Sept. 12, 1933. H. GILES 1,926,847

VENDING MACHINE

Original Filed May 28, 1931 5 Sheets-Sheet 1

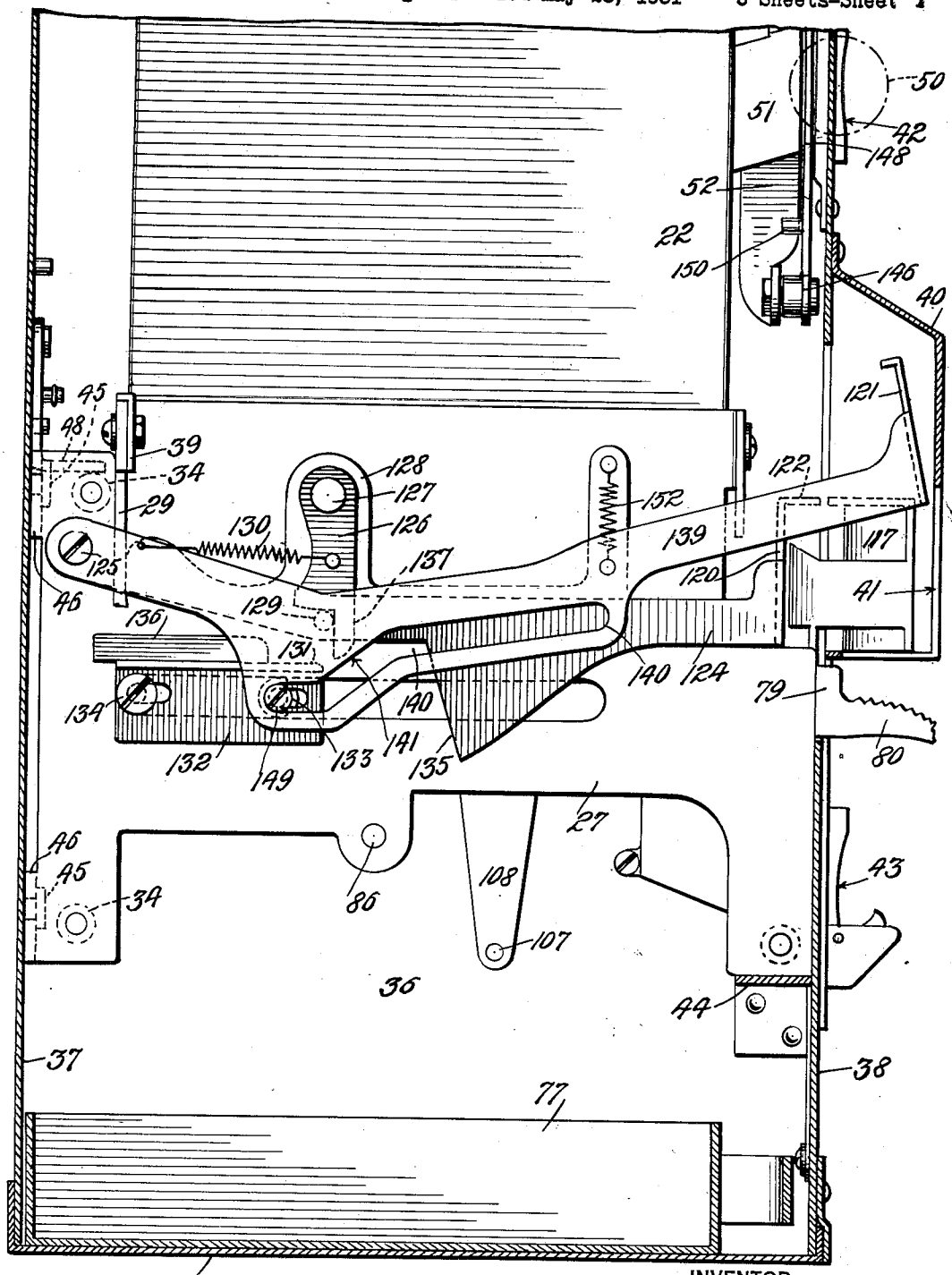


Fig. 1.

