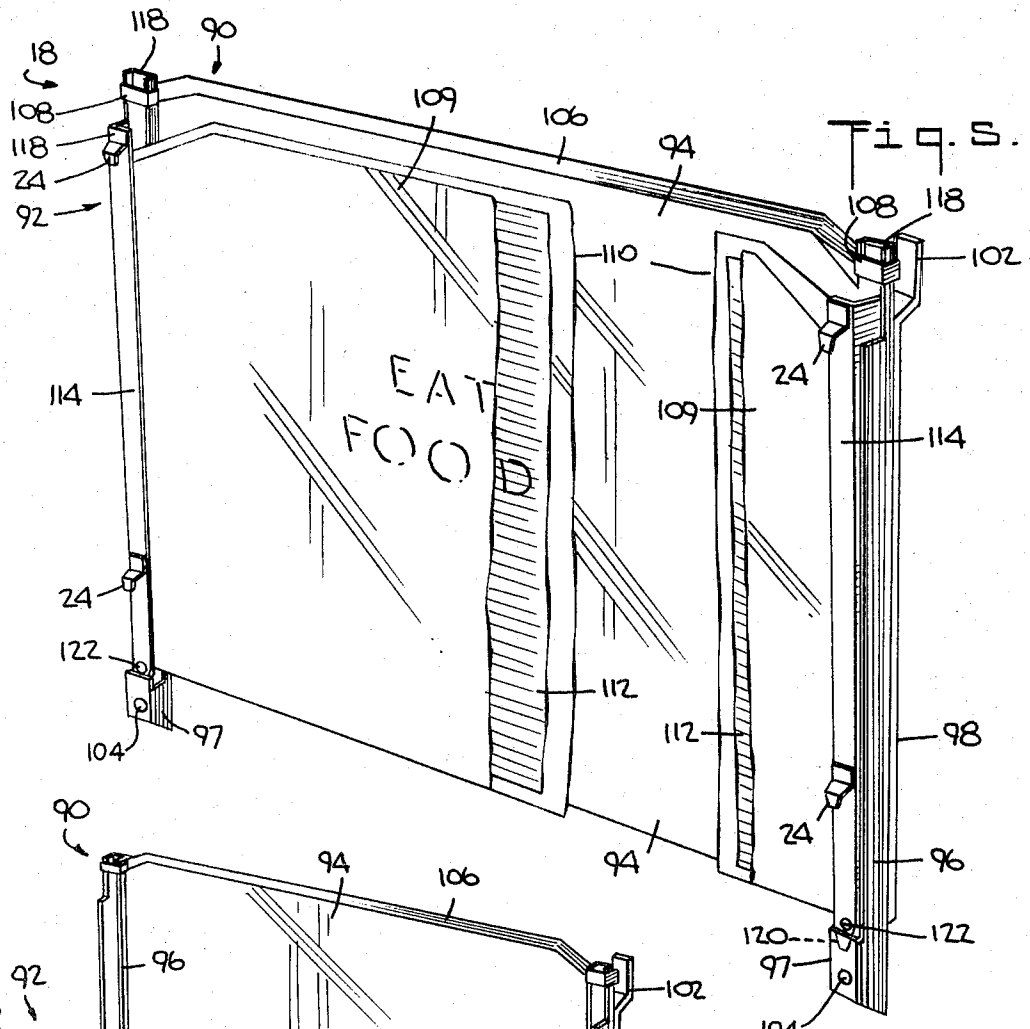

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Fig. 5.

