Feb. 7, 1939. B. J. KALB 2,145,880

SIGN

Filed May 6, 1935 2 Sheets-Sheet 1

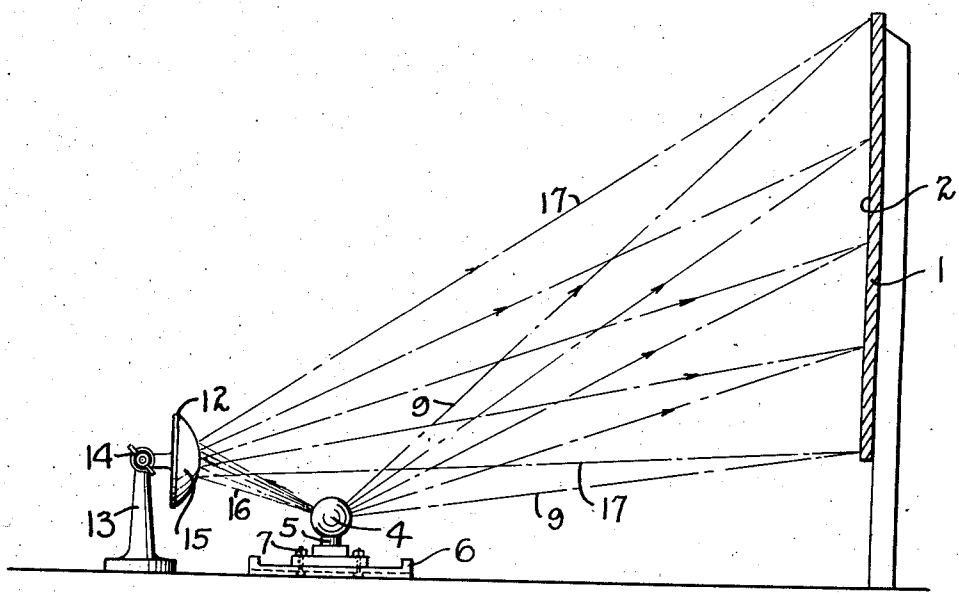


Fig. 1.

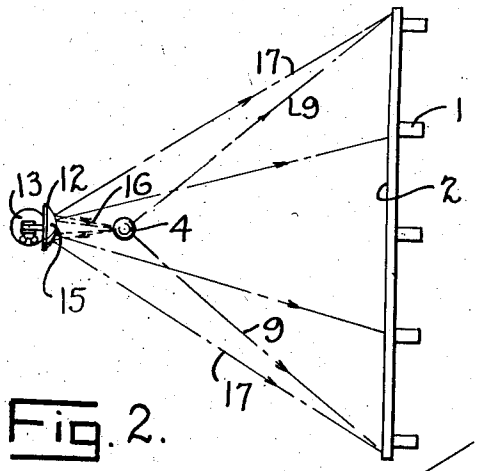


Fig. 2.

Fig. 3.

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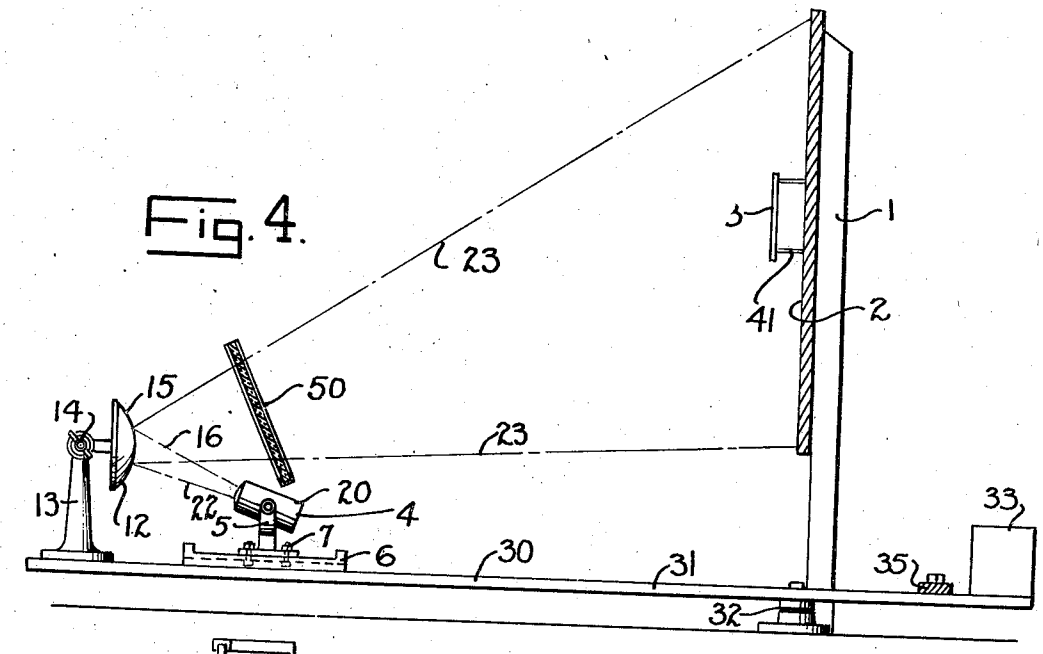
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Fig. 4.



