

A. S. TREW.
CARD DISTRIBUTING MACHINE.
APPLICATION FILED JAN. 8, 1920.

1,375,241.

Patented Apr. 19, 1921.

3 SHEETS—SHEET 1.

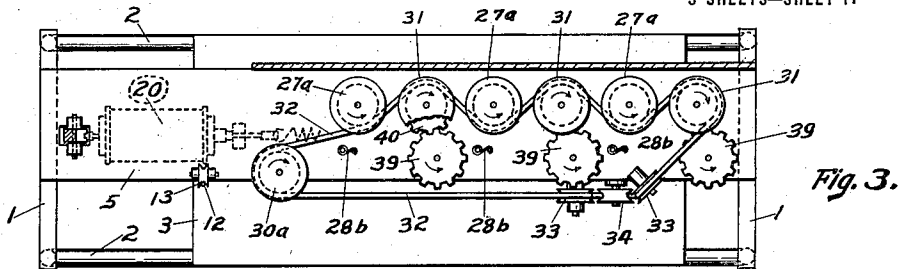


Fig. 3.

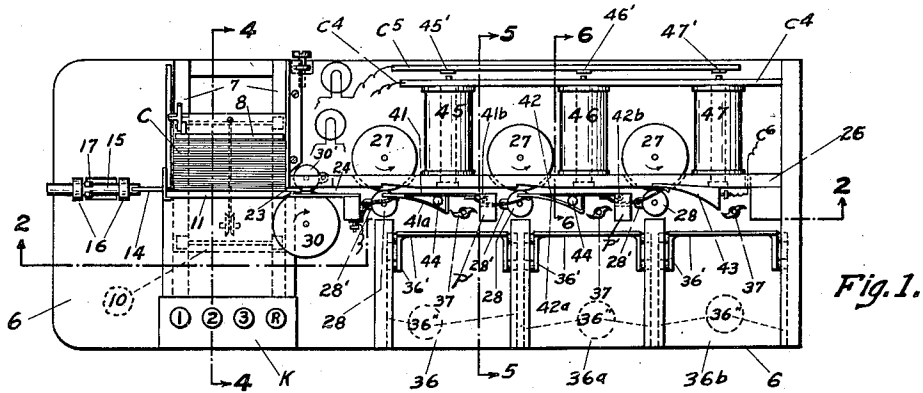


Fig. 1.

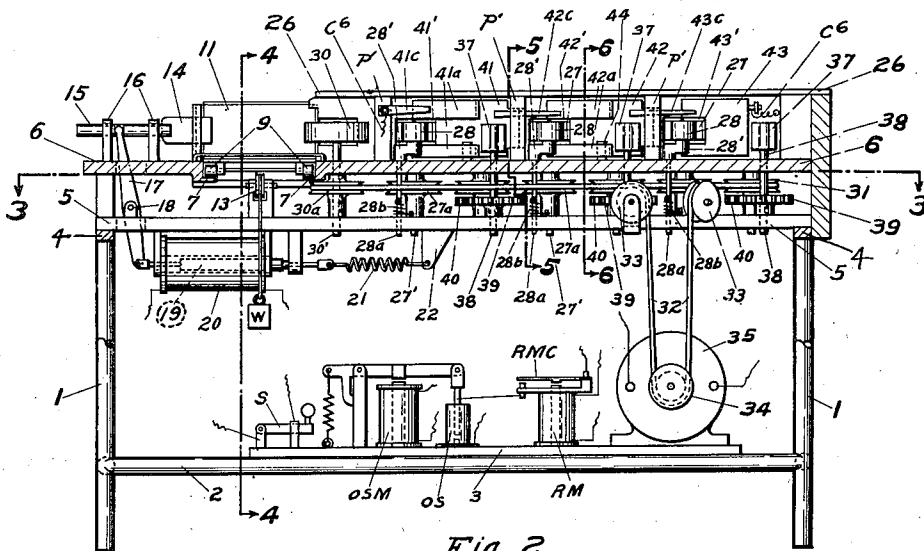


Fig. 2.

