April 7, 1953 C. WILDER 2,634,185

DISPENSING MACHINE FOR PACKAGED ARTICLES

Filed Jan. 6, 1950 5 Sheets-Sheet 1

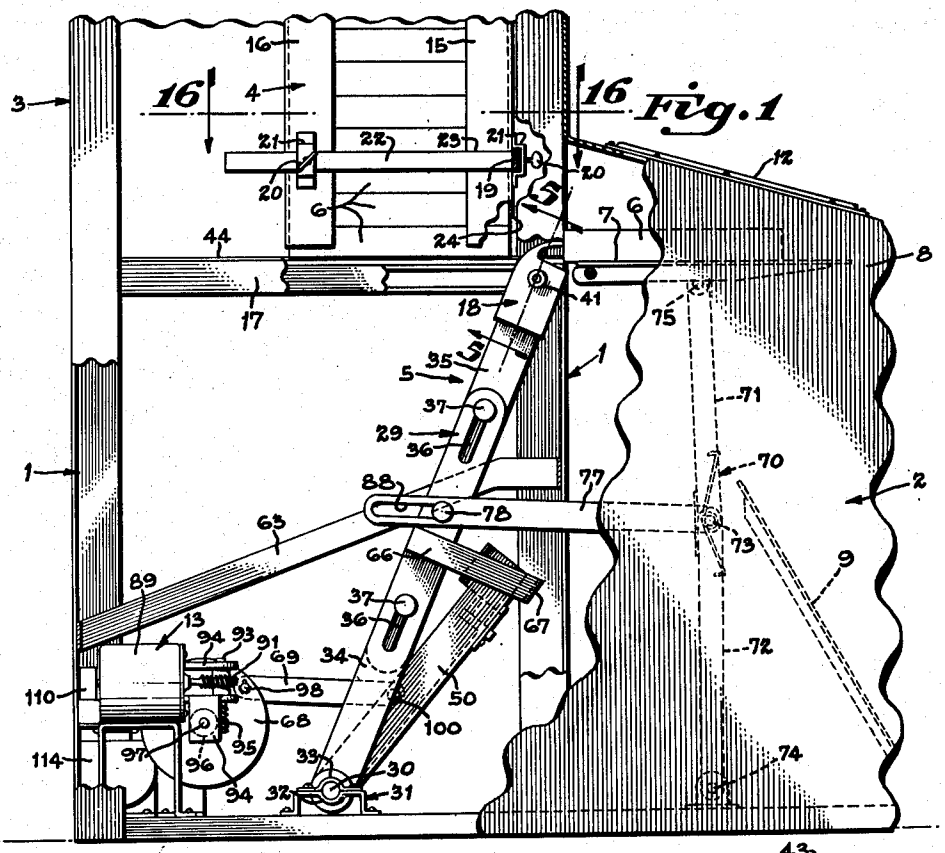


Fig. 1

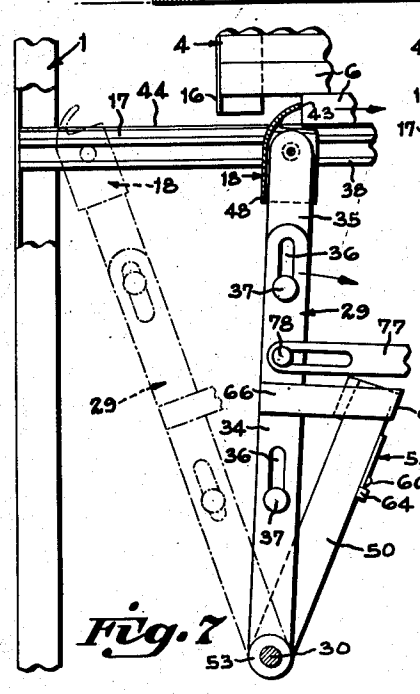


Fig. 7

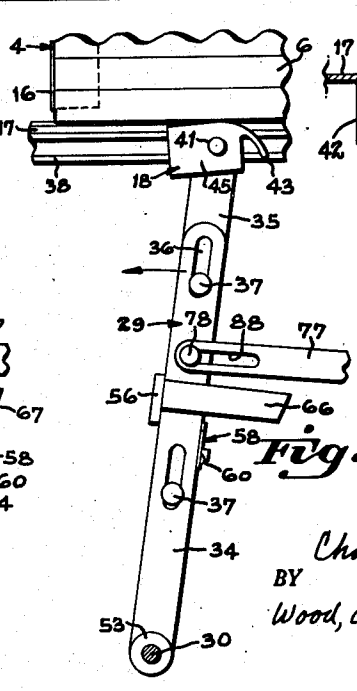


Fig. 6

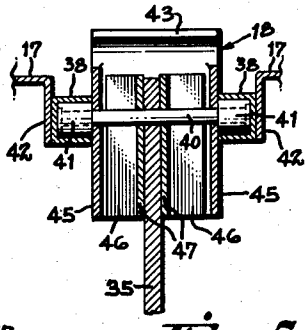


Fig. 5

INVENTOR.
Charlton Wilder
BY
Wood, Arey, Herron & Evans
ATTORNEYS.

April 7, 1953 C. WILDER 2,634,185

DISPENSING MACHINE FOR PACKAGED ARTICLES

Filed Jan. 6, 1950 5 Sheets-Sheet 2

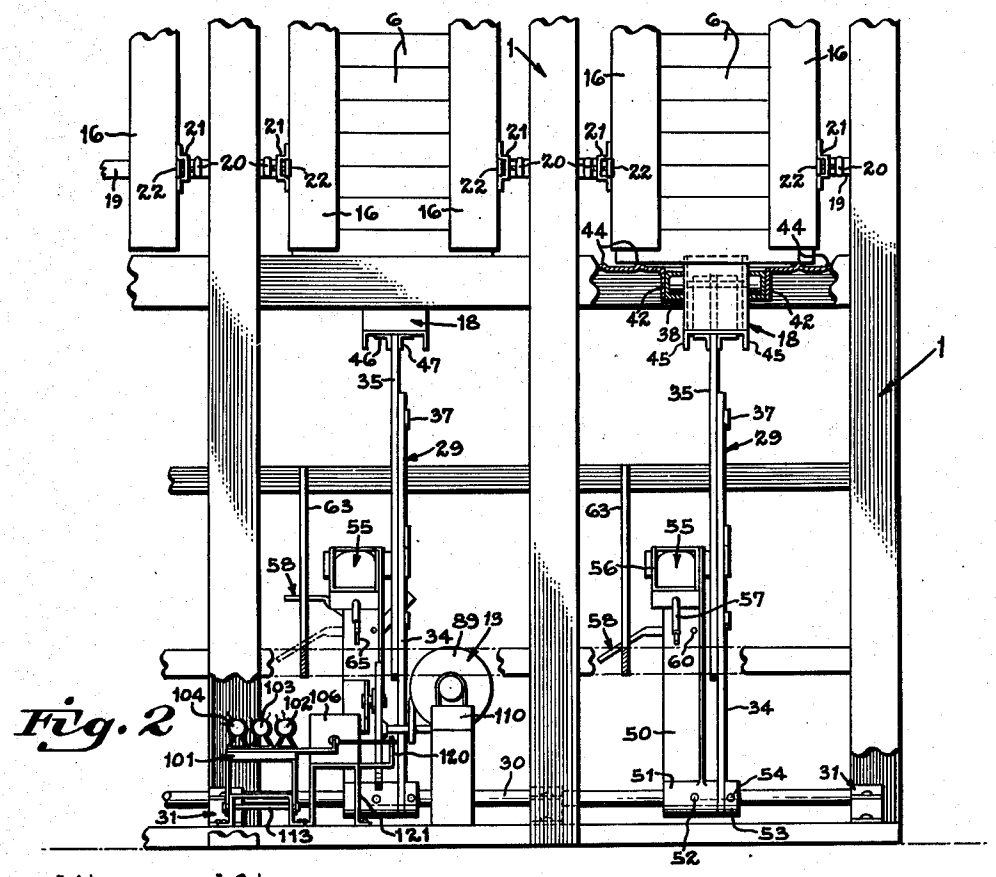


Fig. 2

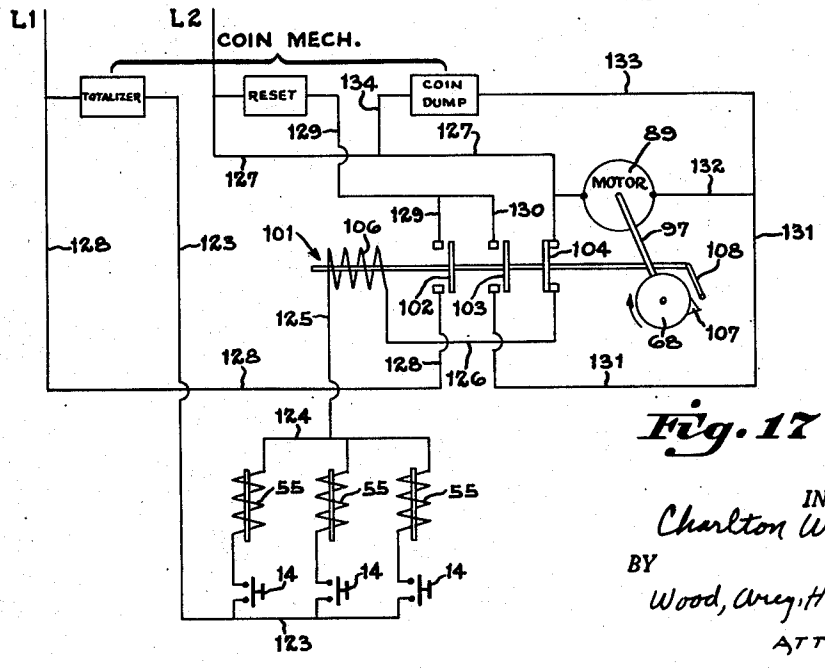


Fig. 17

INVENTOR.
Charlton Wilder
BY
Wood, Arey, Herron & Evans
ATTORNEYS.

