Oct. 4, 1938. C. E. McMAKIN 2,131,843

COIN INJECTOR FOR PACKAGES

Filed July 24, 1937 2 Sheets-Sheet 1

Fig. 1

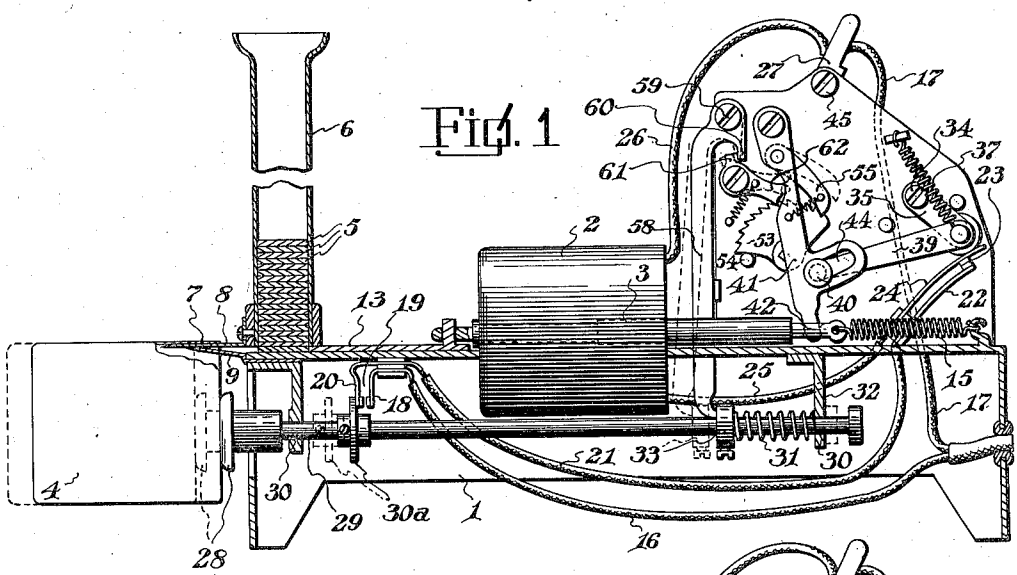


Fig. 2

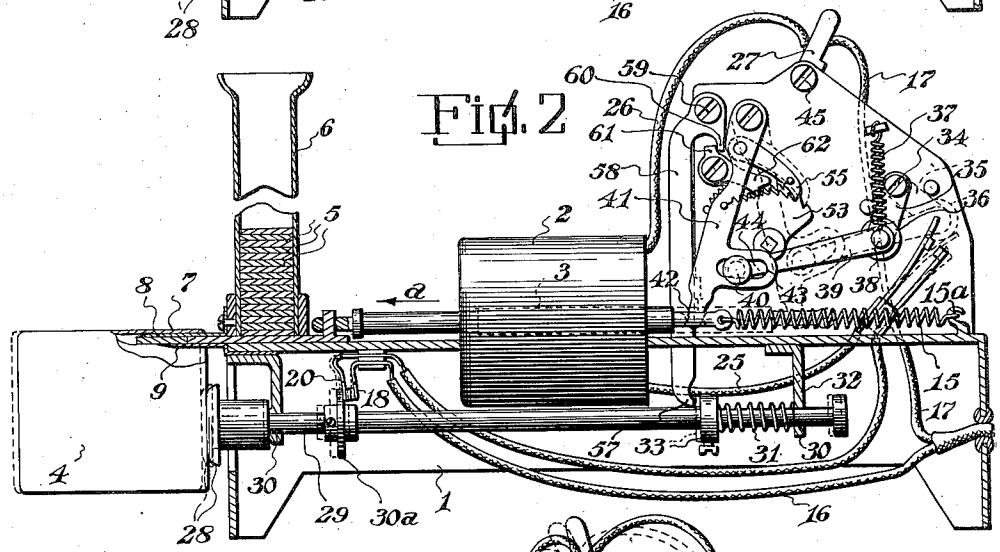


Fig. 3

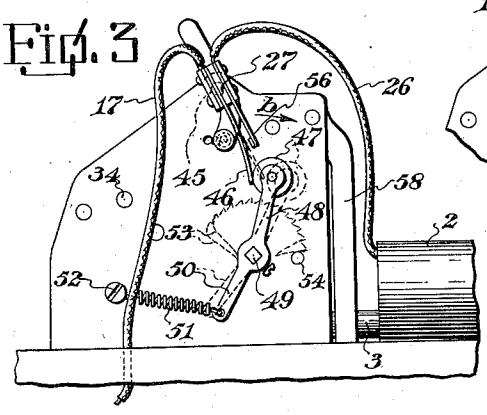
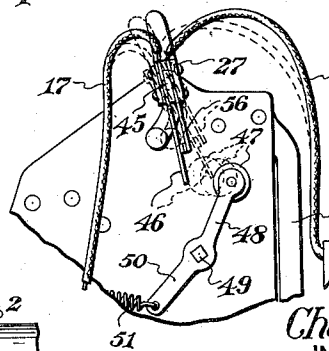


Fig. 4



