This invention relates to an illuminated motion display sign. It is an object of the present invention to provide a motion display sign wherein a design plate having lettering or configurations can be displayed with intermittent brilliancy as a member bearing perforations is rotated about an axis in alignment with a fixed plate having the same arrangement of perforations, similarly spaced and of similar size or shape, so that the full display will be had as the holes of the rotating plate come into registration with the holes of the stationary plate and wherein attractive display effects will be had leading up to and following each display of the design.

It is another object of the invention to provide in an illuminated motion display sign an arrangement including perforated plates with one being rotatable with respect to the other wherein the design or lettering will be provided on removable panels and wherein the designs or lettering can be of a wide variety and of many colors and without having to alter the perforations of the perforated plate to obtain the different designs, the panels being interchangeable to obtain different effects.

It is another object of the invention to provide an illuminated motion display sign, which through a single rotation of a perforated plate relative to a perforated stationary plate, the design will appear a plurality of times for each revolution of the rotating plate and wherein the showings of the designs a scintillating and patterned effect will be had leading up to the burst of color or display of the design or lettering and upon a continuing rotation a receding of the patterned and scintillating effect is had, with this cycle repeating itself several times throughout the single revolution of the rotating plate, whereby reducing the wear of moving parts and the power required to rotate the rotating plate for effecting the desired display.

Other objects of the invention are to provide an illuminated motion display sign, having the above objects in mind which is of simple construction, inexpensive to manufacture, has a minimum number of parts, is compact, the principle of which being adaptable for either window display, large signs or toys, of pleasing appearance, easy to install, self-supporting, and efficient in operation.

For other objects and a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of the present illuminated motion display sign embodying the features of the present invention;

Fig. 2 is a collective and perspective view with fragments of certain of the parts extended from one another and looking into the open housing and upon the lamp source and motor operated parts;

Fig. 3 is an enlarged fragmentary sectional view taken generally on line 3—3 of Fig. 2;

Figs. 4, 5, and 6 are fragments of the perforated plates illustrating respectively the different arrangements of the holes of the device which may be used and also with Fig. 6 showing the use of a square type of hole;

Fig. 7 is a perspective view of a modified form of the invention wherein the advertising or design panel is disposed upon the front of the housing and in front of the perforated plates;

Fig. 8 is an enlarged fragmentary sectional view taken generally on line 8—8 of Fig. 7;

Fig. 9 is a fragmentary sectional view similar to Fig. 8 but with the advertising sheet or display panel being located in the rear of the perforated plates;

Fig. 10 is a fragmentary perspective and exploded view of the operating parts and of the image presented when the rotating plate has its perforations aligned with the perforations of the stationary plate;

Fig. 11 is a similar collective and perspective view after the rotating plate has been angled five to ten degrees from the view shown in Fig. 10 and showing an image produced in the form of a plurality of squares;

Fig. 12 is a collective and perspective view similar to that shown in Fig. 10 after the rotating plate has been angled to approximately 12 to 18 degrees from the zero location, there being a greater number of squares of light showing on the image;

Fig. 13 is a collective and perspective view similar to Fig. 10 with the rotating plate angled to approximately 45 degrees and with the image being in the form of small dots and of a scintillating nature.

Referring now particularly to Figs. 1, 2 and 3, 10 represents a casing having parallel top and bottom slotted edges 11 and 12 overhanging the side edges and providing respectively grooves 13 and 14 into which a multi-layer design plate 15 and a stationary perforated plate or partial light-emitting member 16 is extended and retained. The stationary plate 16 has geometrically arranged perforations or light-emitting passages equi-distant on centers both vertically and horizontally.

An electric cable 17 extends into the back of the casing 10 and in this cable are wires 18, 19 and 20, Fig. 2, which lead respectively to lamp sockets 21 having respectively lamp bulbs 22 and to an electric motor 23.

The wire assemblies are connected in common with a plug 24 so that on placing the plug in a wall socket, current will be supplied to the lamp bulbs 22 and the electric motor 23.

On the back of the casing 10 is a bearing bracket 25 having a spindle shaft 26 rotatable therein and retained against axial displacement by a screw 26' entering a groove in the shaft, Fig. 3. This shaft has a pulley 27 adapted to be driven by a belt 28 connected with the electric motor 23. The electric motor 23 is of the slow turning type so that the shaft 26 will be turned slowly.

The design plate 15 has design or letter openings for light-emitting areas 30. The design plate 15 is preferably of opaque sheet material somewhat transparent and the letters or designs are stamped, treated or cut out of the sheet to provide letter or design areas more transparent.
than other surrounding areas. Transparent colored exterior layers 31 and 32 are spread over the opposite sides of the design sheet 15 so as to give color to light showing therethrough. These letter or design areas 30 are of such dimension as to be aligned with holes 33 in the stationary perforated plate 16, so that a symmetrical letter or design will be placed over it.

The design plate assembly 15 has a hole 34 in the center thereof through which shaft 26 extends. The stationary perforated plate 16 has a hole 35 aligned with the hole 34 so that the shaft 26 can extend therethrough.

On the front of the stationary plate 16 is positioned a perforating rotating plate or partial light-emitting member 36 having perforations or light-emitting passages 37 of the same vertical and horizontal spacing as the holes 33 in the stationary plate 16 so that when the holes 37 are aligned with the holes 33, the letters 30 will appear on the front of the rotating plate 36 in the manner as illustrated in Fig. 10. The plate 36 is fixed to the shaft 26 by nuts 38 and 39 as so to be rotated thereby.

