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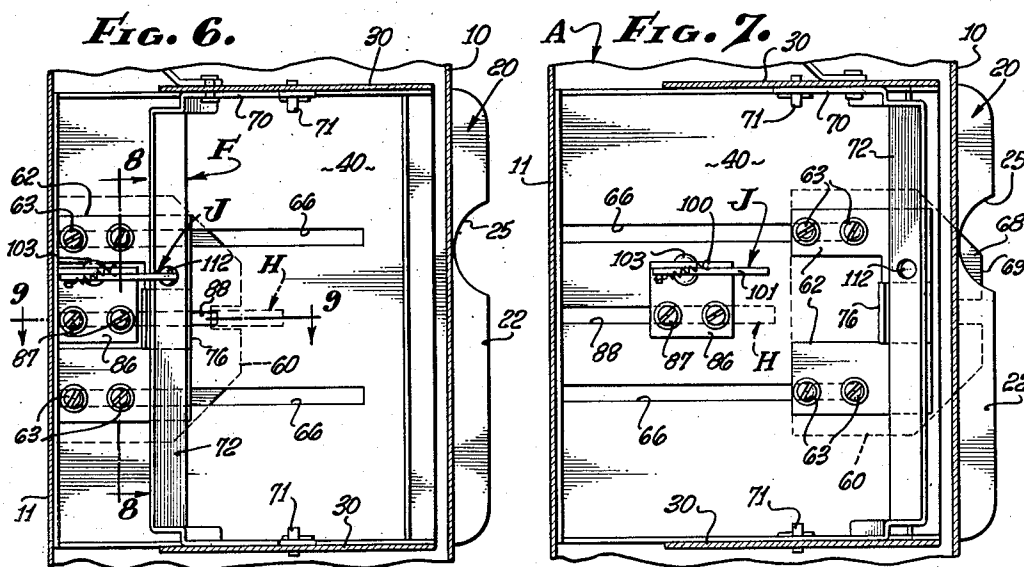
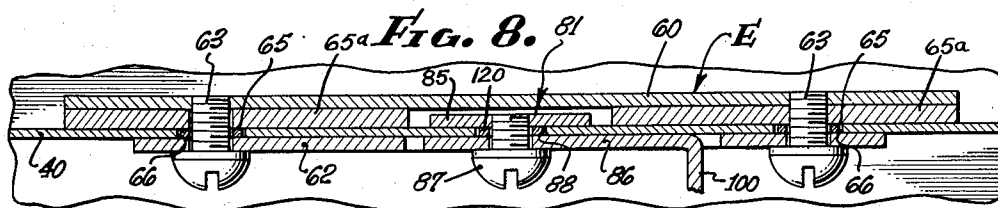
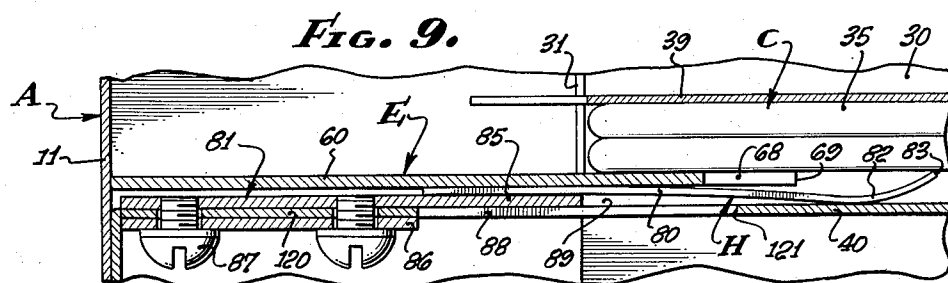
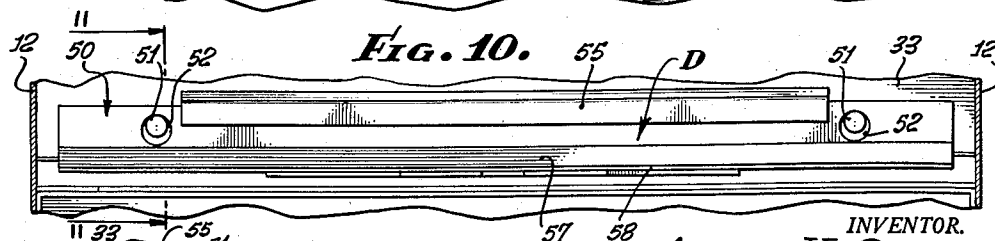
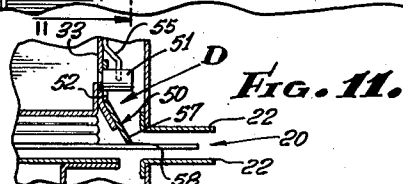
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DISPENSING MECHANISM