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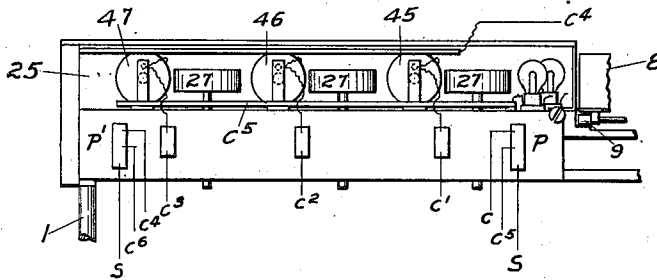


Fig. 7.

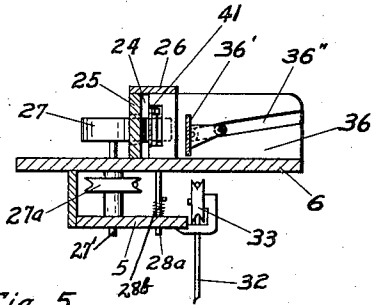


Fig. 5.

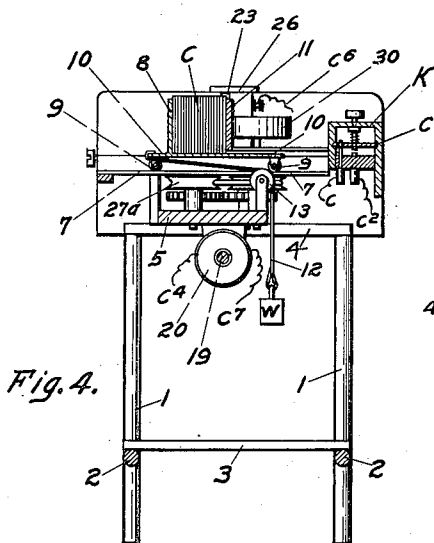


Fig. 4.

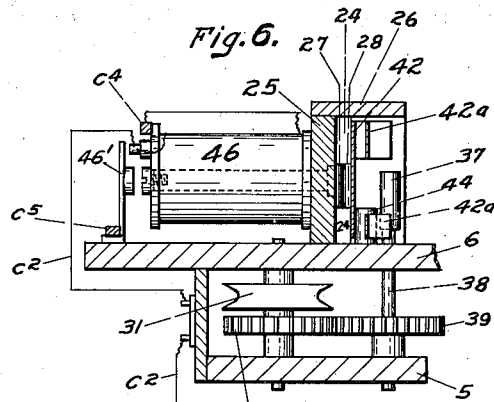


Fig. 6.

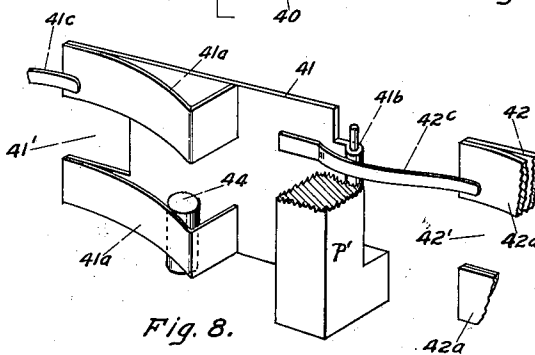


Fig. 8.

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3 SHEETS—SHEET 3.