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Fig. 5

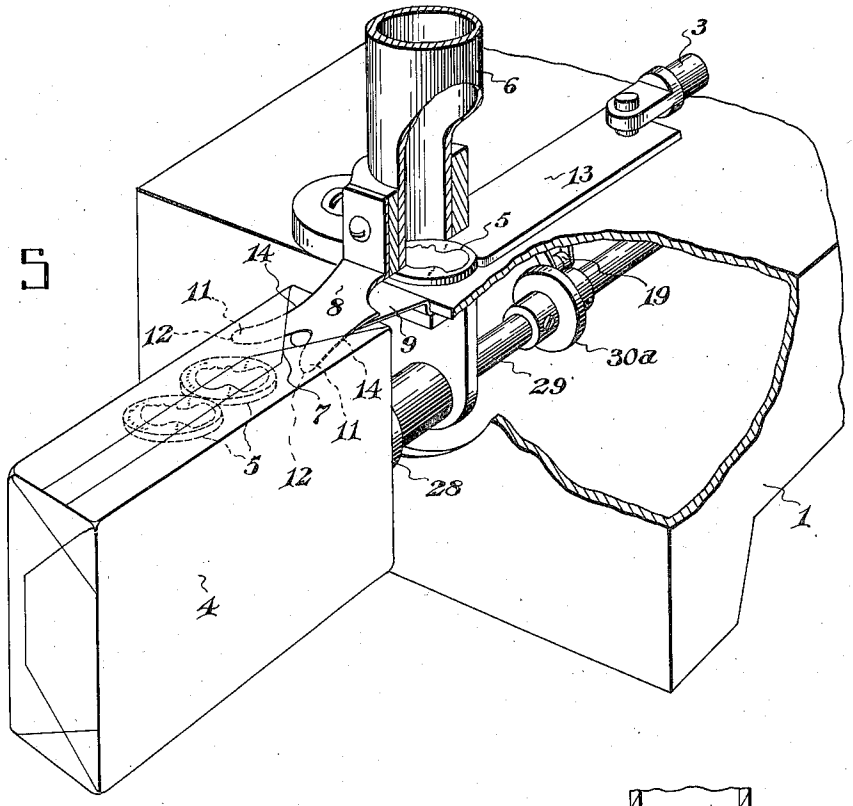
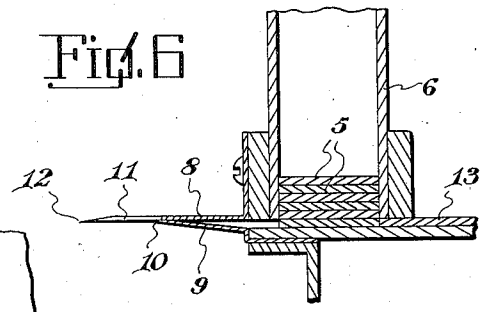


Fig. 6



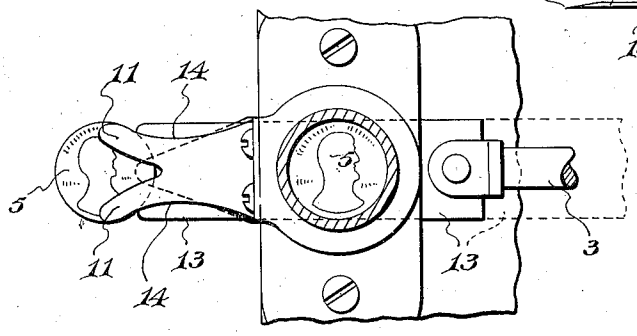


Fig. 7

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COIN INJECTOR FOR PACKAGES

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17 Claims. (Cl. 226—2)