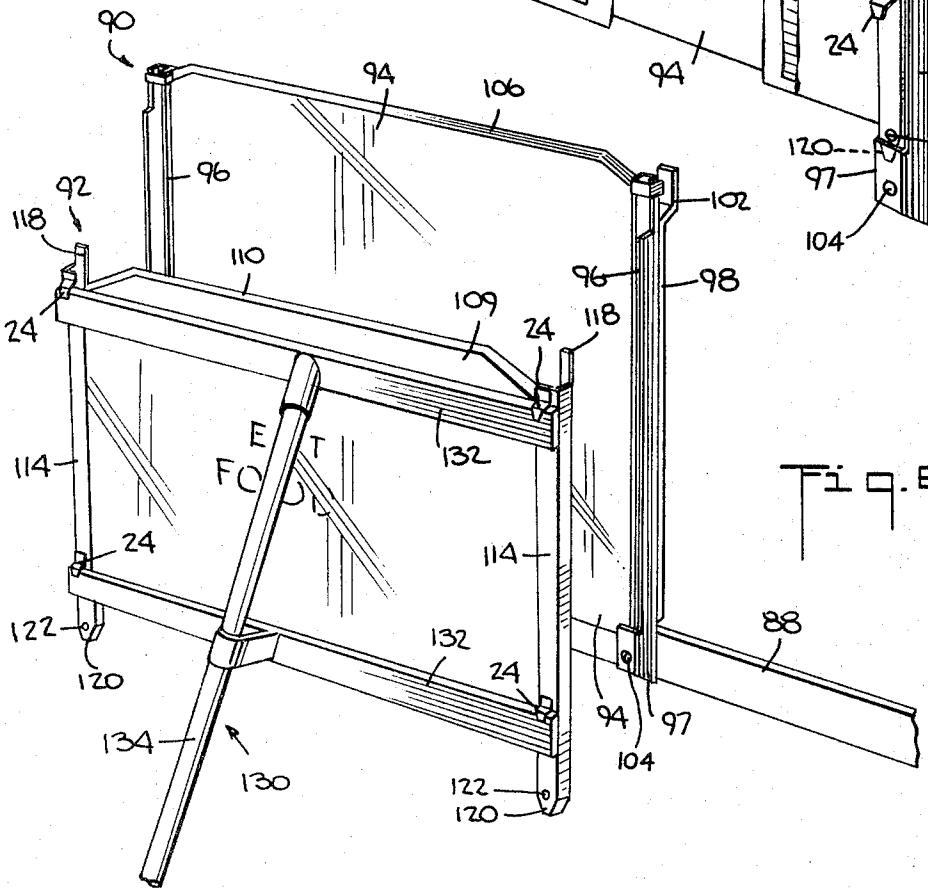

90
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130
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97
104
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Fig. 6.

Fig. 9.

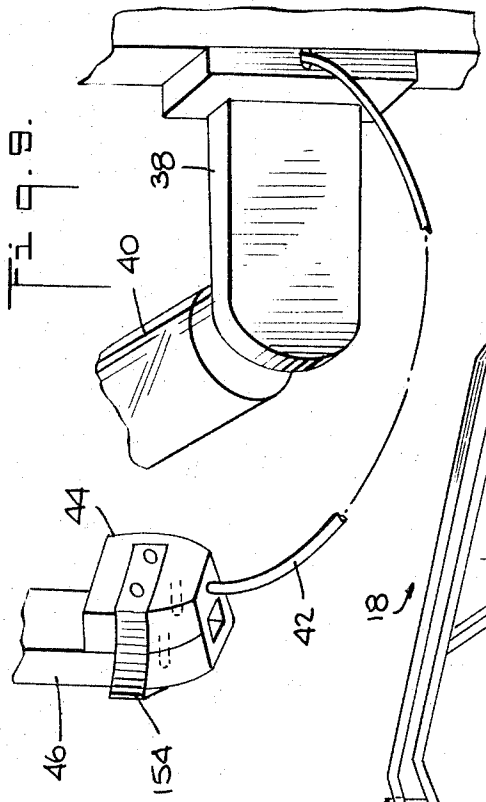


Fig. 7.

Fig. 8.

CONTINUOUS DISPLAY DEVICE

This invention relates to visual display apparatus and more particularly it concerns novel arrangements for the presentation of continuously moving and easily seen pictorial and printed materials.

The present invention is particularly well suited to the presentation of advertising material at point-of-purchase locations where space is limited and yet where eye catching moving displays are desired. Supermarkets and department stores generally have relatively little space available for special advertising displays and in the past such establishments relied primarily on stationary signs and posters to advertise current sales and special offerings.

