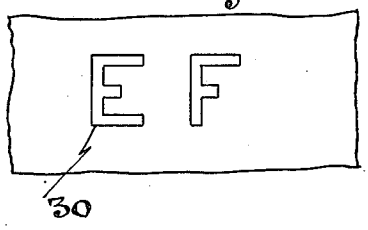
Aug. 25, 1942. T. M. LEWIS ET AL 2,293,990

ILLUMINATED SIGN AND THE LIKE

Filed June 25, 1940 2 Sheets-Sheet 1

Fig. 1.



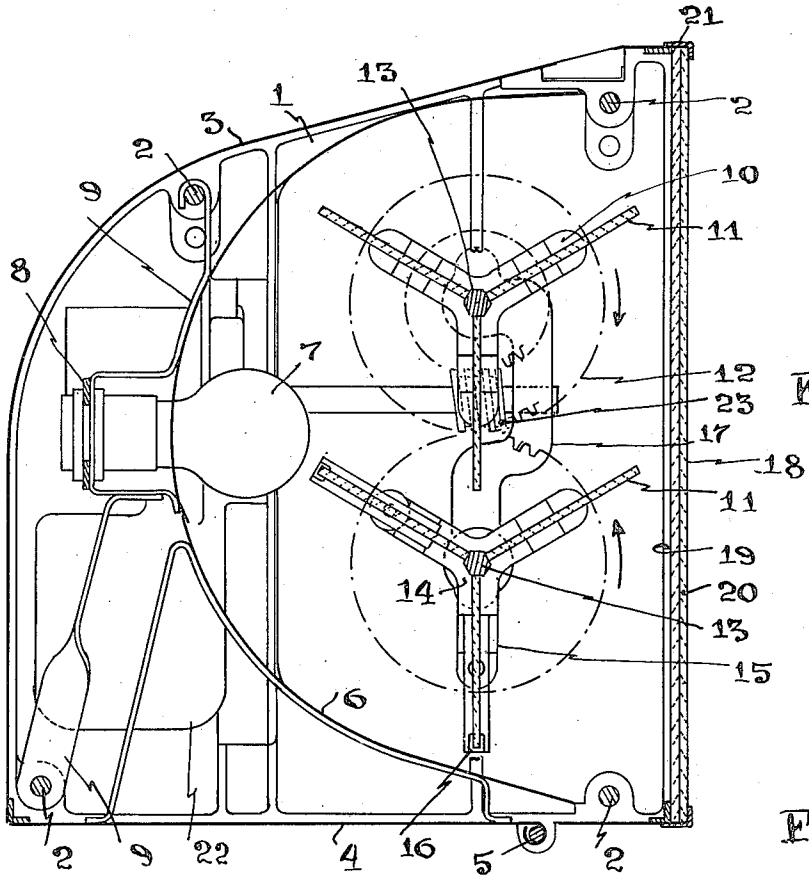


Fig. 2.

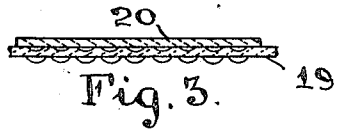
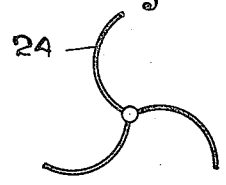


Fig. 3.

Fig. 4.



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Aug. 25, 1942. T. M. LEWIS ET AL 2,293,990

ILLUMINATED SIGN AND THE LIKE

Filed June 25, 1940 2 Sheets-Sheet 2

Fig. 5.

