

April 25, 1939.

B. ROBERTS

2,155,618

DISPLAY SIGN

Filed Nov. 4, 1936

FIG. 1.

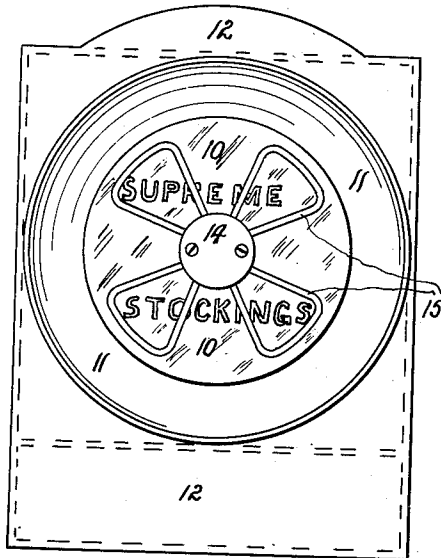


FIG. 2.

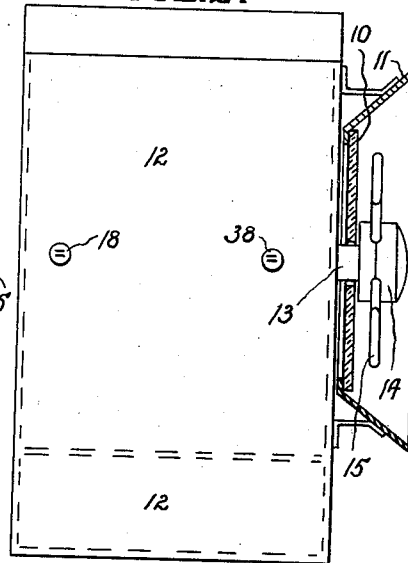


FIG. 3.

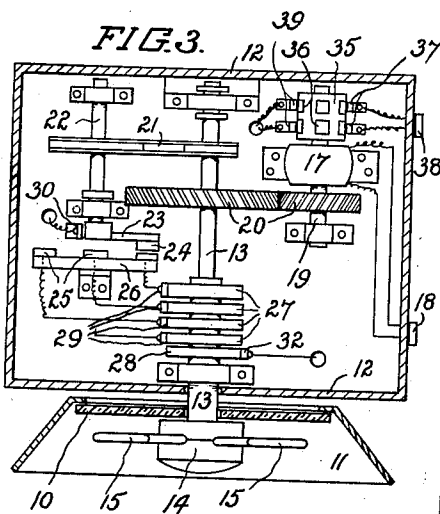


FIG. 4.

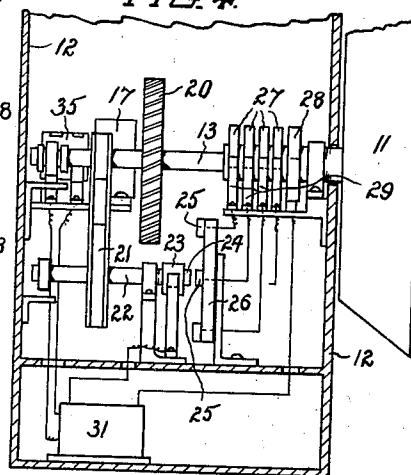


FIG. 5.

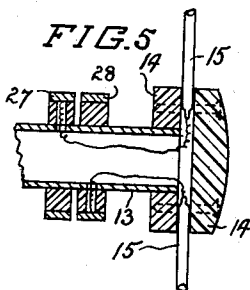


FIG. 6.

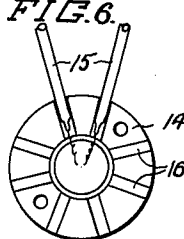


FIG. 7.

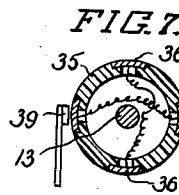
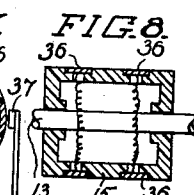


FIG. 8.