The invention relates to coin injecting devices for depositing or injecting one or more coins within the wrapper fold or within the wrapper of a package, for instance a cigarette package of the type used in vending machines, and where the proper change is delivered with the package. Heretofore, it has been the practice to place the coins under the Cellophane wrapping manually, however this is a slow and laborious operation and involves many inaccuracies.

A further object is to provide a coin injecting machine for packages comprising a coin inserting element adapted to enter the folds of the package and means whereby one or more coins may be forced through the coin inserting member and deposited within the package.

A further object is to provide means whereby the injector will inject a predetermined number of coins into the package as long as the package remains in position and means whereby when the package is removed from position the mechanism will be reset for injecting the next predetermined number of coins into the next package to be filled with coins.

A further object is to provide means whereby the machine may be set to insert different numbers of coins, according to the amount of change to be delivered with the package.

A further object is to control the operating mechanism for reciprocating the coin injector blade through the medium of a package engaging member operating a switch controlling a solenoid having its core connected to the coin injector blade and movable against spring action, and means controlled by the core for intermittently breaking the circuit at the forward strokes of the core for allowing the solenoid to be de-energized and the core to move rearwardly and reclose the circuit for successive operation. Also to provide a normally closed switch within the circuit, adjustable to various positions, and which switch is opened after a predetermined number of coin injecting operations, and remains open until a succeeding package is placed in position for receiving the next series of coins.

A further object is to provide a step by step control mechanism controlled by the successive operations for the final circuit breaking operation after the predetermined number of coins have been forced into the package.

A further object is to provide a coin inserting element comprising coin guide blades, preferably converging, thereby forming a sharpened lead edge so the guide blades may be easily inserted within the package cover folds, and a coin forced therefrom will be positively discharged from the end thereof.

A further object is to recess the sides of the guide blade whereby it will not tear or damage a package if the package should be angularly applied thereto.

A further object is to provide switch control means engaged by the package when the coin guides are inserted within the package folds for actuating the coin injecting means after the coin guides are in position within the folds.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawings, described and claimed, it being understood that change in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:

Figure 1 is a vertical longitudinal sectional view through the machine, showing a conventional form of cigarette package in position and the main control switch about to be closed for a coin inserting operation.

Figure 2 is a view similar to Figure 1, showing the main switch closed and the coin delivery plate in forward injecting position, and the auxiliary switch open at the end of the forward stroke.

Figure 3 is a detail side elevation of the outer side of a portion of the machine showing the mechanism for breaking the circuit at the end of a series of operations.

Figure 4 is a view similar to Figure 3, but showing the device set for the final circuit breaking operation at the end of the delivery of three coins.

Figure 5 is a perspective view of the lower end of the coin hopper and forward end of the machine, showing a package in position.

Figure 6 is a vertical transverse sectional view through the lower end of the coin hopper and adjacent parts.

Figure 7 is a horizontal sectional view through the lower end of the coin hopper showing the coin guides in top elevation.

Referring to the drawings, the numeral 1 designates the frame of the machine and 2 a conventional form of solenoid mounted thereon. The solenoid 2 is provided with a conventional form of core 3, which is forced in the direction of the arrow *a* for a coin ejecting and injecting operation, when the solenoid 2 is energized. The energizing of the solenoid is intermittent and is controlled by the cigarette package 4 until a pre-

determined number of coins 5 are ejected from the hopper 6 into the package beneath the Cellophane folds 7 thereof.

