Oct. 6, 1964 P. BOGAART 3,151,409

ELECTRIC SIGN CONSTRUCTION

Filed July 6, 1962 2 Sheets-Sheet 1

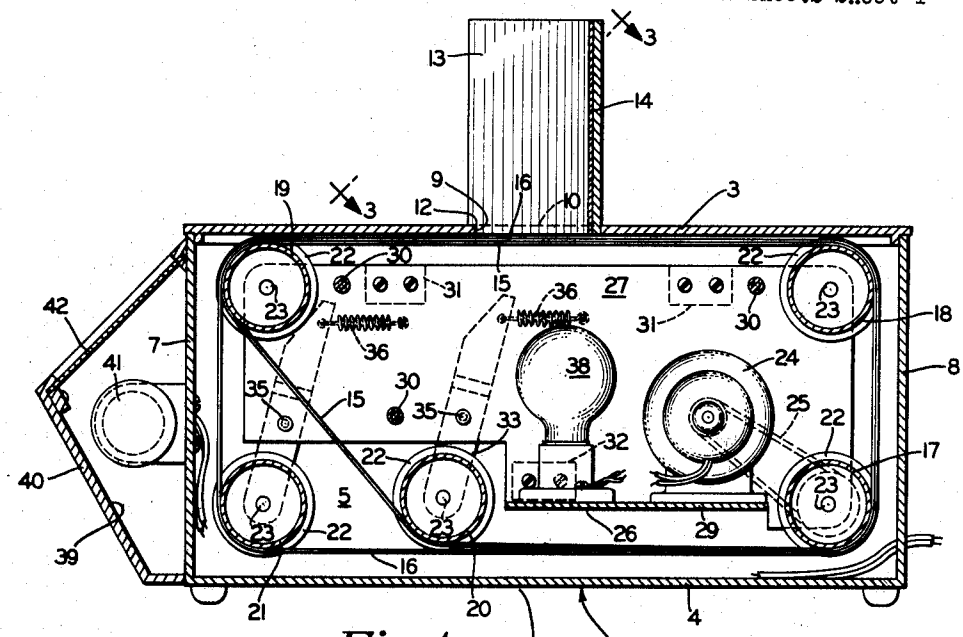


Fig. 1

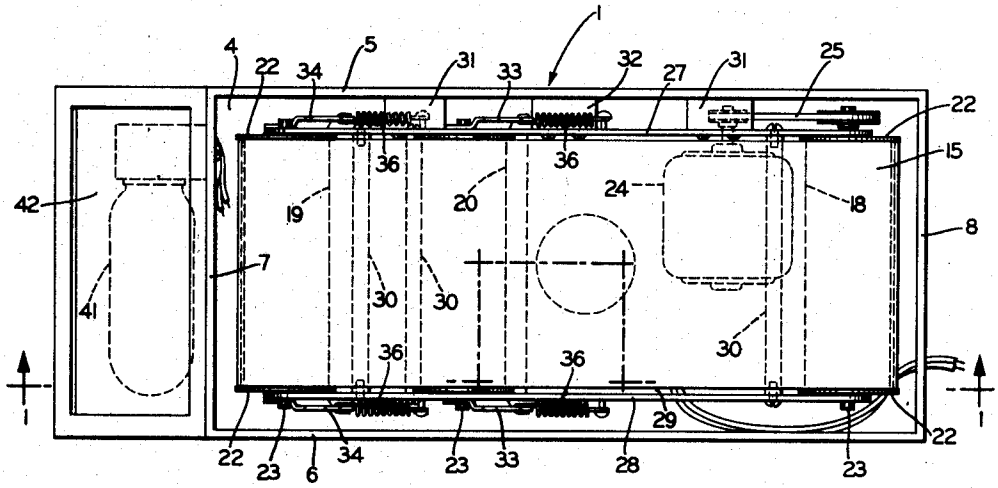


Fig. 2

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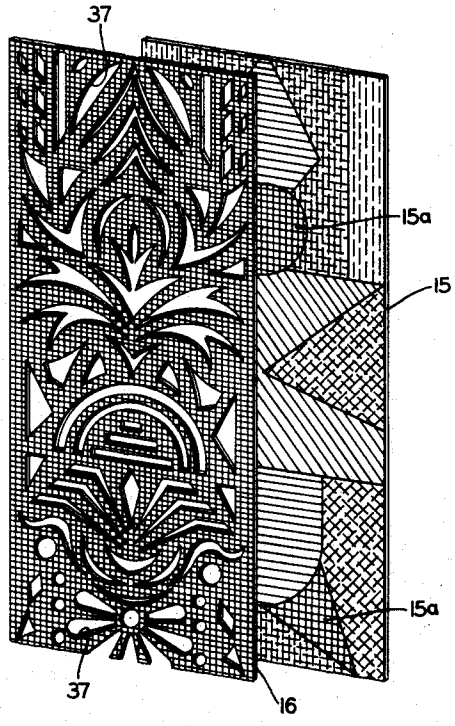


Fig. 4

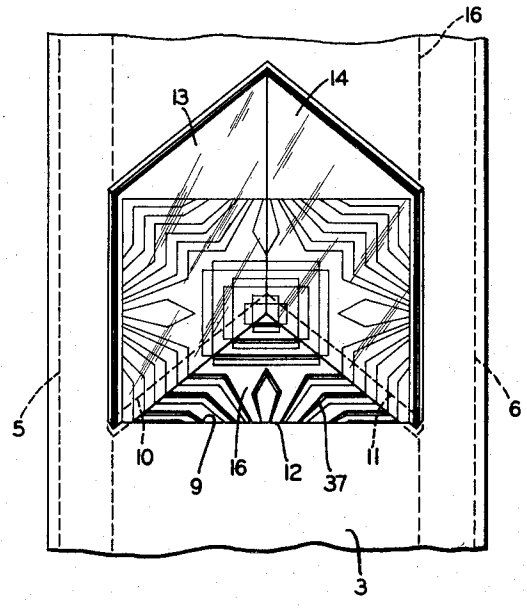


Fig. 3

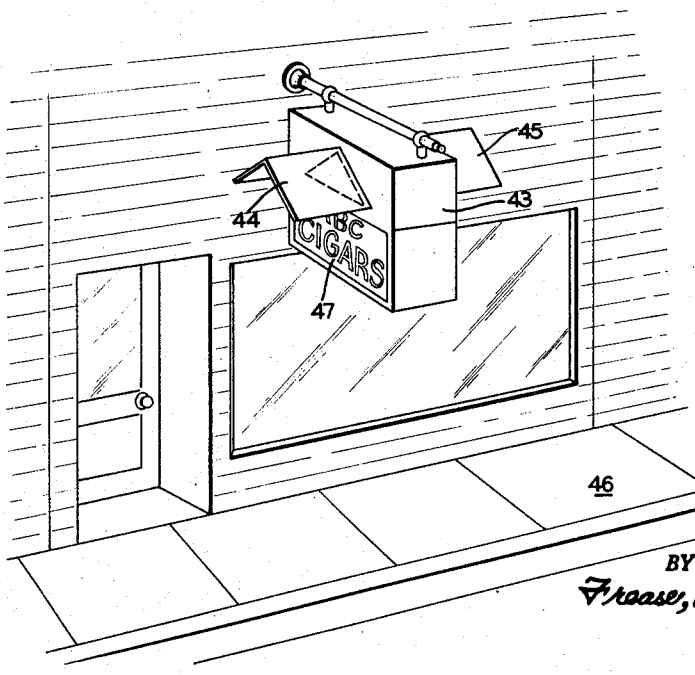


Fig. 5

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United States Patent Office 3,151,409 Patented Oct. 6, 1964

3,151,409

ELECTRIC SIGN CONSTRUCTION

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Filed July 6, 1962, Ser. No. 207,918
1 Claim. (Cl. 40—32)

This invention relates to an electric sign construction. More particularly, it pertains to an illuminated sign having moving illuminated belts with translucent light-projectable designs which are reflected from a pair of mirrors for attracting attention.

