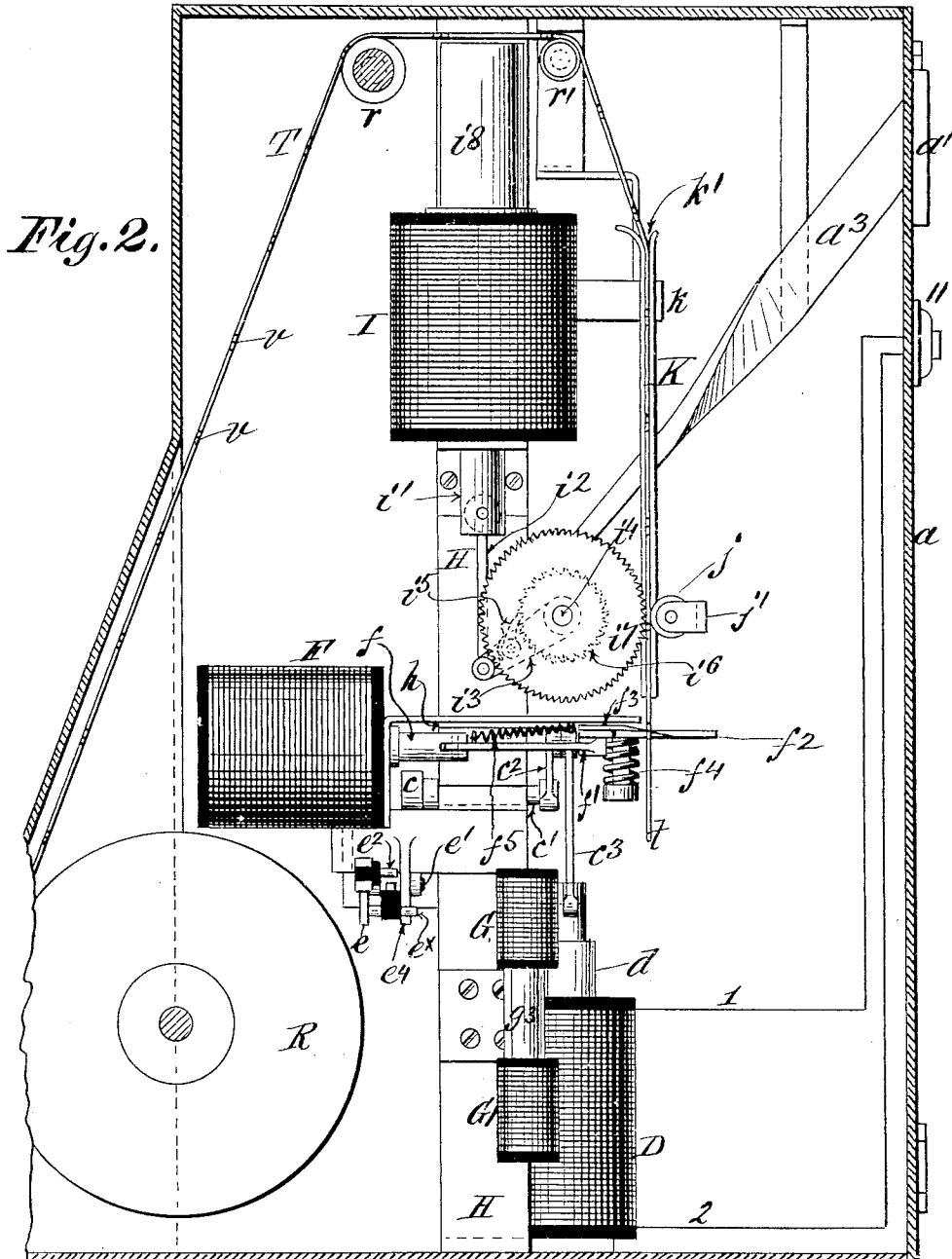


C. J. ROHLAND.
AUTOMATIC VENDING MACHINE.
APPLICATION FILED MAR. 21, 1913.

1,128,518.

