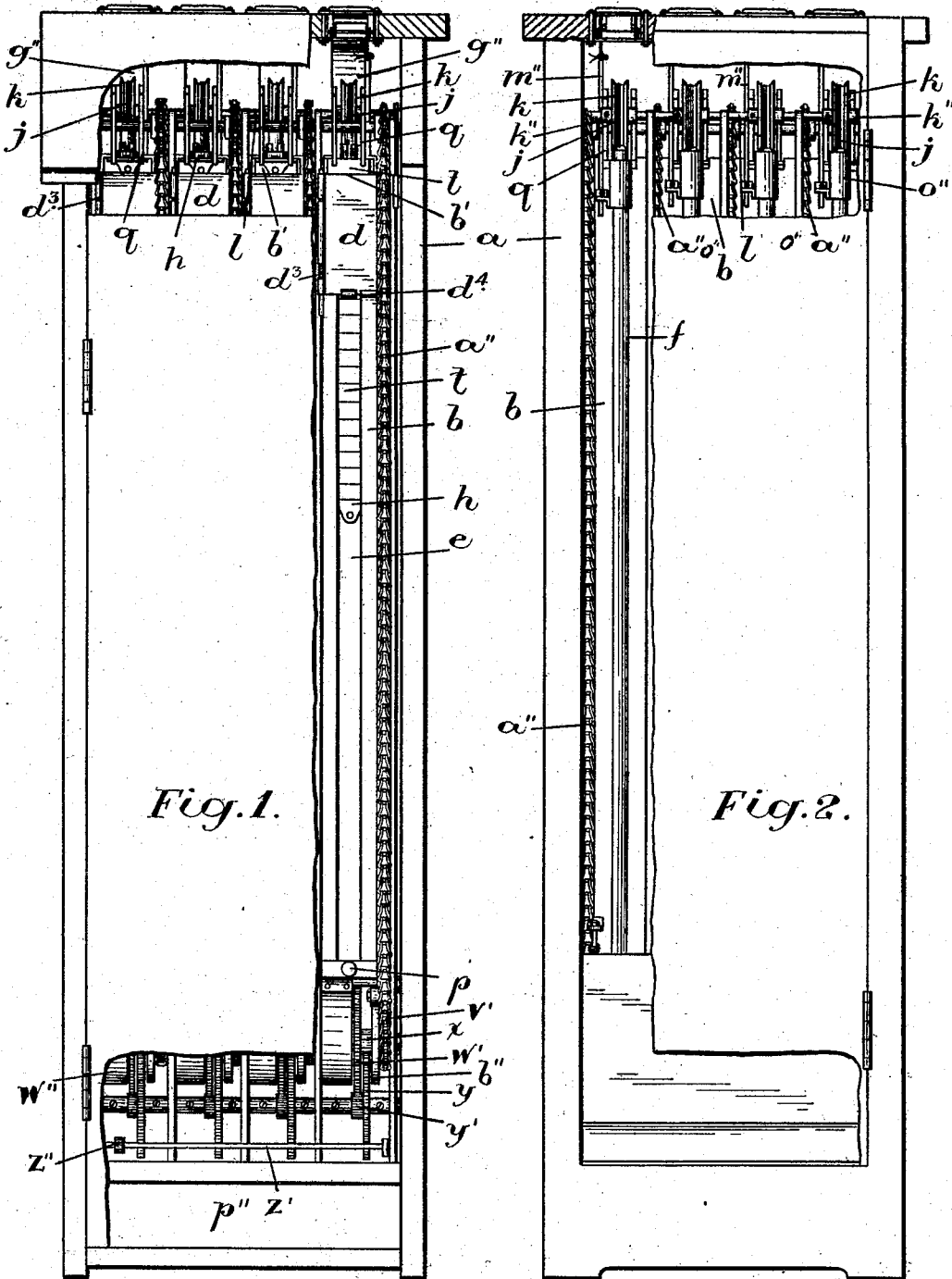


A. P. HOLDEN.
 AUTOMATIC VENDING MACHINE.
 APPLICATION FILED JAN. 4, 1908.

905,317.

