Sept. 6, 1932. J. D. MacLACHLAN 1,875,321

ADVERTISING CARD DISPLAY DEVICE

Filed Dec. 15, 1930 2 Sheets-Sheet 1

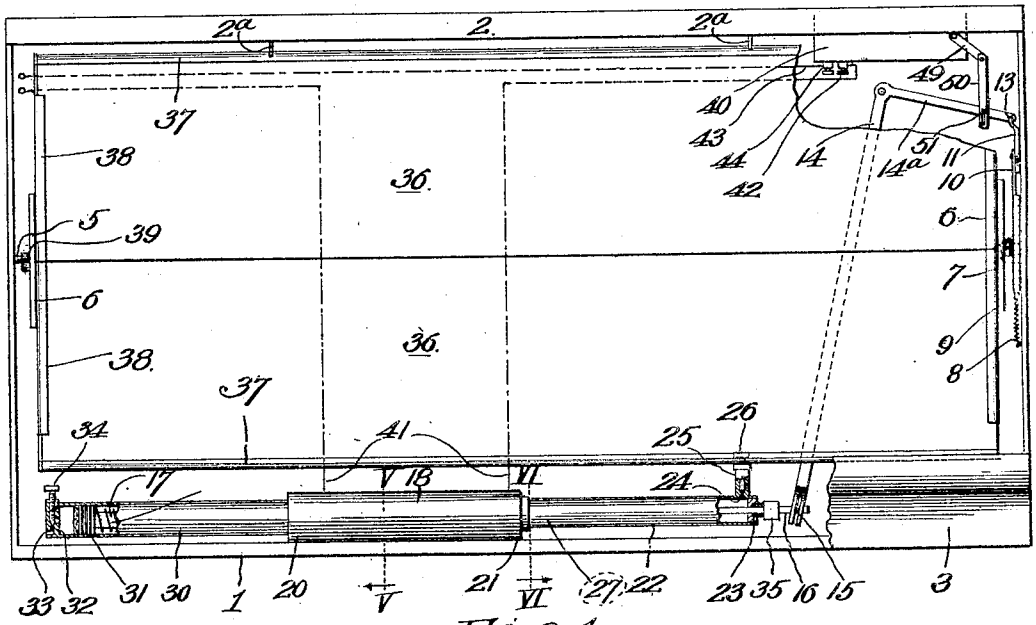


Fig. 1.

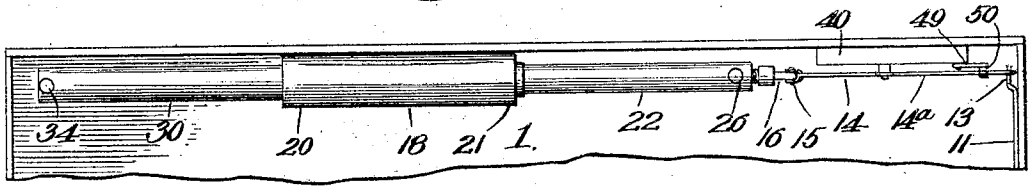


Fig. 2.

Fig. 4.

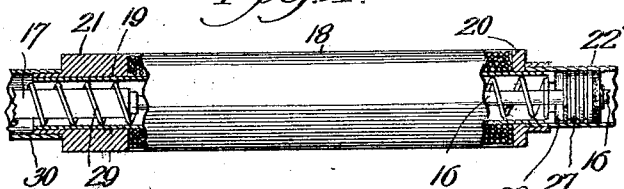


Fig. 5.

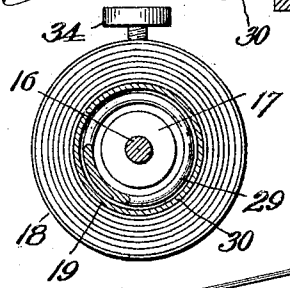


Fig. 7.

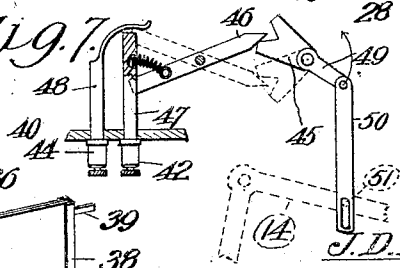
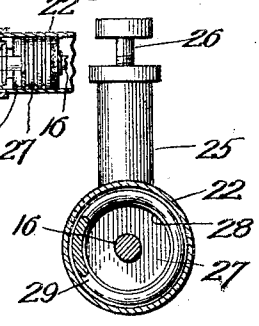


Fig. 6.



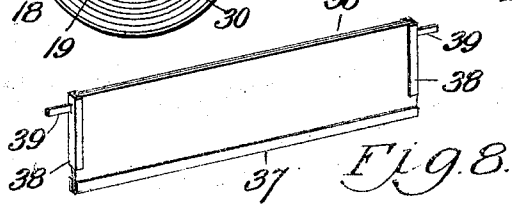


Fig. 8.

