Nov. 14, 1950 G. L. CASTILLON 2,530,044

ILLUMINATED CHANGEABLE SIGN DEVICE

Filed July 25, 1947 3 Sheets-Sheet 1

FIG. 1.

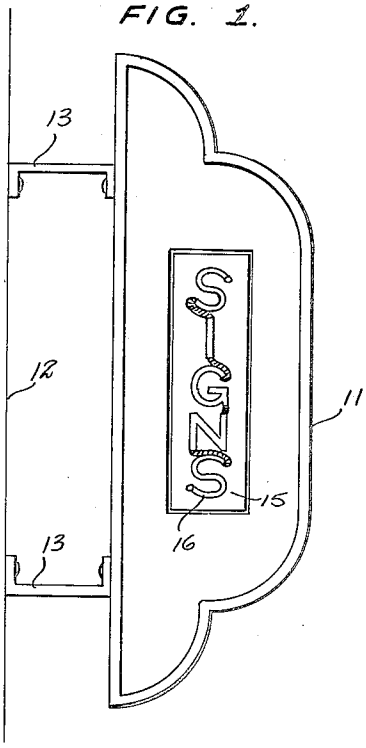
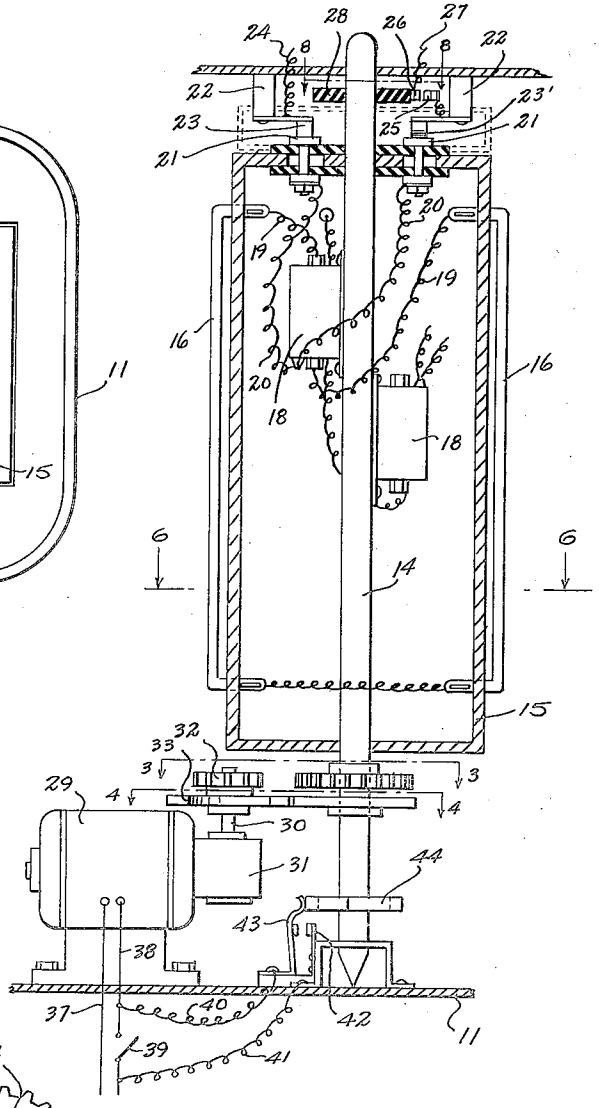


FIG. 2.



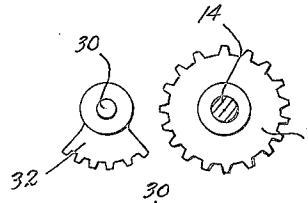


FIG. 3.

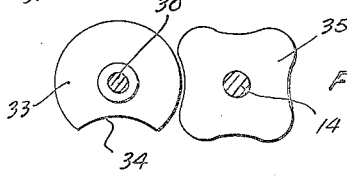


FIG. 4.

INVENTOR.
GUILLERMO L. CASTILLON,
BY

McMorrow, Berman & Davidson
ATTORNEYS.

