

May 12, 1931.

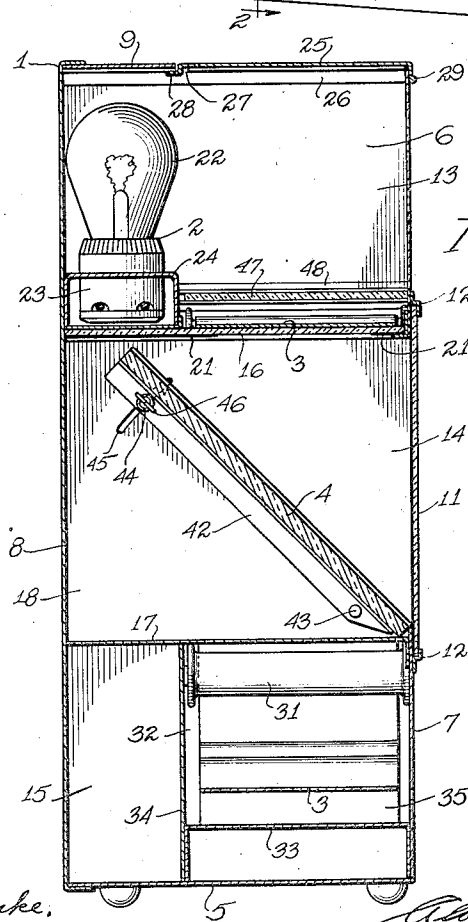
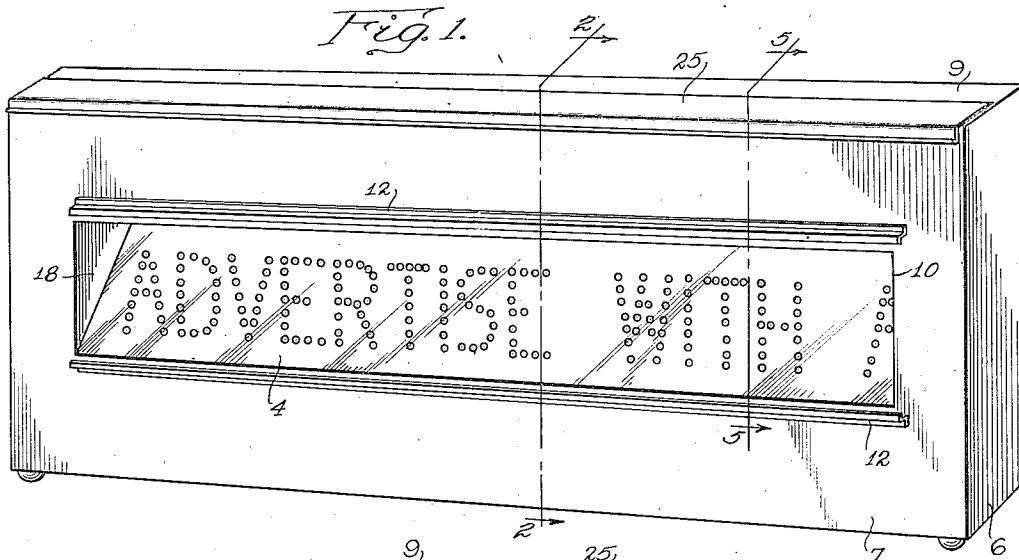
A. J. ELLERN

1,805,209

DISPLAY DEVICE

Filed Oct. 24, 1928

2 Sheets-Sheet 1



Witnesses.

Arthur M. Franke.

Wm. E. Anderson

Inventor.

Albert J. Ellern

By *Thumbe & Thumbe*
Attys.

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2 Sheets-Sheet 2

Fig. 3.

