Nov. 22, 1938. F. HOTCHNER 2,137,289

ANIMATED SIGN

Filed July 26, 1937 2 Sheets-Sheet 1

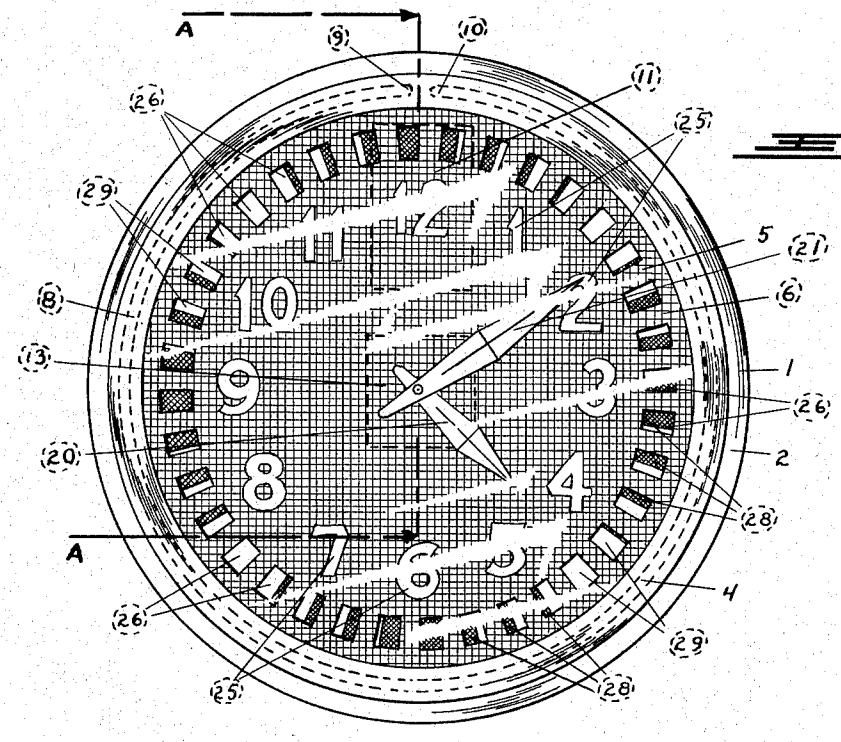


Fig. 1

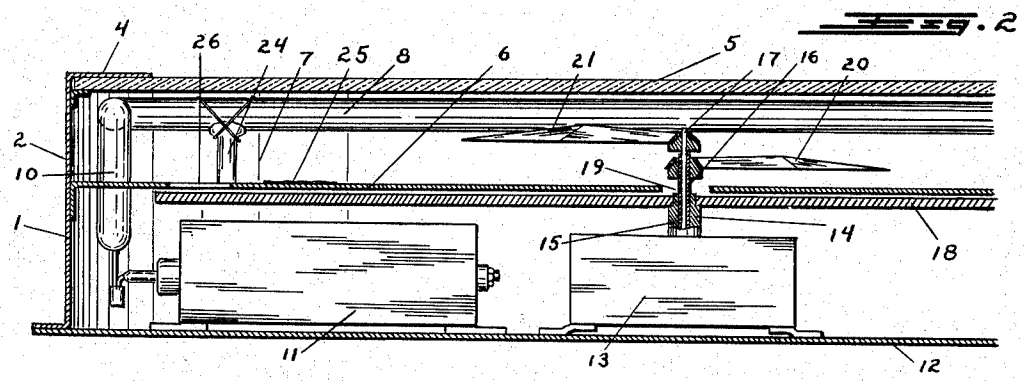


Fig. 2

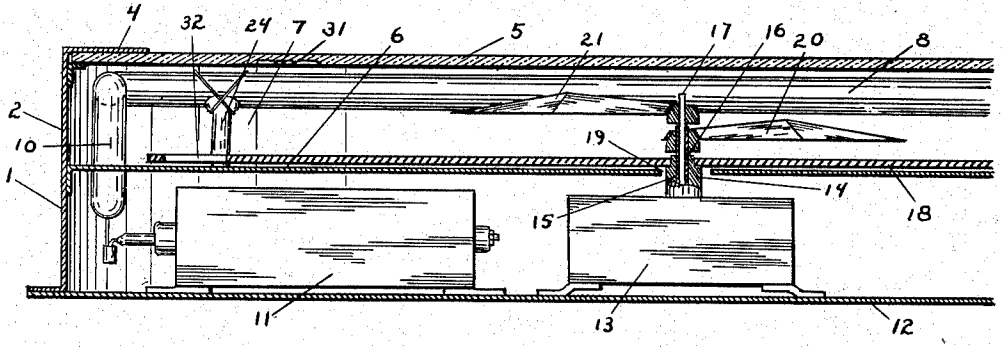


Fig. 3

INVENTOR

Fred Hotchner

Nov. 22, 1938. F. HOTCHNER 2,137,289

ANIMATED SIGN

Filed July 26, 1937 2 Sheets-Sheet 2

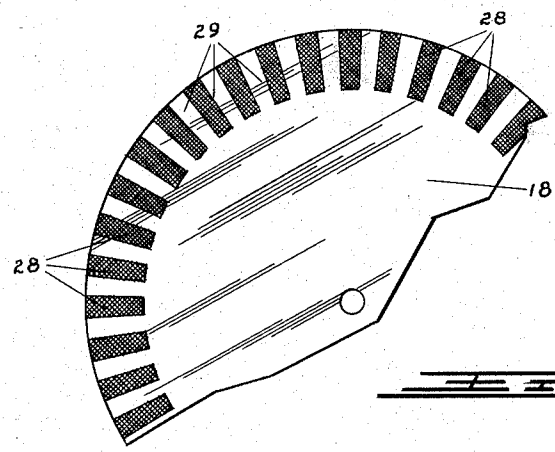


Fig. 4

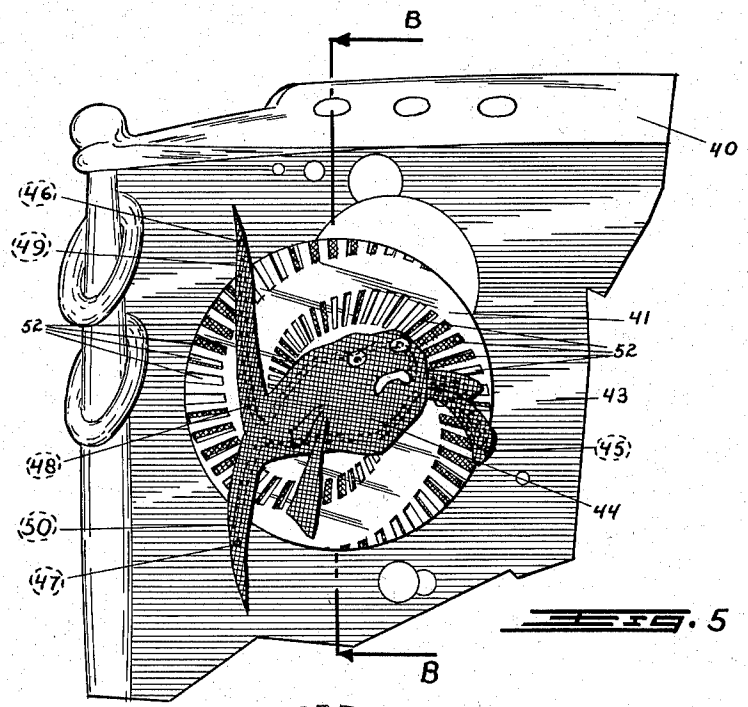


Fig. 5

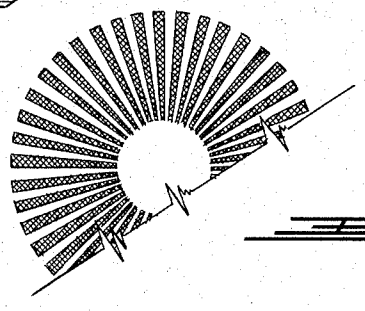


Fig. 6

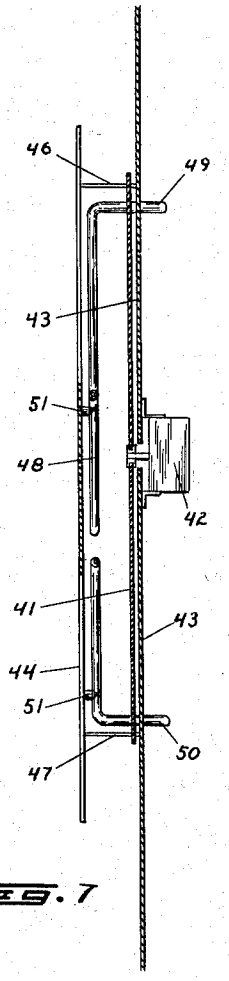


Fig. 7

INVENTOR

Fred Hotchner

Patented Nov. 22, 1938

2,137,289

UNITED STATES PATENT OFFICE

2,137,289

ANIMATED SIGN

Fred Hotchner, Los Angeles, Calif.

Application July 26, 1937, Serial No. 155,730

20 Claims. (Cl. 40—34)

This invention relates to an animated luminous display and is directed to producing displays such as clocks, animated pictures and scenic effects in which the illusion of motion is produced by mechanical elements which need move at but a small fraction of the speed of the illusion. By this contrivance a great variety of attractive effects may be developed by the exercise of the skill of competent designers and require only the simplest of apparatus, being economical in manufacture and operation and subject to little maintenance difficulty.

Displays made according to this invention may embody designs in which some elements are stationary and some moving, as for instance, waterfall or campfire effects. Motion effects of various speeds may be produced by the use of standard apparatus by minor modifications in the construction of the devices thereby making for simplified commercial handling.

