April 15, 1941. C. E. MARKS, JR., ET AL 2,238,177

CHANGEABLE SIGN

Filed Sept. 18, 1939 3 Sheets-Sheet 1

Fig. 1

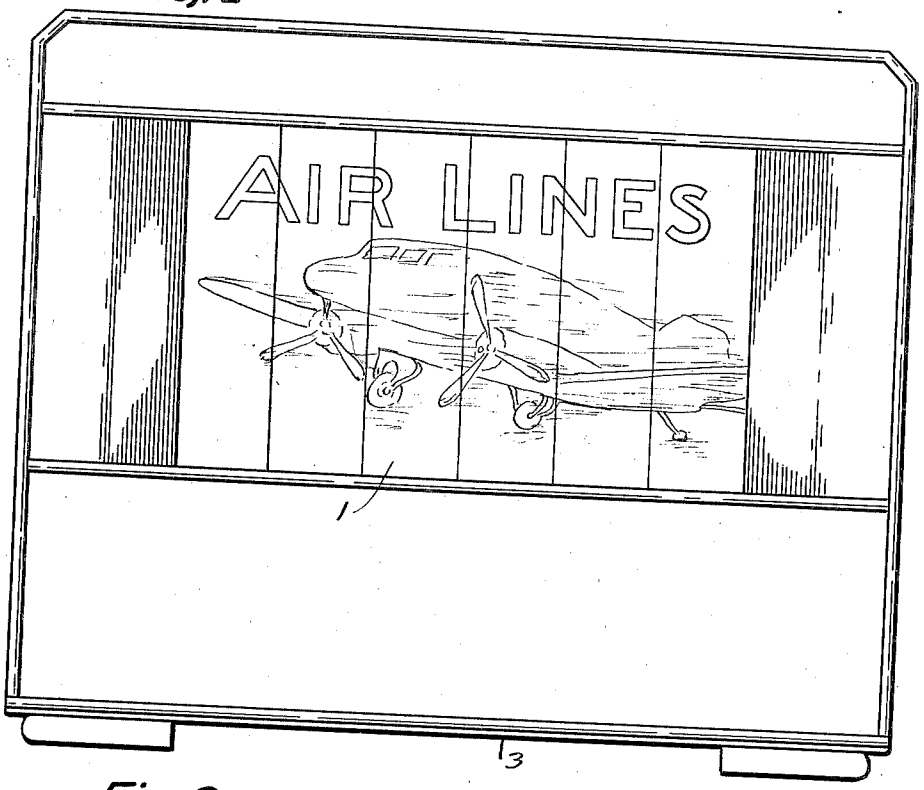
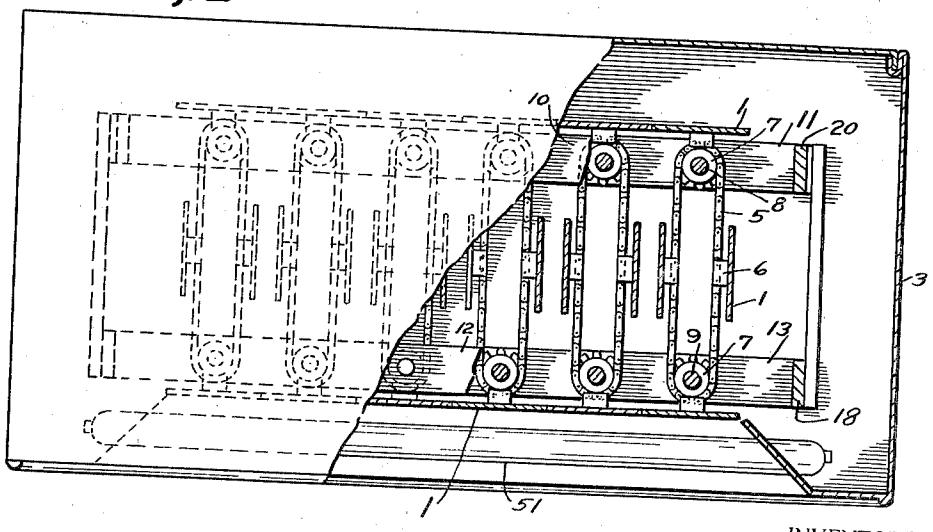


