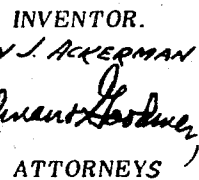


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CARD DISPENSER HAVING A PLURALITY OF SOURCES AND A
PLURALITY OF CARD EJECTORS

PLURALITY OF CARD EJECTORS

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FIG. 5

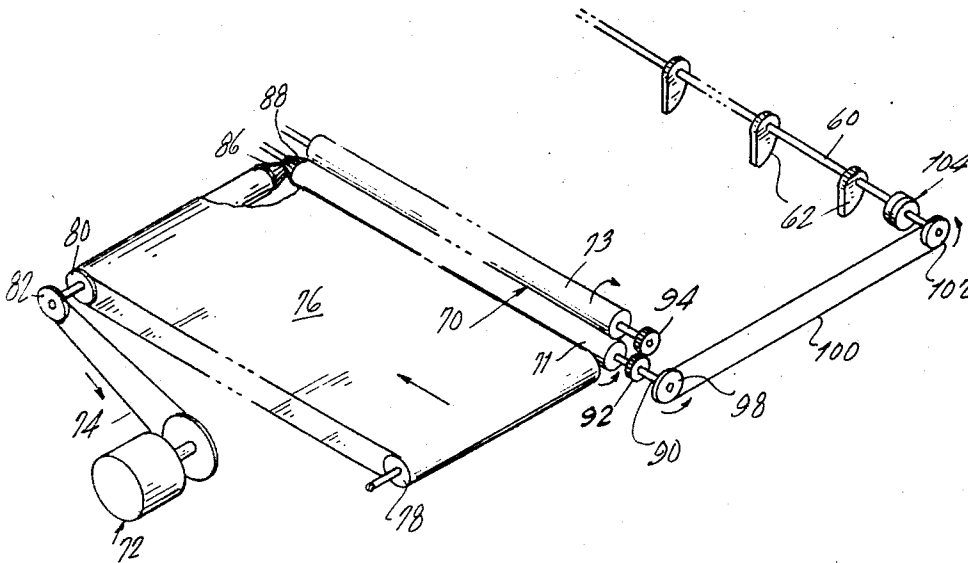
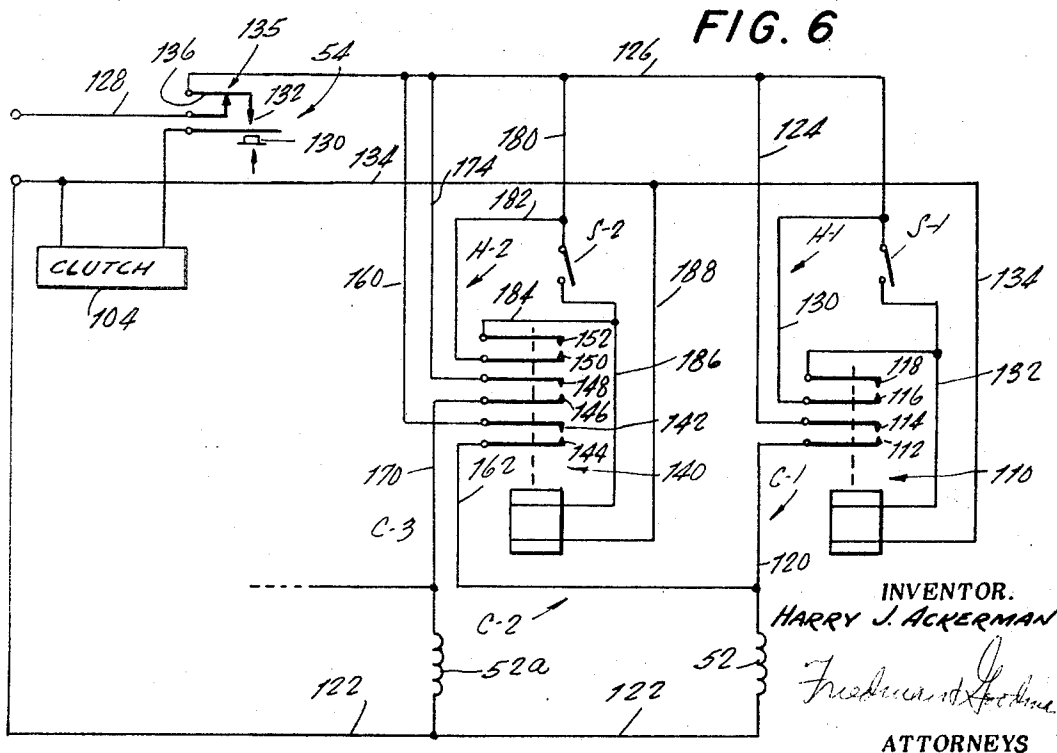


