United States Patent [19]

Horowitz

[11] **3,774,329**

[45] **Nov. 27, 1973**

[54] **ROTATABLE DISPLAY DEVICE**

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[73] Assignee: **Motion Dynamics, Inc.**, Brooklyn, N.Y.

[22] Filed: **Feb. 22, 1972**

[21] Appl. No.: **228,050**

[52] **U.S. Cl.** **40/33**, 40/106.3, 40/128

[51] **Int. Cl.** **G09f 11/10**

[58] **Field of Search** 40/128, 106.3–106.36, 40/33, 68; 74/194

[56] **References Cited**

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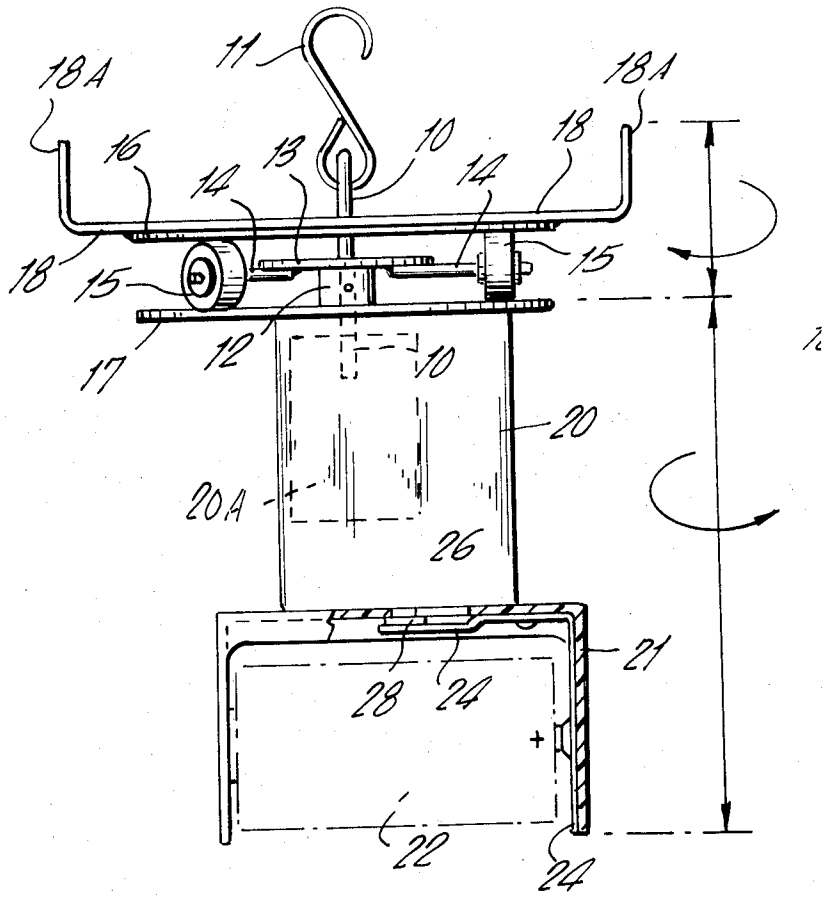
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Primary Examiner—Robert W. Michell
Assistant Examiner—L. R. Oremland
Attorney—Albert F. Kronman

[57] **ABSTRACT**

A display device for advertising purposes including an electric motor which turns a first display portion in one direction around a vertical axis freely carried by the first display portion and a plurality of freely journaled wheel members in frictional contact between the first and second display portions whereby the said display portions are turned in opposite directions.