Fig. 2



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Fig. 3

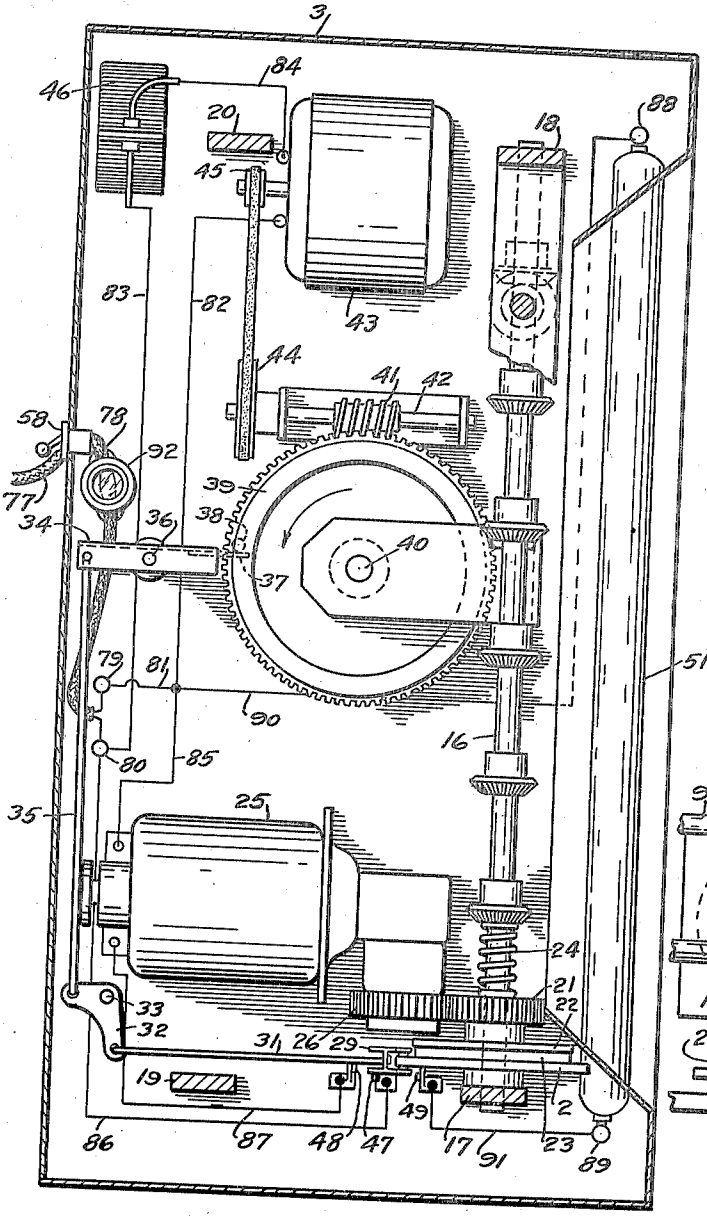
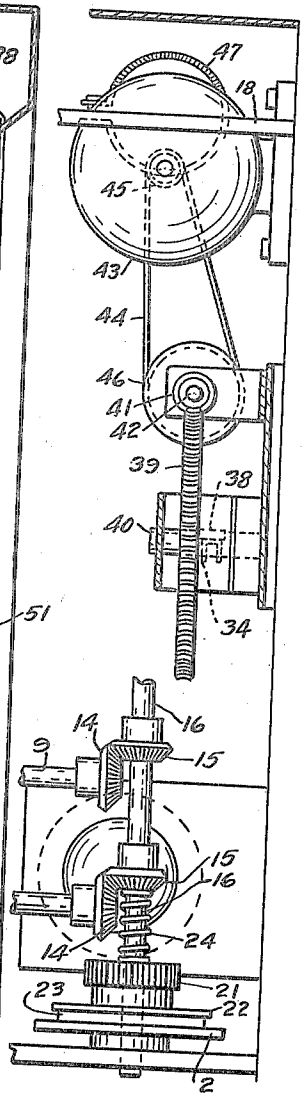


Fig. 4



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Filed Sept. 18, 1939 3 Sheets-Sheet 3

