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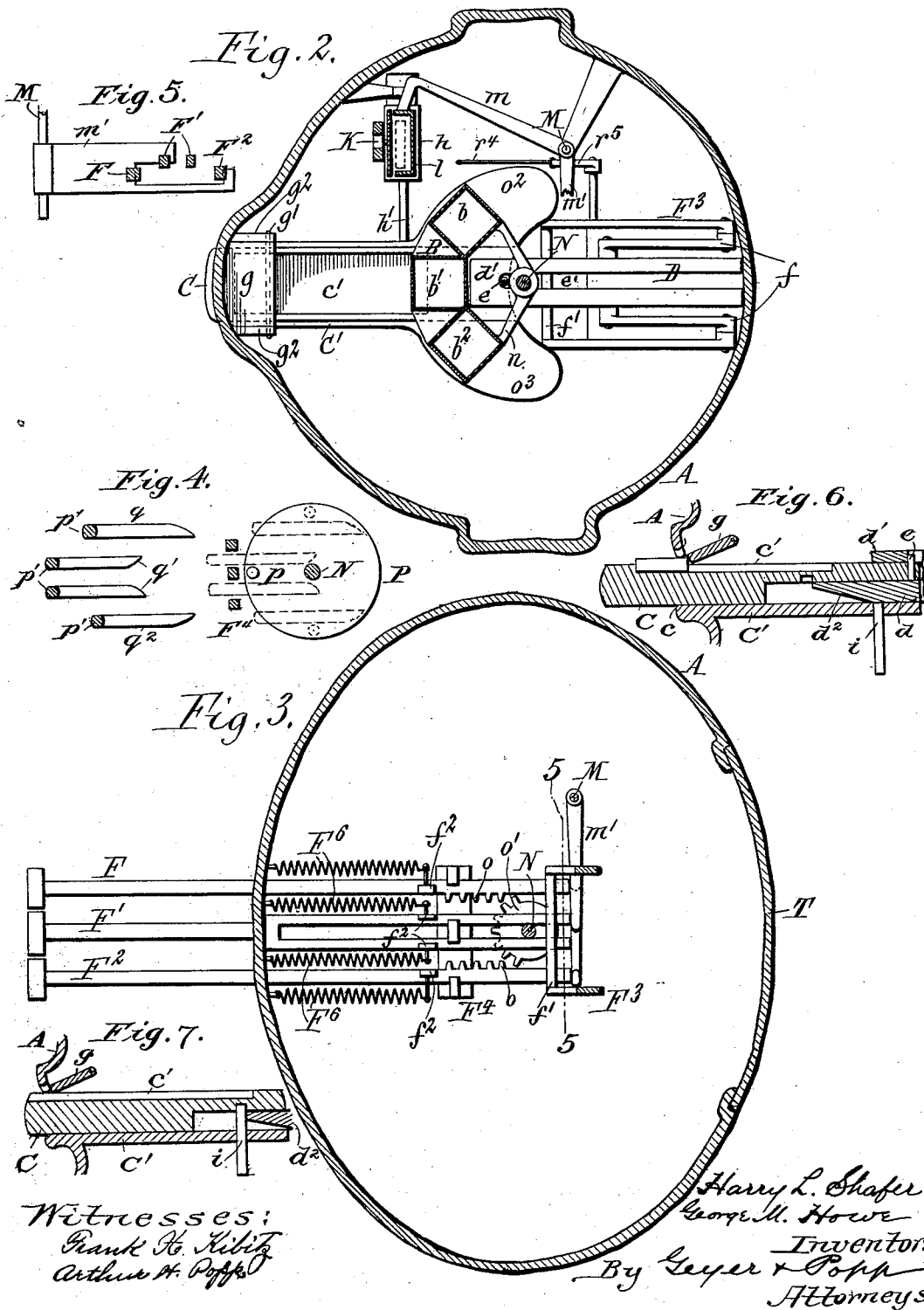
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VENDING MACHINE.