Patented Feb. 16, 1915.

4 SHEETS—SHEET 2.



Witnesses:
Dorothy L. Matt
Lillian Matt

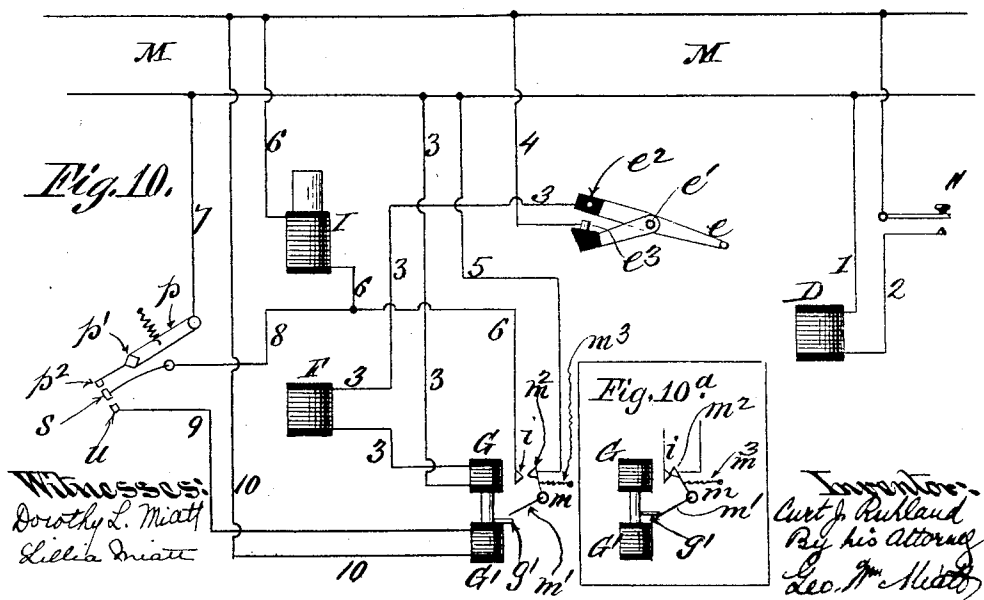
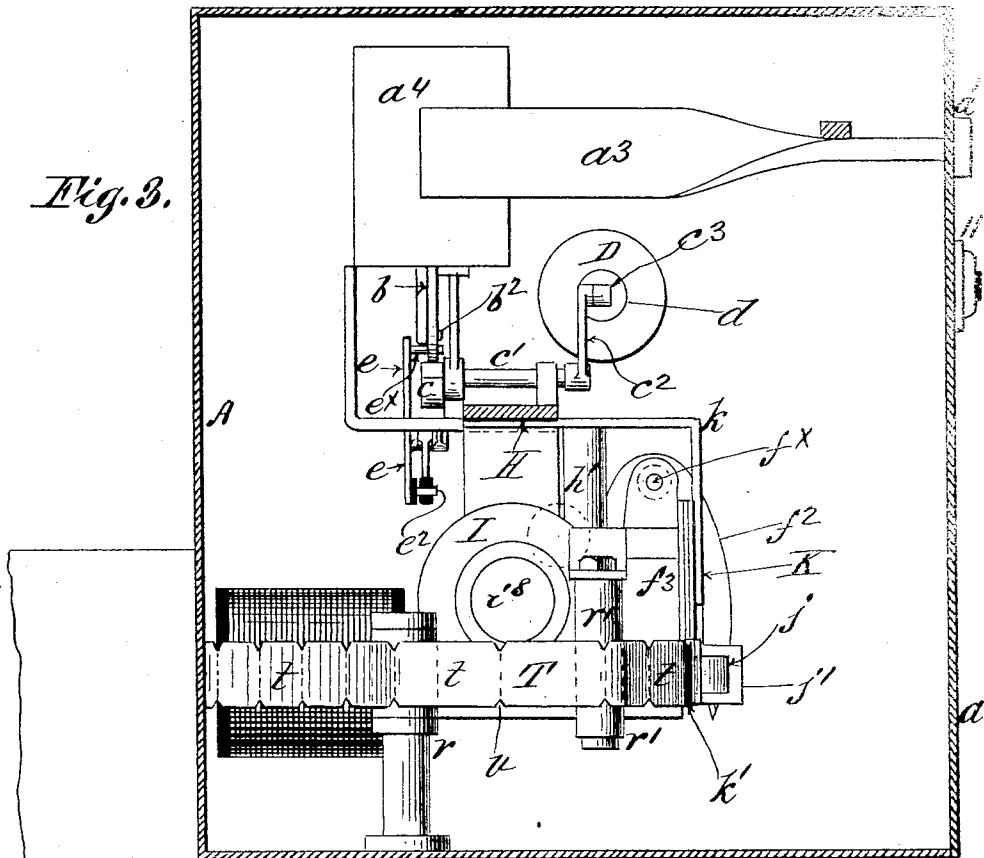
Inventor:
Curt J. Rohland
By his attorney
Leo J. Matt