The present invention makes possible the use of ceiling areas for the presentation of visual displays. Moreover, with the present invention, only minimal interference is presented to overhead lighting systems. In fact, a large portion of otherwise unused light may be employed in the presentation of the illuminated displays.

The present invention also makes possible the presentation of ceiling mounted displays which are oriented at a convenient viewing angle, i.e., about 16° from the vertical, and yet are movable continuously about a loop of oval configuration.

According to the present invention there is provided a flexible driving loop, such as a belt, which moves along a predetermined closed course lying in a first plane. A guide track is provided to define a second closed course lying in a second plane displaced from but parallel to the first plane. A number of flexible display panel assemblies are secured along one edge to the driving loop to drive the display panel assemblies and means are provided to guide the display panel assemblies in the guide track.

The display panel assemblies are flexible for curving movement about the curved portions of the closed course; however, they are provided with sufficient resiliency so that they come back into flattened, extended condition after passing over the curved portions.

The present invention also provides means including collapsable intermediate panels for accommodating the separation which occurs between adjacent display panel assemblies as they pass about the curved portions.

According to a further feature of the present invention novel display panel assembly constructions are provided which permit simple and convenient removal of portions of individual display panel assemblies for repair or for replacement of their associated visual material.

The present invention, in a further aspect, also provides for internal illumination and provides novel means for adapting ordinary ceiling type fluorescent light fixtures to be used in this manner without however detracting seriously from the general illumination provided by these fixtures.

There has thus been outlined rather broadly the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described more fully hereinafter. Those skilled in the art will appreciate that the conception on which this disclosure is based may readily be utilized as the basis of the designing of other structures for carrying out the purposes of this invention. It is important, therefore, that this disclosure be regarded as including such equivalent constructions as do not depart from the spirit and scope of the invention.

A specific embodiment of the invention has been chosen for purposes of illustration and description, and is shown in the accompanying drawings forming a part of the specification, wherein:

FIG. **1** is a perspective view illustrating a visual display device in which the present invention is embodied;

FIG. **2** is a view similar to FIG. **1** showing a portion of the internal construction of the visual display device;

FIG. **3** is a top plan view, partially cut away, of the visual display device of FIG. **1**;

FIG. **4** is an enlarged section view taken along line **4—4** of FIG. **3**;

FIG. **5** is a perspective view, partially cut away, showing a display panel assembly used in the display device of FIG. **1**;

FIG. **6** is perspective view illustrating a panel display replacement operation performed on the apparatus of FIG. **1**;

FIG. **7** is an exploded view illustrating display and intermediate expansion panels as arranged in the device of FIG. **1**;

FIG. **8** is a fragmentary perspective view illustrating an adaptor plug arrangement utilized in the device of FIG. **1**; and

FIG. **9** is a further fragmentary perspective view illustrating an electrical connection utilizing the adaptor plug of FIG. **8.**

As shown in FIG. **1,** a visual display device **10** is shown to be suspended from a ceiling **12** so that it extends downwardly therefrom approximately 1½ feet. The display device **10** is preferably mounted over an existing fluorescent lighting fixture modified as hereinafter described. The lighting from the fixture is then utilized, in part, for internal or back illumination of display panels on the device **10.** As will be appreciated from the following description, the major portion of the light originally provided by the fixture over which the device **10** is mounted, is still available for general illumination through the bottom of the device.

As can be seen in FIG. **1,** the display device **10** includes an upper oval track **14** which is mounted flush against the ceiling **12.** A lower oval track **16** of somewhat smaller size than the upper track, extends in a plane parallel to and beneath the plane of the upper track. A series of display panel assemblies **18** are arranged side by side to extend between the upper and lower oval tracks **14** and **16.** Since the lower oval track **16** is both shorter and narrower than the upper oval track **14,** the display panel assemblies are slanted at an angle approximately 16° with respect to the vertical. This provides optimum viewability to persons walking through the area in which the display apparatus is located.

The display panel assemblies **18** move around the upper and lower track **14** and **16** in the direction of the arrow A at a relatively slow speed, e.g., approximately one and one half circuits per minute.

