Dec. 8, 1959 A. V. SHIPMAN 2,916,126

CONTROL FOR VENDING MACHINES AND THE LIKE

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Fig. 4.

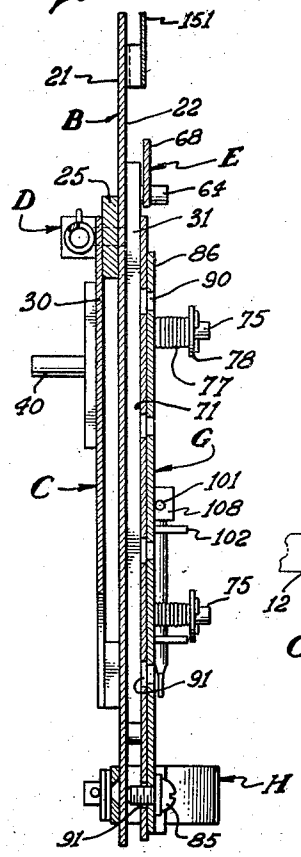


Fig. 1.

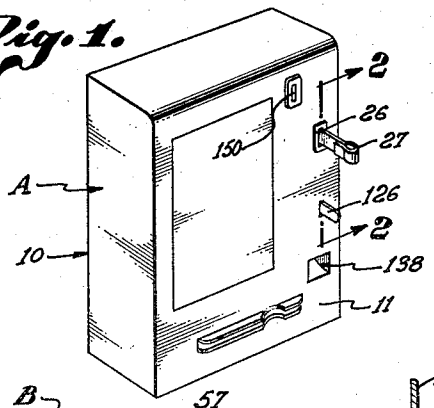


Fig. 2.

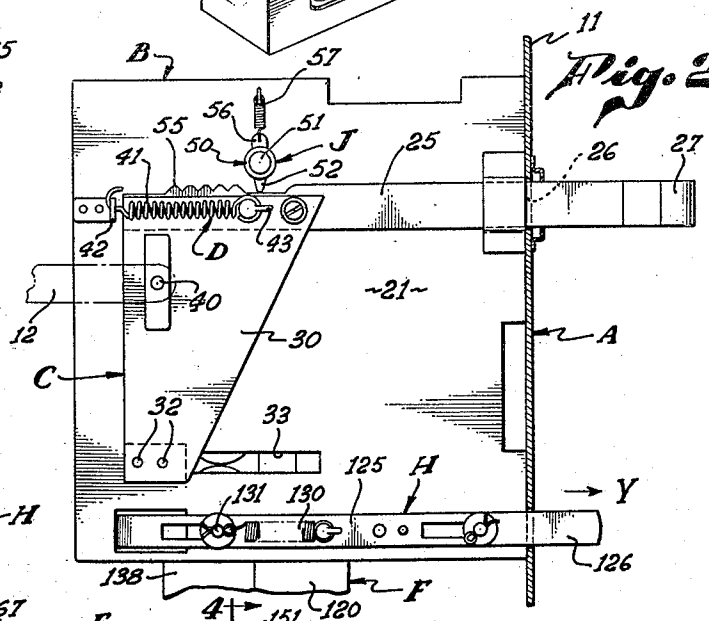
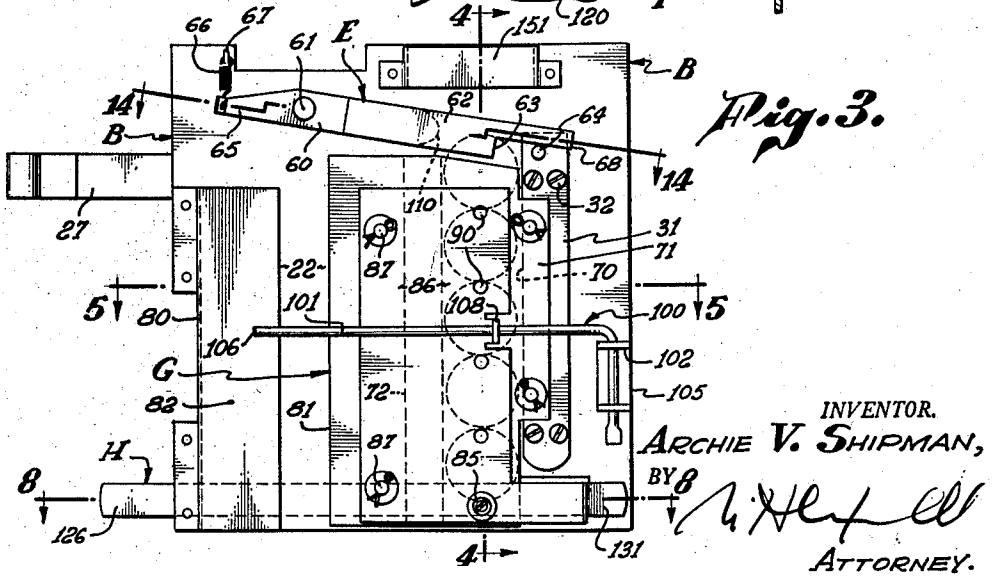