In connection with one preferred form of the invention herein disclosed it is an object of the invention to produce illuminated clocks having traveling border effects around the dials and make use of standard types of clock mechanisms with but minor modifications. The mechanical element used to produce the illusion being of very light construction the standard second hand drive which turns at one revolution per minute is adequate for this purpose. The amplification of speed which may be secured is sufficient to produce from this basic speed an illustion turning as rapidly as may be desired.

It is an object of the invention to produce the illusion of a number of dark and light regions, or regions of varying colors, following each other in procession through the course of the motion effect. In connection with pictorial or conventional designs or the like it is an object to provide displays having some elements stationary and some moving and illuminate them in an efficient manner.

In connection with another preferred embodiment of the invention it is another object of the invention to provide a novel silhouette effect including moving elements to produce the illusion of motion by a simple and inexpensive combination.

Other objects of the invention will be apparent from the following specification taken in connection with the accompanying drawings. It is to be understood that the invention is not limited to the particular embodiment shown but may be variously modified and embodied in luminous displays within the purview of the appended claims.

In the drawings the same reference numeral appearing in more than one view is to be understood as referring to the same or the equivalent part throughout.

The invention is shown in its preferred forms in the accompanying drawings in which:

Figure 1 is a front view of a luminous electric clock having a traveling border effect around the dial produced by means of a revolving disk in connection with openings through the dial.

Figure 2 is a sectional view of the same taken as indicated by the section line A—A in Figure 1.

Figure 3 is a similar sectional view of a clock modified by the positioning of the revolving disk in front of the dial plate.

Figure 4 is a fragmentary view of the revolving disk of the clock shown in Figures 1 and 2.

Figure 5 is a front view of a portion of an electric sign having a novel animated effect utilizing silhouette illumination.

Figure 6 is a fragmentary pattern of the markings on the background behind the revolving disk on the sign shown in Figure 5.

Figure 7 is a sectional view of the device shown in Figure 5 taken as indicated by the section line B—B.

In Figures 1, 2 and 3, numeral 1 indicates the clock which is formed from the body casing 2 and the various elements thereby enclosed. Positioned behind the bezel 4 of the casing is the cover glass 5. A shore distance behind the cover glass is the dial plate 6 forming with the cover glass a chamber 7 in which are located the luminous tube 8 and the hands. The luminous tube is positioned behind the bezel but may be exposed in part or in the whole directly to view. It has electrode terminals 9 and 10 extending through suitable openings in the dial plate to the rear and connected to the terminals of the transformer 11. The transformer is mounted on the back plate 12.

