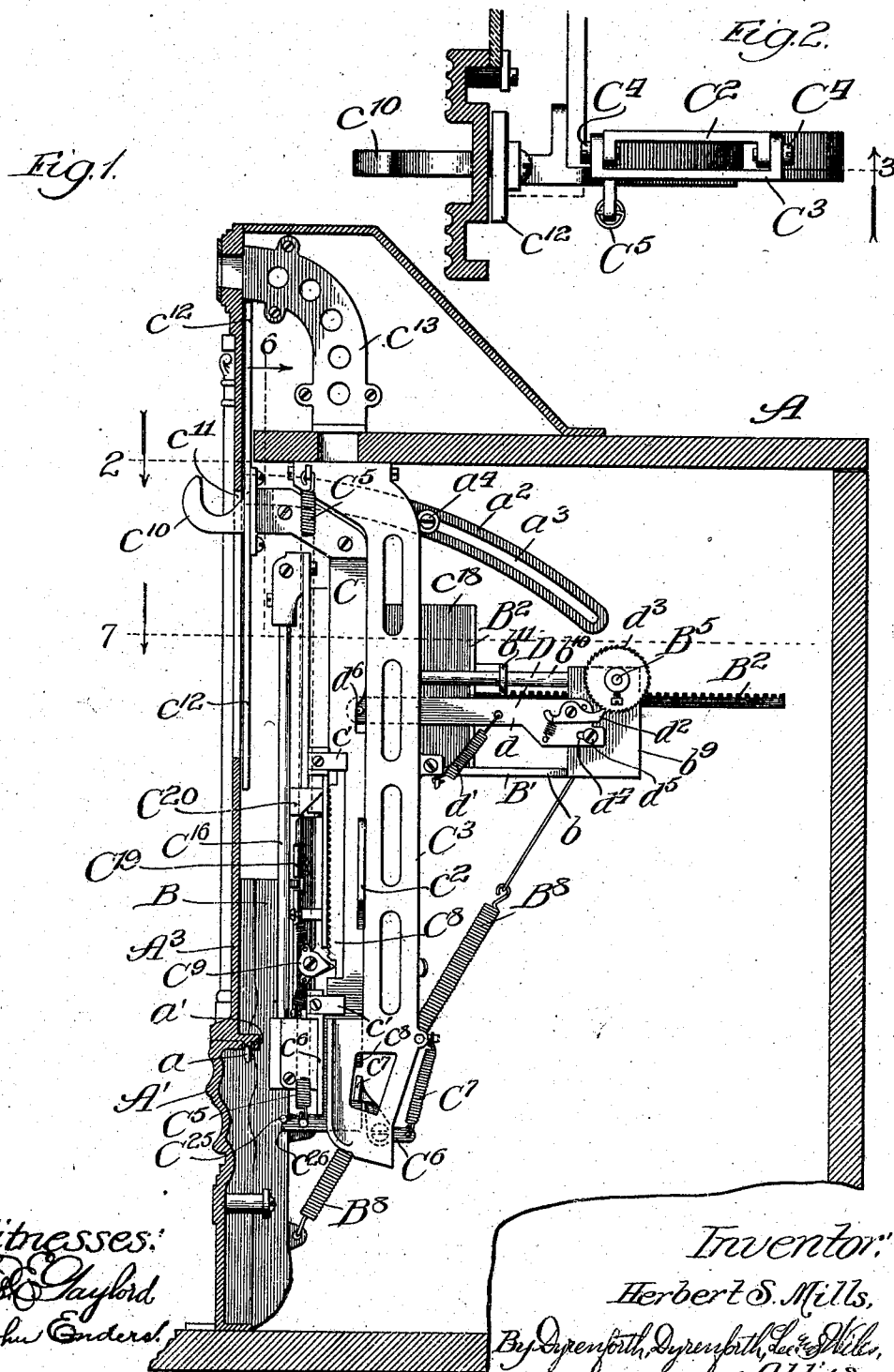


918,882.

