June 8, 1954 W. C. WEBSTER ET AL 2,680,316

ADVERTISING SIGN

Filed Dec. 18, 1950

4 Sheets-Sheet 1

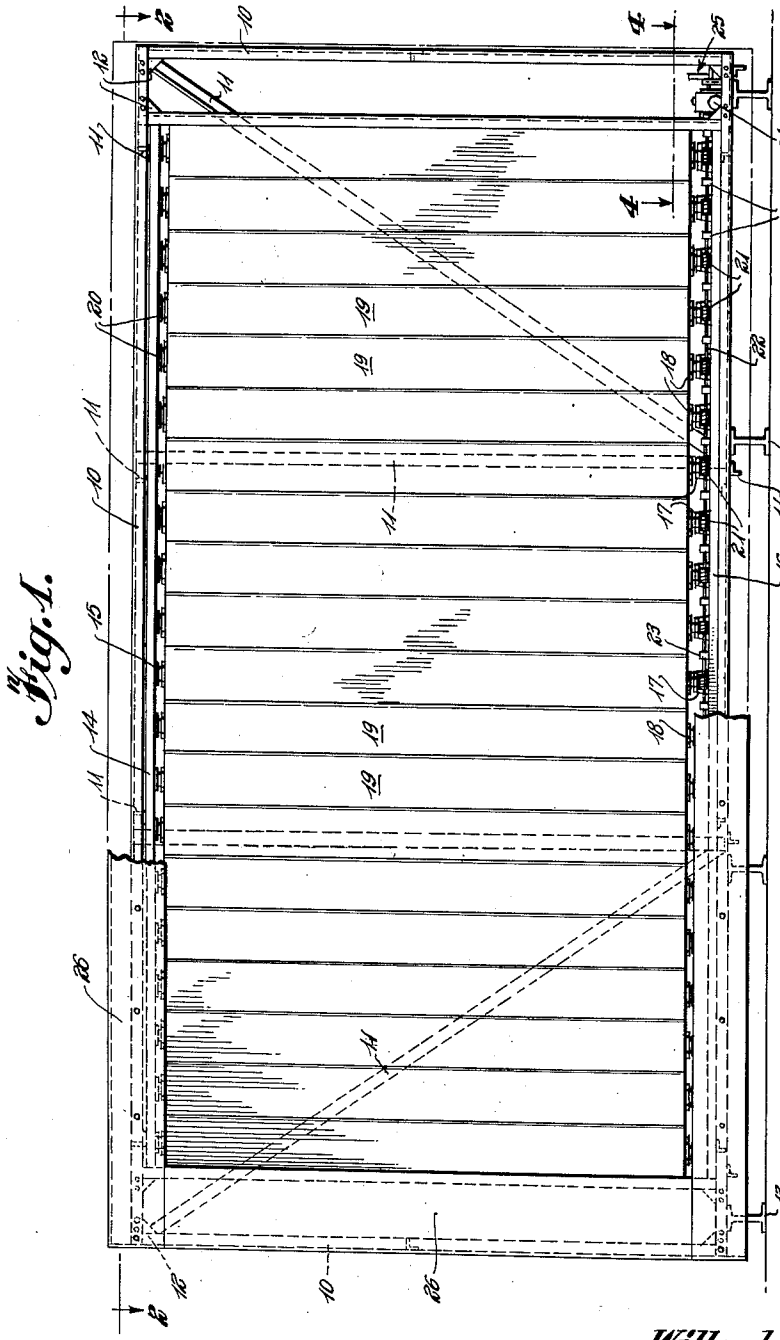


Fig. 1.

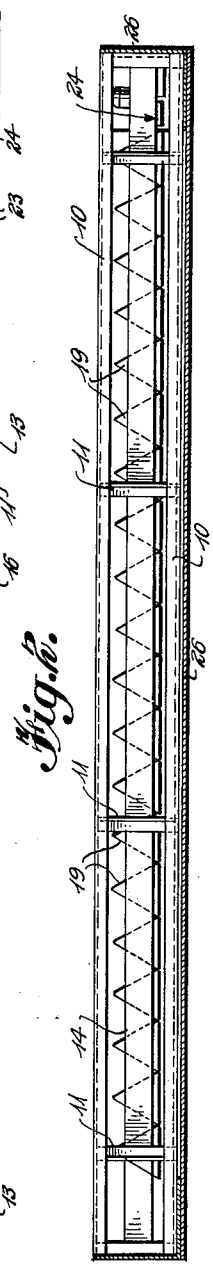


Fig. 2.