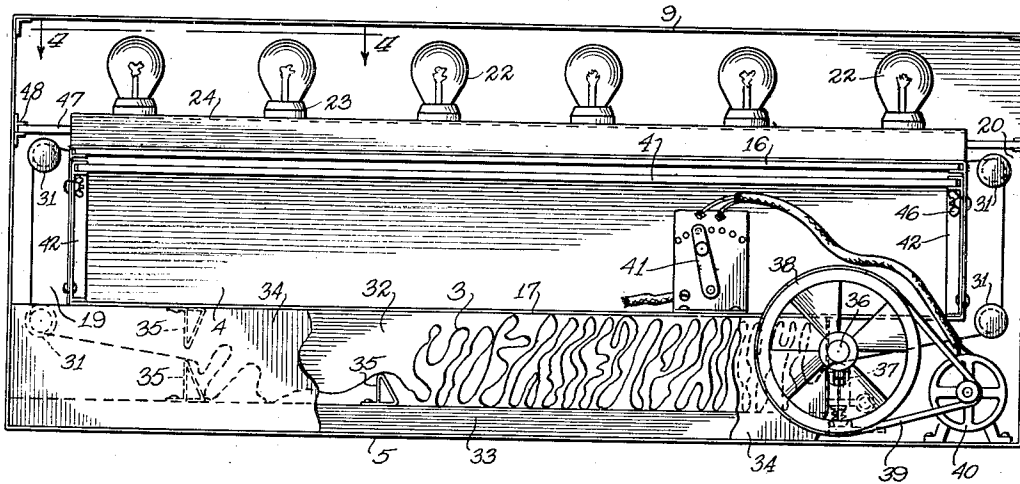


Fig. 4.

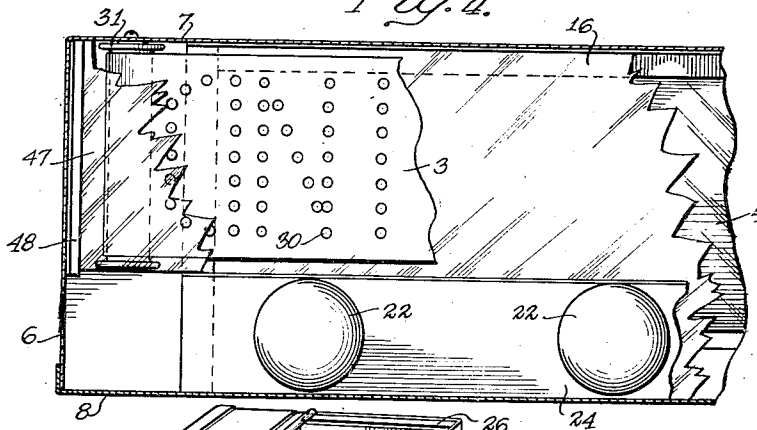
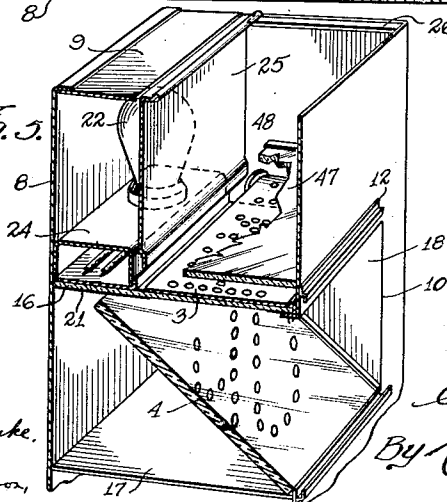


Fig. 5.



Witnesses.

Arthur M. Franke.

H. E. Anderson.

Inventor:

Albert J. Ellern,

By Hummel & Hummel,

Attys:

UNITED STATES PATENT OFFICE

ALBERT J. ELLERN, OF CHICAGO, ILLINOIS, ASSIGNOR TO TRAVELAD CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

DISPLAY DEVICE

Application filed October 24, 1928. Serial No. 314,701.

This invention relates to display devices and more particularly to advertising signs employing a movable light-transmitting belt which bears the words, pictures or other symbols to be displayed.

In traveling belt signs heretofore in use, the display belt has been supported edgewise and has traveled around vertically disposed rollers. In such prior devices, it was necessary to provide a friction brake element which engaged the belt immediately prior to its entry into the display zone in order to hold the display portion of the belt taut and to secure it against wobbling.

The friction brake elements employed in prior devices were objectionable, mainly because they had a tendency to shorten the lives of the traveling belts which they engaged.