Because of the difference in length of the upper and lower tracks **14** and **16,** the upper edges of adjacent

panel assemblies **18** become separated at the curved ends of the tracks. In order to accommodate this separation there are provided expandable intermediate panels **20.** During the movement of the display panel assemblies **18** along the straight courses of the tracks, these intermediate panels remain folded or collapsed to allow the adjacent panels to abut one another. The intermediate panels are not seen during their movement along the straight courses. However, during their passage around the curved end portions of the track, the panels unfold and expand. This expansion is greater at the top than at the bottom and so permits the difference in track lengths to be accommodated without distortion of the shape or position of the display assemblies **18** themselves.

It will be noted that the display panel assemblies **18** are provided with edge braces **22** which extend along their more vertical edges from top to bottom to provide stiffness between the upper and lower tracks **14** and **16.** Removal clips **24** are provided at different locations along the edge braces **22** to facilitate removal and replacement of individual display panel assemblies in a manner to be described.

As indicated above, the display device **10** is preferably mounted over a modified fluorescent lighting fixture. The lighting from the fixture provides illumination from behind the various display panel assemblies **18.** General illumination of the area is retained, however, by virtue of a rectangularly shaped bottom center panel **26** and two semicircularly shaped bottom end panels **28,** which are of a translucent material, such as plastic, and which lie beneath the internal lighting source. The bottom panels are separated and supported by horizontal strips **30.**

The general interior construction of the display apparatus **10** is illustrated in FIG. **2.** As there shown, a fluorescent light fixture well **32** is surrounded by the upper track **14.** A pair of upper horizontal cross braces **34** are attached to adjacent to the ceiling the light fixture well **32;** and the upper oval track **14** is attached to the ends of these cross braces. A pair of vertical struts **36** extend down from each of the upper horizontal cross braces **34.** Each of the vertical braces is provided with upper and lower fluorescent light sockets **38.** These sockets accommodate four fluorescent lamps **40** which extend horizontally between them in two tiers with two lamps in each tier. Electrical wires **42** extend from the socket **38** to adaptors **44** which draw electrical power from original sockets **46** within the light fixture well **32.**

A pair of synchronized electrical drive motors **48** are mounted on brackets **50** attached to the lower ends of the vertical struts **36.** These drive motors are provided with worm drive pinions **52** which engage worm gears **54** mounted to turn vertical drive axles **56** and associated drive drums **58.** The synchronization of the drive motors **48** can be obtained electrically in known manner so as to cause the two drive drums **58** to turn in unison. A pair of drive belt supports **60,** of L shaped cross section, extend along the straight courses between the two drive drums **58.** These drive belt supports **60** are mounted on brackets not shown in FIG. **2.**

Turning now to FIGS. **3** and **4** it will be seen that a pair of longitudinal braces **62** extend horizontal between the lower ends of the vertical struts **36.** A pair of lower horizontal cross braces **64** extend across and are attached to the longitudinal braces **62.** As shown in FIG. **4,** these cross braces bend downwardly in inverted U shaped configuration, and their lower ends are flanged outwardly as indicated at **66.** Screws **68** pass through the lower track **16** into these flanges and serve to secure the lower track in place.

As can be seen in FIG. **4,** the drive drums **58** are each formed with an upper bead **70** and a lower inwardly extending flange **72.** A circular bottom plate **74,** having a diameter slightly greater than that of the drum **58,** is secured by rivets **76** to each drum flange **72.** Each circular bottom plate **74** is also attached, by means of a screw fastener **78,** to its associated vertical drive axle **56.** In order to maximize illumination through the drum **58,** the bottom plate **74** is cut out so as to form spokes extending between the screw fastener **78** and the periphery of the drum.