Electric signs having an illuminated moving endless belt with a changing pattern of designs reflected by mirrors have been known and used previously. Such signs have been objectionable for various reasons.

One continuous or endless belt repeats its pattern presentation after one rotation of the belt. The result is a repetitious display which soon loses attention of the observer.

Moreover, a continuous belt having a design from which light reflects is not as attractive as a belt having a translucent background through which light is transmitted. The latter type of belt has a more lively appearance and therefore sustains greater and more enduring attention of the observer.

Another objection to such prior signs has been the direction in which the belt has moved with respect to the reflecting mirrors. Most prior devices have provided a belt which moves across the angled mirrors rather than in a direction emanating from the vertex. The result of such belt movement is less attractive design developments in the mirrors than where the belt moves from the vertex of the mirrors.

It has been found that the design of a given continuous belt may be changed and varied by the provision of one or more additional belts which overlie each other and which have different lengths.

As the belts move together through the viewing position, they present different combinations of design in color and light openings, for which reason repetition which results from one continuous belt is avoided. As a result, the observer will be attracted to the moving reflection on the sign for a greater length of time.

Moreover, a smaller embodiment of this inveniton may be used as a toy because of the duration of varying designs derived from the use of more than one belt.

Accordingly, it is an object of this invention to provide an electric sign construction having two or more continuous belts which provide a light pattern on a pair of reflecting mirrors, which pattern is continuously changing.

It is another object of this invention to provide an electric sign construction in which the light pattern moves away from the vertex of two converging mirrors to provide a moving symmetrical pattern to the observer.

It is another object of this invention to provide an electric sign construction in which a multitude of combinations of designs is provided through a pair of continuous belts having varying translucent portions which present different design combinations to the observer.

It is another object of this invention to provide an electric sign construction having a continuous belt which includes a design of translucent portions through which light passes to a pair of converging reflecting mirrors.

Finally, it is an object of this invention to provide an electric sign construction having a continuously moving portion which attracts the attention of the observer, which sign achieves the stated objects in a simplified and inexpensive manner.

These and other objects and advantages apparent to those skilled in the art from the following description and claim may be obtained, the stated results achieved, and the described difficulties overcome by the discoveries, principles, apparatus, parts, elements, combinations, and subcombinations which comprise the present invention, the nature of which is set forth in the foregoing general statements, preferred embodiments of which—illustrative of the best modes in which applicant has contemplated applying the principles—are set forth in the following description and shown in the drawings, and which are particularly and distinctly pointed out and set forth in the appended claim forming part hereof.

The nature of the improved electric sign construction of the present invention may be stated in general terms as including one side with an enclosure having an isosceles triangular opening with a right-angled apex, a light source within the enclosure, a first endless belt movably mounted within the enclosure and extending across the opening and between the opening ad the light source, a second endless belt movably mounted between said first belt and the opening and having a length different from that of the first belt, each belt having translucent portions and a light-projectable design therein, a pair of mirrors projecting outwardly from said one side of the enclosure and having abutting edges forming an apex at the right angle of the triangular opening, and power means for moving the belts across and away from the apex of the opening.

By way of example, an embodiment of the improved electric sign construction is shown in the accompanying drawings forming part hereof, in which:

FIGURE 1 is a vertical sectional view taken on the line 1—1 of FIG. 2;

FIG. 2 is a horizontal view taken below the top wall of the container;

FIG. 3 is a fragmentary plan view showing the belt design and its reflections in the upright pair of mirrors above the opening in the top of the container, taken on line 3—3 of FIG. 1;

FIG. 4 is a fragmentary perspective view of the portions of the two belts spaced from each other; and

FIG. 5 is a perspective view of the device inverted above and as viewed by a person on the sidewalk below the device.