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VENDING MACHINE

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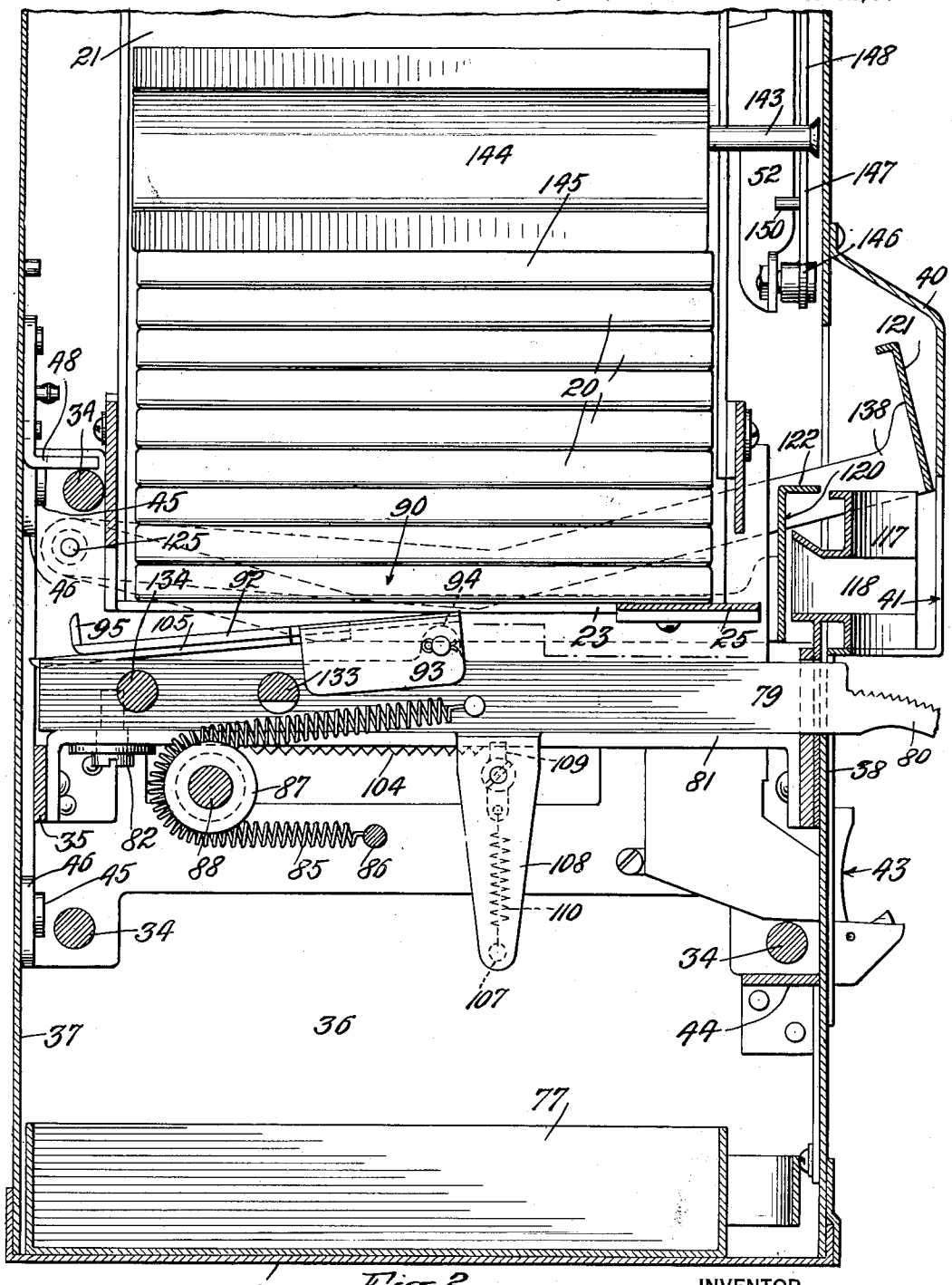


Fig. 2.

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VENDING MACHINE

Original Filed May 28, 1931 5 Sheets-Sheet 3

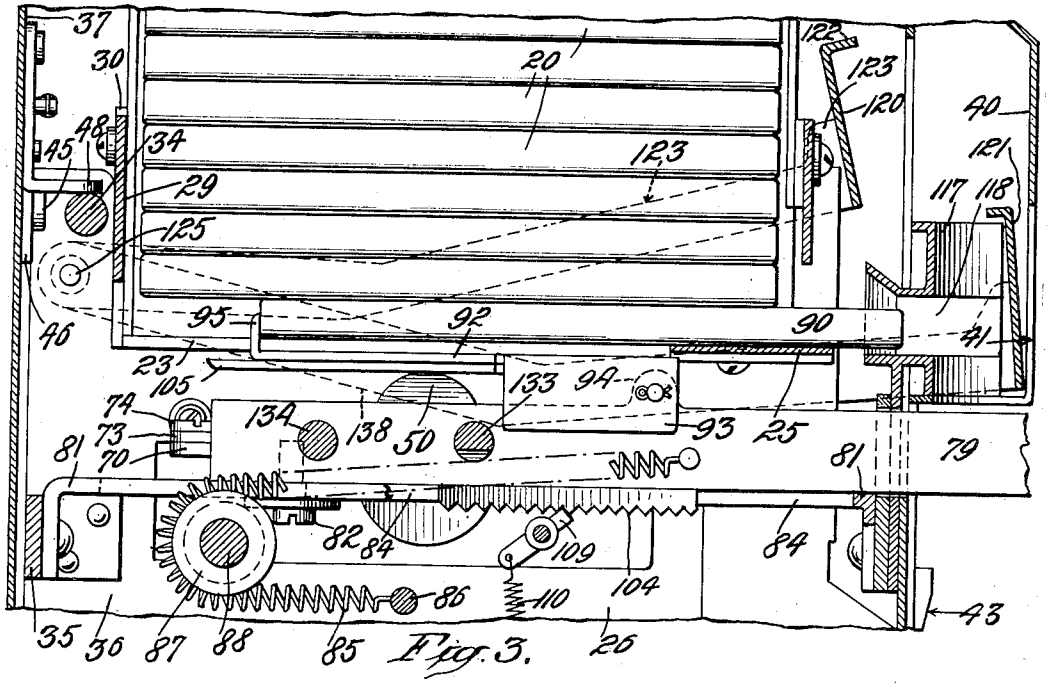


Fig. 3.

