Dec. 13, 1960 K. C. ZEIGLE 2,964,313

VENDING MACHINE FOR TRADING STAMPS AND THE LIKE

Filed Aug. 4, 1958

FIG. 1

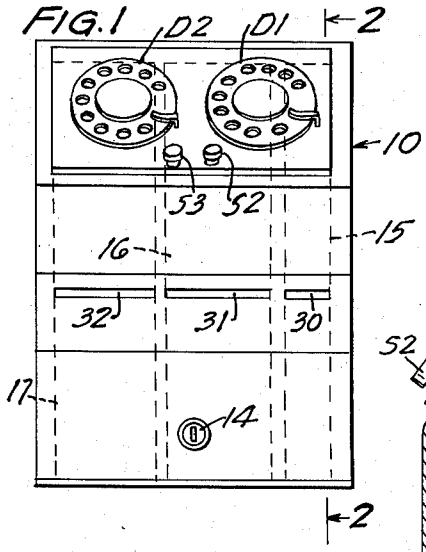


FIG. 2

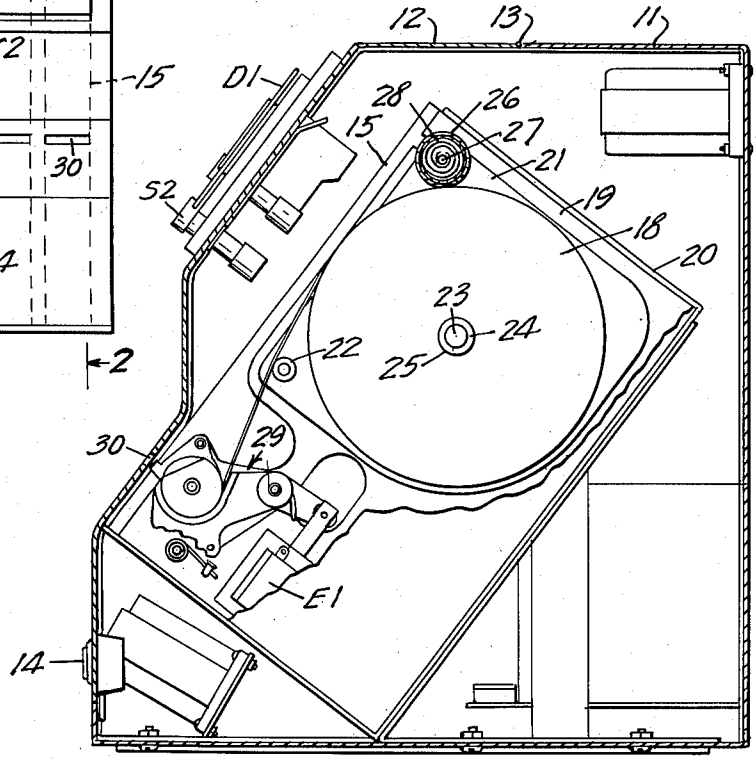
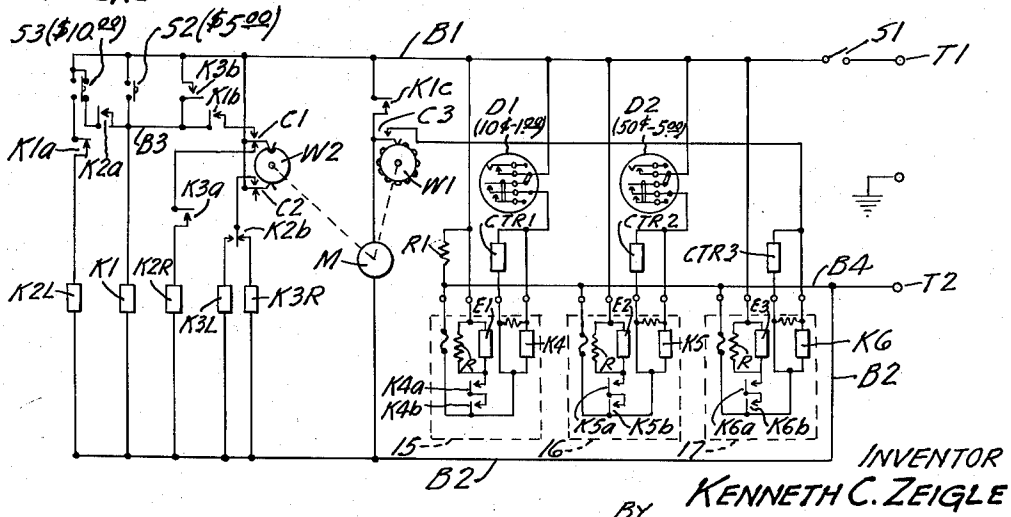