APPLICATION FILED APR. 19, 1901.

NO MODEL.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,971, dated March 3, 1903.

Application filed April 19, 1901. Serial No. 56,580. (No model.)

To all whom it may concern:

Be it known that we, HARRY L. SHAFER, residing at Salem, in the State of Ohio, and GEORGE M. HOWE, residing at Buffalo, in the State of New York, citizens of the United States, have invented new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention relates to a coin-controlled vending-machine designed more especially for delivering chewing-gum, confectionery, and similar goods, although the same may be employed to deliver other articles of merchandise.

To render the machine amusing and attractive, as well as useful, its case preferably has the form of a human head, such as a clown's head, surmounted by the usual conical cap, and the delivery-slide of the machine is projected through the mouth of the hollow figure in delivering the goods, to imitate the human tongue.

One of the objects of our invention is the construction of a simple actuating mechanism which is adapted to a case and delivery-slide of the above-described form and arrangement.

Our invention has the further objects to improve and simplify the construction of the goods-ejector or delivery device and its actuating mechanism and to provide the machine with a multiple goods-magazine adapted to contain a variety of articles and having simple and compact shifting devices which enable the purchaser to conveniently present either of its compartments to a single ejector or delivery-slide.

In the accompanying drawings, consisting of two sheets, Figure 1 is a vertical central section of our improved vending-machine. Figs. 2 and 3 are horizontal sections thereof in lines 2 2 and 3 3, Fig. 1. Fig. 4 is a fragmentary horizontal section in line 4 4, Fig. 1, showing the tumbler for temporarily locking the oscillating multiple magazine in position. Fig. 5 is a fragmentary transverse section in line 5 5, Fig. 3. Fig. 6 is a fragmentary vertical longitudinal section of the delivery-slide and its locking-pawl, showing the slide locked in its partially-projected position. Fig. 7 is

a similar view showing a modification of the delivery-slide.

Like letters of reference refer to like parts in the several figures.

A is the case of the machine, which is preferably formed to represent the head of a clown; but the same may have any other suitable configuration, if desired. When constructed as shown in the drawings, the top of the case, which represents the clown's cap, is made removable to afford access to the interior of the case for filling the goods-magazine and making repairs.

B is an upright magazine for chewing-gum or other goods to be delivered by the machine, which magazine is arranged centrally in the upper portion of the case.

C is a horizontal delivery-slide forming the tongue of the figure and arranged underneath the discharge end of the magazine, so that the lowermost piece of goods rests thereon, as shown in Fig. 1. This delivery-slide is arranged in line with and extends through an opening *c*, forming the mouth of the figure, and is guided in a channel-bar or horizontal guide *C'*, having its bottom arranged on a level with the lower edge of the mouth. The delivery-slide *C* is provided in its upper side with a longitudinal pocket or cavity *c'*, extending nearly to the front end thereof and adapted to receive the lowermost piece of goods from the magazine *B*.

The delivery-slide coöperates with a pusher or ejector *D*, which first removes the lowermost piece of goods in the magazine from the superposed pile and pushes it into the pocket *c'* of the delivery-slide and then projects the slide through the mouth *c* of the case far enough to permit the purchaser to take the goods from the pocket. The ejector *D* consists of a slide, arranged behind the delivery-slide *C* and having its front portion guided in the channel-bar *C'* and bifurcated horizontally to receive the rear portion of the delivery-slide. As shown in Fig. 1, the delivery-slide is recessed on its under side to receive the lower jaw *d* of the bifurcated ejector. The upper jaw *d'* of the ejector is located immediately in rear of the goods-magazine in the retracted position of the ejector and