Fig. 5

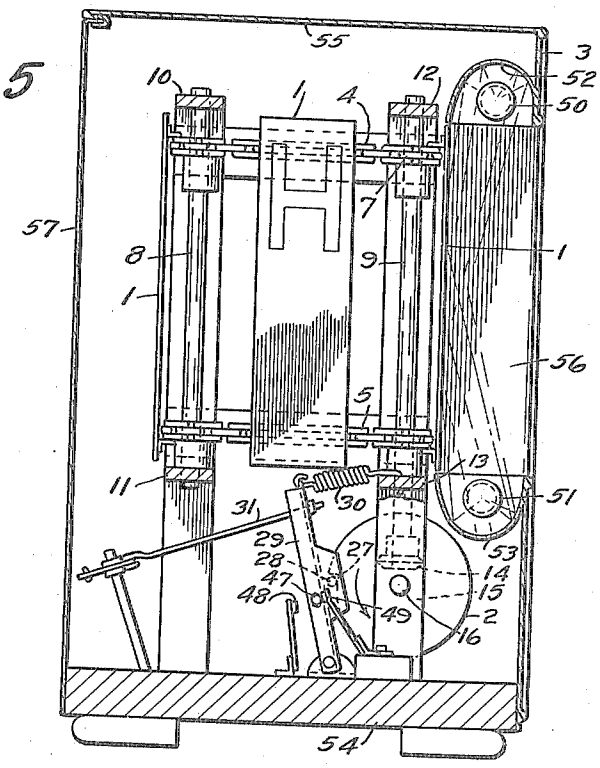
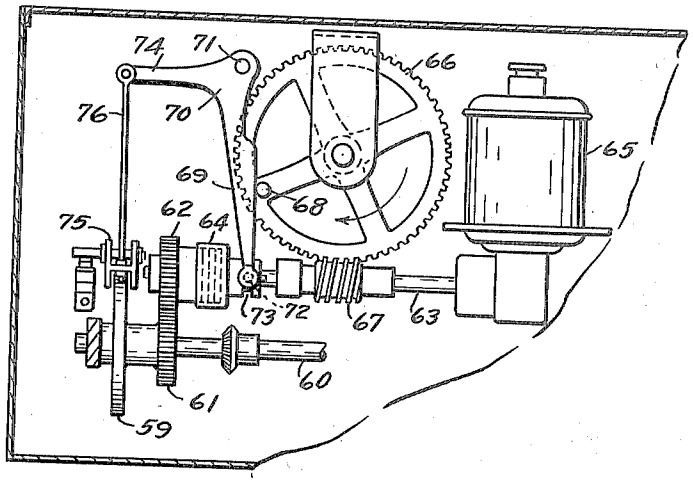


Fig. 6



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UNITED STATES PATENT OFFICE

2,238,177

CHANGEABLE SIGN

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Application September 18, 1939, Serial No. 295,382

8 Claims. (Cl. 40—32)

The purpose of this invention is to provide improvements in advertising signs of the changeable type, in which a plurality of advertisements are consecutively displayed in the same area, in which the different advertisements are positively moved into and out of the displaying positions, and in which the advertisements are provided upon adjoining rigid panels.

The invention is an advertising device comprising a plurality of panels, each constituting a division of an advertisement, and means positively moving said panels into and out of displaying positions, and also means for illuminating said panels when in the displaying position.

Different forms of apparatus have been provided for operating changeable signs, and some of these have used panels, and some panels have been mounted on chains, but it has been found desirable to improve devices of this nature by rigidly mounting the panels upon the chains and by providing positive means for moving the chains and panels exact distances in order to insure that the sign presents a smooth complete surface for display.

The object of this invention is, therefore, to provide means for positively mounting and operating the panels to readily change the sign, and insure a complete new sign for display with each movement.

Another object is to provide means for positively operating a plurality of panels by a motor, in which a positive stop is provided to stop all panels when they arrive in the display position.

Another object is to provide a positive stop for a plurality of display panels, in which the operating means also completes a circuit to illuminate the panels when they arrive in the display position.

A further object is to provide a plurality of panels for signs and the like in which different groups of panels may be displayed at regular intervals to display different advertising in which the parts are rigidly constructed to insure continuous operation.

And a still further object is to provide a changeable advertising sign of a relatively simple and inexpensive construction.

With these ends in view the invention embodies a plurality of panels mounted at regular intervals upon endless chains, with the chains operated by a common shaft, and with a disc on the shaft having a notch adapted to engage a positive stop at the end of each revolution, and in which the shaft is rotated through a "slip" clutch, whereby the shaft may stop without injuring the driving means. The device is also provided with light for illuminating the faces of the panels, and means in combination with the stop operating means for lighting and extinguishing the illuminating means with the operating movement.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings, wherein:

Figure 1 is a view showing a front elevation of the sign.