FIG. 6



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CARD DISPENSER HAVING A PLURALITY OF SOURCES AND A PLURALITY OF CARD EJECTORS

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4 Claims

ABSTRACT OF THE DISCLOSURE

This invention and disclosure are directed to a card dispensing device and the like whereby a card in a stack of cards can be automatically dispensed from the stack. The device includes means for holding the cards in a stack, means for cocking a card dispensing pusher plate, means for projecting the cocked plate forward, and exit means. In an embodiment, means are provided to receive the card and carry it in a longitudinal direction.

BACKGROUND OF THE INVENTION

Field of the invention

This invention is in the field of devices for dispensing cards. In a particularly desirable embodiment, this invention relates to a device for dispensing a plurality of cards from the same number of vertical stacks.

Discussion of the prior art

Heretofore device of all sorts have been provided to dispense cards stacked in a vertical stack. A unique problem exists when it is desired to dispense bingo cards or other cards used in a game of chance. Normally the players desire to pick more than one card before sitting down to play the game. Because of their belief that cards adjacent one another are not likely to both be "lucky" cards or both be "unlucky" cards they generally refused to pick adjoining cards in a vertical stack. Thus, a device has been needed which would automatically substantially simultaneously dispense unrelated cards from a single unit. The device must be so versatile that if a player wants only one card, only one card is dispensed. On the other hand, if a player wants two cards, two cards are dispensed but from different dispensing stations and so on.

SUMMARY AND OBJECTS OF THE INVENTION

It is an object of this invention, therefore, to provide a card dispensing apparatus.

It is another object of this invention, therefore, to provide a card dispensing apparatus suitable for dispensing cards employed in the chance game of bingo wherein the cards dispensed at a given time originate from different dispensing stations.

It is still another object of this invention to provide such a card dispensing apparatus which is automatically operated and responds electromechanically to dispense the cards.

It is yet another object of the invention to provide such a card dispenser which has means provided therewith for carrying the dispensed card laterally.

These and other objects and advantages of this invention will become apparent from the following description, accompanying drawings and appended claims.

STATEMENT OF THE INVENTION

Broadly, this invention contemplates a device for selectively dispensing a predetermined number of cards, said device comprising at least one dispensing station for maintaining a vertical stack of cards, said dispensing station

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on its forward end provided with an orifice through which can pass a card, a card pusher plate mounted rearwardly of said orifice and in the same lateral plane, means for cocking said pusher plate rearward of said stack and means for projecting the cocked pusher plate forward to engage the side of a card and to push it out said orifice.

In a particularly desirable embodiment, this invention contemplates a device for selectively dispensing a predetermined number of cards, said device comprising a plurality of dispensing stations for maintaining vertical stacks of cards therein, each dispensing station on its forward end provided with an orifice through which can pass a card, each provided with a card pusher plate mounted rearwardly of the orifice, electrically responsive solenoids for each of said pusher plates and linked thereto by links whereby activation of a solenoid causes the pusher plate connected thereto to be cocked, a camshaft mounted rearwardly of the pusher plates and running in the same general direction as said orifices, a cam on said shaft whereby revolution of said shaft causes said cam to project forward the cocked pusher plate to dispense a card, and nip rollers positioned laterally across the face of said orifice to grasp and pass a dispensed card therethrough.