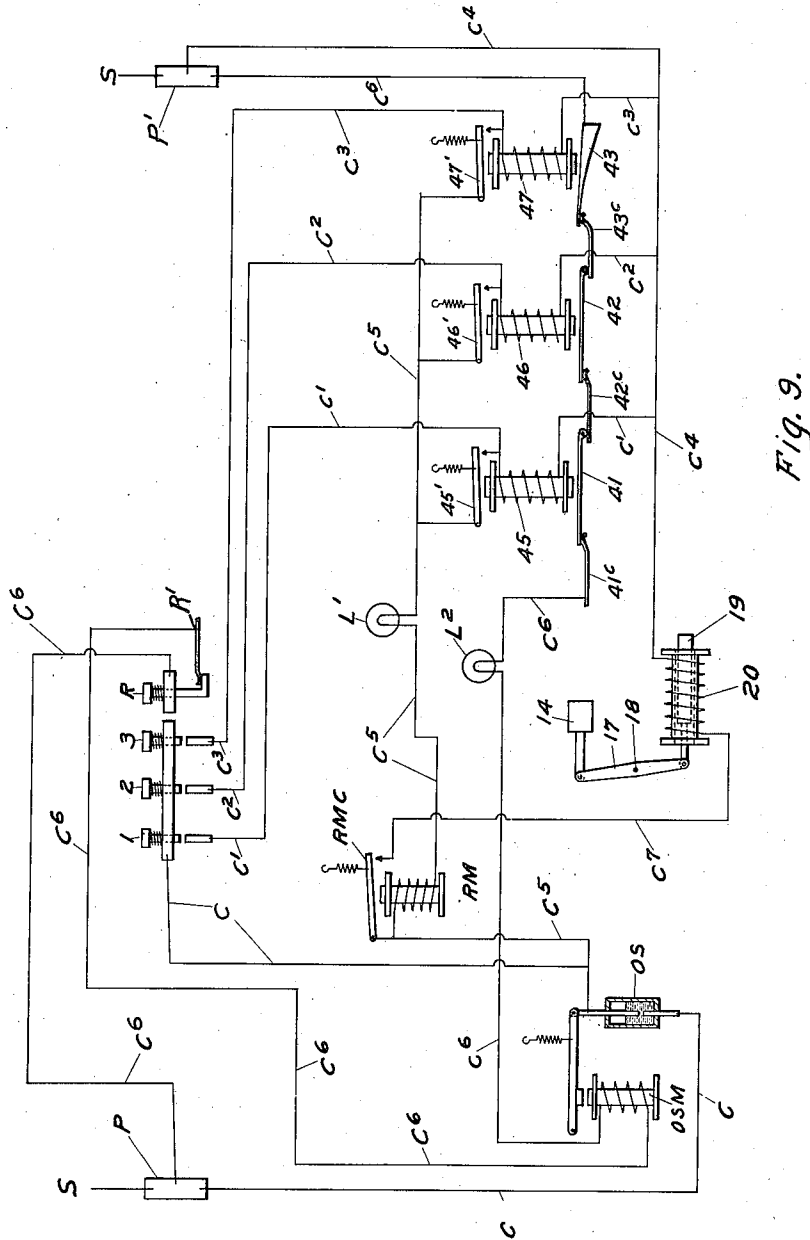


Fig. 9.

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ARTHUR S. TREW, OF PORTLAND, OREGON.

CARD-DISTRIBUTING MACHINE.

1,375,241.

Specification of Letters Patent. Patented Apr. 19, 1921.

Application filed January 8, 1920. Serial No. 350,252.

To all whom it may concern:

Be it known that I, ARTHUR S. TREW, a citizen of the United States, residing in the city of Portland, county of Multnomah, and State of Oregon, have invented certain new and useful Improvements in Card-Distributing Machines, of which the following is a specification.

My invention relates to card distributing machines of the character referred to in my pending applications filed, respectively, April 20, 1912, Serial No. 692,146, and August 25, 1913, Serial No. 786,546, and has for its principal object to provide another improved and highly efficient mechanism for distributing cards, tickets and the like. Among the other objects of the present invention are,—to provide in a machine of the character referred to an improved and highly efficient mechanism for moving the cards from the container along a course of travel; to provide in connection therewith improved and effective switch members for directing said cards at will from said course of travel into the receiving pockets or receptacles; to provide in connection therewith an improved container carriage for the cards, with means for feeding the same forwardly bodily to an ejector without exerting any increased pressure on the cards contained therein which would interfere with their successful ejection, one by one, from said container. Other objects and advantages will be apparent from the following description of one practical embodiment of the invention illustrated in the accompanying sheets of drawings forming a part hereof, and in which,—

Figure 1 is a top plan view of a machine embodying my invention;

Fig. 2 is a front elevation thereof, with parts in section, as along line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a cross sectional view taken on line 4—4, Figs. 1 and 2;

Fig. 5 is a cross sectional view of the upper part of the machine, taken on line 5—5, of Figs. 1 and 2;

Fig. 6 is a cross sectional view of the upper part of the machine, taken on line 6—6 of Figs. 1 and 2;

Fig. 7 is a partial rear elevation showing magnets with circuit connections indicated;

Fig. 8 is a detailed view of one of the

switch members, showing also electrical connections from one to the other; and

Fig. 9 is a diagrammatical view showing electrical circuits and connections.