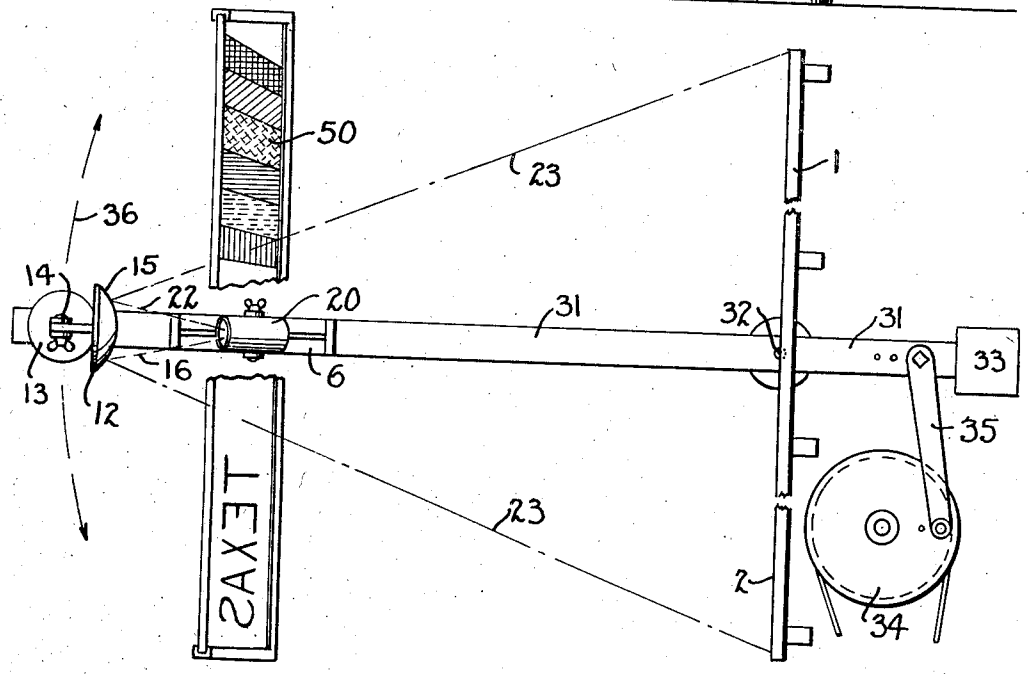


Fig. 5.

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Patented Feb. 7, 1939 2,145,880

UNITED STATES PATENT OFFICE

2,145,880

SIGN

Bernard J. Kalb, Houston, Tex.

Application May 6, 1935, Serial No. 19,969

9 Claims. (Cl. 40—130)

The invention relates to an improved manner of illuminating signs and producing attractive lighting effects thereon.

It is one of the objects of the invention to provide an arrangement of the illumination for signs so that a maximum of illumination may be obtained with a minimum of power.

Another object of the invention is to provide a convex reflector in combination with a lighting source so that the light may be diffused over the sign area.