April 7, 1953 C. WILDER 2,634,185

DISPENSING MACHINE FOR PACKAGED ARTICLES

Filed Jan. 6, 1950 5 Sheets-Sheet 3

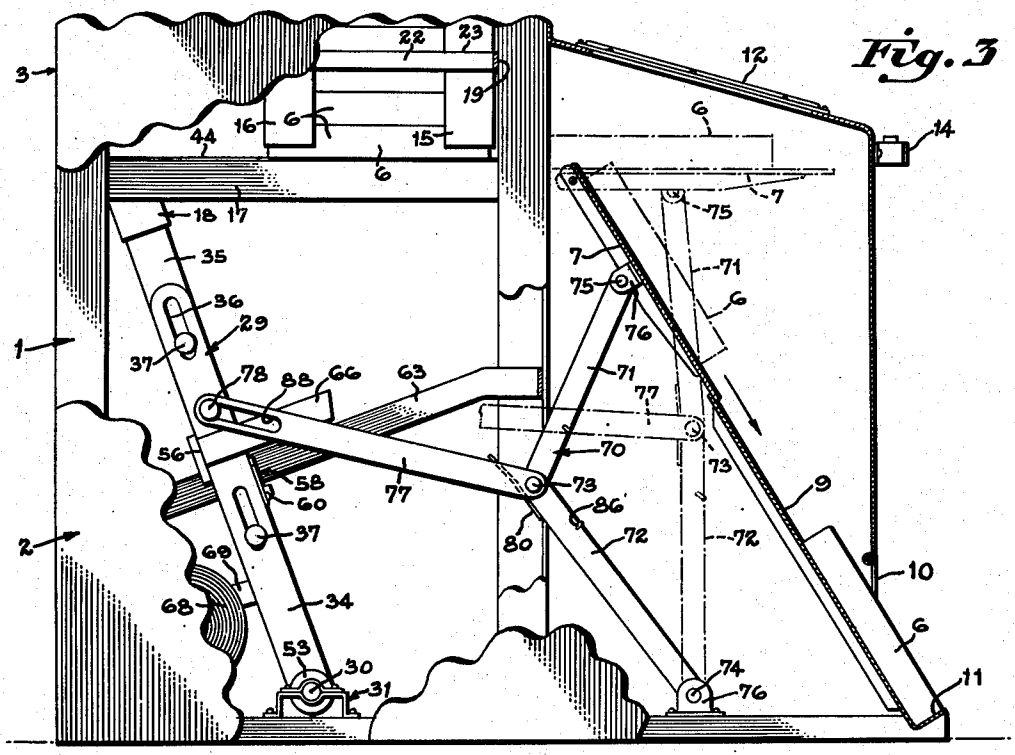


Fig. 3

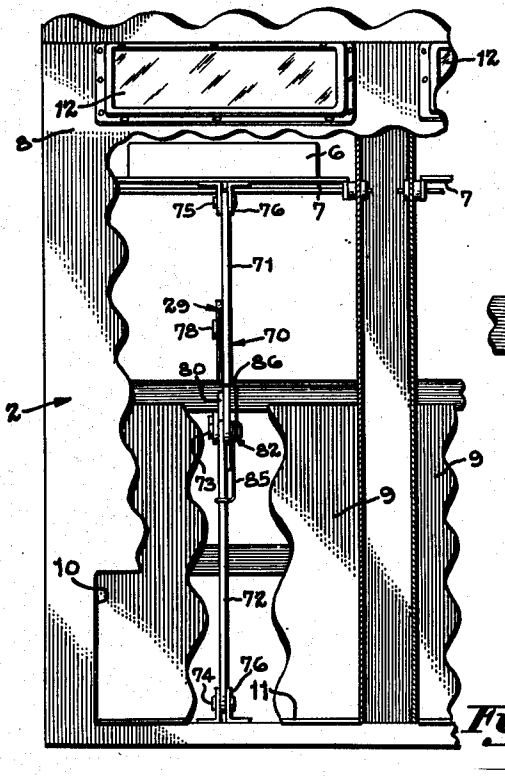


Fig. 4

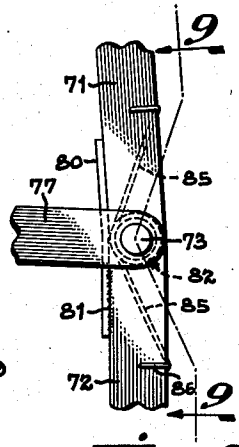


Fig. 8

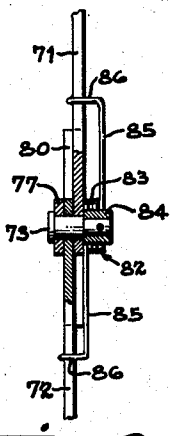


Fig. 9

INVENTOR.
Charlton Wilder
BY
Wood, Arey, Herron & Evans
ATTORNEYS.

April 7, 1953 C. WILDER 2,634,185

DISPENSING MACHINE FOR PACKAGED ARTICLES

Filed Jan. 6, 1950 5 Sheets-Sheet 4

Fig. 11

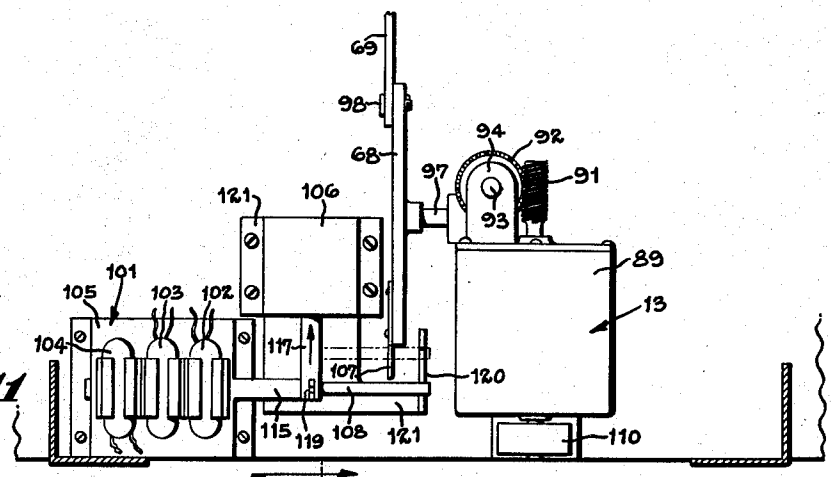


Fig. 10

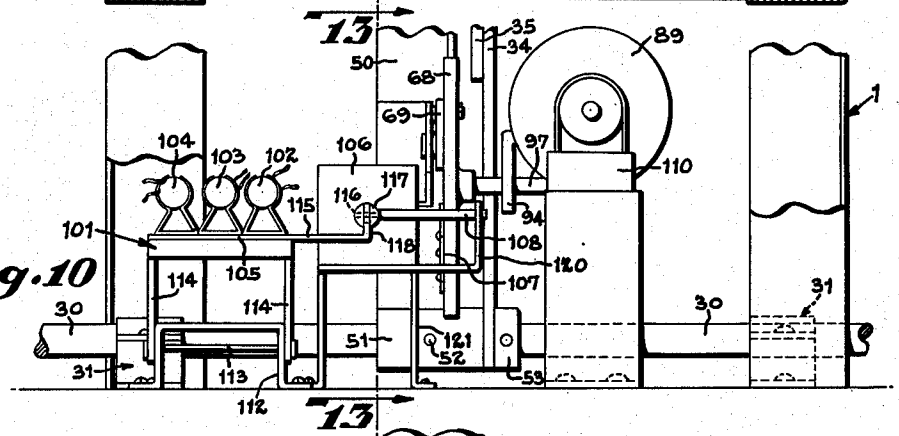


Fig. 12

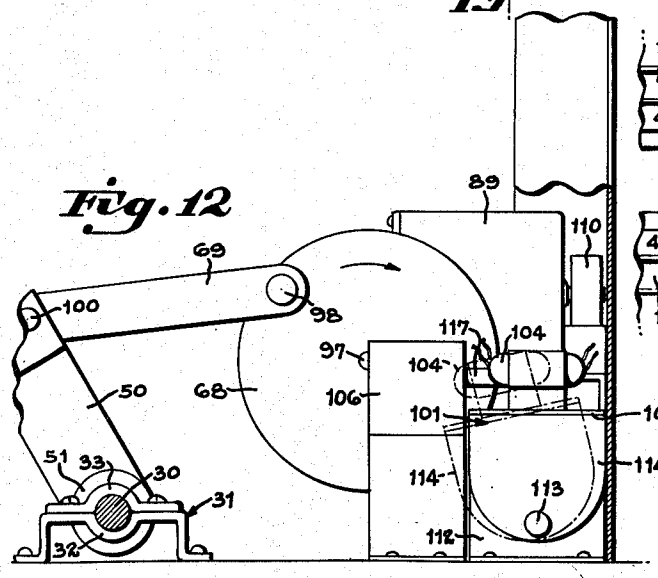
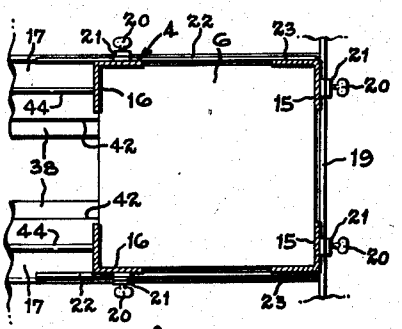


Fig. 16



INVENTOR.
Charlton Wilder
BY
Wood, Arey, Herron & Evans.
ATTORNEYS.