H. S. MILLS.
VENDING MACHINE.
APPLICATION FILED MAR. 30, 1907.

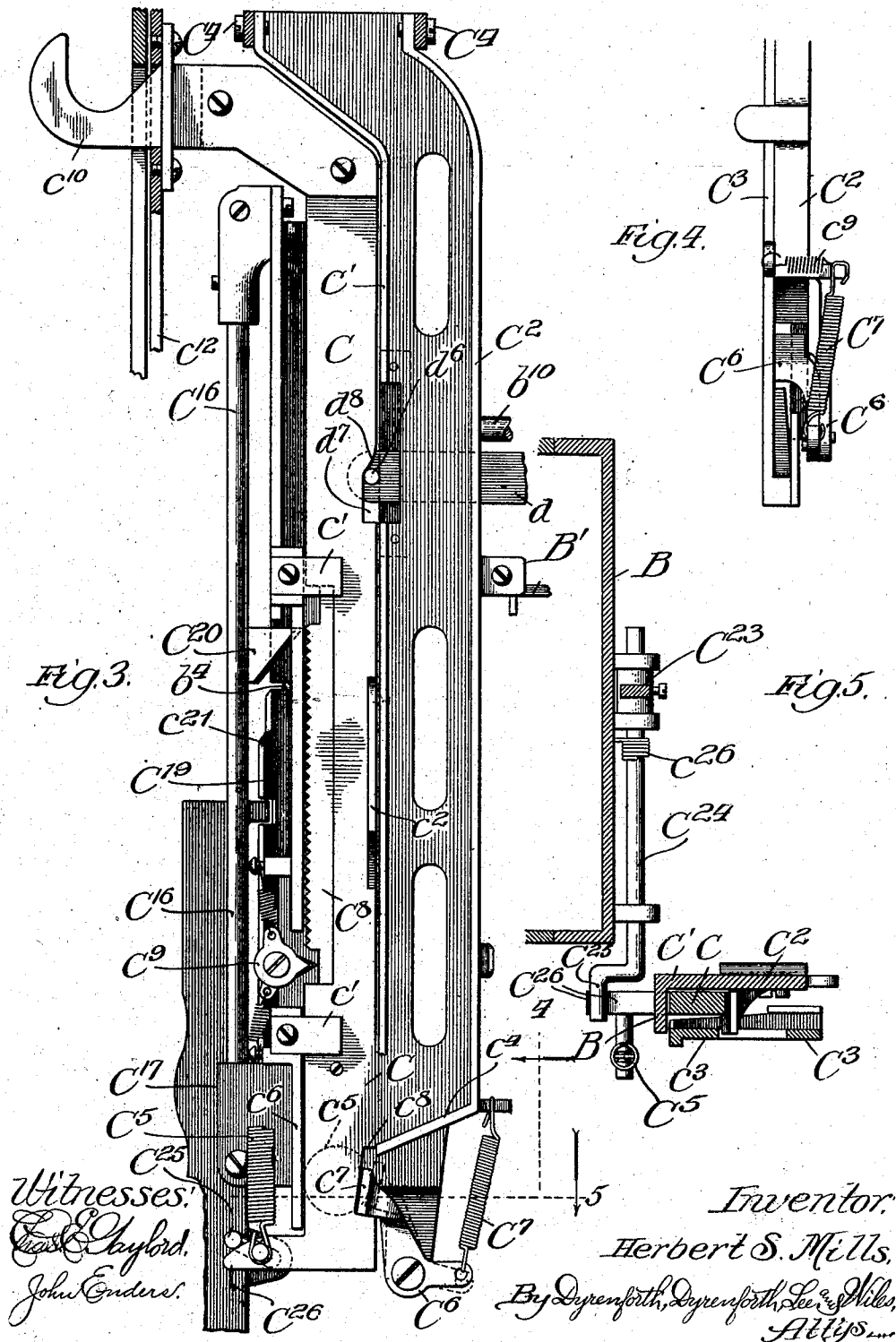
Patented Apr. 20, 1909.
7 SHEETS—SHEET 1.



918,882.

H. S. MILLS.
VENDING MACHINE.
APPLICATION FILED MAR. 30, 1907.

Patented Apr. 20, 1909.
7 SHEETS—SHEET 2.