C. J. ROHLAND.
 AUTOMATIC VENDING MACHINE.
 APPLICATION FILED MAR. 21, 1913.

1,128,518.

Patented Feb. 16, 1915.

4 SHEETS-SHEET 3.

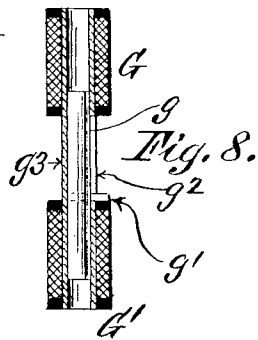
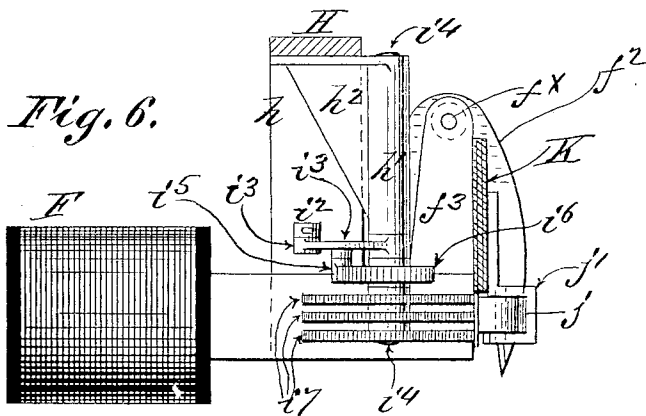
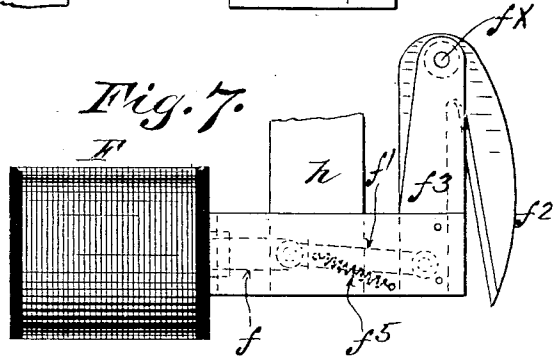
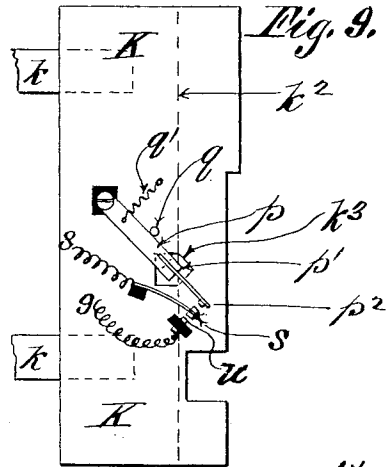
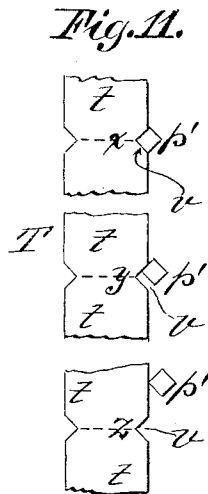
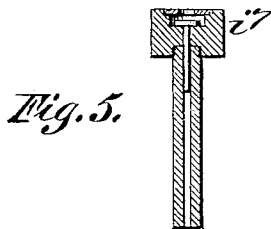
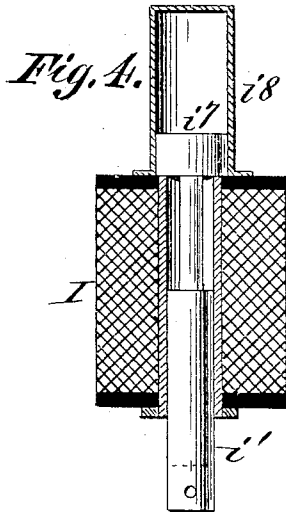