April 7, 1953 C. WILDER 2,634,185

DISPENSING MACHINE FOR PACKAGED ARTICLES

Filed Jan. 6, 1950 5 Sheets-Sheet 5

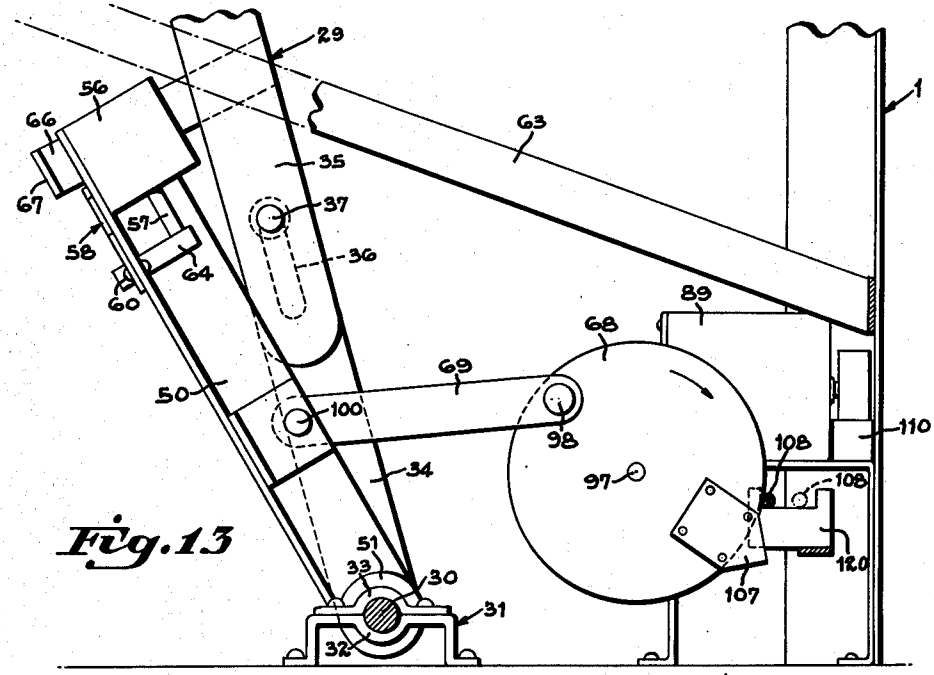


Fig. 13

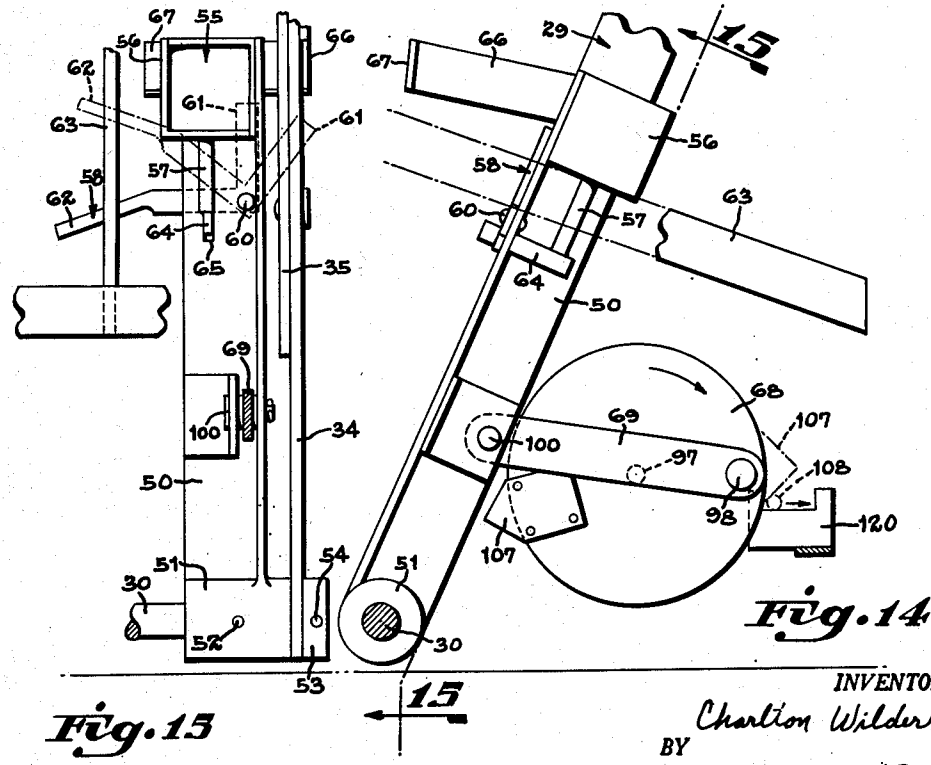


Fig. 14

Fig. 15

INVENTOR.
Charlton Wilder
BY
Wood, Arey, Heron & Evans
ATTORNEYS.

Patented Apr. 7, 1953

2,634,185

UNITED STATES PATENT OFFICE

2,634,185

DISPENSING MACHINE FOR PACKAGED ARTICLES

Charlton Wilder, Cincinnati, Ohio

Application January 6, 1950, Serial No. 137,213

14 Claims. (Cl. 312—66)

1

This invention relates to automatic vending machines which the purchaser operates by inserting coins and depressing selector buttons corresponding to selection of articles dispensed by the machine. The improved apparatus is intended for general utility in vending packaged commodities which, because of bulkiness and diversity in shape and size, have heretofore been considered unsuitable for machine vending.

Selective vending machines are in extensive use in dispensing special products such as cigarettes and other small articles but these usually are special machines limited to one particular product. In other words, they have fixed magazines and associated delivery mechanisms and are used in vending widely used products of such nature that the volume of sales justifies the cost of the machines; however, it is not economically feasible to utilize special machines for general merchandising because of the great range of package sizes involved.

The present apparatus is intended to provide a flexible unit which is adaptable to various sizes and shapes of merchandise within its range of adjustment, whereby the machine may be installed in stores and other establishments to vend standard items which are purchased usually as a matter of routine. It is contemplated as one example, to install the machines in department stores to vend ready-to-wear articles such as socks, shirts, underwear and many other items which do not require individual fitting or alternations. In a store of this character, the selection offered by one machine is insufficient to meet the great number of items, grades and sizes necessarily carried in stock; consequently, it is preferable to group a series of machines in batteries to provide one or more self-service departments whereby the purchaser may make his selections in a rapid, convenient manner and thus conserve time and reduce merchandising costs.

The improved apparatus embodies a series of adjustable magazines to accommodate various packaged items, an individual mechanism associated with each magazine for dispensing the packages, and respective selector buttons for actuating the mechanism of a selected magazine upon insertion of coins and operation of a selector button. The magazines are located in a rearward section of the machine and the delivery mechanisms and associated selector buttons are located in the forward portion, the arrangement being such that the machines may be built into the wall of a self-service department with the front portions presented to the purchaser and

2

the magazines disposed in a service area on the opposite side of the wall in position to be refilled continuously by the store clerks without interfering with the purchasers and without interrupting the operation of the machines. Although the machines are intended primarily for this type of operation, it is contemplated also to install the units individually at desirable locations in the store, in which case the machine is enclosed in a suitable housing provided wth doors for periodic refilling of the magazines.

The primary objects of the invention have been to provide a simple and reliable dispensing mechanism which is operable in conjunction with adjustable magazines to dispense relatively large packages of diverse sizes and shapes without requiring any adjustment in the dispensing mechanism; also, to provide an improved delivery apparatus which displays in full view of the purchaser the identical article which is delivered upon actuating a given selector button so as to simplify the operation of the machine. Because a great deal of purchasing is done by housewives who are inexperienced in dealing with machinery, and arrangement of this kind is of particular advantage in avoiding mistakes in selection since the packages are clearly marked and, in many instances, consist of well known products bearing distinctive trade marks well known to the purchaser. The front portion of each machine is equipped with windows through which the packages are displayed and the selector buttons are closely related to the respective windows for positive identification and selection of the desired article.