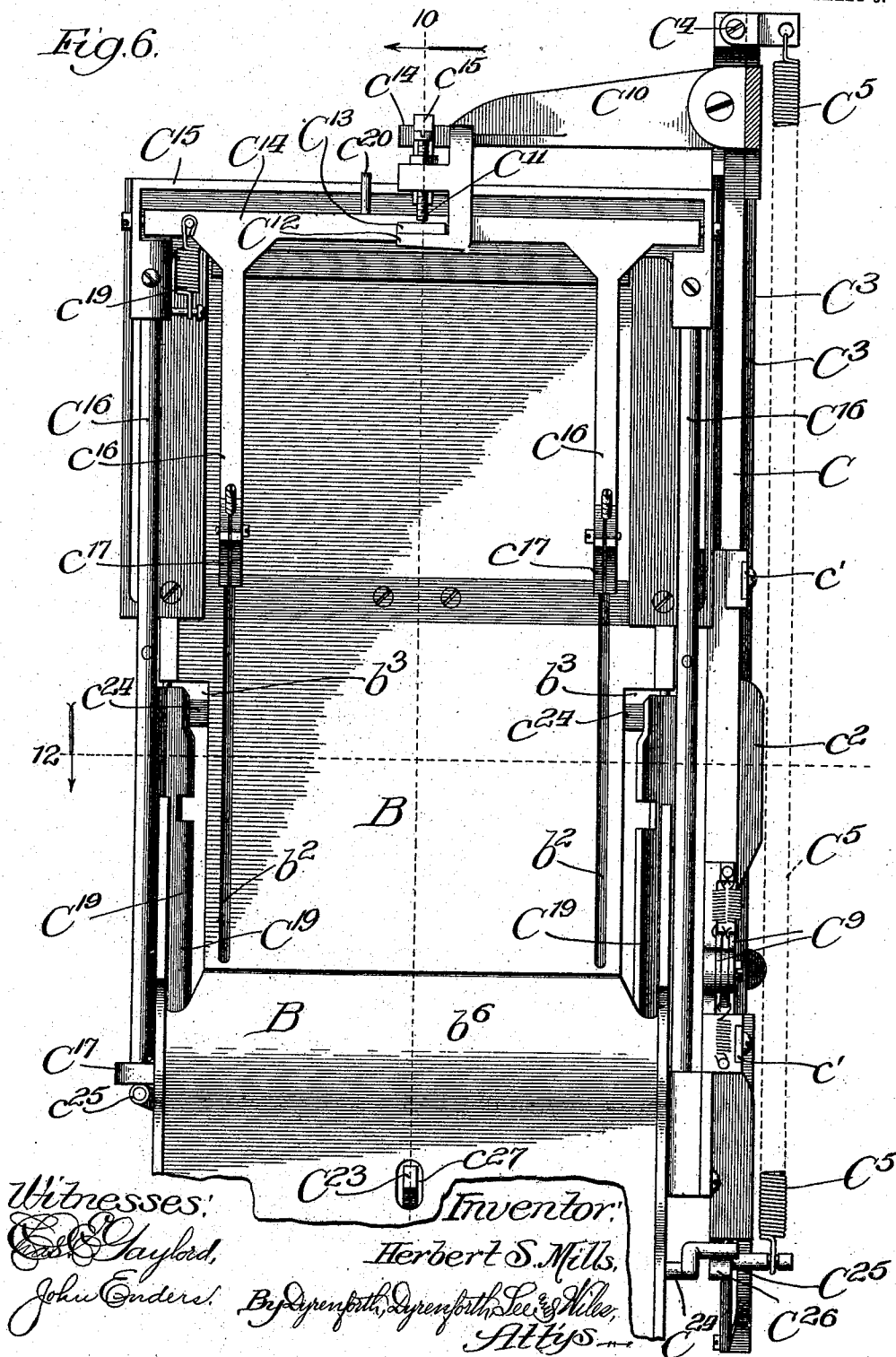


918,882.

H. S. MILLS.
VENDING MACHINE.
APPLICATION FILED MAR. 30, 1907.

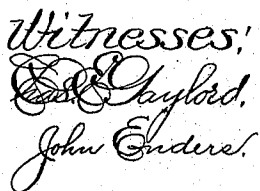
Patented Apr. 20, 1909.
7 SHEETS—SHEET 3.

Fig. 6.



918,882.

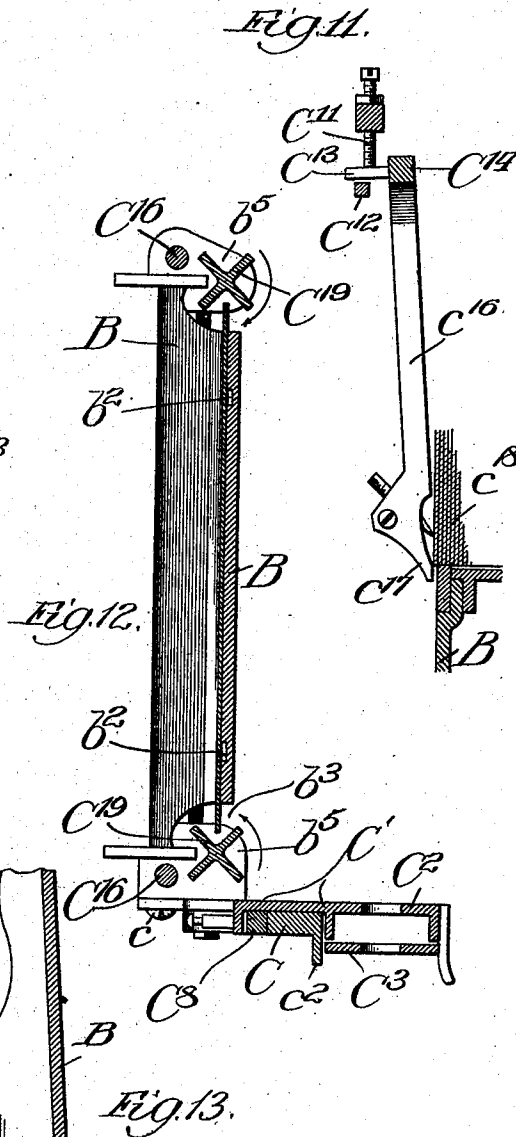
7 SHEETS—SHEET 4.



Inventor,
Herbert S. Mills,
By Syrenforth, Syrenforth, Lee & Miles,
Attys.

918,882.