C. J. ROHLAND.
 AUTOMATIC VENDING MACHINE.
 APPLICATION FILED MAR. 21, 1913.

1,128,518.

Patented Feb. 16, 1915.

4 SHEETS-SHEET 4.



Witnesses:
 Dorothy L. Matt
 Lillia Matt

Inventor:
 Curt J. Rohland
 By his Attorney
 Geo. W. Matt

UNITED STATES PATENT OFFICE.

CURT J. ROHLAND, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
HOBBS MANUFACTURING COMPANY, A CORPORATION OF MASSACHUSETTS.

AUTOMATIC VENDING-MACHINE.

1,128,518.

Specification of Letters Patent.

Patented Feb. 16, 1915.

Application filed March 21, 1913. Serial No. 755,906.

To all whom it may concern:

Be it known that I, CURT J. ROHLAND, a subject of the Emperor of Germany, having declared my intention of becoming a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Automatic Vending-Machines, of which the following is a specification.

The essential features of my invention are applicable to automatic vending apparatus generally, although herein shown more particularly as adapted and applied to ticket vending machines, the basic principle involved being the utilization of the solenoid as a means of actuating the several operative parts of vending apparatus irrespective of the use to which the same may be applied.

Incidentally the invention includes certain minor features in the specific construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1, represents what may be designated as a front elevation of the apparatus, partly in section, the door of the casing or cabinet being omitted; Fig. 2, a sectional elevation taken upon plane of line 2—2 Fig. 1; Fig. 3, a horizontal section taken upon plane of line 3—3 Fig. 1; Fig. 4, a sectional detail of the feed-actuating solenoid; Fig. 5, a sectional detail of the dash-pot piston of said feed-actuating solenoid; Fig. 6, a top view of the feed mechanism; Fig. 7, a top view of the shear mechanism; Fig. 8, a sectional detail of the solenoid switch; Fig. 9, is a view showing the feed-controlling switches; Fig. 10, a diagram showing the electric circuits. Fig. 10^a, is a detail showing the action of the switch plunger; Fig. 11, is a series of diagrams illustrating the operation of the automatic release.

The operative parts are inclosed in a suitable casing A, closed by a door a, having a slot plate a', through which the actuating or purchase coin a², is inserted into the conduit a³, the upper end of which is coincident with the coin slot in the plate a', when the door a, is closed.