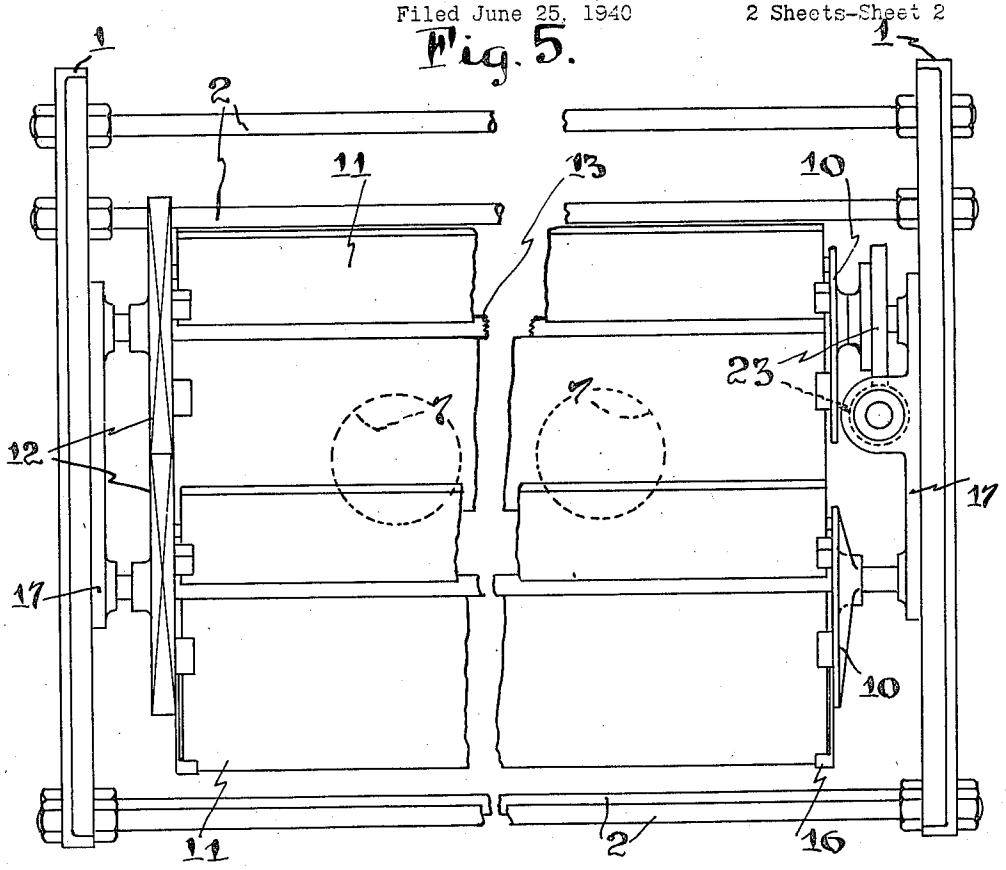


Fig. 6

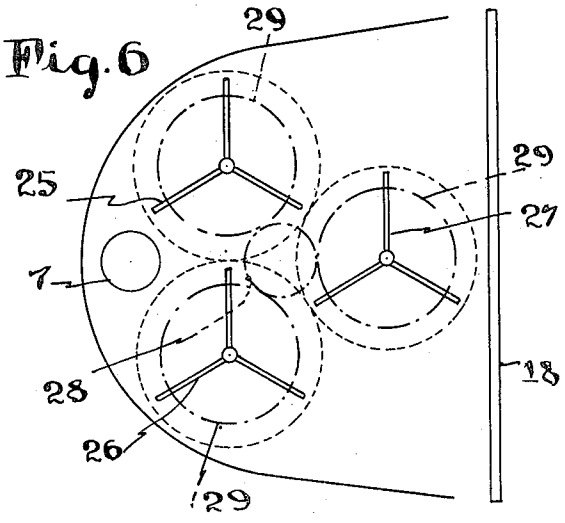


Fig. 7. Fig. 8. Fig. 9.



Fig. 10. Fig. 11. Fig. 12.



Fig. 13. Fig. 14.



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Patented Aug. 25, 1942 2,293,990

UNITED STATES PATENT OFFICE

2,293,990

ILLUMINATED SIGN AND THE LIKE

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Application June 25, 1940, Serial No. 342,398
In Great Britain June 26, 1939

3 Claims. (Cl. 40—132)

This invention relates to illuminated signs such as used for advertising, on cinema fronts, and for other such purposes.

