Feb. 9, 1954 W. E. CLARK ET AL 2,668,649

APPARATUS FOR EJECTING CONTAINERS AND FILLING POPCORN THEREINTO

Filed March 4, 1950 4 Sheets-Sheet 1

Fig. 1.

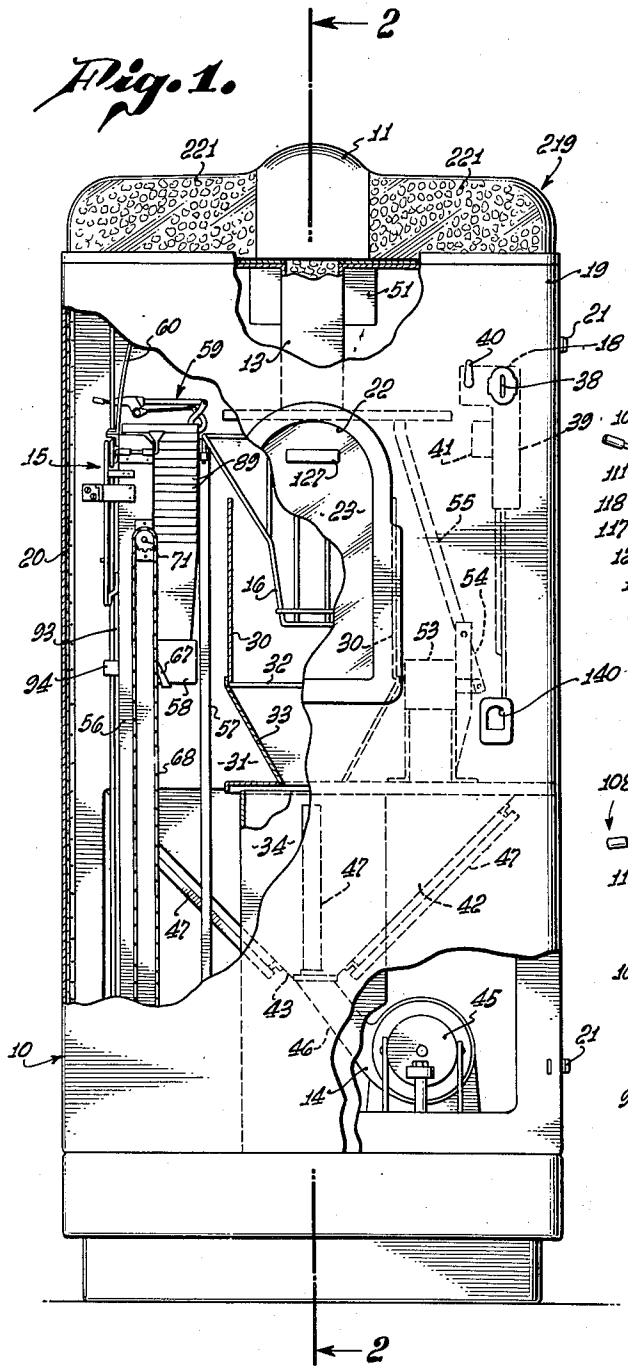


Fig. 11.

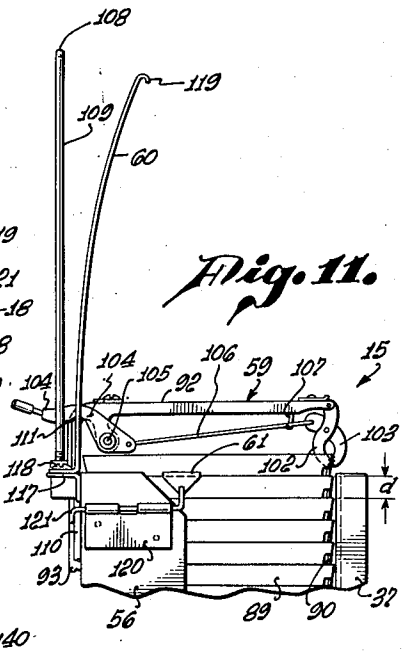
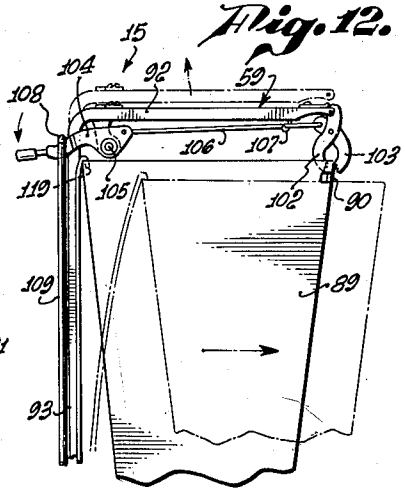


Fig. 12.



WILLIS E. CLARK,
JOHN E. BEALL,
INVENTORS.

BY Stanley White

ATTORNEY.

Feb. 9, 1954 W. E. CLARK ET AL 2,668,649

APPARATUS FOR EJECTING CONTAINERS AND FILLING POPCORN THEREINTO

Filed March 4, 1950 4 Sheets-Sheet 2

Fig. 2.