The coin a², is received at the lower end of the conduit a³, by the grooved end b', of a

trip lever b, (see Fig. 1) pivoted at b², to a stationary part, the other end b², of the trip lever b, being curved upward and resting against a cam c, on the rock shaft c', fulcrumed in a stationary support. A hood a⁴, protects the lower end of the conduit a³, and the trip lever b. Rigidly secured to the rock shaft c', is an arm c², connected by the pitman rod c³, with the plunger or core d, of the solenoid D, which latter is connected by the wires 1 and 2 with the main electrical circuit M, a push button or switch 11 being used to close and open the circuit through the solenoid D.

When a coin a², descends the conduit a³, and rests in the grooved end b', of the trip lever b, with its upper peripheral edge against the lower edge of the conduit as shown in Fig. 1, if the push button 11 be then pressed inward to include the solenoid D, in the electric circuit, the plunger d, will of course be drawn downward, rocking the shaft c', through the medium of the pitman c³, and arm c², and thereby turning the cam c, so that the lever b, is free to yield to its own weight and that of the coin, which it does sufficiently to release the coin a², into a suitable receptacle indicated by W, in Fig. 80 1. When the button 11 is released breaking the electric circuit, a retractile spring c⁴, connected with the arm c², returns the latter, the cam c, trip lever b, and solenoid plunger d, to their normal positions, shown 85 in Fig. 1.

One end e^x of an electric switch lever e, pivoted at e', to a stationary part, projects between fingers b⁴, on an arm pendent from the trip lever b, as shown more particularly 90 in Fig. 1. Consequently when the trip lever b, is rocked as hereinbefore described the point e², contacts with the point e³, thereby closing the circuit 3—4 connected with the main circuit M. In the circuit 95 3—4 is interposed the shear-actuating solenoid F, and the switch solenoid G.

The plunger f, of the shear-actuating solenoid F, is connected by a pitman f', with a swinging V-shaped shear blade f², pivoted at f^x, to a stationary blade f³, and arranged to act in conjunction therewith to sever individual tickets t, from the strip T. The solenoid F, and the stationary shear

blade f^3 , are mounted on a bracket h , attached to the upright H, the U shaped shear being held pressed firmly against that stationary shear blade f^3 , by a spring f^4 . A retractile spring f^5 , (Figs. 2 and 7) tends constantly to draw out the plunger f , of the solenoid F, and to open the movable shear blade f^2 , the energizing of the solenoid F, drawing the plunger f , inward to effect the shearing action.

The switch solenoid G, being in the same circuit with the shear-actuating solenoid F, is excited simultaneously therewith to raise the switch plunger g , which carries the finger g' , protruding through a longitudinal slot g^2 , in one side of the tubular lining g^3 , said tube extending into the solenoid G, as well as into its companion or releasing solenoid G', and acting as a guide for the switch plunger g . This construction is shown in Fig. 8.

When the contact between the points e^2 , and e^3 , is broken by the return of the trip lever b , to its normal position as hereinbefore set forth, the release of the switch plunger g , causes it to descend until its finger g' , rests against the arm m' , of the switch m , causing the arm m^2 , of the latter to contact with the point i , against the resistance of the retractile spring m^3 , as shown in Fig. 10^a. This closes the circuit 5—6—M, and throws the feed-actuating solenoid I, into action.

The plunger i' , of the feed-actuating solenoid is pivotally connected by a rod i^2 , with an arm i^3 , loosely fulcrumed on a shaft i^4 , mounted in a bearing h' , on a bracket h^2 , on the standard H. The arm i^3 , carries a pawl i^5 , engaging with a ratchet wheel i^6 , rigidly attached to the shaft i^4 , as are also the disks i^7 , the serrated peripheries of which engage with the ticket strip T, to feed the same downward. A bearing roller j , mounted upon a bracket j' , attached to the feed channel plate or member K, (in turn rigidly attached by brackets k , k , to the standard H) is arranged on the same horizontal plane with the axis of the shaft i^4 , to sustain the ticket strip T, against the action of the feed disks i^7 , so that the latter will advance the ticket strip T.