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4 Sheets-Sheet 2

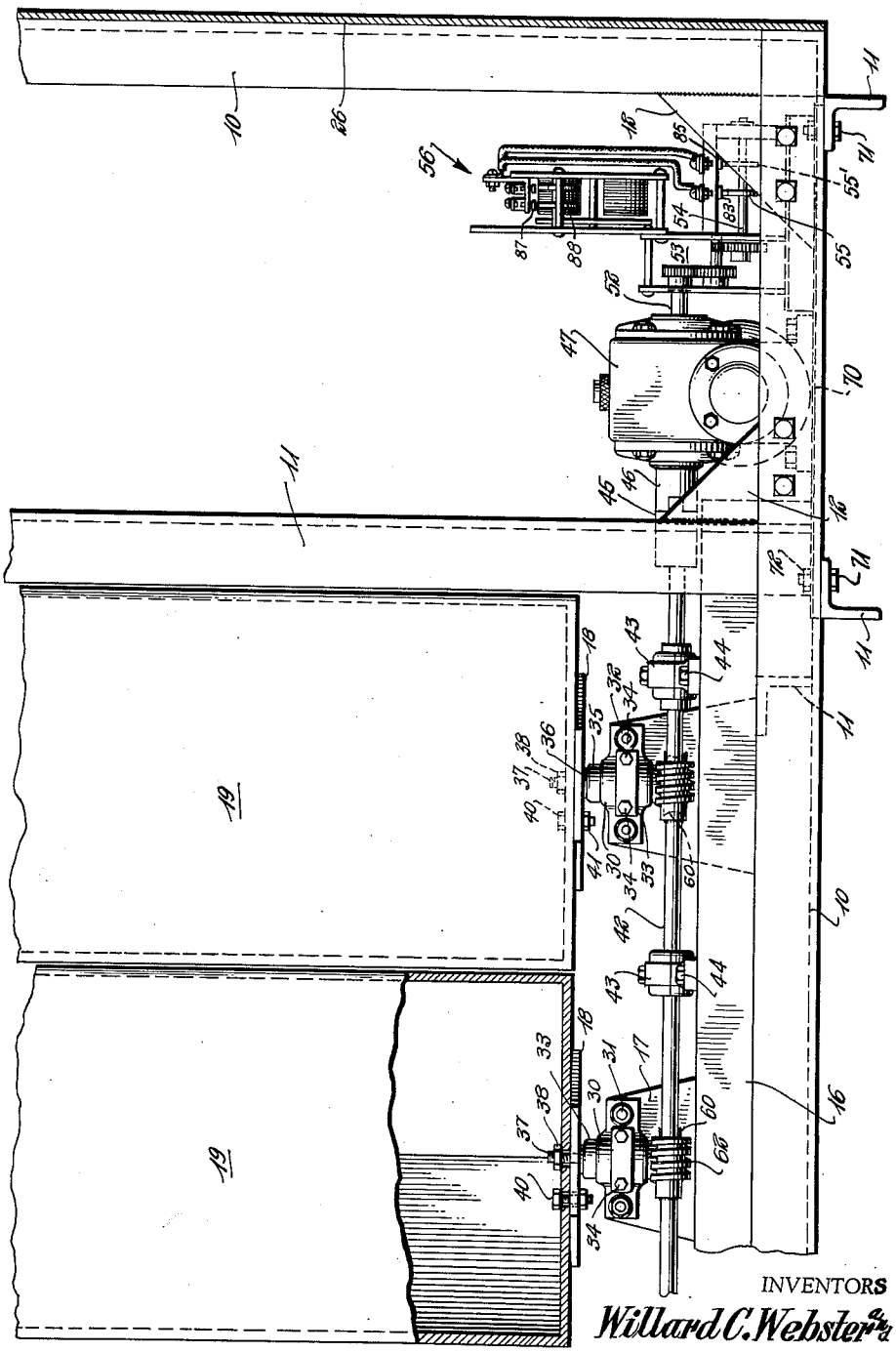


Fig. 3.