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2 Sheets-Sheet 2



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DISPENSING MECHANISM

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3 Claims. (Cl. 221—36)

This invention relates to a dispensing mechanism, and it is a general object of the invention to provide a mechanism serviceable to effectively and dependably dispense articles such as envelopes, one at a time, as for instance, from a case or carrying means provided with a coin control for the dispensing mechanism.

It is a general object of the present invention to provide a dispensing mechanism in a typical vending machine, serviceable to handle or dispense envelopes, whether empty or carrying material such as documents or the like. It is a general object of the invention to provide a dispensing mechanism for handling envelopes and which is such that for each operation of the mechanism but one envelope is dispensed and such operation is assured each time the mechanism is operated.

Another object of the invention is to provide a dispensing mechanism adapted to handle envelopes and including a trap, past which an ejector operates to dispense envelopes one at a time, which trap guards against tampering with the envelopes through the opening provided for their issue from the machine.

Another object of the invention is to provide a dispensing mechanism of the general character referred to having but few, simple, practical parts, which parts are such that they can be readily assembled and are such as to operate effectively and dependably over a long period of time.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of my invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a perspective view of a vending machine embodying the present invention. Fig. 2 is an enlarged, vertical, sectional view of a portion of the machine, being a view taken substantially as indicated by line 2—2 on Fig. 1, parts of the mechanism provided by the invention being shown fully retracted or unactuated; Fig. 3 is a plane section taken substantially as indicated by line 3—3 on Fig. 2 showing parts in dotted lines in positions other than the retracted positions, as shown in Fig. 2. Fig. 4 is an enlarged, vertical, sectional view, taken on line 4—4 of Figure 3, of a part of the mechanism shown in Fig. 2 showing the mechanism partially operated, that is, operated to a point where the opening means of the mechanism has served to open the flap of the envelope and the ejector has entered between the body of the envelope and the flap. Fig. 5 is a view, similar to Fig. 4 but taken on line 5—5 of Figure 3, showing the mechanism in a fully actuated position rendering the envelope engaged by the ejector and accessible from the front of the machine; Fig. 6 is a view similar to Fig. 3 but taken in the opposite direction, being a view taken substantially as indicated by line 6—6 on Fig. 2. Fig. 7 is a view similar to Fig. 6 showing the parts positioned as they are shown in Fig. 5. Fig. 8 is a detailed, transverse, sectional view taken as indicated by line 8—8 on Fig. 6. Fig. 9 is a detailed, transverse, sectional view

taken as indicated by line 9—9 on Fig. 6. Fig. 10 is a sectional view of the trap included in the mechanism, being a view taken substantially as indicated by line 10—10 on Fig. 2; and Fig. 11 is a transverse, sectional view of the structure shown in Fig. 10, being a view taken as indicated by line 11—11 on Fig. 10.

The ejecting mechanism as provided by the present invention can be used to advantage in various situations; however, it is particularly practical as applied to a vending machine and it is, therefore, illustrated in that connection. The vending machine, as shown in the drawings, includes a case or housing A, box-like in form and having a front wall 10; a rear wall 11; side walls 12, top wall 13 and a bottom wall 14. In the particular case illustrated the front wall 10 of the case A is provided with a coin receiving slot 15 adapted to admit coins to a coin control provided in the casing, but having no particular bearing upon the present invention. The coin control mechanism, not shown, controls an operating means including a hand lever 16 projecting at the exterior of the case A through a slot 17, the lever being operable between positions as shown in full lines of Figs. 1 and 2 of the drawings. A delivery opening 20 is provided in the front 10 of case A preferably at the lower end portion of the case and is a horizontally disposed slot-like opening. In the preferred construction, forwardly projecting lips 22 are provided at and project forward from the front 10 at the upper and lower edges of the opening 20, and finger receiving notches 25 are provided in the lips, as shown in the drawings.

