March 12, 1940. A. C. WALAITY 2,193,577

LIGHT DISPLAY DEVICE

Filed Aug. 19, 1939 2 Sheets-Sheet 1

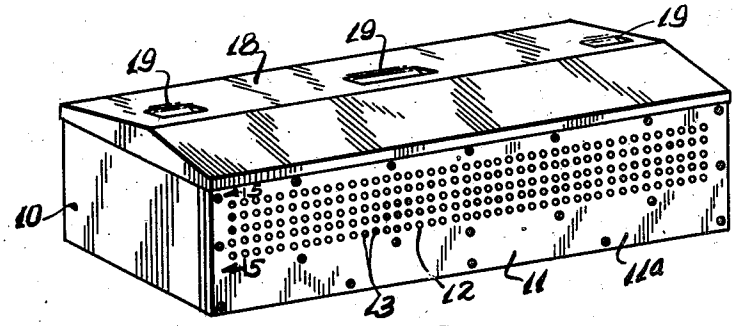


Fig. 1.

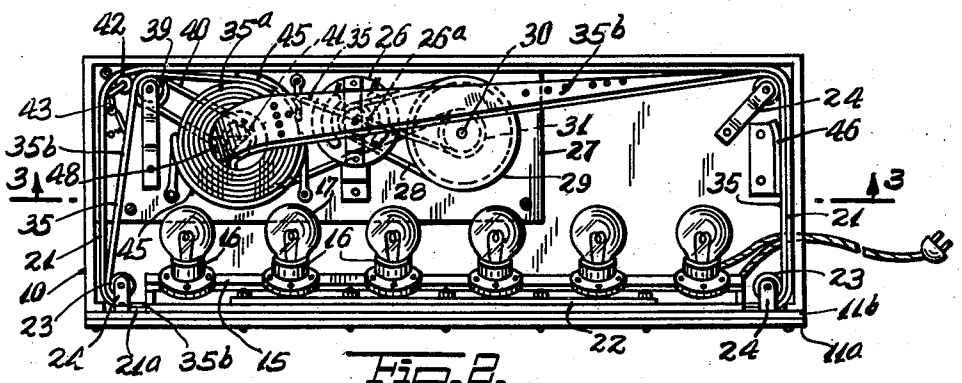


Fig. 2.

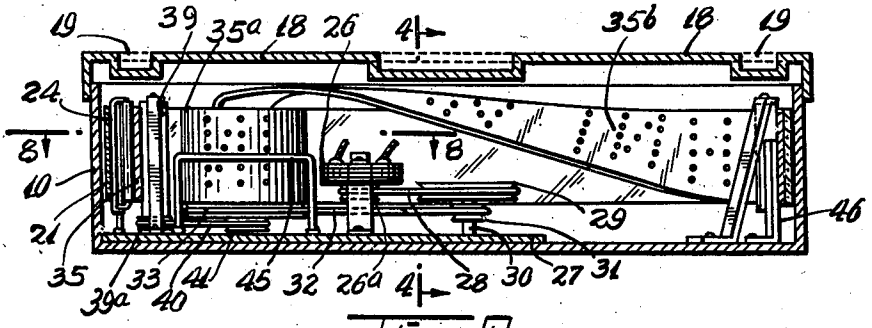


Fig. 3.

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March 12, 1940. A. C. WALAITY 2,193,577

LIGHT DISPLAY DEVICE

Filed Aug. 19, 1939 2 Sheets-Sheet 2

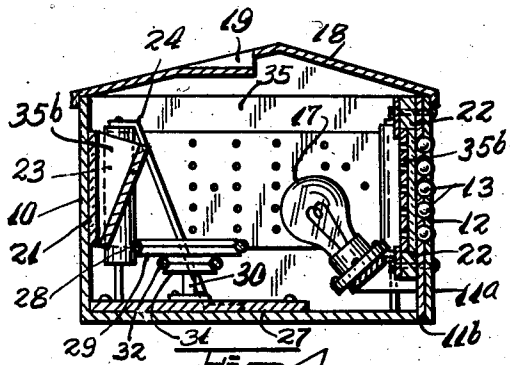


Fig. 4.