Fig. 3.



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Fig. 5.

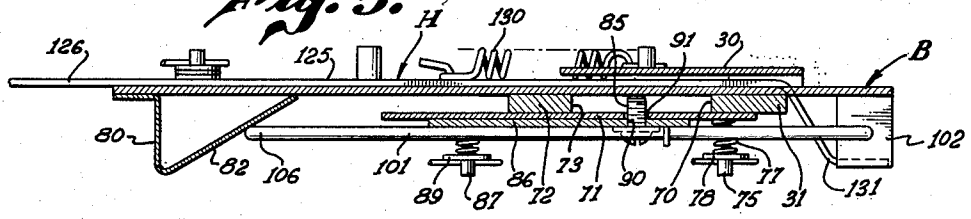


Fig. 6.

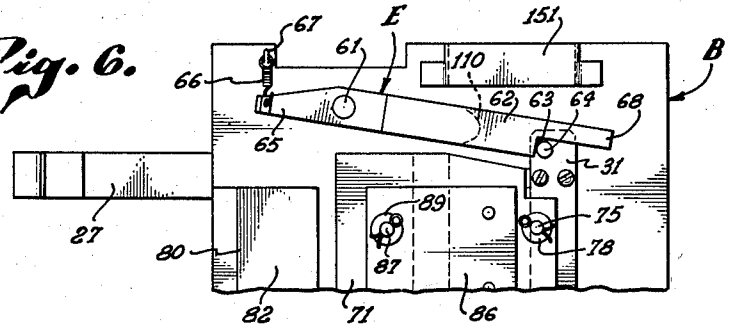


Fig. 7.

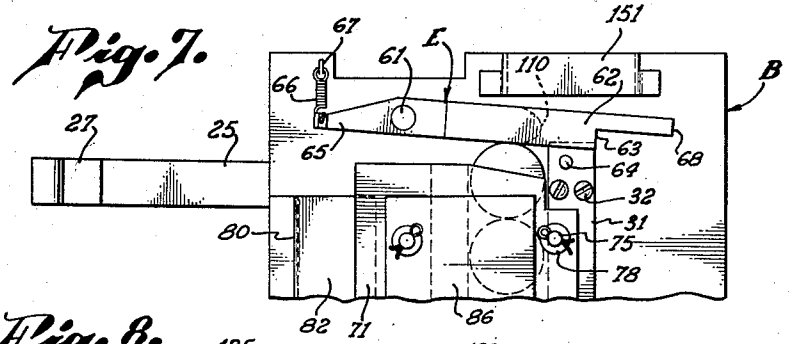


Fig. 8.

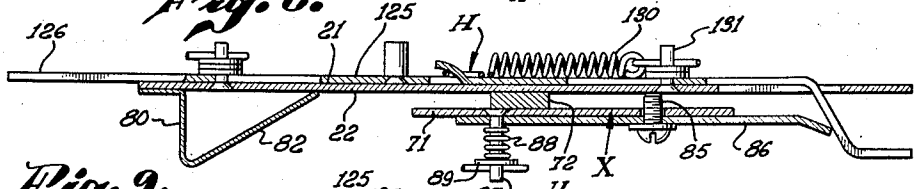
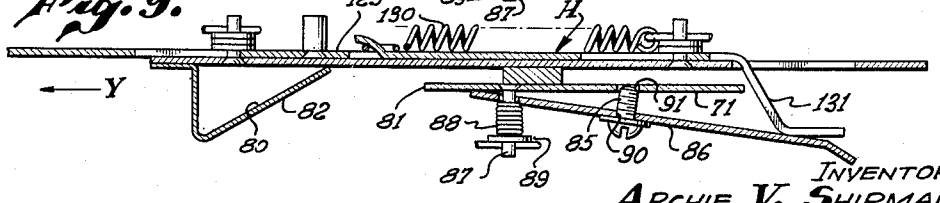


Fig. 9.



