Sept. 15, 1925. 1,553,534

C. F. HUNT

VENDING AND BANKING MACHINE

Filed Nov. 19, 1923 2 Sheets-Sheet 1

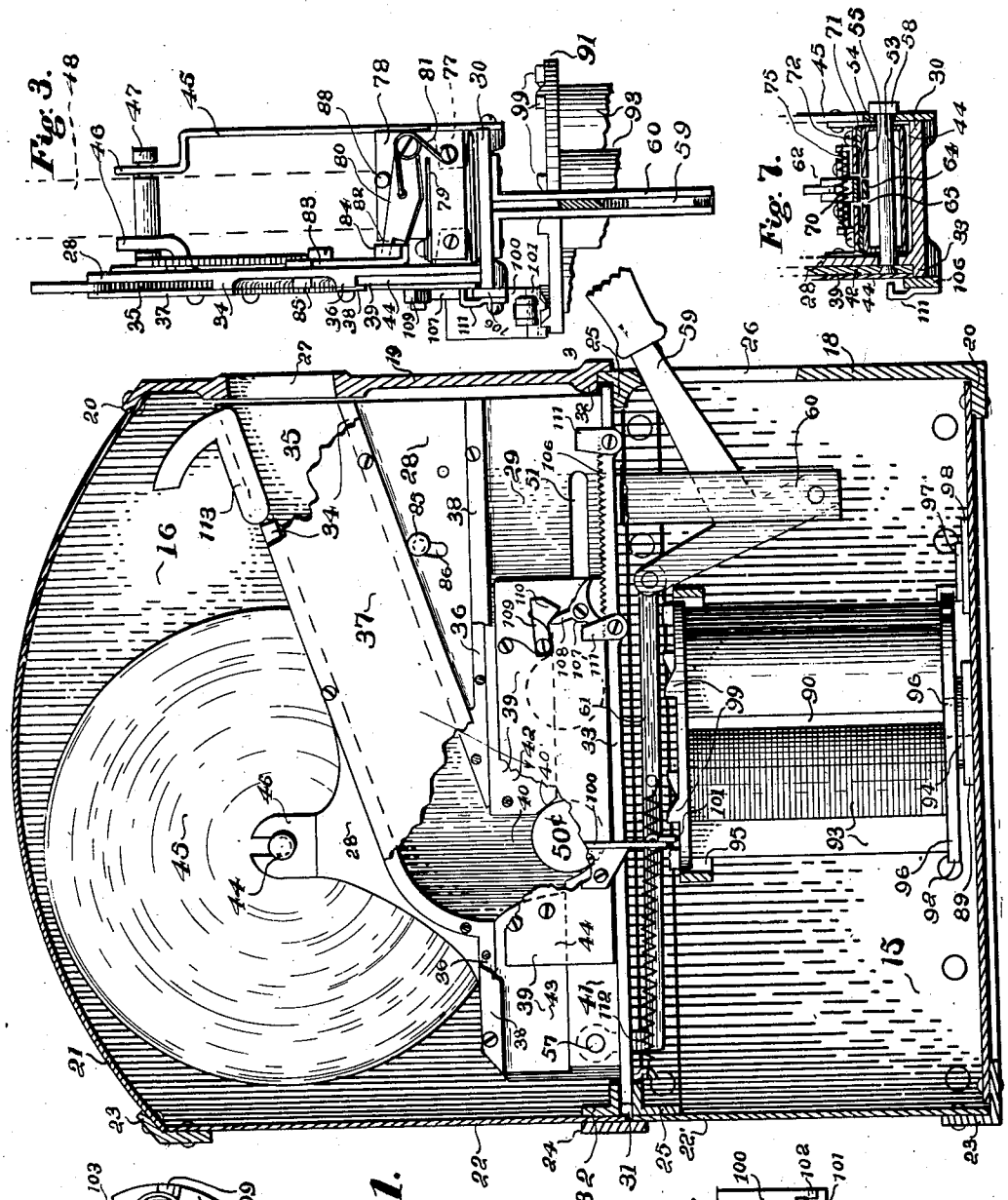


Fig. 1.