FIG. 3



INVENTOR
KENNETH C. ZEIGLE
BY
Williamson, Schroeder & Talmatier
ATTORNEYS

United States Patent Office 2,964,313
Patented Dec. 13, 1960

2,964,313

VENDING MACHINE FOR TRADING STAMPS AND THE LIKE

Kenneth C. Zeigle, Minneapolis, Minn., assignor to Electric Vendors, Inc., Minneapolis, Minn., a corporation of Minnesota

Filed Aug. 4, 1958, Ser. No. 752,983

8 Claims. (Cl. 226—109)

This invention relates to a vending machine for dispensing large numbers of articles such as trading stamps and the like.

In recent years, the use of trading stamps by grocery stores and other types of commercial retail establishments has become extremely popular. However, there has been a considerable amount of difficulty in handling the stamps at the cashier's counters or at the point at which the purchase transaction is made. It has been common practice in the past to bind a plurality of pages of stamps together in a book, and when the stamps are given to the customer, the clerk or cashier must page through his book of stamps and count out the necessary number of stamps and then tear these stamps out of the book in whole or part pages so as to give the customer the proper number of stamps according to the dollar volume of his purchase. It will readily be understood that this process is extremely time-consuming for a cashier or clerk who is extremely busy, such as at the checkout counters of modern supermarkets and the like. Furthermore, the handling of trading stamps in this fashion in the past has caused the clerk or cashier to leave their books of stamps lying on the counter or in an exposed position so as to possibly tempt customers to steal these books of stamps. In the past, there have been a considerable number of thefts of substantial quantities of these trading stamps due to this cause. Of course these trading stamps are as good as cash in large quantities because the stamps are redeemable for items of merchandise.

An object of my invention is to provide a new and improved vending machine of relatively simple and inexpensive construction and operation for dispensing large numbers of trading stamps and the like.

Another object of my invention is to provide a novel machine for quickly dispensing a large, but accurately counted number of trading stamps and the like in such a manner that the cashier or clerk charged with the responsibility of distributing the stamps need only manually operate simple controls to cause dispensing of a desired number of stamps in relation to the dollar volume of the customer's purchase.

A further object of my invention is the provision in a vending machine of apparatus for dispensing a plurality of stamps each time the dispenser is operated.

Still further object of my invention is to provide an improved and novel machine for vending stamps from a roll of stamps in such a manner that the supply of stamps from the roll is neither mutilated or damaged in any sense and the roll of stamps will be unwound as the stamps are dispensed without interference or tearing of the stamps.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to the same or similar parts throughout the several views and in which:

Fig. 1 is a front elevation view of the stamp vending machine;

Fig. 2 is a vertical section view taken approximately on a line as indicated at 2—2 in Fig. 1, and

Fig. 3 is a schematic electrical circuit diagram of the vending machine.

One form of the present invention is shown in the drawings and is described herein.

The vending machine, which is indicated in general by numeral 10 includes a casing and supporting structure 11 having a swingable front panel 12 hinged to the supporting structure at 13 and normally locked in a closed position by a key-operated lock 14. The vending machine 10 has a plurality of stamp dispensers 15, 16 and 17 therein which are outlined in dotted lines in Fig. 1, and one of which, dispenser 15, is shown in substantial detail in Fig. 2. The dispensers 15, 16 and 17 are all substantially similar to each other, but it is specifically noted that dispensers 16 and 17 are of such width as to be adapted to carry a multiple row stamp roll so as eject a plurality of stamps in a row each time the dispenser is operated. Dispenser 15 is of substantially narrower width and is adapted to carry a single row stamp roll 18.