7 SHEETS--SHEET 5.



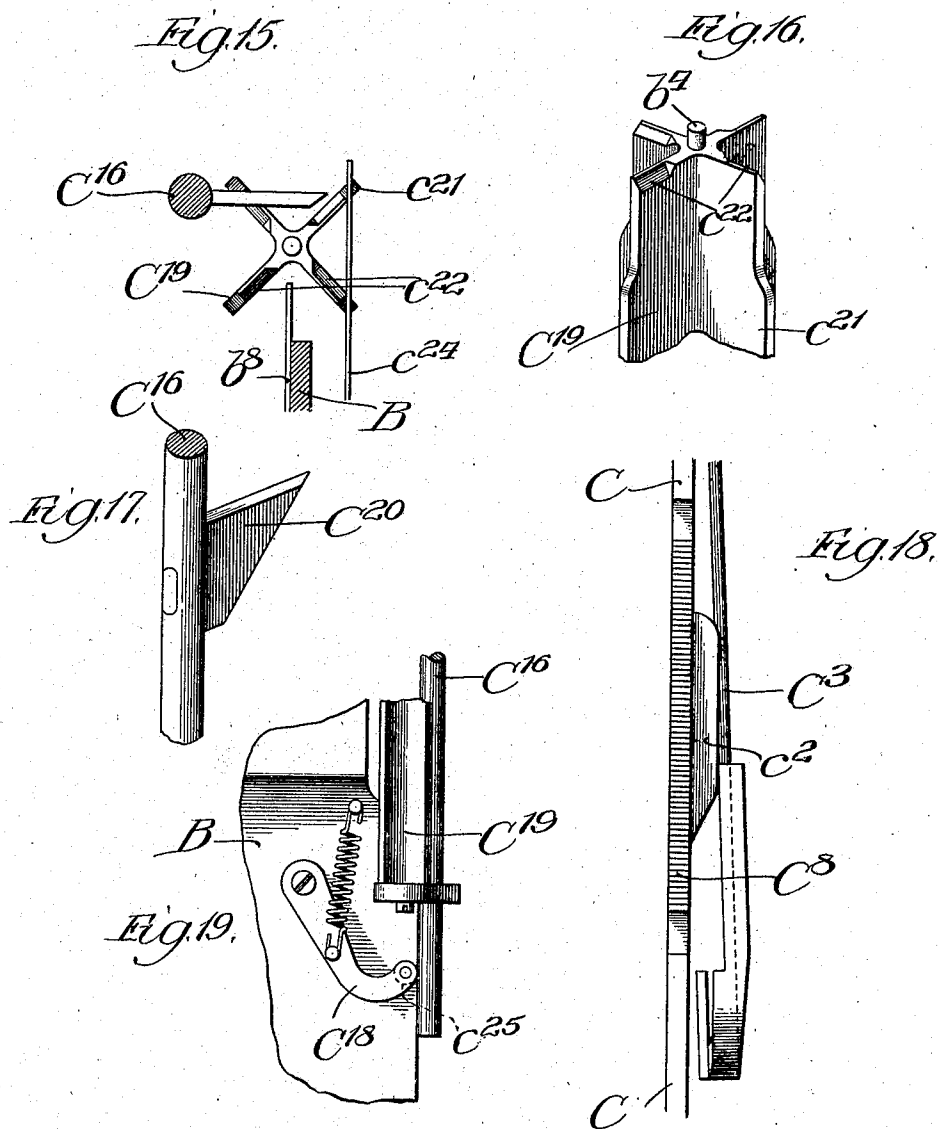
Witnesses,
Edw. Chayford,
John Enders.

Inventor,
Herbert S. Mills,
By Dunfath, Dunfath, Lee & Mills,
Attys.

918,882.

H. S. MILLS.
VENDING MACHINE,
APPLICATION FILED MAR. 30, 1907.

Patented Apr. 20, 1909.
7 SHEETS—SHEET 7.



Witnesses:
Ed. O. Gaylord,
John Enders.

Inventor:
Herbert S. Mills,
By Dyrenforth, Dyrenforth & Mills,
Attys.

UNITED STATES PATENT OFFICE.

HERBERT S. MILLS, OF CHICAGO, ILLINOIS.

VENDING-MACHINE.

No. 918,882.

Specification of Letters Patent.

Patented April 20, 1909.

Application filed March 30, 1907. Serial No. 365,474.

To all whom it may concern:

Be it known that I, HERBERT S. MILLS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Vending-Machines, of which the following is a specification.

My invention relates particularly to card vending machines, and my primary object is to provide a machine of the character indicated of great durability and certainty of action.

The invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Figure 1 is a vertical sectional view, the section being taken just inside of one of the sides of the casing of the machine; Fig. 2, a broken plan section taken as indicated at line 2 of Fig. 1, and illustrating the manner of pivoting one of the sides of a coin-chute employed; Fig. 3, a broken sectional elevational view taken approximately as indicated at line 3 of Fig. 2 and showing the details of the coin-chute employed, the vertically movable slide which serves in the operation of ejecting a card, and ratchet mechanism for insuring complete actuation of said slide; Fig. 4, a broken rear elevational view of the coin-chute and the locking pawl of said slide, said view being taken at line 4 of Fig. 3; Fig. 5, a broken horizontal sectional view taken as indicated at line 5 of Fig. 3 and showing the lower portion of the coin-controlled mechanism, and showing also means for retracting a stop or retainer upon which the ejected card falls, said retainer being retracted during the return upwardly of the coin-ejecting slide; Fig. 6, a vertical sectional view taken as indicated at line 6 of Fig. 1 and showing particularly portions of the card-ejecting mechanism; Fig. 7, a horizontal section taken as indicated at line 7 of Fig. 1, this view showing the card magazine and cards therein, the cards being shown broken; Fig. 8, a broken vertical section taken as indicated at line 8 of Fig. 7 and showing an adjustable screw upon which slides a reciprocating pawl-actuating member which serves to relieve the pressure of the magazine follower upon the cards during the period when the outermost, or most ad-