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4 Sheets-Sheet 3

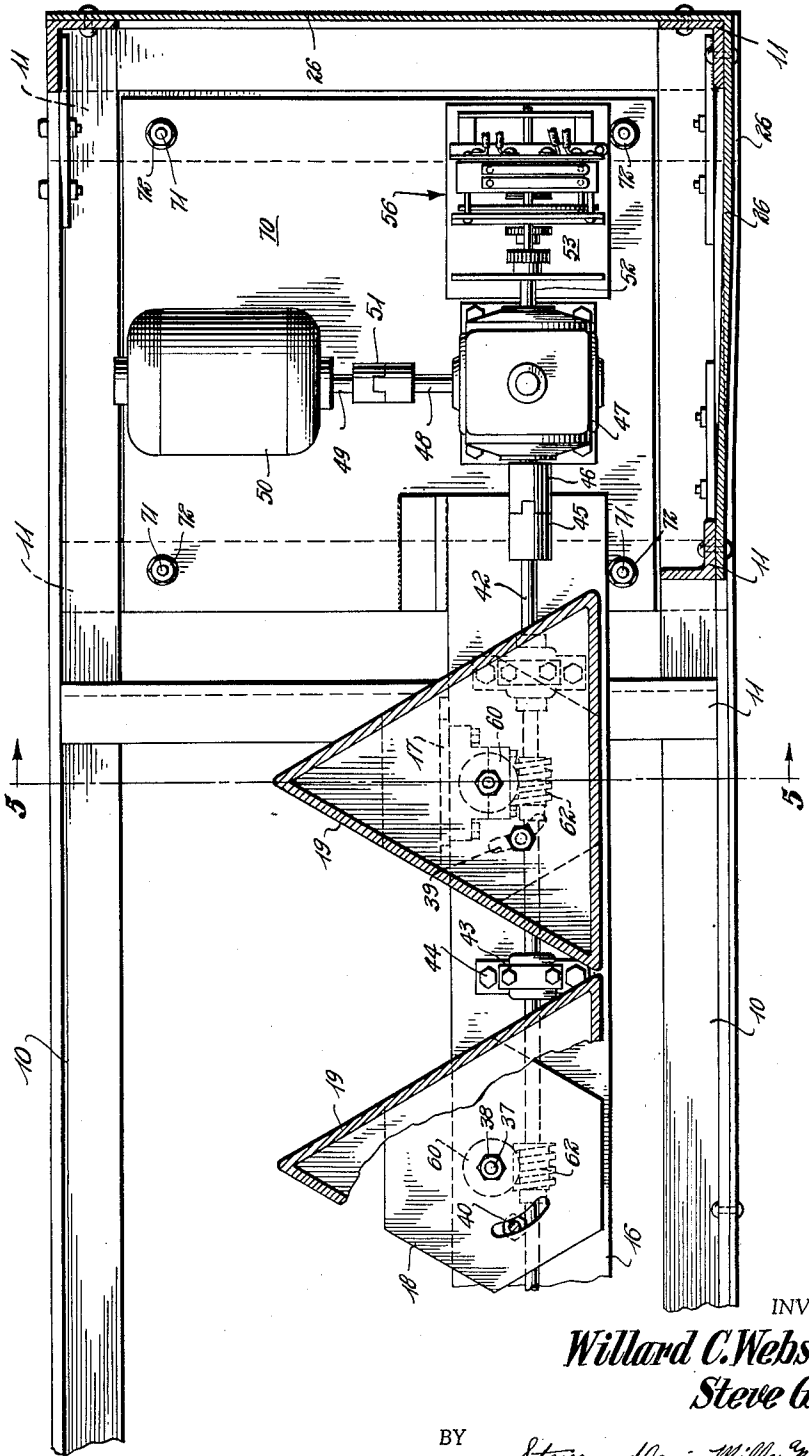


Fig. 4.

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4 Sheets-Sheet 4

Fig. 5.