Each of the dispensers 15, 16 and 17 is a cartridge type unit having a cartridge frame 19 carried in a bracket structure 20 which is affixed to the casing or supporting structure 11 of the machine. The cartridge-type dispensers 15, 16 and 17 are all removable when the front cover 12 of the casing is swung upwardly.

Means are provided for mounting the roll of stamps 18 on the dispenser frame 19, and, in the form shown, such means include a rigid plate 21 pivotally connected by means of a pin 22 to the cartridge frame 19. A mounting post 23 and bearings 24 are affixed to the plate 21 and are adapted to be inserted into and to be tightly fitted in the central opening 25 of the roll of stamps 18 so as to mount the roll of stamps on its own center and thereby cause the stamp roll to rotate on its own axis as the stamps are pulled off the roll. The roll 18 will thereby turn smoothly so as to materially decrease the possibility of the stamps tearing as the roll is turned and the stamps are pulled off. Each of the dispensers is provided with a roller 26 which is spaced adjacent the point of tangency at which the stamps are pulled off the roll and which bears against the periphery of the stamp roll, at least when the stamp roll 18 has a substantial diameter. Means are provided for mounting the roller 26 to continuously urge the periphery of the roller into engagement with the outer surface of the stamp roll 18, and in the form shown such means include a post 27 affixed to the plate 21, and a coil spring 28 affixed to the post 27 and engaging the internal periphery of the sleeve-shaped roller 26 so as to permit yielding of the roller 26 in a direction transversely of its rotation axis. Normally the roller 26 is allowed to freely rotate as the stamp roll 18 is revolved so that the periphery of the roller 26 travels along the periphery of the roll 18. The action of the roller 26 on the stamp roll 18 is such as to prevent tearing of the stamps as they are pulled off the roll and as the roll is intermittently revolved and then stopped.

Each of the dispensers has a stamp-pulley and ejecting mechanism which is indicated in general by numeral 29 and is substantially identical to the detailed mechanism disclosed and claimed in my co-pending application for United States Letters Patent S.N. 447,766 filed August 4, 1954, and entitled Stamp Vending Machine, now Patent No. 2,878,014. It is specifically pointed out that the mechanism 29 includes an electric solenoid E1 which, when energized will cause ejection of a single stamp through the slot 30 in the front cover 12 of the machine.

The other dispensers 16 and 17 each have electric solenoids E2 and E3 respectively for causing dispensing of stamps through the corresponding slots 31 and 32 of the front cover of the machine. When either of the solenoids E2 or E3 of the dispensers 16 and 17 is operated, a row of stamps including five stamps is ejected from the corresponding dispenser from the multiple row stamp roll therein.

Manually operable selectors D1 and D2 comprising telephone-type finger-operated dials are provided for controlling the operation of the dispensers 15 and 16 respectively. The dial devices D1 and D2 are of substantially conventional construction and produce a plurality of current impulses, the number of which produced is proportional to the arc through which the dials are turned and then released. For instance, if a "1" is dialed by moving the dial D1, the associated mechanism produces one current impulse.

With reference to the schematic circuit shown in Fig. 3, power is supplied at the terminals T1 and T2 for supplying energy to the buses B1, B2 and B4. Bus B1 has a control switch S1 therein adjacent the terminal T1 so as to shut down the entire machine when it is to be left idle. The switch S1 may comprise a toggle switch disposed inside the front cover 14 so that the cover may be locked and access to the switch S1 by unauthorized persons is thereby precluded.