The clock mechanism 13 is also secured to the back plate. It has a shaft and bushing assembly 14 which includes the bushings 15 and 16 and the shaft 17. The bushing 15 carries the revolving disk 18 and preferably is driven at one revolution per minute by the second hand gear which is standard equipment with a large number of types of clocks. The bushing 16 and the shaft 17 extend through the hole 19 in the dial plate and carry the hour hand 20 and the minute hand 21.

It is to be understood that the device has been shown in exaggerated proportions for the sake of clarity. In general the chamber will be much more shallow than shown and the dial plate and cover glass so spaced with relation to the tube that light rays from the tube are reflected back from the cover glass to the center of the dial

thus compensating for the intense direct light which falls on the portions of the characters near the tube. The tube is supported at intervals by insulating posts such as that indicated by **24**.

The dial plate is preferably finished in a dark color, and the characters, indicated by **25**, **25**, etc., finished light. The hands are also finished light. Around the characters is the series of openings **26**, **26**, etc., through the dial. Painted on the revolving disk are a number of dark and light sectors as shown in Figure 4. The dark sectors are indicated by **28**, **28**, etc., and the light sectors by **29**, **29**, etc. The openings and the sectors are spaced around the border at a different frequency from each other. In this case there are 36 openings, and 40 dark sectors. There will thus be, in appearance when the disk turns, four dark regions and four light regions turning through the border. Instead of dark and light sectors on the disk there may be alternate sectors of different colors thus producing a colored traveling effect.

Various modifications may be made in the details of construction. For instance, the dial may be made of glass or other transparent material and be suitably painted to leave transparent openings. The term "openings" as used in the claims is to be understood as embracing transparent portions of solid material. The openings may also be modified in various ways in spacing, shape and proportion. In general it is preferred to space the openings and sectors uniformly but at different frequency from each other. Various modifications may be made on this arrangement for various purposes within the purview of the claims.

In the modification of the clock shown in Figure 3 the revolving disk is positioned in front of the dial. The characters may be inscribed on the dial and the disk may be transparent over the regions corresponding to the characters in order to expose the same. However, I prefer to form the characters by sand blasting or other manner of impression on the cover glass. A sand blasted character is indicated by **31**. The sectors in this case are painted on the dial plate and openings, such as indicated by **32**, provided through the disk.

In Figure 5 is shown a novel effect produced by means of a revolving disk together with an illuminated silhouette. By a special arrangement of the openings in the disk the effect of a luminous bubble is produced in front of which a fish swings. The sign body is indicated by numeral **40**. The disk **41** is turned at about one revolution per minute by the motor **42** positioned behind the background sheet **43**. In front of the disk the silhouette **44** is positioned and held by the pins **45**, **46** and **47**. The luminous tube **48** is positioned behind the silhouette and held to it by the insulators **51**, **51**, etc. It has two terminals **49** and **50** which pass through suitable openings in the background to the inside of the sign. Suitable connections to the sign circuit provide for illumination of the tube. The pattern of the sectors on the background is shown in part in Figure 6. The disk may be of metal and have the openings **52**, **52**, etc., cut through. Or it may be of such material as sheet plastic with openings provided by suitable painting. The difference in the number of openings and the number of dark sectors around the circle is six and consequently there will appear to be six dark and six light regions traveling through the sheets on the surface of the bubble.

The various features of the invention may be variously combined to produce displays.

The terms "design" and "inscription" are to be understood as embracing any pictorial representation, convention, design, ornamentation, figure, character, symbol or characterization. The term "animation" is to be understood as embracing motion effects in general. The terms "dark" and "light" as descriptive of the aspects of the segments are to be understood referring to any component of the colors thereof.

Having thus described my invention, what I claim is:

1. Apparatus for producing the effect of an illuminated design part of which is in animation, a background carrying inscriptions corresponding to stationary elements of said design and a movable sheet member exposed in position corresponding to a movable element of said design, said movable member having a plurality of openings spaced along a definite path over which the illusion of motion is to be produced, means behind said movable member presenting a series of dark segments alternating with light segments spaced along said path at a different frequency than said openings, and means to move said movable member to traverse said openings over said segments to variously expose the same to view whereby to produce the illusion of a series of dark and light regions traversing said path at a greater speed than the actual speed of said movable member over said path, and means to illuminate both said stationary design and said movable member.