Inventor
J. D. MacLachlan
By
Thorpe & Thorpe
Attorneys

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ADVERTISING CARD DISPLAY DEVICE

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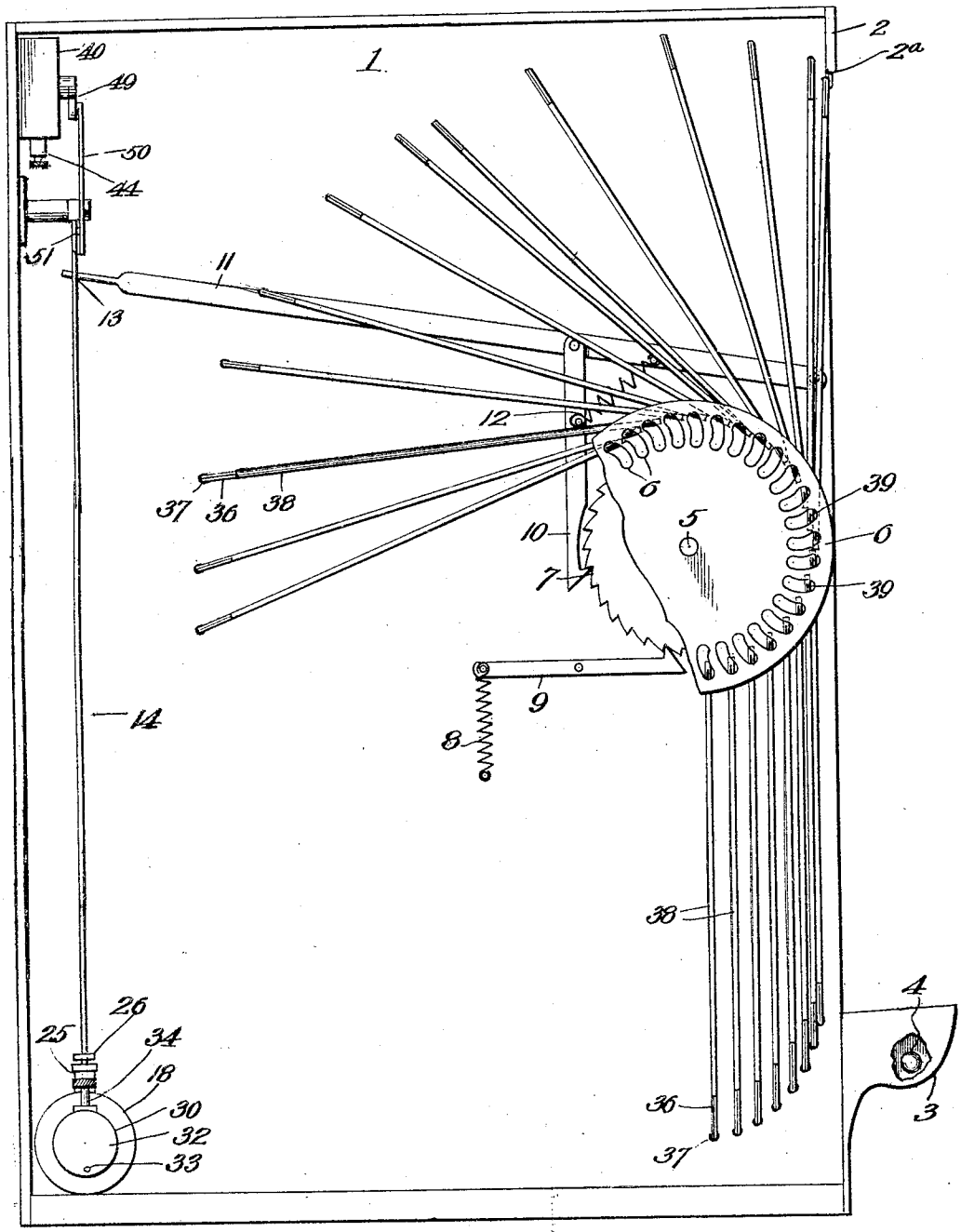


Fig. 3.

Inventor.
J. D. MacLachlan.

By Thorpe & Thorpe
Attorneys

Patented Sept. 6, 1932 1,875,321

UNITED STATES PATENT OFFICE

JOHN D. MacLACHLAN, OF KANSAS CITY, MISSOURI, ASSIGNOR TO MAC AD COMPANY, OF KANSAS CITY, MISSOURI, A CORPORATION OF MISSOURI

ADVERTISING CARD DISPLAY DEVICE

Application filed December 15, 1930. Serial No. 502,419.