Briefly, the mechanism for dispensing the packages consists of an ejector mechanism for each magazine cooperating with a delivery tray at the forward portion of the machine arranged to sustain a package beneath an observation window for inspection before purchasing, the ejector mechanism serving to advance the packages from the magazine to the tray and the tray being arranged to dump the package into a chute for delivery directly to the purchaser upon operation of the selector button for that particular tray. The cycle of operation is initiated when the selector button is depressed, first to dump the package from the tray into the delivery chute, then to return the tray to a level position, after which the mechanism advances the next package from the magazine to the delivery tray where it remains until the next purchaser depresses the button to repeat the cycle of operation.

Further objects of the invention have been to

simplify the ejectors by which the packages are advanced from their magazines by utilizing a single power unit and coupling the ejectors electrically by operation of the selector buttons so that upon each cycle of operation, the selected ejector only is activated; also to provide delivery trays in conjunction with the ejectors which are tilted by the related ejectors to deliver the displayed package as soon as a selector button for that tray is depressed. The apparatus is arranged to return the tray to its display position before the next package is advanced from the magazine; otherwise expressed, the ejectors and trays operate in timed relationship to deliver the package which was advanced to the tray at the end of a previous cycle and then to reset the tray and place the next package upon it before stopping. Thus, even if the magazine is empty, the last package is in position for delivery and after that package is delivered, the tray of course remains empty. The purchaser is guided in his selection by the packages displayed, and consequently will not select an empty delivery tray.

An additional object has been to prevent the tray from being tilted even if force is applied and thus to prevent theft of the package displayed upon it. For this purpose, the tray is tilted by a toggle linkage system which sustains the tray in its display position with the linkage straightened in a locking position. The joint of the linkage is coupled to the related ejector and tilts the tray by imparting a scissors motion to the toggle links during the retracting movement of the ejector and arranged to lock the links in straight position at the end of the package advancing movement of the ejector.

Generally described, the apparatus consists of a series of magazines which are spaced apart sufficiently to enable the magazines to be adjusted to accommodate various package sizes, each magazine being associated with a delivery tray arranged to receive the articles as they are pushed from the lower end of the magazine and to support the article beneath the observation window for inspection by the purchaser. Each magazine is provided with an ejector arm which swings in an arc carrying at its upper end an ejector finger which engages the lowermost article contained in the magazine and pushes the article forwardly to its receiving tray.

The power system which is common to all the ejectors, provides a controlled cycle of operation by means of an electrical control system which, in turn, is energized when the proper number of coins are inserted in the coin mechanism and a selector button depressed. The respective ejector arms normally remain inactive during the cycle of operation except the arm for a particular magazine which is coupled electrically to the driving system in response to operation of the selector button for that magazine. As above noted, the ejector arm is coupled directly to its associated delivery tray in such manner that the tray is tripped to discharge its article during the rearward stroke of the ejector arm and is returned to its supporting position during the forward or package advancing stroke of the arm, but before the package is advanced to the tray. When the machine completes its cycle, the next article to be delivered thus is in display position upon the tray ready for delivery during the first stage of the next cycle.

The connection between the ejector arm and its delivery tray consists of a pair of toggle levers which are pivotally connected together at their intermediate ends with their outer ends pivotally connected to the tray and to a fixed pivot point. A link is connected to the intermediate joint of the levers and its opposite end is connected to the ejector arm to operate the toggle levers in scissors fashion. The toggle levers include stops which lock them in a substantially straight position slightly beyond dead center with the tray in its display position and a spring is applied to the levers to urge them normally in this direction. As the ejector arm swings rearwardly during the first stage of its cycle, the toggle arms are drawn rearwardly against the spring pressure, causing the tray to tilt and discharge its contents upon a chute which communicates with a delivery opening at the front of the machine. As the ejector arm moves forwardly, the spring urges the toggle levers in tray closing direction so that the tray may be closed to receive the next package before the ejector arm advances it.

Various other features and advantages of the invention will be clearly apparent from the specification with reference to the drawings disclosing a preferred embodiment of the invention so that those skilled in the art will comprehend readily the various modifications to which the invention is susceptible.

In the drawings:

Figure 1 is a fragmentary side elevation of a vending machine incorporating the present improvements.

Figure 2 is a rear view of the mechanism illustrated in Figure 1 including the driving apparatus for the ejector arms, with the casing of the machine removed to facilitate illustration.

Figure 3 is a view similar to Figure 1 with the ejecting mechanism in retracted position and the delivery tray tilted to dump the package down the delivery chute.

Figure 4 is a fragmentary front elevation partially broken away, illustrating the delivery tray and the cooperating chute and the linkage for actuating the tray.

Figure 5 is an enlarged fragmentary sectional view taken on line 5—5, Figure 1, detailing the construction of the ejector finger.

Figure 6 is a diagrammatic view illustrating the movement of the ejector arm and finger in the first stage of the operating cycle, preparatory to the ejection of a package from the magazine.

Figure 7 is a view similar to Figure 6 showing the forward or ejecting stroke of the arm with the ejector finger engaged against and advancing the package forwardly toward the delivery tray.

Figure 8 is an enlarged fragmentary view further detailing the toggle joint as viewed in Figure 1.

Figure 9 is a sectional view taken on line 9—9, Figure 8, further illustrating the toggle joint.

Figure 10 is an enlarged fragmentary view detailing the power unit cycle control apparatus as viewed in Figure 2.

Figure 11 is a top plan view projected from Figure 10 further illustrating the power unit.

Figure 12 is an end view as projected from the left end of Figure 10 further illustrating the power unit, and cycle control apparatus.

Figure 13 is a sectional view taken on line 13—13, Figure 10, detailing the lower portion of the ejector arm assembly and its driving connection with the power unit, the parts being shown in the position they assume at the beginning of an operating cycle.

Figure 14 is a view similar to Figure 13 with the parts shown in the position they assume near

the rearward travel limit with the ejector arm fully retracted in a position corresponding to that illustrated in Figure 3.

Figure 15 is a sectional view taken on line 15—15, Figure 14, illustrating the retractor arm assembly with the solenoid operated latch shown in full lines in the retracted position it assumes upon encountering the stationary retracting bar, the active position of the latch being shown in broken lines.

Figure 16 is a sectional view taken on line 16—16, Figure 1, detailing the structure and arrangement of one of the magazines.

Figure 17 is a diagram illustrating generally the electrical circuit which controls the operation of the machine.

Described in general with reference to Figure 1, the various parts of the machine are mounted upon an angle iron frame indicated generally at 1, having a sheet metal housing 2 which encloses the mechanism either in its entirety or partially, depending upon the type of installation. Machines which are to be utilized individually are completely enclosed by housings which have door openings for refilling the magazines; those intended for built-in use are enclosed at the forward portion only. In either case, the forward portion of the housing is provided with a delivery opening, as hereinafter disclosed. The rearward portion of the machine, indicated generally at 3, contains the merchandise magazines 4 in its upper portion and corresponding ejector mechanism 5 arranged to feed the packages 6 from the magazines to the delivery trays 7 which extend forwardly from the lower ends of the magazines. The delivery trays are mounted within the forward portion 8 in cooperating relationship with respective delivery chutes 9 so that the packages are advanced sequentially from the magazine to the delivery tray and from the tray to the delivery chute. The delivery chutes are sharply inclined downwardly and terminate at the delivery openings 10 (Figure 4) formed in the casing at the front portion of the machine. The end of the chute is provided with an end flange 11 to retain the package in a position to be picked up conveniently by the purchaser.

The operating characteristics of the machine are disclosed most clearly in Figures 1 and 3, the ejector being shown in Figure 1 in its stationary position with a package resting upon the delivery tray ready for discharge; and in Figure 3 the ejector mechanism is in the retracting stage of its cycle with the tray tilted to dump the package. In other words, at the end of each cycle, a package 6 is placed upon the tray so that during the first stage of the next cycle the package so positioned is discharged concurrently with retracting movement of the ejector apparatus. During the second stage, the next package is advanced from the magazine toward the tray, but before it reaches the tray, the tray is returned to its level position to receive the package. This arrangement permits the purchaser to observe the identical package which will be delivered when he operates the machine, the forward portion of the casing for this purpose being provided with windows 12 directly above the trays and associated delivery chutes (Figures 1 and 4).

The control system includes a coin mechanism (not shown) which consists of a commercial structure in electrical connection with the power unit indicated generally at 13, Figure 2. The power unit includes a cycle control switch arrangement which deenergizes the unit after one complete cycle of operation. The cycle of operation is initiated by inserting the proper coins into the coin mechanism, depressing one of the selector buttons 14 (Figure 3) corresponding to the desired package, whereupon the power unit is energized to execute one cycle of operation.

As above noted, each machine is provided with a series of magazines and cooperating ejector systems which are actuated selectively by the power unit 13. Each machine constitutes a complete unit in and of itself and may be installed individually in stores and other business establishments for merchandising packaged articles or, on the other hand, a series of machines may be placed side by side in a special department devoted to vending machine merchandising. If the machines are installed in batteries, it is preferable to place them in a wall opening and present only the forward or delivery portion 10 to the purchaser, with the rearward magazine section 3 at the opposite side of the wall so that the magazines may be replenished directly from a supply room remote from the purchaser's room without interfering with the operation of the machines. The specification is directed to a single dispensing machine since the machines of the group are identical and operate as independent units.