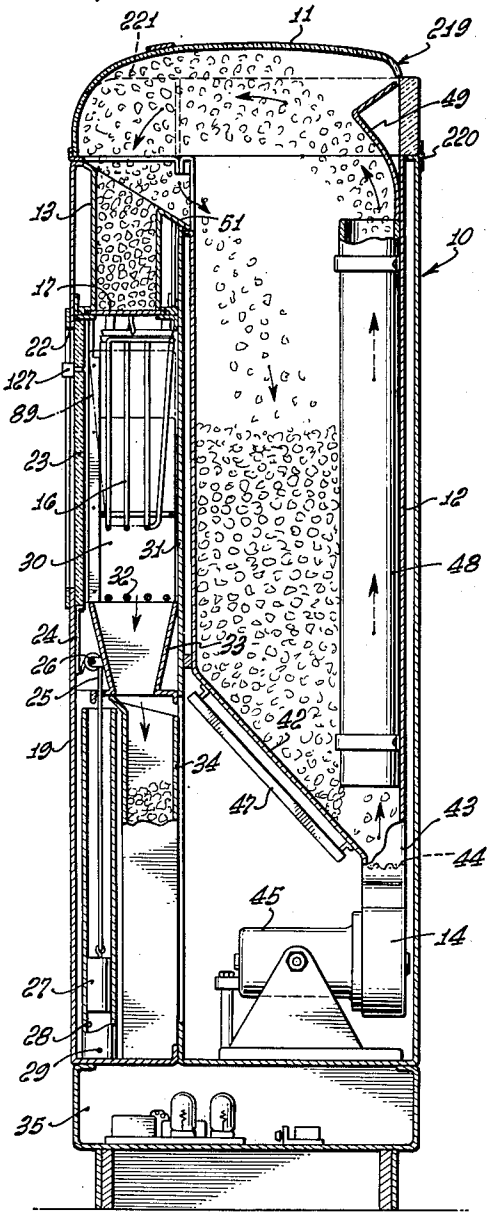


Fig. 13.

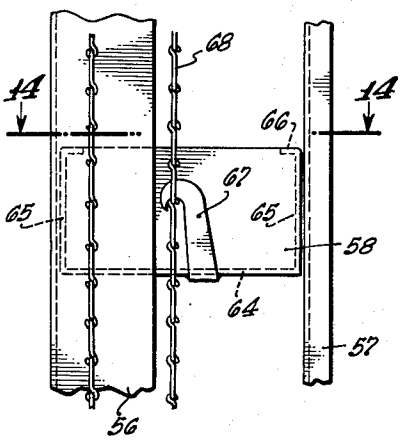
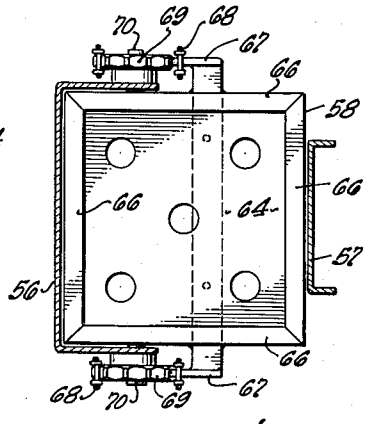


Fig. 14.



WILLIS E. CLARK,
JOHN E. BEALL,
INVENTORS.

BY Herbert White

ATTORNEY.

Feb. 9, 1954 W. E. CLARK ET AL 2,668,649

APPARATUS FOR EJECTING CONTAINERS AND FILLING POPCORN THEREINTO

Filed March 4, 1950 4 Sheets-Sheet 3

Fig. 15

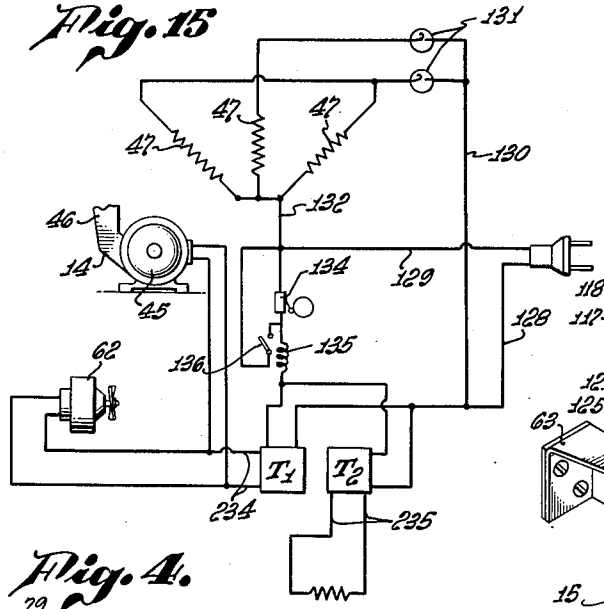


Fig. 4.

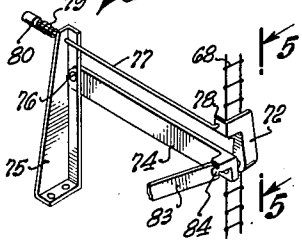
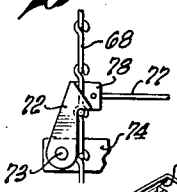


Fig. 5.



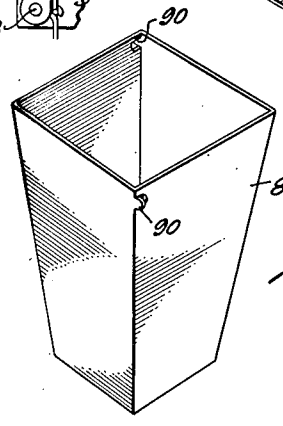
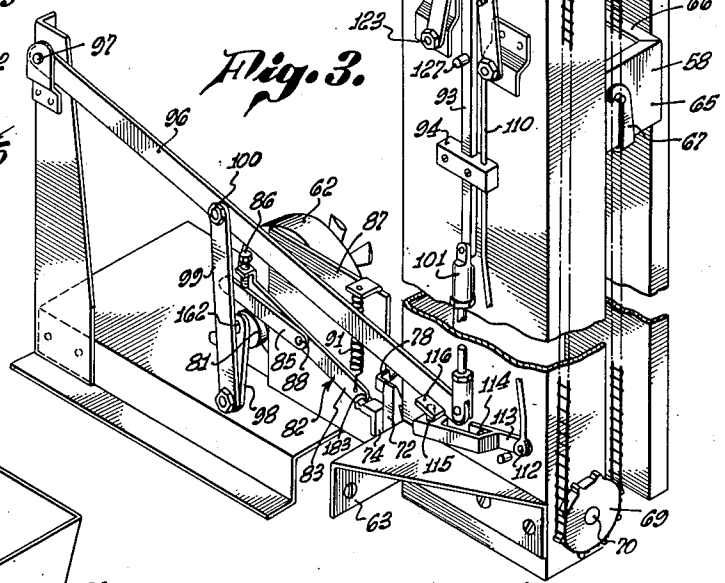


Fig. 6.