This invention relates to electrically operated display advertising devices, and more especially to devices of that class for successively disposing the front face of each card of a series bearing advertising matter, in a display position and at the same time disposing the rear face of the preceding card in a cooperating display position so that the matter simultaneously displayed by two cards may constitute a single advertisement.

The object of the invention is to produce a device of the character mentioned which is not only efficient and dependable in operation, but will operate on any voltage and at exceedingly low cost for electric current.

Another object is to produce a device which will, for a long period of time, require no attention other than that necessary to remove an advertising card or cards and make replacement with another card or cards bearing a different message or announcement.

A still further object is to produce a device which can be adjusted quickly and easily for card operation at different speeds and card display for different periods of time and which is practically noiseless in operation at any speed.

With these general objects named in view and others as will hereinafter appear, the invention consists in certain novel and useful features of construction and organization of parts as hereinafter described and claimed; and in order that it may be fully understood, reference is to be had to the accompanying drawings, in which:—

Figure 1 is a front view, partly broken away and partly in section, of a display advertising device embodying the invention.

Figure 2 is a fragmentary plan view with the top of the casing omitted.

Figure 3 is a side view of the rear side of the casing and some of the cards omitted and with the rotary card carrier broken away.

Figure 4 is an enlarged fragmentary view of a solenoid forming a part of the device.

Figure 5 is a magnified cross section of the solenoid on the line V—V of Figure 1.

Figure 6 is a sectional view on the same scale as Figure 5, taken on the line VI—VI of Figure 1.

Figure 7 is a detail view of the snap switch forming a part of the device.

Figure 8 is a perspective view on a small or reduced scale of one of the advertising cards of the device.

Referring now to the drawings in detail, 1 is a casing open at its front side and provided at the top of said side with a depending molding stop strip 2 and one or more arresting pins 2*a* depending from said strip. The casing also is provided with a reflector 3 extending across the open side near the bottom thereof, and containing one or more incandescent lamps 4 for the illumination of the cards hereinafter identified, as they are brought to display position.

Adjacent the front opening and approximately midway the heighth of the casing, is a rotary card carrier, comprising a suitably-journaled transverse shaft 5, a pair of disks 6 and a ratchet wheel 7 rigid with the shaft, each disk having a circular series of slots 6*a* and the ratchet wheel a corresponding number of teeth, and engaging said wheel under the pressure of a spring 8, is a dog 9, for preventing back rotation of the carrier.

For effecting step-by-step rotation of the carrier, a pawl 10 is pivotally suspended from a lever 11 mounted on one end wall of the casing, and a spring 12, connects the pawl and lever to yieldingly press the former into engagement with the ratchet wheel in the up swing of the lever, or to permit the pawl to slide over the teeth of the ratchet wheel when the lever moves downwardly and the wheel is held against reverse turning movement by the dog 9.

The rear end of the lever 11 has a slidable and pivotal connection at 13 with one arm of a bell-crank lever 14 mounted to rock parallel with the back of the casing, and the free end of the other arm of the bell-crank has a pin and slot connection at 15, with the stem 16 of the core 17 of a solenoid 18, disposed horizontally upon the bottom of the casing in the vertical plane of the bell-crank lever movement.

The solenoid has a tubular brass lining 19 of greater diameter than, and fitting loosely around the core, and mounted on said lining

are the ends 20 and 21 of the solenoid, the end 20 being non-magnetic and the end 21, of magnetic material. With a solenoid of this construction, the movement of the core under magnetic influence, is more extended than could be obtained if both ends were of equal magnetic power. In effect, the use of the magnetic end results in focusing or concentrating the greatest pulling force at the other end and the result is that the bell-crank lever moves enough to insure the full operation of the snap-switch, hereinafter referred to, should it, for any reason fail to snap automatically after being operated a distance ordinarily sufficient for that result to follow. It is desirable to employ a solenoid of the character described, as it not only insures full operation of the switch, but also insures a full step movement of the carrier regardless of lost motion in the points of pivotal connection of and between the levers. It will be understood, of course, that any solenoid or its equivalent, capable of insuring the full operation of the switch may be employed, the one described being preferred because it has been thoroughly tested and found very dependable in operation.

To cushion the movement of the core when actuated under the magnetic influence of the solenoid, the latter has a brass extension or barrel 22 provided with a head 23, and with an exit 24 for air, communicating with a casing 25 controlled by a valve 26, the core stem having a piston 27 within the barrel, the latter in conjunction with the valve-controlled exit and piston constituting a dash pot, it being noted that the piston is provided with peripheral grooves to contain grease which will provide for lubrication without replenishment for a long period of time.