A cam-driving motor M is provided within the housing and one side of the motor is connected directly to bus B2 and the other side of motor M is connectible to bus B1 through contact K1*c*. The motor M is drivably connected with a pair of cam wheels W1 and W2. The cam wheel W1 controls the operation of cam switch C3, and has a plurality, ten specifically, of lobes around the periphery thereof for operating the cam switch C3 ten times each time the wheel W1 makes a single revolution. The cam wheel W2 controls the operation of cam switches C1 and C2 which are arranged in diametrically opposed relation with respect to each other on the cam wheel W2, and the cam wheel W2 has a single depression therein for operating the cam switches C1 and C2 on alternate half revolutions thereof, or for operating each of the cam switches C1 nad C2 once during each full revolution of the cam wheel. The cam wheels W1 and W2 are driven at a substantially slower rate than the motor M and are driven through a speed reduction assembly. It has been experienced that the cam wheels W1 and W2 may be driven at such a speed as to make a complete revolution in approximately two or three seconds, and the associated circuitry controlled by the cam switches C1 and C2 and C3 will successfully operate at this rate of speed.

A relay K1 is connected to the bus B2 and is also connected to a bus B3 which is connectible to bus B1 through any of a number of parallel arranged switch contacts. Bus B3 is connectible to bus B1 through relay contacts K3*b* or through relay contact K1*b* and cam switch C1, or bus B3 is connectible to bus B1 through a manually operable push button control switch S2 which is normally open but which is closable by operation of the button on the control panel 12 of the machine, and bus B3 is also connectible to bus B1 through relay contact K2*a* and a second manually controllable two-position push button switch S3, the control button for which is also disposed on the front panel 12 of the machine.

It should be noted here that the manually controllable switches S2 and S3 initiate the operation of dispenser 17 and the control mechanism therefor. The switch S2 causes the dispenser 17 to operate ten times and thereby causes fifty stamps to be ejected and when the machine is used for dispensing trading stamps, the proper number of stamps are dispensed for an even five dollar purchase when the stamps are valued at one for each ten cents of purchase value. The switch S3 when operated, causes the dispenser 17 to operate twenty times for the dispensing of one hundred stamps, which in trading stamps corresponds to the purchase value of ten dollars.

A latching relay has a latch coil K2L and a release coil K2R, and the latching coil K2L is connected directly to bus B2 and is connectible to bus B1 through relay contact K1*a* and through the contacts of switch S3 when shifted; and the release coil K2R is connected directly to bus B2 and is connectible to bus B1 through relay contacts K3*a* and through cam switch C1 when in its normal position. A second latching type relay has a locking coil K3L and a release coil K3R, both of which are connected directly to bus B2 and which are alternately connectible to bus B1 through relay contacts K2*b* and through cam switch C2 when shifted. The operating solenoid E3, dispenser 17, is normally connected to bus B1 and is connectible to bus B4 through series-connected relay contacts K6*a* and K6*b* and through a fuse. Relay K6 in dispenser 17 is connected directly to the bus B4 through the fuse and is connectible to bus B1 through the cam switch C3 and relay contact K1*c*. It will therefore be seen that as the cam wheel W1 is revolved, the lobes thereon will operate the cam switch C3 to provide current pulses which operate relay K6, the contacts of which operate to provide current pulses to the solenoid E3, and each time the solenoid E3 is operated, a row of five stamps is dispensed through the slot 32. The dispenser 17 will either dispense 50 stamps or one hundred stamps each time the operating mechanism is set into operating condition.

Operating solenoid E2 of dispenser 16 is connected directly to bus B1 and is connectible to bus B4 through relay contacts K5*a* and K5*b* and through the fuse. The operating relay K5 for dispenser 16 is connected directly to bus B4 through the fuse and is connectible to bus B1 through the dial mechanism D2 which, when operated provides current pulses to the relay K5 for causing intermittent operation of the solenoid E2 whereupon to dispense stamps.