Fig. 3.



WILLIS E. CLARK,
JOHN E. BEALL,
INVENTORS.

BY Hoobler White

ATTORNEY.

Feb. 9, 1954

W. E. CLARK ET AL
APPARATUS FOR EJECTING CONTAINERS
AND FILLING POPCORN THEREINTO

2,668,649

Filed March 4, 1950

4 Sheets-Sheet 4

Fig. 7.

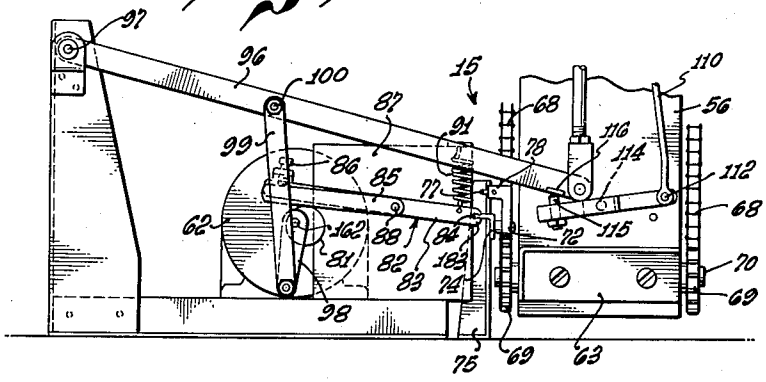
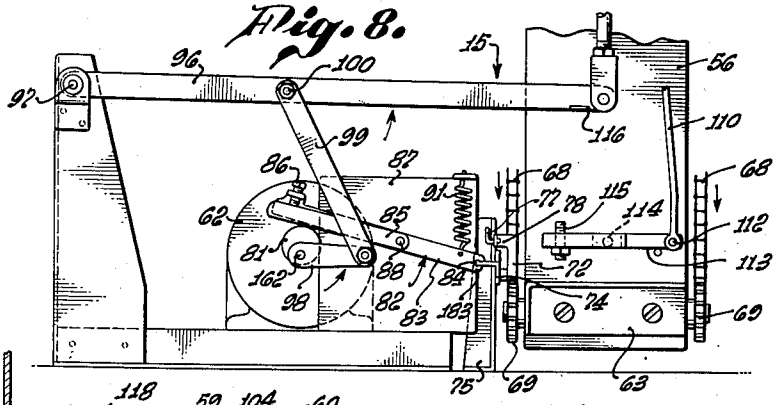


Fig. 8.



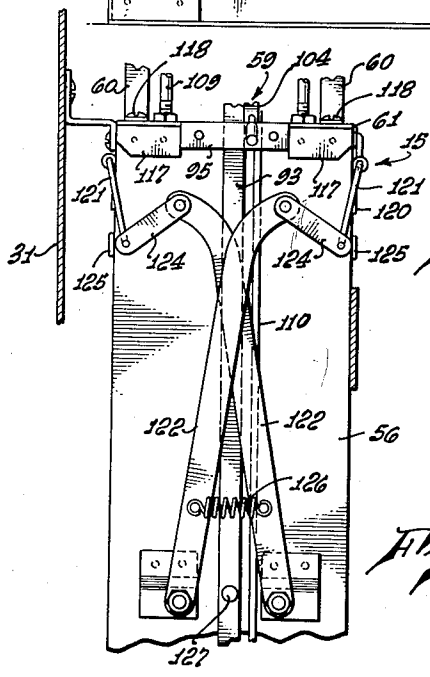


Fig. 9.

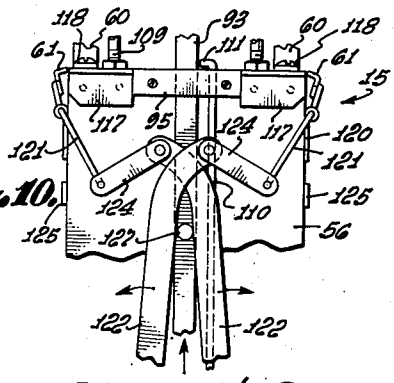


Fig. 10.

WILLIS E. CLARK,
JOHN E. BEALL,
INVENTORS

BY Herbert White

ATTORNEY.

Patented Feb. 9, 1954

2,668,649

UNITED STATES PATENT OFFICE

2,668,649

APPARATUS FOR EJECTING CONTAINERS AND FILLING POPCORN THEREINTO

Willis E. Clark and John E. Beall,
Los Angeles, Calif.

Application March 4, 1950, Serial No. 147,671

13 Claims. (Cl. 226—19)

1

This invention relates generally to improved dispensers and particularly to apparatus for successively dispensing measured quantities of popcorn into suitable containers. In certain of its aspects, the invention may be considered an improvement on the apparatus disclosed in application Serial Number 46,597, filed August 28, 1948, by Earnest E. Martin. The present application is also closely related to our copending application Serial Number 147,672, and shows certain features of dispenser construction which are more specifically described and claimed in that application.

A major object of the present invention is to provide a coin actuated dispensing machine operable to rapidly and effectively deliver a quantity of corn from a storage chamber or hopper into a collection chamber and then into a mechanically ejected and positioned box or other container. Dispensers embodying the invention are particularly adapted for completely automatic operation, in which insertion of a coin acts to initiate a series of operations culminating, without further action by the operator, in the delivery of a filled container to a receiving location. As will appear, such rapid and automatic delivery is effected by a unique control arrangement and automatic timing sequence, which is considered an important feature of the invention.