The object of the invention is a method of and means for obtaining optical effects of novel character including blending or mingling of different colours.

The kind of sign to which the invention more particularly relates is that including a display surface, a light source for illuminating said surface, and a moving means interposed between the light source and the display surface.

In a sign according to the invention, a plurality of co-operating rotatory or oscillatory members having arms or vanes are interposed between the light source and the display surface, said arms or vanes being differently coloured so that as they move, the colours projected on to the display surface are continually changing. Many interesting and beautiful colour effects are thereby obtained.

Reference may be made to the appended drawings in which:

Figure 1 is a fragmentary view of part of a display surface.

Figure 2 is a cross-sectional elevation of a sign according to the invention.

Figure 3 is a fragmentary sectional view of a form of glass which may be used in the movable vanes and the display surface of the sign shown in Figure 2.

Figure 4 is a diagrammatic view of another shape of vanes.

Figure 5 is an elevation at right angles to Figure 2 with the display surface and the outer sheet metal casing removed.

Figure 6 shows diagrammatically another form of the invention.

Figures 7–14 depict various cross-sectional shapes of letters or other display matter which may be used on the outer face of the display surface of the sign illustrated in Figure 2.

The vanes may be made of any suitable translucent or transparent material, coloured as desired, may vary in number, and may be straight, curved, or other shape in cross-secton.

Referring to the accompanying drawings, a convenient construction of sign such as shown in Figures 2 and 5 embraces cast end plates 1 held apart by distance bolts 2 and enclosed by sheet metal forming a casing 3, the bottom part 4 of which is hinged at 5 to allow access to the interior. 6 is a two-part reflector supported by ties from upper and lower distance bolts 2 and from the end plates, and 7 denotes electric light bulbs carried by spaced longitudinal bars 8 in turn supported by the ties 9.

In this embodiment, two rotating members 10 each with three radial arms or vanes 11 are employed, and disposed the one above the other at a distance between their axes of rotation less than their diameter so that when passing, a vane of one member moves in the space bounded by two vanes of the other member in the manner of a toothed wheel but without contact, i. e. the vanes overlap in certain positions. The material of which the vanes are made is preferably glass with each vane of a different colour, either ordinary glass, hammered glass such as indicated in Figure 3, or other refracting formation, or other kind. Toothed wheels 12, chain and sprocket, or other means may be employed for maintaining the two members and the shafts 13 on which they are mounted in constant transmissional relation by which means the colour variations appear in a regular and recurring sequence. A convenient mounting for the vanes may embrace an armed spider 14 at each end of the shafts 13 with locating lugs 15 and U section retainers 16 which take over the outer edge of the vane, the shafts being journalled in brackets 17 fixed to the end plates 1.

The casing 3 accommodates the three parts or groups of elemental parts in relative positions such that the light source 7 lies to the rear, the display surface 18 to the front, and the movable members intermediate the light source and the display surface; the light source may be either on, above or below a plane passing through the middle of the casing i. e. a plane midway between the axes of rotation of the two members. The light source will usually take the form of one, or a bank of electric lamps according to the size of the sign.

The display surface is illuminated from the back or rear and includes transparent or translucent parts for the display matter, and opaque or low-light-transmission parts where little or no light is desired. The latter parts may be blacked out by paint, a convenient and economical method of producing original equipment, or allowing the display matter to be readily changed as the user desires. For enhancing the effects, the display surface may consist of a sheet of hammered glass 19, in which case an outer sheet of plain glass 20 may be secured thereto to facilitate painting of the display matter on the surface 18 seen by the observer. The composite sheet is held in place by an angle section rim 21.

Rotational movement of the members is derived from any appropriate source of power e. g. an electric motor 22 installed at the back of the

casing and connected with one of the shafts 13 by worm gearing 23, hot air from the light source or from a heating element, or otherwise.