The operating solenoid E1 is connected directly to bus B1 and is connectible to bus B4 through relay contacts K4*a* and K4*b* and through the fuse. The operating relay K4 of dispenser 15 is connected directly to bus B4 through the fuse and is connectible to bus B1 through the dial mechanism D1 which, when operated, provides current pulses for intermittently operating the relay K4 and thereby causing intermittent operation of the operating solenoid E1 to effect dispensing of stamps.

In order to effect the dispensing of a large number of stamps, one of the push buttons S2 or S3 is operated to cause dispenser 17 to eject a large predetermined number of interconnecting stamps and simultaneously while the dispenser 17 is operating, the dials D1 and D2 may be operated so as to cause dispensers 15 and 16 to eject the exact number of additional stamps so that the total number of stamps ejected simultaneously from the machine corresponds to that to which the customer is entitled in relation to the dollar volume of his purchase. When switch S2 is pushed and then released, the switch will be momentarily closed and then reopened. When the switch S2 is closed, the relay K1 operates to shift the several contacts K1*a*, K1*b* and K1*c* thereof. Contact K1*c* closes to start the motor which produces rotation of the cam wheels W1 and W2, which, respectively, start the application of current pulses to the relay K6 for initiating operation of dispenser 17 and the rotation of cam wheel W2 causes shifting of cam switch C1. Closing of contact K1*b* provides a holding circuit for the relay K1 through the cam switch C1 to bus B1. As the rotation of the cam wheel W1 continues, causing pulsing of the relay K6 and solenoid E3 to effect ejection of stamps, the cam wheel W2 also rotates to its first half revolution whereupon cam switch C2 operates to energize release coil K3R, with no effect, and as the cam wheel W2 continues to rotate, coil K3R is deenergized. As the ejecting of stamps continues, the cam wheel W2 will complete its

second half revolution and cam switch C1 returns to normal, thereby breaking the holding circuit for relay K1, whereupon the contacts thereof return to normal, causing contact K1*c* to open and thereby stop the motor to cause the ejection of stamps to stop, and contact K1*b* also opens to return the entire circuit to static condition.

After the push button S2 has been operated, and simultaneously while the dispenser 17 is operating the dial D2 may be manually operated to commence application of current pulses to relay K5 and operating solenoid E2 to thereby effect dispensing of stamps from the dispenser 16, and simultaneously, the dial D1 may be operated to supply current pulses to the relay K4 and operating solenoid E1 to effect ejection of stamps from dispenser 15.

It should be understood that in the alternative to operating switch S2, the switch S3 may be operated to effect ejection of a block of stamps including twice as many stamps as the block of stamps ejected upon pressing of switch S2. The switch S3 will be momentarily operated and then released. When the switch S3 is operated, the relay latching coil K2L causes operation of the contacts K2*a* and K2*b*. The contacts K2*b* shift but have no immediate effect. The contact K2*a* closes so as to energize relay K1 through the switch S3 when returned to normal. Contact K1*a* opens to lock out latching coil K2L and render the switch S3 ineffective, even if operated, until the operational cycle is completed. Contact K1*c* closes to start the motor and start the cam wheels W1 and W2 as previously described. Cam switch C1 shifts and relay contact K1*b* closes to provide a holding circuit for relay K1 through cam switch C1 to bus B1.

As the cam wheels revolve, ejection of stamps from dispenser 17 continues and when cam wheel W2 completes its first half revolution, cam switch C2 shifts to energize the latching coil K3L to cause operation of the relay contacts K3*a* and K3*b*. K3*b* closes to provide a shunt circuit with respect to contact K1*b* and cam switch C1 so as to hold the relay K1 in energized condition. Contact K3*a* closes to prepare for energization of release coil K2R when the cam switch C1 returns to normal condition. As cam wheel W2 continues, cam switch C2 opens the circuit to latching coil K3L and causes deenergization thereof.

As the dispensing of stamps continues, the cam wheel W2 will complete its second half revolution and cam switch C1 returns to normal. The motor continues to operate because relay K1 remains energized. Cam switch C1 causes energization of release coil K2R, which causes return of the contacts K2*a* and K2*b* to normal, with no immediate effect. As the cam wheel W2 continues, the cam switch C1 again shifts to deenergize release coil K2R, and cam wheel W1 continues to revolve, and after a slight hesitation, the pulsing of relay K6 and solenoid E3 continues to effect continued dispensing of stamps.