A further feature of the invention is to provide dispensing apparatus adapted to rapidly and preferably automatically deliver a filled container of corn in the above manner, and in which the corn is transferred between the storage chamber and collection chamber by air entrainment past a transparent window within the sight of an operator, to thus attain an eye catching effect similar to that contemplated in the above Martin application.

Further features of the invention involve a preferred form of container ejecting mechanism operable to automatically feed a single container from a supply of containers to a corn delivery location upon each operation of the machine. As in the machine as a whole, this container ejecting mechanism has been especially designed for extreme rapidity of operation while at the same time assuring the effective and positive handling of successive containers.

In accordance with the invention, the apparatus is operable upon reception of a coin to transfer corn from a storage chamber to a collection chamber and to feed a single box or other container to a delivery location, after which the transferred corn is dispensed from the collection

2

chamber into the box. The transfer of corn may be timed to continue for a predetermined period sufficient to fill or overfill the collection chamber and to then automatically cease. Further, the dispensing of the corn from the collection chamber into a box may be effected automatically and in timed relation with the corn transfer and box ejection operations to attain completely automatic delivery of the filled container.

As previously mentioned, we prefer to transfer the corn between the storage chamber and collection chamber by an entrainment along the inside of a viewing window. In this connection, we particularly contemplate the coin controlled operation in timed relation of a container ejector and a blower or the like for creating the corn entraining flow of air. To assure delivery of a filled container in a minimum period of time, the corn may be transferred and the box ejected simultaneously, to be followed by automatic dispensing of the transferred corn into the box.

The container ejector acts first, upon each operation of the dispenser, to move a single container outwardly from a nested position within a stack of containers, after which it laterally ejects the container into a holder at the corn delivery location. This lateral ejection may be accomplished with maximum facility and in an extremely short interval of time by means of a resilient spring or the like, which may be resiliently deformed or conditioned for ejection by the initial outward movement of a container from its nested position. We have also provided means for preventing the delivery of more than one container upon a single operation, as well as means for advancing the supply or stack of containers a predetermined distance upon each actuation to successively advance the individual containers into position for ejection.

The above and further features and objects of the present invention will be better understood from the following detailed description of the typical embodiment illustrated in the accompanying drawings, in which:

Fig. 1 is a front view of a presently preferred form of popcorn dispenser, with the front wall partly broken away to reveal certain of the interior mechanism;

Fig. 2 is a central vertical section through the dispenser taken on line 2—2 of Fig. 1;

Fig. 3 is an enlarged fragmentary perspective view of the box ejecting mechanism;

Fig. 4 is a detailed perspective view of the elevator driving ratchet mechanism;

Fig. 5 is an enlarged fragmentary view of the

elevator driving ratchet taken on line 5—5 of Fig. 4;

Fig. 6 is a perspective view of a preferred form of popcorn box especially designed for use with the present dispensing apparatus;

Fig. 7 is a fragmentary side view of the lower portion of the box ejecting mechanism in its normal condition;

Fig. 8 is a view corresponding to Fig. 7 but showing the apparatus during its box ejecting movement;

Fig. 9 is an enlarged fragmentary side view of an upper portion of the box ejecting mechanism and showing especially the means for actuating the stops for preventing upward movement of more than one box during an ejecting operation;

Fig. 10 is a view corresponding to Fig. 9 and showing the stops in their released positions for permitting elevation of the supply of boxes;

Fig. 11 is an enlarged fragmentary front view of the upper portion of the box ejecting mechanism in its normal condition;

Fig. 12 is a view corresponding to Fig. 11 and showing the ejecting apparatus at the moment when an upper box has been elevated from its nested position within the stack of boxes and is being laterally ejected to a corn delivery location.

Fig. 13 is an enlarged fragmentary front view of the box stack elevating mechanism;

Fig. 14 is a transverse section taken on line 14—14 of Fig. 13; and

Fig. 15 is a diagrammatical representation of the electrical control circuit of the dispenser.

Referring first to Figs. 1 and 2, the present popcorn dispenser comprises essentially a housing 10 having an upper transparent dome 11, and containing a popcorn storage chamber 12, a collection chamber 13, a blower 14 for creating an upward flow of air to transfer popcorn from the storage chamber past transparent dome 11 and into the measuring chamber, box ejecting mechanism 15 for individually feeding cartons into a supporting cage 16 beneath the collection chamber, a valve or sliding plate 17 for dispensing the corn from the measuring chamber into an ejected box, and a coin responsive control 18.

Housing 10 is essentially rectangular in shape, and carries at its front a door 19 hinged along one side at 20 and adapted to be locked in closed condition as by suitable key controlled locks 21. Door 19 contains a delivery opening 22 through which an operator may remove a filled box of corn from cage 16 after a coin has been inserted into mechanism 18 and the apparatus has completed a delivery cycle. Opening 22 is normally closed by plastic door 23 which is suitably guided for downward sliding movement to an open condition in which the filled box of corn may be removed. A bracket 24 extends downwardly from the lower edge of door 23 and is attached at its lower end to cord 25, which extends upwardly about a pulley 26 and then downwardly to carry an actuating weight 27. This weight is cylindrical in shape and is vertically movable within a dash-pot cylinder 28 having a restricted air outlet at 29. As will be understood, weight 27 normally tends to move downwardly and to thus elevate door 23 to the closed condition of Figs. 1 and 2. The door may be manually opened downwardly against the tendency of weight 27 by handle projection 127 to permit removal of a filled box of corn, after which the door automatically and slowly returns to its closed condition as permitted by the escape of air from cylinder 28 through restricted opening 29.

At the sides of cage 16, the main housing door 19 carries a pair of vertical walls 30, forming with the forward wall 31 of the main portion of the housing a closed-wall delivery recess at the rear of door 23. Grating 32 forms the bottom of this recess and permits downward passage of any spilled corn through tapering chute 33 into a removable waste container 34 carried by the door.