On each quarter turn of the rotating plate 36 the full design or letters will appear. As the rotating plate is turned through five to ten degrees to assume the position shown in Fig. 11, a different image will display certain large groups of lighted holes 41. Upon the disc 36 being turned further to approximately 12 to 18 degrees as illustrated in Fig. 12, a still different image as indicated at 42 will result. This image will have a larger number of groups of hole displays, as indicated at 43 but the number of holes in each group will be less. As the disc 36 is turned to approximately 45 degrees and to the position illustrated in Fig. 13, an image with distributed single holes, as indicated at 45, will result. At this point, with the rotating plate moving, the lighted holes will have a scintillating effect. Therefore, the reverse showing of the images will be effected after the rotating disc 36 continues through the next 45 degrees. At each quarter turn the full letter or design display image, shown in Fig. 10, as indicated at 46 will appear. The same cycle of images will appear for the next quarter turn of the rotating plate 36.

The design or letter assembly 15 can be made in one piece having a translucent body with the letters being printed with opaque coating or coloring with a different translucency or even transparent to get the desired effect.

The use of the invention in the arrangement of the small openings on both of the plates being of the same size and of the same spacings vertically and horizontally so that they can register respectively with one another to provide full view of the design or letters. Upon rotation of the rotatable plate on a common axis with the stationary plate, the respective holes of the rotatable plate will gradually move out of alignment with the respective holes of the stationary plate to give the above described effects.

In Fig. 4, the holes of the plates are arranged in squares, a hole being in the center of the square. The hole itself is round. With such a plate, the full showing of the design is obtained when each quarter turn of the disc is made.

In Fig. 5, the holes are arranged in triangularly-shaped groups on a plate 36 and with the holes being round as indicated at 37. With the triangular arrangement the holes of the rotatable plate 36 would be aligned with the stationary plate having a similar arrangement of holes with one-third revolution of the rotatable plate 36. A different effect would be obtained, although it would be similar to the effect of the form described, for the respective squares.

In Fig. 6, there is shown a rotatable plate 36 having square holes 37. The square holes are arranged in groups of four and a slightly different appearance will result from the light shining therethrough. The stationary plate will have a similar shaped hole and arrangement of the holes. It will thus be apparent that the holes can be made of different shape and differently arranged but in all instances the arrangement and shape of the rotating plate is identical with the arrangement and shape of the stationary plate. It will also be apparent that the plates can be a facsimile of a perforated panel or plate in both instances and can be in the nature of a film or of a piece of glass treated or made up in such a manner as to appear perforated. One or more rotating plates with similar perforations can be used. Also, if desired, the stationary panel need not be stationary but may be permitted to revolve. In this manner the timing of the plates coming together so that all holes are aligned to display the light-emitting passages.

The plates may be moved in a different manner so long as at one time throughout the cycle of movement all of the perforations of both plates will be aligned with the respective perforations of the other plate. Spacings of one-half inch on centers for the holes or perforations in the plate have been found satisfactory. It will also appear that the design is shown on a separate plate or panel and that the changing effect is had by the relative rotation of the perforated plates.

According to the form of the invention shown in Figs. 7, 8 and 10 the result. The stationary plate is disposed outwardly on the rotating plate. There is provided a casing or housing 50 having top and bottom edges 51 and 52. Each edge has two parallel grooves therein. The grooves in the top edge 51 are indicated respectively at 53 and 54 and in the bottom edge respectively at 53' and 54'. In Fig. 8, a perforated stationary plate 55 is disposed in front grooves 53 and 53' along with a design or advertisement panel 56 that is disposed in front thereof. A rotating panel or plate 57 is disposed in rear of the plate 55 and is rotated by spindle 26' having nuts 38' and 39'. The nut 39' will lie in a hole 58 in the stationary plate 55 and the shaft 26 will not penetrate the design panel 56.

In Fig. 9, the display panel or design plate is disposed in the inner grooves 54 and 54' as indicated at 59. A hole 60 is provided in the design plate 59 to receive shaft 26'. The design plate 59 can be flexed sufficiently so that the shaft 26' can be extended through the hole 60 upon the design plate 59 being extended into the slots 54 and 54'.

It will thus be seen that the rotating plate can be located on the inner side of the stationary plate as well as on the bottom of the exterior of the display signs so revolving or rotating plate will be apparent and its rotation will not be interfered with.

It will be apparent that the design plates can be of any type where portions of the same will transmit more light than the other portions and where sufficient light is passed therethrough with sufficient aligned holes of the plates covering the transparent or translucent part of the design plate as to give a clear image thereof.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claim.

What is claimed is:

An illuminated motion display sign comprising an open front casing, a light source lying within said casing, a first partial light-emitting member overlying the front of the casing and having light-emitting passages arranged in a geometrical manner with their centers equi-distant from each other in both vertical and horizontal directions, a second partial light-emitting member having light-emitting passages arranged in a manner as the light-emitting passages of the first-mentioned partial light-emitting member, said second partial light-emitting member being positioned over the first partial light-emitting member on an axis so that the light-emitting passages of the second partial light-emitting member may be identically registered with the light-emitting passages of the first partial light-emitting member whereby light
may penetrate simultaneously all of the passages of the partial light-emitting members, a stationary design member of a transparent nature aligned with said light-emitting members, said stationary design member having certain areas more transparent than other areas and defining a design, said certain areas being dimensioned to underlie the aligned light-emitting passages of said light-emitting members when their passages are aligned with one another, and means connected to the second light-emitting member to slowly rotate it relative to the first light-emitting member about said axis so that the design areas will be intermittently displayed between light dispersions of group area patterns as the second light-emitting member is rotated.

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