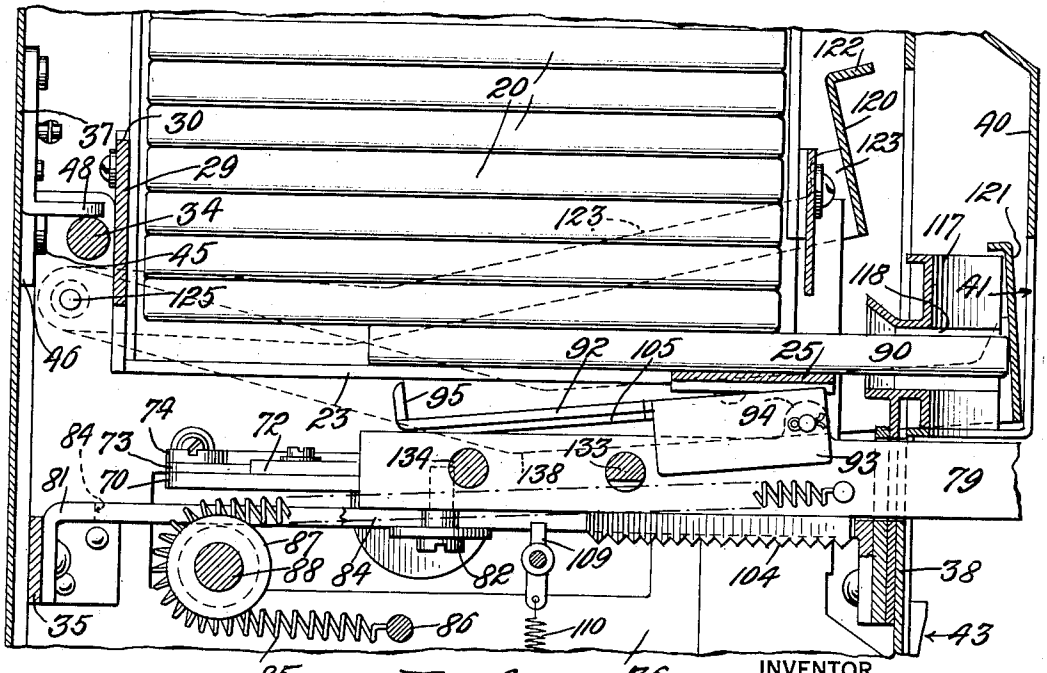


Fig. 4.

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VENDING MACHINE

Original Filed May 28, 1931 5 Sheets-Sheet 4

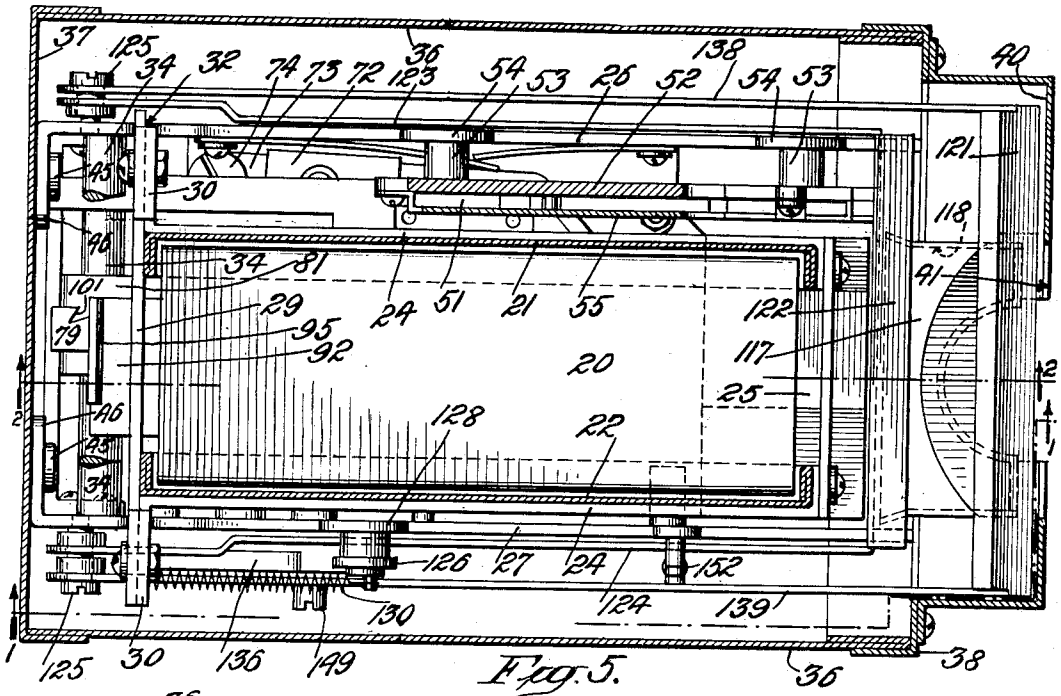


Fig. 5.