As further shown in FIG. **4,** the upper horizontal cross braces **34** are secured to flange edges **80** of the light fixture well **32** by means of attachment clips **82.** The upper oval track **14,** in turn, is secured to the upper horizontal cross braces **34** by means of angle brackets **84,** as shown in FIG. **3.** The upper track **14** itself is of U shaped cross sectional configuration and is formed with a downwardly opening channel **86** which serves as a guide track for the display panel assemblies **18.**

A strap-like drive belt **88** passes over the peripheries of the two drive drums **58** and extends along the drive belt supports **60** between the drums. Thus, as the drums turn in unison the drive belt is caused to follow a course corresponding to the lower track **16.** Elongated rivets **90** extend laterally outward from the drive belt **88** at spaced apart locations therealong. These rivets secure the various display panel assemblies **18** to the drive belt in a manner such that, as the belt is driven by the drums **58,** it moves the display panels **18** along the tracks **14** and **16.**

During operation of the device, the electrical drive motors **48** operate through their associated drive pinions **52** and worm gears **56** to turn their associated drive drums **58.** This in turn causes the belt **88** to move about the drums. As the belt moves, its rivets **90** pull on the lower edges of the display panel assemblies **18** to move them along the path defined between the upper and lower tracks **14** and **16.** Each individual display panel assembly, with its associated printed or illustrative information passes continuously around the entire device so that it will be seen by anyone in sight range of the device no matter where he is standing.

During this movement, the individual display panel assemblies are illuminated continuously from behind by means of the fluorescent lamps **40.** This illumination serves to facilitate viewing and at the same time it provides an attractive presentation. The major portion of the light from the fluorescent lamp **40** is recovered, however, for general illumination purposes; and this is achieved by virtue of the translucent bottom panels **26** and **28.**

As the panel assemblies **18** move along they are maintained at a slight angle (e.g., approximately 16°) with respect to the vertical so as to optimize viewing convenience. Because of this, the panel assemblies undergo partial separation at the upper ends during their passage around the curved ends of the device. This partial separation is accommodated, as well as explained hereinafter, by virtue of the construction and mounting of the panel assemblies. The intermediate panels **20** are arranged to collapse behind the adjacent panel assem-

blies **18**, as shown in FIG. **3**, during their passage along the straight courses of their movement, and to expand to fill the spaces between the panel assemblies during their passage around the curved ends of the device. The collapsing of the intermediate panels **20** is such that they extend substantially perpendicular to the display panel assemblies and thereby do not cause interference with the illumination of these panel assemblies by the lamps **40**.

The construction of the individual display panel assemblies **18** is best seen in FIGS. **5** and **6**. As can be seen therein, each display panel assembly is made up of a permanent portion **90** and a removable portion **92**.

The permanent portion **90** comprises a generally rectangular inner sheet **94** of flexible transparent or translucent plastic material. Elongated edge channel members **96** are secured to the outer surface of the sheet **94** along its vertical edges, while elongated track follower strips **98** are secured to the inner surface of the sheet **94** in alignment with the edge channel members **96**. Reverting to FIG. **4**, it will be seen that each of the vertical edges of the inner sheet **94** is sandwiched between an associated one of the edge channel members **96** and its corresponding track follower strip **98**. In addition, these members are held together by screws **100** which pass through them and the edge of the sheet **94** itself. As further shown in FIG. **4** the upper end of each track follower strip **98** is bent inwardly with respect to the display device to form a follower projection **102** which fits loosely in the channel formed by the upper track **14**. The outer edge of the track itself projects into the space between the follower projection **102** and its associated channel member **96**. In this manner the upper ends of the display panel assemblies **18** are guided around the upper track **14**.

As can be seen in FIGS. **4**, **5** and **6**, the lower ends of the channel members **96** extend down below the lower edge of the inner sheet **94**. Moreover, while the major portion of the length of the channel members **96** is of open channel configuration, opening outwardly of the display device, a lower portion **97** thereof, below the sheet **94**, is of box-like configuration. As shown, openings **104** are provided in these lower portions **97**, and the rivets **90** on the drive belt **88** fit loosely through these openings.

The upper edge of the inner sheet **92** is stiffened with an upper strip **106** of spring steel or similar material. This ensures that the upper edge of the inner sheet will remain extended during and after its passage around the curved ends of the upper track **14**.