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Fig. 10.

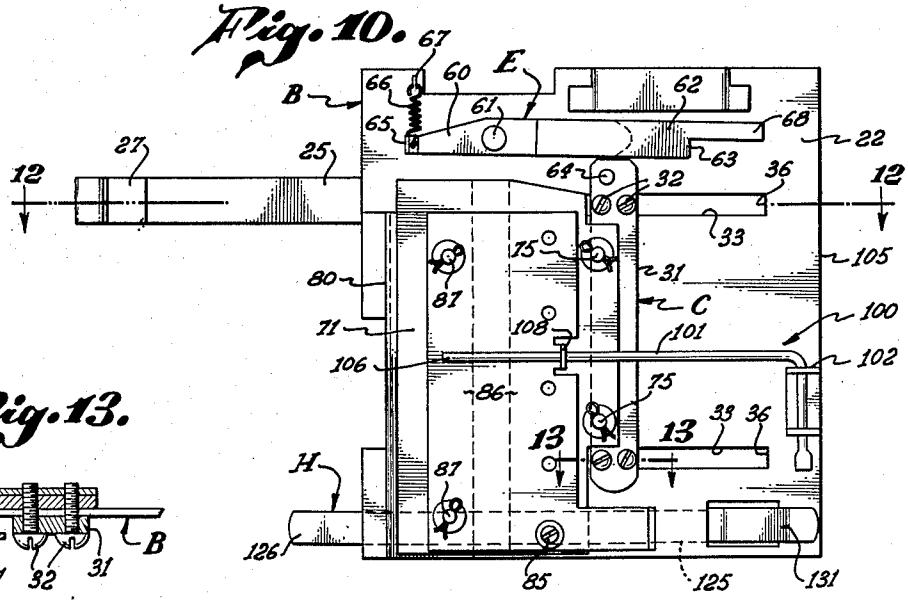


Fig. 13.

Fig. 11.

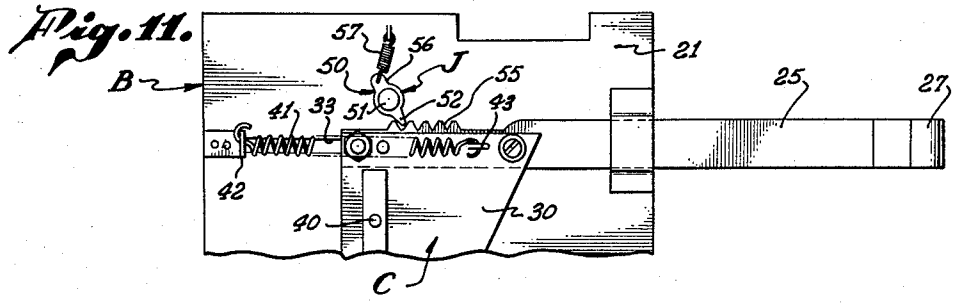


Fig. 12.

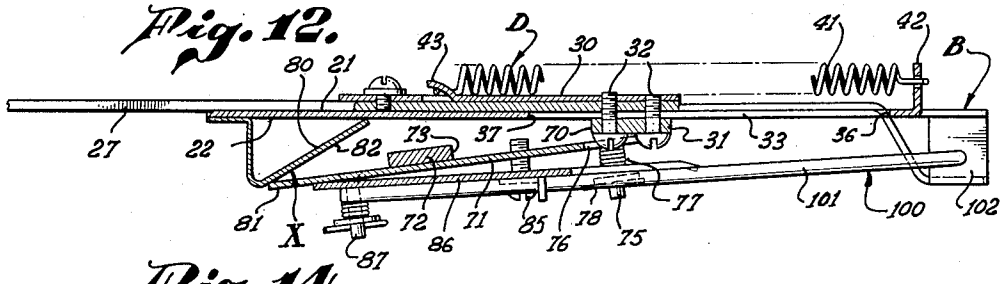
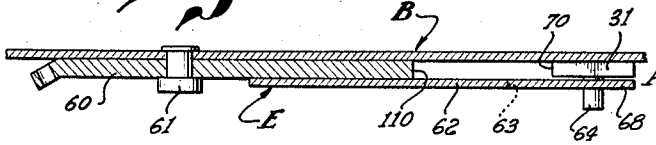


Fig. 14.