vanced, card is being moved downwardly over the front face of the pack of cards in the operation of separating the first card from the pack of cards; Fig. 9, a broken section taken as indicated at line 9 of Fig. 7 and showing a detail of the rack which serves to actuate the follower, the stirrup for holding said rack, and a pinion which serves to actuate the rack; Fig. 10, a broken vertical section taken as indicated at line 10 of Fig. 6, this view showing a vertical section through the magazine and showing portions of cards in the magazine; Fig. 11, a view showing one of the point-equipped arms of a pivotally mounted slide actuated member which serves in separating the foremost card from the remainder of the cards in the ejecting operation, this view showing said arm in the position which it occupies during the ejecting operation; Fig. 12, a horizontal sectional view taken as indicated at line 12 of Fig. 6, and showing revoluble winged members which serve, during the operation of separating one card from the pack to throw the previously separated card into the discharge chute to permit it to fall upon the above-mentioned stop, or retainer, upon the retraction of which, during the upward movement of the slide, the card will fall through the discharge opening and be delivered to the purchaser; Fig. 13, an enlarged broken vertical section showing the lower portion of the discharge passage of the machine, said view showing that portion of the discharge passage which is omitted from Fig. 10; Fig. 14, a broken vertical sectional view taken as indicated at line 14 of Fig. 7; Fig. 15, a plan view, diagrammatic in its nature, illustrating the manner of actuating the revoluble winged card-ejecting members employed; Fig. 16, a broken perspective view of one of said revoluble winged members; Fig. 17, a broken perspective view of one of the slide rods and a cam carried thereby serving in the actuating of one of said revoluble members during the descent of the slide; Fig. 18, a broken front elevational view of a rack-equipped slide-bar, a cam carried by said bar, and the lower portion of the swinging side member of the coin-chute which is actuated by said cam; and Fig. 19, a broken view showing one of a pair of friction mem-

bers which serve to engage slide rods, said pair of friction members being shown in position in Fig. 14.

In the construction illustrated, A represents a casing whose front A' is equipped with a skeleton plate A² which is adapted to be swung forwardly about its lower end with relation to the casing in a manner which will be hereinafter described and which is provided with a glass plate A³ which enables the cards to be viewed; B, an internal front metal plate or frame member upon the rear side of the upper portion of which is mounted a card magazine B' which is equipped with a follower B² having a rearwardly projecting rack B³ with which meshes a pinion B⁴ mounted on a transverse shaft B⁵, one end of which is equipped, as shown in Fig. 7, with a drum B⁶ upon which winds a cord B⁷ which is connected with a spring B⁸ whose lower end is attached to the lower end of the plate B, the tendency of said spring B⁸ being to actuate the chute B⁵ and move the follower B² forwardly; C, a vertically disposed slide-bar movable in a guide C' with which the plate B is equipped at one lower edge, as shown in Figs. 3 and 5; C², a coin-chute formed integrally with the guide C' and having a movable side member C³ which is supported on a pivot C⁴ at its upper end, as shown in Fig. 6; a spring connected at its upper end with a short lateral arm with which the movable side member C³ is equipped at its upper end and connected at its lower end with a stud projecting laterally from the lower end of the slide C, whereby the spring C⁵ performs the double function of maintaining the side member C³ yieldingly in its normal vertical position and of maintaining the slide C normally in its elevated position; C⁶, a locking pawl for the slide C which is normally held in the locking position by a spring C⁷, as shown in Figs. 3 and 4; C⁸, a ratchet bar applied to the front edge of the slide bar C and which cooperate with the pawls C⁹, thus serving to insure complete depression of the slide bar C; C¹⁰, (Figs. 6 and 14) a lateral arm projecting inwardly transversely from the upper end of the slide bar C and equipped with stops or bearings C¹¹, C¹² which engage a forwardly projecting lug C¹³ carried by a rock-member C¹⁴ which is pivoted in a slide C¹⁵, said slide having vertical rods C¹⁶ which move in guides C¹⁷ with which the frame-member B is equipped; C¹⁸, a pair of friction members engaging the rods C¹⁶; C¹⁹, a pair of vertically disposed revoluble winged ejecting members actuated by cams C²⁰ projecting rearwardly from the rods C¹⁶; C²¹, a discharge chute located between the lower portions of the plates A' and B, said chute having a discharge opening C²² (Fig. 13); C²³, a stop or retainer carried by a shaft C²⁴ having a crank C²⁵ adapted to be struck by a forwardly extending projection C²⁶ carried

by the lower end of the slide bar C, as shown in Fig. 3; and D, a slide actuated tension-relieving device which serves during the downward travel of the guide C' to relieve the pressure upon the cards during the operation of separating the front card from the pack of cards.

The casing A may be formed in any suitable manner, and any provision (not shown) for access to the interior of the casing may be provided. The front plate A² is preferably arranged to be swung forwardly about its lower end, and for this purpose, it is provided at its lower end with lugs a which enter sockets a' with which the plate A' is provided on its rear surface, as shown in Fig. 1, and said plate A² is provided at or near one lateral edge with a rearwardly projecting arm or sector a² having a slot a³ struck about an axis at the lower end of the plate A², said slot a³ receiving a screw a⁴ which secures the arm a² to the inner surface of one side of the casing. Thus, the plate A² may be swung forwardly, or may be removed, at will, to facilitate access to the working parts. The front of the casing, including the plate A² may be made of ornamental members and of any suitable design.

