March 24, 1931. F. R. SVOBODA 1,797,534

DISPLAY APPARATUS

Original Filed April 24, 1926 2 Sheets-Sheet 1

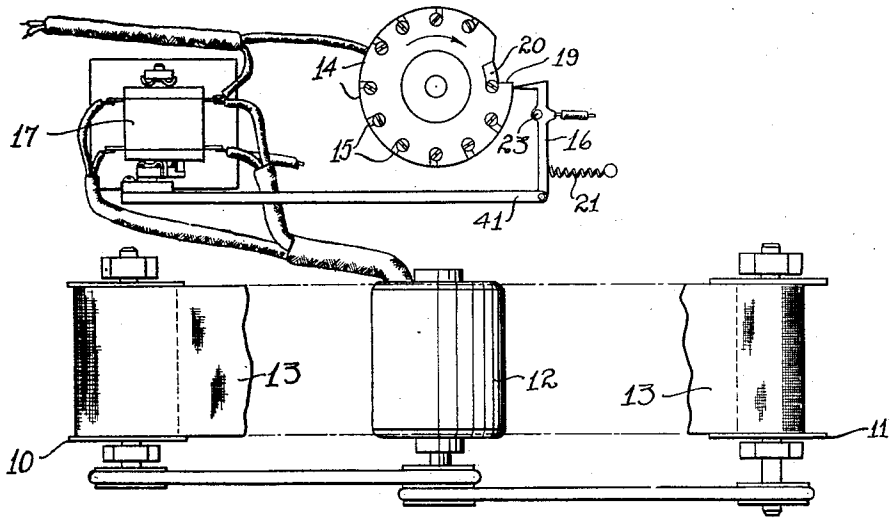


FIG. 1

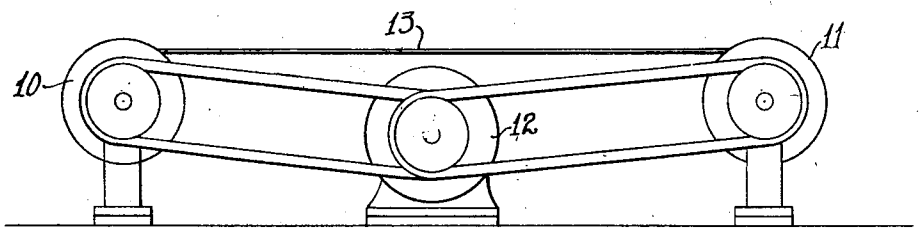


FIG. 2

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DISPLAY APPARATUS

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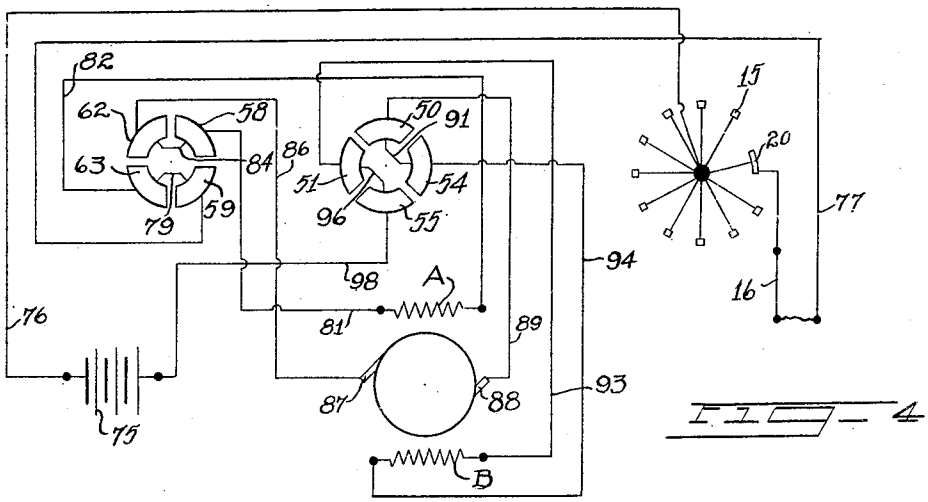