Another object of the invention is to provide a single light source in combination with a convexly curved reflector so that the power required to produce the desired amount of illumination can be materially reduced over the arrangements now in general use.

Another object of the invention is to provide a spot light in arrangement with a convexly curved reflector so that the rays may be diffused on the sign to be illuminated.

Another object of the invention is to provide a spot light and convex reflector to furnish illumination for an advertising sign and to arrange therewith a plate so that different color or character effects may be projected or created upon the sign.

Another object of the invention is to provide an oscillating carriage for a spot light and convex reflector, in order that the light rays from the reflector may be directed from various angles upon the board to be illuminated.

Still another object of the invention is to provide varying lighting effects upon a background by moving a light source and reflector in such a manner that the light rays will pass through a transparent screen and project onto the background any colors or characters which may be carried by the screen.

It is also an object of the invention to diffuse a concentrated light upon a background so that clear cut shadows of desired characters may be cast upon the sign.

Another object of the invention is to provide a light source in combination with a convex reflector of short focal length so that the reflected rays will be diffused over the area of the sign without interference.

Still another object of the invention is to obtain the maximum illumination from substantially a point source so that the shadows of characters cast upon a background will be clear cut and attractive.

Other and further objects of the invention will be readily apparent when the following description is considered in connection with the accompanying drawings wherein:

Fig. 1 is a side elevation of one arrangement for illuminating a sign board so that the maximum lighting effect is obtained with a minimum consumption of power.

Fig. 2 is a top plan view looking down on the arrangement of Fig. 1.

Fig. 3 is a view similar to Fig. 1, but illustrating an arrangement of a spot light or concentrated source of illumination which is directed on the reflector.

Fig. 4 is a side elevation showing some of the parts in section to illustrate the manner of an oscillating source of light and reflector arrangement in such a manner that the rays will pass through a screen.

Fig. 5 is a top plan view of the arrangement shown in Fig. 4.

The present invention relates to somewhat the same subject-matter as does my prior copending application, Serial No. 5,551, filed February 8, 1935.

With a majority of the advertising devices and signs now in general use and particularly with outdoor advertising boards and window displays, the illumination therefor is provided by arranging a considerable number of lights about the border of the board or sign or on overhanging brackets above the board so that the light rays are directed on the face of the board.

With many advertising boards from 1500 to 2000 watts are required to provide illumination which is satisfactory.

The present invention contemplates a system of illuminating advertising boards or signs wherein the desired amount of illumination may be obtained with a material reduction in the wattage necessary, and wherein various attractive features may be provided in combination with the sign.

Fig. 1 shows a side elevation of an advertising display board or sign 1 which may be of any size or configuration and may be of a small type such as used in show windows or other desirable locations, or it may be of the type such as the large outdoor bill boards.

This board includes the background 2 which may carry any suitable characters 3 either in relief or printed or painted thereon, as occasion may require, as well as any illustrations or other matter to be displayed.

Positioned in front and below the board in the Fig. 1 form of the invention is a source of light 4. This source is here illustrated as a single electric bulb whose filament is preferably as

closely arranged as possible so as to obtain a substantially point source of light. Any form of light source such as a carbon arc may be used. This light source is preferably mounted on a base 5 which is adjustable on the foundation 6 by means of the bolts or screws 7. It is to be understood that this light source may be arranged in any position desired such as below or above the board, but preferably in such a position that some of the light rays 9 will be directed toward the board 2.

Positioned beyond the light source 4 is a convexly curved reflector 12. This reflector is carried by a suitable standard 13 and is adjustable by means of the set screw 14, so that the reflected rays may be focused on the board 1. The reflector may be of any desired type, material, or configuration.

A convexly curved reflector surface 15 having a short focal length has been provided in order that the light rays 16 which strike the reflector will be reflected along the lines 17 toward the background 2. With reflectors the angle of incidence is equal to the angle of reflection and therefore by adjustment of the position of the light source and of the reflector the maximum amount of light can be directed toward the background 2. As an illustration, it has been found in practice that a signboard 10 x 40 feet which usually requires light bulbs totaling from 1500 to 2000 watts can be illuminated with the present arrangement where a single bulb 4 of about 500 watts is provided, and that with this arrangement a better illumination is obtained by the use of the single bulb where the light rays are reflected by a convexly curved reflector as illustrated.