At the bottom of the housing, a relatively small compartment 35 contains a pair of timers T1 and T2 for controlling the operation of the dispenser. Coin control 18, which may be of any known type, is mounted to the door, and comprises an upper coin receiving slot 38, a suitable slug rejector 39, a coin return button 40 and opening 140, and a coin actuated micro-switch 41 whose momentary closing upon reception of a coin acts to initate the sequence of operations which delivers a filled box of corn into cage 16.

The top of the housing is closed by a cover 219 hinged to the rear of the housing at 220. The transparent elongated dome 11 extends between the front and rear edges of this cover at a central location. The front portion of the cover may be adapted to contain display popcorn at either side of dome 11, as at 221 in Fig. 1.

Storage chamber 12 extends vertically along the rear of the housing, and is essentially rectangular in horizontal section along most of its vertical extent. The lower end of the storage chamber tapers at 42 to a reduced opening 43 containing screen 44 through which blower 14 directs an upwardly moving stream of air. The blower, which is driven by an electric motor 45, communicates with the bottom of the storage chamber through an angularly extending air inlet line 46. Electrical heaters 47, extending along the downwardly converging portion of the storage chamber, heat that corn in the bottom of the storage chamber which will next be dispensed, and also heat the boxes which are to receive the dispensed corn. Vertically extending tube 48 is mounted within the storage chamber at a location spaced from the bottom of the chamber and acts to direct the stream of air from blower 14 upwardly within the chamber and toward transparent dome 11. By virtue of the spaced relation of the bottom of tube 48 with the bottom of the storage chamber, corn falls downwardly within the chamber beneath tube 48 to be entrained and carried upwardly within the tube by the stream of air from the blower. At the upper end of tube 48, the housing carries a forwardly curving deflecting plate 49 adapted to direct the upward stream of air and entrained corn forwardly along the inside of transparent dome 11 to be viewed by an operator of the machine and to then fall downwardly into measuring chamber 13.

Measuring or collection chamber 13 extends vertically above box holding cage 16 and is adapted to contain only a pre-determined quantity of corn sufficient to fill a single box and to overflow downwardly into the storage chamber any corn received in excess of that pre-determined quantity. To facilitate such overflow of the corn, an inclined plate 51 extends about the upper end of the measuring chamber to direct the excess corn downwardly into the storage chamber. The collection chamber is normally closed at its bottom by a suitable sliding plate or valve 17 adapted to be automatically opened by solenoid 53, which is mechanically connected to

the valve through pivotable levers 54 and 55 (see Fig. 1).

Referring now to Fig. 3, the box ejecting apparatus 15 comprises essentially a pair of spaced vertically extending guides 56 and 57 for receiving a vertical stack of nested boxes, an elevator 58 vertically movable within guides 56 and 57 for supporting and vertically advancing the stack of boxes, a box gripping member or arm 59 mounted for vertical movement to carry an upper box from its nested position to an upper ejection location, a pair of leaf springs 60 operable to eject the elevated box laterally from the ejection location to a delivery location within cage 16, and a pair of stops 61 engageable at opposite sides with a second box to prevent its upward movement with the top box. The box ejecting mechanism is operated by a drive motor 62 which is energized for a timed period sufficient to drive shaft 162 through exactly one revolution during each operation of the dispenser.

Channel shaped guides 56 and 57 are mounted to the housing in any suitable manner, as by brackets 63, and form together a vertically extending elevator shaft adapted to contain and guide a vertical stack of boxes of the type shown in Fig. 6. Elevator 58 is rectangular and of an external dimension only slightly less than that of the box receiving shaft formed by the two guides to itself be accurately guided for vertical movement (see Fig. 14). Structurally, the elevator comprises a bottom wall 64 and four side walls 65, the upper edge of each side wall being turned inwardly at 66 to form a reduced dimension upper opening through which the bottom container of a stack extends for engagement with the bottom wall 64. A pair of supporting hooks 67 extend outwardly and then upwardly from the front and rear sides of the elevator for reception within corresponding links of a pair of endless elevator drive chains 68, mounted at the front and rear of box guide 56. At their lower ends, the two chains 68 extend about a pair of sprockets 69 rigidly interconnected for rotation together by a connecting shaft 70. At their upper ends, the chains extend about a pair of idler sprockets 71. The chains 68 are advanced a predetermined distance corresponding to the length of a single one of their links upon each operation of the machine, to move the elevator upwardly a similar distance and to thus successively advance the individual boxes into the position of the upper box in Fig. 11, from which position they are successively ejected. This advancement of the chains is effected by a vertically movable ratchet 72 engaging a vertical portion of the inner chain to move it downwardly one link upon each operation of the machine (see Figs. 3, 4, 5, 7 and 8). This ratchet is pivotally carried at 73 by an arm 74 which in turn is pivotally mounted to the stationary frame member 75 at 76. A control rod 77 is attached to an ear 78 on ratchet 72 and extends forwardly through an opening in frame member 75. Coil spring 79, received about rod 77 at the front of frame member 75, acts against outer button 80 on the rod to normally urge ratchet 72 into its chain engaging operative position of Fig. 5. Inward movement of button 80 against the tendency of spring 79 acts to release the driving engagement between ratchet 72 and chain 68 to permit lowering of elevator 58 upon insertion into the apparatus of a new supply of boxes.