Patented Dec. 1, 1908.

3 SHEETS—SHEET 1.



Witnesses.
 H. L. Trimble.
 A. M. Venable

Inventor.
 Arthur P. Holden
 by Charles H. Fisher
 his attorney

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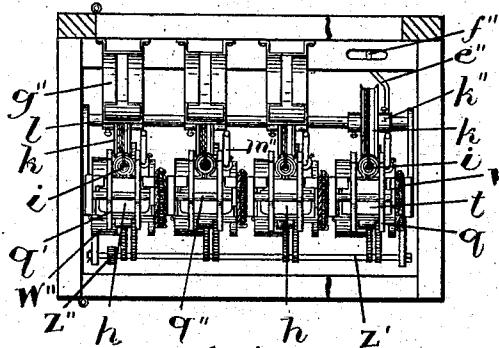


Fig. 3.

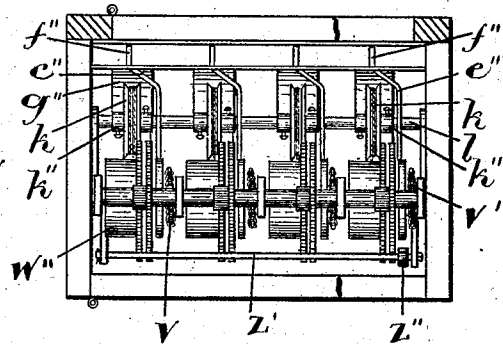


Fig. 4.

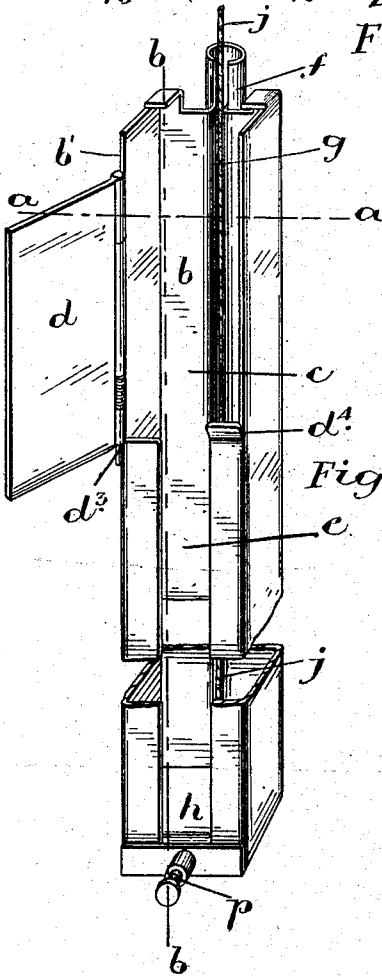


Fig. 5.

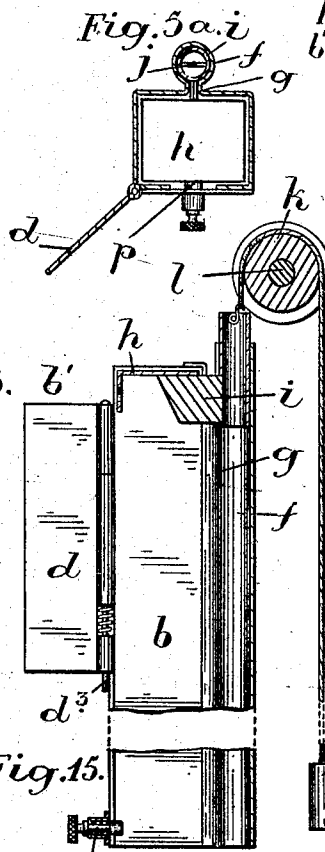


Fig. 5a, i.

