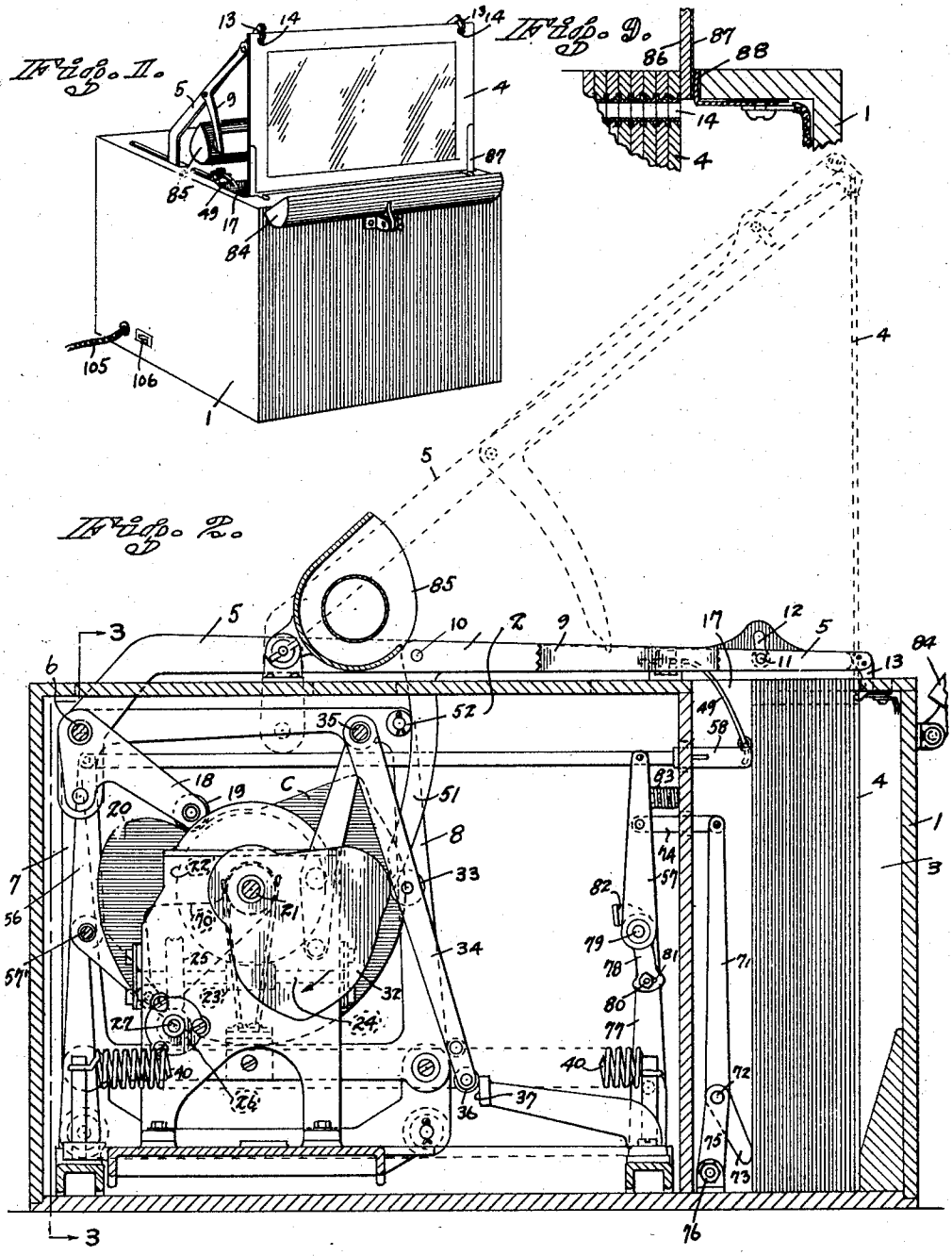
Dec. 31, 1929. W. A. GARLICK 1,741,228

CARD DISPLAY MACHINE

Filed May 24, 1927 3 Sheets-Sheet 1



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CARD