Ratchet 72 is vertically driven by rotation of motor 62 through cam 81, carried by the motor driven shaft 162, and lever assembly 82. This lever assembly comprises a first lever arm 83 having a bifurcated circularly recessed end 183 movably received about an essentially cylindrical projection 84 extending from the side of ratchet carrying arm 74 to transmit movement of arm 83 to the ratchet. Lever assembly 82 also includes a second arm 85 adjustable relative to arm 83 by screw 86 and engaging cam 81. Arms 83 and 85 are both pivotally mounted to an upstanding frame member 87 at 88, so that cam 81 effects a downward chain advancing movement of ratchet 72 upon each rotation of motor 62. The cam is so designed that the advancement of the chain will raise the elevator 58 the exact distance necessary to move the next box into position for ejection. Spring 91 acts to normally urge the ratchet upwardly and to thus return the ratchet to its normal position of Figs. 3 and 7 after each downward chain advancing movement.

Box 89 (see Fig. 6), especially designed for use with the present dispensing apparatus, is formed of a single sheet of paper board especially cut and folded to present a pair of outwardly projecting lugs 90 each spaced a predetermined distance from the upper edge of the box. As will be understood, when a series of boxes of this type are nested one within the other, projections 90 maintain successive boxes in a predetermined relation such that the upper edges of successive boxes are spaced apart exactly the distance which the elevator is raised upon each operation of the dispensing machine. Consequently, each upward movement of the elevator advances the next successive top box into position for ejection.

Upon each operation of the machine, box gripping arm 59 raises the next successive top box in the stack upwardly from its nested position of Fig. 11 to the ejection position of Fig. 12, in which the box is released to be laterally deflected into cage 16 by leaf springs 60. Arm 59 has an upper portion 92 projecting horizontally across the top of the box receiving space, integrally connected with a portion 93 extending downwardly at the side of box guide 56. This downwardly extending portion of arm 59 is suitably guided for vertical movement by a pair of guiding blocks 94 and 95 mounted to elevator guide 56. Member 59 is normally in its lowered box gripping condition of Figs. 3 and 11 and is adapted to be successively elevated to the Fig. 12 position and then lowered once during each operation of the machine by the previously mentioned single rotation of motor driven shaft 162. This drive is effected by first transmitting the rotation of motor 62 into a vertical swinging movement of lever arm 96 about its stationary fulcrum end 97, through crank arm 98 carried by the motor shaft and connecting arm 99 pivotally attached to arm 96 at 100. The outer end of arm 96 is connected to the lower end of member 59 by an adjustable turnbuckle type connection 101, to transmit the vertical swinging movement of arm 96 to member 59.

Member 59 is adapted to automatically grip and release the upper box of a stack by relative movement between a first jaw 102, rigidly carried by the horizontal portion of member 59 at its outer end, and a second movable jaw 103. To assure tight retention of the box by these jaws, the inner opposed faces of the jaws may be serrated or toothed as shown. Movable jaw 103 is actuated between its closed box gripping position of Fig. 11 and its opened box releasing position of Fig. 12 by vertical swinging movement of con-

trol arm 104 about its point of attachment 105 to member 59. Each swinging movement of arm 104 is transmitted to the movable jaw through a rod or wire 106, whose downward jaw closing movement is limited at the over center position of Fig. 11 by a suitable stop 107. As will be understood, movement of the jaw actuating mechanism to this over center position acts to lock the jaw in its closed position and assure tight retention of the upper edge of the box during the upward movement of the box to its Fig. 12 position. The jaws are normally in the closed condition of Fig. 11, so that energization of the drive motor 62 immediately starts the elevation of the upper box to the ejection position of Fig. 12. Upon arrival at this upper position, arm 104 engages the upper cross piece 108 of inverted U-shaped member 109, which extends upwardly from angles 117 on guide 56, and such engagement with cross piece 108 acts to prevent further upward movement of the engaged portion of arm 104 to thereby swing arm 104 to its jaw opening position as member 59 continues upwardly a short distance to the broken line position of Fig. 12. The jaws are thus opened, and springs 60 are free to laterally eject the box to its delivery location.

After such ejection of a box, motor 62 continues to rotate and consequently moves member 59 downwardly to its original position. Upon arrival at its lowest position, jaw 103 is automatically closed to tightly grip the upper edge of the next successive box in preparation for the next operation of the machine. For this purpose, an actuating rod 110 is guided by blocks 94 and 95 for vertical movement alongside the vertically extending portion of member 59, and has at its upper end a short horizontal portion 111 engageable with the underside of arm 104 to swing that arm to its jaw closing position. At its lower end, rod 110 is pivotally connected at 112 to a lever element 113, which is pivoted to the stationary guide 56 at 114 and which carries at its inner end an upwardly extending adjustable screw 115 engageable with an operating ear 116 on lever arm 96. Upon movement of member 59 and arm 96 downwardly to their normal lowest positions, ear 116 on arm 96 engages screw 115 to pivot lever element 113 about its fulcrum point 114 and in turn elevate rod 110 in a manner actuating arm 104 to its over center jaw closing position.

The two box ejecting leaf springs 60 are rigidly mounted at their lower ends to angles 117 through screws 118, and normally tend to return to the upwardly and inwardly curving positions of Fig. 11. At its upper end, each spring forms a hook portion 119 which limits upward movement of the box in the Fig. 12 ejection position. As a box is moved upwardly between the position of Fig. 11 and the ejection position of Fig. 12, it resiliently deflects springs 60 to the full line position of Fig. 12. Upon automatic release of the jaws, springs 60 then tend to return to their normal position of Fig. 11 (shown in broken lines in Fig. 12) to laterally and forcefully eject the box into delivery cage 16.

To prevent upward movement of more than one box with member 59, we provide a pair of stops 61 engageable with the top edges of the second box in a stack and preventing its upward movement. These stops are normally in their inner active positions of Fig. 9, and are automatically moved outwardly to their inactive positions of Fig. 10 during upward movement of the elevator, to permit upward advancement of the entire stack of boxes at that time. Each stop 61 is carried by a wirelike body 121 which extends first downwardly and then horizontally, and is mounted for swinging movement about the axis of its horizontally extending portion by a bearing 120 attached to guide 56. At the side of guide 56, stop carrying body 121 forms a crank throw 121, which is connected through link 124 to an actuating arm 122 pivoted at 123 to the stationary box guide. A stop 125 limits the swinging movement of each crank throw 121 to determine the inner box engaging position of the corresponding movable stop 61. The two actuating arms 122 are normally urged together by an interconnecting spring 126 to retain the two movable stops 61 in their inner positions. Upon upward movement of member 59, a lug 127 carried by the depending portion 93 of that member engages the inner surface of arms 122 to simultaneously actuate those arms in a manner releasing stops 61. While these stops are released, the elevator is automatically moved upwardly by the previously described cam controlled mechanism to move the next successive box into position for lateral ejection.