FIG. 4

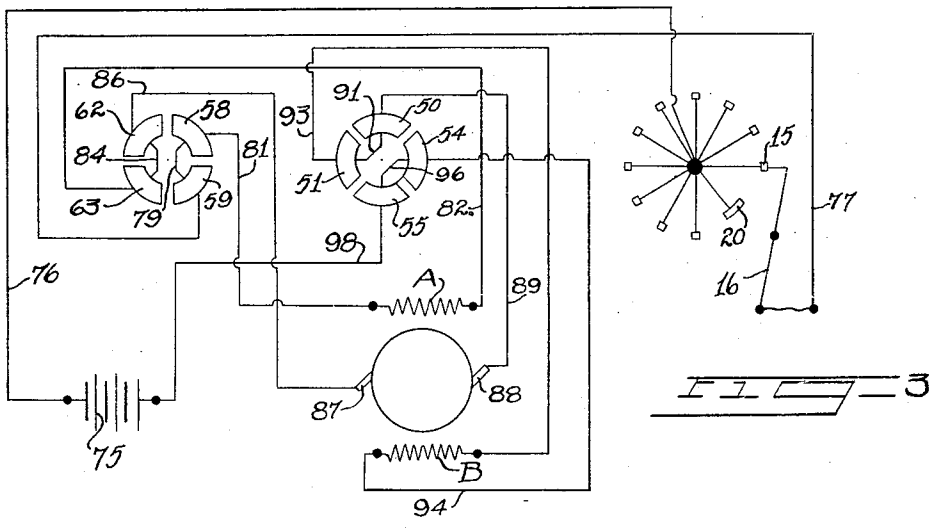


FIG. 3

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1,797,534

UNITED STATES PATENT OFFICE

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DISPLAY APPARATUS

Original application filed April 24, 1926, Serial No. 104,437. Divided and this application filed March 14, 1927. Serial No. 175,331.

This invention relates to advertising apparatus and more particularly to mechanism by means of which a display panel is exposed to view for a certain period of time, and is then removed from view and is replaced by another display panel. More particularly, this application is a division of my copending application, Serial No. 104,437, filed April 24, 1926.

An object of the present invention is to provide a display apparatus comprising a strip having display panels arranged in sequence thereon, with means for winding up the strip on one roll while paying it out from another and automatically reversing the procedure after the last panel has been exposed.

The preferred means for carrying out my invention is illustrated in the drawings wherein Fig. 1 is a plan view of an apparatus illustrating an electric controller by means of which the display panels may be actuated; Fig. 2 is a side elevation of the apparatus; Figs. 3 and 4 are diagrams illustrating different positions of the contact members in the reversing switch for controlling the direction of motor rotation.

My invention is illustrated in connection with a sign apparatus embodying spaced rolls 10 and 11 which are adapted to be rotated by an electric motor indicated at 12 between the rolls. A strip of flexible material having advertising matter arranged thereon in panels is illustrated at 13 as adapted to be wound onto the rolls, while mechanism is arranged to control the motor so as to cause operation of the rolls progressively in one direction for exposing each panel for a predetermined length of time, and then after the panels have been exposed to reverse the direction of rotation and rewind the feed roll. The mechanism is controlled by the operation of the motor and as illustrated is arranged to cause an intermittent unwinding and a continuous winding of the strip. If desired, I may arrange the mechanism to effect an intermittent winding as well as an intermittent unwinding, whereby the advertising panels may be exposed for a certain length of time during both the forward and reverse movements. To control operation of the motor I have shown a distributor in the nature of a disc 14 which has spaced contact points 15 arranged thereon at predetermined intervals. The distributor may be caused to rotate continuously by any suitable device such as a time control mechanism.

The disc 14 comprises electric insulating material while the contacts thereon are embedded in the material, and are adapted to be electrically connected with a contact lever 16, which in turn is arranged to actuate a control switch 17 for controlling the direction of motor rotation. The wiring connections are such that whenever the member 16 is in engagement with any of the contacts 15, the motor will be rotated in one direction, but whenever the lever is in engagement with the contact member 20, the motor will be rotated in the opposite direction. Moreover, the lever is arranged to be urged toward the disc by means of a spring 21 which normally tends to swing the lever about the pivotal connection 23, and to hold it in engagement with the contact member 20.

The control switch indicated in general at 17 is illustrated and described in detail in my copending application heretofore referred to, and briefly comprises a set of shiftable contacts which are arranged to be actuated whenever the lever 16 is swung about its pivotal connection for reversing the field connections to the motor and thereby reversing the direction of rotation of the same. The wiring diagram shown in Fig. 3 is such that the connections cause the motor to rotate in a forward direction. The motor continues to so rotate so long as the lever 16 remains in engagement with one of the contacts 15. The length of each contact and the space between them is such that each panel is exposed for a predetermined length of time and is exposed in the same location, notwithstanding variations in diameter of the supply roll during the unwinding operation.