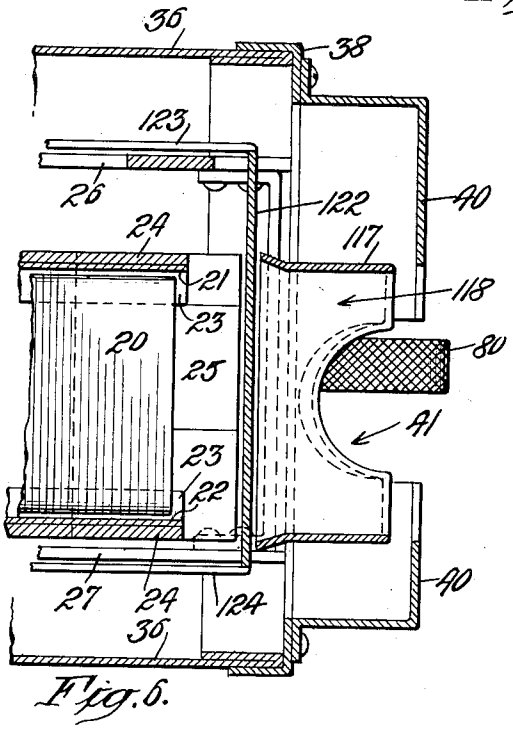


Fig. 6.

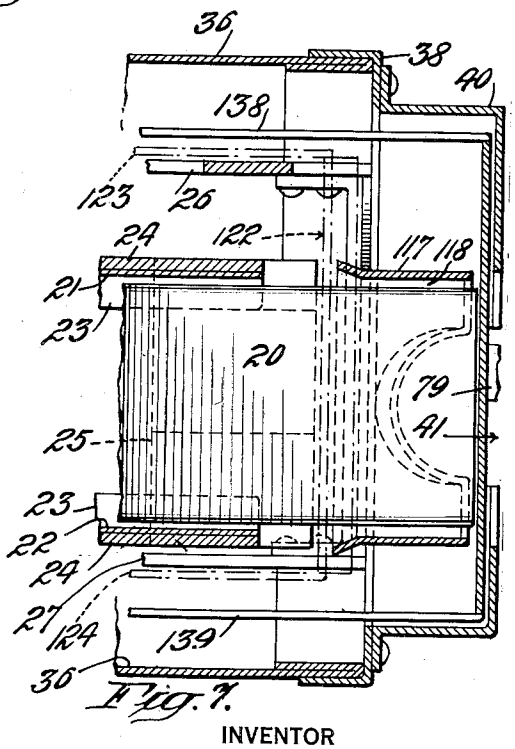


Fig. 7.

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VENDING MACHINE

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Fig. 8.

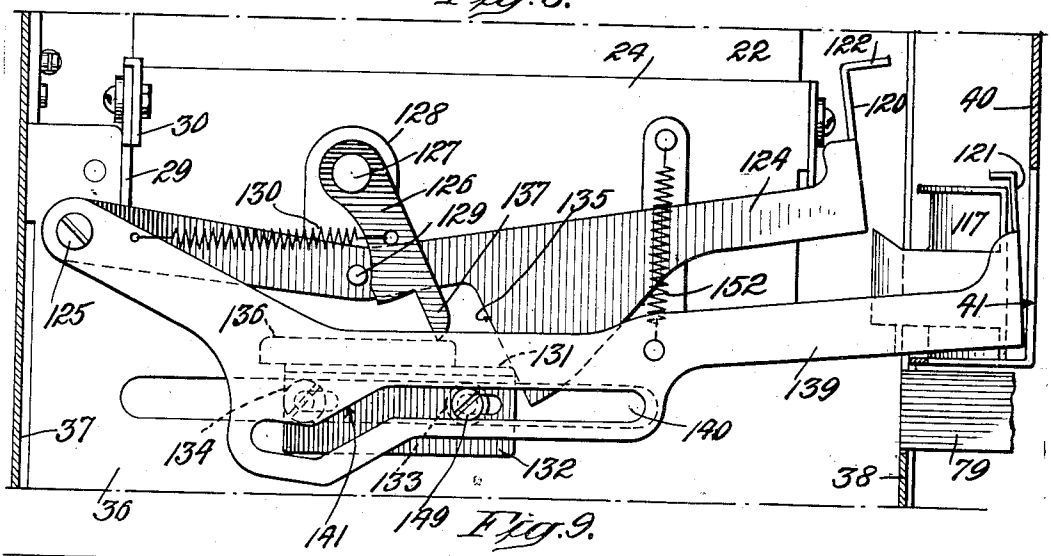
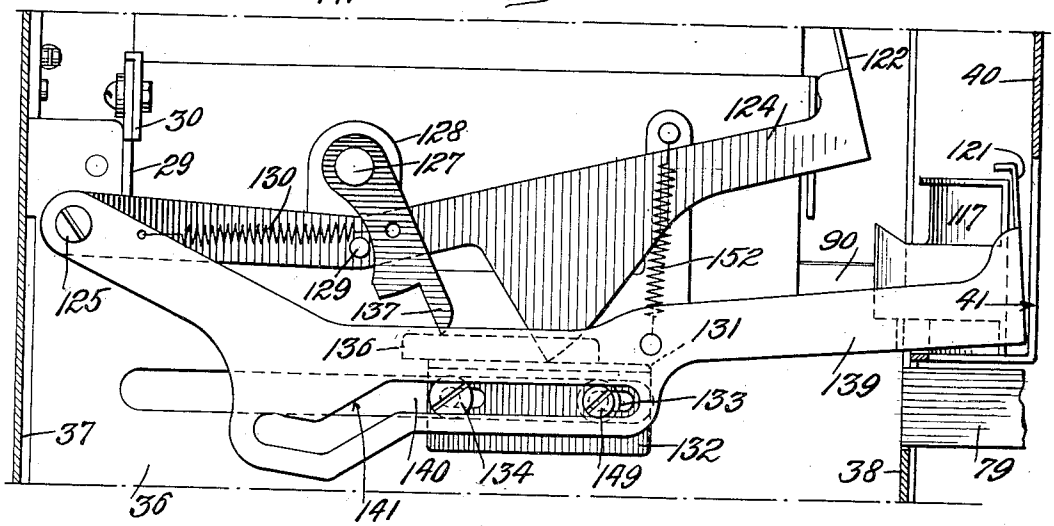