Nov. 14, 1950 G. L. CASTILLON 2,530,044

ILLUMINATED CHANGEABLE SIGN DEVICE

Filed July 25, 1947 3 Sheets-Sheet 2

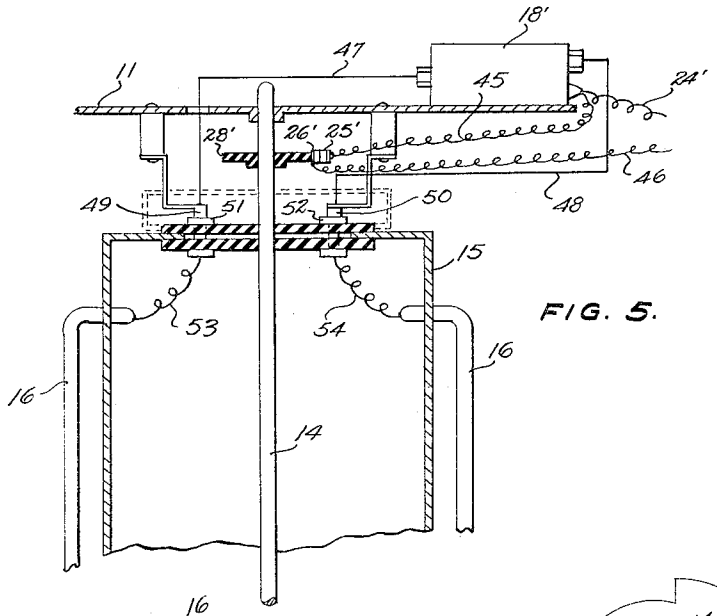


FIG. 5.

FIG. 8.

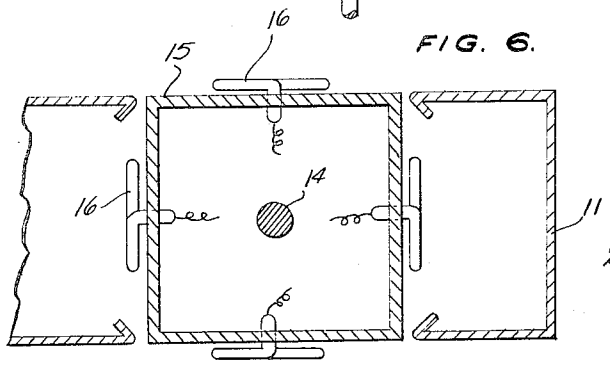
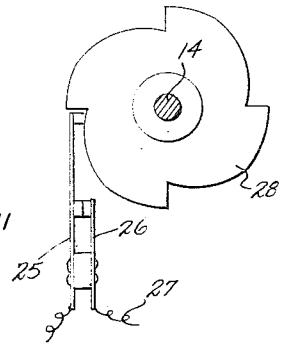


FIG. 6.



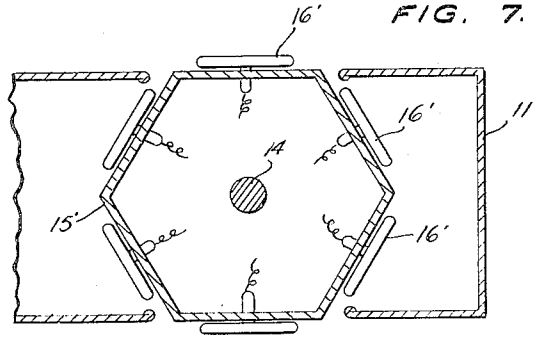


FIG. 7.