DISPLAY MACHINE

Filed May 24, 1927 3 Sheets-Sheet 2

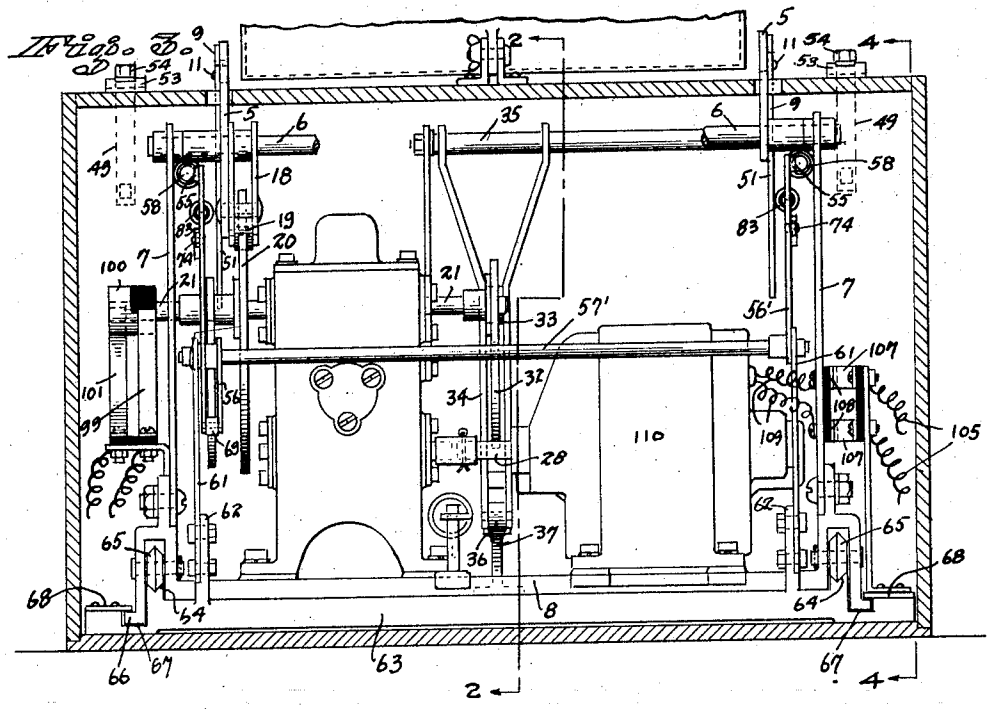


Fig. 3.

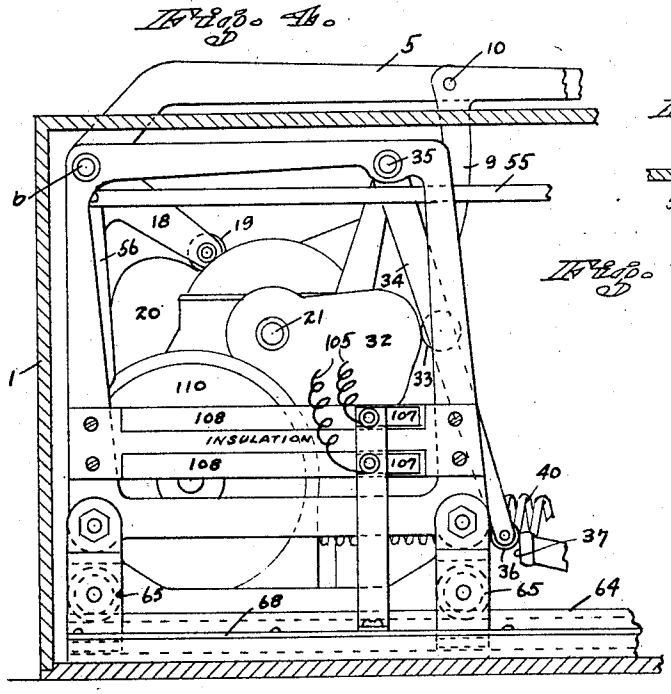


Fig. 4.