2 Claims, 8 Drawing Figures



2 Sheets-Sheet 1

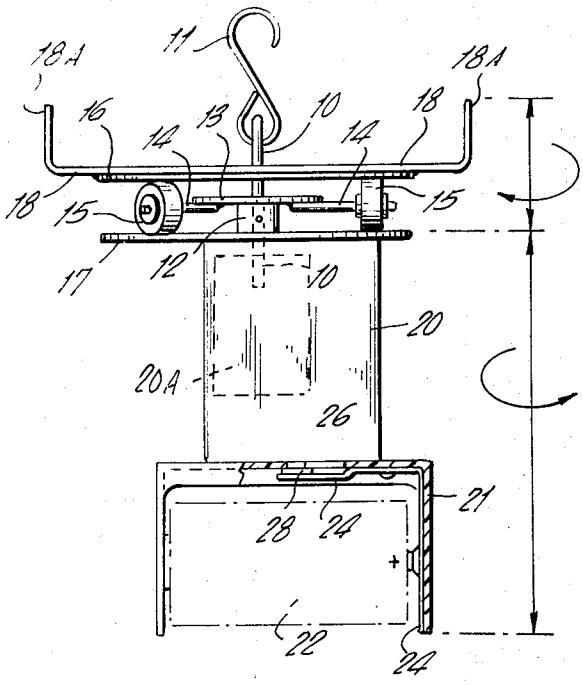
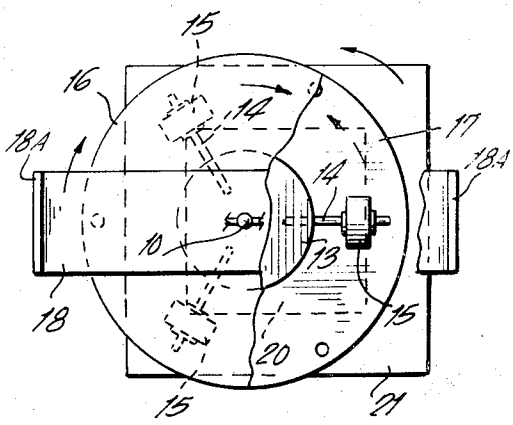


FIG. 1

FIG. 2



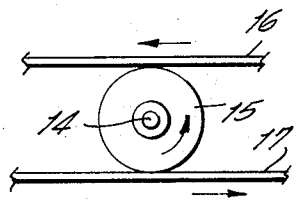
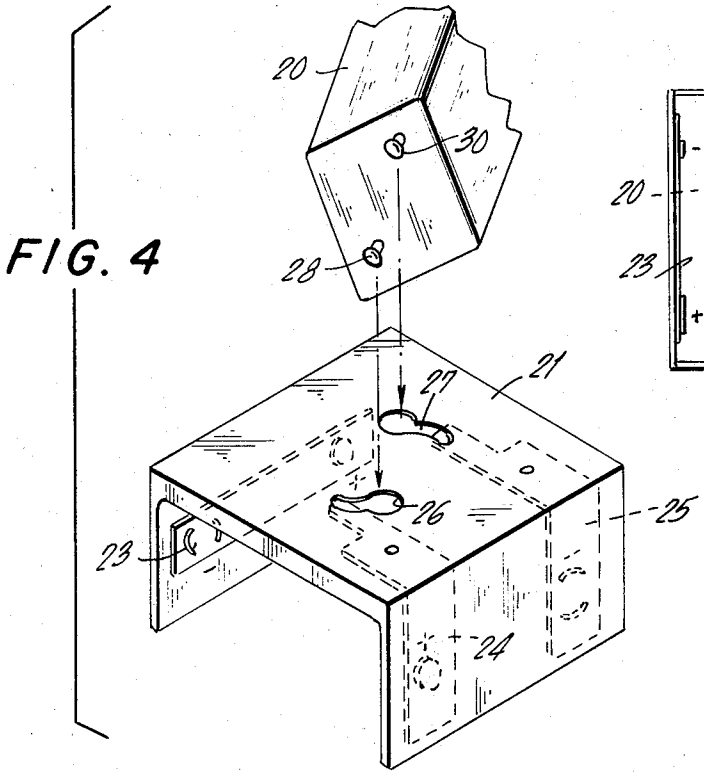