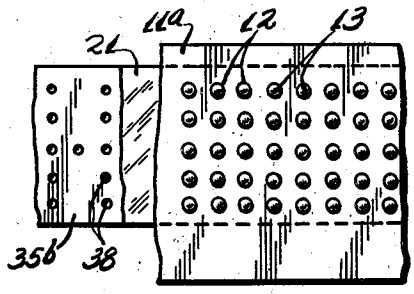


Fig. 6.

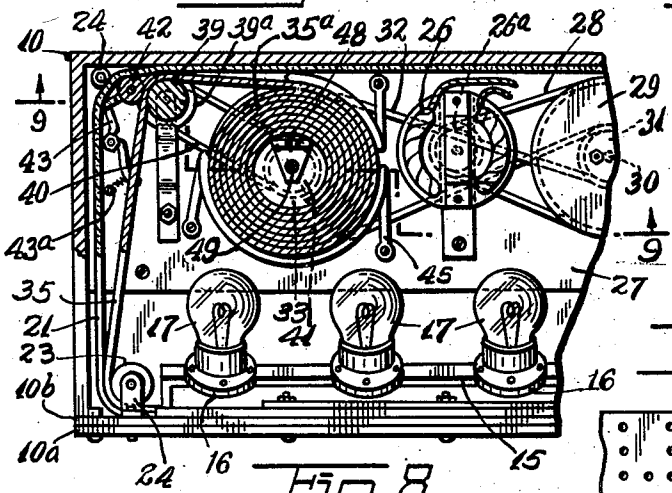


Fig. 8.

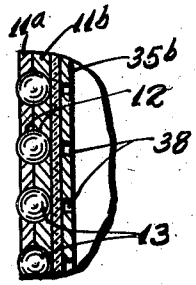


Fig. 5.

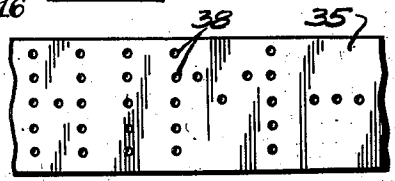


Fig. 7.

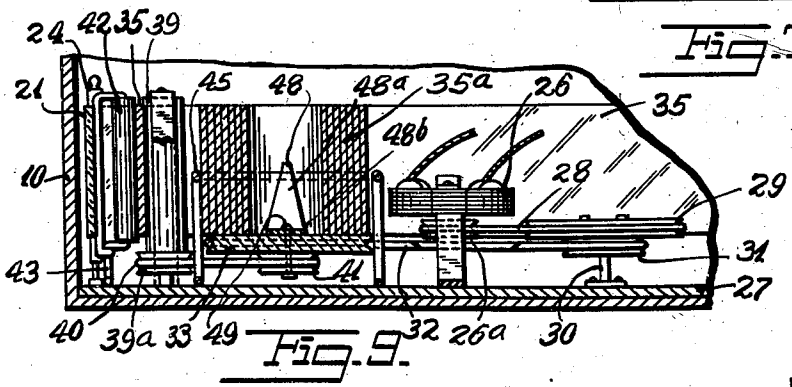


Fig. 9.

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UNITED STATES PATENT OFFICE

2,193,577

LIGHT DISPLAY DEVICE

Anthony C. Walaity, Nutley, N. J., assignor of thirty-five per cent to Marinus Abbink, Nutley, N. J.

Application August 19, 1939, Serial No. 290,949

9 Claims. (Cl. 40—32)

This invention relates to new and useful improvements in a light display device.

This application is a continuation-in-part of my abandoned application filed on July 6, 1939, Serial No. 282,964.

The invention has for an object the construction of a light display device which is characterized by a body having a front panel formed with a plurality of small window apertures, and a novel arrangement of an endless translucent color slide, and an endless stencil mounted within the body behind said window apertures and moved in a specific fashion.

More specifically the invention relates to arranging the endless stencil with a web portion extending across the window apertures and coming from a roll portion resting upon a certain driving plate in a manner so that one end of said web portion connects with the outside turn of said roll and the other end of the web portion extends into the center of the roll and connects with the inside turn. In this way the endless stencil may be of especially long length and operate in an endless fashion.

Still further the invention proposes a novel arrangement of a cage for holding the roll portion on said plate in a particular way.

Another object of this invention resides in an arrangement which will permit adjustment of the holding cage in a way to control the diameter of the roll for reasons to be hereinafter explained.