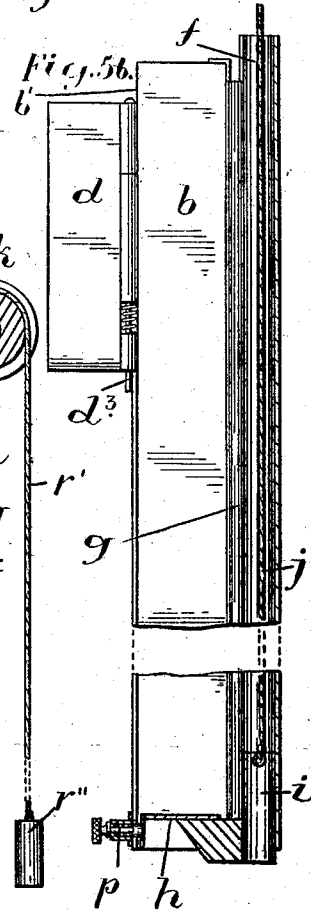


Fig. 5b.

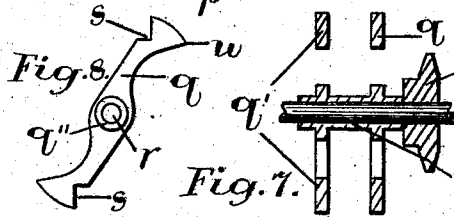


Fig. 7.

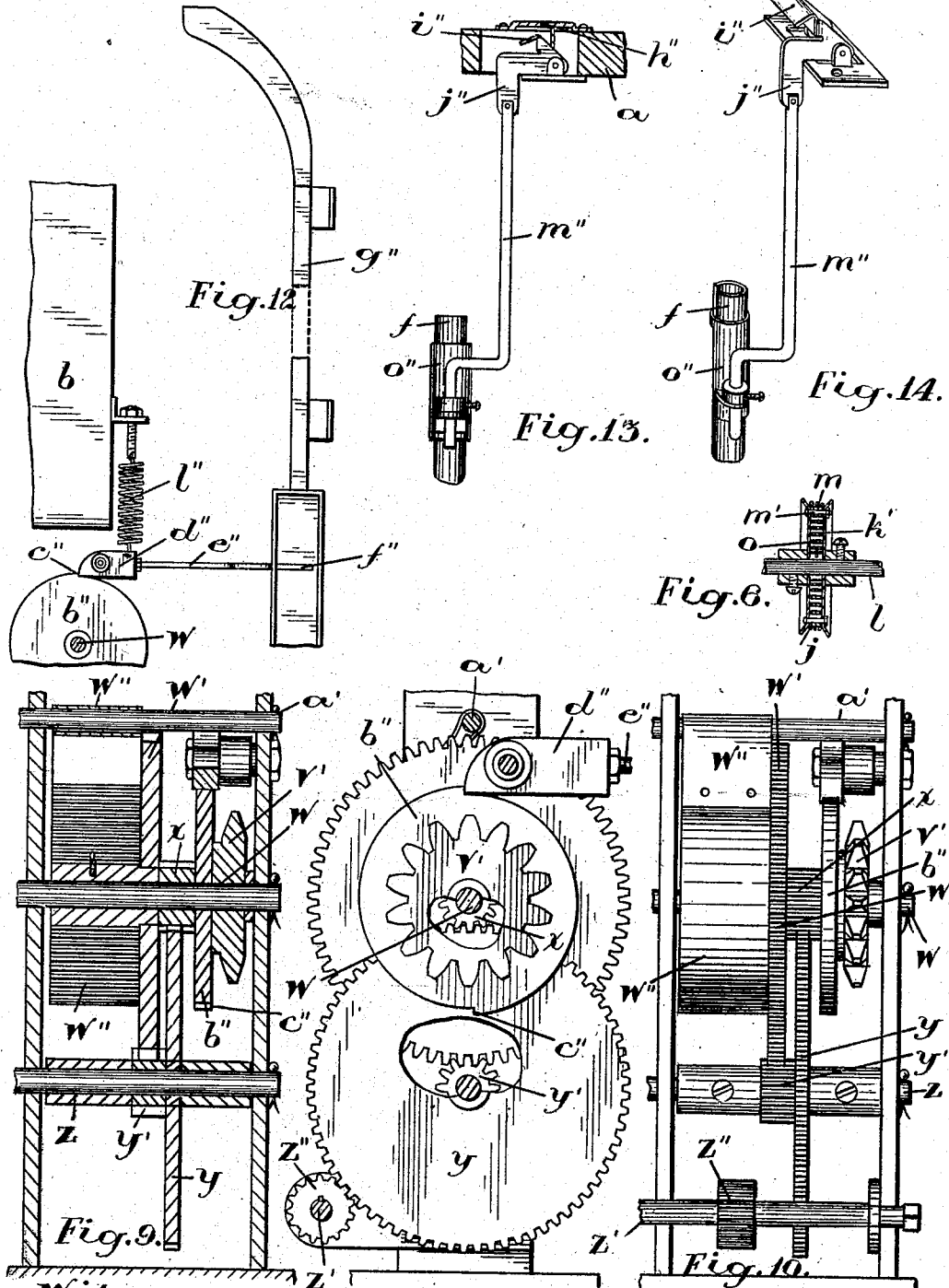
Witnesses.
 H. L. Trimble.
 A. P. Holden