Magazines

As illustrated in Figures 1 and 16, the packages are maintained in vertical stacks in the magazines indicated generally at 4, there being provided in each machine a plurality of magazines and a corresponding ejector apparatus and delivery tray for each magazine. The articles to be dispensed are packaged preferably in boxes or cartons of a given size for each article to adapt the articles to the magazines. The magazines each consist of vertical angle irons indicated at 15 and 16, arranged to embrace loosely the four corners of the packages which are stacked within them, with the lowermost package of the stack resting upon a horizontal support rail 17 which is traversed by an ejector finger 18, as hereinafter disclosed in detail. In order to adapt the magazine to receive various sizes and shapes of packages, the angle irons are adjustable with respect to one another, as detailed in Figure 16. As shown, the forward angle irons 15 are adjustably secured to a horizontal rail 19 which, in turn, is secured to the forward angle irons of the frame 1. The adjustable attaching means for the magazine angle irons is illustrated at the lower end only but it will be apparent that the same construction may be utilized at the upper end to maintain the angle irons securely in their parallel relationship.

As shown, the forward angle irons 15 are secured to the support rail 19 by means of wing nuts 20 which are screwthreaded through U-shaped brackets 21, welded or otherwise secured to the angle irons 15. Upon loosening the wing nuts, the angle irons may be shifted laterally with respect to each other to accommodate the lateral dimension of the package to be contained therein. It will be observed in Figure 2, that space is provided between adjacent magazines so that they may be expanded laterally to accommodate packages larger than those disclosed. It is to be observed also that the several magazines of a given machine may be adjusted for various sizes of packages within the pre-

scribed limits; also, that the machine can be converted to the desired size without any change other than the actual change in magazine size, since the ejector finger 18 is arranged to operate over a fixed path which is slightly longer than the maximum magazine size.

The rearward angle irons 16 of the magazine are supported by horizontal rails 22 having their ends welded or otherwise secured to the forward angle irons 15 as at 23. The rearward angle irons are secured to the bars 22 by wing nuts 20 passing through brackets 21 and engaging the bar 22 in the same manner as the forward angle irons. It will be apparent therefore that the magazine size can be changed widthwise and lengthwise. The width is adjusted by loosening the front wing nuts and shifting the angle iron and rails 22 laterally relative to the support rail 17; and the length is adjusted by loosening the wing nuts and shifting the rearward angle irons 16 with respect to the forward ones. In adjusting the width dimension of the magazine, it is preferable to maintain the magazine assembly in centered relationship with respect to its ejector finger.

As shown in Figure 6, the ejector finger 18 is arranged to be tripped by the package to an inoperative position during its retracting movement and to swing by gravity to a vertical position after passing the rearward edge of the package to advance the package, as shown in Figure 7. The rearward angle irons 16 of the magazine extend downwardly toward the guide rail 17 to engage the rearward end of the lowermost package to prevent the package from being pushed rearwardly during the rearward travel of the ejector finger, and the forward angle irons 15 terminate above the lower package, as at 24 (Figure 1), to permit the package to be pushed forwardly during the delivery stroke of the ejector finger.

Ejector apparatus

Each magazine is equipped with an individual ejector mechanism 5, which may be selectively actuated to feed the packages from the magazine to a related delivery tray, and each tray is connected to the ejector mechanism for operation in conjunction with that particular unit. Thus, the ejector and delivery mechanism for each magazine operate in unison independently of the other magazines to deliver the selected package and advance a succeeding package from the magazine to the tray upon each cycle of operation. As previously described, the ejectors which serve the several magazines are powered from a single power unit and are individually connected to the power unit upon depressing in related selector button.

Described in detail with reference to Figures 1 and 5, each ejector consists of a swinging arm assembly 29 having its lower end pivotally mounted upon a rock shaft 30 journalled in bearings 31 which are secured to the base of the machine frame. As shown in Figure 3, rock shaft 30 extends crosswise of the machine and provides a common pivotal support for all of the ejector arms of the machine, a bearing being provided between the respective arms to stabilize the rock shaft. The bearings are of the split type, each consisting of a bottom section 32 secured to the base and a cap section 33 secured by screws to the bottom section. The arm assemblies naturally swing in an arc and in order to move the ejector finger 18 in a horizontal path with respect to the magazines, each arm assembly 29 is of sectional construction consisting of a lower arm 34 which is loosely pivoted upon the rock shaft 30 and an extensible upper section 35 which carries the ejector finger 18. The lower arm is slotted as at 36—36 and the upper section is slidably joined to the lower by means of headed rivets or shoulder screws 37—37 fixed in the upper section and slidably engaged in the slots.

As detailed in Figure 5, the upper end of the extensible section 35 is confined for horizontal movement by channels 38—38 which are welded or otherwise secured to the rail 17 immediately beneath the magazine. The ejector finger 18 is pivotally mounted upon the upper end of the extensible section 35 by a pivot pin 40 which passes through the arm 35 and ejector finger. The pin extends beyond the opposite sides of the ejector finger and carries rollers 41—41 which are confined in the channels 38; thus, pin 40 pivotally mounts the ejector finger and also supports the extensible arm section. As the lower arm swings through its arc of movement, the extensible section slides longitudinally with respect to the lower section 34 to compensate for the arc of swing. As shown in Figures 2 and 5, the rail 17 is provided with longitudinal flanges 42—42 upon which the channels 38 are welded or otherwise secured, and the ejector finger 18 and arm section 35 are guided accurately with respect to the rail 17 with the upper end 43 of the ejector finger extending above the plane of the rail 17 in position to engage the package resting upon the rail. In order to reduce friction, the rail 17 is provided with a pair of longitudinal beads 44—44 arranged to support the package (Figure 2).

The ejector finger 18 is formed preferably of sheet metal and is generally U-shaped in cross section to provide a pair of side flanges 45—45 for mounting purposes. A pair of angle brackets 46—46 are secured upon the inner surface of the finger to provide spaced flanges 47—47 which embrace the opposite sides of arm section 35 to stabilize the finger angularly with respect to the arm section. The lower portion 48 of the ejector finger depends downwardly a sufficient distance below the pivot pin 40 to cause the finger to hang by gravity in a vertical position with respect to the arm. During the retracting motion of the ejector finger (Figure 6), its upper end 43 contacts the underside of the package and is tripped to the position shown; after passing the rearward end of the package, the finger drops to the vertical position shown in Figure 7. Upon engaging the package, the finger is locked in its engaging position by engagement of its lower portion 48 against the section 35 to slide the package from the magazine and advance it to the delivery tray.

Selective driving mechanism

Each arm assembly 29 is loosely pivoted upon the shaft 30 and is swung through its operating cycle by means of a respective driving lever 50 which is non-rotatably secured to the rock shaft 30. As shown in Figure 2, the driving lever is provided with a hub 51 secured by a pin 52 to shaft 30 and the lower arm 34 of the ejector assembly is maintained in position alongside the driving lever by a collar 53 which is secured to shaft 30 by a pin or screw 54. During the cycle of operation, all of the driving levers swing in unison through a cycle of oscillation but the ejector arms remain stationary unless they are

coupled to the driving levers. The ejector arm for a selected magazine is coupled to its driving lever by depressing a selector button **14** which energizes a solenoid operated latch, generally indicated at **55**, there being provided an individual solenoid latch unit for each lever.

The electrical system for energizing the solenoids is described in detail in connection with the electrical circuit illustrated in Figure 17 and the levers **50** are driven by a power unit interconnected in the circuit. For present purposes, it is sufficient to note that when the coins are inserted in the coin mechanism and a selector button depressed, all of the driving levers are oscillated by rock shaft **30** and the selected ejector arm is coupled by a solenoid latch **55** to its driving lever to operate through its cycle. The power unit includes a cycle control apparatus arranged to cause the mechanism to operate through one complete cycle and then to deenergize automatically at the end of the cycle. The construction and operation of the power unit and cycle control apparatus is later disclosed in conjunction with the electrical circuit.

The general arrangement of the solenoid operated latches **55** is illustrated in Figure 2 and one of the latches is detailed in Figures 13 and 15. As shown, the latch units are mounted upon the outer or swinging ends of the driving levers, each solenoid having its coil enclosed by a housing **56** which is secured preferably by screws to its lever **50**. The lever **50** is formed of angle irons to provide the necessary stiffness and the housing **56** is nested within the angle section, as shown in Figures 13 and 15. The solenoid armature is provided with a plunger **57** extending through the housing **56** and adapted to actuate a coupling latch **58** which is pivotally mounted as at **60** upon the driving lever in position to engage the ejector arm assembly when the solenoid is energized, as shown in broken lines in Figure 15. The coupling latch is shaped like a bellcrank, having one limb **61** arranged to engage the ejector arm assembly and an arm **62** arranged to engage an inclined release bar **63** which swings the lever **58** to its inoperative position at the retracting stroke limit of the driving lever in the manner shown in Figures 14 and 15.