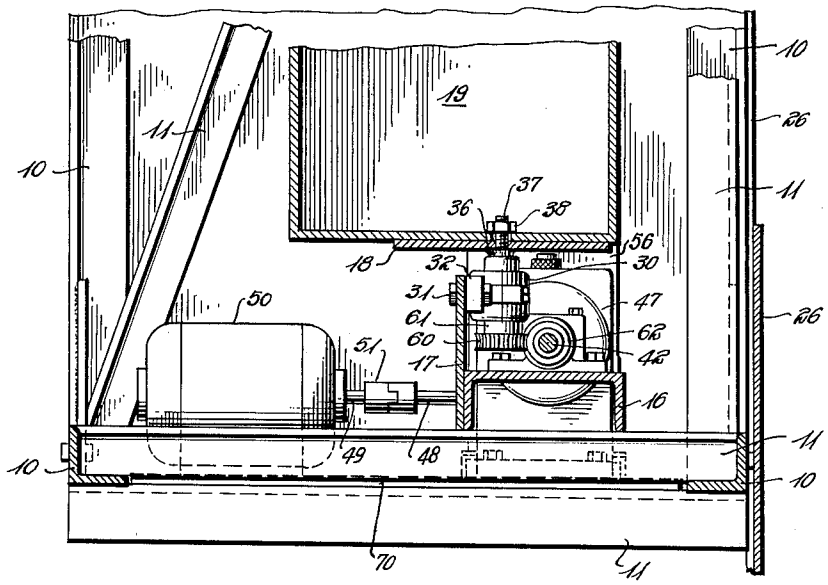
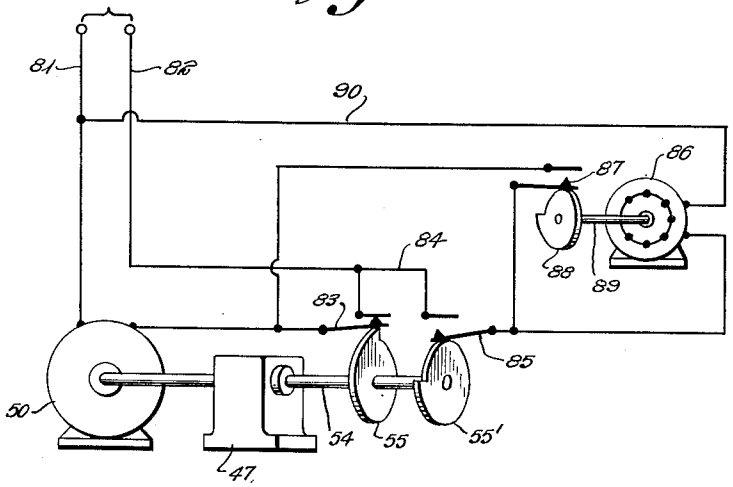


Fig. 6.



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Patented June 8, 1954

2,680,316

UNITED STATES PATENT OFFICE

2,680,316

ADVERTISING SIGN

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Application December 18, 1950, Serial No. 201,276

6 Claims. (Cl. 40—53)

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This device relates to a sign or billboard and particularly to a sign or a billboard arranged to sequentially display a plurality of full-sized advertisements or other pictorial or printed displays.

While the principles of this invention will herein be described as applied to the type of billboard that is customarily used in outdoor advertising, it will at once be apparent that the same principles may be applied to smaller signs for use indoors, in windows, and in other places.

The usual outdoor billboard is simply a flat surface upon which is painted a single advertising display. A plurality of advertising displays could be placed on a single billboard by reducing the size of each display but if this is done, the advertising value of each display is reduced by its reduction in size and is detracted from by the other displays adjacent to it. As a consequence, it is generally considered most feasible to place only a single advertising display on a single billboard, and preferably, to separate such a billboard from other billboards by an appreciable distance. This permits the advertising display to be on a large enough scale to attract attention and to be easily seen and understood even by those passing rapidly in some vehicle. It also avoids dividing the viewer's attention between a number of smaller advertising displays.

In accordance with the present invention, it has been found that all of the advantages of a single and separate advertising display can be retained but that the location can be utilized for two, three or even more advertising displays, and that such extra attention may be obtained for these advertising displays as to make each of the plurality of advertising displays more effectively presented than the single display arrangements previously used.

This is accomplished in accordance with the present invention by the provision of an advertising sign, or billboard, or display, whichever it be called, that comprises a plurality of elongated rotatable members, each of which has a plurality of faces, at least two, preferably three, and possibly even more. One set of faces of the rotatable members is aligned to form a relatively continuous surface on which a display may be mounted in sections and the elongated members are so arranged that they can be periodically rotated to bring another series of surfaces into parallelism. This second series of surfaces carries the sections which together form another display. By using three surfaces on the elongated members, it is possible to periodically rotate the

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members and to thus periodically display one after the other, three different advertising displays or signs.

The motion of this sign when it changes from one display to another attracts the attention of the viewer and thus each of the two or three or more advertising displays receives the viewer's full attention.