Fig. 9.



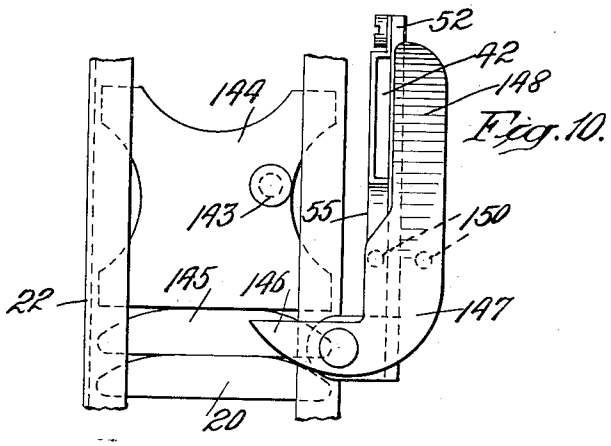


Fig. 10.

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Patented Sept. 12, 1933 1,926,847

UNITED STATES PATENT OFFICE

1,926,847

VENDING MACHINE

Harvey Giles, Brooklyn, N. Y., assignor to Collier Advertising Service, Inc., New York, N. Y., a corporation of Delaware

Original application May 28, 1931, Serial No. 540,591. Divided and this application October 4, 1932. Serial No. 636,115

6 Claims. (Cl. 312—67)

This invention relates to an improvement in vending machines of the type in which an article is delivered when a coin of proper denomination is deposited in the machine and a plunger or handle is manipulated. More particularly the invention is an improvement in a mechanism for closing the delivery opening of such a machine and maintaining such opening in closed condition until the plunger, which is operated to deliver the merchandise, reaches a certain position in its movement whereupon it causes the guard for the delivery opening to be shifted and the opening exposed so that the delivered merchandise is accessible to the purchaser.

This application is a division of my co-pending application, Serial No. 540,591, filed May 28th, 1931, which has been issued as Patent No. 1,919,017 dated July 18, 1933.

The object of the invention is to provide an improved guard means for vending machines of this character positively preventing the insertion of any means whatever into the machine to injure or abstract surreptitiously the articles which are to be vended in return for the deposit in the machine of a proper coin. This object, and other objects, the advantages of which will appear as the description proceeds, are accomplished in the vending machine hereinafter fully described and particularly pointed out in the appended claims.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which: Fig. 1 is a section taken on the line 1—1 of Fig. 5, and showing in side elevation the left hand side of the operating parts of the machine, the parts being shown in normal position; Fig. 2 is a vertical section through the middle of the machine, the section being taken on substantially the line 2—2 of Fig. 5, the parts being shown in normal or inoperative condition; Fig. 3 is a view similar to Fig. 2, but with the upper and lower parts removed, and showing the article delivery means in engagement with an article and in the act of pushing it forward; Fig. 4 is a view similar to Fig. 3, but with the article pushed forward into position where it may be obtained by the purchaser, and showing the article delivery means freed from the article; Fig. 5 is a top plan, partly in section, of the operating parts of the vending machine; Fig. 6 is a detail of the right hand end of Fig. 5 and showing the parts in section; Fig. 7 is a view similar to Fig. 6, but with the article moved forward into position to be grasped by the purchaser; Fig. 8 is a side elevation of the guard members, showing their positions when a coin has been inserted in the machine and the plunger pulled partly forward; Fig. 9 is a view similar to Fig. 8, but showing the position of the parts when the plunger has been pulled forward to the limit of its outward movement; and Fig. 10 is a detail, showing the guard member for closing the coin slot when all the articles have been sold.