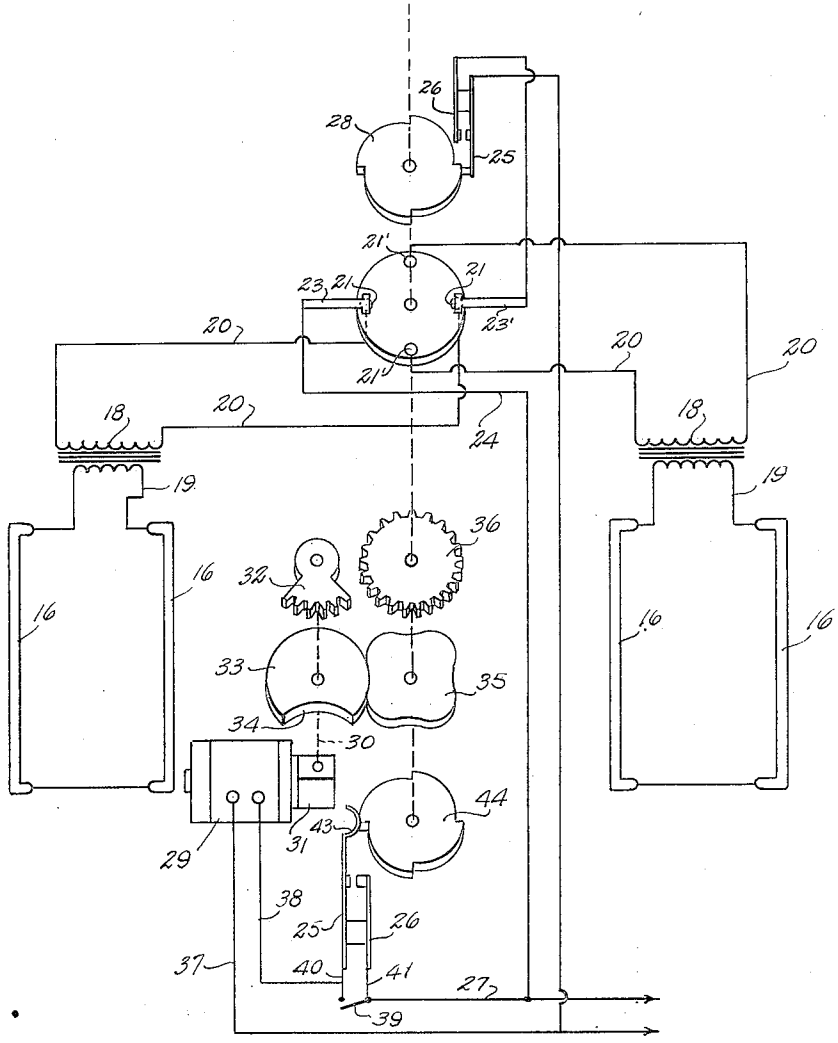
INVENTOR.
GUILLERMO L. CASTILLON,
BY
McMorrow, Berman & Davidson
ATTORNEYS

Nov. 14, 1950 G. L. CASTILLON 2,530,044

ILLUMINATED CHANGEABLE SIGN DEVICE

Filed July 25, 1947 3 Sheets-Sheet 3

FIG. 9.



INVENTOR.
GUILLERMO L CASTILLON,
BY
McMorrow, Berman + Davidson
ATTORNEYS.

Patented Nov. 14, 1950 2,530,044

UNITED STATES PATENT OFFICE

2,530,044

ILLUMINATED CHANGEABLE SIGN DEVICE

Guillermo Lopez Castillon, San Antonio, Tex.

Application July 25, 1947, Serial No. 763,682

1 Claim. (Cl. 40—77)

1

This invention relates to illuminated changeable signs, and more particularly to changeable signs of the neon tube type.

A main object of the invention is to provide a novel and improved sign device of the rotary changeable type which is very simple in construction, compact in size and reliable in operation.

A further object of the invention is to provide an improved changeable sign device which is inexpensive to manufacture, sturdy in construction and which is easy to maintain in repair.

Further objects and advantages of the invention will become apparent from the following description and claim, and from the accompanying drawings, wherein:

Figure 1 is a front elevational view of a sign device constructed in accordance with the present invention.

Figure 2 is an enlarged vertical cross-sectional detail view taken through the axis of and showing the operating mechanism for the rotor portion of the sign device of Figure 1.

Figure 3 is a horizontal cross-sectional detail view taken on line 3—3 of Figure 2.

Figure 4 is a horizontal cross-sectional detail view taken on line 4—4 of Figure 2.

Figure 5 is an enlarged fragmentary vertical cross-sectional detail view taken through the upper portion of a modification of a changeable sign rotor constructed according to the present invention.

Figure 6 is a horizontal cross-sectional view taken on line 6—6 of Figure 2.

Figure 7 is a view similar to Figure 6 but showing a modified cross-sectional shape for the sign rotor thereof.

Figure 8 is an enlarged horizontal cross-sectional detail view taken on line 8—8 of Figure 2.

Figure 9 is a schematic view of the electrical circuits showing the switches and switch actuating means of the changeable sign shown in Figure 2 of the drawings.

Referring to the drawings, 11 designates generally a sign body secured to the wall 12 of a building by supporting brackets 13, 13. The sign body is hollow, as shown in Figures 6 or 7, and journalled vertically therein is a shaft member 14. In the embodiment of Figures 2, and 6, shaft 14 carries a vertically extending hollow rotor body 15 which is square in cross-sectional shape, the front and rear walls of the sign body being apertured so that the rotor body 15 may be positioned with a pair of its opposite faces in substantially flush relationship with the front and

2

rear walls of the sign body, and by rotating the rotor body and shaft 14, successive faces of the rotor body may be presented at each of the sign body wall apertures. Each of the rotor body faces carries a sign tube 16 which may be a conventional neon tube or other suitable gas tube employed for forming signs.