The ends of the upper strip **106** wrap around the upper end regions of the channel members **96** to provide retaining loops **108** for the removable portion **92** of the display panel assembly.

The removable portion **92** of the display panel assembly **18** comprises a pair of outer rectangular sheets **109** and **110** of flexible transparent plastic or similar material. The sheets **109** and **110** overlie each other and they are sealed together along their lower and side edges to form a pocket. A display sheet **112** containing printed, pictoral or other visual material to be displayed, is contained within this pocket. A pair of elongated mounting braces **114** are secured along the side edges of the sheets **109** and **110**. These mounting braces have cross sectional dimensions which enable them to fit snugly into the open channels formed along the channel members **96**. As can be seen in FIG. **5** the upper ends of the mounting braces **114**, beyond the upper edges of the sheets **109** and **110**, are formed with upwardly projecting flanges **118** which are dimensioned to fit snugly up into the retinaing loops **108**.

The length of the mounting braces **114** is such that when their flanges **118** are pushed fully up into the retaining loops **108**, the lower ends of the braces just clear the upper edges of the box-like lower portions **97** of the channel members **96**. The lower ends of the braces **114** are provided with a taper **120** to enable them to slip down inside the box-like lower ends of the channels **96**. Screws **122** or similar protrusions at the upper end of the tapers **120** abut the upper edge of the box-like lower ends of the channels **96** to limit the downward movement of the braces **114**. As can be seen in FIG. **5** the length of the upwardly protruding flanges **118** is such that when the braces **114** are in their inserted position with the screws **122** abutting the upper edge of the box-like lower ends of the channels **96**, the flanges **118** extend up into the retaining loops **108**. The removable portion **92** of the display panel assembly **18** is thus secured to the permanent portion **90**. Moreover, the permanent portion holds the removable portion fully extended so that the display sheet **112** is fully viewable. As shown the removal clips **24** are mounted on the mounting braces **114**.

The removable portion **92** may be separately removed from the stationary portion **90** for repair or for replacement of its display sheet **112**. This is preferably accomplished with the aid of a removal jig **130** shown in FIG. **6**. The removal jig comprises a pair of rigid parallel slats **132** of sufficient length and of sufficient distance from each other to engage the removal clips **24** on the mounting braces **114**. The slats are mounted on an elongated handle **134** which maintains them in fixed positional relation to each other and which also permits one to manipulate the jig **130** while on the floor.

As shown in FIG. **6**, the removable portion **92** is removed by first causing the jig slats **132** to engage the removal clips **24**. The jig **130** is then moved upwardly slightly to lift the lower ends of the mounting braces **114** up out of the box-like lower portions **97** of the channel members **96**. The lower ends of the mounting braces **114** are then swung outwardly to clear the lower ends of the channel members **96** and the jig **130** along with the mounting braces **114** is lowered so that the flanges **118** pass down and out from the retaining loops **108**. The removable portion **92**, which is then held extended on the jig **130** by means of the removal clips **24**, is lowered for repair or replacement of its display sheet **112**.

It will be appreciated that the various removable portions **92** of the display panel assemblies **18** can be removed individually without affecting the overall operation of the devices. This is because the permanent portions **90** of the display panel assemblies, together with the expandable intermediate panels **20** and the drive belt **88** constitute a complete operative chain which passes around the course defined between the upper and lower tracks **14** and **16**.

FIG. **7** illustrates a portion of this chain. As shown, one of the expandable intermediate panels **20** is connected between each pair of adjacent display panel assemblies. The display panels **20** are of generally triangular configuration, with their base at the top, and their apex at the bottom to accommodate the difference between the upper and lower oval track lengths. Now

since the tracks have straight side portions and curved end portions and since for optimum viewing the angle of tilt of the panels with respect to the vertical should be constant, the accommodation of the difference in track lengths must be confined to the curved ends of the tracks. This is achieved by the mounting arrangements herein described wherein the individual display panel assemblies **18** are each attached, rather loosely, at two displaced points to the drive belt, while the upper ends of the panel assemblies are left free to follow loosely in the upper track **14** and the panel assemblies are resiliently biased, as by the spring steel strips **106** along their upper edges, toward a fully extended condition. A certain amount of dip occurs in the central regions of the display panel assemblies as they pass around the curved ends of the device; however, this is accommodated by the relatively flexible two point connection to the drive belt **88** and the loose engagement with the upper track **14.**