The largest number of colour variations occur when each vane is of different colour, though fewer variations produce attractive effects. The vane which is intercepting a large proportion of light from the light source (in the embodiment shown and in the depicted position of the vanes, the vertical vane of the upper member) produces a wide band at the middle of the display surface, but as the remaining direct and reflected light from the source passes through the other four vanes, different parts of the beam are coloured in different combinations of colour in what appears to be flowing light or liquid, according to the direction of the rays which may be axial, converging or diverging in relation to the horizontal axis of the casing and a line joining the centre of the light source and the middle of the display surface. As however, the vanes are moving in opposite directions of rotation, the proportions of light coloured by the several vanes is continually changing, and thus a particularly beautiful result accrues.

If desired, provision such as a spline connection between shaft and gear wheel and a locking setscrew, may be incorporated for enabling the relative angular positions of the two sets of vanes to be altered to obtain a different colouring. Or provision may be made for sliding the lower shaft and its member out of mesh, and re-meshing the two gear wheels at any one of a number of different positions so long as the vanes do not touch, each position giving a difference in the colouring seen on the display surface, or a difference in cyclic variations.

In Figure 4 is illustrated a modification in which the vanes 24 of the moving member are curved in cross-section.

In another modification depicted diagrammatically in Figure 6, three movable members are incorporated with two (denoted by 25, 26) disposed somewhat as described in the arrangement of Figure 2, and the third identified by 27 in advance of or to the rear and intermediate to the two superposed ones. In this case the spacing of the latter may be somewhat increased and their peripheral orbits arranged not to meet, so that if desired the speeds of revolution need not be identical. One arrangement of gears for driving the three shafts at different speeds comprises a common driving wheel 28, and three driven wheels 29 in mesh therewith, the driven wheels each having a different number of teeth, say one tooth difference. Another gearing is indicated in dotted lines, two meshing wheels being mounted at one end of the member shafts, and two wheels at the opposite ends. Differential rotational speeds augment the number of variations in colouring of the display surface.

Differential speeds of rotation may also be applied to two movable members such as illustrated in Figure 2 provided that the ends of the vanes are spaced so that they do not touch while rotating. In one example of this kind, one of the members is placed nearer to the light source than the other and the vertical spacing reduced to provide vertical overlap without touching so that uncoloured light does not pass on to the display surface.

Since the axes about which the members rotate are transverse or at right angles to the general direction of the light projected from the source, the vanes travel towards the source for half of their revolution and away from it during the other half, setting up effects on the light colouration which are not present when the intercepting medium remains at a constant distance from the light source.

Satisfactory results are obtainable when the display surface is plane, but if desired the letters 30 Figure 1 or other display shapes may stand proud of or be raised from the surface, in which variation any one of numerous cross-sections may be adopted. Figures 7, 8, 9, 10, 11, 12, 13 and 14 are plan views of examples of this kind, being respectively semi-circular with the curved face outwards, triangular, circular, elliptical, square, rectangular, rectanguloid with an outer rounded face, and annular; any of the solid sections illustrated may alternatively be hollow, and any one may be filled with liquid. These letters may be secured to the display surface in any one of the several conventional well-known manners, for example, by cementing clamps or other securing means. This detail forms no part of the present invention, and illustration thereof is deemed unnecessary.

Having thus described our invention, what we claim is:

1. An illuminated sign, including a display surface, a light source for illuminating said surface, and a plurality of cooperating sets interposed between the light source and display surface, each of the sets being movable relative to an axis substantially parallel to the direction in which the light is projected from the light source, and each set including a rotatably mounted shaft and a plurality of translucent colored vanes carried by and radial of the shaft, with the vanes of one set moving in a path passing through the path of movement of the vanes of another set.

2. A construction as defined in claim 1, wherein the vanes are differently colored and move successively from a position in a plane coincident with the plane of the direct rays from the light source to a plane directly transverse such direct rays, the color bands from at least two of the vanes of a set constantly moving relative to each other over the display surface to simulate a series of flowing bands of light movement over the display surface in constantly changing color variation.

3. A construction as defined in claim 1 wherein the sets are arranged with their axes out of vertical alignment relative to the display surface.

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