Inventor.
 Arthur P. Holden
 by Charles W. Riches
 his Attorney

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Patented Dec. 1, 1908.
3 SHEETS—SHEET 3.



Witnesses.
H. L. Grumble.
A. H. Bentley

Fig. 11. Inventor.
Arthur P. Holden
by Thomas W. Smith
an attorney.

UNITED STATES PATENT OFFICE.

ARTHUR P. HOLDEN, OF TORONTO, ONTARIO, CANADA.

AUTOMATIC VENDING-MACHINE.

No. 905,317.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed January 4, 1906. Serial No. 294,635.

To all whom it may concern:

Be it known that I, ARTHUR PEART HOLDEN, of the city of Toronto, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Automatic Vending-Machines, of which the following is a full, clear, and exact description.

This invention relates to an automatic vending machine comprising a magazine, an elevator therein automatically movable towards its delivery end, an ejector, a motor for actuating the ejector, and a coin operated controller for the ejector motor, as hereinafter more fully set forth and more particularly pointed out in the claims.

For a full understanding of the invention reference is to be had to the following description and to the accompanying drawings, in which,

Figure 1 is a front elevation of a four magazine vending machine showing the constructive arrangement of the parts. Fig. 2 is a rear elevation of the construction shown in Fig. 1. Fig. 3 is a plan view of the construction shown in Figs. 1 and 2 looking at it from the top. Fig. 4 is a plan view of the construction shown in the preceding figures looking at it from the bottom. Fig. 5 is a perspective view of one of the magazines. Fig. 5^a is a transverse section of the magazine shown in Fig. 5 taken on the line *a-a*. Fig. 5^b is a vertical section of the magazine taken on the line *b-b* Fig. 5. Fig. 6 is a vertical section through one of the motors for the magazine elevators, taken lengthwise of the shaft therefor. Fig. 7 is a vertical section of one of the ejectors taken lengthwise of the shaft therefor. Fig. 8 is a side elevation of the construction shown in Fig. 7. Fig. 9 is a vertical section through one of the motors for the ejecting mechanism taken lengthwise of the shaft therefor. Fig. 10 is a front elevation of the construction shown in Fig. 9. Fig. 11 is a side elevation of the construction shown in Fig. 9. Fig. 12 is a side elevation of one of the coin chutes, showing the constructive arrangement of the controlling mechanism for the ejector motors. Fig. 13 is a side elevation of the coin slot closing mechanism. Fig. 14 is a perspective view of the construction shown in Fig. 13. Fig. 15 is a vertical section of a magazine, magazine elevator and an alternative form of elevator motor.

Like letters of reference refer to like parts throughout the specification and drawings.

Within the cabinet *a* are four magazines *b* substantially rectangular in cross section, with apertures *c* at the upper ends of their front sides, and slots *e* extending from said apertures to their lower ends to facilitate the placing of the merchandise therein. On the magazine fronts, at the sides of the apertures *c* and projecting above the bottoms thereof are keepers *d*⁴. Hinged to the magazine fronts are covers *d* to close the apertures, said covers being vertically movable on their hinges *d*³ to rise above the keepers *d*⁴, and to descend into position behind them, so that said keepers may hold the covers to securely close the apertures or permit them to open as required.