The solenoid is a conventional structure and its armature is spring loaded to urge the plunger normally in the outward position, as shown in Figures 13 and 14. A driving connection is established between the solenoid plunger and coupling latch by means of a lug **64** welded or otherwise secured upon the end of the plunger **57** and passing at right angles through a slot **65** formed in the driving lever **50**. The extended end of lug **64** engages the limb **62** of the coupling latch and, upon being energized, the solenoid plunger retracts and pulls the coupling lever from its inoperative position shown in full lines in Figure 15 to its coupling position, as shown in broken lines. The two latch positions are shown also in Figure 2, the latch for the left hand ejector arm being shown in its coupling position, while the right hand latch is shown in its uncoupled position.

The solenoid latch operates only to retract a selected ejector arm to a position behind the magazine and is released when the arm is retracted; in other words, the latch is active only during the idling stroke, and the ejector is driven by positive abutment with the driving lever during the power stroke. As shown in Figure 1, the driving lever overtravels the ejector arm assembly and occupies a position angularly advanced with respect to the ejector assembly; therefore, upon energizing the selector solenoid, the solenoid latch will swing to its coupling position prior to actual engagement of the latch with the ejector arm assembly. This arrangement prevents binding of the latch against the ejector which would interfere with proper operation. When the solenoid is energized, the power unit begins its operating cycle, causing the driving lever to swing rearwardly until its coupling lever contacts the ejector arm to drive it rearwardly, as shown in Figure 6, continuing in this direction until it reaches the fully retracted position shown in broken lines in Figure 7. During the latter portion of the rearward swing of the driving lever and ejector arm, the coupling limb **62** contacts the underside of the stationary release bar **63** and begins to swing the latch toward uncoupling position. Upon reaching its rearward position, the latch is completely uncoupled from the ejector arm and occupies the position shown in Figures 14 and 15.

The driving lever now begins to swing forwardly until it contacts the abutment arm **66** which is fixed upon the ejector arm, the end of arm **66** being bent angularly as at **67** to provide an abutment which is engaged by the driving lever. It will be observed that the abutment **67** is spaced sufficiently from the ejector arm to provide an overtravel as the driving lever moves in the ejecting direction. The driving levers are powered by a driving disk **68** connected by a pitman **69** to one of the levers. The disk forms a part of the power unit and produces a crank motion through one cycle of rotation each time the power unit is energized, as hereinafter described. The arrangement is such that the actual travel of the ejector does not depend upon precise stopping of the disk at the end of its cycle, instead the ejector arm stops when the disk completes its cycle even though the driving lever may reverse its direction before stopping.

As the ejector arm moves forwardly, it contacts the rear edge of the lowermost package, as shown in Figure 7, and thrusts the package forwardly until it is advanced to the delivery tray, as shown in Figure 1. It will be observed at this point that the travel of the ejector arm is considerably greater than is necessary to eject the package size illustrated. This permits the magazines to be be adjusted for various sizes of packages without changing the stroke of the ejector mechanism. Otherwise expressed, the forward edge of the package is located at a fixed position and the rearward edge varies in accordance with the package length; therefore, the maximum length is limited only by the rearward stroke limit of the ejector. The width of the packages is, of course, limited by the lateral spacing between the magazines.

Delivery mechanism

As above noted, the ejector finishes its cycle of operation with a package ejected from the magazine and resting upon delivery tray **7** in a position to be viewed by the purchaser. When the selector button for that particular package is depressed, the tray is tilted from the position shown in Figure 1 to that shown in Figure 3 causing the package to slide down the tray to the delivery chute **9** to be picked up by the purchaser. This occurs before the next package is ejected from the magazine, the tray being tilted as the ejector arm retracts and being lev-

elled before the next package is advanced by the ejector from the magazine. For this purpose, the tray is connected to the ejector arm for direct actuation in time with ejector movements as hereinafter described.

Described in detail, the tray is supported and actuated by a toggle joint indicated generally at 70 consisting of a pair of limbs 71 and 72 pivotally connected together as at 73 to provide a knee joint and having their respective opposite ends pivotally connected to the base of the machine as at 74 and to the tray as at 75. These connections are made by means of angle brackets 76 which are spaced to receive the limbs 71 and 72 with pivot pins 74 and 75 joining the limbs to the brackets (Figures 3 and 4). A scissors motion is imparted to the limbs by a link 77 connected to the limbs at the intermediate pivot point 73 having its opposite end pivotally connected as at 78 to the ejector arm 29. As the ejector arm retracts, the limbs swing to the position shown in Figure 3 causing the tray to tilt to an inclined position in alignment with the discharge chute and to return to level position before the ejector arm advances the next package from the magazine to the tray.

In order to lock the tray in level position, there is provided at the knee joint a stop plate 80 which is welded as at 81 to the lower limb 72. This plate engages the upper limb and locks the limbs with respect to one another in their straightened position with the pivot point 73 slightly beyond the centers of the upper and lower points 74 and 75. Downward thrust upon the tray thus is resisted by the stop plate 80 since the relationship of the pivot points causes the limbs to swing in that direction.

As detailed in Figures 8 and 9, a spring 82 is applied to the knee joint to urge the limbs normally to their straight position. Thus, it is impossible to tilt the tray except by angulating the limbs. Spring 82 consists of a coil 83 engaged upon a stud 84 forming a part of the pivot pin 73 and the coil is provided with arms 85—85 having their ends bent to form hooks 86—86 for engagement with the edges of the respective limbs. The spring arms 85 are arranged to bias the toggle limbs against the stop plate 80 such that the spring resists the tray tilting motion imparted by the link 77 during the retracting movement of the ejector arm. The spring exerts sufficient force to return the toggle limbs from their angular relationship shown in Figure 3 so as to level the tray before the ejector arm advances the next package to the tray.

The rearward end of link 77 includes a slot 88 engaged by the pin 78 of the ejector arm whereby the tray is tilted by positive engagement of the pin against the end of the slot during retracting of the ejector arm and is returned by spring 82 and controlled by the pin during the package advancing movement of the ejector. In other words, the spring exerts the actual force for returning the tray to its level position with the pin engaged against the end of the slot until the tray is levelled. During the final advancing motion of the ejector arm after the tray is levelled, the pin 78 traverses the slot until it resides against the right hand end of slot 88, as shown in Figure 1. The toggle limbs thus are locked positively by the link 77 and ejector arm assembly so that it is impossible to force the limbs rearwardly; consequently, the tray cannot be tilted by means other than the normal operation of the machine.

Power unit

As above noted, the several ejector and delivery assemblies for the magazines are driven from a common source of power and the selected mechanism is coupled to the driving levers 50 by the solenoid operated coupling latches 58. The power unit is best illustrated in Figures 11 to 15 inclusive and consists of an electric motor 89 coupled to the driving disk 68 through reduction gearing, the disk being connected to one of the driving levers 50 by the pitman 69, as above noted, to actuate the several driving levers in unison. A cycle control apparatus is associated with the power unit to provide one revolution, corresponding to one cycle of operation, each time the unit is energized.

Described with reference to Figures 1 and 11, the shaft of motor 89 is provided with a worm 91 meshing with a worm wheel 92 fixed to a vertical shaft 93 which is journalled in a bracket 94 secured to the motor. The lower end of shaft 93 includes a worm 95 (Figure 1) meshing with a second worm wheel 96 carried by a horizontal shaft 97 also journalled in bracket 94. The driving disk 68 is non-rotatably secured upon the extended end of the shaft 97 and is rotated at a relatively low speed by reason of the reduction gearing. One end of pitman 69 is connected to the disk by the pivot pin 98 and the opposite end is connected to one of the driving arms 50 by means of a second pivot pin 100 (Figures 13 and 14). Since the several driving levers 50 are non-rotatably fixed to the rock shaft 30, they swing in unison through a forward and return stroke during one revolution of disk 68 and the selected ejector arm 29 is driven by the arm to which it is coupled.

As illustrated, the cycle is controlled by an automatically operated switch assembly 101 which is interconnected electrically in the control system and which is actuated mechanically by the driving disk to deenergize the motor and apply a brake at completion of one revolution of the disk. Alternatively, it is contemplated to utilize a relay connected mechanically to the disk and having a series of contacts to control the cycle. In the present form, mercury switches are utilized. Of these, switches 102 and 103 are normally open and switch 104 is normally closed, the purpose of this arrangement being more clearly explained in conjunction with the control circuit. The arrangement is such that the mercury switches are maintained normally in level position, as shown in Figure 12, with switches 102 and 103 open and switch 104 closed. They are tilted to the position shown in broken lines to close switches 102 and 103 and open switch 104 when one of the selector buttons is depressed to initiate a cycle of operation.

For this purpose, the switches are mounted upon a tilt platform 105 which is connected mechanically to a solenoid 106 (Figure 11) and arranged to tilt the platform when the solenoid is energized by depressing one of the selector buttons. The mercury switches are adapted to establish a holding circuit for continued operation of the motor for one cycle of rotation. At the end of the cycle, the platform is returned to level position by the driving disk 68. For this purpose, the disk 68 includes a skid or cam 107 (Figure 13) adapted to engage a pin 108 which is connected to the tilt platform to return the tilt bracket to its level position. As shown in Figures 11 and 12, the solenoid 106 is energized to tilt the switch platform 105, moving the pin 108 to the shown

position and causing the motor to rotate the disk in the direction indicated by the arrow. Upon completion of the cycle, the cam 107 engages the pin 108 and returns the platform to its original position, thereby automatically deenergizing the motor circuit and applying an electric brake 110 (Figure 10) to stop the motor.