Fig. 2 is an arrangement looking down on the system shown in Fig. 1 to illustrate the paths of the light rays. It is to be understood, of course, that the spacing of the light, reflector, and sign may be varied.

With the arrangement of Fig. 1 the maximum amount of light is of course directed onto the sign and may therefore be used where the sign has only a flat background which is to be illuminated.

Fig. 3 shows a modified form of the invention wherein the light source is provided by a spotlight 20. This spotlight may be of any desired size or configuration and will preferably direct the rays 22 therefrom directly onto the reflector 12. A spotlight of this type is of advantage because the rays are concentrated inside of the spotlight and directed onto the reflector in such a manner that they will be reflected along the lines 23 so that there will be no interference of one light ray with the other. Obviously the shape of the opening 24 in the front of the spotlight and the shape of the reflecting surface 15 of the reflector 12 can be so arranged that the group of light rays will be of the same configuration and focused directly upon the board 2. This may be accomplished by suitable frames or blank out cards as desired. Such framing of the light is not necessary, but may be desirable in many instances.

The reflector 12 can, of course, have any desired shape or curvature which will depend upon its position with respect to either the light source or the board. The size of the light and the reflector and their positioning with respect to each other and with respect to the board as well as the curvature of the reflector can all be designed and constructed in accordance with the amount of illumination, the size of the board or sign, and the space available, in order to obtain the desired result.

Figs. 4 and 5 show a form of the invention somewhat similar to those forms previously described, except that the spotlight 20 and the reflector 12 have both been mounted on a movable support 30. The support may be moved in any desired manner, Figs. 4 and 5 however illustrating an oscillating arm 31 which is pivoted at 32 with a suitable counterbalance 33 thereon. Any source of power such as the rotating wheel 34 having a pitman rod 35 connected to the arm 31 may be provided.

It will be apparent from Fig. 5 that as the wheel 34 rotates the outer end of the arm 31 will be caused to move in the direction of the arrows 36 so that the light rays will be directed toward the board 2 from various angles depending upon the movement of the light and the reflector. If desired, the characters 3 which are carried by the board 1 may be spaced outwardly therefrom by suitable support portions 41. In this manner the shadows of the characters will be thrown upon the background 2 of the board and because of the movement of the light of the reflector the shadows will be caused to move on the background. The light may be so arranged that the shadows will fall on the background 2 either above or below the actual characters 3 so that a double illustration is visible with the shadow performing a movement while the actual characters remain stationary.

An arrangement of this type wherein no reflector is employed is disclosed in my prior copending application previously mentioned.

In order to obtain additional attractive effects with the arrangement of the moving light and reflector a plate or screen 50 may be suitably positioned in the path of the light rays 23. This plate 50 may be colored in any desired manner with stripes, circles, or other configuration so as to obtain desired color effects upon the board 2. In practice a plurality of stripes transversely of the length of the plate 50 of different colors have been found to cause bands of color to traverse the background 2 from side to side in combination with the movement of the shadows of the characters 3 and form a very attractive illumination for the sign.

If desired, any suitable characters or indicia may be painted or formed upon the plate 50 as desired, so that the shadows or colors thereof will be cast upon the background. In this manner special or additional characters, colors, or indicia can be cast on the board and be caused to move in order to attract attention. Preferably this plate 50 is arranged at an angle so that the light rays 23 will pass therethrough in a substantially perpendicular manner, so that there will be no distortion thereof.

The term image or shadow as herein used shall mean any characterization which may be cast on the background regardless of whether it is the actual shadow of some character such as 3 or some symbol in relief on the background as well as any projection of either color, character or indicia which may be positioned adjacent or on the plate 50. Naturally any shadows of characters or colors from the plate 50 may move entirely across the background because of the proximity of the plate to the light whereas the shadows of characters adjacent the background will have an oscillating motion. The composite result of the two arrangements is that the shadows of the color effects from the plate come

onto the background from one side and cross it completely whereas the shadow effects of the characters **3** are visible all of the time. Where pictures, words, or symbols are painted or positioned on the plate **50** the shadows thereof will be very attractive because they come onto the background and may pass completely across it disappearing on the opposite end only to reappear again when the light reverses its movement.