In rear of the magazines are slideways *f* the interiors of which communicate with the interiors of the magazine by slots *g* formed through the rear sides of the magazine for that purpose. Contained within the magazines *b* are elevators *h* having elevator guides *i* movable in the slideways *f*, and connected to the elevator guides *i* are elevator cords or cables *j*. The elevator cords or cables extend above the top of the slideways *f* and are wound on the motor drums *k*. The motor drums *k* are revolubly mounted on a stationary shaft *l* supported above the top of the magazine in rear of the slideways, and each motor drum *k* consists of two annular side plates *k'* loosely mounted on the stationary shaft *l*, a rim *m* contained between the annular side plates *k'* and maintained in position therebetween by clamping screws *m'* which fasten the side plates together, and motor springs *o* contained between the side plates *k'* within the rim. One end of each motor spring *o* is connected to the stationary shaft *l* and the other end is connected to one of the clamping screws *m'*. The elevator cords or cables *j* attached to the elevator guides are wound on the motor drums *k* and as the magazine elevators descend they unwind from and cause the revolution of the motor drums to automatically wind the motor springs *o*, so that when the descending force is removed from the magazine elevators the motor springs may unwind themselves and rewind the elevator cords or cables on the motor drums. Spring tensioned detent pins *p* extending through the lower end of the magazine fronts are employed to

hold the magazine elevators inoperative in the magazines until the latter have received their contents.

When the magazines are "charged" the
 5 detent pins are released to allow the elevator
 motors to raise the elevators with their loads
 towards the tops of the magazines and posi-
 tion the topmost packages opposite the deli-
 10 very openings b' so that they can be en-
 gaged and delivered by the ejectors q as the
 latter move under the influence of the ejector
 motors as hereinafter described. Each
 ejector consists of one or more sets of ejector
 15 arms q' , a hub q'' loosely mounted on the sta-
 tionary shaft r above the top of the maga-
 zines and a sprocket wheel v . Formed in
 the heel of each ejector arm q' is a substan-
 tially V-shaped groove s to engage the front
 20 edge of the topmost package t in its respec-
 tive magazine until the commencement of
 the revolution of the ejectors when said
 package is engaged and ejected by the toe u
 of the ejector arm or arms coming into con-
 tact with it. When the topmost package has
 25 been delivered the remaining packages in the
 magazine are raised by the elevator moving
 under the influence of the elevator motor to
 bring the next package in succession to the
 one delivered opposite the delivery opening
 30 of the magazine, the motion of the ejector
 being arrested when it has cleared the path
 of the ascending package so that the V-
 shaped groove s will receive the top edge of
 the front of the then topmost package t and
 35 by preventing its displacement or removal
 from the magazine cause it to be retained
 therein until the next operation of the eject-
 ing mechanism.

Mounted on each ejector hub q'' is a
 40 sprocket wheel v which is alined with the
 sprocket wheel v' loosely mounted on the
 motor shaft w stationarily supported below
 the magazines. Rigidly connected to each
 sprocket wheel v' and revoluble therewith is
 45 a pinion wheel x which meshes with a spur
 wheel y loosely mounted on a stationary
 shaft z located below the motor shaft w .
 Each spur wheel y is provided with a pinion
 wheel y' with which meshes a spur wheel w'
 50 loosely mounted on the motor shaft w . The
 spur wheels w' are driven by motor springs
 w'' coiled around the motor shaft. The
 outer ends of the motor springs w'' are fas-
 tened to a stationary bar a' and their inner
 55 ends are connected to the spur wheels w' so
 that the unwinding of the motor springs will
 cause the revolution of the spur wheels w'
 which motion is transmitted by the pinion
 wheels y' to the spur wheels y and finally to
 60 the pinion wheels x and sprocket wheels v' .
 Passing around the sprocket wheels v and v'
 are sprocket chains a'' by which motion is
 transmitted from the motors to the ejectors
 65 during the actuation of the former. To stop
 the actuation of the motors the sprocket