the delivery-slide, and said jaw is thinner than the pieces of goods, so that upon moving the ejector forwardly its upper jaw displaces only the lowermost piece, in a common 5 manner. The ejector preferably has a loose connection with the delivery-slide, so that it moves idly on the same while displacing the lowermost piece of goods and pushes out the slide only during the final portion of the 10 stroke of the ejector. In the construction shown in the drawings this slack connection is formed by a vertical pin *e* projecting upwardly from the tail of the delivery-slide and entering a longitudinal slot *e'*, formed in the 15 ejector by bifurcating the latter, as shown in Figs. 1 and 2. During the forward stroke of the ejector its lower jaw *d* strikes the front end of the lower recess of the delivery-slide and projects the latter, and upon the return 20 stroke of the ejector the front end of its slot *e'* comes in contact with the pin *e* of the delivery-slide, withdrawing the latter to its former position.

Any suitable means may be employed for 25 operating the ejector, the devices shown in the drawings consisting of one or more horizontal push-rods or plungers *F F' F²*, arranged in the lower portion of the case and extending through its front wall, and a vertically- 30 swinging duplex lever *F³*, arranged to be rocked by either of said push-rods and connected with the ejector by links *f*. The lever *F³* is suitably fulcrumed within the case and provided at its lower end with a cross-bar *f'*, 35 which is arranged in the path of shoulders or projections *f²*, arranged on the push-rods *F F' F²*, respectively, so that upon pressing any one of these rods its shoulder strikes the cross-bar of the lever and rocks the latter in 40 the proper direction to move the ejector forwardly. The push-rods are guided on a standard *F⁴*.

F⁶ is a spring connecting one arm of the actuating-lever *F³* with the case *A* and serving to return this lever, the ejector *D*, and the 45 delivery-slide *C* to their normal positions. Each of the push-rods *F F' F²* is provided with a similar return-spring *F⁶*.

The purpose of the slack connection between the delivery-slide or tongue *C* and the 50 ejector *D* is to shorten the stroke of the slide and prevent the same from being projected to an unnecessary and unnatural extent, which would be the case if the ejector had no 55 dead movement on the tongue.

g is a movable stop for preventing the retraction of the delivery-slide until after the piece of goods has been removed from the projected slide. This stop preferably consists of a forwardly-inclined pawl arranged 60 above the slide in rear of the delivery-opening *c* and mounted at its rear end upon a transverse pivot-pin *g'*, carried by lugs *g²* of the case. The free front end of this pawl 65 rests loosely upon the delivery-slide, and the pawl is wider than the pocket *c'* of the slide,

so as not to enter the pocket. As shown in Fig. 1, the depth of this pocket is less than the thickness of the sticks or cakes of goods delivered by the machine, so that a stick lying in the pocket projects above the upper 70 side of the delivery-slide and deflects the pawl upwardly and passes freely under the same when the slide is projected. As soon as the stick of goods passes beyond the pawl 75 the latter drops upon the slide by gravity. The return-spring *F⁵* of the actuating-lever *F³* withdraws the projected delivery-slide as soon as the actuated push-rod *F*, *F'*, or *F²* is released. In the absence of means for temporarily 80 holding the slide in its projected position it might return into the case before the purchaser could remove the goods therefrom. By providing the machine with the stop-pawl 85 *g* the latter under the above condition intercepts the piece of goods in the pocket of the slide and prevents the same from passing out of reach with the slide, the slide moving along the under side of the intercepted piece until the front end of its pocket comes in contact 90 with the front end of the piece, when the slide is blocked, as shown in Fig. 6, and the piece can be removed therefrom. As soon as this is done the slide is released and allowed to complete its return movement under the 95 action of the spring *F⁵*. In locking the delivery-slide against inward movement the pawl *g* bears against the slide on opposite sides of its pocket, and the pivot of the pawl is located at such a distance above the slide 100 that the free end of the pawl cannot swing to the rear side of its pivot.