The plate B is formed with an opening b near its upper end, and is equipped with a rearwardly projecting shelf b' at the lower edge of said opening which constitutes the bottom of the card magazine B'. Said plate is provided below said opening b with vertical grooves b² (Fig. 12) which serve to receive the point of the card-engaging prongs of the ejector slide. Said plate B is further provided beneath the level of the opening b and near the lateral edges of the plate (Fig. 6) with vertical slots b³, in which are located the revoluble members C¹⁹, said members C¹⁹ having pivots or journals b⁴ at their extremities journaled in lugs b⁵ with which the plate B is equipped. As shown in Fig. 10, the plate B is provided near its lower end with a forwardly curved portion, or enlargement, b⁶ above which is a ledge b⁷ upon which a card rests after separation from the pack. A card rests, after such separation, upon said ledge with an end between two wings of each revoluble member C¹⁹, and, upon actuation of said revoluble members, the card is thrown forwardly and caused to drop upon the, for the time being, projecting stop, or retainer, C²³. This will be understood by reference to Fig. 10. The magazine is shown supplied with cards b⁸, and one of the cards b⁸ is shown resting upon the ledge b⁷ and in position to be thrown forwardly into the discharge-chute C²¹ when the revoluble members C¹⁹ are actuated through a quarter revolution. The bottom b' of the magazine B' is shown equipped at its rear end with standards b⁹ which support the

shaft B⁵; and connecting the upper end of the standards b⁹ and the plate B are side rods b¹⁰. The follower B² is equipped, as shown in Fig. 7, with perforate ears b¹¹ which slide upon the rods b¹⁰. The rack B³ extends through a stirrup b¹² suspended from the shaft B⁵, as shown in Figs. 7 and 9. The bottom plate b' of the magazine is equipped, as shown in Fig. 8, with a lug b¹³ through which passes a vertical screw b¹⁴ which forms an adjustable support for a sliding member which constitutes a part of the tension-relieving device D.

As shown in Fig. 12, the main portion of the guide C' and the main portion of the coin-chute C² are formed integrally with each other in the form of a rearwardly projecting vertically disposed plate which is applied to one lateral edge of the plate B in any suitable manner, as by screws c. The slide bar C is held in the guide C' by means of removable clips c', as shown in Figs. 3 and 7. Said slide bar C is equipped with a lateral cam c², as shown in Figs. 3 and 12; and the lower portion of the swinging side plate C³ of the coin-chute with a forward projection c³ which is located in the path of said cam, as shown in Fig. 5, whereby as the slide bar approaches the lower end of its traverse the swinging side member of the coin-chute is actuated to dislodge any coin which might otherwise obstruct the passage. The coin-chute is provided at its lower end, as shown in Fig. 3, with a forwardly and downwardly inclined flange c⁴, which serves to direct the coin c⁵ between a flange c⁶ and an inclined flange c⁷ with which the locking pawl C⁶ is equipped, whereby the slide bar C⁶ may be unlocked by a coin preparatory to actuating said slide bar. The lower end of the slide bar C is provided with a notch c⁸ which normally receives the flange or head c⁷ of the locking pawl C⁶. As shown in Fig. 4, an additional spring is provided which tends to hold the swinging side member C³ of the coin-chute normally in a vertical position. As shown in Fig. 3, the front edge of the slide bar C is slotted or recessed to receive the ratchet bar C⁸, which is applied to the slide bar in any suitable manner. The upper end of the slide bar is equipped with a forwardly projecting arm which terminates in a hook or handle c¹⁰ which moves, as shown in Fig. 1, in slot c¹¹ which is provided in the casing plate A². Said hook, or handle, is equipped with a plate c¹² which moves with the slide member and forms a closure for the slot c¹¹. Above the coin-chute c² is a chute section c¹³ which serves to direct the coin into the chute C².

As appears from Fig. 6, I preferably employ two or more pawls C⁹ which operate upon the ratchet bar C⁸, but this is a matter of minor importance.

The arm C¹⁰ extends parallel with the front of the casing, and the lug C¹³ is located

about the center of the rock-member C¹⁴. The details of the connection between the arm C¹⁰ and the rock-member C¹⁴ are unimportant, so long as a slight rocking motion of the member C¹⁴ is permitted. As appears from Figs. 6 and 10, I have shown the arm C¹⁰ equipped with a horizontal lug c¹⁴ which engages a vertical lug c¹⁵ with which the rock-member C¹⁴ is equipped, these lugs tending to prevent the slide bar C from being turned out of its proper plane should any lateral pressure be applied to the hook or actuating handle c¹⁰. The rock-member C¹⁴ is equipped with depending arms c¹⁶ having extremities c¹⁷ adapted to bear upon the front face of the plate B, and having adjustable points c¹⁸ adapted to engage a card, as shown in Fig. 11. Said adjustable points c¹⁸ register with the vertical slot b² in the front face of the plate B, so that the points will not be dulled as the ejector slide moves downwardly. The rock-member C¹⁴ is connected by a spring c¹⁹ with the slide C¹⁵, as shown in Fig. 6. Said rock-member is equipped with a stud c²⁰ which serves as a stop to prevent the spring c¹⁹ from turning the member C¹⁴ too far. The normal position of the rock-member C¹⁴ is shown in Fig. 10. When the slide C is depressed, force is transmitted through the member C¹¹ and lug C¹³, thus tilting the rock-member to the position shown in Fig. 11 and causing the points c¹⁸ to engage a card.