Figure 2 is a sectional plan with parts broken away.

Figure 3 is a sectional plan showing the operating means in the base of the device also with parts broken away.

Figure 4 is a section through the lower part of the sign showing the operating parts in elevation, with parts broken away and parts omitted.

Figure 5 is a section through one end of the sign also with parts broken away and parts omitted.

Figure 6 is a sectional plan somewhat similar to that illustrated in Figure 3, showing an alternate design in which the entire apparatus is operated by a single motor.

In the drawings the device is shown as it may be made, wherein numeral 1 indicates the panels, numeral 2, the control disc, and numeral 3, the outer case.

The panels 1 are mounted upon endless chains 4 and 5 through clips 6, the chains being similar, and pairs of chains indicated by the same reference numerals are provided for each set of panels.

In the design shown, the panels are provided in groups with four panels on each set of chains, and these are mounted so that in each position the panels will present a continuous flat surface at the front of the sign, and, although the panels are shown as being vertically positioned, it will be understood that they may also be horizontal or arranged as desired.

Each of the chains 4 and 5 is mounted upon sprockets 7 at the ends, and the sprockets are mounted upon an idler shaft 8 at the back and an operating shaft 9 at the front, with the shafts rotatably held in cross members 10, 11, 12, and 13, of a framework, and with the lower ends of the shafts 9 extending downward and provided with bevel gears 14 which mesh with similar gears 15 on a main shaft 16. The shaft 16 is rotatably mounted in vertical members 17 and 18 of the forward part of the frame, and the back of the frame is provided with similar vertical members 19 and 20. The stop or operating disc 2 is fixedly mounted on the shaft 16, and this is driven by a gear 21 freely mounted on the shaft and provided with a friction collar 22 and a friction washer 23, all of which are frictionally held against the disc 2 by a spring 24, and it will be noted that normally the gear 21, which is rotated by a motor 25 through a gear 26 will normally rotate the disc 2, however, when the disc 2 engages a stop, the friction washer 23 will permit the gear 21 to continue to rotate with the disc 2 stationary.

The disc 2 is provided with a notch 27 in the

periphery, and this is adapted to engage a pin 28 in a yoke 29 which is pivotally mounted at the lower end and resiliently held toward the disc by a spring 30. It will be noted in Figure 5 that the disc 2 is positively held and cannot rotate in the direction of the arrow with the parts in the position shown, however, with the pin 28 moved away from the disc, the disc may rotate until the notch 27 passes the pin 28, and then the pin will ride against the outer surface of the disc until the disc makes a complete revolution and returns to the position shown.

The member 29 in which the pin 28 is mounted is moved backward to release the disc by a rod 31 connected to a bell-crank 32 pivotally mounted on a pin 33 and connected to a lever 34 through a bar 35, and it will be noted that the lever 34 is pivotally mounted on a pin 36 and provided with an extending end 37 adapted to engage a pin 38 on the under side of a gear 39 pivotally mounted on a pin 40 and adapted to be rotated by a worm 41 on a shaft 42 rotated by a motor 43 through a belt and pulleys 44 and 45.

The motor 43 operates continuously, the speed thereof being controlled by a variable rheostat 46, and this rotates the gear 39 continuously so that the pin 38 thereon moves the lever 34 and then slips by the lever, permitting the lever to remain stationary until the gear makes a complete revolution, thereby providing timing means and operating the panels with each revolution. As the pin 38 engages the end 37 of the lever 34, the opposite end operates the bell-crank 32 through the bar 35, drawing the member 29, through the rod 31, backward releasing the disc 2 by drawing the pin 28 out of the notch 27, and at the same time making a contact between a contact point 47 on the member 29 and another contact point 48, thereby completing a circuit to the motor 25, causing the motor to start operating, and the operation of the motor 25, with the disc 2 released, rotates the shaft 16, moving the chains with the panels 1 thereon through a complete revolution of the shaft 16 or until the notch 27 again engages the pin 28, and at this time the spring 31 moves the member 29 forward, opening the contacts 47 and 48, thereby breaking the circuit to the motor and stopping the shaft 16. The disc 2 engaging the pin 28 positively stops the shaft in the proper position, although the motor may continue to rotate after the circuit is broken, the friction disc 23 permitting the rotation of the motor and gears. At the same time, as the member 29 returns to the position shown, the contact 47 will engage another contact 49 which completes a circuit through lights 50 and 51, illuminating the sign until the pin 38 travels through another revolution, opening the contacts 47 and 49 as it moves the member 29 backward.