The lower end of the hopper 6 is provided with upper and lower coin guide plates 8 and 9, better shown in Figure 6, and the guide plate 9 is preferably formed from spring material, and inclines upwardly and into engagement with the under side of the coin guide plate 8 and terminates in a sharpened edge 10 engaging the under side of the plate 8. Guide plate 8 has its forwardly diverging fingers 11 sharpened at 12 so they will easily pass under the package folds 7, clearly shown in Figure 5. As the reciprocating coin delivery plate 13 moves forwardly, it engages the inner edge of the lower coin 5 within the hopper 6, and forces the same forwardly between the coin guide plates 8 and 9 until the coin clears the forward end of the under guide 9 and is deposited within the package 4. The above operation continues until a predetermined number of coins have been deposited within the package 4. To prevent damage to the wrapper folds 7, if the package is placed on the coin guide in an angular position, the opposite sides of the upper guide plate 8 are recessed as at 14, hence it will be seen that any angular positioning in a horizontal plane during the package placing and removing operation will not damage the folds 7.

The solenoid core 3 is normally forced rearwardly and pulled rearwardly when the solenoid is deenergized by a contractible spring 15 connected to the rear end thereof, and anchored to the frame 1 at 15*a*, clearly shown in Figure 1.

Electrical energy is supplied to the solenoid 2 through conductor wires 16 and 17, which may lead to any suitable source of power. The wire 16 is connected to a spring contact arm 18 of a main switch 19, and when said switch 19 is closed, energy passes over the spring arm 20 of the main switch, conductor wire 21 and thence to one of the spring arms 22 of the auxiliary control switch 23. Auxiliary switch 23 is normally closed against the spring action of spring arm 22 and spring arm 24 and electrical energy passes over the arm 24, thence through conductor wire 25 to the solenoid field in the usual manner and thence through a conductor wire 26 to the final circuit breaking switch 27, which is normally closed. The other side of the final control switch 27 is in circuit with the source of power through the conductor wire 17. It will be noted that when the device is in normal inoperative position as shown in Figure 1, the main switch 19 is open, the auxiliary switch 23 closed and the final circuit breaking switch 27 closed as shown in Figure 4, therefore it will be seen when main switch 19 is closed, the solenoid 2 will be energized and the coin ejector plate 13 forced forwardly.

It will also be seen that when the circuit is broken at the forward end of the stroke of the plate 13, the contractible spring 15, upon deenergizing of the solenoid 2, will pull the core 3 of the solenoid rearwardly.

In operation, the operator places the package 4 in position on the coin guides 8 and against the rod head 28, which is mounted on the slidable control rod 29. Rod 29 is axially movable in bearings 30 against the action of the expansion spring 31, interposed between the bracket 32 and the collar 33. Adjustably mounted on the rod 29 is an insulated disc 30*a*, which when forced inwardly engages at the inner end of its movement a spring contact arm 20 of the main control switch 19 and forces the same into engagement with the spring contact arm 18, thereby closing the main switch, and as the auxiliary switch 23 and the final circuit breaking switch 27 are closed, the solenoid is energized and the core 3 forced forwardly for a coin ejecting operation. Pivoted at 34 above the auxiliary switch 29 is an arm 35 having an insulating disc 36 on its lower end, which, when in rear inoperative position as shown in Figure 1, maintains the auxiliary switch 23 closed, and when in its forward position at the end of a coin delivery operation is snapped forwardly for quickly opening the auxiliary switch 23 under the control of the contractible spring 37, which is anchored to the frame and to the arm 35 at its free end, as at 38. Also pivoted to the arm 35 at 38 is a forwardly extending link 39, the forward end of which has a limited sliding connection at 40 to a downwardly extending arm 41 carried by the frame, the lower end of which arms extends into a slot 42 in the solenoid core 3. As the pivoted arm 41 is forced forwardly by the core 3, the sliding connection 40 is engaged by the end 43 of the slot 44, hence the free end of the pivoted arm 35 is forced forwardly thereby opening the switch 23.

As the switch 23 is opened the circuit is broken and the solenoid deenergized, thereby allowing the core 3 of the solenoid to be forced rearwardly under the influence of the contractible spring 15, consequently the pivoted arm 41 will be forced rearwardly, thereby forcing arm 39 rearwardly, as well as the lower end of pivoted arm 35 until the insulating member 36 engages the spring arm 24 of the auxiliary switch 23, and forces the same to closed position in relation to spring arm 22, therefore it will be seen that the next coin delivering operation will take place as long as the package 4 is held in position and the main switch 19 closed, therefore it will be seen that the succeeding coin ejecting and injecting operations may be accomplished.