As illustrated in Figs. 15 and 16, each revoluble member C¹⁹ is provided with four wings c²¹ which are beveled at their upper ends as indicated at c²²; and as indicated in Fig. 17, the cams C²⁰ are provided with beveled surfaces c²³ which serve to engage the beveled surfaces c²² and rotate the member c¹⁹ when the card-ejecting slide is actuated. As shown in Fig. 14, flat springs c²⁴ are applied to the rear surface of the plate B and engage the wings of the members C¹⁹, thus preventing accidental rotation.

As appears from Fig. 14, the friction members C¹⁸ comprise spring-held arms equipped with rollers c²⁵ which are located normally beneath the lower ends of the rods C¹⁶. When the card-ejector is depressed, the arms are swung to the position indicated in Fig. 19, the rollers remaining in frictional engagement with the rods C¹⁶.

The rock-shaft C²⁴ is equipped, as shown in Fig. 14, with a spring c²⁶, which tends normally to project the stop C²³ into the card-discharge chute C²¹, it being observed that the stop C²³ extends through an opening c²⁷ in the plate B. As has been indicated, when the ejector slide is moved downwardly, the cam C²⁶, shown in Fig. 3, is withdrawn from the crank C²⁵, thereby permitting the rock-shaft C²⁴ to move under the action of its spring and project the stop C²³.

The friction relieving device D comprises a

slide d equipped with a spring d^1 which tends to hold the slide at the forward end of its traverse; a spring-held pawl d^2 applied to the slide d ; and a ratchet wheel d^3 secured on one end of the shaft B^5 and adapted to be engaged by the pawl d^2 in the rearward movement of the slide d . The rear end portion of the slide d is provided with a slot d^4 which receives a stud or screw d^5 projecting from one of the standards b^9 . The front portion of the slide d rests upon the adjustable screw b^{14} , as shown in Fig. 8; and the front portion of said slide is equipped with a lateral stud d^6 which normally is located in a recess d^7 with which the rear edge of the slide-bar C is provided, as shown in Fig. 3. At the upper portion of said recess is a sloping shoulder d^8 , and above said sloping shoulder is a straight vertical surface serving as a cam surface, so that when the slide-bar C is depressed, the stud d^6 will ride upon the sloping shoulder d^8 and the vertical edge of the bar above said shoulder, thereby forcing the slide d rearwardly and actuating the shaft B^5 , thereby to relieve the pressure of the follower upon the cards. The slide d is inclined slightly, so that by lowering the adjustable member b^{14} upon which it rests, as shown in Fig. 8, a longer throw of the slide is provided for.

Provision is made, as shown in Fig. 3, for the disengagement of the ratchet bar C^8 from the pawl C^9 to permit the return of the slide-bar C to its elevated position. This is accomplished by providing a large enough notch to enable the pawl to turn with relation to the bar. This is an expedient which is common in mechanics.

The operation will be readily understood from the foregoing detailed description. The slide-bar C may be released by dropping a coin through the chute-section c^{13} into the chute C^2 , thus retracting the locking pawl C^9 and withdrawing it from the notch which it engages at the lower end of this slide-bar. Thereupon, the customer, by grasping the handle c^{10} may depress the slide-bar C , and through the medium of the arm C^{10} rock the member C^{14} on its pivot to cause the card-engaging points to engage a card, after which continued pressure will cause the slide C^{15} to move downwardly with the member C^{14} and separate a card from the front face of the pack of cards within the magazine B^1 . During the initial portion of the movement of the slide-bar C , the tension-relieving device D is actuated to relieve the pressure upon the card follower. Once the downward movement of the slide is begun, the movement must be completed before the slide can return to its elevated position, owing to the engagement of the pawls C^9 of the ratchet bar C^8 . As the slide nears the lower end of its traverse, the cam C^2 engages the lower end of the swinging side member

of the coin-chute C^2 and actuates said side member to dislodge any coin which may become wedged in the coin-chute. During the initial portion of the downward movement of the slide bar C the cam C^{20} carried by the lower end of the slide bar is withdrawn from the crank C^{25} , thereby permitting the shaft C^{24} to rock under the action of its spring and project the stop C^{23} . As the slide-bar moves downwardly, the slide C^{15} moving therewith brings the cams C^{20} into engagement with the revoluble members C^{19} , causing said members to make a quarter revolution, thereby throwing any card which may be resting upon the ledge b^7 forwardly and permitting the same to fall upon the stop C^{23} . During the return movement of the slide bar C^{23} the cam C^{20} again engages the crank C^{25} and withdraws the stop C^{23} , thereby permitting a card to pass through the discharge chute and be delivered at the discharge opening C^{22} .

The foregoing detailed description has been given for clearness of understanding only, and no undue limitation is to be understood therefrom.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a vending machine, the combination of a card-magazine, a card-separating slide constructed and arranged to slide the outermost card from the pack thereof in the magazine, and a pair of revoluble members constructed and arranged to receive the card so separated from the pack and move it to a different plane for delivery into the discharge chute.

2. The combination of a card magazine, a card-separating slide, and a pair of revoluble members actuated during the operation of the slide and serving to receive a card at one operation of the machine and deliver it at another operation of the machine.

3. The combination of a card magazine, a card-separating slide, a pair of revoluble members having channels for the ends of the cards, and means actuated with the slide for turning said revoluble members, for the purpose set forth.