The improved devices of the present invention are particularly adapted for use in connection with the vending of a large number of different kinds of articles, but are more especially adapted for use in vending such relatively large and difficultly handled articles such as chocolate almond bars, or like elongated packages such as are indicated at 20 in the drawings. The almond bars or other similar articles 20 are supported in a horizontal position in a vertical hopper comprising two side walls 21 and 22 which are inturned at their rear and forward edges so as to hold the articles in place. The lowermost article is supported by the ledges 23 which are the inturned lower ends of the supporting walls 24 which support and strengthen the lower ends of the side walls 21 and 22 of the hopper. At their rear ends the ledges 23 are spaced apart to permit the article delivery means to have access to the lowermost article to move it forward, but at their forward ends the ledges are connected by a cross piece 25. The hopper is supported on the upper edges of two walls 26 and 27 of a frame which also supports the operating parts of the vending machine. For this purpose a transversely arranged plate 29 connected to the two ears 30 which project laterally from the rear ends of the walls 24 rests in the notches 32 formed in the rear upper edges of the frame walls 26 and 27. The frame walls 26 and 27 are held in fixed relation by the cross rods 34, placed at appropriate points where they will not interfere with the movements of the operating parts, and by the transverse braces 35.

The hopper and the frame for supporting the operating parts of the machine are housed within a vertically arranged casing which is of the usual form and construction and comprises the side walls 36, the rear wall 37, the front wall 38 and the bottom 39, the top of the casing not being shown since it contains no operating parts. In the front wall 38 of the casing is formed an enlargement 40 at which point the articles are delivered through the opening 41 therein, to the purchaser. In the upper part of the front wall 38 of the casing is located the slot 42 through which the coin is inserted into the machine, and in the lower part of the front wall 38 of the casing is a slot 43 through which a coin not of proper

denomination or a slug is returned to the would-be purchaser. The frame walls 26 and 27 for supporting the operating parts of the machine are held in fixed position in the lower part of the casing by means of the bracket 44 (Figs. 1 and 2) on which the forward lower edges of the side frames 26 and 27 rest and by means of the pins 45 projecting forwardly from the rear wall 37 of the casing and which are engaged by the slotted ears 46 inturned from the rear edges of the frame walls. The frame is prevented against accidental upward displacement by means of a spring-pressed latch 48 which engages against the upper surface of the uppermost cross-rod 34.

When the coin 50 is inserted through the slot 42 it passes into an inclined channel 51 constituting the entrance of a coin chute formed between the relatively heavy outer wall or plate 52 (Fig. 10) supported in upright position by the studs 53 extending inwardly from the upright ears 54 on the frame wall 26, and a relatively thin inner wall 55 the edges of which are inturned and abut against the inner surface of the outer wall 52, to which they are secured at convenient points. The coin chute is provided with the usual protective devices, such as a magnet, a deflector for spurious coins or slugs and other devices to insure the retention only of proper coins, these devices not being shown since the same form no part of the invention herein claimed. When a coin of proper denomination passes through the coin chute 51 it descends down through the same and reaches a certain point where it is held in a vertical position until after it has performed the function of putting the coin delivery mechanism into condition to deliver an article, by means of a guard plate or coin support 72 adjustably secured to an arm 73 pivoted at 74 on a ledge or plate 70.

The article delivery mechanism comprises, in addition to the parts for holding the coin in predetermined vertical position, a reciprocatory plunger 79 having on its outer or forward end a handle 80. The plunger 79 is substantially as long as the lower part of the machine casing is deep and is supported on a horizontally and longitudinally arranged bracket 81 which is slotted at 84 (Fig. 3) throughout its length to accommodate the guiding screw 82 which passes loosely through the slot and enters the lower side of the rear end of the plunger. The plunger is normally held in its retracted or inoperative position by means of a contraction spring 85 one end of which is fastened to the plunger and the other end of which is fixed to a pin 86 projecting inwardly from the frame wall 27. The spring 85 passes over a guide wheel 87 journalled on a stud 88 projecting inwardly from the frame wall 27.

The means for engaging the lowermost article 90 of the stack of articles in the hopper and advancing it to a position from which it can be removed from the machine when a coin of proper denomination has been inserted in the machine and the plunger drawn outwardly, comprises a plate 92, having at its forward end down-turned ears 93 by which it is pivotally connected with the boss 94 extending upwardly from about the middle of the upper surface of the plunger. The plate 92 extends rearwardly beyond the article-containing hopper and the rear end 95 of the plate 92 is upturned for the purpose of engaging the rear end of the lowermost article in the hopper and pushing it forwardly. In the normal or inoperative condition of the operating parts of the machine, the rear end of the plate 92 rests against the upper surface of the rear end of the plunger 79, as shown in Fig. 2. When it is attempted to pull the plunger 79 outwardly, without first depositing a coin of proper denomination in the machine, the plunger is prevented from moving beyond a certain point by means of a latch lever, not shown, which engages with a notch 101 (Fig. 5) formed in the rear end of the plunger and thereby prevents the plunger from being drawn farther outwardly. But when a coin 50 of proper denomination has been deposited in the machine and it is held in vertical position, as shown in Fig. 3, the latch lever is, through suitable mechanism, held in such a position that it cannot enter the notch 101 in the plunger, so that the plunger can be drawn outwardly to complete its full forward movement. To prevent the plunger from returning to its rearward normal position before completing its full forward movement, the lower edge of the plunger is provided with the usual rack 104 located in the slot 84 and adapted to be engaged by the dog 109 held in normal position by a spring 110, the lower end of which is connected to a pin 107, fixed in a bracket 108, extending downwardly from the support 81.