Still further the invention proposes the construction of a device as mentioned which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure—

Fig. 1 is a perspective view of a light display device constructed in accordance with this invention.

Fig. 2 is a plan view of the device shown in Fig. 1 with the cover removed.

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a longitudinal vertical sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a fragmentary enlarged vertical sectional view taken on the line 5—5 of Fig. 1.

Fig. 6 is a front elevational view of Fig. 5 showing certain parts broken away.

Fig. 7 is a fragmentary view of a portion of the endless stencil.

Fig. 8 is a fragmentary enlarged horizontal sectional view taken on the line 8—8 of Fig. 3.

Fig. 9 is a fragmentary vertical sectional view taken on the line 9—9 of Fig. 8.

The light display device in accordance with this invention includes a hollow body 10 having a front panel 11 formed with a plurality of small window apertures 12. More specifically the side panel 11 is formed from two layers of material, there being an outer layer 11a and an inner layer 11b. The apertures 12 are formed in these layers. In each aperture there is a spherical ball 13 of glass or other transparent material. The apertures 12 are so constructed that when the panels 11a and 11b are secured together, the spherical balls 13 will be held in position.

A means is provided for illuminating the interior of the body 10. This means includes a bracket 15 mounted within the body 10 and supporting a plurality of lamp sockets 16. These sockets are provided with lamps 17. The arrangement is such that the lamps 17 may light up the interior of the body 10. For this purpose, the body 10 is provided with a cover 18 to confine the light. This cover 18 is formed with several shielded openings 19 which are each shielded by a box like construction arranged to permit the exit of heat, and preventing the passage of light.

An endless translucent color slide 21 is movably mounted in the body 10 and has a front web portion 21a extending across the said window openings 12. More specifically the portion 21a is guided in tracks 22 mounted upon the rear side of the panel 11. These tracks are arranged along the top and bottom edges of the web 21a. The color slide 21 is supported in the corners of the body 10 by vertical rollers 23. Each roller 23 is mounted in a supporting bracket 24.

A means is provided for moving the endless color slide 21, and this means includes an electric motor 26 mounted upon the base plate 27 secured within the body 10. The elctric motor 26 is provided with a driving pulley 26a which is connected by a belt 28 with a larger pulley 29 mounted on a rotatively supported shaft. This shaft is provided with a small pulley 31 engaged by a belt 32 engaging over a larger pulley 33. This latter pulley 33 is rotatively supported and supports the roll portion 35a on an endless stencil 35. Portions of this stencil 35 are in intimate contact with the color slide 24, and serve to drive the color slide.

The endless stencil 35 has a web section 35b engaging the tracks 22 immediately behind the web portion 21a of the color slide 21. The endless stencil 35 comprises a strip of paper or similar material formed with perforations to spell out words or symbols and these perforations are so arranged as to align with certain of the window apertures 12. The roll portion 35a rests upon

the top of the pulley 33 which forms a supporting plate for the roll portion. The roll portion 35a is coaxial with the pulley 33.

One end of the web section 35a of the endless stencil is guided over a roller 39 which is driven by a belt 40 engaging over a pulley 41 mounted coaxially with the pulley 33. A pressure roller 42 is mounted on a pivotal bracket 43 and presses the endless stencil 35 against the roller 39 under the pressure of a spring 43a acting between the bracket 43 and the base plate 27. This web portion 35b connects with the outside turn of the roll portion 35a. The other end of the web section 35b extends into the center of the roll portion 35a and connects with the inside turn.

A cage 45 is stationarily mounted on the plate 27 and encircles the roll portion 35a for maintaining the same in formation. Several guiding members 46 are mounted within the body 10 and serve to guide various sections of the endless stencil.

A finger member 48 is mounted upon the top face of the pulley or plate 33 and acts within the roll portion 35a. This finger comprises an angle member having a vertical arm 48a and a horizontal arm 48b. The horizontal arm rests on the face of the pulley or plate 33 and is attached thereto by a fastening element 49. The vertical arm 48a tapers so that it has inclined sides as illustrated in Fig. 9.