The mechanism as provided by the present invention includes generally guide means B in the case A adapted to handle and guide envelopes C, which envelopes are in stacked relation. In the case illustrated, the means B is adapted to carry a vertical stack or pile of envelopes C so that the envelopes extend lengthwise or parallel with the slot or opening 20 in the front 10 of case A.

In the case illustrated, vertically disposed guides 30 are provided in the case projecting rearwardly therein from the wall 10, and flanges 31 at the rearmost edges of the guides 30 oppose each other and confine the envelopes C against movement or shifting rearwardly from the position shown in Fig. 2. At the forward portion of the guideway, that is, the part adjacent the wall 10, the means B includes a vertical front wall 33 for the guideway, spaced somewhat rearward from the front wall 10 of case A, and guide rods 34 extend up from the wall 33, as shown in the drawings.

The envelopes C to be handled by the machine may be ordinary or conventional envelopes, either filled or empty, as circumstances may require. The envelopes are shown stacked, one upon another, to be in a vertical stack or pile and each has a body portion 35 and a flap 36 adjacent the edge 37 of the body and projecting therefrom to normally overlie and be snug against the bottom 38 of the body. The envelopes are preferably stacked so that they are arranged in like manner, each having its flap carrying edge 37 forward in the guideway or faced toward the front wall 10 of case A.

The guideway B, as above described, carries the stack or pile of envelopes as shown in Fig. 2 so that it is maintained in an upright position with the envelopes, one over another, and in practice, it is preferred to provide a follower 39 on the top of the pile of envelopes to be acted upon by gravity to hold the envelopes snugly together, one against another. It is to be observed from the drawings that the guide means B that carries the supply or stack of envelopes is located in the case A so that its lower end portion terminates at or opposite the discharged opening 20 provided in the front 10 of the case A.

The invention provides a platform 40 at the bottom of

the guide means B, and in the preferred construction the platform 40 is characterized by or is in the form of a flat, horizontally disposed plate provided with spaced upwardly projecting lands 41 adapted to be engaged by the lowermost envelope C of the pile of envelopes carried by the guide means B. The lands 41 are flat-topped parts spaced apart lengthwise of the envelopes, and in the case illustrated they are shown adjacent the guides 30 so that the end portions of the envelopes engage and are supported by the lands. In the construction illustrated, the opposing edge portions of the two lands 41 diverge or are formed so that they are further apart at the front end portion of the platform than they are at the rear end portion thereof, as shown in Fig. 3 of the drawings.

A trap D is provided at the lower end portion of the guide means B and immediately inwardly of the opening 20 so that envelopes may be passed one at a time out of the machine through the opening 20, but the trap D will effectively stop insertion of wires or other objects or implements, designed to affect tampering, from entering the machine where the envelopes in the means B can be engaged. In the case illustrated, the trap D includes an elongate, horizontally disposed plate 50 carried by horizontally spaced mounting members 51 so that the plate is supported horizontally just inward of the opening 20 and immediately above the plane of the opening. In the case illustrated the mounting members 51 are carried by and project forward from the wall 33 of the guide means B, and they extend through vertical guide slots 52 provided in the plate 50. A bracket 55 is fixed to the wall 33 and has a lip overhanging the upper edge portion of the plate 50 to retain the plate in place on the mounting members 51. The construction just described is such that the plate 50 can shift or work vertically a limited amount, and it can swing or rock somewhat between a position flat against or parallel with wall 33 and a position where it extends down and somewhat forward, as shown in Fig. 5.