The intermediate panels **20** actually do no pulling or pushing and therefore the orientation and positioning of the display panel assemblies **18** during their movement around the device is maintained by their own construction and mounting arrangements as described above. These intermediate panels **20** do, however, serve to prevent glare effects from light which would otherwise pass between the parted display panels as they pass around the curved ends of the device. Moreover, the intermediate panels **20** may themselves be provided with additional advertising or other informational or decorative material. While the intermediate panels **20** are collapsed and essentially hidden during their passage along the straight courses of the device (as seen in FIGS. **1** and **3**) nevertheless, the fact that they unfold during movement to reveal previously hidden material, itself provides an attention attracting feature. The edges of the intermediate panels **20** may be secured to the permanent portions **90** of the display panel assemblies **18** by sandwiching them, along with the edges of the inner sheets **94,** between the elongated channels **96** and their associated follower strips **98.**

As indicated previously in connection with FIG. **2,** the electrical power for the fluorescent lamps **40** may be obtained from the original sockets **46** within the light fixture well **32** by means of adaptors **44.** The construction and operation of these adaptors is shown in FIGS. **8** and **9.** As can be seen in FIG. **8,** one of the original fluorescent sockets **46** includes an entrance channel **140** into which the prongs of a fluorescent lamp enter, one after the other. The channel **140** opens into a generally triangular recess **142** which accommodates a 90° rotation of the fluorescent lamp. Brass contact strips **144** in the recess **142** make contact with the lamp prongs when it is so rotated.

As also shown in FIG. **8,** the plug adaptor **44** comprises a solid base portion **148** and a pair of prongs **150** projecting outwardly therefrom in the manner of fluorescent lamp prongs. The electrical wires **42** enter the base portion **148** and are connected to the prongs **150** therein. A spring steel clip **154** extends out from the side of the base portion **148.**

The adaptor **44** is connected to the socket **46** in the same manner as a fluorescent lamp. That is, the adaptor prongs **150** are fitted, one after the other, down through the channel **140** and into the triangular recess **142.** The adaptor is then rotated 90° to bring the prongs **150** into contact with the contact strips **144.** This rotation also causes the steel clamp **154** to fit around the end of the socket **46,** as shown in FIG. **9,** to hold the adaptor against the socket. As can be seen, the wires **42** extend from the adaptor **44** to an associated one of the light sockets **38.** In this manner electrical power may be brought to a new arrangement of fluorescent lamps without need for major revisions to existing equipment.

Although a specific embodiment of the invention is herein disclosed for purposes of explanation, various modifications thereof, after study of this specification, will be apparent to those skilled in the art to which the invention pertains.

What is claimed is:

1. A visual display apparatus comprising a flexible conveyor loop, means for guiding and driving said loop for recirculating movement along a first endless path lying in a horizontal first plane, a guide track arranged to define a second endless path horizontally offset with respect to said first path and in a second plane parallel to and above the first plane, one of said paths being longer than the other, a plurality of flexible display panels each having a first edge and an opposite edge, each panel being secured along said first edge to said conveyor loop and means for guiding each display panel along its said opposite edge to follow said guide track whereby said panels are moved along while tilted from the vertical for convenient and continuous viewing at all positions of said panels along said paths.

2. A visual display apparatus according to claim **1** wherein said display panels are each of composite construction having removable portions including display panel holding means and permanent portions for holding said removable portions.

3. A visual display apparatus according to claim **1** wherein said display panels are reinforced along the edges thereof which extend between said paths.

4. A visual display apparatus according to claim **1** wherein each of said flexible display panels is resiliently biased, along its said opposite edge, to a flattened extended condition.

5. A visual display apparatus according to claim **1** wherein said means for guiding and driving said loop comprises a pair of drums.