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Patented Dec. 8, 1959

2,916,126

CONTROL FOR VENDING MACHINES AND THE LIKE

Archie V. Shipman, Los Angeles, Calif.

Application August 3, 1953, Serial No. 371,776

1 Claim. (Cl. 194—55)

This invention has to do with a control for vending machines and the like, and it is a general object of the invention to provide a simple, practical, dependable coin controlled mechanism for vending machines or like apparatus.

It is an object of the present invention to provide a simple, compact, dependable mechanism serviceable in a vending machine, or the like, and which is such that is can be selectedly set to act following or in response to the deposit of a predetermined number of coins of a particular character.

It is another object of this invention to provide a control mechanism of the general character referred to which includes a coin stop adapted to be selectively positioned to vary the mechanism for handling various numbers of coins, the stop being such that it can be adjusted or positioned rapidly and without the exercise of any special care or skill.

It is another object of this invention to provide a mechanism of the general character referred to including a coil releasing mechanism operable to effect the return of coins deposited, should a user elect to recover coins prior to operation of the mechanism.

It is another object of this invention to provide a mechanism of the general character referred to including but few, simple parts, all simple in form and compact and all such as to assembly into a structure which is simple and dependable in operation and at the same time compact and such as to occupy a limited space.

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 typical coin control vending machine embodying the mechanism of the present invention. Fig. 2 is an enlarged side elevation of the mechanism embodying the invention, being a view taken substantially as indicated by line 2—2 on Fig. 1 showing the mechanism in a retracted or unactuated position. Fig. 3 is a view of the structure shown in Fig. 1 taken at the reverse or opposite side of the mechanism and showing the parts in an unactuated or retracted position. Fig. 4 is an enlarged, vertical, detailed, sectional view of the mechanism taken substantially as indicated by line 4—4 on Fig. 3. Fig. 5 is an enlarged plane section taken as indicated by line 5—5 on Fig. 3. Fig. 6 is a view similar to a portion of Fig. 3 showing the manner in which operation of the mechanism is stopped in the absence of the required coins therein. Fig. 7 is a view similar to Fig. 6 illustrating the mechanism released as a result of the presence of the desired coins therein. Fig. 8 is an enlarged plane section taken as indicated by line 8—8 on Fig. 3. Fig. 9 is an enlarged plane section similar to Fig. 8 showing the mechanism operated to effect return or release of coins without operation of the mechanism in a manner to effect actuation of the vending machine. Fig. 10 is a view

similar to Fig. 3 and showing the mechanism in a fully actuated or operated position. Fig. 11 is a view similar to the upper portion of Fig. 2 showing the mechanism operated and approaching a fully operated position. Fig. 12 is a plane section similar to Fig. 8 showing the mechanism in the fully operated position. Fig. 13 is an enlarged plane section taken as indicated by line 13—13 on Fig. 10 and Fig. 14 is an enlarged plane section taken as indicated by line 14—14 on Fig. 3.

The mechanism as provided by the present invention is adapted to be applied to or incorporated in vending machines, or the like, to effect control thereof in response to the deposit of coins. In the drawings, a vending machine A is shown as including a box-like case or housing 10, and within the machine the parts or mechanism to be controlled include an operating rod 12 shown in Fig. 2 connected to the control mechanism as provided by the present invention. The present invention is in no way concerned with details of the vending machine or of parts or mechanism of which the element 12 is a part and, therefore, such details are eliminated in the present disclosure.

So far as the present invention is concerned, the mechanism provided can be mounted in the case or body 10 of a vending machine as circumstances may require, and in the drawings the mechanism as provided by the invention is shown carried by the front wall 11 of the case 10 of the vending machine A with the principal parts of the mechanism projecting inwardly from the wall 11 to be within the case 10 while the manually accessible or operable parts project forward from wall 11 and are accessible at the exterior of the case.