The ticket strip T, is fed from a reel R, over guide rolls r , r' , and into the channel h' in the guide member or plate K, one edge of the strip being alined against the vertical straight edge h^2 , by a gravity guide rest n , mounted on pivotally supported arms n' , n' , as shown most clearly in Fig. 1.

Equidistant V-shaped nicks v , are formed in the edges of the strip T, corresponding to the length of the tickets. These notches on one side of the ticket strip are utilized for the purpose of releasing and stopping the mechanism after the desired length of feed has been accomplished. To this end I use

a rigid switch arm p , formed with a feeler p' . This arm p , is pivotally mounted on the face of the channel member K, and is normally held against a stop q , (Fig. 9) by a retractile spring q' . The feeler p' , protrudes into the path of the ticket strip T, through an opening k^3 , formed for it in the channel member K, as shown in Fig. 9. On the outer end of the arm p , is a flexible contact member p^2 . Normally the feeler p' , rests in a notch on the inner edge of the ticket strip (that which contacts with the straight edge h^2 , in its passage through the channel) engaging therewith as shown at x , in Fig. 11. When the feed-actuating solenoid is electrically energized as before stated and the ticket strip T, begins to move under the impulse of the serrated forwarding disks i^7 , the rear edge of the notch v , forces the feeler p' , outward sufficiently (y , Fig. 11) to cause the flexible contact p^2 , to engage another flexible contact s . This closes the circuit 7—8—6—M, and insures the electrical energizing of the solenoid I, for, and until the completion of, the feed stroke, as said solenoid I, would otherwise be cut out when the advance of the ticket strip forced the feeler p' , entirely out of the notch v , and on to the longitudinal edge of the strip (as at z , Fig. 1) thereby causing the contact s , to engage with the contact u , and closing the circuit 7—9—10—M, thus energizing the releasing solenoid G', causing it to pull down the switch plunger g , past the switch arm m' , and allowing the retractile spring m^3 , to break the contact i , m^2 , and open the circuit 5—6—M, which would of course cut out the solenoid I, were it not for the fact that the circuit 7—8—6—M, had been established as before stated, to be maintained while the feeler p' , is in contact with the longitudinal edge of the ticket strip T, and until said feeler is forced by the spring q' , into a succeeding notch v , thereby breaking all the contacts p^2 , s — u , opening the circuit 7—8—6—M, and cutting out the feed-actuating solenoid I.

In order to render the action of the feed mechanism sufficiently slow and deliberate to obviate a sudden, precipitate stroke of the ratchet arm i^3 , &c., when the feed-actuating solenoid I, is energized, which would render the device inoperative, I connect the plunger i' , of the solenoid I, with a valve piston i^7 , extending into a dash pot i^8 , on top of the solenoid, as shown more particularly in Figs. 4 and 5, by which means the upward stroke of the plunger i' , rod i^2 , and arm i^3 , is retarded sufficiently to insure smoothness and uniformity of action.

By the use of solenoids, actuating reciprocatory plungers by which the several mechanical operations are effected and controlled I am enabled to greatly simplify and cheapen automatic vending apparatus,

render the operation thereof more expeditious, and the supervision and adjustment thereof more convenient and economical.

What I claim as my invention and desire to secure by Letters Patent is,

1. In automatic vending apparatus actuated by electricity, a plurality of electric circuits in which are interposed solenoids, actuating reciprocatory plungers connected with operative parts for performing successive functions.

2. In automatic vending apparatus actuated by electricity, a plurality of electric circuits in each of which is interposed a solenoid actuating a reciprocatory plunger connected with and controlling an operative part, and means whereby one solenoid controls another solenoid and circuit.

3. In automatic vending apparatus actuated by electricity, a solenoid and plunger, and a second solenoid in a circuit controlled by the first solenoid and arranged to actuate feeding mechanism.