Referring now more in detail to the drawings, my invention as here illustrated, comprises a supporting frame or table, composed of the end leg members 1—1, with lower cross connecting members 2—2, supporting a lower shelf 3, and with upper connecting members 4—4, supporting an upper shelf 5, and with a table top 6 supported thereabove.

I will first describe the card container mechanism with the ejector for ejecting the cards therefrom, one by one. Referring to Figs. 1, 2, and 4, it will be noted that at the left hand end of the table 5, there is an opening therethrough, at the bottom of which at opposite sides thereof, are track members 7—7, upon which moves crosswise of said table a card container carriage 8, provided with wheels or rollers, as 9—9, adapted to said track members. The front edge of the bottom 10 of the container is adapted to move under a front window 11, stationary with the table top 6. Instead of pushing the cards forwardly together in the container, I have found that it is better to provide a movable container carriage and thus avoid undue compression on the cards which interferes with their ejection from the container. The card container is normally drawn forwardly by means of a weight W, suspended from the top by means of a cable 12, running over a pulley 13, and attached to the rear end of the bottom 10 of the card carriage or container 8, as clearly indicated in Fig. 4. As the container carriage is thus moved forwardly, the cards C therein are moved forwardly with the foremost card against the retaining window 11, immediately in the rear of which is a reciprocating ejector member 14, Figs. 1 and 2, upon the end of a plunger rod 15, mounted to be reciprocated through standards 16—16, by means of a rocker arm 17, pivotally mounted intermediate its ends, as at 18, and adapted to be rocked forwardly by means of a core 19, in a magnet 20, with which it is connected as indicated, whenever said magnet is energized, said core 19 and lever 17, being moved to the inoperative or normal position by means of a spring 21, attached to said core at its opposite end and