wheels v' or their pinion wheels x are pro-
 vided with clutch disks b'' having teeth c''
 corresponding in number and location with
 the ejector arms and engaging the rims of
 the clutch disks are detent clutches d'' form- 70
 ing part of the controlling levers e'' . The
 controlling levers e'' are fulcrumed interme-
 diate the detent clutches d'' and their coin
 engaging ends f'' which project into the
 75 paths of the coin chutes g'' so that the coins
 descending therethrough may engage them
 and cause the levers to rock upon their ful-
 crums and release the detent clutches d'' from
 engagement with the clutch disks. The coin
 80 chutes g'' correspond in number and location
 with the magazines b and are preferably lo-
 cated in rear thereof with their upper ends
 curved forwardly to the coin slots h'' which
 are formed through the top of the cabinet a .
 Movable across the top of the coin slots h'' 85
 are pivoted covers i'' actuated by bell crank
 levers j'' and links m'' having slides o'' mov-
 able on the slideways f .

In the operation of the apparatus, a coin is
 inserted into the machine through a coin slot 90
 h'' and descends through the corresponding
 coin chute g'' to the coin receptacle p'' . Dur-
 ing its descent it engages the end f'' of the
 controlling lever e'' and the force of the im- 95
 pact of the coin upon the lever e'' caused by
 the momentum of its descent is sufficient to
 displace the lever from its normal position and
 trip the detent clutch d'' from its engagement
 with the tooth of the clutch disk so that the
 100 clutch disk b'' can revolve with its pinion
 wheel v' under the influence of the motion
 transmitted to it from the corresponding
 motor spring w'' . During the revolution or
 partial revolution of the clutch disk, its
 105 sprocket wheel v' by means of the sprocket
 chain a'' causes the revolution of its cor-
 responding sprocket wheel v and ejector.
 The ejector as previously stated, while inac-
 tive holds or prevents the removal of the top-
 most package by its heel engaging the front 110
 edge of the package and during the revolution
 of the ejector, its toe comes into contact
 with the rear end of the package and dis-
 charges it through the delivery opening b' at
 the top of the magazine. The teeth c'' of 115
 the clutch disk are so timed that when the
 topmost package has been ejected, the mo-
 tion of the ejector will be arrested and the
 heel of the ejector will be positioned to en-
 gage the front edge of the topmost package 120
 until the ejector has been again set in motion
 after the insertion of a coin. As the pack-
 ages are from time to time delivered from
 the magazine the elevator under the influ-
 125 ence of its elevator motor intermittently
 moves upwardly with its load until the last
 package has been delivered. When the mag-
 azine is empty the elevator rises therein until
 the elevator guide engages the slide o'' and
 130 actuates the link and bell crank lever j'' to

position the cover i'' so that it will close the coin slot h'' and prevent the insertion of any further coins into the coin chute corresponding to the empty magazine. To cause the instantaneous reengagement of the detent clutches with the teeth of the clutch disks, tension springs l'' are connected to the controlling levers e'' and to the apparatus to restore the controlling levers to their normal position after being actuated by the inserted coin. Slidably mounted on, and revoluble with the winding shaft z' is a winding pinion wheel z'' to successively engage the spur wheels y and revolve them to wind the motor springs w'' . Instead of using spring motors for actuating the elevators, gravity means consisting of cords r' and weights r'' such as shown in Fig. 15, may be employed for that purpose and it is also possible to actuate the ejectors by other classes of motors than those shown or described and such as are in common use, and it is also possible to modify the construction and arrangement of the parts without departing from the nature of the invention, the essential features of which are the employment of a magazine for containing the vendible articles, an elevator therein automatically movable towards its delivery end, an ejector for delivering the vendible articles successively during the successive operations of the machine, means for automatically actuating the elevator, other means for automatically actuating the ejector, and a coin operated controller for the ejector actuating means.