Described in detail, the tilt platform 105 is pivotally mounted upon a bracket 112 by a pivot pin 113 passing through the bracket and the limbs 114—114 forming a part of the tilt platform. The upper portion of the tilt platform includes a laterally extended arm 115, pivotally connected by pin 116 to the outer end of the solenoid plunger 117. The connection is made by the upwardly bent arm portion 118 passing through a slot formed in the end of a plunger 117, the angular extension 118 preferably being slotted as at 119 to accommodate the swinging motion of the tilt table (Figure 11). The pin 108 which is engaged by the cam 107 is secured directly to the end of the solenoid plunger 117 and extends across the circumference of the disk with its outer end slidably supported upon an angle bracket 120 forming a part of the base 121 which supports the solenoid. When cam 107 engages pin 108 and returns the tilt platform back to its level position, the motor is deenergized and the driving disk overruns slightly by inertia to carry the cam 107 to the position shown in Figure 13. When pin 108 is reset, the solenoid plunger is pulled to its extended position ready to initiate the next cycle of operation upon being energized.

Electrical control system

The coin mechanism, cycle control apparatus and selector buttons are interconnected electrically, whereby upon insertion of the correct amount of change into the coin mechanism, the circuit is conditioned for operation; however, actual operation is deferred until one of the selector buttons is depressed to trip the cycle control apparatus and to couple the selected ejector arm to its driving lever. The circuit illustrated in Figure 117 is adapted to one type of coin mechanism and it will be apparent that other coin devices may be utilized, in which case, the circuit will be altered as required. The coin mechanism is a commercial product and a detailed description of its component parts is omitted since such apparatus is well known in the art.

The mechanism disclosed in the diagram consists of a totalizer, a reset device and a coin dump, such parts being suitably arranged as a unit which is installed at one side of the machine. The parts are indicated in the diagram by the labeled rectangles, each part being suitably interconnected in the circuit as shown. Thus, the totalizer unit closes the circuit for operation when the correct number of coins have been inserted and a selector button depressed, the reset device resets the totalizer for the next operation after the cycle is initiated, and the coin dump discharges the coins into a receiver after the cycle is initiated. In the diagram, the cycle control switch is illustrated as a relay having two normally open contacts which correspond to the mercury switches 102 and 103 and a normally closed contact corresponding to the normally closed mercury switch 104. Also, the mechanical connection between the motor 89 and driving disk 68 is illustrated diagrammatically as a direct connection instead of the gear reduction system actually employed. The control system is best understood by analyzing its operation when a cycle of operation is initiated.

As shown, the circuit is powered by the lines L1 and L2 and is illustrated with three selector buttons 14 and associated coupling solenoids 55 although the operation is the same regardless of the number of ejectors and corresponding solenoids. The totalizer is arranged to energize line 123 from line L1 when the coins have been inserted so that a circuit is established through line 123 to the contacts of a selected button 14 to energize the winding 55 of the related coupling solenoid. The circuit is completed by way of line 124 which is common to the terminals of the coupling solenoids 55, through line 125, to winding 106 of the cycle control solenoid, to line 126 and through the normally closed contact 104 to complete the circuit by way of line 127 to L2. Thus, when a selector button 14 is depressed, a corresponding coupling solenoid is energized, the cycle control solenoid is energized to close the normally open contacts 102 and 103 and to open the normally closed contact 104. The normally closed contact 104 causes the windings 55 and 106 to be energized momentarily when the selector button 14 is depressed but prevents the mechanism from operating for more than one cycle. When the normally closed contact 104 is opened, the latch solenoid winding 55 and cycle control winding 106 are deenergized; however, their respective plungers remain in retracted position until they are extended mechanically by operation of the machine.

As soon as winding 106 is energized, a circuit through the motor is established by way of line L1, branch line 128, through the closed contact 102 to lines 129 and 130, through closed contact 103 to line 131. From line 131 the circuit branches to line 132, through the motor to line 127, thus completing the circuit from L1 through the motor to L2 to start a cycle of operation.

Briefly, therefore, when the selector button is depressed, a circuit is established through the totalizer to energize the selected solenoid 55 and to energize the cycle control solenoid 106 through normally closed switch 104 to line L2. When cycle control solenoid 106 is energized, it opens normally closed contact 104 to deenergize the solenoids 55 and 106; however, the coupling latch 58 which is actuated by the winding 55 remains in coupling position until the latch is retracted mechanically by the release bar 63. Also, the cycle control apparatus 101 remains in energizing position until it is returned to deenergizing position by engagement of cam 107 with pin 108 at the end of the cycle. The motor will thus continue to run after the button 14 is momentarily depressed by reason of the holding circuit established through the cycle control apparatus.

The closing of contact 102 completes a circuit from line L1 through contact 102 to line 129 and through the reset device to line L2. When contact 103 closes to energize the motor, the coin dump is energized from the motor line 131, branch line 133, through the coin dump and through line 134 and 127 to L2. When the reset is energized, the totalizer is released from the position it assumed upon the insertion of the coins and is conditioned for the next cycle and when the coin dump is energized, it discharges the coins from the totalizer to a coin receiving section.

When the cam 107 contacts the pin 108 at the end of the cycle, the contacts 102 and 103 will be opened to deenergize the motor and apply the

motor brake and the contact 104 will be closed so that the circuit for the solenoid windings 55 and 106 again will be completed through the totalizer, and selector button at the next cycle of operation.

Having described my invention, I claim:

1. A package dispensing machine comprising a plurality of magazines adapted to sustain packages one upon another in stacked relationship, respective ejector arms pivotally mounted beneath the magazines and having upper ends arranged to reciprocate with respect to the magazines to eject the packages individually from the magazines, power means common to the several ejector arms, a shiftable coupling device associated with each ejector arm and adapted in one position to establish a driving connection between the power means and ejector arms, an electrical element connected to each coupling device and adapted upon being energized, to shift the same into coupling position, and manually operated means for energizing the electrical elements individually and thereby shifting the coupling devices selectively into coupling position to cause ejection of the package from a selected magazine upon operation of the power means.

2. In a package dispensing machine, a plurality of magazines adapted to sustain packages one upon another in stacked relationship, a respective ejector arm having a lower end pivotally mounted loosely upon a common axis beneath each magazine and having an upper end adapted to retract and advance with respect to the magazines to eject a package therefrom during the advancement of the ejector arm, a respective driving lever having its lower end mounted upon said common axis and disposed alongside each of the ejector arms, a power driven unit adapted to operate through a single cycle for retracting and advancing the driving levers in unison with respect to the ejector arms with which they are associated, an electrically operated coupling device on each of the driving levers adapted to establish a driving connection between a selected ejector arm and its cooperating driving lever, and a manually operated selector switch in electrical connection with each of the said electrically operated coupling arms for selectively controlling the operation of the ejector devices.

3. In a dispensing machine, a plurality of magazines for sustaining a plurality of packages one upon another in stacked relationship, a rock shaft, a respective ejector arm for each of said magazines, each of said ejector arms being of sectional construction and constituting a lower arm section loosely mounted upon said rock shaft and an upper section extensibly mounted upon said lower section, an ejector finger mounted upon the upper end of each of said upper sections, means for guiding each of said ejector fingers in a path of movement whereby each of said ejector fingers are adapted to retract and advance with respect to the magazines for ejecting the packages therefrom, a respective driving lever associated with each of said ejector arms, the driving levers having their lower ends secured to said rock shaft, a power unit connected to said rock shaft adapted to swing the rock shaft and driving levers unitarily through a retracting and advancing stroke, an electrically operated coupling latch mounted upon each of said driving levers and adapted to couple a selected ejector arm to its associated driving lever for operation of the ejector arm in unison with the driving lever, and respective selector switches connected electrically to the coupling latches to operate the latches and cause actuation of the selected ejector arm.

4. In a package dispensing machine, a plurality of vertical magazines arranged in a row and adapted to sustain packages one upon another in stacked relationship, a respective ejector arm for each of the magazines, said ejector arms being of sectional construction constituting a lower section and an upper section movable axially with respect to the lower section, a rock shaft pivotally mounting the lower ends of the lower sections, a respective ejector mounted upon the upper ends of the upper sections, guide means engaging the ejectors and adapting the same to reciprocate in a predetermined path with respect to the lower ends of the magazines to eject the packages therefrom, a respective driving lever for each of the ejector arms, the driving levers having their lower ends non-rotatably secured to the said rock shaft, a power unit connected to one of the said driving levers and adapted to reciprocate the driving levers in unison, cycle control means associated with the power unit and adapted to deenergize the power unit after each cycle of reciprocation of the driving levers, a solenoid operated latch mounted on each of said driving levers, a respective selector switch in electrical connection with the respective solenoid operated latches, the said latches being constructed and arranged to couple the driving lever to its associated ejector arm upon manual operation of a selector switch.