The mechanism as provided by the present invention includes generally a fixed or rigid frame member B, a slide or crosshead C carried by the frame A and adapted to reciprocate relative thereto, a means D normally yieldingly holding the crosshead in an unactuated or retracted position, a releasable latch means E adapted to control the crosshead, a coin receiver F and a coin control actuating means G cooperatively related to the crosshead and frame and adapted to receive one or more coins and when thus loaded to be effective to release the means E following which the coins are discharged from the receiver F.

The mechanism further includes a coin return or releasing mechanism H serviceable after coins have been deposited in the mechanism to release them from the receiver F preliminary to operation of the mechanism.

The frame B in the preferred form of the invention is a simple, flat, vertically disposed plate-like element having opposite sides 21 and 22. In the particular case illustrated, the frame B is attached or fixed to the front wall 11 of the case 10 and projects rearwardly therefrom to be located within the case with both sides of the frame spaced from other parts of the vending machine.

The slide or crosshead C is carried by the frame B to reciprocate relative thereto, preferably horizontally, and in the case illustrated, it has an operating arm 25 projecting from it through an opening 26 in the front wall 11. The arm has an operating handle 27 on its forward or outer end conveniently accessible to a person operating the machine.

The crosshead C, in the form illustrated, includes sections 20 and 31 on opposite sides of the frame and connected by guides 32 that extend between the sections 30 and 31 to operate in slots 33 provided in the frame.

The section 30 of the crosshead is a flat, plate-like element located at or adjacent the side 21 of frame B while the section 31 is an elongate, vertically disposed section located at or adjacent the side 22 of frame B. In the case illustrated, the frame B has vertically spaced, horizontally disposed slots 33, and the guide members 32

extend between and connect the sections 30 and 31 and in so doing they extend through the slots 33.

Through the construction just described the crosshead C is supported by frame B for limited reciprocation relative to the frame, and when the crosshead is in an unactuated or retracted position, the guide members 33 are stopped against the ends 36 of the slots 33 whereas when the crosshead is fully actuated, it is stopped against the guides 33 and stopped against the ends 37 of the slots 33.

In the particular case illusrated, the element or member 12 of the mechanism A requiring operation is suitably connected or coupled to the crosshead C. In the case illustrated, the arm 12 is connected to crosshead C by a pivot pin 40 so that as the crosshead is reciprocated relative to frame B, the arm 12 is correspondingly operated.

The means D provided to normally yieldingly hold the crosshead C in a retracted or unactuated position is preferably a spring means. In the case illustrated the means D is shown as including a helical tension spring 41 having one end anchored to a bracket 42 on frame B while the other end is anchored to a bracket 43 on the crosshead C. The location and action of the spring 41 is clearly illustrated in the drawings from which it will be noted that the spring normally holds the crosshead retracted yet permits it to be manually operated to a forward or actuating position such as is illustrated in Fig. 12 of the drawings.

In the preferred carrying out of the invention, movement control means J is included in the machine to control the operation of the crosshead C relative to frame B so that when the crosshead is operated from the retracted position it can be operated only forward or toward a fully actuated position and cannot be returned until it has reached the fully actuated position, and correspondingly, when the crosshead starts to move from the fully actuated position to the retracted position it cannot be reversed as to its direction of movement.

In the case illustrated, the means J is a reversal ratchet means and is shown as including a pivoted ratchet member 50 mounted on the frame B as by a pivot pin 51 and having a tooth or jaw 52 cooperatively related to a series of ratchet teeth 55 on the crosshead C. The teeth 55 are in an elongate series extending lengthwise of the crosshead, that is, in the direction of movement of the crosshead, and the parts are related so that when the crosshead is retracted the ratchet member or jaw 52 is beyond one end of the series of teeth whereas when the crosshead is fully actuated, the jaw 52 is beyond the other end of the series of teeth. An arm 56 projects from the pawl and a spring 57 anchored to the frame B connects to the arm 56 to normally yieldingly hold the arm in a neutral position such as is shown in Fig. 2 of the drawings. When the crosshead C is moved from the neutral or unactuated position shown in Fig. 2 toward an out or actuated position, the jaw 52 drags across the teeth 55 as shown in Fig. 11 allowing the crosshead to move toward the actuated position by checking it against retraction. When the crosshead reaches the fully actuated position, the pawl operates to the neutral position and then as the crosshead is moved back to the unactuated position, the jaw 52 ratchets or drags across the teeth 55 allowing the return movement by checking movement of the crosshead toward the actuated position.