While the coin is held in its vertical position, as shown in Fig. 3, and the plunger is being drawn outwardly, an arm 105 connected to the plate 92, but lying on a lower plane than the plate 92 and extending rearwardly parallel with the plate 92, rides up over the top edge of the coin and thereby raises the plate 92 so as to bring the rear upturned edge 95 thereon in line with the rear end of the lowermost article 90 in the hopper. The middle section of the lower edge of the plate 29 is cut away to permit the up-turned rear end 95 of the plate 92 to be pushed to the rear of the lowermost article 90 in the hopper. When the article 90 has been moved forward into position where it can be removed from the machine by the purchaser, a cam lug carried by the plunger encounters mechanism which frees the coin so that it can fall down into the coin box 77.

The article is not pushed all the way out of the machine by the article-delivery means 92 on the plunger, but is moved sufficiently to cause its forward end to enter a box-like structure or device 117 located under the hood 40 and to the rear of the opening 41 therein. The device or structure 117 has a central horizontal opening 118 in alignment with the lowermost article 90 in the hopper so that the forward end of the article 90 may enter the opening 118. The full forward movement of the plunger leaves the article with its forward end substantially flush with the forward edge of the device 117, as shown in Figs. 4 and 7. Before the article reaches this position, the coin will have descended so that the arm 105 has been permitted to descend and thereby disengage the rear end of the plate 92 from the article. To permit the removal of the article from the machine the front face of the structure 117 is made concaved as clearly shown in Fig. 6 to accommodate the fingers of the purchaser.

While the machine is in normal condition, access to the interior of the machine through the opening 118 is prevented by the inner guard member 120 and after the plunger has been pulled forward a certain amount and until it reaches its rearmost position, the outer face of the device 117 is closed by an outer guard member 121. Thus all surreptitious access to the articles to be vended is effectually prevented, both during

the normal inoperative condition of the machine and during the act of delivering an article. The inner guard member 120 is a transversely arranged plate having a strengthening upper lip 122. The plate 120 is carried by the forward ends of two arms 123 and 124 pivoted at their rear ends on the pins 125. During the normal condition of the machine the plate 120 is held lowered to the rear of the opening 118 in the revice 117 as shown in Fig. 2 by means of a dog 126 pivoted at 127 on a lug 128 extending upwardly from the frame plate 27. The lower end of the dog 126 is notched to engage a pin 129 extending outwardly from the arm 124. The dog 126 is held normally in engagement with the pin 129 to keep the plate 120 in fixed position at the rear of the opening 118 by means of a tension spring 130. The plate 120 is lifted on the outward movement of the plunger after a coin of proper dimension has been inserted in the machine, by means of a cam lug 131 extending outwardly from a vertically arranged plate 132 adjustably carried by the pins 133 and 134 extending laterally from the rear end of the plunger 79 and projecting through a horizontal slot in the plate 27. The forward edge of the cam lug 131 encounters the cam surface 135 to raise the guard plate 120 and the dog 126 is freed from the pin 129 by a block 136, mounted on the lug 131, encountering the lower end 137 of the dog.

The outer guard member 121 is normally held raised above the device 117, as best shown in Fig. 1, since the inner end of the opening 118 is closed by the inner guard member 120. The outer guard member 121 is supported on the forward ends of the two arms 138, 139 pivoted at their rear ends on the pins 125. The arm 139 is provided with a cam slot 140 which receives the outwardly extending end 149 of the pin 133. When the parts of the machine are in normal position, the rear lower end of the cam slot 140 is engaged by the pin 133 and thereby holds the forward ends of the arms 138 and 139 raised, and with them the outer guard member 121. A contraction spring 152 assists in holding the forward ends of the arms 138 and 139 raised. On the outward movement of the plunger after a coin has been inserted in the machine, the pin 149 encounters the inclined surface 141 of the slot 140 and thereby lowers the outer guard member 121 and places it in front of the device 117 in which position it continues until the plunger returns to its normal retracted position. The lifting of the inner guard member 120 from behind the opening 118 and the lowering of the outer guard member 121 in front of the opening 118 are properly timed with respect to each other and to the moving of the said end of the article 90 into the opening 118, the guard member 120 being raised just before the article reaches it and the guard member 121 being lowered before or at the time the guard member 120 is raised. It is thus seen that the guard member 121 remains in front of the opening 118 while the said end of the article enters it and that access to the article to remove it from the machine cannot be had until after the plunger is released and is permitted to return to normal retracted position.

The operation of the machine is briefly as follows:—Assuming that a coin of proper dimension has been inserted through the slot 42, it passes through the chute 151 downwardly until it reaches a position where it is held vertically so that when the purchaser pulls the plunger 79 outwardly by means of its handle portion 80, the plunger is free to move outward since the latch lever which normally enters the notch 101 in the plunger is held out of the way by the coin. The plunger is thus free to be pulled all the way out. On its outward movement the arm 105 of the article-delivery plate 92 encounters and rides up on the coin 50 as shown in Fig. 3, thereby raising the plate 92 and placing the up-turned rear end 95 thereof behind the lowermost article 90 in the hopper. The continued forward movement of the plunger pushes the forward end of the article itno the opening 118 of the device 117 until the forward end of the article is substantially flush with the forward edge of the device, as shown in Figs. 4 and 7, at which point the coin is freed by suitable mechanism to permit it to drop into the coin box 77. During the outward movement of the plunger and before the forward end of the article reaches the inner end of the opening 118, the forward edge of the cam ledge 131 encounters the cam surface 135 and raises the inner guard member 120. Just before or at the time the guard member 120 is raised, the engagement of the cam surface 141 of the slot 140, by means of the pin 149, causes the guard member 121 to be lowered in front of the opening 118. The guard members continue in this relative position until the plunger has been pulled all the way out and is again moved into retracted position, the inner guard member 120 being released first and permitted to drop down upon the upper surface of the article and then the guard member 121 being raised to permit the purchaser to remove the article. As the article is removed, the inner guard member 120 drops down behind the opening 118 and effectually seals it, the pin 129 being lowered to permit the notched lower end 127 of the dog 126 to swing into engagement therewith to hold the inner guard member in lowered position until the next operation of the machine.