The final control switch 27 is pivotally and adjustably mounted on a stud 45 carried by the side of the frame so its spring arm 46 can be adjusted in various positions in relation to a switch opening disc 47, carried by a pivoted arm 48 secured to rotate with a shaft 49 carried by the side of the frame. Arm 48 is provided with an extension 50, to which is connected a spring 51, which is in turn anchored at 52 to the frame, therefore the disc 47 is normally forced in the direction of the arrow *b*, Figure 3. Shaft 49 extends through the frame and has mounted thereon a toothed segment 53 limited in movement in one direction by a stop 54, and during successive operations or oscillations of the arm 41, a spring actuated pawl 55 rocks the toothed segment 53 step by step at each coin dispensing operation as long as the main switch 19 is held closed by the package, and according to the adjustment of the final circuit breaking switch 27. Figure 4 shows the switch set for delivering three coins, the dotted line positions of said member 47 being shown therein.

When the member 47 reaches the spring contact arm 46 of the final circuit breaker 27, arm 46 is flexed out of engagement with conductor arm 56, thereby breaking the circuit and deenergizing the solenoid 2. This action takes place even if the main switch 19 is closed, and the package 4 maintained in position. The operator then removes package 4 from its position in engagement with the head 28 of the push rod 29 and then the expansive action of spring 31 against collar 33 will force the collar and push rod forwardly against the free end 57 of a downwardly extending

lever 58. The upper end of the lever is pivoted at 59 and is provided with a depending finger 60, which engages the nose 61 of a releasing dog 62 and rocks said releasing dog upwardly against the action of its spring until it raises the spring actuated dog 55 out of engagement with the toothed segment 53, thereby allowing said segment to be returned to normal position as shown in full lines in Figure 4, and the contact arms 46 and 56 of the final circuit breaking switch 27 to be moved to closed position so the next steps, involving a succeeding package to be filled, may take place. Figure 1 shows a push rod in position where slight further movement will close the main switch 19, and it also shows in dotted lines the initial positions of lifting finger 62 and dogs 55. In Figure 2, is shown in dotted lines the inoperative position, and in full lines the operative positions of the parts.

From the above it will be seen that a coin injecting device is provided for injecting coins in any number desired, so that change may be furnished along with the package to the purchaser, and the device is particularly adapted for preparing packages of cigarettes for insertion in vending machines so the purchasers' change is delivered with the package.

It will also be seen that the device is simple in construction, the parts reduced to a minimum, and it is automatic and controlled by the package, and that when the final control switch is properly positioned, there will be no danger of the operator placing an excess number of coins in the package.

The invention having been set forth what is claimed as new and useful is:

1. A machine for depositing a predetermined number of coins within the wrapper of a package, said machine comprising a coin hopper, a coin guide extension carried by the hopper and adapted to be inserted within the wrapper of the package, solenoid means for forcing coins from the hopper into the wrapper of a package, means for energizing said solenoid, a main switch, an auxiliary switch, a final circuit maker and breaker in circuit with said means, said auxiliary switch being normally closed, said final switch being normally closed until a predetermined number of operations, said main switch being opened and means controlled by the package and cooperating with the main switch for closing the same whereby a successive predetermined number of solenoid operations will take place until the final switch is opened.

2. A device as set forth in claim 1 including a core carried by the solenoid, means carried by the core for intermittently discharging coin into the package on its forward stroke and at the same time breaking the circuit at the auxiliary switch, means for moving the solenoid rearwardly upon breaking of the circuit and again closing the auxiliary switch and step by step means for opening the final switch at the ends of successive operations.

3. A device as set forth in claim 1 including a reciprocating core carried by the solenoid, spring means for normally forcing said core rearwardly, said core, upon energizing of the solenoid, discharging coin into the package at the forward ends of its stroke, lever means for opening the auxiliary switch at the forward ends of the core strokes and closing the auxiliary switch at the rear ends of its strokes, a step by step movable segment controlled by the lever means, said segment having means cooperating with the final switch for opening the same and breaking the circuit at the end of a predetermined number of core operations.