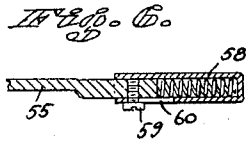


Fig. 6.

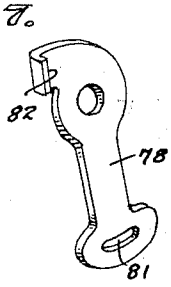


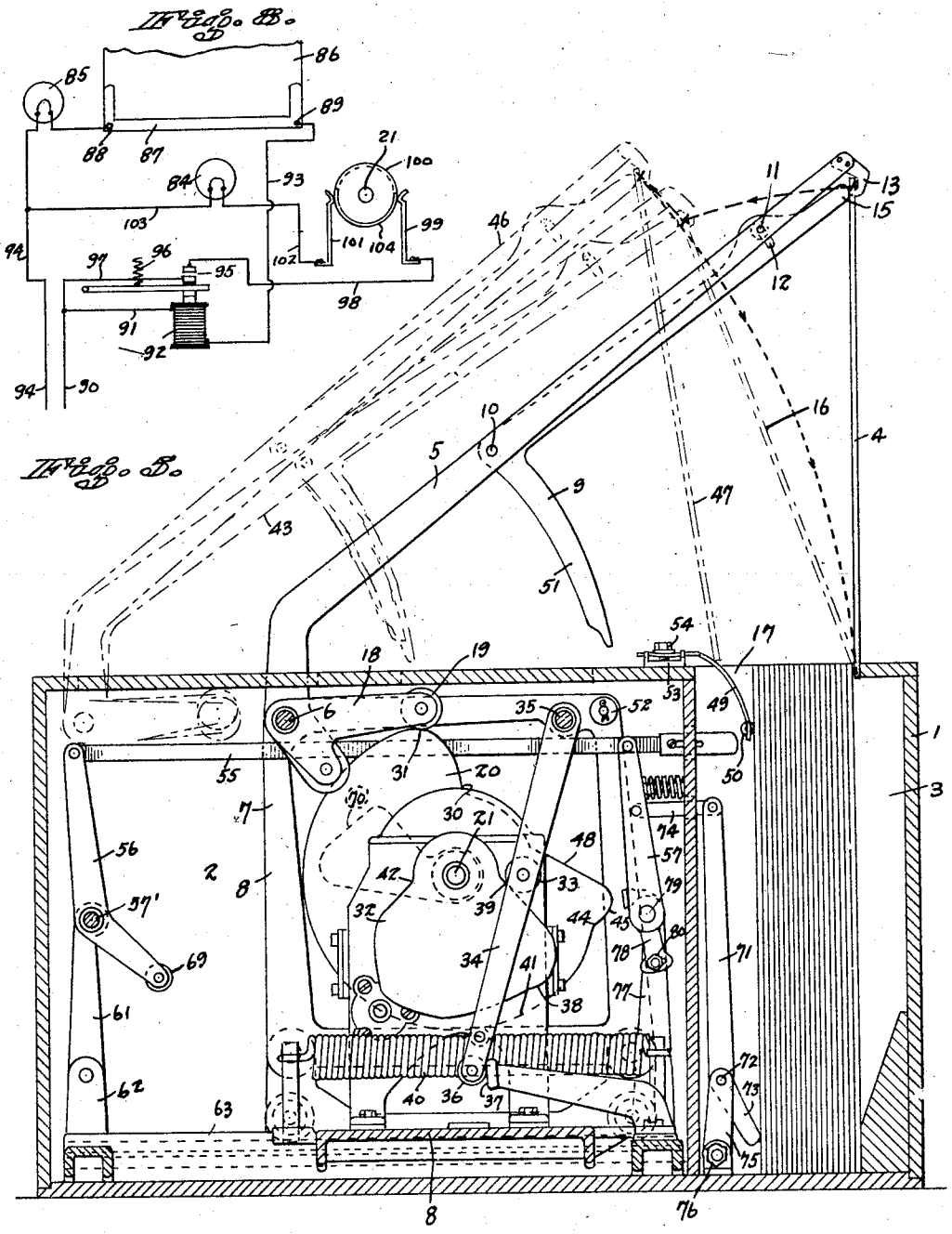
Fig. 7.