- to a stationary part 22 secured to the upper shelf 5. Thus when said magnet 20 is energized, in a manner to be hereinafter described, its core 19 is moved to the left operating through the rocker arm 17 to move the ejector 14 to the right so as to eject the foremost card laterally from the opposite side of the container, as through a side opening 23, Fig. 1.
- 10 Along the table top 6, extending laterally from said opening 23, is a passageway, or course of travel, designated 24, with a back wall as 25 extending therealong and with a top ledge, as 26 above the same. Rotatably mounted at intervals along the rear of said passageway and projecting through said back wall 25, are a number of transfer or feed rollers, 27—27—27. On the opposite side of said passageway and opposite said rollers, and frictionally driven thereby, are corresponding smaller feed rollers, as 28—28—28. A large roller 30 and a small roller 30', adjacent the discharge opening 23, serve to grip the cards as they are ejected from the container and to pass them along to the rollers 27 and 28, as will be readily understood, each pair of rollers passing them to the next pair, unless intercepted by a switch to be hereinafter referred to.
- 30 Said rollers 30 and 27 are mounted upon the upper ends of vertical shafts, designated, respectively, 30' and 27', mounted in suitable bearings through the table top 6 and at their lower ends projecting through the upper shelf 5, as indicated, and are provided between said table 6 and shelf 5 with driving, grooved pulleys, as 27^a and 30^a. Also mounted between said table top 6 and the upper shelf 5, are idler pulleys, as 31—31, to give direction and frictional contact to a driving belt or cable 32 for driving the pulleys 27^a, which drive the transfer rollers 27, which driving belt or cable 32, after passing over guide pulleys, as 33—33, passes down to a driving pulley 34, upon a motor 35, by means of which the feed or transfer rollers 30, 27—27 are continuously driven through the connections just described. Therefore, as a card is ejected from the container carriage at the side opening 23 thereof, it is first gripped by the rollers 30 and 30' and thrown along the passageway 24 to the first pair of rollers 27—28, thence to the second pair and so on along the passageway leading straight out from the discharge opening 23 at the side of the container. The small rollers 28, instead of being mounted directly upon vertical shafts, are mounted upon crank-like members, as 28' upon the upper ends of the shafts 28^a, which are mounted between the table top 6 and the upper shelf 5, and are provided with coiled springs, as 28^b, on the shelf 5, which normally hold the small rollers in yielding contact with the large rollers 30 and 27, whereby to grip the cards or tickets and pass them along.
- 36, 36^a and 36^b designates three receiving pockets or receptacles adapted to receive the cards or tickets to be distributed. It is understood, of course, that the machine can be extended to any length desired and with any number of feed rollers and receiving pockets. Within each pocket or receptacle is a follower head, as 36', provided at its opposite ends with anti-friction rollers, adapted to run in inclined guideways, as 36'', in the opposite side walls of the pocket, as clearly indicated in Fig. 5, whereby said follower head automatically, by gravity, tends to move the cards or tickets forwardly in the pocket or receptacle. Mounted at the front of each pocket or receptacle, is a rotating beater, as 37, adapted to keep the cards or tickets discharged into the pocket pushed back against the follower head 36'. Said beaters 37 are each mounted upon the upper end of a shaft, as 38, extended through the table top 6 and the upper shelf 5, as indicated, and each beater shaft 38 is provided with a gear, as 39, see Figs. 3 and 6, adapted to mesh with an adjacent gear, as 40, mounted upon each of the shafts which carries an idler pulley, 31. Thus said beaters are driven at a high speed from the idler pulleys which are driven by the belt or cable 32 from the motor 35.
- I will next describe the switch mechanisms by means of which the cards sent along the passageway 24, by the feed rollers 30—30' and 27—28, are turned into the receiving pockets 36, 36^a, or 36^b. 41 and 42 designate movable switch members, hingedly mounted at their attached ends to supporting posts, as P', and 43 designates a fixed switch block, which need not be movable for it directs the cards or tickets into the last pocket. These switch members are located along one side of the passageway 24, and each comprises a flat strip of spring metal set edgewise, and each being cut out or notched at its free end as at 41' and 42', so as to straddle the rollers 27—28, and each being bent back upon itself a short distance at its free or forward end (see Fig. 8), with the rearwardly projecting portions flared outwardly, as at 41^a and 42^a, and then bent inwardly at an angle, toward the body, but not attached thereto, as clearly indicated in Fig. 1. Mounted between the main portion of each switch member and the bent back portion thereof, in the table 6, is an upstanding pin or stud, as 44, of insulating material, and when the switch members 41 and 42 are moved inwardly across the passageway 24, in a manner hereinafter described, upon their hinges, 41^b and 42^b, the lower flaring spring portions 41^a and 42^a of said switch members yieldingly bear against said pins or

studs 44, and operate to draw said switch members back into their normal positions as soon as they are released. The portions 41^a and 42^a of the switch members 41 and 42 are so curved and positioned that when any of the switch members are moved across the card passageway, they form an effective guide or switch for directing any cards traveling said passageway into the pocket or receptacle whose switch member is open, and into position to be beaten back into the pocket by the beaters referred to.

As a means for operating said switch members 41 and 42, I have provided an electro-magnet for each, positioned opposite the switch and at the opposite side of the passageway 24, as indicated. When said magnets are energized, they operate to draw said switch members across said card passageway to direct the cards or tickets into the pocket or receptacle opposite thereto.