2. Apparatus for producing the effect of an illuminated design part of which is in animation, a background carrying inscriptions corresponding to stationary elements of said design and a movable sheet member exposed in position corresponding to a movable element of said design, said movable member having a plurality of openings spaced along a definite path over which the illusion of motion is to be produced, means behind said movable member presenting a series of dark segments alternating with light segments spaced along said path at a different frequency than said openings, and means to move said movable member to traverse said openings over said segments to variously expose the same to view whereby to produce the illusion of a series of dark and light regions traversing said path at a greater speed than the actual speed of said movable member over said path, and a luminous tube extending around said design close to said background.

3. Apparatus for producing the effect of an illuminated design part of which is in animation, a background carrying inscriptions corresponding to stationary elements of said design and a movable sheet member exposed in position corresponding to a movable element of said design, said movable member having a plurality of openings spaced along a definite path over which the illusion of motion is to be produced, means behind said movable member presenting a series of dark segments alternating with light segments spaced along said path at a different frequency than said openings, and means to move said movable member to traverse said openings over said segments to variously expose to view said segments whereby to produce the illusion of a series of dark and light regions traversing said path at a greater speed than the actual speed of said movable member over said path, a silhouette member positioned in front of the planes of said background and said movable member and an

elongated illuminant behind said silhouette and lighting both said background and said movable member.

4. Apparatus for producing the effect of an illuminated design part of which is in animation, a background carrying inscriptions corresponding to stationary elements of said design and a movable sheet member exposed in position corresponding to a movable element of said design, said movable member having a plurality of openings spaced along a definite path over which the illusion of motion is to be produced, means behind said movable member presenting a series of dark segments alternating with light segments spaced along said path at a different frequency than said openings, and means to move said movable member to traverse said openings over said segments to variously expose to view said segments whereby to produce the illusion of a series of dark and light regions traversing said path at a greater speed than the actual speed of said movable member over said path, a silhouette member in the form of an element of said design extending in front of said movable member and a light behind said silhouette member lighting both said background and said movable member.

5. Apparatus for producing motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a plurality of openings therethrough substantially uniformly spaced along a definite path over which the illusion of motion is to be produced, the rearward of said members being provided with means to represent a series of substantially uniformly spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a speed greater than the relative speed of said members, each of said regions embracing a plurality of said openings.

6. Apparatus for producing illuminated motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a plurality of openings therethrough substantially uniformly spaced along a definite path over which the illusion of motion is to be produced, the rearward of said members being provided with means to represent a series of substantially uniformly spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a speed greater than the relative speed of said members, and an elongated illuminant positioned close to the plane of the forward of said members and disposed generally lengthwise with said path.

7. Apparatus for producing illuminated motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a plurality of openings therethrough substantially uniformly spaced along a definite path over which the illusion of motion is to be produced, the rearward of said members being provided with means to represent a series of substantially uniformly spaced dark segments alternating with light segments along said path and at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a speed greater than the relative speed of said members, an elongated illuminant positioned close to the plane of the forward of said members and a sheet of transparent material positioned a short distance in front of the forward of said members and aiding by reflection to distribute the light from said illuminant over said display.

8. Apparatus for producing illuminated motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a plurality of openings therethrough substantially uniformly spaced along a definite path over which the illusion of motion is to be produced, the rearward of said members being provided with means to represent a series of substantially uniformly spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a speed greater than the relative speed of said members, a silhouette member positioned a short distance in front of the plane of the forward of said members and an elongated illuminant behind said silhouette member and lighting said display.

9. Apparatus for producing illuminated motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a plurality of openings therethrough substantially uniformly spaced along a definite path over which the illusion of motion is to be produced, the rearward of said members being provided with means to represent a series of substantially uniformly spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a speed greater than the relative speed of said members, a silhouette member in the form of an element of the design of said display extending in front of the said forward of said members and a light behind said silhouette member illuminating said display.

10. Apparatus for producing motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a design inscription thereon a portion of which is to appear as though in motion along a definite path and a plurality of openings therethrough spaced along said path, the rearward of said members being provided with means to represent a series of spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and

light regions traversing said path at a greater speed than the relative speed of said members along said path, each of said regions embracing several of said openings.