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Dec. 31, 1929. W. A. GARLICK 1,741,228

CARD DISPLAY MACHINE

Filed May 24, 1927 3 Sheets-Sheet 3



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Patented Dec. 31, 1929 1,741,228

UNITED STATES PATENT OFFICE

WILLIAM A. GARLICK, OF SAN FRANCISCO, CALIFORNIA

CARD-DISPLAY MACHINE

Application filed May 24, 1927. Serial No. 193,853.

My invention relates to improvements in card display machines and consists in the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide a card display machine which is adapted to automatically raise the front card from a group of cards, to a vertical position, to hold it in this position for a predetermined length of time and then lower the card behind the pack of cards, this same operation being repeated for each card in the pack while the machine is operating.

A further object of my invention is to provide a device of the type described, which makes use of novel means for moving the pack of cards forwardly for creating a space behind the pack for the reception of the card being temporarily exposed.

A further object of my invention is to provide a device of the type described which makes use of two sources of lights, one source being disposed in front of the exposed card for illuminating non-transparent cards while the other source is disposed in back of the exposed card for illuminating the transparent cards.

Other objects and advantages will appear in the following specification, and the novel features of my invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of this application, in which

Figure 1 is a perspective view of the device;

Figure 2 is a section along the line 2—2 of Figure 3;

Figure 3 is a section along the line 3—3 of Figure 2;

Figure 4 is a section along the line 4—4 of Figure 3;

Figure 5 is a view similar to Figure 2, but showing the moving parts in an altered position;

Figure 6 is a sectional view of a pusher rod;

Figure 7 is a perspective view of an adjustable stop;

Figure 8 is a wiring diagram of the device; and

Figure 9 is a sectional detail view showing one of the cards as being provided with a conductor strip.

In carrying out my invention I provide a casing 1, which is divided into two compartments 2 and 3, the compartment 2 housing the card lifting mechanism and the compartment 3 housing the cards.

I will first describe the compartment with the lifting mechanism which includes arms 5, see Figure 2, and which are pivoted to a shaft 6, the shaft in turn being carried by uprights 7 which form a part of a movable frame 8, see Figure 3. The arms 5 are adapted to be swung from the full line position shown in Figure 2 into the dotted line position during the initial movement of the machine. The arms in raising to this position will lift one of the cards 4 into vertically exposed position, as shown in Figure 2.

The manner of connecting the arms 5 to the front card 4 is shown in Figure 5. It will be noted from this figure that the arms carry bell-crank levers 9, which are pivoted to the arms at 10 and which are limited in their movement by a pin 11 riding in an arcuate slot 12 in the levers 9. The bell-crank levers 9 rest against hooks 13 carried by the free end of each arm 5. The hooks 13 are so fashioned as to enter an eyelet 14, see Figure 9, in the card 4. The hooks 13 of both arms will simultaneously enter the two eyelets in the front card. A swinging of the arms 5 will cause the hooks 13 to lift the card and will cause the end 15 of each bell-crank lever 9 to bear against the opposite face of the card, as clearly shown in Figure 5. In this way the card 4 is temporarily secured to the arms 5 and will be moved by the arms. It is obvious that if the pivot point 6 of the arms 5 shown in Figure 2 should remain in the same position throughout the entire swinging of the arms, the hooks 13 would describe an arc as they are moved upwardly and would therefore tilt the card into the dotted line position 16, shown in Figure 5. However, I provide means for moving the carriage 8 from the position shown in

Figure 2 into the position shown in Figure 5 and time this movement of the carriage with the swinging of the arms 5 so that the hooks 13 will rise vertically and will therefore hold the card 4 in a vertical position while it is being exposed. Of course, the compartment 3 is provided with an opening 17 in the top thereof for permitting the cards to be removed from the compartment.