H is the coin-chute, which preferably opens through the nose of the hollow figure *A*, as shown in the drawings, and extends rearwardly and downwardly below the level of the 105 delivery-slide. The chute is provided at its lower end with a movable interceptor or gate *h*, as shown in Fig. 2, which gate is carried by a vertically-swinging elbow-lever *h'*, suitably pivoted in the case *A*. 110

i is a locking bolt or latch arranged to prevent forward movement of the ejector *D* and the delivery-slide *C* except when a coin is deposited in the chute. This locking-bolt passes 115 upwardly through an opening formed in the bottom of the channeled guide and projects normally into the path of the ejector, as shown in Fig. 1. If desired, this bolt may also interlock with an opening in the delivery-slide, 120 as shown. The locking-bolt *i* is carried by the long horizontal arm of the gate-lever *h'*, so that when a coin drops upon the gate *h* it depresses said lever, causing the locking-bolt *i* to be withdrawn from the delivery-slide and the path of the ejector and permitting these 125 parts to be operated by the push-rods *F F' F²*.

As shown in Fig. 1, the lower jaw *d* of the ejector *D* is provided on its lower front portion with a beveled or rearwardly-inclined 130 face *d²*, which rides over the upper end of the locking-bolt *i* after the latter has been with-

drawn by the deposit of a coin and which depresses said bolt sufficiently to fully open the gate *h* and discharge the coin from the chute.

K is a permanent magnet, of horseshoe or other suitable form, arranged to move into the coin-chute for intercepting iron disks, washers, or similar objects that may be used in attempting to defraud the machine. The arrested object may be expelled or otherwise removed from the coin-chute by any suitable means. This may be accomplished by making a small portion of the chute immediately above the magnet laterally movable relatively to the remaining portion of the chute. This movable portion consists of a tapered three-sided section *l*, fitted and guided between the adjacent stationary sections of the chute, as shown in Fig. 2, and mounted on the free end of a horizontal rock-lever *m*, secured to the upper end of an upright rock-shaft M. This shaft turns in suitable bearings and is provided at its lower end with an actuating-lever *m'*, which extends across the inner ends of all of the push-rods *F F' F²*, as shown in Figs. 1, 2, 3, and 5. Upon pressing one of these rods it swings the lever *m'* rearwardly, thereby rocking the shaft M and its upper lever *m* and causing the latter to swing the movable chute-section to one side of the chute. This movable section thus sweeps any arrested iron object from the magnet-poles, and after the removal of the object the magnet swings automatically to its former retracted position. The rock-shaft M is returned to its initial position for restoring the movable chute-section by a torsion-spring *m²*, surrounding the shaft and secured at one end to the shaft and at its other end to one of the shaft-bearings or by any other suitable means.

As shown in Fig. 3, the push-rods *F F' F²* are located at progressively-greater distances from the fulcrum of the actuating arm or lever *m'* of the shaft M. In order to equalize the throw of this actuating-arm, the same is suitably recessed or cut away, as shown in Fig. 5, so that after the arm has been swung the desired distance by one of the push-rods the rod clears the arm and completes its stroke independently of the arm.

The goods-magazine B preferably consists of two or more independent compartments *b b' b²*, which are arranged side by side and designed to contain different flavors of chewing-gum or different kinds of confections. Any one of these compartments is adapted to be brought into register with the delivery-slide C, and for this purpose the compartments are preferably arranged in the arc of a circle and connected by arms *n* with an upright rock-shaft N, suitably journaled in the central portion of the case A, so that by turning this shaft in one or the other direction either of the magazine-compartments may be brought over the delivery-slide. The magazine is normally held in its central position, with its middle compartment in register with the delivery-slide, by spiral or torsion springs *n' n²*, applied