4. In automatic vending apparatus actuated by electricity, a solenoid and plunger, a second solenoid and plunger in a circuit controlled by the first solenoid and arranged to actuate feeding mechanism, and a third solenoid and plunger in a third circuit arranged to actuate shearing mechanism.

5. In automatic vending apparatus, actuated by electricity, a solenoid and plunger actuating and controlling an operative part and a solenoid and plunger actuating and controlling another operative part and controlled by the first solenoid.

6. In automatic vending apparatus actuated by electricity, a solenoid and plunger actuating and controlling an operative part, a second solenoid and plunger actuating and controlling an operative part and controlled by the first solenoid, and a third solenoid and plunger actuating and controlling an operative part.

7. In electrically operated automatic vending apparatus, a strip formed with edge notches, strip feeding mechanism, and a feeler engaging said notched edge of the strip and controlling said strip feeding mechanism.

8. In electrically operated vending apparatus, a strip formed with edge notches, strip feeding mechanism, an electrical switch provided with a feeler engaging the notched edge of the strip, and two electric circuits controlled by said switch, for the purpose described.

9. In electrically operated vending apparatus of the character designated, the combination of a solenoid, a plunger operated by said solenoid, a ratchet lever operated by said plunger, a shaft rotated by said ratchet, a peripherally serrated feed disk on said shaft and an opposed bearing roller, ar-

ranged to forward a strip, for the purpose described.

10. In electrically operated vending apparatus, a strip formed with edge notches, strip feeding mechanism, an electrical switch provided with a feeler engaging the notches in the strip and arranged to shift the control of the feed mechanism from one electrical circuit to another, for the purpose set forth.

11. In electrically operated vending apparatus, a solenoid and plunger controlling the action of strip feeding mechanism, two electrical circuits connected with said solenoid, a notched strip forwarded by the feed mechanism, and a feeler actuated by the notched strip to throw the solenoid into first one electric circuit and then the other, for the purpose described.

12. In vending apparatus of the character designated, the combination of solenoid, a plunger reciprocated thereby, a movable shear blade pivotally connected with said plunger, a stationary blade arranged in conjunction with said movable shear blade, means for automatically feeding a strip between said shear blades, and means for automatically opening and closing the electric circuit in which said solenoid is interposed, for the purpose described.

13. In vending apparatus of the character designated, the combination of a solenoid, a plunger reciprocated thereby, a ratchet lever operated by said plunger, a shaft rotated by said ratchet, a peripherally serrated feed disk on said shaft, an opposed bearing roller, means for automatically opening and closing the electric circuit in which said solenoid is interposed, a piston attached to the plunger, and a dash pot inclosing said piston for the purpose of controlling the stroke of the plunger and feed mechanism.

14. In vending apparatus of the character designated, the combination of two solenoids each in a separate electric circuit, a plunger common to both solenoids, a switch finger on said plunger, and a switch in a third electric circuit actuated by said plunger finger, for the purpose described.

15. In vending apparatus of the character designated, the combination of two solenoids each in a separate electric circuit, a plunger common to both solenoids, a switch finger on said plunger actuating a switch in a third electric circuit, solenoid in said third circuit, a plunger actuated by said solenoid, and feed mechanism operated by said plunger.

16. In vending apparatus of the character designated, the combination of a solenoid and plunger arranged to actuate an operative part, a primary electric circuit in which said solenoid is interposed, and a secondary circuit connected therewith and controlled by a plunger common to two solenoids, each in a different circuit, and means for auto-

matically opening and closing said latter circuits, for the purpose described.

17. In vending apparatus of the character designated, the combination with a guide way for a strip having controller notches in one edge, of a straight edge and a gravity guide rest arranged to hold the notched edge of the strip against said straight edge, and

in contact with a feeler controlling an electric switch by which the feed is governed, 10 for the purpose described.

CURT J. ROHLAND.

Witnesses:

FRANK W. ROBINSON,
GEO. WM. MATT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."