Similar numerals refer to similar parts throughout the various views of the drawings.

In FIG. 1 an electric sign construction is generally indicated at 1. It includes a boxlike enclosure or container 2 having top and bottom walls 3 and 4, opposite side walls 5 and 6, and end walls 7 and 8.

The top wall 3 is provided with an opening 9 having a preferably triangular shape (FIG. 3), including opening edges 10 and 11 of equal length and edge 12. The edges 10 and 11 are preferably disposed at 90° to each other.

As shown in FIGS. 1 and 3, a pair of mirrors 13 and 14 are mounted on the top wall 3 and project upwardly from the equal edges 10 and 11 of the opening 9. The mirrors 13 and 14 are disposed at right angles to each other corresponding to the angle of the apex of the opening 9 formed by the edges 10 and 11.

Within the container 2, a pair of endless belts 15 and 16 are mounted on and between belt mounting rollers 17–21. Each roller includes a head flange 22 at each end thereof for maintaining the belts 15 and 16 in place. In addition, the rollers are mounted on similar axles 23.

The roller 17 is driven by drive means including a motor 24 and an interconnecting belt 25. Conventional gear reduction means may be provided between the motor and the driven roll 17.

The drive means as well as the rollers 17–21 are mounted on a U-shaped mounting frame 26 having spaced side members 27 and 28 as well as a bottom member 29. The vertical side members 27 and 28 are provided

with similar spacers 30. The frame 26 is held in place by upper mounting blocks 31 and a lower mounting block 32, which blocks extend between the side wall 5 and the side member 27. The rigidity of the frame 26 plus the spacers 30 hold the several components on the frame in place.

Both belts 15 and 16, being driven by a common roller 17, move at the same rate of speed. The belt 16 is longer than the belt 15. In FIG. 1, the shorter belt 15 is disposed over the roller 20 and the longer belt 16 is disposed over the roller 21. Both rollers 20 and 21 are similarly mounted between pairs of belt tensioning levers 33 and 34 having pivot points 35 located on opposite side members 27 and 28 of the frame 26.

The rollers 20 and 21 are mounted at the lower ends of the respective levers 33 and 34 and the upper ends of said levers are provided with coil springs 36 having ends secured to the side members 27 and 28 of the frame. The springs 36 pull the levers 33 and 34 in a clockwise direction about their pivots 35 and therefore hold the belts 15 and 16 tautly in place. The shorter color belt 15 is preferably composed of a translucent material having a scattered design of color and having opaque portions 15*a*, as shown in FIG. 4. The longer design belt 16 is preferably composed of an opaque or black material with light openings 37 of varying configuration. The patterns for both belts are symmetrical on opposite sides of the center line or longitudinal axis thereof and the colored and opaque portions 15*a* of the belt 15, being visible through the openings 37, combine with the openings to present a substantially infinitely varying design of colors.

As the belts move together under the opening 9, light passes through the lower or inner belt 15 as well as through the light openings 37 in the upper or outer belt 16. A light source 38 is mounted on the bottom member 29 of the frame. Accordingly, light passes through the belts 15 and 16 as well as the opening 12 and is reflected in the angled mirrors 13 and 14. The belts 15 and 16 preferably move across the opening 9 in a direction from the apex to the side 12.

Because of the greater length of the belt 16, a different combination of patterns of the two belts is constantly presented at the light opening 12. For that reason, the belts will rotate through an infinite number of cycles before the original sections of the two belts are identically aligned.

It is understood, however, that more than two belts may be used where an even greater variety of design combinations are necessary.