to opposite ends thereof. These springs are secured at opposite ends to the shaft N and its bearings and are preferably wound in opposite directions, as shown, so that when the magazine is moved out of its central position in either direction one of said springs is strained and the other relaxed. The oscillating magazine is shifted laterally by one or the other of the outer push-rods *F F²*, which latter are arranged on opposite sides of the rock-shaft and provided on their inner sides with gear racks or teeth *o*, arranged to mesh with a mutilated gear-wheel *o'*, secured to said rock-shaft. When it is desired to bring either the right-hand or the left-hand magazine-compartment into register with the delivery-slide C, the corresponding push-rod *F* or *F²* is pressed. The teeth *o* of this rod entering into engagement with the gear-wheel *o'* turn the latter and the rock-shaft N in the proper direction to bring the desired compartment over the delivery-slide, and after shifting the magazine the teeth clear the gear-wheel, allowing the push-rod to complete its stroke for actuating other mechanism of the machine without further effect upon the magazine. Upon releasing the actuated push-rod the same is returned to its former position by its spring. During the return stroke of the rod its teeth *e* again engage with the gear-wheel *o'* and return the same and the rock-shaft to their former position, thereby automatically restoring the magazine to its central position.

o² o³ are stationary horizontal shields or bottom plates arranged underneath the multiple magazine flush with the top of the delivery-slide C and projecting from opposite sides of the channel guide-bar C'. These shields close the lower ends of those magazine-compartments which are out of register with the delivery-slide.

As shown in Fig. 3, the inner portion of the intermediate push-rod *F'* is bifurcated to clear the magazine-shaft N.

In order to retain the oscillating magazine in either of its positions, suitable locking devices are combined with the push-rods *F F' F²*. These locking devices consist of a disk P, secured to the lower portion of the magazine-shaft N and having a locking-pin *p* on its upper side and locking bars or tumblers *q q' q²*, carried by the push-rods, respectively, and cooperating with said pin. These tumbler-bars are arranged lengthwise on the under side of the push-rods and located on a level with the locking-pin *p*, and their inner ends are rigidly connected with the rods by vertical arms *p'*. The intermediate push-rod *F'* is provided with two of such tumbler-bars *q'*, arranged to straddle the locking-pin *p*, which latter stands on the front side of the magazine-shaft and in line with the space between said bars when the magazine is in its normal central position. Upon pushing the rod *F'* its tumbler-bars advance therewith and straddle the locking-pin *p*, as shown by dotted lines in Fig. 4, holding the magazine against

turning in both directions. The outer push-rods $F F^2$ are provided with single tumbler-bars $q q^2$, which are arranged to stand on the inner side of the locking-pin when the latter is turned in either direction with the disk P in shifting the magazine, as shown by dotted lines in Fig. 4. When one of the side tumbler-bars q or q^2 is thus advanced with its companion push-rod, it effectually locks the magazine in its shifted position, and upon releasing the actuated push-rod the corresponding tumbler-bar is withdrawn from the locking-pin p , allowing the disk P to be returned to its former position by the gear-rack o of said push-rod meshing with the gear-wheel o' . The tumbler-bars $q q' q^2$ are arranged at a sufficient distance from the disk P in the normal position of the push-rods to allow the disk to be turned for properly registering the magazine before the tumblers engage with the locking-pin p .

The buttons of the push-rods may bear the names of the goods contained in the corresponding magazine-compartments, or such designations may be placed on the front of the case A above the respective rods.

r is one of the eye-apertures of the hollow figure A . On the inner side of each of these apertures is arranged a movable eyeball r' , which is mounted on the front arm of a rock-lever r^2 . This lever is pivoted on a transverse pin or shaft r^3 , suitably supported in the figure, and its rear arm is connected with the actuating-lever F^3 of the ejector D by a rod or link r^4 and an arm r^5 , so that whenever the machine is operated the eyeballs r' are automatically moved up and down in imitation of the rolling of the human eye.