The barrel 22 has an internal shoulder 28 engaged by one end of a spiral spring 29 within the solenoid and a second barrel extension 30 thereof, and bearing at its opposite end against a piston 31 on the core and within said barrel 30 for the purpose of effecting reverse travel thereof when the solenoid is fully de-energized, and to reset the connected parts for the next operation of the snap switch hereinbefore mentioned for the re-energization of the solenoid. The barrel 30 has a head 32 having an opening 33 controlled by a valve 34, and the piston 31 serves in conjunction with the barrel 30 and valve-controlled head 31, as a dash pot for cushioning the spring-effected or reverse action of the core, and the parts operatively connected thereto, said piston 31 like the piston 27 having peripheral grease-retaining grooves for lubrication purposes.

The head 23 of the barrel 22, provides a support and guide for the core stem 16, and is equipped with a packing gland 35 to prevent leakage of air around said stem, it being understood that the valve-controlled openings of the barrels admit air to the latter upon the appropriate piston movements.

Advertising cards 36 equal in number to the number of teeth of the ratchet wheel, comprise duplicate sections fitted flatly together and held permanently in such relation by thin tin or equivalent channel strips 37 clamped upon the outer longitudinal edges of the sections, and similar channel strips 38 clamped upon the end edges of the sections, the channel strips 38 having alined flat arms 39 at the inner corners of the cards to engage opposite pairs of slots 6*a* of the disks of the carrier, the slots providing for quick and easy application of the cards in or for their removal from position through the front opening as the cards successively clear the pins 2*a* and start to swing downward to pendent position through the front opening of the casing. The slots also permit the cards to travel upwardly in a casing of relatively shallow depth from front to rear, as in such travel the cards stand in a downwardly and rearwardly sloping position until their respective trunnions have attained an elevation near the plane of the top of the disks, the slots also making it possible to mount a greater number of cards on the carrier than would be possible if the pivotal point of the cards were fixed and also permitting the lower edge of the upstanding front card to abut the upper edge of the foremost pendent card. The features of advantage due to the use of the curved slots and flat trunnions are explained and claimed in my application for patent filed July 9, 1930, Ser. No. 466,676, and it is believed that the reference herein made is sufficient to indicate that each step imparted to the carrier through the energization of the solenoid, is attended by the simultaneous display of the front side of the foremost upstanding card and that face of the foremost pendent card which was hidden when said card occupiel an upstanding position at the front side of the casing.

The switch 40 may be of any conventional snap-switch type, preferably of that type, which, when operated to a certain degree, will continue such operation with a snap and either make or break a circuit which includes the solenoid, and then leads to one binding post 42 of the switch, the other line wire being connected by a conductor 43 to the other binding post 44 of the switch. The latter, as shown has an oscillatory member 45 operatively engaging a rock arm 4 for permanently engaging one contact of the switch. Operation of the member 45 in one direction causes the arm 46 to electrically connect the two contacts 47—48, and in the other direction to break such electrical connection. To operate the oscillatory member, it is provided with a crank-arm 49 pivotally engaged by a link 50 having a pin-and-slot connection 51

with the bell-crank lever, the engagement being such that downward movement of the upper arm 14*a* of the lever effected by the spring 29, effects turning movement of switch member 45 until the snap-action occurs and thus completes the circuit as explained, the lever 11 being moved at the same time to dispose the pawl 10 in position to impart a step movement to the carrier.

The energization of the solenoid effects right-hand movement of the core and the latter causes the bell-crank lever to operate the lever 11 to turn the carrier and thereby change the display by pulling the foremost upstanding card below the plane of pins 2*a*, so that it shall swing downwardly and forwardly to pendent position mentioned and be replaced in its upstanding position by the next upstanding card, the original rear side of the first card and the front side of the replacement card being exposed to view through the open front side of the casing so that any advertising matter thereon shall be exposed to view. The operation of the bell-crank causes the link to rock member 45 and thus again break the circuit through the solenoid and permit the spring 29 to again function as explained, and each succeeding operation is a repetition of those described.

From the above description, it will be apparent that while I have described and claimed the preferred embodiment of the invention, it is to be understood that I reserve the right to make all change falling within the spirit of the invention and without the ambit of the prior art.

I claim:—

In an advertising device, a casing having an open front side, a horizontal transverse rotary carrier journaled in the casing, cards movable with and pivotally mounted at their inner corners on the carrier and adapted for independent pivotal movement from an upwardly-projecting position visible at the same side of the casing, a ratchet wheel rotatable with the carrier, a pawl to turn and a dog to prevent reverse turning movement of the ratchet wheel, a lever carrying the pawl, a bell-crank lever for operating the pawl-carrying lever, electrically-operated means for operating the bell-crank lever in one direction, an electric snap switch for making and breaking a circuit through said electrically operated means, a link establishing a pivotal pin-and-slot connection between the bell-crank lever and the switch, and means for reversing the movement of the bell-crank lever when the circuit through the electrically operated means is broken through operation of the snap-switch.

In testimony whereof I affix my signature.

JOHN D. MacLACHLAN.