A series of controlling keys, as at K, Fig. 1, is provided with which to manually control the operation of the machine and the distribution of the cards in the card carriage 8. A key is provided for each pocket or receptacle in which the cards or tickets are to be distributed. These keys are marked 1, 2, and 3, and a fourth key R is shown whose function is to break the electric circuit at will so as to permit the parts to be returned to their normal positions. Key 1 corresponds to pocket 36, key 2 to pocket 36^a and key 3 to pocket 36^b. Each key is connected into an electric circuit which controls the ejector magnet 20, and each pocket key is also connected into and controls a circuit which energizes the particular magnet for moving the switch member which directs the cards or tickets into its particular pocket, as for example, key 1 controls a circuit which not only energizes the magnet 20 for operating the ejector, but also controls a circuit which energizes magnet 45 which operates to draw switch member 41 to itself and across the card passageway 24, so as to direct the card or ticket traveling the passageway 24 into the pocket 36. Key 2 in addition to controlling the circuit including the ejector magnet 20, controls a circuit including the magnet 46 which, when energized, opens switch 42.

I will now describe the circuit connections, in connection with the various movable parts, and as illustrated in Fig. 9 of the drawings, in which the several parts heretofore described are given the same reference numbers.

The electric energy for operating the mechanism can be taken from any suitable source, with the main lines connected to the machine in any desired manner, as by means of two terminal plates, P and P' on the back of the machine, and also shown in Fig. 7, which said main circuits can be connected

through a main switch, as S, mounted in any convenient location on the machine, as indicated in Fig. 2.

The operating circuits run through the machine from terminal plate P to terminal plate P', and in the present embodiment of the invention, there are four circuits which I will designate as circuit one, circuit two, circuit three and circuit four.

Circuit one is traced from terminal plate P through the line designated C¹ and extends from the plate P to and through a key R of the key board, a spring contact member R', thence to and around an oil switch magnet OSM, through lamp L², and thence through the main card switch members 41, 42 and 43, by means of the spring contact members 41^c, 42^c, and 43^c, clearly indicated in Fig. 1 and also in Fig. 8, and thence to the terminal plate P'. This circuit is normally completed and is broken by pressing the key R, which moves it away from the contact member R', and is also momentarily broken by the passing of a card or ticket between any one of the contact members 41^c, 42^c, or 43^c and the switch member with which it normally stands in contact.

Circuit two is traced from the terminal plate P through the line designated C and extends from the plate P to and through the oil switch OS, which has been closed by the passing of circuit one through the oil switch magnet OSM, thence to the key plate and through any of the keys 1, 2 or 3, over the key lines C¹, C², or C³, as the case may be, thence to the magnets 45, 46 or 47, thence to line C⁴ and to the terminal plate P'.

Circuit three is traced over the line C⁵ and starts from the oil switch OS, thence to and around relay magnet RM, through lamp L', through relay contacts 45', 46', or 47', as the case may be, which contact members have been closed by circuit two passing over the line C¹, C² or C³, around one of the magnets 45, 46 or 47, thence from said contact members 45', 46', or 47', said circuit joins circuits C¹, C², or C³, as the case may be, to line C⁴, and thence to the terminal plate P'.

Circuit four may be traced over line C⁵ from the oil switch OS to the relay magnet contact RMC, thence by line C⁷ to magnet 20, which operates the card ejector 14, thence through line C⁴ to terminal plate P'.

In operation the four circuits just described and traced on Fig. 9 of the drawings, cooperate with each other in the following manner: Supposing key 1 is pressed by the operator with the object in view of causing the foremost card in the container to be ejected and deposited in the first receiving pocket 36. The pressing of this key 1 completes circuit two described over the line C¹, energizing magnet 45. This closes contact member 45' and also attracts main switch