The releasable latch means E as provided by the present invention includes a latch member 60 mounted on the frame B by means of a pivot pin 61. The latch member 60 has a latch arm 62 of substantial length and provided with a shoulder 63 adapted to cooperate with a lug 64 provided on and projecting from the crosshead. In the preferred arrangement the latch member 60 is mounted at or adjacent the side 22 of frame B, and the lug 64 is on and projects from the section 31 of the crosshead. The latch member 60 has an arm 65 extending or projecting therefrom, and a spring 66 in the form of a helical tension spring has one end anchored at 67 to frame B while the other end is connected to arm 65. The spring 66 operates to normally yieldingly urge the arm 60 downwardly as indicated by the arrow in Fig. 3. An extension 68 of arm 60 projects beyond the shoulder 63 and overlies the lug 64. When the crosshead is in the retracted or unactuated position, the extension 68 of the arm 62 rests on the lug 64, and the lug 64 is spaced somewhat from shoulder 63. If an attempt is made to operate the crosshead as by pulling on arm 25, the lug 64 engages the shoulder 63 and thus the means E positively stops forward movement of the crosshead. However, the arm 62 is subject to being moved upwardly or released as will be hereinafter described in which event the shoulder 63 is above the lug 64 and passes the lug so that the crosshead can be operated to a fully actuated position.

The coin control actuating means G, as provided by the present invention, is cooperatively combined with or related to the frame B and crosshead C. In the form illustrated, the means G includes elements cooperating with the frame and crosshead to define a coin chute, and it includes a stop for limiting the insertion of coins into that chute and it includes structure whereby the latch means E is released following loading of the means G with a predetermined number of coins, following which the coins are released to be discharged into the receiver F.

In the construction illustrated in the drawings, the side 22 of frame B forms one wall or side of the coin chute while the longitudinal or vertical edge 70 of the crosshead section 31 forms one edge wall of the coin chute. The means G provides a vertical plate 71 at the side 22 of frame B to form the opposite side wall of the coin chute and provides a vertical rib 72 on the plate 71 with an edge 73 forming the opposite edge wall of the coin chute.

The plate 71 is shown as a simple, flat, vertically disposed plate mounted on and carried by the crosshead, for instance, by section 31 of the crosshead so that it is normally yieldingly held in a position where it is parallel with and spaced just far enough from the side 22 of frame B so that a coin will be received between the frame and the plate. In the construction illustrated, the means employed to mount the plate 71 on the section 31 of the crosshead includes posts 75 mounted on and projecting from the section 31 of the crosshead through openings 76 in the plate 71. Helical compression springs 77 are carried on the posts 75 between the outer sides of plate 71 and stops 78 on the outer ends of the posts. Through this construction the mounting of plate 71 on the crosshead is such that the plate is normally yieldingly urged toward the frame as indicated by arrows *x* in Figs. 8 and 12 of the drawings.

In the construction illustrated, the section 31 of the crosshead suitably spaces a plate 71 from frame B, and the ridge 72 on the plate 71 likewise serves to suitably space the plate from the frame. The edges 70 and 73 of the crosshead section 31 and ridge 72 are preferably straight, vertically disposed and thus parallel parts spaced apart to accommodate the desired coin between them.

When the crosshead is in the retracted or unactuated position the construction just described serves to yieldingly hold the plate 71 parallel with and suitably spaced from the frame B establishing the coin chute as shown in Figs. 4, 8, and 9 of the drawings. The present invention provides a lift means adapted to effect shifting or lifting of plate 71 away from the frame after the crosshead has been moved a predetermined distance away from the retracted position and as it approaches and finally reaches the fully actuated position. The lift means, as shown in the drawings, includes a cam 80 mounted on the frame B and a cam follower 81 provided on or projecting from the plate 71. The cam 80 has a pitched or inclined face 82 that receives the follower 81 and effects swinging of the plate away from the frame or in a direction opposite to that indicated by arrows *x* in

Fig. 12 as the crosshead moves to and approaches the fully actuated position. The follower **81** in the case illustrated is a part of or a mere extension on the plate **71**, and its projecting edge portions engages or cooperates with the inclined face **82** of the cam. It will be apparent from the drawings that the cam **80** can be located on the frame and can be related to the follower **81** so that the plate **71** begins to lift away from the frame when the crosshead reaches a predetermined position in the course of its movement from the retracted to the operated position, and when the plate has started to lift it will continue to lift until the crosshead reaches the fully operated position.