The lights 50 and 51 are preferably positioned above and below or rather beyond the ends of the panels 1, and these may be provided with reflectors 52 and 53, however it is understood that lights of any suitable type may be used, and these may be located at any point or points.

The entire device is illustrated as being mounted upon a base 54 with a housing 55 having a sign opening 56 at the front and a removable back 57, however, it will be understood that the housing, base, and other mounting means may be of any type or design or arranged in any manner. The device may also be provided with a switch 58 connected by suitable circuits to the operating parts, however the switch may be located at any suitable point and operated in any manner.

In the design shown in Figure 6 a disc 59, similar to the disc 2, is fixedly mounted on a shaft 60 similar to the shaft 16 and operated by a gear 61. However, the gear 61 is rigidly attached to the disc, and this is operated by a gear 62 on a shaft 63 through a clutch 64. In this design the shaft 63 is continuously rotated by a motor 65 similar to the motor 25, and this rotates a timing gear 66 through a worm 67, the gear 66 being provided with a pin 68 that engages an arm 69 of a bell-crank 70 pivotally mounted on a pin 71 and provided with a yoke 72 having pins extending into a circular groove in a clutch collar 73 forming part of the friction clutch 64, and it will be noted that, as the pin 68 engages the arm 69, the clutch is forced into engagement, causing the gear 62 to rotate the gear 61 and thereby rotating the disc 59. At the same time the opposite end 74 of the bell-crank 70 draws a member 75, similar to the member 29 backward through a rod 76, drawing a pin 28 out of a notch 27, and, at the same time, breaking a circuit to the lights similar to the operation of the member 29, and the pin 28 will hold the clutch in operating position until the disc 59 makes a complete revolution when the disc will positively stop and the clutch will release the gears from the shaft 63, permitting the motor and gears 66 to continue to rotate. It will be understood that this operating means is only typical as any suitable means may be provided for operating a shaft similar to the shaft 16 or the disc 2 for moving the parts through positive degrees or distances.

In the design illustrated in Figure 3, the switch 58 is connected in a cord 77 which may be connected to any suitable source of supply, and the switch is connected to a cord 78 which is connected to terminals 79 and 80, and the terminals are connected to the motor 43 through wires 81 and 82, and also wires 83 and 84, the wires 83 and 84 passing through the rheostat 46, making it possible to control the speed of the motor.

The terminals 79 and 80 are also connected to the motor 25 through wires 85 and 86, the wire 86 being connected through the contacts 47 and 48 and a wire 87 to the opposite terminal of the motor. The terminals 79 and 80 are also connected to the lights 50 and 51 on vertical leads 88 and 89, the lead 88 being connected to the terminal 79 through the wire 90, and the lead 89 being connected through a wire 91 to the terminal 49, with the current passing back to the terminal 80 through the wire 86, with the contact 47 engaging the contact 49. It will be understood that these circuits are only diagrammatic, and also for the purpose of illustration, as the circuits may be provided in any manner, and the wires may extend to any point or points. The circuit may also be provided with a fuse 92, as indicated, if desired.

It will be understood that changes may be made in the construction without departing from the spirit of the invention. One of which changes may be in the type of endless chains used, another may be in the use of other means for attaching the panels to the chains, another may be in the use of any number of chains for each set of panels, another may be in the use of other means for illuminating the panels or in the location of the illuminating means, and still another may be in the shape or design of the casing.

The construction will be readily understood from the foregoing description. In use the device may be provided as shown and described, and it

will be noted that a sign of this type may be positioned at any suitable point, and with suitable signs or advertising on the panels it may be operated continuously, and the advertising may be changed by painting directly upon the panels or by securing advertising matter thereto in any manner or by any means. With a sign arranged in this manner, it may operate continuously as long as desired, or means may be provided for turning it off and on as desired.