By providing a translucent belt 15 and an opaque belt 16 having light openings 37, a startlingly real appeaarnce is provided by the light source 38 which is disposed below the belts and passes through to the reflection mirror surfaces 13 and 14. The light projects through the colored translucent design of the belt 15 as well as through the light openings 37 in the belt 16 and the light pattern is thereby reflected in the right-angled mirrors 13 and 14, as shown in FIG. 3.

As shown in FIGS. 1 and 2, the sign construction 1 is also provided with a light compartment 39 enclosed between a wall 40 and the end wall 7. A light source 41 is mounted within the compartment 39 and reflects light through a transparent or translucent glass 42 having advertising copy contained thereon. Accordingly, the sign construction 1 may be placed within the window of a store front where the changing design in the mirrors 13 and 14 is visible to pedestrians on an adjacent sidewalk. During his observance of the changing design, the observer is attracted to the advertising copy on the glass 42.

A modification is shown in FIG. 5 in which a sign construction 43 is mounted on a store front above a sidewalk. The sign is provided with two pairs of mirrors 44 and 45 which project from opposite sides of the sign construction 43. The pairs of mirrors 44 and 45 extend from

light openings on opposite sides, within which openings an arrangement of belts similar to the belts 15 and 16 may be provided to attract attention of pedestrians walking in either direction upon a sidewalk 46. Advertising copy 47 may be provided on a lower portion of the sign construction 43, as shown in FIG. 5.

The device of the present invention provides an improved sign construction in which at least two or more light translucent belts of different length are mounted for a continuous projection of varying design patterns. By providing two or more belts, a greatly extended cycle of the varying pattern is obtained, which pattern change can continue over an indefinite period of time.

In addition to serving as a source of attraction for advertising, the device may also be used as a toy by omitting the advertising portion including the parts forming the light chamber 39 and the glass 42.

Moreover, the device of the present invention provides a realistic or lively design pattern on the reflecting surfaces of the mirrors.

In the foregoing description certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations have been implied therefrom as such words are used for descriptive purposes and are intended to be broadly construed.

Moreover, the embodiment of the improved construction illustrated and described herein is by way of example and the scope of the present invention is not limited to the exact construction shown.

Having now described the invention, construction, operation and use of preferred embodiments thereof and the advantageous, new and useful results obtained thereby; the new and useful electric sign construction and reasonable mechanical equivalents thereof obvious to those skilled in the art are set forth in the appended claim.

What is claimed is:

An electric sign construction including a container having an opening in one side thereof, a light source within the container and spaced from the opening, a first movable endless belt mounted within the container between the opening and the light source, a second movable endless belt mounted within the container and between the opening and the first endless belt, one of said belts being longer than the other, a belt-mounting roller on one side of and having an axis parallel to the plane of the opening, another belt-mounting roller on the other side of and having an axis parallel to the plane of the opening, the first and second belts both being mounted on and between said rollers, at least one additional roller for each belt being mounted within the container, spring-biased means for holding each belt tautly upon said rollers, one of said belts having an endless-pattern of light-transmitting openings which pattern is symmetrical on opposite sides of the longitudinal axis of the belt, the other of said belts having a pattern of colored and opaque portions which pattern is likewise symmetrical with respect to the longitudinal axis of said other belt, the longitudinal axes of both belts being aligned and positioned centrally with respect to the container opening, the opening being an isosceles triangle the vertex of which is aligned with the longitudinal axes of the belts, a pair of mirrors connected to form a vertex therebetween, said mirrors mounted upon the container and projecting at right angles to the plane of said triangular opening and being aligned along said equal sides of said triangular opening, the line forming the vertex of said mirrors being aligned with the vertex of said triangular opening, and the belts being movable in a direction away from the vertex of the opening, whereby light from the light source passes through the variously colored portions of the inner belt and through the pattern openings in the outer belt and is reflected upon the mirrors as the belts move to provide an indefinite number of combinations of superim-

posed light patterns which enlarge as they move across the opening.

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