In the embodiment of Figure 7, the rotor body designated at 15' is hexagonal, and each face thereof carries a sign tube 16', the faces of the rotor body being adapted to be successively presented at the respective opposed front and rear wall apertures of the sign body responsive to rotation of the shaft 14 in the same manner as described in connection with the embodiment illustrated in Figures 2 and 6.

In the embodiment of Figure 2 the shaft 14 carries a pair of transformers 18, the secondary of each transformer being connected to a series arrangement of opposing sign tubes 16, 16 by conductors 19, 19. The primary of each transformer 18 is connected by wires 20, 20 to a respective pair of diametrically opposed contact terminals 21, 21' carried by the top wall of the rotor body 15, the respective pairs of contacts 21, 21' being on diameters 90° apart in the embodiment of Figures 2 and 6. In the embodiment of Figure 7 there are three transformers and the primary contacts thereof are carried on the top wall of the rotor body on diameters 60° apart.

Secured to the upper wall portion of the stationary sign body 11 by suitable insulators 22, 22 are pairs of opposed brush members 23', 23' adapted to engage sets of opposed contacts 21 and 21' to energize a transformer 18 when the sign tubes associated therewith are exposed at the respective front and rear surfaces of the sign 11. A wire 24 connects brush member 23 to one of the alternating current source line wires. Brush member 23' is connected through a pair of contact arms 25 and 26, shown in Figure 8 to a wire 27 which is connected to the other alternating current source line wire.

Contact arms 26 and 25 are supported by suitable insulator means, not shown, from the top wall of the sign body 11. Contact arm 25 is resilient in nature and is biased so that it normally engages contact arm 26. The shaft 14 carries a cam 28 of insulating material which engages the end of contact arm 25 and is shaped so as to maintain arm 25 disconnected from arm 26 until the shaft 14 has rotated into a position corresponding to a flush relation of a face of rotor body 15 with an adjacent face of the sign body. In this position the end of arm 25 enters a notch

in cam 28 whereby arm 25 is released and engages the arm 26, thereby completing the primary circuit of the corresponding transformer 18, said circuit being already closed at the contacts 21 and 21' by the respective brushes 23, 23'.

Mounted on the lower portion of the stationary sign body 11 is a motor 29 whose shaft is geared to a vertical shaft 30 journalled in a gear box 31 carried by said motor. Shaft 30 carries a gear segment 32 and a disc member 33. Segment 32 substends an angle of 90° and disc member 33 is formed with an arcuate notch 34 also subtending an angle 90° and aligned with gear segment 32. Shaft 30 is located adjacent rotor shaft 14. Shaft 14 carries a generally square cam member 35 coplanar with disc member 33 and extending at its edge adjacent the periphery of said disc member. Shaft 14 also carries a gear 36 adapted to mesh with the gear segment 32.

As shown in Figures 3 and 4, gear segment 32 is out of mesh with gear 36 for three quarters of a cycle of rotation of shaft 30. During this period, the sign-bearing surfaces of the rotor 15 remain stationary with respect to the sign body 11. When segment 32 rotates into mesh with gear 36, shaft 14 also rotates, carrying with it the sign-bearing surfaces of the rotor 15. A corner of cam member 35 enters the notch 34 of disc member 33, and when segment 32 completes its engagement with gear 36 the notch 34 moves past said corner, at the same time causing the cam 35 to be positively rotated to a predetermined position wherein the sign-bearing surfaces of the rotor are in proper flush relation with respect to the outer surfaces of the sign body.

Motor 29 is energized from the current source by wires 37 and 38, and included in wire 38 is a control switch 39. Connected across switch 39 by wires 40 and 41 is a second switch comprising a stationary contact arm 42 to which wire 41 is connected and a movable contact arm 43 to which wire 40 is connected. Contact arm 43 is resilient and is self-biased toward contact with arm 42. The end of arm 43 is engaged, however, by a cam 44 carried by shaft 14, said cam 44 being shaped similarly to cam 28 but being arranged on shaft 14 so that the contacts 42 and 43 are closed only during the period when gear segment 32 is in mesh with gear 36. This insures that a quarter cycle of rotation of shaft 14 will be completed even if switch 39 is opened during said quarter cycle. The sign-bearing surfaces carried by rotor 15 will therefore never be left in partly rotated positions when the control switch 39 is opened.