4. A machine for depositing a predetermined number of coins in a package, said machine comprising a frame, a solenoid carried by said frame, a core carried by said solenoid, a hopper from which coins are forced into the package when the solenoid is moved forwardly upon energizing of the solenoid, means for normally forcing said core rearwardly when the solenoid is deenergized, a main switch, an auxiliary switch and a final circuit breaking switch, a circuit between said switches, said auxiliary switch being closed when the solenoid core is in rear position and opened when the solenoid is in forward coin delivering position, thereby allowing the core to move rearwardly under the influence of its means for again closing the circuit, said circuit closing of the auxiliary switch being controlled through lever means cooperating with the switch and with the solenoid core and means controlled by said lever means for opening the final circuit breaking switch after a predetermined number of operations of the solenoid core.

5. A device as set forth in claim 4 wherein the means for opening the final switch comprises a toothed rock segment, pawl means cooperating with the segment and controlled by the lever means for intermittently rocking the segment in one direction upon each reciprocation or operation of the solenoid core, means controlled by a package and cooperating with a main switch for closing and opening the same, said last named means upon removal of the package releasing the segment and pawl and allowing the segment to return to normal position.

6. A device as set forth in claim 4 including a package push rod axially movable for closing the main switch, a step by step control mechanism for opening the final switch, said step by step mechanism being controlled by axial movement of the push rod by removal of the package for releasing the step by step mechanism and allowing the closing of the final switch.

7. A machine for inserting coins in a package, said machine comprising a frame, a solenoid carried by said frame, a core movable through said solenoid for intermittently injecting coins into the package, spring means for normally forcing the core rearwardly upon deenergizing the solenoid, a main switch, an auxiliary switch and a final circuit breaking switch, all of said switches and solenoid being in circuit with each other, said main switch being normally open, said auxiliary switch and final circuit breaking switch being normally closed and means controlled by the solenoid core whereby upon closing of the main switch the solenoid will be energized, its core forced forwardly for a coin delivering operation, the auxiliary switch opened for deenergizing the solenoid, the core forced rearwardly for again closing the auxiliary switch for again energizing the solenoid for a succeeding operation and means controlled by the movement of the core for finally opening the circuit at the final circuit breaking switch after a predetermined number of operations.

8. A device as set forth in claim 7 including means whereby the final circuit opening switch may be adjusted whereby it will operate after a predetermined number of operations of the solenoid core.

9. A device as set forth in claim 7 including a package push rod controlling the closing and opening of the main switch, said main switch be-

ing closed after the coin guide members have entered the package.

10. A device as set forth in claim 7 including a core controlled step by step operated means for opening the final switch, a package push rod for closing the main switch upon movement in one direction, said push rod also forming means upon removal of the package for releasing the step by step final switch control mechanism and allowing the same to return to normal position and the final switch to close.

11. The combination with a coin injecting device for injecting coins beneath a package wrapper, said device comprising guide fingers between which the coin is forced said guide fingers having recessed sides whereby upon angular positioning of a package the wrapper will not be torn.

12. A device as set forth in claim 11 wherein the guide fingers are superimposed, the upper guide fingers having diverging arms terminating in sharpened edges and also forming recesses in opposite sides thereof.

13. A device as set forth in claim 11 wherein the coin guide fingers are in superimposed relation, the upper guide finger having diverging sharpened arms, the lower guide finger inclining upwardly and terminating in a sharpened forward end engaging the upper guide finger.

14. A device as set forth in claim 1 including means for automatically stopping the operation of the machine after a predetermined number of operations thereof.

15. A device as set forth in claim 1 including means for automatically stopping the operation of the machine after a predetermined number of operations without removing the package from the coin guide.

16. A device as set forth in claim 1 including means for automatically stopping the machine after a predetermined number of operations thereof without removing the package from its position on the coin guide and means whereby upon removal of the package a succeeding operation of the machine may take place.

17. A machine for depositing a predetermined number of coins within the wrapper of a package, said machine comprising a coin hopper, a coin guide extension carried by the hopper and adapted to be inserted within the wrapper of a package, electrically controlled means for forcing coins from the hopper into the wrapper of a package, means for energizing the electrically controlled means, a main switch, an auxiliary switch, a final circuit maker and breaker in circuit with said means, said auxiliary switch being normally closed, said final switch being normally closed until a predetermined number of operations, said main switch being opened and means controlled by the package and cooperating with the main switch for closing the same whereby a successive predetermined number of operations of the electrically controlled means will take place until the final switch is opened.

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