I will now describe the means for initially swinging the arms 5 upwardly and for moving the carriage 8 forwardly at the same time. The arms 5, as hereinbefore stated, are connected to the shaft 6 and the shaft in turn carries an arm 18, upon the free end of which is mounted a roller 19 that rides upon a cam 20 fixed to a shaft 21, see Figure 2. Figure 2 also shows how the shaft 21 carries a worm gear 22, which is in mesh with a worm 23 that is carried by a shaft 24, the latter carrying a worm gear 25 in mesh with the worm 26 carried by a shaft 27, which operatively connects to a motor shaft 28, see Figure 3. In this way the speed of the motor shaft 28 is reduced sufficiently to cause the shaft 21 to slowly rotate.

When looking at Figures 2 and 5 it will be noted that the roller 19 rides over the surface of the cam 20 defined by numbers 30 and 31, while the arms 5 are being raised into the full line position shown in Figure 5. During this same time a cam 32 mounted upon the shaft 21 is engaging with a roller 33 carried by an arm 34, this arm being pivotally connected to the carriage 8 at 35 and having a roller 36 contacting with a stop 37. Figures 2 and 5 also show how the arm 34 will be swung from the position shown in Figure 2 into the position shown in Figure 5 as the arms 5 are swung from the full line position shown in Figure 2 into the full line position shown in Figure 5. During this movement the cam 32 will have traveled a distance to cause the roller 33 to move from a point 38 on the cam to a point 39. It will be noted that the carriage 8 is moved forwardly by a spring 40 and that the cam 32 merely determines the speed and the limit of travel of the carriage 8.

After the arms 5 have been raised into the full line position shown in Figure 5, the arms will remain in this position for a predetermined period of time, while the roller 19 controlling the movement of the arms 5 moves from the point 31 on the cam 20 to a point approximately at 41, and the roller 33 moves from a point 39 on the cam 32 to a point 42. The speed of the shaft 21 may be such as to cause any predetermined time limit to expire while the rollers are moving between the points above referred to, thus holding the card 4 in display position for the required time period.

Further movement of the cams 20 and 32 will now cause the arm 34 to move the carriage 8 back into the full line position shown in Figure 2, whereupon the arms 5 will be carried back into dotted line position 43, shown in Figure 5. This, of course, causes the card 4 to tilt at the angle shown by the dotted lines 16 in Figure 5. While the arms 5 have moved into the positions 43, the roller 19 will be riding from the point 41 on the cam 20 to a point 44, see Figure 5. At this juncture the roller 19 will strike a high point 45 in the cam 20, which will raise the arms 5 from the dotted line positions 43 into the dotted line positions 46. This will raise the hooks 13 high enough to free the lower edge of the card 4 from the pack of cards. The card 4 will now swing by gravity into the dotted line position 47, shown in Figure 5.

It will now be observed that cam 20 has a portion 48 which will permit the roller 19 to rapidly move and to lower the arms 5 into the full line position shown in Figure 2. During this movement the lower edge of the card 4 will ride over strips 49 past rollers 50 carried by the strips and down in back of the pack of cards 4. During this movement of the arms 5, the portions 51 of the bell-crank levers 9 will contact with idlers 52 carried by the carriage 8 and will cause the bell-crank levers to swing so as to release the hooks 13 from the eyelets 14. This, of course, frees the card 4 from the arms 5 and permits the card to drop in back of the pack while the arms 5 carry the hooks 13 to the front of the pack of cards for engaging with the next successive card.

The special construction of the strips 49 is shown in Figures 3 and 5 and it will be noted that the strips are secured to brackets 53 by screws 54 in such a manner that the screws 54 may be adjusted for varying the tension of the rollers 50 upon the back of the pack of cards.