As the cam wheel W2 completes its third half revolution, cam switch C2 operates again to energize release coil K3R which causes the contacts K3*a* and K3*b* to return to normal. Although contact K3*b* reopens, relay K1 remains energized through contact K1*b* and cam switch C1. As the cam wheel W2 continues rotation, the cam switch C2 turns and the release coil K3R is deenergized.

As the cam wheel W2 completes its fourth half revolution, the application of current pulses to relay K6 and solenoid E3 will have been completed and the cam switch C1 returns to normal, thereby breaking the hold circuit for relay K1 which is deenergized and causes the contacts thereof to return to normal. Contact K1*b* opens, K1*a* recloses to prepare K2L for subsequent operation and contact K1*c* opens to deenergize the motor and prevent any further pulsing of the dispenser relay and solenoid.

As a typical example of a transaction, assume that the customer has made a purchase in the amount of $17.60. In rapid succession, the clerk or cashier will push the button S2, will then dial at the fifth hole of dial D2, will then push switch S3 and will then dial the first hole of dial D1. After having pushed switch S2 which causes dispensing of fifty stamps, dial D2 is then operated by inserting the person's finger in the fifth hole counterclockwise from the stop, revolving the dial D2 and by the time the manual operation of dial D2 is completed, the operation of dispenser 17 will have been completed and then switch S3 is immediately operated to effect dispensing of another one hundred stamps and finally, dial D1 is operated by inserting the person's finger in the first hole counterclockwise from the stop, revolving the dial D1 to effect discharging of one stamp. Therefore it will be seen that within a very few seconds and with no effort or counting necessary on the part of the clerk or cashier, a large block of accurately counted stamps is provided for the clerk to hand to the customer.

As previously indicated, as the stamps in the rolls are pulled out, the stamps are prevented from tearing or being mutilated by the operation of the spring-pressed roller 26. It will be understood that because the stamp rolls in the dispensers 16 and 17 are five-stamps wide, the inertia of these rolls is quite substantial so that it is important that these rolls revolve on their own centers so as to minimize the static inertia of the rolls as the stamps are intermittently pulled off and the roll is thereby effectively stopped and started a multiplicity of times during the operation of the dispenser.

It will be seen that I have provided a vending machine for quickly and accurately dispensing extremely large numbers of trading stamps and the like which are given in direct relation to the dollar volume of a purchase.

It will, of course, be understood that various changes may be made in the form, detail, arrangement and proportion of the parts without departing from the scope of my invention which consists of the matter described herein and set forth in the appended claims.

What is claimed is:

1. Apparatus for quickly and accurately dispensing large numbers of stamps, comprising a first dispenser, a second dispenser, a switch-operated control mechanism connected with said first dispenser and constructed to cause said first dispenser to eject a predetermined number of stamps each time the switch is operated, and an operating mechanism operable simultaneously with said control mechanism and connected with the second dispenser and including a manually operated selector device causing a selected number of stamps to be dispensed when the device is operated, whereby said switch and said device may be operated in rapid succession to cause simultaneous operation of the dispensers and accurate dispensing of a large number of stamps.

2. The invention set forth in claim 1 wherein the selector device comprises a rotary, finger-operated dial mechanism producing a number of dispenser-operating current pulses corresponding in number to the magnitude of the arc through which the dial is turned.

3. Apparatus for quickly and accurately dispensing large numbers of stamps, comprising first, second and third dispensers, each containing a roll of stamps to be dispensed, the roll of stamps in the second dispenser being a multiple row stamp roll whereby to cause the second dispenser to eject a plurality of stamps in a row each time the dispenser is operated, a switch-operated control mechanism connected with said first dispenser and constructed to cause said first dispenser to eject a predetermined number of stamps each time the switch is operated, and an operating mechanism operable simultaneously with said control mechanism and connected with the second and third dispensers and including a pair of rotary finger-operated dial mechanisms respectively controlling the second and third dispensers and causing a selected number of stamps to be dispensed when said dial mechanisms are operated, whereby said switch and said dial

mechanisms may be operated in rapid succession to cause simultaneous operation of the dispensers and accurate dispensing of a large number of stamps.