When the light rays striking the convexly curved reflector are diverging then they are reflected only as diverging rays whose spead is the same as though the rays originated from a point source which is the focal point in back of the reflector.

The advantage of this arrangement of illumination for a device of this type is that where all of the rays approaching the background are diverging as though they emanated from a point source the image or shadow cast on the background will be clear cut and attractive. The edges of the image or shadow are thus clear and distinct. As distinguished from the above arrangement, if a concave reflector or a plurality of sources of light are employed then there is no pin point source and the light rays approaching the background will be crossed and interfering to cast a plurality of overlapping images or shadows so that an indistinct outline is cast upon the background.

Where the screen or plate **5** is a straight flat plate as shown and the light travels on an arc, the shadows cast appear to not only move from side to side but to also effect some vertical movement on the background. The shadow or the color effects created by this arrangement are very clear and distinct on the background because the substantially point source of light throws only diverging rays onto the convexly curved reflector and only diverging rays therefore pass through the screen or plate, as previously pointed out.

The invention contemplates broadly the idea of the combination of a source of light with a convexly curved reflector to diffuse the light onto the board, so that a maximum of illumination is obtained by the use of a minimum of power. Many modifications and various combinations of the structure may be had in practicing the invention, and the present description is to be limited only on the appended claims.

What is claimed is:

1. A sign, a source of illumination therefor, a reflector to diffuse the light rays of said source on said sign, means to move said source of illumination and said reflector relative to said sign, and indicia positioned between the reflector and the sign so that movement of the shadows of said indicia occurs on the sign.

2. A sign, a source of illumination therefor, a reflector to diffuse the light rays of said source on said sign, means to move said source of illumination and said reflector relative to said sign, and characters spaced from said sign so that the shadows thereof cast on the sign will effect movement upon operation of said means.

3. A sign, a source of illumination therefor, a reflector to diffuse the light rays of said source on said sign, means to move said source of illumination and said reflector relative to said sign, characters spaced from said sign so that the shadows thereof cast on the sign will effect movement upon operation of said means, and additional means to cast colored effects on said sign.

4. The combination of a signboard, outstanding characters thereon, a transparent plate in front of said board, additional characters on said plate, a light source, a reflector therefor, means disposing said reflector to direct the reflected rays through said plate and upon the board, whereby the shadows of all of said characters will be cast upon said board, and means to move the reflector so that the shadows of said first and of said additional characters move upon the board in different relationships.

5. The combination of a signboard, outstanding characters thereon, a transparent plate in front of said board, additional characters on said plate, a light source, a reflector therefor, means disposing said reflector to direct the reflected rays through said plate and upon the board, whereby the shadows of all of said characters will be cast upon said board, and means to move the reflector so that the shadows of said first and of said additional characters move upon the board in different relationships, said plate being arranged so that said shadows are clear on the board.

6. In an advertising device a background, characters outstanding therefrom, a light to be cast on said characters so that the shadows thereof will fall on said background, a translucent plate between the light and background, colors on said plate to be cast onto the background by the light, and means to move the light to effect movement of the shadows and colors.

7. In an advertising device a background, characters outstanding therefrom, a light to be cast on said characters so that the shadows thereof will fall on said background, a translucent plate between the light and background, additional characters on said plate whose shadows will also be cast on the background by the light, and means to move the light to effect the movement of all of said shadows.

8. In an advertising device a background, characters outstanding therefrom, a light to be cast on said characters so that the shadows thereof will fall on said background, a translucent plate between the light and background, colors on said plate to be cast onto the background by the light, additional characters on said plate whose shadows will also be cast on the background by the light, and means to move the light to effect movement of the shadows and colors.

9. A sign including an opaque background, characters outstanding therefrom, a source of light in front of said background to cast a light upon the background and characters, additional characters between the source of light and said first mentioned characters, and means to move the light to effect composite movement of the shadows of all the characters upon the background.

BERNARD J. KALB.