FIG. 3

FIG. 4



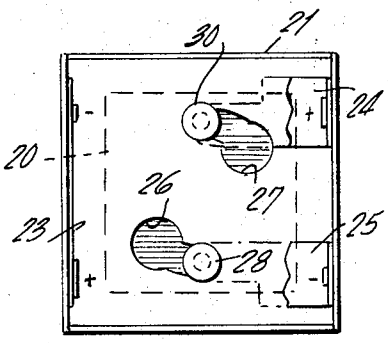


FIG. 5

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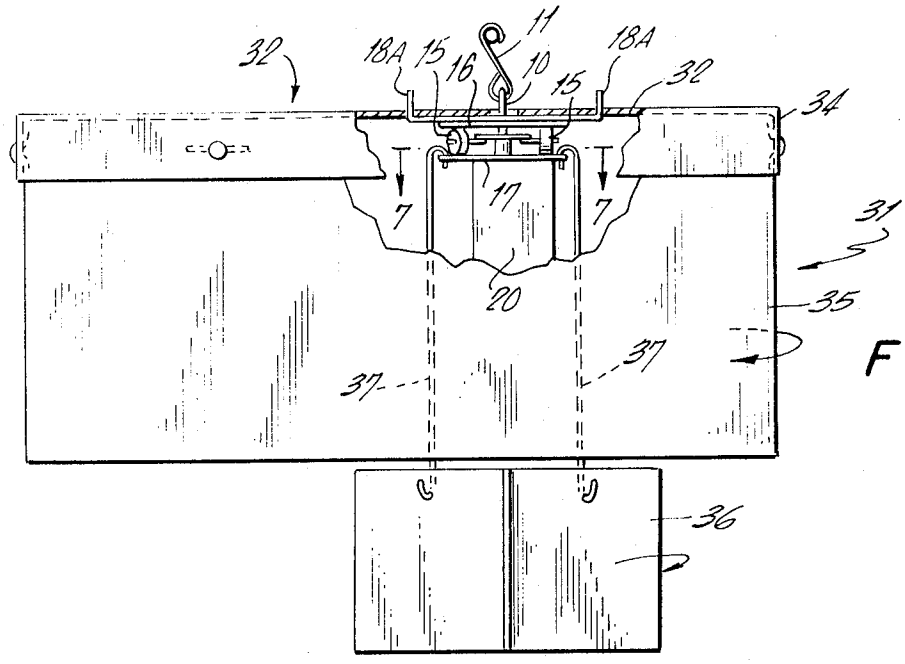


FIG. 6

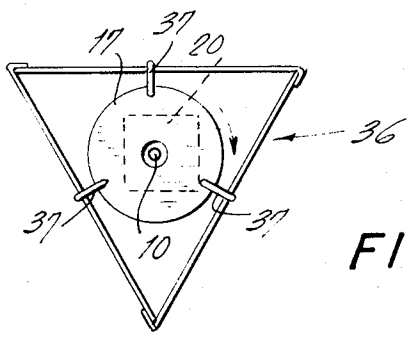


FIG. 7

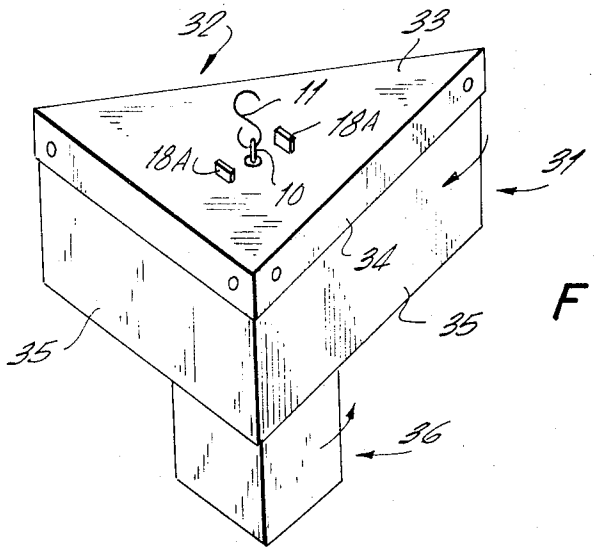


FIG. 8

ROTATABLE DISPLAY DEVICE

BACKGROUND OF THE INVENTION

Display devices are designed to attract the attention of persons who will then read the message on the display. Displays which turn in a single direction are old in the art and are therefore of lesser value in arousing notice. The use of two rotational display portions produces an interesting display and a device which provides more than the usual animation of prior devices.

A feature of the invention resides in the simplicity of the moving parts, there being no belts, gears, nor pulleys required.

Another feature of the invention is the arrangement of wheels on a stationary mounting which provides axial alignment of the two portions of the display each turning on the axis and in opposite directions.

Other features and additional details of the invention will be disclosed in the following description, taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE FIGURES

FIG. **1** is a side view of the invention showing some parts in section and illustrating the operation of the mechanism.

FIG. **2** is a top view of the display device shown in FIG. **1** with parts broken away to show the details of construction.

FIG. **3** is a side view of one of the reversing wheels, indicating its method of operation.

FIG. **4** is an isometric view of the battery holder and the motor housing which is coupled to it.

FIG. **5** is a bottom view of the battery box.

FIG. **6** is a side view of the invention with parts broken away operating with added display units of various shapes.