6. A visual display apparatus according to claim **5** wherein said means for guiding and driving said loop further comprises a pair of synchromous electric motors driveably coupled to said drums.

7. A visual display apparatus according to claim **1** wherein each display panel is loosely connected to said conveyor loop at two mutually displaced locations along its length.

8. A visual display apparatus according to claim **1** wherein collapsable intermediate panels are connected between adjacent ones of said flexible display panels, said intermediate panels having side edges connected to corresponding edges of adjacent display panels, said intermediate panels being bendable to allow movement of said of said side edges toward and away from each other for expansion and contraction of said intermediate panels.

9. A visual display apparatus according to claim **8** wherein said intermediate panels are of greater expanded extend along an edge thereof nearest said guide track.

10. A visual display apparatus according to claim **1** wherein each of said first and second endless paths is

of oval configuration with straight courses interconnecting semicircular ends.

11. A visual display apparatus according to claim **10** wherein the second endless path is larger than and surrounds the first path.

12. A visual display apparatus comprising an upper oval track, means for mounting said track to lie against a ceiling, a pair of drums, means mounting said drums to rotate in a lower plane parallel to and beneath said track, a flexible conveyor belt extending about said drums and lying along a lower oval path beneath said upper oval track, said lower oval path being smaller than and surrounded by said upper oval track, a plurality of display panels each having a first edge and an opposite edge and each being secured along said first edge to said belt and track engaging means along the opposite edge of each display panel and engaged with said upper track for following same.

13. A visual display apparatus according to claim **12** wherein said upper oval track and said lower oval path are relatively dimensioned such that said display panels extend at a substantially control angle with respect to the vertical as they move along between said track and said path.

14. A visual display apparatus according to claim **12** wherein collapsable intermediate panels are arranged between adjacent display panels.

15. A visual display apparatus according to claim **14** wherein said intermediate panels are of generally triangular shape with their base extending along said upper track and their apex located at said belt.

16. A visual display apparatus according to claim **14** wherein said intermediate panels are bendable inwardly of said tracks.

17. A visual display apparatus according to claim **12** wherein said display panels each include a permanent portion connected to said belt and engaging said upper track, and a removable portion detachable from said permanent portion.

18. A visual display apparatus according to claim **17** wherein said permanent portion of said display panels each comprise a flexible sheet-like member of generally rectangular configuration, a pair of elongated rigid members extending along opposite side edges of said sheet-like member and attached, at the ends thereof nearest the lower oval path, to said belt and loosely engaged at their other ends to said upper track and an elongated resilient bendable member attached to said sheet-like member along an edge thereof which extends nearest said upper track.

19. A visual display apparatus according to claim **17** wherein said permanent portions each include elongated rigid members forming side edges of the portions between the belt and the upper track and means on said rigid members for attachment of one of said removable portions.

20. A visual display apparatus according to claim **19** wherein said removable portions comprise a pair of flexible transparent sheet-like members forming a pocket for containing a display sheet and means for attaching the removable portion along its edges to the rigid members of the permanent portions.

21. A visual display apparatus comprising a support structure adapted to be suspended from a ceiling light fixture, a plurality of visual display panels having upper and lower edges, means for supporting said panels and moving same so that their upper edges follow a first closed path around said fixture and their lower edges follow a second closed path of a different length than and located below and horizontally offset with respect to said first path so that said panels remain tilted from vertical for convenient viewing, and lamps supported by said support structure for providing back illumination for said display panels.

22. A visual display apparatus according to claim **21** wherein said means for supporting said panels includes a lower track having a bottom opening for allowing emission of light from within said apparatus for general illumination.

23. A visual display apparatus according to claim **21** wherein said lamps are elongated fluorescent tubes extending generally horizontally within said apparatus between the upper and lower edges of said panels.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,849,918 Dated November 26, 1974

Inventor(s) Dante V. Mazzocco, Sr.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 39, after the words "attached to" delete "adjacent to the ceiling";

line 40, after "32" insert --adjacent to the ceiling--;

Column 4, line 64, "well as" to read --will be--.

Signed and sealed this 27th day of May 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks

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