The machine thus continues to operate until the articles have been delivered to a predetermined extent. When the articles in the hopper have been lowered to the predetermined level by the delivery of the successive bottom articles from the hopper, the pin 143 projecting forwardly from the weight 144 resting on the topmost article 145 in the hopper, encounters the inturned lower end 146 of a pivoted guard member 147 and moves the upper end 148 thereof over the coin slot 42, thereby preventing further insertion of coins into the machine. The pivoted guard member 147 is in an unbalanced condition, and when the arm 146 thereof is released, the member 147 moves to the position shown in Fig. 10, exposing the slot 42. The stop pins 150 by engagement with the opposite sides of the plate 52 limit the movement of the guard member.

Having thus described the invention, what I claim as new is:—

1. In a vending machine of the character described including an article delivery means and a reciprocable plunger for controlling the article delivery means, a device having an opening into which one end of an article is moved by the article delivery means, and a guard member controlled by the plunger and moved into position in front of the device on the forward movement of the plunger moving the article into the device, said guard remaining in front of the device until the plunger is returned to normal position, whereby the guard is removed from in front of the device, thereby exposing the article for removal from the device.

2. In a vending machine of the character described including a reciprocable plunger carrying an article delivery means, a device into which the article delivery means advances the forward end of an article to be delivered, an inner guard normally positioned in back of the device, a pivoted arm on which the inner guard is mounted, an outer guard adapted to be moved in front of the device, but normally out of alinement therewith, a pivoted arm on which the outer guard is mounted, each of said two arms having means adapted to be controlled by the plunger for raising the inner guard and for lowering the outer guard.

3. In a vending machine of the character described including a vertically arranged article containing hopper open at its lower end to expose an article to be delivered, a reciprocable plunger having an article delivery member mounted thereon, a device having an opening into which the delivery member advances the forward end of an article, an inner guard member normally positioned behind the opening in the device, a pivoted arm on which the guard member is mounted, a dog for holding the inner guard in position behind the opening in the device, said arm having a cam surface, a cam lug on the plunger for engaging the cam surface and raising the guard as the plunger moves forward to move the forward end of the article into the device, an outer guard member, a pivoted arm on which the outer guard member is mounted, the arm of the outer guard member having a cam slot and a pin carried by the plunger engaged in the cam slot, said cam slot being so arranged that when the plunger is in retracted position, the outer guard member is held raised, and when the plunger moves forward the outer guard is moved forward into the opening in the device.

4. In a vending machine of the character described including article delivery means, a device having an opening into which one end of an article is moved, an inner guard member normally closing the opening in the device, an outer guard member, means for moving the inner guard member to permit the article to be moved into the device, said means being operative when the inner guard member is moved to place the outer guard member in front of the device to prevent access to the article in the device until after said means is returned to normal position.

5. In a vending machine of the character described including a vertically arranged hopper containing the articles to be delivered, a reciprocable plunger having an article delivery means adapted to engage and move forward the lowermost article in the hopper, a device having an opening located opposite the forward end of the lowermost article in the hopper, an inner guard member normally located between the forward end of the article and the opening in the device, means controlled by the plunger as it moves the article forwardly toward the device for moving the inner guard member out of the path of the article, an outer guard member and means controlled by the plunger as it moves the article forwardly for placing the outer guard member in front of the opening in the device to prevent access to the article until after the plunger returns to normal position.

6. In a vending machine of the character described including a vertically arranged article containing hopper open at its lower end and a reciprocable plunger carrying an article delivery member adapted to engage and push forward the lowermost article in the hopper, a device having an opening in alinement with the forward end of the lowermost article, an inner guard member normally located between the lowermost article and the opening in the device to prevent access to the article, a pivoted arm on which the inner guard member is mounted, said arm having a cam surface, a lug on the plunger adapted to engage the came surface to raise the inner guard member as the article is moved toward the opening in the device, a spring pressed dog for engaging the arm to hold the guard member behind the opening, a lug on the plunger for disengaging the dog from the arm to permit the guard member to be raised, an outer guard member, a pivoted arm on which the outer guard member is mounted, said second arm having a cam slot, and a pin carried by the plunger engaged in the cam slot, said cam slot being so arranged that when the plunger is in retracted position, the outer guard member is held out of alinement with the opening in the device, and when the plunger is moved forward the outer guard member is placed in front of the device to prevent access into it until after the plunger returns to retracted position.

HARVEY GILES.