Other objects and advantages will become apparent from a detailed description of the following specification when taken in conjunction with the drawings in which:

Figure 1 is a view in side elevation of the complete advertising sign;

Figure 2 is a view in horizontal section of Figure 1 along line 2—2;

Figure 3 is a view in side elevation showing the drive for the vanes and the timing mechanism;

Figure 4 is a view in horizontal section of Figure 1 taken along line 4—4;

Figure 5 is a view in vertical section of Figure 4 taken along line 5—5; and

Figure 6 is a schematic representation of the electric timing and controlling circuit.

Referring now to the drawings, Figures 1 and 2 show the completed advertising sign. It consists of a basic frame of L section structural members 10 bolted together to define a parallelepiped and intermediate members 11 and angles 12 for structural stability. The frame is supported above the horizontal plane by means of short I beams 13. Running lengthwise of the frame at its top portion is secured a channel member 14, as by welding, with its channel opening downward. Mounted at spaced intervals along the member 14 in its channel are a series of thrust bearings 15 adapted to receive the end of a shaft. Similarly along the bottom portion of the frame is welded a second channel member 16, also running lengthwise and with its channel opening downward. The top of the member 16 carries a series of stands 17 and mounted with each stand is a turntable 18. The stands 17 are secured by welding them in position. There is provided for each thrust bearing 15 a stand 17 and turntable 18 located opposite thereto. Supported on its end on each turntable 18 is a hollow prismatic vane 19. The other end of the vane 19 is provided with a rigidly mounted projecting shaft 20 which fits into the respective thrust bearing 15.

Each turntable 18 is bearing-mounted to a stand 17 by means of a shaft (not shown). The details of this mounting will be considered in conjunction with Figures 3–5 inclusive. One end of

the shaft is rigidly attached to the turntable 18 and the other end is provided with a gear (not shown). A worm gear 21 meshes with each of the aforementioned gears. The worm gears 21 are mounted on shaft 22 at sufficient intervals to effect this purpose. Intermediate the worm gears 21 are thrust bearings 23. The shaft 22 is connected to a reductor 24 which in turn is connected to an electric motor not shown. Also connected to the reductor 24 are cut-off and timing devices generally designated as 25. These will be described in detail in conjunction with the remaining drawings.

A mask is provided over the front, top, and sides of the sign by utilizing strips 26. This will serve to protect the sign from the weather and at the same time hide the working elements of the device so that a more pleasing effect is given to the matter being advertised.

In operation the vanes 19 are aligned to form a continuous surface upon which is placed advertising matter. Electricity is supplied to the motor and it drives the turntables 18 through the reductor 24, shaft 22, worm gears 21, and the bearing mountings for the turntables 18. When the prismatic vanes 19 have rotated 120 degrees the motor cut-off 25 stops the electricity to the motor. At this moment each vane 19 has rotated one-third of a revolution. Inasmuch as the vanes 19 were originally aligned to form a continuous surface, they now in their present position also are aligned and present a continuous surface. This new surface, as the old, is covered with advertising matter. After a determined interval of time, one that is sufficient to give an individual a good opportunity to absorb the full significance of the advertising matter, the supply of electricity is returned to the motor. The vanes are then rotated one-third of a revolution and the operation just described is repeated.

Because the vanes 19 are all alike and of a prismatic configuration, they will present three distinct continuous surfaces which can be endowed with suitable advertising matter.

Figures 3, 4 and 5 show in greater detail the operating mechanism for the advertising sign. The channel member 16 as previously described serves as a base for the stands 17 which are affixed thereto by welding to one side or leg of the member 16. The stands 17 are flat plates of generally trapezoidal configuration. A bearing mounting 30 is attached to each of the stands 17 by means of bolts 31 and nuts 32. The bearing 33 is maintained in the mounting by screws 34. Placed directly above each bearing mounting 30 is a thrust bearing 35. Projecting through each bearing mounting 30 and thrust bearing 35 is a shaft not shown. By means of a built-up weld 36 each turntable 18 is attached to each shaft. Mounted rigidly on each turntable 18 is a threaded stud 37 for the purpose of securing a prismatic vane 19. This is accomplished by placing a vane 19 having a concentric hole in its base surface on the stud 37 so that the stud projects through the hole. A nut 38 is then applied to the stud 37.

An additional feature of the turntables 18 and vanes 19 is that each is provided with an arcuate slot 39. When a vane 19 is placed on a turntable 18 in the manner above-described, the slots 39 are aligned and a bolt 40 is passed through them. A nut 41 is put on the bolt 40. By means of this arrangement the vane 19 can readily be adjusted in the event it becomes out of alignment with the other vanes 19, or it can readily be aligned in the first instance.