The plate 50 has a guard 57 depending from its lowermost edge and projecting downward and somewhat forward. The lower edge 58 in the guard is straight, and it preferably is of such length as to extend the full length of the opening 20. The construction just described is such that the lower edge 58 of the guard normally occurs about opposite or possibly below the lower edge of the opening 20; however, when an envelope is being ejected through the opening the plate 50 can lift and rock, allowing the bottom edge 58 of the guard to contact the uppermost surface or face of the envelope.

It will be thus apparent that the trap D serves to guard or protect envelopes in the machine against being tampered with or removed therefrom except as a result of proper operation of the machine, as will be hereinafter described.

The invention provides an ejector E carried by the platform 40 and adapted to engage the lowermost envelope carried by the guide means B and to operate that envelope so that it is shifted horizontally forward and partially through the opening 20, that is, so that it issues at the front of the case A between the lips 22, to be engageable by an operator's fingers applied at the notches 25.

The ejector E as illustrated in the drawings includes a flat plate 60 carried on the top of the platform 40 between the lands 41 to be slidable on the platform between a retracted or rear position, as shown in Fig. 3, and a fully actuated position, as shown in dotted lines in Fig. 3.

The ejector E further includes a lower section 62 located at or adjacent the lower side of the platform 40, and connecting members 63, such as screws, extend between and connect the section 62 and the plate 60 of the ejector occurring at the top of the platform. In

the preferred construction, inserts 65, 65^a are carried by the connecting members 63 between the plate 60 and section 62. The inserts 65 are slidably engaged in laterally spaced parallel slots 66 formed on or through the platform 40 and extending in the direction that the ejector operates, as shown in Fig. 3 of the drawings. The inserts 65^a are flat members that occur between the inserts 65 and the plate 60, to maintain the plate in spaced relationship above the platform. In the particular case illustrated, the inserts 65^a are straight elongate members and are arranged in parallel spaced relationship to define a space between the plate 60 and the platform 40 to accommodate the means H. Through the construction just described, it will be seen that the ejector is a simple, rigid unit carried by the platform to freely reciprocate back and forth.

In the preferred form of the invention, the plate 60 of the ejector occurring above the platform 40 is preferably provided at its forward or leading portion with forwardly projecting tongues 68 which are fashioned, as shown in Fig. 3, to readily enter between the body and flap of an envelope. The tongues have straight, parallel, leading ends 69 adapted to engage in the fold or crotch of the envelope formed between the body and the flap.

The invention provides an operating means F for the ejector E, and in the form illustrated, the operating means F is characterized by a pivot arm 70 carried by a pivot 71 located in the lowermost portion of the case A. The arm 70 projects upwardly to a point close beneath the platform 40 and beneath the section 62 of the ejector E where it has a laterally projecting or horizontally disposed head 72 received between the spaced sides 76 of a yoke that is fixed to and which depends from the section 62 of the ejector. Through the construction just described, as the arm 70 is rocked as between positions such as is shown in broken and dotted lines on Fig. 3 of the drawings, the head 72 on the arm remains engaged in the yoke on the ejector, and through this construction the ejector is shiftable relative to the platform 40 between the retracted and fully operated positions by a simple swinging of the arm 70.

In carrying out the present invention, the vending machine, in which the mechanism is incorporated, may include a coin control between the operating lever 16 and the arm 70, and, in practice, may include any suitably operating mechanism between lever 16 and the arm 70 serving to effect the desired operation of the arm 70 by means of the lever 16. In the particular case illustrated the lever 16 is shown operatively connected with the arms 70 by suitable linkage, there being an elongate vertically disposed connecting bar 16^a with its upper end pivotally supported in the upper portion of the machine, a link 16^b carried by the lever 16 and connected to the bar at a point between its ends, and a link 70^a carried by the arm 70 and connected to the lever end of the bar 16^a. The present invention is not concerned with the details of this means or mechanism and further unnecessary detailed description has, therefore, been omitted.

The present invention further provides an opening means H adapted to assure opening or separation of the flap of the lowermost envelope from the body of that envelope as the ejector advances toward the flap so as to assure the proper reception of the tongues 68 of the ejector plate 60 between the body of the envelope and the flap thereon.