In a still more preferred embodiment of this invention, the camshaft is in electrical combination with the solenoids whereby actuation of the solenoids causes the pusher plate to become cocked during which a make-break switch is actuated by the movement of said pusher plate thereby engaging a single revolution clutch with the camshaft and causing it to rotate substantially simultaneous with deenergization of the electrical circuit.

DESCRIPTION OF THE DRAWINGS

The invention can be more readily understood and appreciated when reference is made to the accompanying drawings, in which:

FIGURE 1 is a fragmentary perspective view of the apparatus comprising the present invention;

FIGURE 2 is a cross-sectional view thereof taken along line 2—2 of FIGURE 1;

FIGURE 3 is a view similar to FIGURE 2 of the apparatus in the process of dispensing a card;

FIGURE 4 is a cross-sectional view taken along line 4—4 of FIGURE 1;

FIGURE 5 is a diagrammatic view of certain portions of the apparatus; and

FIGURE 6 is a schematic circuit diagram of the electrical controls for the apparatus.

DESCRIPTION OF PREFERRED EMBODIMENTS

The selectively controlled card dispensing apparatus designated generally by the numeral 10, is supported by means of a generally rectangular frame comprised of side plates 12 and 14, a rear plate 16 and front brackets 18 and 20. The frame supports a number of cards carrying trays corresponding to the number of dispensing stations desired. It will be understood that any number of stations can be employed, the drawings illustrating two such stations by way of example, since this is adequate for the purposes of illustration of the operation of the apparatus. The stations and consequently the trays may be horizontally arranged as shown in FIGURE 1 or may be stacked vertically, if desired. The same principles of operation will apply to a vertically stacked arrangement. A control panel 24 is employed in conjunction with the device said panel having as many push buttons as card dispensing stations desired. Each of the push buttons 26 is identified with the particular number of cards intended to be dispensed by the apparatus as a whole. The control panel is illustrated with eight push buttons, it being understood that any number may be employed depending upon the selective capacity for the apparatus. Thus where eight push buttons are

provided, the apparatus will be provided with eight identical dispensing stations horizontally arranged in the manner indicated, the frame being horizontally extended to accommodate the desired number of stations. The number accompanying the push buttons 26 indicate the number of dispensing stations which will be rendered operative upon the depression thereof and consequently the number of cards which will be dispensed in that particular operation of the machine.

Each of the trays is provided with longitudinally disposed, inwardly directed support flanges 28 to support a stack of cards 30 within the tray. The trays are generally of rectangular conformation including vertically extended side walls 32, a front wall 34 and a rear wall 36. Transverse slots 37 are provided in the rear walls of the trays for accommodating the reciprocal pusher plate 38, to be operated in the manner particularly hereinafter described. The front wall of each tray is similarly provided with a transverse front slot or orifice 40 which is of sufficient height to permit a single card to be dispensed there-through. The slots are disposed in registry with the upper surfaces of flanges 28 so that the lower card of the stack resting upon the flanges is in registry with the slot openings. An aperture 42 may be advantageously provided in the front wall of each tray to permit the contents and height of the stack to be readily ascertained. Each of the tray stations is provided with a link 50 linking pusher plate 38 to solenoid 52. Mounted on the side plate 12 is a make-break switch 54 which is engageable and actuable by rearward movement of pusher plate 38. Similarly, mounted on side plate 12 is mounting 56 through which passes camshaft 60 having cams 62 thereon. The camshaft is so positioned that revolution of the shaft 60 causes revolution of the cams and engagement of the cams 62 with the rearward edge of pusher plate 38 thereby uncocking the pusher plate as shown in FIGURE 3. Camshaft 60 has mounted to it exteriorly of mounting 56 a single revolution clutch actuable by the "making" phase of the make-break switch 54.