On each shaft holding a turntable 18 located directly below the bearing mounting 30 is a gear assembly consisting of a gear 60 and a gear hub and bearing 61. The gear 60 is brazed to the shaft. Meshing with each gear 60 is a worm gear 62 mounted securely on a shaft 42. Inasmuch as the shaft 42 extends the entire length of the advertising sign it is necessary at spaced intervals to provide thrust bearings 43. These are fastened to the top surface of the member 16 by bolts 44. A flexible coupling 45 connects the shaft 42 with the driven shaft 46 of the reductor 47. The driving shaft 48 of the reductor 47 is similarly flexibly connected to the output shaft 49 of an electric motor 50 by coupling 51. A second driven shaft 52 of the reductor 47 is connected by gearing 53 to a shaft 54 upon which are mounted the adjustable time cams 55 and 55', of the timing and cut-off assembly generally designated as 56.

The basic frame as described in conjunction with Figures 1 and 2 consists of L section structural members 10, intermediate members 11, and angles 12. Additionally, masking strips 26 are provided for the purpose previously mentioned. At one end of the frame a base or table 70 is provided to support the motor 50, reductor 47, and timing assembly 56. The table 70 is attached to the basic frame by bolts 71 and nuts 72 which secure it to intermediate members 11 and the basic frame members 10 which structurally form the area immediately surrounding the end. Each of the several pieces of equipment carried on the table 70 is securely maintained there by bolting in a conventional manner.

Referring now to Figure 6 it will be seen how the timing device referred to in previous figures operates. The electric motor 50 is mechanically connected to the reductor 47 which is mechanically connected to shaft 54 by suitable gearing. The shaft 54 carries adjustable timing cams 55 and 55'. A source of electricity is supplied to the motor 50 by means of leads 81 and 82. Lead 81 is directly connected to the motor 50 and lead 82 is connected to one side of a switch 83 which is operated by cam 55. The other side of switch 83 is connected to the motor 50. A tap-off lead 84 from lead 82 is provided to one side of a switch 85 operated by cam 55'. The other side of the switch 85 is connected to one side of a suitable timer 86 and to one side of a switch 87 operated by a cam 88 driven by the shaft 89 of the timer 86. A lead 90 is connected to the other side of the timer 86 to provide a return through lead 81. The other side of switch 87 is connected directly to the motor 50.

The timing device operates in the following manner. Initially the vanes 19 are aligned and not moving. The switch 83 is maintained in closed position by cam 55 and the switches 85 and 87 are held open by their respective cams 55' and 88. When a source of electricity is provided, a complete circuit through leads 81 and 82 and switch 83 enables motor 50 to operate to turn vanes 19 and shaft 54 through reductor 47. When the vanes 19 have rotated 120 degrees, the cams 55 and 55' which are correlated to vane motion react as follows. Cam 55 now has been sufficiently rotated by shaft 54 so that it holds switch 83 open. This stops the motor 50. Simultaneously, cam 55' has been rotated so that it now holds switch 85 in a closed position. As a result of this activity the motor 50 has stopped. The vanes 19 have also stopped rotating 120°

from their starting position. A complete circuit now exists through the timer 86 by means of leads 81, 82, 84 and 90 and switch 85. As the timer runs for a predetermined interval it turns shaft 89 carrying cam 88. At the completion of the time interval the cam 88 has rotated sufficiently to maintain switch 87 in a closed position. This provides a complete circuit for the motor 50 by means of leads 81, 82 and 84 and switches 85 and 87. As the motor 50 turns, its movement is transmitted to shaft 54. As the shaft turns, cam 55 immediately closes switch 83 and cam 55' immediately opens switch 85. At the same time the timer 86 has rotated the cam 88 by means of shaft 89 to such an extent that the cam 88 now holds the switch 87 in an open position. The timing device is now in its initial position ready to repeat the operation.

It is to be noted from the foregoing that the advertising sign has been so designed that it is readily susceptible to being disassembled. In this manner it can be transmitted from one point to another easily by shipment in its unassembled condition. Consequently, it can therefore be assembled economically at the point of erection or use. The sign is capable of being disassembled by reason of the use of bolts throughout. Additionally, all the shafts are provided with connecting couplings at suitable points to permit their being taken apart.