In normal operation of the device, switch 39 is closed and motor 29 is energized causing shaft 30 to rotate continuously. By the process above described, this causes shaft 14 to be rotated a quarter turn at successive regular intervals. As the rotation of the shaft 14 begins, the primary circuit of the transformer 18 energizing the exposed sign tubes at the starting position of rotor 15 is opened at brushes 23 and 23'. The primary circuit for the other transformer is closed at brushes 23 and 23' and at contacts 25 and 26 just as the shaft 14 completes its quarter cycle of rotation. The first sign tubes 16, 16 are therefore dark while the rotor 15 moves through its quarter cycle of rotation and a successive set of sign tubes is energized as said quarter cycle is completed. The tubes remain energized through substantially the time period during which gear segment 32 is out of mesh with gear 36.

Where the cross-sectional shape of the rotor is hexagonal, as in Figure 7, the gear segment on shaft 30 and the arcuate notch in the disc member thereon subtend angles of 60°, and the cam member on shaft 14 is generally hexagonal rather than square. This provides a 60° angle of rotation of shaft 14 for every complete cycle of rotation of shaft 30. The switch cams 28 and 44 are formed to open and close their associated contacts at 60° intervals instead of 90° intervals.

In the embodiment of Figure 5 only a single transformer is employed, said transformer, shown at 18', being mounted on the top wall of the sign body 11. One of the primary wires 24' is connected to one of the alternating current source line conductors. Supported from the top wall of the sign body by suitable insulating means, not shown, are the separable contact arms 25' and 26' similar to the arms 25 and 26 shown in Figure 8, and engaging the end of arm 25' is a notched cam 28' carried by shaft 14, said cam 28' being similar to cam 28 of Figure 8. The other primary wire 45 of transformer 18' is connected to contact arm 25', and a wire 46 connects arm 26' to the other alternating current source conductor. The secondary wires 47 and 48 of transformer 18' are connected to respective diametrically opposed brushes 49 and 50 secured by suitable insulators to the top wall of sign body 11. The brushes 49 and 50 are adapted to engage respective diametrically opposed contact terminals 51 and 52 carried on the top wall of rotor 15 when respective opposite associated sign-bearing faces of rotor 15 are flush with the outer surfaces of sign body 11. The oppositely located sign tubes 16, 16 carried on said faces are connected in series arrangement and are connected to terminals 51 and 52 by respective wires 53 and 54. When each opposite set of tubes 16, 16 is in the position shown in Figure 5, said tubes are energized from the secondary of transformer 18' through the brushes 49 and 50 and the respective contact terminals 51 and 52 associated with said tubes. In this position of the rotor 15 the primary circuit of transformer 18' is closed at contact arms 25', 26' by the release of contact arm 25' into a notch of cam disc 28' in a manner similar to the manner in which contact arm 25 is released by cam 28 in Figure 8.

The other details of the structure of Figure 5 are the same as those described in connection with the preceding embodiments of the invention. The operation of the embodiment of Figure 5 is therefore substantially thes ame as described in connection with said preceding embodiments except that the sign tubes 16, 16 are successively energized from the secondary of the single stationary transformer 18' instead of from individual transformers carried on the rotor of the apparatus.

While certain specific embodiments of a changeable illuminated sign device have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, its intended that no limitations be placed on the invention other than as defined by the scope of the appended claim.

What is claimed is:

A changeable sign comprising a support, a regular polygonal rotor, a shaft extending through said rotor being fixed thereto and rotatably journalled in said support, a motor, a continuously rotating drive shaft operatively connected to said

motor, a gear fixed on said rotor shaft, a gear segment fixed on said drive shaft engageable with said gear for intermittently rotating said rotor, a disc fixed on said drive shaft and formed with an arcuate recess on one side in registry with said gear segment, a cam member on said rotor shaft formed with arcuate side edges for engagement with said disc and arcuate corners engageable in the recess in said disc for holding said rotor while said segment is out of mesh with said gear, lamps carried by the sides of said rotor, circuit connecting means for said lamps including a resilient contact arm, a cam on said rotor shaft engaging said contact arm for breaking the lamp circuit in timed relation to the rotation of said rotor, a motor circuit for said motor including a control switch, and a shunt switch across said latter switch, said latter switch including a resilient contact arm engageable with a fixed contact member, and a cam on said rotor

shaft associated with said first cam and said segment gear engaging said latter resilient contact arm for shunting said control switch thereby connecting the motor circuit to complete each intermittent movement of said rotor.

GUILLERMO LOPEZ CASTILLON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
861,798	Bohannon	July 30, 1907
1,803,597	Craig	May 5, 1931
1,913,504	Nachumsohn	June 13, 1933

FOREIGN PATENTS

Number	Country	Date
74,522	Germany	Feb. 23, 1923