The main objects of this invention are to provide a display device having improved means for supporting a traveling belt without the use of friction brakes or similar elements; to provide supporting means of this kind which are adapted to support the belt in a horizontal position during its travel through the display zone; to provide an improved form of magazine adapted to permit that portion of the belt which is not in the display zone to accumulate in folds so as to conserve space for a belt of considerable length; to provide improved guide means for the belt; to provide improved means for artificially illuminating the portion of the belt in the display zone; to provide improved means for reflecting the image of that portion of the belt in the display zone; to provide improved means for coloring the light rays reflected by said reflecting means; and to provide a display device of this kind which is adapted to employ daylight interchangeably with and in place of the artificial light.

An illustrative embodiment of this invention is shown in the accompanying drawings, wherein:

Figure 1 is a perspective of a display device, to which this invention is applied; the front window panel being removed.

Fig. 2 is a vertical transverse section, taken on the line 2—2 of Fig. 1.

Fig. 3 is a rear view of the device with the rear wall of the housing removed.

Fig. 4 is a fragmentary horizontal section, taken on the line 4—4 of Fig. 3.

Fig. 5 is a fragmentary section, taken on the line 5—5 of Fig. 1, and showing the parts in perspective.

In the form herein shown, the improved display device includes an endless light transmitting screen bearing any desired indicia and having a horizontally disposed portion which is movable through a display zone between a source of light and a mirror arranged to reflect the images of the indicia.

By the word indicia it is intended to mean any words, symbols, emblems, figures, letters, pictorial representations or the like.

In the specific construction herein shown, the device comprises a box-like housing 1, having a source of artificial light 2 arranged to cause diffused light rays to pass through a display belt 3 to permit the images of the indicia on the belt to be reflected in a mirror 4.

The housing 1 may be of any desired size and shape and is preferably made of sheet metal. In the form shown, it comprises a bottom 5, end walls 6, a front wall 7, removable rear wall 8, and a top 9. The front wall 7 has a centrally located window 10 provided with a suitable transparent pane 11 mounted in angle bars 12. If desired, a separate frame member may be mounted on the housing 1 in front of the wall 7 for supporting the pane 11 and for embellishing the device.

Formed within the housing 1, is an upper compartment 13, a central compartment 14 and a lower compartment 15. Extending across the housing, is a pair of horizontal partitions 16 and 17, which are spaced from the end walls 6 and which are connected to end partitions 18.

The spaces between the partitions 18 and the end walls 6 provide passages 19 and 20 communicating with the upper and lower compartments 13 and 15 respectively.

The partition 16 forms the means for supporting a portion of the display belt 3 in a horizontal plane during its travel through the display zone, and, therefore, this partition is made of suitable transparent material, such

as glass, which will permit the light rays to pass downwardly to the mirror 4. If desired, opaque portions 21 may be formed on the partition 16 to shut out all light rays except those passing through the belt 3.

In the form shown, the artificial illuminating means 2 comprises a battery of incandescent bulbs 22, supported in sockets 23, which are mounted on a hollow base 24 supported on the partition 16 at the rear of the housing.

The bulbs 22 are located rearwardly of the belt 3 and, therefore, only diffused rays of light pass downwardly through the display portion of the belt. This improved arrangement of parts prevents the images of the light filaments from being reflected in the mirror 4.

In order to permit the device to be operated as a daylight sign, the top 9 of the housing 1 is provided with a movable section 25, which may be shifted to a vertical position directly in front of the bulbs 22, as shown in Fig. 5, thereby hiding the bulbs from view and permitting the daylight to enter the housing at a point above the display belt.

The section 25 is supported on angle bars 26 which are provided with openings 27 arranged to permit the section 25 to move downwardly when it is raised to a vertical position. The inner edge of the section 25 is bent to provide a flange 28 adapted to engage the rear section of the top 9, and the forward edge thereof is bent to provide a handle part 29.

The display screen 3 may be made of any suitable material. In the form shown, it comprises a flexible belt in which the indicia are formed by means of perforations 30.

The belt 3 is supported horizontally on the partition 16 and passes around guide rollers 31 which are journaled in the passages 19 and 20.

The greater portion of the belt 3 accumulates in folds in a magazine 32 located in the compartment 15. The magazine 32 has a bottom member 33 and an inner wall 34. Both ends of the magazine 32 are open to permit the free passage of the belt 3.