I claim—

1. An automatic machine for vending packets of merchandise comprising a packet carrying elevator, a guideway, a guide for the elevator slidable in the guideway, a shaft, a pulley revoluble on the shaft, means for automatically turning the pulley in one direction, a cord for the elevator passing over the pulley and attached to the elevator guide, an ejector shaft, an ejector comprising a hub part and two arms extending radially from the hub part, each arm having a recess in the heel thereof to receive and engage with the front edge of the packet and lock it on the elevator while the ejecting mechanism is inactive, and means for actuating the ejector.

2. An automatic machine for vending packets of merchandise comprising a packet carrying elevator, a guideway, a guide for the elevator slidable in the guideway, a shaft, a pulley revoluble on the shaft, a volute spring attached at its inner end to the shaft and at its outer end to the pulley, a cord for the elevator passing over the pulley and attached to the elevator guide, an ejector shaft, an ejector comprising a hub part and two arms extending radially from the hub part, each arm having a recess in the heel thereof to receive and engage with the front

edge of the packet and lock it on the elevator while the ejecting mechanism is inactive, and means for actuating the ejector to deliver the packet from the elevator.

3. An automatic machine for vending packets of merchandise comprising a packet carrying elevator, a guideway, a guide for the elevator slidable in the guideway, a shaft, a pulley revoluble on the shaft, means for automatically turning the pulley in one direction, a cord for the elevator passing over the pulley and attached to the elevator guide, an ejector shaft, an ejector comprising a hub part and two arms extending radially from the hub part, each arm having a recess in the heel thereof to receive and engage with the front edge of the packet and lock it on the elevator while the ejecting mechanism is inactive, a clock movement, connecting means between the clock movement and the ejector shaft, a clutch disk driven by the clock movement, and a releasable detent clutch for locking and releasing the clutch disk.

4. An automatic machine for vending packets of merchandise comprising a packet carrying elevator, a guideway, a guide for the elevator slidable in the guideway, a shaft, a pulley revoluble on the shaft, a volute spring attached at its inner end to the shaft and at its outer end to the pulley, a cord for the elevator passing over the pulley and attached to the elevator guide, an ejector shaft, an ejector comprising a hub part and two arms extending radially from the hub part, each arm having a recess in the heel thereof to receive and engage with the front edge of the packet and lock it on the elevator while the ejecting mechanism is inactive, a clock movement, connecting means between the clock movement and the ejector shaft, a clutch disk driven by the clock movement and a releasable detent clutch for locking and releasing the clutch disk.

5. An automatic machine for vending packets of merchandise comprising a packet carrying elevator, a guideway, a guide for the elevator slidable in the guideway, a shaft, a pulley revoluble on the shaft, means for automatically turning the pulley in one direction, a cord for the elevator passing over the pulley and attached to the elevator guide, an ejector shaft, an ejector comprising a hub part and two arms extending radially from the hub part, each arm having a recess in the heel thereof to receive and engage with the front edge of the packet and lock it on the elevator while the ejecting mechanism is inactive, a clock movement, connecting means between the clock movement and the ejector shaft, a clutch disk driven by the clock movement, and a pivoted lever engaging the clutch disk at one end.

6. An automatic machine for vending packets of merchandise comprising a packet carrying elevator, a guideway, a guide for

the elevator slidable in the guideway, a shaft,
a pulley revoluble on the shaft, a volute
spring attached at its inner end to the shaft
and at its outer end to the pulley, a cord
5 for the elevator passing over the pulley and
attached to the elevator guide, an ejector
shaft, an ejector comprising a hub part and
two arms extending radially from the hub
part, each arm having a recess in the heel
10 thereof to receive and engage with the front
edge of the packet and lock it on the ele-

vator while the ejecting mechanism is in-
active, a clock movement, connecting means
between the clock movement and the ejector
shaft, a clutch disk driven by the clock 15
movement, and a pivoted lever engaging the
clutch disk at one end.

Toronto, November 23rd, A. D. 1905.

ARTHUR P. HOLDEN.

Signed in the presence of—

C. H. RICHES,

L. F. BROCK.