Having thus fully described the invention, what we claim as new and desire to secure by Letters Patent is:

1. An advertising sign comprising a plurality of panels on endless chains, with the panels arranged to be positioned in displaying position, providing an uninterrupted advertisement or the like, characterized by sprockets upon which the endless chains are mounted, rotating shafts upon which the sprockets are mounted, bevel gears on the shafts at one end of the chains, complementary bevel gears meshing with the gears on the shaft, a main shaft mounting the said complementary gears, a disc fixedly mounted on said main shaft, said disc having a notch at one point, a pin positioned to rest against the periphery of said disc, means urging the pin against the disc and into the notch thereof, providing stopping means therefor, and means removing the pin from said notch and rotating said disc and shaft.

2. A sign, as described in claim 1, having a friction clutch on the main shaft engaging the disc, with the means rotating the shaft operating through said clutch.

3. An advertising device, as described in claim 1, having illuminating means for the panels and contacts positioned to break the circuit to the illuminating means and complete a circuit to the rotating means as the pin is withdrawn from the notch of the disc.

4. An advertising sign, as described in claim 1, having an auxiliary shaft operated by a motor, driving means between the auxiliary shaft and main shaft, a clutch between the said auxiliary shaft and the said driving means, a bell crank adapted to remove the pin from the notch in the disc, and also adapted to operate the clutch, a gear having a pin thereon positioned to engage said lever, and means rotating said gear from the said auxiliary shaft.

5. An advertising sign comprising a plurality of panels on endless chains, with the panels arranged to be positioned in displaying position, providing an uninterrupted advertisement or the like, characterized by sprockets upon which the endless chains are mounted, rotating shafts upon which the sprockets are mounted, bevel gears on the shafts at one end of the chains, complementary bevel gears meshing with the gears on the shaft, a main shaft mounting the said complementary gears, a disc fixedly mounted on said main shaft, said disc having a notch at one point, a pin positioned to rest against the periphery of said disc, means urging the pin against the disc and into the notch thereof, providing stopping means therefor, a motor with a friction clutch adapted to rotate said disc, and another motor operating means for removing the pin from the notch in the disc.

6. An advertising sign comprising a plurality of panels on endless chains, with the panels arranged to be positioned in displaying position, providing an uninterrupted advertisement or the like, characterized by sprockets upon which the endless chains are mounted, rotating shafts upon which the sprockets are mounted, bevel gears on the shafts at one end of the chains, complementary bevel gears meshing with the gears on the shaft, a main shaft mounting the said complementary gears, a disc fixedly mounted on said main shaft, said disc having a notch at one point, a pin positioned to rest against the periphery of said disc, means urging the pin against the disc and into the notch thereof, providing stopping means therefor, a friction clutch on the main shaft, a motor rotating the shaft through the friction clutch and disc, and means removing the pin from the notch in the disc comprises a plurality of levers, a spring holding the levers in the position of urging the pin against the disc, a pin on a gear positioned to engage the levers to remove the pin from the notch, and a motor driving said gear.

7. An advertising sign comprising a plurality of panels on endless chains, with the panels arranged to be positioned in displaying position, providing an uninterrupted advertisement or the like, characterized by sprockets upon which the endless chains are mounted, rotating shafts upon which the sprockets are mounted, bevel gears on the shafts at one end of the chains, complementary bevel gears meshing with the gears on the shaft, a main shaft mounting the said complementary gears, a disc fixedly mounted on said main shaft, said disc having a notch at one point, a pin positioned to rest against the periphery of said disc, means urging the pin against the disc and into the notch thereof, providing stopping means therefor, means for removing the pin from the notch in the disc, an independent motor operating said timing means, another motor rotating said main shaft, a slip connection between the said motor and shaft, and contacts positioned to start the operation of said shaft operating motor as the pin is withdrawn from the notch, and stop the operation of said motor when the pin again drops into the notch.

8. An advertising sign comprising a plurality of panels on endless chains, with the panels arranged to be positioned in displaying position, providing an uninterrupted advertisement or the like, characterized by sprockets upon which the endless chains are mounted, rotating shafts upon which the sprockets are mounted, bevel gears on the shafts at one end of the chains, complementary bevel gears meshing with the gears on the shaft, a main shaft mounting the said complementary gears, a disc fixedly mounted on said main shaft, said disc having a notch at one point, a pin positioned to rest against the periphery of said disc, means urging the pin against the disc and into the notch thereof, providing stopping means therefor, and suitable rotating means, timing means operated by the rotating means, said timing means operating means for withdrawing the pin from the notch of the disc.

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