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UNITED STATES PATENT OFFICE

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DISPLAY SIGN

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In New Zealand May 25, 1936

1 Claim. (Cl. 40—130)

This invention has been devised with the object of producing a construction or combination of apparatus for the display of signs of any desired nature. This apparatus provides for the signs being displayed in a brilliant manner amid a surrounding of kaleidoscopic flashing sheet light effects produced by the movements of coloured lights in constantly changing relationship across or about the sign forming matter.

The invention comprises broadly the combination with a mirror background on which the sign matter is suitably set out, of a series of coloured electric lights arranged to radiate from a boss upon a spindle positioned at about the centre of the background so that in the rotation of the spindle the lights pass, as a wheel, in front of the mirror to produce the effects beforementioned by direct vision and reflection from the mirror surface in combination. These coloured lights may be varied in their nature and colouring in any number of different ways and are automatically controlled to alternate with others of different nature or colours in their illumination as they are caused to rotate in front of the sign, in order thus to obtain changing effects in luminosity and colouring.

The invention in its more detailed features comprises the employment of a sign background of mirror nature and of a spindle passing out through the front of the sign and adapted to be rotated by an electric motor through any approved gearing, to drive it at a desired rate of speed. On the outer end of the spindle are mounted, in a radial manner, a number of glass tubes or gas filled tubes designed to be illumined by the passage of electric current through them in a well known manner and these are connected through commutator or other approved make and break apparatus combined with the spindle whereby on the rotation of the spindle the said light forming tubes will be switched in and out in any desired sequence or relationship so that when the lights are coloured, the aforesaid different effects will be produced by the movements of the lights in front of the mirror background.

The invention also comprises the combination in such an apparatus of means whereby, when it is used in circumstances in which the light tubes are of the nature to require alternating current and the supply available is of direct current nature, the supply to the tubes may be converted into the alternating character required.

The apparatus designed also may have embodied therein the necessary transformers and resistances required for its effective illumination.

The invention is illustrated in the accompanying drawing as concerned with a particular and suitable construction and arranged of its operating and illuminating means and as adapted for removal or transport from place to place as a complete display unit, but it will readily be understood that the general features of construction and operation may be adapted to suit other circumstances whether in conjunction with a transportable or a permanent structure of the apparatus.

In this drawing:—

Figure 1 is a front elevation of the apparatus.

Figure 2 is a side elevation thereof, the sign portion proper being shown in section.

Figure 3 is a plan of the whole apparatus, the containing casing for the operating means being shown in section.

Figure 4 is a side elevation of the operating means with the casing in section.

Figure 5 is an enlarged side sectional elevation showing the manner of mounting the light tubes and supplying current thereto.

Figure 6 is a front elevation of the light tube carrying arbor with the front portion removed to show a manner of mounting and connecting the light tubes.

Figure 7 is a sectional end elevation, and

Figure 8 is a longitudinal section of the apparatus for use in converting direct into alternating current for the purposes of this invention.

In giving effect to the invention a mirror or reflecting surface plate 10 is provided and is surrounded by a bevelled rim 11 also having a surface of suitable light reflecting nature. These are made as fixtures to any suitable framing or like support. In the drawing they are shown as being attached to the front of a cabinet 12 in which are assembled the operating means hereinafter described so as to constitute a readily portable unit to allow for its position being changed from time to time, as desired. The whole apparatus may however be embodied in a stationary structure. Also the size of the mirror and its framing may be of any desired size and, in addition, its outline shape may be other than the circular shape shown in the drawing.

The matter to be displayed is set out on the surface of the mirror 10, being placed thereon in any manner suitable for its display in the circumstances associated with its use.

A spindle 13 is mounted to project forwardly through the centre of the mirror 10 and on its forward end such spindle has a boss 14 made of approved electric insulator material affixed to it.

This boss carries a number of approximately U-shaped light tubes 15 arranged to radiate therefrom and mounted in the boss so that their ends are fitted into recesses therein, as for instance in the manner shown in Figures 5 and 6 where the boss is shown as being made in two parts, an inner part having radial grooves 16 in its face to receive the tube ends, and an outer part secured to the inner part and covering the groove inset tubes. The current supply connections for the tubes are then carried inwardly through the spindle 13 which is made tubular at this end for such purpose.