Fig. 3.

Fig. 7.

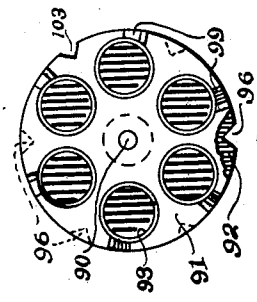


Fig. 9.

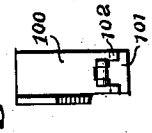


Fig. 8.



Fig. 12.

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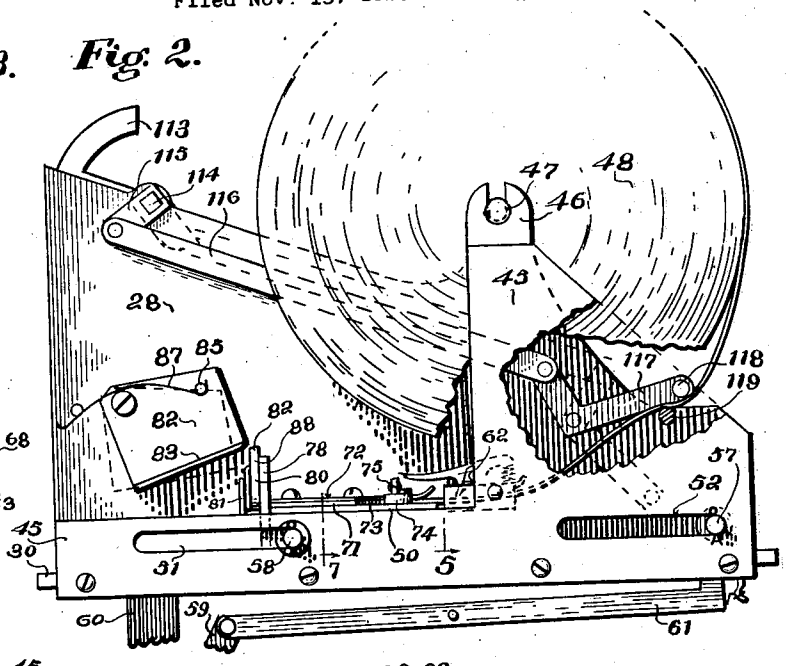
VENDING AND BANKING MACHINE

Filed Nov. 19, 1923 2 Sheets-Sheet 2

Fig. 13.



Fig. 2.



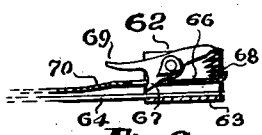


Fig. 6.

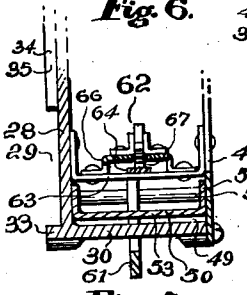
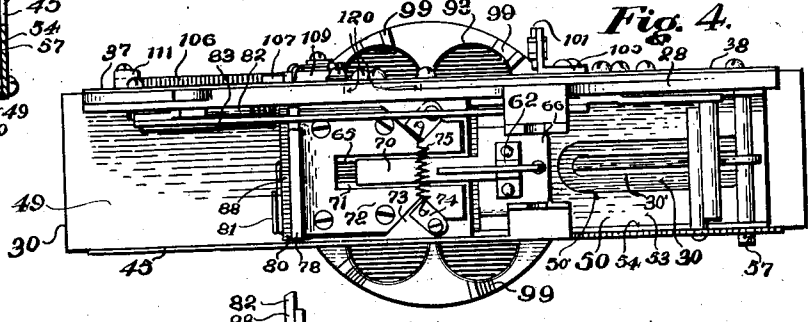


Fig. 5.

Fig. 4.