4. The combination of a card magazine, a card-separating slide, card-receiving and ejecting means serving to receive a card from said slide at one operation and ejecting it at another operation of the machine, and a movable stop serving to engage the card after the latter is discharged from said card receiving and ejecting means.

5. The combination of a card magazine, a card-separating slide, a pair of revoluble card receiving and ejecting members, means moving with said slide for actuating said revoluble members, a movable stop, means for projecting said stop during the ejecting movement of said slide, means for operating

said revoluble members during the ejecting movement of said slide, and means for retracting said stop during the return movement of said slide.

5 6. The combination of a card magazine, a card-follower therein, a slide movable transversely with relation to the direction of movement of said follower, and card-separating means, comprising a slide and a rock-member mounted thereon and connected
10 with said first-named slide, whereby said rock-member is turned when said first-named slide is actuated and is then moved bodily, for the purpose set forth.

15 7. The combination of a card magazine, a slide, a rock-member pivotally supported thereon and equipped with card-engaging means, means for turning said rock-member to cause a card to be engaged and actuating
20 said slide for separating the card so engaged from the others in the magazine.

8. The combination of a card magazine, a slide, a rock-member mounted on said slide and equipped with card-engaging points,
25 and a second slide connected with said rock-member and serving to turn the rock-member and actuate the first-named slide.

9. In a vending machine, the combination of a card magazine, a follower therein, yielding
30 means tending to move said follower in one direction, card-separating means, and means for relieving the pressure of said follower for the purpose set forth.

10. The combination of a card magazine, a
35 follower therein, means tending to move said follower in one direction, a card-ejecting slide, a device serving to relieve the pressure of said follower upon the cards, and means actuated with said slide for actuating the
40 pressure-relieving device.

11. The combination of a card magazine, a
45 follower therein, a spring tending to move said follower in one direction, a card-separating slide, a cam moving with said slide, and a pressure-relieving device actuated by said cam, for the purpose set forth.

12. The combination of a card magazine, a
50 follower therein equipped with a rack, a shaft equipped with a pinion meshing with said rack, a spring tending to rotate said shaft in
one direction, a card-shifting slide, a ratchet-wheel applied to said shaft, a pawl co-acting with said ratchet-wheel, and a pawl-actuating member actuated by said slide.

13. The combination of a card magazine, a
55 follower therein equipped with a rack, a shaft equipped with a pinion meshing with said shaft, a spring connected with said shaft and serving to move said follower in one direction,
60 a ratchet-wheel connected with said shaft, a pawl co-acting with said ratchet-wheel, a slide carrying said pawl, a slide-bar equipped with a cam serving to actuate said first-named slide, and card-ejecting means
65 actuated by said second-named slide.

14. The combination of a card magazine, a card-separating slide, cams movable therewith, and revoluble card receiving and ejecting members having wings provided with beveled surfaces adapted for engagement
70 with said cams, for the purpose set forth.

15. In a machine of the character set forth, the combination of a plate equipped with a ledge, a slide movable parallel with the face
75 of said plate and equipped with card-engaging means serving to separate a card from the pack and deposit the same upon said ledge, revoluble card receiving and ejecting members, and means actuated by said slide
80 for actuating the said revoluble members, for the purpose set forth.

16. In a machine of the character set forth, the combination of a vertical plate, a card magazine projecting rearwardly from the upper
85 portion thereof, said plate being provided on its front surface with slots, a slide, a rock-member mounted on said slide and equipped with card-engaging points registering with said slots, and means for turning
90 said rock-member and actuating said slide, for the purpose set forth.

17. In a machine of the character set forth, the combination of a card magazine, a horizontally movable follower therein, a vertically
95 movable slide, a spring normally holding said slide in an elevated position, a second slide, a rock-member mounted on the second-named slide equipped with card-engaging means, and means carried by said
100 first-named slide for actuating said rock-member and moving said second-named slide, for the purpose set forth.

18. In a machine of the character set forth, the combination of a vertically disposed plate
105 equipped with a rearwardly projecting shelf, a card magazine of which said shelf forms the bottom, a follower for said magazine, a vertically disposed slide, and card-engaging means actuated by said slide.

19. In a machine of the character set forth,
110 the combination of a card magazine, a horizontally movable follower therein, a vertically movable slide, friction members engaging said slide, a rock-member mounted on
115 said slide and equipped with card-engaging means, a second slide connected with said rock-member, and a spring normally holding said second-named slide in an elevated position.

20. In a machine of the character set forth,
120 the combination of a frame provided with a card-discharge passage, a magazine for the cards provided with a follower, a rock-shaft provided with a stop adapted to move in said
125 passage, a card-ejecting slide operating to separate a card from the pack thereof in the magazine, means for receiving the card so separated to move it to a different plane to discharge it into said passage, and means
130 carried by said slide for actuating said rock-

shaft and said card-receiving means, for the purpose set forth.

21. In a machine of the character set forth, the combination of a vertically-disposed plate having a perforation in the upper portion thereof, a card-magazine equipped with a follower adapted to present cards at said perforation, a rock-member equipped with pointed members for engaging a card con-

structed and arranged to normally extend to out of engagement with the cards, and means for turning said rock-member on its axis and thus moving it bodily to shift a card from the pack, for the purpose set forth.

HERBERT S. MILLS.

In presence of—

J. H. LANDES,

R. A. SCHAEFER.