5. In a dispensing machine, a plurality of magazines for sustaining a plurality of packages one upon another in stacked relationship, a respective ejector arm for each of said magazines adapted to retract and advance with respect to the magazine for ejecting the packages therefrom, a respective driving lever disposed adjacent each of said ejector arms, a power unit connected to said driving levers and adapted to swing the levers unitarily through a retracting and advancing stroke, cycle control means arranged automatically to deenergize the power unit with the driving levers in advanced position, an electrically operated coupling latch mounted upon each of said driving levers and adapted to couple a selected ejector arm to its associated driving lever for retracting the ejector arm in unison with the driving lever when the latch is in coupling position, a stationary latch release member adapted to engage and uncouple the latches as the driving levers approach the end of their retracting stroke, a respective abutment on the driving levers adapted to engage and advance the ejector arms upon advancement of the driving levers, and respective selector switches connected to the electrically operated coupling latches for selective actuation thereof.

6. In a package dispensing machine, a package magazine adapted to sustain a plurality of packages one upon another in stacked relationship, an ejector mechanism constructed and arranged to retract and advance relative to the lower end of the magazine and adapted to eject a package from the magazine during the advancement of the ejector mechanism, a pivotally mounted tiltable tray disposed normally in a substantially horizontal position adjacent the magazine in a position to receive and sustain the package ejected from the magazine, a delivery chute associated with said tiltable tray, spring urged limbs constructed and arranged to support the

tray normally in said horizontal position, a link extending from said spring urged limbs to the ejector mechanism adapted to actuate said spring urged limbs during the retracting movement of the ejector mechanism in a direction to tilt the tray and thereby to discharge the package sustained thereon into the chute, said link and spring urged limbs being constructed and arranged to reposition the tray to said horizontal package sustaining position during the advancement of the ejector mechanism.

7. In a package dispensing machine, a package magazine adapted to sustain a plurality of packages one upon another in stacked relationship, an ejector mechanism constructed and arranged to retract and advance relative to the lower end of the magazine and adapted to eject a package from the magazine during the advancement of the ejector mechanism, a delivery tray pivotally mounted adjacent the magazine and disposed in a substantially horizontal position to receive and sustain the package ejected from the magazine, a delivery chute associated with the delivery tray, an articulated linkage connected to the tray and adapted in a normal position to support the tray in said horizontal position and adapted upon being articulated to a second position to tilt the tray to a discharge position, and a link connecting the said articulated linkage to the ejector mechanism adapted to articulate said linkage and tilt the tray during the retracting movement of the ejector mechanism to discharge the package sustained on the tray into the chute, the said link and articulated linkage being constructed and arranged to reposition the tray to a horizontal package sustaining position during the advancement of the ejector mechanism prior to the advancement of a succeeding package from the magazine to the tray.

8. In a dispensing machine, a magazine adapted to sustain a plurality of packages one upon another in stacked relationship, an ejector mechanism associated with the magazine and adapted to retract and advance relative to the lower end of the magazine to eject the packages individually from the magazine, a tray pivotally mounted adjacent the magazine adapted to receive and sustain the packages ejected from the magazine, a toggle link having an end connected to the tray for supporting the same and for tilting the tray to discharge the package sustained thereon, and means connecting the ejector mechanism to the toggle link whereby the tray is tilted during the retracting motion of the ejector mechanism to deliver a package previously advanced to the tray, the said connecting means being constructed and arranged to return the tray to its supporting position during the advancing movement of the ejector mechanism prior to the advancement of a succeeding package from the magazine to the tray.

9. In a dispensing machine, a magazine adapted to sustain a plurality of packages one upon another in stacked relationship, a telescopic ejector arm having an end pivotally mounted beneath the magazine and arranged to retract and advance relative to the magazine, guide means arranged to confine the upper end of the arm to a straight path of movement with respect to the magazine during the reciprocation of the ejector arm, an ejector element mounted upon the upper end of the arm adapted to engage the lowermost package of the magazine during the forward reciprocation of the arm to advance the package from the magazine and to trip to a disengaging position with respect to the lowermost package of the magazine during its retracting movement, a tiltable support member associated with the magazine adapted to receive and sustain the package ejected from the magazine, a toggle joint connected to the support member, means connecting the toggle joint to the ejector arm operable to tilt the support member when the ejector arm is in retracted position to discharge a package sustained thereon and to return the support member to package sustaining position during the advancing movement of the ejector arm, and a power unit connected to the ejector arm for actuating the arm, the power unit being arranged to stop when the ejector arm is in advanced position, thereby locking the toggle link and support member in package sustaining position.

10. A package dispensing machine comprising a plurality of magazines adapted to sustain a plurality of packages one upon another in stacked relationship, a respective ejector arm pivotally mounted beneath each of the said magazines, said ejector arms having upper ends adapted to eject the packages from the magazines, power means common to the several ejector arms, said power means including respective driving levers mounted alongside the ejector arms, a coupling device associated with each of said driving levers, said coupling devices being adapted to couple the ejector arms individually to the driving levers, and manual means for selectively actuating said coupling devices whereby the power unit is coupled to the ejector arms individually to cause the selected ejector arm to eject a package from its related magazine.

11. A package dispensing machine comprising a plurality of magazines adapted to sustain a plurality of packages one upon another in stacked relationship, a respective ejector for the said magazines adapted to retract and advance relative to the magazines to eject the packages from the magazines, respective pivotally mounted ejector arms having their free ends connected to the ejectors for advancing and retracting the same, respective driving levers mounted in a position to swing in an arc alongside the ejector arms, power means for actuating the driving levers in unison, automatic means associated with the power means adapted to deenergize the power means after each advancement of an ejector, a shiftable coupling device associated with each of said ejector arms adapted to couple the ejector arms individually to the driving levers, an individual electrical element connected to each coupling device and adapted upon being energized to shift the coupling devices into a position to establish a driving connection between a selected driving lever and ejector arm, and manual switch means for selectively energizing said electrical elements and concurrently energizing the power means whereby the power means causes the ejector to eject a package from the selected magazine.

12. A package dispensing machine comprising a plurality of magazines adapted to sustain packages one upon another in stacked relationship, respective pivotally mounted ejector arms associated with the magazines adapted to be actuated with respect to the magazines to eject the packages from the magazines, a respective driving lever pivotally mounted adjacent each ejector arm, respective tiltable package delivery trays having respective tray actuating devices operable to sustain the trays in horizontal position adjacent the respective magazines, the trays being adapted to

receive the packages ejected from the magazine by the ejector arms, a power unit having means for actuating the driving levers collectively, manually operated coupling means for connecting a selected ejector arm to its adjacent driving lever to cause ejection of the package from the magazine to the adjacent delivery tray, and connecting links between the respective ejector arms and tray actuating devices, the links and actuating devices being constructed and arranged to tilt the trays from said horizontal position and thereby to discharge a previously ejected package upon actuation of the selected ejector arm.

13. In a package dispensing machine, a plurality of magazines adapted to sustain packages one upon another in stacked relationship, a respective ejector arm for each magazine, the arms being pivotally mounted on a common axis and adapted to advance and retract with respect to the magazine and to eject a package therefrom, a respective driving lever pivotally mounted upon said common axis alongside each of the ejector arms, a power unit for swinging the driving levers in an arc in unison with respect to the ejector arms with which they are associated, an electrically operated coupling device on each of the driving levers adapted upon being energized to establish a driving connection between a selected ejector arm and its cooperating driving lever, whereby the swinging movement of the driving lever in its arc is transmitted to the associated ejector arm, and a manually operated selector switch in electrical connection with each of the said electrically operated coupling devices adapted to energize the coupling devices for selective operation of the ejector arms.

14. In a package dispensing machine, a plurality of vertical magazines arranged in a row and adapted to sustain packages one upon another in stacked relationship, a respective ejector arm for each of the magazines adapted to reciprocate with respect to the lower ends of the magazines to eject the packages therefrom, a respective driving lever associated with each of the ejector arms, a power unit connected to the said driving levers and adapted to reciprocate the driving levers in unison through individual cycles of operation, cycle control means associated with the power unit and adapted to deenergize the power unit automatically after each cycle of reciprocation of the driving levers, an electrically operated two-position latch mounted on each of said driving levers, a respective selector switch in electrical connection with the electrically operated latches, the said latches being constructed and arranged to be shifted to a coupling position to connect the driving lever to its associated ejector arm upon manual operation of a selector switch, a respective latch release member disposed in the path of movement of each of said latches adapted to engage and shift the latches to uncoupling position as the driving levers approach the end of reciprocation in one direction, and abutment means on each of the ejector arms adapted to be engaged by the driving levers whereby said ejector arms are driven by said driving levers during reciprocation of the driving levers in the opposite direction, the said switches being interconnected with the power unit to initiate a cycle of operation and simultaneously energize an electrically operated latch upon manual actuation of the switch, whereby the selected ejector arm is reciprocated through its cycle of reciprocation in one direction by said latch and in the opposite direction by said abutment means.

CHARLTON WILDER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,459,504	Grover et al.	June 19, 1923
2,279,936	Brodie et al.	Apr. 14, 1942
2,323,981	Du Grenier et al.	July 13, 1943