member 41 to the magnet 45, thus opening the way into the receptacle or pocket 36. The spring contact member 41^c, however, keeps contact therewith. Circuit two, though only momentarily closed by the pressing of the key 1, energized magnet 45 and closed circuit three, which also passes through magnet 45, as described, and maintains the magnetism thereof, though the key 1 be released, it only being necessary to touch the key to establish and maintain the magnetism of magnet 45, which opens and holds open the main switch 41 leading into pocket 36. There is also established circuit four from the oil switch OS over lines C⁵ and C⁷, through the magnet 20 which moves the ejector and ejects the foremost card or ticket in the container. Thus by pressing key 1, circuits, two, three and four are all completed, the main switch member is opened, the ejector is operated and the card started. The card or ticket is forced along the card passageway adjacent to the card pockets in the manner hereinbefore described. As soon as the card passes between the main switch member 41 leading into the first pocket 36, and the light spring contact member 41^c, it thereby breaks circuit one, which runs over line C⁶. As this circuit controls the oil switch magnet OSM, and it is thus momentarily demagnetized, the oil switch OS is opened, thereby opening all the other circuits. As soon as the card passes between contact member 41^c and the main switch 41, the circuit one, over line C⁶ is complete, being only momentarily broken by the passing of the card, and this is done to open the oil switch. Thus whenever any of the keys 1, 2 or 3, is pressed, the action just described takes place. By pressing the key R, circuit one is manually broken, the oil switch opened and all the circuits opened at will.

Thus it will be noted that I have provided an improved card distributing machine in which, when a key is pressed, a card or ticket is ejected from a container and instantly transmitted to a card-receiving pocket or receptacle corresponding with that particular key and that the pressing of that key sets into operation the mechanism necessary to accomplish this act, and that the card itself, as it passes into the pocket, operates to restore the mechanism to its normal condition, ready for another operation by the same key, or any other key.

I am aware that changes can be made in the invention as illustrated and described without departing from the spirit thereof and I do not, therefore, limit the invention to the details here shown and described, except as I may be limited by the hereto appended claims.

I claim:

1. In a card distributing machine, in com-

bination, a container for cards, an ejector working therein, a series of card receiving pockets, with a straight horizontal card passageway formed from said container along side of said pockets, a series of feed rollers arranged in pairs along said passageway and adapted to feed the cards along said passageway from said container, with means for driving the same, switch members, for said card receiving pockets adapted to be moved across said passageway to direct cards into said pockets, a series of keys corresponding to said receiving pockets, and operating connections from said keys to said ejector and said switch members, whereby the movement of the key in one direction operates said ejector to eject a card and also sets the desired switch member.

2. In a card distributing machine, a card container carriage movably mounted, means for moving the same forwardly, a stationary retaining member under which the base of the carriage moves with the cards resting thereagainst, a card ejector and means for operating the same to eject the exposed card from said container carriage one by one as said card carriage advances.

3. In a card distributing machine, in combination, a container, an ejector operating therein, a series of feed rollers arranged in pairs and adapted to pass said cards along from one pair to another, means for driving said feed rollers, a series of receiving pockets for said card adjacent said feed rollers and a series of switch members adapted to be moved into positions between pairs of feed rollers to intercept said cards and turn them into said receiving pockets, and means for operating said ejector at will and for operating said switch members simultaneously with the ejection of a card.

4. In a distributing machine for cards, tickets and the like, a container with an ejector for ejecting the cards therefrom one by one, a series of receiving pockets with a straight card passageway extending horizontally from said container along said receiving pockets, a series of feed rollers arranged in pairs at intervals along said passageway for passing said cards, tickets or the like along said passageway, switch members movably mounted and adapted to be moved across said passageway between pairs of feed rollers to intercept said cards and to turn them into said pockets, means for driving said feed rollers, a series of operating keys corresponding to said receiving pockets, and operating connections from said keys to said ejector and to said several switch members, whereby the manipulation of a key in one direction operates said ejector to eject a card and set a corresponding switch member, substantially as described.

5. In a machine of the character referred

to, a carriage movable bodily in opposite directions and adapted to hold a supply of tickets or cards edgewise thereon and to move them bodily forwardly, means for moving said carriage forwardly, a retaining window against which the foremost card rests as said card carriage is moved forwardly, and means for ejecting said foremost card laterally from said carriage, for the purpose indicated.

6. In a machine of the character referred to, in combination, a card carriage adapted to hold a supply of cards, tickets or the like in edgewise position, means for moving the same bodily forwardly with the cards thereon as said cards are ejected therefrom, a reciprocating ejector adapted to eject said cards one by one laterally from said carriage, means for operating said ejector at will, and a retaining window in front of said carriage and against which said cards are lightly pressed as said carriage is moved forwardly, substantially as described.