These light tubes 15 are made of any of the common types designed to provide for coloured light being emitted when electric current is passed through them. The several tubes may be of respectively different colours and each tube may itself be made to give different colour effects in its length. Consequently with the spindle set rotating to carry the tubes round like spokes of a wheel in front of the mirror surface, brilliant kaleidoscopic flashing sheet light effects may be produced to draw attention to the matter displayed on the mirror surface. By providing for the tubes being illumined in alternation as they move round, and in any desired order, an additional characterization is given the display.

The means for operating the apparatus shown in the drawing are suitable for these purposes but other means may be employed to obtain the same or similar effects, such means following known rules of construction and assembly as concerned with the governing of supply current to moving electric lights.

These means comprise an electric motor 17 connected with a plug-in terminal 18 on the side of the cabinet 12, the spindle 19 of which motor is connected by gearing 20 with the spindle 13 to rotate such at the desired speed. This spindle, by means of the chain and sprocket gearing 21, drives a countershaft 22 mounted in the cabinet parallel therewith. The countershaft has a contact making wiper arm 23 fixed on one end which arm carries a contact member 24 that is adapted to engage, in turn, a series of four contact blocks 25 affixed to the side of a carrier plate 25 that is mounted in the cabinet opposite the end of the countershaft 22. These blocks 25 are spaced at suitable intervals apart and are insulated from their carrying plate and from one another. Upon the spindle 13 are mounted four side by side commutator rings 27 which rings are respectively wired through the hollow end of the spindle to the positive ends of the four light tubes 15. A fifth commutator ring 28 is also mounted on the spindle 13 and the return ends of the four light tubes are connected to this ring by a common return. The four contact blocks 25 are connected with the respective rings 27 through brushes 29 and the wiper arm 23 is electrically connected through a brush 30 with one pole of the output of a transformer 31 arranged within a chamber in the bottom of the cabinet 12. The return commutator ring 28 is connected by means of the brush 32 with the other pole of the transformer output.

Thus with current supplied to this transformer from any convenient source, its output current

is caused as the spindle 13 and the countershaft 22 rotate, to be directed to each of the light tubes in turn. Any desired sequence as concerned with the order of the tubes may be provided for by arranging the connections between the blocks 25 and the several commutator rings 27 according to the requirements. Also the number of tubes and the periods and times and order of illumination are capable of being varied by the appropriate variations in the number and arrangement of the several parts.

The transformer is used to cause the necessary step up in voltage required for the gas filled light tubes, but this may be dispensed with when the supply voltage is sufficient for the type of light tube employed.

The apparatus also may be adapted for supplying the alternating current to the light tubes required for their purposes, in cases where the supply is of the direct current type, by introducing into the supply circuit to the transformer, means for rapidly and automatically making and breaking the current flow to such transformer.

These means are shown in Figures 3, 7 and 8 of the drawing and comprise a drum 35 of an electric insulating material mounted on one end of the spindle of the driving motor 17, into the surface of which drum are set two circumferential series of contact blocks 36, with the blocks of each series disposed in pairs positioned diametrically opposite each other and electrically connected together by wiring inside the drum, as indicated in the sectional views Figures 7 and 8. Positioned along one side of the drum are two contact brushes 37 to which the leads from the supply plug 38 are respectively connected and which brushes respectively engage the drum in the circumferential lines of the two series of blocks. Another pair of brushes 39 are positioned on the other side of the drum to respectively engage the drum in the lines of the blocks and at points respectively diametrically opposite to the two brushes 37. These brushes 39 are connected respectively with the two poles of the transformer input. Consequently as the drum 35 is rotated through the running of the motor 17, the current flow is alternately completed through the brushes and contact blocks as they come into coincident positions, and broken by the interposition of the drum surfaces between the blocks.

I claim:—

A display sign characterized by the combination with a mirrored surface bearing the sign thereon, of a boss disposed centrally in such surface, a series of electric light tubes arranged to radiate from said boss and disposed in front of said mirrored surface, means for imparting rotation to the boss and light tubes, to cause such tubes to move round across the front of the said display surface whereby said tubes are visible directly and by reflection on said mirrored surface, a beveled rim surrounding the mirrored surface and said tubes and having a light reflecting surface, and means whereby the supply of electric current to each of the said tubes may be alternately effected and broken in any desired order relatively with the others.

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