The operation of the device is as follows:

The lamps 17 illuminate the interior of the body 10. The stencil 35 and the color slide 21 move in endless fashion. The arrangement is such that the perforations 38 of the endless stencil are periodically aligned with the window apertures 12 of the front panel 11, transmitting light from the interior of the body 10 through the color slide to the exterior. When one observes the light display device from the exterior there will be the appearance of letters or words or symbols moving along the front of the device as the various openings 38 selectively align with certain of the window apertures 12.

The endless stencil 35 is moved in a novel fashion. The motor 26 drives the pulley 29 which in turn turns the pulley 31 at the same speed. The pulley 31 is smaller than the pulley 39 and hence these pulleys act as a speed reducer. The small pulley 31 drives the pulley or plate 33. So that the invention may be better understood let us assume that the pulley 33 is rotating at 75 R. P. M. The small pulley 31 which is connected coaxial with the pulley 33 drives a small pulley of the same size which is mounted upon the bottom of the roller 39 and hence the roller 39 is turning at 75 R. P. M.

The roller 42 is tensioned against the roller 39 and these two rollers, acting together work like drawer rollers and pull on the tape 35. This pulling is communicated along the tape 35 to the left hand end of the web portion 35b and hence around to the center of the roll 35a. For an example, let us assume that the outside of the roll 35a is five inches in diameter, and the inside is three inches. It will be readily seen from this example that the inside of the roll must necessarily travel faster then the outside. This phenomenon is balanced by the use of a finger 48, which in the particular design of the parts, travels substantially twice as fast as the roll portion 35a.

The finger 48 runs inside of the roll portions 35a assisting in forcing the tape out from the inside of the roll by frictionally engaging and pushing against the bend of the tape and which comes out from the inside turn of the roll portion. The outside cage 45 serves only as a guide to keep the roll portion 35a on the pulley or plate 33. The guide is of wire so that the friction is relatively small and therefore the roll portion 35a cannot bind against the guide.

Furthermore since the plate or pulley 33 turns faster than the roll portion 35a it also helps in winding up the tape upon the outside of the roll portion 35a. Incidentally the finger 48 which is traveling around upon the inside turn of the roll portion 35a frictionally grips the roll portion with sufficient force to also assist in winding the web portion upon the outside of the roll portion 35a. Because of the roll portion 35a, the stencil, while endless, is however of an exceptionally long length.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:—

1. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, an endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body, means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, and a stationary cage for holding said roll portion on said plate.

2. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, and endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body, means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, and a stationary cage for holding said roll portion on said plate, said panel being formed from two layers of material clamped together and supporting glass or the like balls within said window apertures.

3. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, an endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body,

means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, and a stationary cage for holding said roll portion on said plate, said means for illuminating said body, comprising a bracket supporting a plurality of sockets provided with electric lamps.

4. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, an endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body, means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, and a stationary cage for holding said roll portion on said plate, said endless color slide being supported over a plurality of rollers in turn supported in brackets mounted within said body.

5. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, an endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body, means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, and a stationary cage for holding said roll portion on said plate, said means for rotating said plate including an electric motor connected with a transmission system for driving said plate.

6. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, an endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body, means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, and a stationary cage for holding said roll portion on said plate, said means for rotating said plate including an electric motor connected with a transmission system for driving said plate, said plate comprising the top face of a pulley of said transmission system.

7. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, an endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body, means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, and a stationary cage for holding said roll portion on said plate, said stencil comprising a strip of material formed with perforations.

8. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, an endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body, means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, and a stationary cage for holding said roll portion on said plate, and including a wire frame partially surrounding and engaging the sides of said roll portion.

9. A light display device, comprising a body having a front panel formed with a plurality of small window apertures, means for illuminating the interior of said body, an endless translucent color slide movably mounted in said body and having a web portion extending across said window apertures, means for moving said slide, a horizontal plate rotatively mounted in said body, means for rotating said plate, an endless stencil having a web portion extending across said first named web portion and having a roll portion resting on said plate coaxially thereof with one end of said last named web section connecting with the outside turn of said roll and the other end of said last named web section extending into the center of the roll and connecting with the inside turn, a stationary cage for holding said roll portion on said plate, and a finger mounted upon said horizontal plate and engaging against the inside turn of said roll portion for assisting in pushing out the inside turn of the endless stencil and for frictionally engaging the wall of the inside turn for assisting in winding the endless stencil upon the outside of the roll portion.

ANTHONY C. WALAITY.