The electrical timing device as hereinbefore described is subject to modification in the event that it is desired to coordinate neon or other electrical effects with the rotation of the hollow prismatic vanes. Additionally, the timing device can be made adjustable to different stopping and starting sequences.

While this invention has been described in conjunction with a single embodiment, it is, nevertheless, to be understood that various changes and modifications obvious to one skilled in the art are within the scope, spirit, and contemplation of this invention.

What is claimed is:

1. An advertising device that comprises a hollow prismatic vane each surface of which constitutes a display surface, a turntable for vertically mounting said vane, a first shaft having a gear connected to said turntable, an electric motor having a shaft on which is mounted a worm gear meshing with said gear, cam means mounted on another shaft, gearing means connecting said motor to said cam means, an electric circuit supplying power to said motor, switch means in said circuit mounted for operation by said cam means to cut off power to said motor, timing means in said circuit to operate responsive to power cut off to the motor to reconnect power to said motor after a predetermined interval of time, so that said vane is adapted consecutively and intermittently to present its display surfaces.

2. An advertising device that comprises a hollow prismatic vane each surface of which constitutes a display surface, a turntable for mounting said vane, a first shaft having one end rigidly connected to said turntable and having a gear rigidly mounted on its other end, an electric motor having a shaft, a worm gear mounted on the shaft of said motor and meshing with said gear, a pair of cams mounted on another shaft, gearing means connecting said motor to the shaft holding said cams, said gear means adapted to correlate the rotation of said cams with said vane, an electric circuit supplying power to said motor, a switch in said circuit mounted for operation by one of said cams to cut off power to said motor responsive to the position of said vane, another switch in said circuit mounted for operation by said other cam, timing means in said circuit, said other switch and timing means adapted to cooperate responsive to power cut off to reconnect power to said motor after a predetermined interval of time, so that, said vane is adapted consecutively and intermittently to present its display surfaces.

3. An advertising device that comprises a frame, a plurality of elements each having a display surface and mounted for rotation in said frame, the display surfaces of said elements adapted to be aligned at one point in their rotation, cam means, a motor having a power supply, gear means connecting said motor with said cam means and said plurality of elements so that said cam means is correlated to the aligned position of said elements, means responsive to the position of said cam means to cut off said power supply and stop the elements in their aligned position, and timing means to reconnect the power after a predetermined interval so that said plurality of elements are adapted alternately to rotate and to cooperate to present a substantially continuous advertising surface.

4. An advertising device that comprises a plurality of hollow prismatic vanes, each surface of each vane constituting a display surface, a turntable for vertically mounting each of said vanes, a shaft having a gear mounted thereon rigidly connected to each of said turntables, an electric motor having a shaft, a worm gear on said motor shaft meshing with each of said gears, cam means mounted on another shaft, gearing means connecting said motor to said cam means, an electric circuit supplying power to said motor, said vanes being rotated by said motor so that their display surfaces will be aligned three times during complete rotation of said vanes and said cam means correlated to the aligned positions of said vanes, switch means in said circuit mounted for operation by said cam means to cut off power to motor and stop said vanes in an aligned position, timing means in said circuit to operate responsive to power cut off to the motor to reconnect power to said motor after a predetermined length of time whereby said vanes are adapted consecutively and intermittently to present a substantially continuous advertising surface.

5. An advertising device that comprises a plurality of hollow prismatic vanes each surface of each vane constituting a display surface, a turntable for mounting each vane, a shaft for each turntable having one end rigidly connected to said turntable and having a gear rigidly mounted on its other end, an electric motor having a shaft, a worm gear mounted on the shaft of said motor meshing with each of said gears, a pair of cams mounted on another shaft, gearing means connecting said motor to the shaft holding said cams, said vanes being rotated by said motor so that their display surfaces will be aligned three times during complete rotation of said vanes, said gear means adapted to correlate said cams to the aligned positions of said vanes, an electric circuit for supplying power to said motor, a switch in said circuit mounted for operation by one of said cams to cut off power to said motor responsive to an aligned position of said vanes, another switch mounted for operation by said other cam, timing means, said other switch and timing means adapted to co-

operate responsive to power cut off to reconnect power to said motor after a predetermined interval of time so that said vanes are adapted consecutively and intermittently to present three substantially continuous advertising surfaces during their complete rotation.

6. An advertising device as defined in claim 4 wherein the turntable and portion of the vane resting thereon are slotted and means are mounted in the slots to permit adjustment of the vanes to maintain their alignment.

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