Referring now to Fig. 15, current is supplied to the apparatus through a pair of supply lines 128 and 129, which lead to heaters 47 through line 130, thermostatic controls 131 and line 132. Line 128 connects with each of the control timers T1 and T2, and line 129 leads to these timers through a coin control switch 134 and a holding coil 135, which is operable to close a circuit about switch 134 by actuation of switch 136. The box ejector motor 62 and the pump motor 45 are connected in parallel through lines 234 to timer T1, which energizes these motors for a predetermined timed period after initial closing of the circuit by coin controlled actuation of microswitch 134. Timer T2, which is preferably of known electronic type, acts to automatically energize corn dispensing solenoid 53 through lines 235 after T1 has de-energized the blower and box ejector, and retains the solenoid in its dispensing valve actuating position for a predetermined period sufficient to completely dispense the contents of the measuring chamber before permitting it to again close.

In using the illustrated dispensing machine, popped corn is first placed in storage chamber 12, and a stack of nested boxes of the type shown in Fig. 6 are placed on elevator 58 between vertical stationary guides 56 and 57 of the box ejecting mechanism. Downward movement of the elevator, during such insertion of the boxes, is permitted by releasing latch 72 through inward movement of button 80, as previously described. Electrical supply lines 128 and 129 are then connected to a suitable source of electrical energy, typically a 110 volt alternating current supply.

An operator inserts a coin into slot 38, and the coin in passing downwardly within the coin control mechanism momentarily actuates microswitch 134 to close the circuits to both timers T1 and T2. Such momentary closing of this circuit also energizes holding coil 135 to close switch 136 and maintain the electrical supply circuit closed even after the opening of microswitch 134. Immediately upon the closing of the coin controlled circuit, timer T1 simultaneously energizes box ejecting motor 62 and blower motor 45. The blower then creates an upward flow of air entraining a quantity of corn from the storage chamber, through tube 48, against deflecting plate 49, along the inside of transparent dome 11 within the sight of an

operator, and downwardly into measuring chamber 13. Any excess corn transferred by this stream of air overflows downwardly into the storage chamber. The period of actuation of the blower is predetermined and of sufficient length to overfill the measuring chamber, thus assuring the delivery of a full measure of corn to the operator.

The circuit to motor 62 of the box ejecting mechanism is closed for a period sufficient to rotate the motor driven shaft through exactly one revolution, to thereby eject a single box into cage 16. Reviewing briefly the manner of operation of the box ejecting mechanism, jaws 102 and 103 are normally closed about the upper edge of the top box in the stack, and stops 61 normally prevent upward movement of the second box in the stack. As motor 62 then rotates from the normal position of Fig. 7, arm 96 is swung upwardly by crank arm 98 and connecting arm 99 to move member 59 upwardly and carry the top box in the stack to the position of Fig. 12. Upon arrival at the position of Fig. 12, arm 104 is swung downwardly relative to member 59 by engagement with cross piece 108 of member 109 to release the box from the gripping jaws. Member 59 then continues its upward movement and the box is laterally deflected into cage 16 by the tension of leaf springs 60. Continued operation of the motor swings arm 96 downwardly to move member 59 back to its position of Fig. 11, the jaws being tightly closed about the next successive upper box by upward movement of rod 110 upon arrival of member 59 at its lowermost position.

While member 59 is in the upper part of its travel, stops 61 are outwardly deflected by engagement of lug 127 with the inner surfaces of lever arms 122. During the period that these stops are thus outwardly deflected, cam 81 acts to pivot lever element 82 about its fulcrum point 88 to lower ratchet element 72 a distance sufficient to advance chains 68 the length of one of their links. Such movement of the chains raises the elevator a predetermined distance corresponding to the distance between the upper edges of successive boxes in the stack, as determined by the positioning of box lugs 90. Such upward movement of the elevator advances the next successive box to the position of the top box in Fig. 11 in preparation for its ejection on the next operation of the machine. As member 59 returns to its lower position, lug 127 moves away from its engagement with arms 122 to permit return of stops 61 back to their active positions.

Timer T1 automatically de-energizes motor 62 and motor 45 after the former has rotated shaft 162 through one complete revolution and after the latter has transferred enough corn to overfill measuring chamber 13. Timer T2 then energizes solenoid 53 to release the measured corn from chamber 13 downwardly into the box which has been ejected into cage 16. The operator may then open plastic door 23 to remove the filled box of corn.

We claim:

1. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for transferring corn from the storage chamber into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, common coin responsive control means controlling said corn transferring means and said container feeding means and operable to render them effective to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, and dispensing means for discharging the corn from said collection chamber and positioned to deliver the corn into the container at said delivery location, said collection chamber and dispensing means being constructed to retain the transferred corn against discharge from the collection chamber during the transfer of corn thereto.

2. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for transferring corn from the storage chamber into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, common coin responsive control means controlling said corn transferring means and said container feeding means and operable to render them effective to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, automatic control means operable to automatically de-energize the corn transferring means after its energization for a period sufficient to fill the collection chamber, and dispensing means for discharging the corn from said collection chamber and positioned to deliver the corn into the container at said delivery location, said collection chamber and dispensing means being constructed to retain the transferred corn against discharge from the collection chamber during the transfer of corn thereto.

3. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for transferring corn from the storage chamber into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, dispensing means for discharging corn from the collection chamber and positioned to deliver the corn into a container at said delivery location, coin responsive control means controlling said corn transferring means and said container feeding means and operable to render them effective to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, and automatic control means operable to automatically energize said dispensing means to dispense the corn from the collection chamber into the container after energization of said corn transferring means for a period sufficient to transfer a predetermined charge of corn to the collection chamber, said collection chamber and dispensing means being constructed to retain the transferred corn against discharge from the collection chamber during the transfer of corn thereto.

4. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for transferring corn from the storage chamber into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, coin responsive control means operable to energize said corn transferring means and said container feeding means in timed relation to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, dispensing means for discharging the corn from

said collection chamber and positioned to deliver the corn into the container at said delivery location, and timer means operable to deenergize said corn transferring and container feeding means and to actuate said dispensing means after a predetermined interval from the energization of said corn transfer and container feeding means, said collection chamber and dispensing means being constructed to retain the transferred corn against discharge from the collection chamber during transfer of corn thereto.

5. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, common coin responsive control means controlling said flow creating means and operable to render them effective and said container feeding means to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, and dispensing means for discharging the corn from said collection chamber and positioned to deliver the corn into the container at said delivery location, said collection chamber and dispensing means being constructed to retain the transferred corn against discharge from the collection chamber during the transfer of corn thereto.

6. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, common coin responsive control means controlling said flow creating means and said container feeding means and operable to render them effective to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, said control means including timer means operable to automatically interrupt said transfer of corn after it has continued for a period sufficient to fill the collection chamber, and dispensing means for discharging the corn from said collection chamber and positioned to deliver the corn into the container at said delivery location, said timer means being operable to automatically actuate said dispensing means upon said interruption of the corn transfer, said collection chamber and dispensing means being constructed to retain the transferred corn against discharge from the collection chamber during the transfer of corn thereto.

7. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, means for dispensing corn from the collection chamber into a container at said delivery location, and coin responsive control means operable to first energize said flow creating means and said container feeding means to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, and operable then to automatically energize said dispensing means to dispense the corn from the collection chamber into the container.

8. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, means for dispensing corn from the collection chamber into a container at said delivery location, and coin responsive control means operable to first energize said flow creating means and said container feeding means to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, said control means being operable to automatically de-energize the flow creating means after its energization for a period sufficient to fill the collection chamber, and being operable then to automatically energize said dispensing means to dispense the corn from the collection chamber into the container.

9. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, an overflow collection chamber adapted to contain a given quantity of corn and to overflow downwardly any corn received in excess of said quantity, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, coin responsive control means operable to energize said flow creating means and said container feeding means to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, said control means including a timer operable to automatically de-energize the flow creating means after its energization for a period sufficient to overfill the collection chamber, and dispensing means for discharging the corn from said collection chamber and positioned to deliver the corn into the container at said delivery location.

10. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, an overflow collection chamber adapted to contain a given quantity of corn and to overflow downwardly any corn received in excess of said quantity, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, means for dispensing corn from the collection chamber into a container at said delivery location, and coin responsive control means operable to energize said flow creating means and said container feeding means to transfer a quantity of corn to the collection chamber and to feed a container to the delivery

location, said control means including a timer means operable to automatically de-energize the flow creating means after its energization for a period sufficient to overfill the collection chamber, and operable then to automatically energize said dispensing means to dispense the corn from the collection chamber.

11. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for holding a single container at a delivery location, means for feeding a container from said supply holder to said last mentioned means, common coin responsive control means controlling said flow creating means and operable to render them effective and said container feeding means to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, dispensing means for discharging the corn from said collection chamber and positioned to deliver the corn into the container at said delivery location, and control means including a timer operable to automatically actuate said dispensing means after energization of said flow creating means for a period sufficient to transfer a predetermined charge of corn to said collection chamber, said collection chamber and dispensing means being constructed to retain the transferred corn against discharge from the collection chamber during the transfer of corn thereto.

12. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, coin responsive control means operable to energize said flow creating means and said container feeding means in timed relation to transfer a quantity of corn to the collection chamber and to feed a container to the delivery location, dispensing means for discharging the corn from said collection chamber and positioned to deliver the corn into the container at said delivery location, and timer means operable to deenergize said flow creating and container delivering means after their energization for a predetermined period, and operable to then actuate said dispensing means in timed relation to said flow creating means and container feeding means, said collection chamber and dispensing means being constructed to retain the transferred corn against discharge from the collection chamber during transfer of corn thereto.

13. A popcorn dispenser comprising a storage chamber for containing popcorn to be dispensed, a collection chamber, means for creating a flow of air from said storage chamber toward the collection chamber, means for entraining corn from the storage chamber in said flow of air to be transferred thereby into the collection chamber, means for holding a supply of containers, means for feeding a container from said supply holder to a delivery location, coin responsive control means operable to energize said flow creating means and said container feeding means simultaneously to transfer a quantity of corn to collection chamber and to feed a container to the delivery location, and means for dispensing the corn from said collection chamber and positioned to deliver the corn into the container at said delivery location, means for actuating said dispensing valve, and timer means operable to automatically de-energize the flow creating means after its energization for a period sufficient to transfer a predetermined charge of corn to the collection chamber, said timer means being automatically operable after said de-energization of the flow creating means to energize said valve actuating means to discharge said corn, said collection chamber and valve being constructed to retain the transferred corn against discharge from the collection chamber during transfer of corn thereto.

WILLIS E. CLARK.
JOHN E. BEALL.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
310,905	Milbank	Jan. 20, 1885
1,035,348	Jannell	Aug. 13, 1912
2,051,344	Parks et al.	Aug. 18, 1936
2,258,548	Doutrich	Oct. 7, 1941
2,286,165	Balton	June 9, 1942
2,413,446	Glassner	Dec. 31, 1946