It will be apparent from Fig. 12 of the drawings that when the plate **71** has been lifted away from the frame the coin chute established through the construction above described is opened or operated so that a coin will be no longer confined between the frame and the plate but will be free to drop from between these parts.

The mechanism of the present invention includes a stop means for coins deposited in the machine, and this stop means includes generally a coin stop **85** on a carrier **86** suitably mounted on the plate **71**. In the case illustrated the carrier **86** is a flat, plate-like element mounted on the plate **71** to be normally yieldingly held against the outer side of the plate or adjacent the plate as shown in Fig. 8 of the drawings.

In the case illustrated, the mounting means for the carrier **86** includes posts **87** projecting from the plate **71** and compression springs **88** between heads **89** on the posts **87** and the carrier **86**. Through this construction, which is clearly shown in Fig. 8, the carrier **86** is normally yieldingly held flat against the plate **71**.

The stop **85** is a member carried by the carrier **86** and projecting therefrom to enter the coin chute hereinabove referred to so that it serves as a stop limiting downward movement of coins in the chute. It is preferred that the stop **85** be vertically adjustable or such that it can be selectively arranged in various positions longitudinally of the coin chute to the end that the mechanism can be set to receive any desired number of coins. For instance, the stop **85** can be set so that the chute will receive but one coin or it can be set to receive a multiplicity of coins. In the case illustrated, the stop **85** is in the form of a screw threaded into or through an opening **90** in the carrier **86** to project from the carrier **86** toward the frame and normally through an opening **91** in the plate **71**.

In the case illustrated, threaded openings **90** are provided at suitable intervals in the plate **71**, that is, in a vertical series in the plate **71**, and corresponding openings **91** are provided in the plate **71** so that as the stop screw **85** is arranged in any one of the openings **90** it will operate through an opening **91** in the plate **71** to enter the coin slot. From the drawings, particularly from a consideration of Fig. 3 of the drawings, it will be noted that the stop **85** can be selectively located or positioned so that the coin slot will receive one or more coins, as the operator elects.

In accordance with the present invention, a releasing means **100** is provided for, or in connection with, the carrier **86** so that when the crosshead has been operated to a position where the plate **71** starts to shift or rock relative to the frame to open the coin chute, the stop carrier is operated relative to plate **71** to effect withdrawal of the stop from the coin chute. In the form illustrated, the means **10** includes a lever **101** pivotally mounted at **102** on frame B. The point of pivotal support of the arm is adjacent the edge **105** of frame B remote from the edge portion at which cam **80** is located. The arm **101** projects from the point of pivotal mounting so that it overlies the carrier **86** and its terminal end **105** bears on the cam **80**. A lug **108** projects up from the carrier **86** at the edge thereof remote from the edge which is connected to the plate **71**. The lug **108**

slidably passes the arm **101**. The construction is such that as the crosshead is operated toward the cam **80** and as the plate **71** is shifted or lifted by means of the cam **80**, the plate **71** passes between the arm **101** and the cam and swings or lifts the arm causing the edge portion of the carrier **86** carrying the stop **85** to swing or lift away from the plate **71** with resulting retraction of the stop from the coin chute. By the time the crosshead reaches the fully actuated position the stop **85** has been completely withdrawn or retracted from the coin chute. As a result of the construction just described, coins previously deposited in the coin chute and stopped therein by the stop **85**, as indicated in Fig. 3 of the drawings, are positively released and allowed to drop by gravity from the mechanism into the receiver F.

From the foregoing description it will be noted that as the mechanism is operated, the crosshead moves from the retracted position a substantial distance toward the actuated position before the plate **71** starts to lift away from the frame and before the stop starts to retract from the chute.