The means H, as illustrated in the drawings, is characterized by a finger 80, preferably a spring finger in the form of a leaf spring, anchored to a carrier 81 and having a forwardly projecting free end portion 82 normally tending to move upwardly so that the tip end 83 of the finger normally bears either against the lowermost envelope C or against the plate 60 of the ejector,

should the ejector be moved forward beyond the tip end of the finger.

The carrier 81 is slidably carried by the platform 40 to a point between the spaced slots 66 that carry the spacers 65 of the ejector E, and it has a top section 85 slidable on the top of the platform and a section 86 slidable on the bottom of the platform, which sections are connected by connecting members such as screws 87 which extend through a longitudinal slot 88 provided in the platform parallel with the slots 66 and located midway between them, as shown in Fig. 3 of the drawings.

In the particular case illustrated, the plate 60 of the ejector E is spaced somewhat above the top of the platform by the spacers 65^a of the ejector, and the top section 85 of the carrier 81 is adapted to enter the opening 89 that occurs between the bottom of plate 60 and the top of the platform 40. When the parts are fully retracted, the ejector is adjacent the rear wall 11 of the case A, and the carrier 81 is likewise adjacent the wall 11. Under this condition the section 85 of the carrier 81 is between the plate 60 of the ejector and the platform 40.

The finger 80 of the means H projects forward from the section 85 of the carrier 81, and when the parts are fully retracted, as shown in Fig. 2, the forward portion 82 of the finger tending to move upwardly is forward of the foremost or leading edges 69 of the tongues in the plate 60. As a result of this, the tip end 83 of the finger bears against the lowermost side of the body of the lowermost envelope C at a point rearward of the flap of that envelope.

The invention provides means J coupling or cooperatively relating the ejector E and the means H so that as the ejector is moved forward from its fully retracted position, as shown in Fig. 2, the carrier 81 of the means H moves with the ejector so that the finger 80 bearing against the lowermost envelope precedes the tongues 68 and because of its bearing against the envelope positively and certainly enters between the body of the envelope C and the flap thereof, thus partially opening the flap of the envelope. In the particular construction illustrated, the projecting end portion 82 of the finger is preferably curved or arcuate in form with its convex side down and its concave side up so that as the finger enters between the body of the envelope and the flap, the flap is definitely separated from and moved downward relative to the body of the envelope. The means J is such that when the flap of the envelope has been partially opened, the forward movement or advance of the carrier 81 ceases, and the ejector, the tongues of which, have by this time entered the body of the flap, continues to move forward and to do so until the envelope has been shifted forward to a position such as is shown in Fig. 5 of the drawings.

The coupling means J, as shown in the drawings, is a releasable latch mechanism. A bracket 100 is carried by and depends from the lowermost section 86 of the carriage 81, and a latch member 101 is mounted on the bracket 100 by means of a pivot pin 103. The latch has a forwardly projecting portion with a jaw 105, and a spring 106 is connected with the latch to normally yieldingly urge it in the direction indicated by the arrow in Fig. 5. A stop 110 on the bracket 100 is engaged by the latch limiting the movement of the latch under the influence of the spring to a position where the latch will receive and catch the head 72 on the arm 70, which head is, as has been described, carried in the yoke which depends from the ejector. In the case illustrated, an opening 112 is provided in the head to receive the body 105 of the latch, as clearly shown in Fig. 2 of the drawings.

In the case of the mechanism above described, as the head 72 moves from a retracted or rearmost position, as shown in Fig. 2, it swings or moves somewhat upward and by the time the flap of the envelope has been opened

by the spring finger and the tongues of the ejector have entered between the flap of the envelope and the body, the head has lifted to a point beyond which the body of the latch cannot travel because of the stop 110 and, therefore, at this point the head becomes unlatched from the jaw 105 leaving the carrier 81 in a forward position and stationary as shown in Figs. 4 and 5 and leaving the ejector free to move on forward until the envelope has been ejected or moved forward in the desired manner. As the ejector is moved back or from the fully operated position to the retracted position, the head 72 on the arm 70 engages the jaw of the latch, depressing the latch until the jaw enters the opening or hole 112, which operation occurs just before the mechanism reaches the fully retracted position as shown in Fig. 2.