Forward of the dispensing station there are a pair of nip rolls 70 which grasp a card passing through slot 40. These nip rolls are driven by the various connections illustrated in FIGURE 5. As seen, a motor 72 causes a belt 74 to be run in the direction shown. An endless conveyor belt 76 is wrapped about rollers 78 and 80. Roller 80 revolves due to the revolution caused by the movement of belt 74 revolving roller 82 axially connected to roller 80. Roller 80 at one end is affixed to the end of the lower nip roller 71 by bevel gears 86 and 88. Revolution of bevel gears 86 intermeshed with bevel gears 88 causes lower nip roll 71 to rotate as indicated. On the opposite end of lower nip roller 71 from bevel gear 88 there is axially connected thereto via axis 90 spur gear 92. Spur gear 92 meshes with spur gear 94 axially connected to upper nip roller 73 via axis 96. Additionally, axis 90 extends through spur gear 92 and meets wheel 98 about which is passed a belt 100. Belt 100 passes around opposing wheel 102 axially connected to one half of clutch 104. It is this clutch 104 which is engaged during the "make" operation of the make-break switch 54. Thus, by virtue of motor 72 constantly working, belt 74 constantly revolves moving roller 82, roller 80 causing the conveyor belt to be in continuous operation. Continuous revolution of roller 80 causes continuous revolution of the gears on either end of the nip rolls and continuous movement of belt 100. Thus regardless of the position of the pusher plate solenoids or cams, the nip rolls and the belt 100 are in constant continuous revolution.

Referring once again to the rearward section of the card dispensing apparatus, there is provided pursuant to the instant invention an electrical circuit which operates independently of the electric motor 72 illustrated in FIGURE 5. The rearward electrical circuit which is the electrical portion of the card dispensing mechanism is illustrated in

FIGURE 6. Provided therein pursuant to the present invention is a plurality of solenoid operating circuits which are responsive to dispense a predetermined number of cards in response to push button 26. Actuation of push button 26 when only one card is desired closes switch S-1 thereby energizing relay 110 causing contacts 112 and 114 to meet and contact 116 and 118. When contacts 112 and 114 meet the solenoid circuit C-1 is completed. This circuit is defined by wires 120, 122, 124, 126 and 128. When contacts 116 and 118 are in contact with one another a holding circuit H-1 is created defined by lines 130, 132 and 134. The purpose of holding circuit H-1 is to enable completion of a cycle for which purpose the circuitry was designed without requiring the operator to maintain switch S-1 closed. When circuit C-1 is energized solenoid 52 pulls link 50 to which it is connected which in turn pulls pusher plate 38 rearwardly. The rearward edge of pusher plate 38 engages make-break switch 54 engaging clutch 104 with camshaft 60 causing the same to rotate. This occurs when contact 130 meets terminal 132; continued movement of the make-break switch 54 causes breaking of the circuit at 135 when terminal 136 ceases to be in electrical contact with line 128. This "breaking," in turn, causes the breaking of the contacts 112-114 and 116-118 thereby restoring the unit to the position shown in FIGURE 6 with switch S-1 open. The single revolution clutch completes one revolution of the cams 62.

If two cards are desired the number 2 push button 26 is pushed, closing switch S-2. This energized relay 140 closing contacts 142-144, 146-148 and 150-152 thereby completing three circuits. One circuit C-2 comprises lines 128, 160, 162 and 122 and operates the first solenoid 52. The second circuit C-3 comprises lines 170, 122, 174 and 128. It operates the second solenoid 52a. The third circuit H-2 is a holding circuit similar to circuit H-1 comprising lines 128, 180, 182, 184, 186, 188 and 134. These circuits operate identically as circuits H-1 and C-1 with the exception that both solenoids 52 and 52a are operated and the relay 140 closes three pair of contacts.