Referring now to the wiring diagram shown in Fig. 3, current flows from the source of power 75 along line 76, then to one of the contacts 15, through lever 16, line 77, and thence through the switch 17. More particularly from line 77, current flows through

stationary contact 59, movable contact 79, stationary contact 58, line 81, field A, line 82, stationary contact 63, movable contact 84, stationary contact 62, line 86, brush 87, through armature to brush 88, line 89, stationary contact 50, movable contact 91, stationary contact 51, line 93, field B, line 94, stationary contact 54, movable contact 96, stationary contact 55, and then through line 98 back to the source of power.

So long as the lever 16 is in engagement with one of the contacts 15, the motor will operate in one direction and will cease operating as soon as the disc has been rotated sufficiently far to break the connection. The period of time during which the engagement is maintained is so regulated that one advertising panel on the strip 13 is wound onto one of the rolls and another is unwound sufficiently to expose it to view. After the disc has been rotated sufficiently far to bring the contacting edge of the lever 16 adjacent the contact 20, then the lever is caused to drop into the depression 19 in the disc under the action of the spring 21. During such movement the link 41 is actuated to operate the switch 17, and to change the relation of the movable contacts with reference to the stationary contacts and thereby to reverse the field connections of the motor. The detailed construction of the switch is illustrated in my copending application, consequently I have limited this application merely to a diagrammatic showing of the wiring connections.

The wiring diagram shown in Fig. 4 illustrates connections by means of which the motor is caused to operate in a reverse direction. Tracing the current from the source of power 75, it will be evident that current flows through line 76, contact 20, contact lever 16, line 77, stationary contact 59, movable contact 79, stationary contact 63, line 82, field A, line 81, stationary contact 58, movable contact 84, stationary contact 62, line 86, brush 87, through armature to brush 88, line 89, stationary contact 50, movable contact 91, stationary contact 54, line 94, field winding B, line 93, stationary contact 51, movable contact 96, stationary contact 55, line 98 and back to the source of power.

In comparing these two wiring diagrams, it will be evident that the direction of current through the armature is the same in both cases, but the direction of current flowing through the field windings is reversed. The operation in a reverse direction continues so long as the member 20 is in engagement with the lever 16, but since that portion of the disc adjacent the contact 20 is constructed in the form of a cam, it will be obvious that the nose of the lever will move radially away from the center of the disc and thereby will shift the movable contact members back to the position where the motor is rotated in a forward direction. By varying the length of the contact 20, the reversing operation of the motor can be terminated before the movable contact members are shifted from engagement with one set of stationary contacts to another. Thus, I can prevent arcing between the contact points. Moreover, by increasing the size of the disc and using more than one contact for the position of reverse rotation, the motor can be caused to operate intermittently in a reverse direction, wherefore the advertising panels can be exposed intermittently both in a forward and reverse position.

An advertising device made in accordance with my invention is advantageous in that it provides a simple apparatus which may be cheaply manufactured and which permits a wide range of adjustability to suit operating needs.

Having thus described my invention, I claim:

1. In combination, two spaced rolls, a strip connecting the rolls and adapted to be wound onto one while being paid out from the other, said strip being divided into panels, an electric motor operatively connected to one of the rolls, and means for actuating the motor to advance the strip step-by-step in one direction to expose each panel for substantially the same length of time, and for actuating the motor to reverse the strip continuously for substantially the entire length thereof after the last panel is exposed.

2. In combination, a pair of spaced rolls, a strip connecting the rolls, and adapted to be wound onto one while being paid out from the other, and a single means for advancing the strip step-by-step in one direction and for automatically retrieving the advanced portion, the retrieving operation being accomplished in one continuous movement.

3. The combination with a pair of rollers and a web mounted upon said rollers and adapted to wind from either thereof to the other, of a common actuating member for said rollers, means for establishing a periodic step-by-step drive from said actuating member to one of said rollers, and means for alternatively establishing a continuous drive from said actuating member to the other roller.

In testimony whereof, I hereunto affix my signature.

FRANK R. SVOBODA.