The operation of our improved machine is as follows: In the normal position of the parts the tongue or delivery-slide C and the ejector D are retracted and locked against forward movement and the multiple goods-magazine B is in its central position, with its middle compartment in register with the delivery-slide, as shown in the drawings. If the purchaser desires the kind of goods supplied by the central magazine b' , he deposits a coin of the proper denomination in the coin-chute, the coin dropping upon the gate h and depressing the lever h' sufficiently to withdraw the locking-bolt i from the delivery-slide C and the ejector D . He then pushes the intermediate rod F' inwardly to its full limit. This movement causes the shoulder of the rod to strike the cross-bar of the actuating-lever F^3 , thereby rocking the latter on its pivot and sliding the ejector D forward. The ejector in turn pushes the lowermost piece of goods in the middle magazine-compartment into the pocket of the delivery-slide and at the same time projects the latter through the mouth of the figure A , as hereinbefore described. If the purchaser removes the goods from the delivery-slide before the latter is retracted, the slide returns to its former position and the next piece of goods

descends upon the slide in front of the ejector D ; but if the slide should return before the purchaser can remove the goods the slide is automatically locked in a partly-projected position by the pawl g , as hereinbefore described, and upon removing the goods the slide is permitted to complete its return movement. Immediately after pushing in the middle rod F' its locking-tumblers q' straddle the pin p and lock the magazine in position. As the central push-rod F' is not geared to the magazine-shaft or otherwise connected therewith, the magazine is unaffected by the movement of that push-rod. At the same time that the delivery-slide C is projected the movable section l of the coin-chute is shifted out of alinement with the chute, causing the rear or trailing wall of the section to sweep any previously-deposited spurious object from the magnet K . Upon depositing a coin in the chute and pushing one of the outer rods—say the right-hand rod F^2 —the magazine is first rocked toward the right through the medium of the gear-rack o of said rod and the gear-wheel o' , bringing the proper compartment over the delivery-slide C , and the shoulder of the rod then strikes and rocks the actuating-lever F^3 , operating the ejector D and projecting the delivery-slide as before. During the final portion of the inward movement of the actuated push-rod the tumbler-bar q^2 of this rod advances behind the locking-pin p , which has previously been shifted to the dotted position shown in the lower portion of Fig. 4, thereby locking the magazine in position during the forward stroke of the ejector. Upon releasing the actuated push-rod the magazine is automatically returned to its central position by the reaction of its strained centering-springs.

As shown in Figs. 1 and 3, the shoulders of the push-rods are located at a sufficient distance in advance of the actuating-lever F^3 to effect the shifting of the magazine before the actuation of the delivery-slide C .

The front and rear walls of the magazine-compartments $b b' b^2$ terminate above the upper side of the lowermost pieces of goods in the same to permit the pieces to be pushed into the pocket of the delivery-slide; but the side walls of the compartment extend below the upper side of said pieces in order to shift the same laterally with the magazines.

For the purpose of locking the delivery-slide C when a magazine-compartment is empty and avoiding loss to the purchaser in case he deposits a coin for goods which are exhausted a stop-block S is placed loosely upon each stack of goods in the magazine. This block is considerably thicker than the pieces of goods, so that when the block drops upon the delivery-slide after the removal of the last piece in the stack it acts as a locking-tumbler between the upper jaw d' of the ejector D and the front wall of the magazine-compartment. The ejector is therefore blocked and prevented from projecting the delivery-

slide, and as a consequence the release of the deposited coin from the coin-chute, which cannot take place until the ejector is advanced by the action of one of the push-rods, is prevented. The purchaser, observing that the machine is inoperative as regards the particular push-rod which he has operated, may push one of the remaining rods, and so bring one of the other unexhausted magazine-compartments in register with the delivery-slide and obtain a piece of goods therefrom. By this expedient the purchaser, although not obtaining the particular goods desired, nevertheless receives value for his deposit, rendering the machine more popular than one in which the deposit is lost under similar circumstances.

The coins discharged from the chute drop into the lower portion of the case A or into a suitable receptacle, and the case is provided with a door T, through which the coins may be removed.

If desired, the pawl g may be used simply as a stripper for pushing the articles off the front end of the tongue or delivery-slide C when the latter returns into the case, as shown in Fig. 7. In this modified construction the article-pocket of the tongue extends to the extreme front end of the latter.