FIG. **7** is a top view of the lower portion of the display shown in FIG. **6** taken along line **7—7** of FIG. **6.**

FIG. **8** is a perspective view of the display units shown in FIGS. **6** and **7.**

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGS. **1** through **5,** the display device includes a central rod **10** which may be the output shaft of a small motor **20A** supported by a hook **11.** The hook **11** may be coupled to another shaft or to any convenient stationary supporting means. The hook **11** and the central rod do not turn when the device is in operation. A short sleeve **12** is secured to the rod **10** by means of a pin or set screw so that it too remains stationary. A disk **13** is secured to the sleeve **12** and supports three spaced radial shafts **14** each of which, in turn, supports a wheel **15,** which is freely rotatable on the shaft. The wheels **15** frictionally engage two flat disks **16** and **17,** as hereinafter more fully set forth.

The upper disk **16** is freely journaled upon the rod **10** and carries a bracket **18** to which may be secured any type of display material intended for rotation in one direction. The lower disk **17** overlies and is secured to a housing **20** and a battery holder **21** which turn with the disk **17** during the operation of the display device. The housing **20** may be made of insulating material having a square cross section, and supporting an electric motor **20A** and speed reducer (not shown) of conventional design. The armature of the motor is coupled to the central rod **10** which is stationary; therefore the motor field coils and their housing are forced to rotate around the rod **10** whenever the motor **20A** is activated. Disk **17** is secured to housing **20** and rotates with it.

The battery holder **21** is shown in greater detail in FIGS. **4** and **5.** Two cylindrical dry cells **22** (FIG. **1**) are carried by the battery holder and are retained in place by spring plates **23, 24** and **25.** Plate **23** makes contact with the negative terminal of one battery and the positive terminal of the other battery. Plate **24** makes contact with the positive terminal of one battery and serves as an output terminal of the power source by extending upwardly to the top of the battery holder to a position under a bayonet-type slot **26.** Plate **25** makes contact with the negative terminal of the other battery and also extends up to the top of the battery holder where it is positioned under a similar second slot **27.** Each of the slots **26** and **27** is formed with an enlarged opening for entrance of motor terminal lugs **28** and **30,** secured to the bottom of the motor housing **20.**

The operation of this form of the invention is as follows: Batteries **22** are placed in the battery holder **21** and the holder is coupled to the bottom of the motor housing **20** by placing the enlarged portions of the slots over the terminals **28** and **30** and then rotating the battery holder to move the smaller portions of the slots around the terminals. This action starts the motor **21** A and the entire lower portion of the display including disk **17** turns around the central rod **10.** When disk **17** turns, it drives the wheels **15** which turn about their shafts **14** and this motion frictionally drives the top disk **16** causing it to move in a direction opposite to the motion of disk **17.** FIG. **3** illustrates this counter-rotating action. The result is: two portions of the display device are moved around a common axis in opposite directions and at the same rotary speed.

FIGS. **6, 7** and **8** show the display device with advertising display units added. The upper unit **31** includes a top portion **32** having a triangular flat section **33** formed with cut-out slots which fit over on upstanding portions **18** A of the bracket **18.** The edges of the upper trangular section **33** can be bent over to form a flange **34** for attaching side display members **35** which carry an advertising messate. The bottom portion of the device is covered by a second trangular display unit **36,** the geometrical form of each display unit **31** or **36** being optional. Display unit **36** is secured to disk **17** by three wire hooks **37** and therefore rotates with the disk in a direction opposite to the upper unit **31.**

When the display device is carrying the units **31** and **36,** the reversing wheels **15,** the motor compartment **20,** and the battery holder **21,** are not visible to an observer. Only the display surfaces can be seen. This construction provides no distracting elements and maintains the observer's attention on the messages shown on the revolving units.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In a display device for moving a first display unit in one rotary direction and a second display unit in the opposite rotary direction, the improvement comprising:

a. a stationary support comprising a rod coupled to a supporting means and including a plurality of radially extending shafts secured thereto;

b. a plurality of wheels freely and rotatably mounted on said shafts;

c. a first disk mounted on one side of the wheels in frictional contact therewith and coupled to an electric motor for axial rotation relative to the rod;

d. a second disk mounted on the opposite side of the wheels in frictional contact therewith and adapted to rotate in axial alignment with the first disk but in an opposite direction;

e. display means respectively secured to the first and second disks; and

f. an electrical power source comprising a plurality of electric dry cells mounted in a holder secured to said motor;

g. means comprising two pin and bayonet slot connections to detachably couple the dry cell holder to the motor.

2. A display device according to claim **1** wherein said motor housing is made of insulating material and wherein the pin and bayonet slot couplings also act as power conducting means.

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