7. In a distributing machine of the character referred to, a supporting table, a card container, an ejector for ejecting cards therefrom, one by one, means for operating the same, a series of receiving pockets along said table with means for holding cards therein in order, means forming a passageway from said container along adjacent said receiving pockets, feed rollers arranged in pairs along said passageway and adapted to grip the ejected card from said container and drive it along said passageway, switch members movably mounted for each receiving pocket and adapted to be moved across said passageway between pairs of feed rollers to intercept said cards and turn them into said pockets, and means for operating at will said switch members simultaneously with the ejecting movement of said ejector, substantially as described.

8. In a card distributing machine, in combination, a table, a card container carriage movably mounted thereon, means for moving the same forwardly, an ejector adapted to eject cards from said carriage one by one, a series of receptacles for said cards, switch members movably mounted to direct said cards into said receptacles, a series of feed rollers arranged in pairs and adapted to feed said cards from said container carriage along side of said receptacles, magnets for operating said ejector and said switch members, a series of operating keys corresponding with said receptacles, a source of electrical energy, circuit connections therefrom to said magnets and including said keys for controlling said circuits, whereby the pressing of a key causes the operation of the ejector and a switch member, and means for holding the cards in order in said receptacles, substantially as described.

9. In a machine of the character referred

to, in combination, a container, an ejector with magnet for operating the same, a series of receptacles for cards, tickets or the like, movably mounted switch members for directing said cards into said receptacles, magnets for operating the same, a series of controlling keys corresponding to said receptacles, and circuit connections including said keys and said magnets, whereby the manipulation of said keys causes the operation of the ejector and switch magnets, means for moving said cards from said container to said receptacles, and means whereby said cards break said circuits as they move into said receptacles.

10. In a machine of the character referred to, a series of card receptacles with a card passageway along adjacent thereto, switch members for directing cards into said receptacles from said passageway, means for moving said cards along said passageway, magnets for controlling said switch members, a source of electricity with circuit connections to said magnets, a series of finger keys corresponding to said receptacles and connected into said circuits for closing the same, and contact members in said circuits adapted to be separated by the passing of cards therebetween, whereby to momentarily break said circuits, substantially as described.

11. In a machine of the character referred to, in combination, a card container, an ejector therefor with magnet for operating the same, a series of card receptacles, means forming a passageway from said container along said receptacles, feed rollers arranged in pairs along said passageway for passing cards along the same, means for operating said feed rollers, switch members movably mounted adjacent said receptacles and adapted to be moved across said passageway to intercept said cards and turn them into said receptacles, magnets for moving said switch members, a series of finger keys corresponding to said receptacles, means for connecting said machine with a source of electricity, a plurality of circuit connections through said machine including said magnets and said finger keys, and magnet-controlled contact members in said circuits, whereby one circuit when completed will establish other circuits, and whereby one circuit when broken, will cause the breaking of the others, substantially as described.

12. In a machine of the character referred to, for distributing cards, electrically-controlled mechanism and circuit connections therefor to determine the points of distribution of the cards, contact members arranged in the path of travel of the cards to be distributed, and means for feeding cards between said contact members to momentarily separate them and break the determining circuit controlled thereby.

13. A card distributing machine comprising

ing in combination, a card container, an electrically operated ejector for ejecting cards therefrom one by one, a series of receiving pockets, a series of electrically controlled switch members, one for each pocket, to direct cards into said pockets, means providing a passageway for cards along adjacent said pockets and switch members with means for propelling the cards along said passageway, a series of operating keys corresponding with the receiving pockets, with electrical connections to said ejector and to said

switch members, whereby the pressing of a key sets said mechanism into operation, and means operated by a passing card to stop said operation.

Signed at Portland, county of Multnomah, and State of Oregon, this 23 day of Dec., 1919.

ARTHUR S. TREW.

In presence of—

ALEX. E. SORUM,
JOHN WM. WEIMER.