From the foregoing description and from the drawings it will be apparent that a stack or supply of envelopes C can be installed in the machine so that the stack of envelopes are supported by the lands. Assuming the mechanism to be in the fully retracted position shown in Fig. 2, forward operation of the ejector E, by swinging of arm 70 through any suitable means, results in movement of the opening means H with the ejector until the finger of the opening means has partially opened the flap of the lowermost envelope and until the tongues 68 of the ejector have entered between the body of that envelope and the flap thereof. At this time the latch 101 of means J releases, allowing the carrier 81 supporting the finger 80 to stop. If desired, this movement or travel of the carrier 81 may be limited or stopped by the spacer 120 between sections 85 and 86 of the carrier engaging the forward end 121 of slot 88. When the means H has stopped operation, the ejector can continue forward and upon being moved to the fully actuated position, it will have advanced or pushed the lowermost envelope forward until the edge portion 37 thereof is between the lips 22 and is accessible so that it can be freely withdrawn from the machine.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described my invention, I claim:

1. A mechanism of the character described including, an elongate vertical guide carrying a pile of envelopes with the flaps thereof downward of the bodies thereof, a platform at the lower end of the guide and supporting the pile of envelopes in the guide, an ejector carried by the platform to reciprocate horizontally in a direction transverse of the lowermost envelope, a carriage mounted on the platform to reciprocate parallel with the ejector and a finger on the carriage to project forward from the carriage, and means operating the carriage and ejector together with the finger projecting ahead of the ejector and until the finger has moved the flap of the lowermost envelope from the body thereof and the ejector extends over that flap and to then advance the ejector while the carriage is still and until the said envelope is shifted horizontally relative to the pile, said means including, a pivoted arm engaging the ejector and adapted to be swung to move the ejector, and a latch pivotally carried by the carriage and releasably connecting the arm and carriage only during initial movement of the ejector from a retracted position.

2. A mechanism of the character described including, a vertical guide carrying an elongate vertically disposed pile of envelopes with the flaps thereof downward of the bodies thereof, a platform at the lower end of the guide and supporting the pile of envelopes in the guide, an ejector carried by the platform to reciprocate horizontally in a direction transverse of the lowermost envelope, a carriage mounted to reciprocate parallel with the ejector and a finger on the carriage to project for-

ward from the carriage, and means to operate the carriage and ejector together with the finger projecting ahead of the ejector and until the finger has moved the flap of the lowermost envelope from the body thereof and the ejector extends over that flap and to then advance the ejector while the carriage is still and until the said envelope is shifted relative to the pile, said means including, a yoke on the ejector, a pivoted arm engaging the yoke, and a latch pivotally carried by the carriage and releasably engaging the said pivotal arm.

3. A mechanism of the character described including, a box-like case having a wall with an opening therein, a vertical guide in the case with its lower end portion opposite the opening, a vertical pile of elongate flat horizontally disposed envelopes in the guide with the flaps thereof downward of the bodies thereof, a platform below the guide and supporting the pile of envelopes in the guide, a rigid ejector carried by the platform and having a plate-like portion above the platform to reciprocate horizontally beneath the pile of envelopes and to move them one at a time through the opening and having a portion beneath the platform and operatively coupled with the said plate-like portion, a carriage supported on the platform below the plate-like portion of the ejector and shiftable relative thereto, a spring on the carriage to normally yieldingly bear against the bottom of the body of the lowermost envelope and adapted to move horizontally relative thereto to open the flap thereof, and

means connected with the ejector and the carriage and shifting the ejector and the carriage and finger horizontally to open said flap until the ejector is over said flap and to thereafter shift only the ejector to move said envelope through said opening, said means including, a yoke depending from the section of the ejector occurring below the platform, a pivoted arm engaging the yoke and adapted to be swung to move the ejector, and a latch pivotally carried by the carriage to depend therefrom and below the platform and releasably engaging the said pivoted arm during the initial movement of the ejector from a retracted position.

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