At this point it will be well to notice the construction of the pack moving mechanism which automatically makes room for the exposed card by moving the pack of cards forwardly as soon as the front card is removed, this operation being repeated so long as the machine operates.

A rod 55, see Figure 5, is pivotally carried by a bell-crank lever 56 and by an arm 57. There are two of these rods 55 provided, one being disposed at each side of the machine and there are also two arms 57 provided for supporting the rods. One bell-crank lever supports one rod while an arm 56′ supports the other. Each rod 55 carries a spring-pressed plunger 58, see Figure 6, and this plunger is limited in its movement by a set screw 59 slidable in a slot 60. The bell-crank lever 56 and the arm 56′ are carried by uprights 61, which in turn are secured to lugs 62, see Figures 3 and 5, which are carried by the base 63. A shaft 57′ operatively connects the lever 56 with the arm 56′. Fig-

ure 3 shows how the base 63 is provided with tracks 64 for the reception of rollers 65, which carry the carriage 8. The carriage 8 is further provided with tongues 66 which ride in guide channels 67 and which are retained in place by cover plates 68.

The bell-crank lever 56 carries a roller 69 which is adapted to be contacted by a cam 70 carried by the shaft 21 when the cam is moved into operative relation with the roller 69 by the carriage 8. The cam 70 is so positioned on the shaft 21 as to actuate the bell-crank lever 56, rods 55 and spring plungers 58 when a card 4 is being swung from the dotted line position 16 into the dotted line position 47, see Figure 5. During this movement of the rods 55, the arms 57 will be swung to the right when looking at Figure 5 and will rock bell-crank levers 71 about pivots 72 for moving card pushers 73 away from the pack of cards. The bell-crank levers 71 are connected to the arms 57 by links 74 and the bell-crank levers may be adjusted by adjusting an arm 75 at the desired position and then tightening a nut 76, see Figure 5. Each arm 57 is carried by an upright 77 which in turn is secured to the base 63 and the arm may be limited in its movement in a counter-clockwise direction when looking at Figure 5, by means of a stop member 78 of the shape shown in Figure 7. The stop member 78 is pivotally mounted on the pivot point 79 of the arm 57 and is secured in adjusted position by a lock bolt 80. The bolt 80 passes through a slot 81 in the stop member 78, see Figure 7, and in this way the stop lug 82 may be positioned with respect to the arm 57 for limiting the movement of the arm.

The operation of this portion of the device is such as to cause the spring plungers 58 to contact with the pack of cards while the card pushers 73 are moved away from the pack of cards and then to move the spring plungers away from the cards while the pushers 73 contact with the cards. The movement of the plungers and the pushers is quick and one follows in rapid succession to the other so that as the card 4 is moved down in back of the pack of cards, the spring plungers 58 will have first moved the entire pack forwardly the thickness of one card, thus making room for the card dropping behind the pack and then these spring plungers will move away from the pack of cards while the card passes thereby. During the movement of the spring plungers away from the pack of cards, the pushers 73 will engage with the pack and will move the lower portion of the pack forwardly the thickness of one card, prior to the time of the exposed card dropping down into its lowermost position, yet subsequent to the time the exposed card passes the spring plungers 58. A coil spring 83 urges the arms 57 in a counter-clockwise direction.