Thus, operation of the device is rather simple. Electric motor 72 is turned on initially to operate the endless conveyor 76, the nip rolls 70 and the belt 100 continuously by virtue of the interconnecting and interdependent gears, belts and wheels discussed above. A stack of vertical cards is inserted into the dispensing stations. A push button 26 is pushed, say button number 2 energizing both solenoids 52 and 52a. It is to be understood that by virtue of the holding circuit H-2 the operator need not hold his finger on the button 26 which closes switch S-2 until a card is dispensed, it being sufficient that the button is pushed once. Solenoids 52 and 52a pull links 50 which in turn pull the first two pusher plates 38 rearwardly to cock them. As the rearward edge of the first pusher plate 38 is moved rearwardly, it engages make-break switch 54 causing clutch 104 to be engaged with the continuously revolving shaft of wheel 102. This causes camshaft 60 to rotate one revolution and thus rotate cams 62 which engage the first two cocked pusher plates 38 and project them forward. Simultaneously with engagement of the clutch, the solenoid circuits C-2 and C-3 are broken so that solenoids 52 and 52a do not continue to draw the pusher plates rearwardly and thus releases the pusher plates. Pusher plates 32 pass through transverse slots 37 in rear wall 36 engaging the back edge of a vertically stacked card. This moves the card forward through transverse front slot 40 on front wall 34. As it passes through transverse front slot 40 it is caught by nip rolls 70 comprising lower roller 71 and upper roller 73. These rollers, revolving in the direction shown in FIGURE 5, grasp the card and move it onto moving endless conveyor belt 76 where it is moved over roller 80.

From the foregoing, it will be apparent that the device is operable to dispense a single card, or a multiple of cards vertically stacked. The dispensing stations can be

situated side-by-side, as illustrated or, alternatively, vertically. The device can even be constructed to deposit one card from one dispensing station disposed in vertical relation with respect to another card from a different dispensing station. Furthermore, it should be apparent that while the device has been shown with two dispensing stations, others operating in conjunction with the first can be provided. In that case, the electrical system will provide switches and relays which will operate additional solenoids and their holding circuits. All else will be substantially the same as disclosed.

The terms and expressions used herein are terms of description and illustration and not of limitation, as there is no intention, in the use of such terms and expressions, of excluding any equivalents, or portions thereof, as many modifications and departures from the specific disclosure are possible within the scope of the invention claimed.

I claim:

1. A device for selectively dispensing a predetermined number of cards, said device comprising a plurality of dispensing stations for maintaining a plurality of vertical stacks of cards, each of said dispensing stations on its forward end being provided with an orifice through which can pass a card, a plurality of card pusher plates mounted rearwardly of said dispensing stations and said orifices and being in the same lateral plane, means for selectively cocking a predetermined number of said pusher plates rearwardly of said stack and unitary means for projecting the respective cocked pusher plates forward so that said pusher plates engage the edges of said associated cards and to simultaneously push them out of said associated orifices by a single movement of said projecting means.

2. A device for selectively dispensing a predetermined number of cards according to claim 1, wherein said means for cocking said pusher plate comprises an electrically responsive solenoid linked to each pusher plate via a link and there is a pusher plate, link and solenoid for every dispensing station whereby activation of a solenoid causes the pusher plates connected thereto to be cocked, wherein said means for projecting the cocked pusher plate comprises a cam on a cam shaft and there is at least one cam for every pusher plate whereby revolution of said shaft causes said cam to project forward the cocked pusher plate to dispense a card, and wherein there is a pair of

nip rollers positioned laterally across the face of said orifice to grasp and pass a dispensed card therethrough.

3. A device for selectively dispensing a predetermined number of cards according to claim 2, wherein the bottom nip roll of said nip rollers terminates at one end in a bevel gear and at the other end is axially connected to a spur gear, said spur gear intermeshing with a spur gear axially connected to the upper nip roll, the lower spur gear axially connected to a driven wheel about which there is a belt, said belt passing over a second wheel to drive said wheel, said second wheel axially connected to a clutch engageable with said camshaft, said bevel gear intermeshing with a second bevel gear at one end of a driven roller of an endless conveyor belt assembly, said driven roller connected to an electrically operable driving motor to rotate said roller.

4. A device for selectively dispensing a predetermined number of cards according to claim 3, wherein rearwardly of at least the first actuatable pusher plate there is positioned a make-break switch engageable by rearward movement of said pusher plate whereby said clutch is engaged electrically during the "make" operation of said switch, said switch and said clutch in electrical combination with said solenoids and at least one electric push button switch which is in an electric circuit and determines the number of solenoids actuated and cards dispensed.

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