It will be observed that in our machine no independent act or movement is required on the part of the operator for bringing the magazine into proper register with the ejector or delivery device when one of the side plungers is operated, but the magazine is shifted and the goods are delivered by one and the same act. This feature simplifies the machine and also renders its use more convenient to the purchaser.

Although the mechanism herein shown and described is especially desirable as applied to a case having the configuration of a human head, the same is equally applicable to cases of other forms.

We claim as our invention—

1. The combination with a case having an opening, of an article-magazine, a delivery-tray arranged underneath the magazine and adapted to project through said opening, an ejector which pushes the lowermost piece in the magazine upon the tray and projects the tray, a slack connection between the ejector and the tray, and means for operating the ejector, substantially as set forth.

2. In a vending-machine, the combination with an article-magazine and a delivery tray or slide, of means for projecting said tray, a spring which tends to retract the tray, and a movable stripping device located above the tray and arranged to permit an article upon the tray to trip past the same during the forward stroke of the tray and to engage behind the article and prevent the same from returning with the tray upon the backward stroke of the latter, substantially as set forth.

3. In a vending-machine, the combination with an article-magazine, of a delivery tray

or slide provided on its upper side with a shoulder, means for projecting said tray, a spring which tends to retract the tray, and a forwardly-inclined locking-pawl pivoted above said tray, resting at its free lower end upon the same and adapted to drop behind an article upon the tray, substantially as set forth.

4. In a vending-machine, the combination with an article-magazine, of a delivery tray or slide provided in its upper side with a pocket of less depth than the thickness of the vended articles, means for projecting the tray, a spring which tends to retract the tray, and a stop-pawl pivoted above the tray in a forwardly-inclined position, resting upon the surface thereof and constructed of greater width than said pocket, substantially as set forth.

5. In a vending-machine, the combination of an article-delivery device, a multiple magazine arranged over said delivery device and movable crosswise thereof in either direction for permitting either of its compartments to be brought in register therewith at will, an actuator, and shifting devices intermediate of said actuator and the magazine and the delivery device, for transmitting motion from the actuator to both of said elements, substantially as set forth.

6. In a vending-machine, the combination of an article-delivery device, a shifter for the same, a rotary multiple magazine arranged to swing across said delivery device in either direction, a shaft carrying the magazine and having an actuating device, and a plunger constructed to engage both with the shifter of the delivery device and the actuating device of said shaft, substantially as set forth.

7. In a vending-machine, the combination of an article-delivery device, a universal shifter for the same, a rotary multiple magazine arranged to swing across said delivery device in either direction and provided on opposite sides of its axis with shifting devices, a pair of plungers each constructed to engage with said universal shifter and with one of the shifting devices of the magazine, and a third plunger constructed to engage with said universal shifter but to clear the shifting devices of the magazine, substantially as set forth.

8. In a vending-machine, the combination with a multiple magazine and an upright shaft carrying the same and provided with a gear-wheel, of an ejector arranged underneath the magazine, a push-rod having a shoulder or projection and a gear-rack meshing with said gear-wheel, and an actuating-lever connected with said ejector and arranged to be tripped by the shoulder or projection of the push-rod, substantially as set forth.

9. In a vending-machine, the combination of an article-delivery device, a multiple magazine movable across said delivery device in either direction for bringing either of its compartments in register with the delivery de-

vice at will, said magazine having a locking member, and a plurality of actuators for shifting the magazine, each having a locking device arranged to engage with said locking member, substantially as set forth:

10. In a vending-machine, the combination of an article-delivery device, a rotary multiple magazine movable across said delivery device, a shaft carrying the magazine and having a disk provided with a locking pin or projection, and a plurality of shifting plun-

gers for the magazine, each having a locking bar or tumbler arranged to engage with said pin, substantially as set forth.

Witness our hands this 16th day of April, 1901.

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Witnesses:

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