In accordance with the present invention, the crosshead completed with the parts carried by or shifting therewith serve to form a coin carrier adapted to receive and carry a predetermined number of coins and to so carry the coins that they cooperate with and actuate the means E as the crosshead moves from the retracted position and before it reaches a position where the plate **71** has shifted or the stop **85** retracted to release the coins. In the case illustrated a cam-like shoulder **110** is provided on the arm **62** of the latch member **60**, and this shoulder is in the path of the uppermost coin carried in the coin chute established through the mechanism above described. For instance, in the case illustrated in Fig. 3 the stop **85** is located so that the coin slot receives and carries five coins, one above the other, the lowermost coin supported on the stop while the uppermost coin projects up and is positioned to cooperate with the shoulder **110**. In this case any number of coins less than five will not provide a coin in a position to engage **110**; however, when the fifth coin has been deposited it is in position so that as the carriage is operated from the retracted position, the uppermost or fifth coin engaging shoulder **110** releases the latch means E clearing the lug **64** so that the crosshead can move forward and to the fully actuated position. As a result of this complete forward movement of the crosshead, the arm **12** connected to the crosshead is operated in the desired manner and can, in practice, be provided to accompany any desired action. From the foregoing description it will be apparent that following release of the latch means E, the plate **71** is shifted and the stop **85** retracted with resulting release of the coins so that they all fall from the chute and into the receiver F.

In the form of the invention illustrated, the receiver F has a trough or duct portion **120** located so that as the coins fall from the mechanism above described they are conducted to a desired point in the case **10** to be later collected as is common in machines of this general character.

In accordance with the present invention, the machine is provided with the means F serviceable to release coins after they have been deposited but before the mechanism has been actuated. The means F includes a bar **125** slidably carried by the frame B to reciprocate relative thereto and having a forward end portion or handle **126** at the front of the case **10**. The bar **125** is mounted by means of a pin and slot construction so that the bar has a limited movement, and a spring **130** has one end anchored at **131** while the other end is connected to the bar **125** to normally yieldingly hold the bar retracted. The bar has a head or cam portion **131** projecting from it and positioned to be moved into engagement with the stop carrier **86**. The parts are related so that when the bar **125** is in the normal position where it is held by

the spring **130**, the head or cam part **133** is clear of the stop carrier **86** and has no action thereon. However, whenever the bar **125** is pulled forward or in the direction indicated by the arrow *y* in Fig. 9, the head **123** on the bar engages the carrier **86** causing it to be rocked or tilted relative to plate **71** so that the coin stop **85** is retracted allowing the coins to drop from the chute and into a trough **138** that extends to the exterior of the machine where the coins are made available to the user. The bar **125** is free to be manually operated at any time, and if any coin or coins are in the chute, operation of the bar **125** will effect release of the coins making them available at the exterior of the machine.

In a typical use of the structure provided by the present invention, that is, in a typical application of the mechanism to a vending machine A, or the like, a coin receiving slot **150** is provided in the case **10** of the machine and a suitable coin guide **151**, or the like, extends from the slot **150** to a point above the mechanism of the present invention so that when the crosshead is retracted establishing a closed coin chute open at its ends, a coin deposited in the slot **150** will roll or drop into the coin chute.

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 claim.

Having described my invention, I claim:

A mechanism of the character described including, a flat vertically disposed frame, a crosshead carried by the frame to reciprocate horizontally relative thereto between a retracted position and an operated position and having

an operating arm projecting from it, a plate carried by the crosshead at one side of the frame and shiftable relative thereto from a normal position where it cooperates with the frame and crosshead to define a vertical coin chute, cam means adapted to shift the plate and open the chute as the crosshead is operated toward the operated position, a stop normally engaged in the chute to stop a coin therein and adapted to be retracted from the chute as the crosshead is operated toward the operated position, and a latch normally positioned to stop movement of the crosshead toward the operated position and adapted to be released by a coin in the chute, the stop being carried by a carrier mounted on the plate and having a plurality of ports in a series lengthwise of the chute and adapted to selectively receive and carry the stop, means normally yieldingly holding the carrier in position where the stop is in the chute, and a bar carried by the frame and adapted to be shifted relative thereto and engageable with the carrier to effect retraction of the stop from the chute.

References Cited in the file of this patent

UNITED STATES PATENTS

1,044,629	Dawes	Nov. 19, 1912
1,198,210	Giles	Sept. 12, 1916
1,495,217	Alexander	May 27, 1924
2,233,654	Tratsch	Mar. 4, 1941
2,310,072	Fry	Feb. 2, 1943
2,339,823	Vogel	Jan. 25, 1944

FOREIGN PATENTS

728,245	Germany	Nov. 23, 1942
755,130	France	Sept. 4, 1933