Mounted in the magazine 32, are guide elements 35 arranged at suitable positions for straightening the belt as it leaves the magazine and enters the passage 19.

The belt 3 may be driven in any suitable manner. In the form shown, the belt driving mechanism includes a pair of rollers 36 and 37 arranged to grip the belt adjacent the inlet of the magazine 32. The roller 36 has a pulley 38 connected by a belt 39 to a motor 40 mounted in the compartment 15 and controlled by a switch 41.

The mirror 4 is located in the compartment 14 directly behind the window 10. In order to permit the mirror to be angularly adjusted relative to the display portion of the belt 3, the mirror is mounted in a frame 42, which

is pivotally connected to the end partitions 18 by pins 43.

Mounted on the frame 42, are bolts 44, which engage arcuate guide slots 45 in the partitions 18. Wing nuts 46 on the bolts 44 permit the mirror to be secured in adjusted position.

When it is desired to color the light rays reflected in the mirror, a color imparting medium is placed between the mirror and the light source.

In the form shown, the color medium comprises a glass plate 47, of any desired color, which is removably supported in channel guides 48 secured to the end walls 6 above the plane of the belt 3.

In operation, the belt 3 is continuously driven at a speed which will enable the observer to readily read the reflected characters. The light from the lamps 22 is diffused and passes downwardly through the colored plate 47 and that portion of the belt 3 which is supported horizontally by the plate 16.

The images of the moving indicia are reflected in the mirror 4 so as to be readable through the window 10.

When the belt reaches the magazine 32, it accumulates in folds and then as it reaches the guides 35 it is straightened before passing through the passage 19. The plate 16 supports the belt horizontally in the display zone, so as to eliminate the use of friction brake elements.

When it is desired to operate the device as a daylight sign, the top section 25 is shifted into position in front of the bulbs 22 so as to permit the daylight to enter through the top of the housing.

Although but one specific embodiment of this invention has been herein shown and described, it is to be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. A device of the class described comprising a light-transmitting display screen bearing indicia, a source of light on one side of the plane of said screen, a mirror located on the opposite side of said plane for reflecting the images of said indicia, a movable partition adapted to be shifted to a position between said source of light and said screen, and means for moving said screen to cause the images to move on said mirror.

2. A device of the class described comprising a housing having a window therein, an endless light transmitting display screen movably mounted in said housing and bearing indicia, means for supporting a portion of said screen in a horizontal plane, a source of light above said plane, a mirror located below said plane and adjacent said window for reflecting the images of said indicia, a

top on said housing, a portion of said top being movable into a position between said source of light and said screen, and means for moving said screen.

5 3. A device of the class described comprising a housing having a window therein, an endless light transmitting display screen movably mounted in said housing and bearing indicia, means for supporting a portion
10 of said screen in a horizontal plane, a source of artificial light located behind said screen portion and above said plane, a mirror located below said plane and disposed transversely to said screen portion, and a top on
15 said housing, a portion of said top being movable into a position between said source of light and said screen portion to permit daylight to enter said housing above said screen.

20 4. A device of the class described comprising a housing having a window therein, an endless light transmitting display screen movably mounted in said housing and bearing indicia, means for supporting a portion
25 of said screen in a horizontal plane, a source of artificial light located behind said screen portion and above said plane, a mirror located below said plane and disposed transversely to said screen portion, said mirror
30 being adjustable angularly relative to said screen portion, and a top on said housing, a portion of said top being movable into a position between said source of light and said screen portion to permit daylight to enter
35 said housing above said screen.

5. A device of the class described comprising a housing having a window therein, an endless light transmitting display screen movably mounted in said housing and bearing
40 indicia, means for supporting a portion of said screen in a horizontal plane, a source of artificial light located behind said screen portion and above said plane, a mirror located below said plane and disposed transversely to said screen portion, a color im-
45 parting medium located between said mirror and said source of light, and a top on said housing, a portion of said top being movable into a position between said source of light
50 and said screen portion to permit daylight to enter said housing above said screen.

Signed at Chicago this 20th day of October, 1928.

ALBERT J. ELLERN.