4. Apparatus for quickly and accurately dispensing large numbers of stamps, comprising first, second and third pulse-operated dispensers for ejecting stamps in proportion to the number of pulses applied, said second dispenser being constructed to eject stamps in incremental numbers greater than one each time the dispenser is operated, a switch-operated control mechanism connected with said first dispenser and constructed to cause said first dispenser to eject a predetermined number of stamps each time the switch is operated, and an operating mechanism operable simultaneously with said control mechanism and connected with the second and third dispensers and including a pair of manually operated selector devices respectively controlling said second and third dispensers and causing a selected number of stamps to be dispensed therefrom when the devices are operated, the selector device for said second dispenser being adapted to cause ejection by said second dispenser of stamps totaling in number up to the predetermined number dispensed by the first dispenser each time the switch is operated.

5. Apparatus for quickly and accurately dispensing large numbers of stamps, comprising first and second pulse-operated dispensers for ejecting a large number of stamps in proportion to the number of current pulses applied, pulsing means applying a rapid succession of current pulses to said first dispenser, a motor having a cam-operated switching means operating the pulsing means to apply a predetermined number of pulses to the first dispenser, control means for the motor and including a manually operable switch, and manually and selectively controllable means producing a variable number of current pulses and applying the pulses to the second dispenser and adapted for operation simultaneously with said first dispenser, whereby to facilitate dispensing of a large, but accurately counted and variable number of stamps.

6. Apparatus for quickly and accurately dispensing large numbers of stamps, comprising first and second pulse-operated dispensers for ejecting a number of stamps in proportion to the number of current pulses applied, a motor, a cam switch connected with the first dispenser for applying current pulses thereto for operating the dispenser, a rotary cam driven by the motor and operating said cam switch, cam-operated switch means driven by

the motor and connected for stopping application of current pulses to the first dispenser after application of a predetermined number of current pulses thereto, manually controllable means initiating operation of the motor, and manually and selectively controllable means producing a variable number of current pulses and applying the pulses to the second dispenser and adapted for operation simultaneously with said first dispenser, whereby to quickly and accurately cause dispensing of a large, but variable number of stamps.

7. Apparatus for quickly and accurately dispensing large numbers of stamps, comprising a pulse-operated dispenser constructed to eject a number of stamps in proportion to the number of pulses applied, a motor, a first cam switch connected with the dispenser for applying current pulses for operating the dispenser, a first rotary cam operating said switch a number of times during each revolution thereof, control means including a pair of individually operable manual devices for initiating operation of the motor, means for maintaining the motor in operation for a revolution of said first cam and including a second cam switch and cam means causing the operation of the motor to be interrupted when said first cam completes a full revolution, and means responsive to operation of one of said manual devices for shunting said second cam switch during the first revolution of said first cam and maintaining the motor in operation during a second revolution of the first cam, whereby to provide selectivity between large quantities of stamps to be dispensed.

8. The invention set forth in claim 7 and including means to remove the shunt of said second cam switch during the second revolution of the first cam and including a third cam switch operated by said cam means, whereby to interrupt operation of the motor at the end of the second full revolution of said first cam.

References Cited in the file of this patent

UNITED STATES PATENTS

943,279	Smith	Dec. 14, 1909
2,258,912	Steen et al.	Oct. 14, 1941
2,264,647	Stearns	Dec. 2, 1941
2,712,442	Hanson	July 5, 1955

FOREIGN PATENTS

295,845	Switzerland	Mar. 16, 1954
363,381	Great Britain	Dec. 14, 1931
765,992	France	Apr. 9, 1934