I will now describe how the cards are illuminated when in exposed position. The machine is designed to display transparent and non-transparent cards and is provided with two sources of light, the source 84 being used for illuminating the front of the cards, while the source 85 is used for illuminating the back of the cards. The wiring diagram shown in Figure 8 clearly illustrates how the light 85 is illuminated when a transparent card 86 is raised into exposed position while the light 84 is extinguished. Each of the transparent cards 86 carries a metallic strip 87 which closes contacts 88 and 89, which are disposed as shown in Figure 9, so as to be engaged when the card 86 is in raised position. The current will now flow from line 90 through wire 91, magnet 92, wire 93, terminal 89, strip 87, channel 88, light 85 and wire 94. This energizes the light 85 and causes the magnet 92 to break the switch 95 which cuts off the circuit to the light 84. When, however, a non-transparent card is raised into exposed position, the current for light 85 will be broken between terminals 88 and 89 and will thus de-energize magnet 92, thus permitting a spring 96 to close the switch 95 and cause the current to flow from wire 90 to wire 97, switch 95, wire 98, brush 99, commutator 100, brush 101, wire 102, light 84, wire 103, and back to wire 94. The commutator carries a conductor strip 104 which closes the circuit to the light 84. The commutator 100 is carried by the shaft 21 and is therefore timed so as to energize the light 84 when the card 4 is in the position shown in Figure 1. If the card happens to be a transparent one, as shown in Figure 1, the light 84 is extinguished, and the light 85 is energized in the manner just described.

In Figure 1 I show an electric cord 105 leading from a source of current to the machine and a circuit through this cord being controlled by a switch 106. Figures 3 and 4 show how the wires 105 lead to brushes 107 which ride upon strips 108. Wires 109 lead from the strips 108 to the motor 110. In this way the circuit is kept closed to the motor while the carriage 8 reciprocates as soon as the switch 106 is closed.

The member 58 moves the cards forwardly to cause the front card to be impinged upon the hooks 13. The lever 71 moves the bottom of the cards forwardly to prevent the cards from bunching at the back of the pack.

Although I have shown and described one embodiment of my invention, it is to be understood that the same is susceptible of various changes and I reserve the right to employ such changes as may come within the scope of the appended claims.

I claim:

1. A device of the type described comprising a casing, a plurality of non-transparent and transparent cards carried by said casing, means for lifting said cards one at a

time into operative position, means for illuminating the front of the non-transparent cards when raised into operative position, and means for illuminating the rear of the transparent cards when raised into operative position, said last named means being controlled by the means carried by the transparent cards.

2. A device of the type described comprising a casing, a plurality of cards carried by said casing, means for raising the cards one at a time from the front of the pack of cards and depositing them in the back of the cards, and means for moving the top of the pack of cards forwardly prior to the dropping of an exposed card in back of the pack and for moving the bottom of the pack after the top has been moved and before the exposed card drops into its lowermost position.

3. A device of the type described comprising means for raising the front card of a pack of cards into vertical position, said means holding the card in display position for a predetermined time period, then moving the top of the displayed card into a position overlying the back of the pack of cards, then raising the display card for freeing the bottom thereof from the pack whereby said card will swing by gravity into vertical position, then lowering the card; and means for moving the pack of cards forwardly for making room for the lowered card.

4. A device of the type described comprising a casing, a carriage movably mounted in said casing, card lifting arms pivotally carried by said carriage for engaging with the top of a card, and mechanical means carried by said carriage forwardly for moving said carriage and said arm upwardly simultaneously for causing the card to be lifted vertically.

5. A card display machine comprising a casing, a plurality of cards carried thereby, a carriage, arms carried by said carriage for lifting a card, means for moving the carriage toward the front of the pack of cards and the arms upwardly for causing a card to be raised vertically into operative position, said means subsequently reversing the movement of the carriage for conveying the card to the back of the pack.

6. A card display machine comprising a casing having two compartments, a plurality of cards disposed in one compartment, a carriage mounted in the other, card lifting arms secured to said carriage, a cam shaft for simultaneously moving said arms upwardly and said carriage forwardly for causing the arms to successively raise the cards in a vertical direction when moving them into operative position.

7. A card display machine comprising a casing, a plurality of cards carried thereby, a carriage disposed in said casing, arms carried by said carriage for successively engaging with the cards, a cam shaft for simultaneously moving said carriage forwardly and arms upwardly for causing said arms to raise the cards vertically into operative position, and means actuated by the cam shaft for moving the top of the pack of cards forwardly prior to the dropping of an exposed card in back of the pack.

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