11. Apparatus for producing illuminated motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a design inscription thereon a portion of which inscription is to appear as though in motion along a definite path and a plurality of openings therethrough spaced along said path, the rearward of said members being provided with means to represent a series of spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a greater speed than the relative speed of said members along said path, each of said regions embracing several of said openings, and a luminous tube extending around the design so provided and illuminating both the stationary and the moving elements thereof.

12. Apparatus for producing illuminated motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a design inscription thereon a portion of which inscription is to appear as though in motion along a definite path and a plurality of openings therethrough spaced along said path, the rearward of said members being provided with means to represent a series of spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a greater speed than the relative speed of said members along said path, a silhouette member positioned forward of the plane of the said forward of said members and an elongated illuminant behind said silhouette member and generally following said path.

13. Apparatus for producing illuminated motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a design inscription thereon a portion of which inscription is to appear as though in motion along a definite path and a plurality of openings therethrough spaced along said path, the rearward of said members being provided with means to represent a series of spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a greater speed than the relative speed of said members along said path, a silhouette member in the form of an element of said design extending in front of the motion effect thus produced and partially covering the same, and a light behind said silhouette member illuminating said display.

14. An illuminated clock including a dial, hands in front of said dial, openings through said dial annularly disposed therearound, a revolvable member positioned behind said dial and having a series of dark segments alternating with light segments along the path of said openings, and means to turn said revolvable member to traverse said openings across said segments.

15. An illuminated clock including a dial, hands in front of said dial, openings through said dial annularly disposed therearound, a revolvable member positioned behind said dial and having a series of dark segments alternating with light segments along the path of said openings, hands in front of said dial, means to turn said revolvable member to traverse said segments behind said openings to produce an attraction effect by the various exposure of said segments through said openings, and an illuminant disposed around said dial to light said dial, hands and said segments as they are thus exposed.

16. An illuminated clock including a dial, hands in front of said dial, openings through said dial annularly disposed therearound, a revolvable member positioned behind said dial and having a series of dark segments alternating with light segments along the path of said openings, hands in front of said dial, means to turn said revolvable member to traverse said segments behind said openings to produce an attraction effect by the various exposure of said segments through said openings, an illuminant disposed around said dial and a sheet of transparent material positioned in front of said dial and hands and disposed to aid by reflection to distribute light from said illuminant over said dial and hands.

17. An illuminated clock including a dial plate provided with a series of dark segments alternating with light segments along an annular path therearound, a revolvable disk in front of said dial plate having a series of openings therethrough disposed to be moved in front of said segments to variously expose the same as it turns, hands in front of said disk and means to turn said disk.

18. An illuminated clock including a dial plate provided with a series of dark segments alternating with light segments along an annular path therearound, a revolvable disk in front of said dial plate having a series of openings therethrough disposed along the path of said segments at a different frequency than said segments to variously expose said segments as it is turned, means to turn said disk, hands in front of said disk, and an elongated illuminant around said dial to light said hands and said segments as they are thus exposed.

19. An illuminated clock including a dial plate provided with a series of dark segments alternating with light segments along an annular path therearound, a revolvable disk in front of said dial plate having a series of openings therethrough disposed along the path of said segments at a different frequency than said segments to variously expose said segments as it turns, means to turn said disk, hands in front of said disk, an elongated illuminant around said dial to light said hands and said segments as they are thus exposed, and a sheet of transparent material in front of said disk and hands positioned to aid by reflection in distributing light thereover from said illuminant.

20. Apparatus for producing motion effects including, in combination, a pair of sheet members disposed to be moved relative to each other, one behind the other, the forward of said members having a plurality of openings therethrough spaced along a definite path over which the il-

lusion of motion is to be produced, the rearward of said members being provided with means to represent a series of spaced dark segments alternating with light segments along said path at a different frequency than said openings, and means to move said members relative to each other to traverse said segments behind said openings whereby to produce the illusion of a series of dark and light regions traversing said path at a speed greater than the relative speed of said members, each of said regions embracing a plurality of said openings.

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