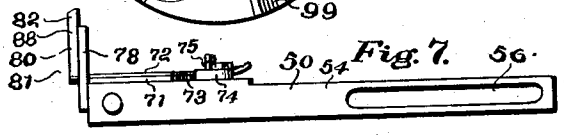
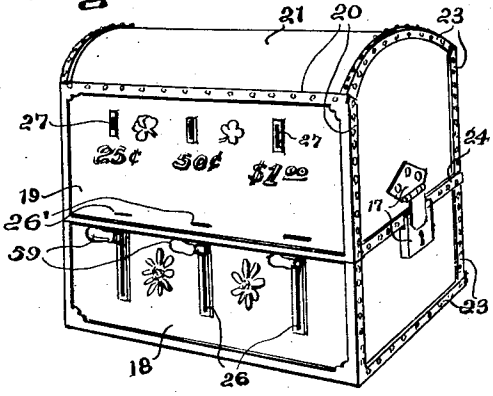


Fig. 7.

Fig. 11.



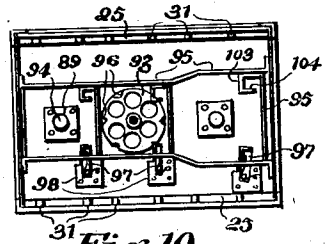


Fig. 10.

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Patented Sept. 15, 1925. 1,553,534

UNITED STATES PATENT OFFICE.

CHARLES F. HUNT, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE NATIONAL BANK MACHINE CO., INC., OF WASHINGTON, DISTRICT OF COLUMBIA.

VENDING AND BANKING MACHINE.

Application filed November 19, 1923. Serial No. 675,744.

To all whom it may concern:

Be it known that CHARLES F. HUNT, a citizen of the United States, residing at Washington, in the District of Columbia, has invented certain new and useful Improvements in Vending and Banking Machines, of which the following is a specification.

The invention has for an object to provide a satisfactory machine which is adapted to the sale or dispensation of paper checks, slips or the like and to adapt the machine to use with various grades of check material, especially stiff paper such as used for tickets, although it is also adapted to use with lighter material such as used for stamps, also.

A further aim is to provide such a device which is liable in a minimum degree to damage by failure of persons to properly operate the lever for discharge of a check. This is of especial importance where children or work people of low mentality are involved. It is also an object to provide a mechanism so constructed that if partial operation of a lever is made the machine will still function by a subsequent further operation in the proper direction to discharge the proper article or check, so that the patron will not risk the loss of money without proper return in using the machine.

A particular object is to provide such a machine which will be proof against dishonesty either in the use of counterfeit coins or blanks or in attempted extraction of contents without full payment for the value received.

Another object is to provide a novel means to prevent discharge of a number of checks by repeated partial operations of the operating lever upon insertion of a single coin. A further aim is to present a novel means for severing a check strip.

It is an especial aim to so correlate the parts that the severing device will function as a feeding means and a safety means preventing a patron from grasping a partly extruded ticket or the like and after releasing the operating lever pulling out the strip.

A further aim is to provide in a machine utilizing the coin as a part of the operative connection for dispensation, a novel coin ram and push rod mechanism.

The provision of a novel and efficient coin magazine device is an important desideratum of this invention.

It is also a special aim to effect improvements in the specific mechanism of such appliances in the several assemblies involved, particularly with reference to the operation of a ticket, check or stamp feeding and severing device; and the coin controlled operating means therefor.

It is a further important aim to enable the adaptation of the mechanism in which a coin serves as a part of the operative connection, to the use of coins of different denominations in an inexpensive manner. A further purpose is to so embody the mechanism that the parts for each denomination of several which may be involved in a machine, may be respectively removed without disturbing the operative relation of the parts or other units and quickly replaced, without requiring shop work or exceptional mechanical ability. It is a further important aim to enable the assembly of any desired number of units in a machine without requiring changes in design of the stock parts, except as to the ram proper and coin-engaged plunger element. The invention also seeks to provide a novel and desirable construction in the closure of such a machine, whereby opening of the upper part to permit access to the mechanism will also unlock a lower part of the case for access to money containers and related parts. It is a further purpose to offer a novel form of control for governing the feed of tape having stamps or tickets printed thereon.

Additional objects, advantages and features of invention reside in the construction, arrangement and combination of parts involved in the embodiment of the appliance, and will be readily understood from the following description and from the drawings, in which,

Figure 1 is a cross sectional view of the machine showing the left hand side of a dispensing unit partly in section, and the coin magazine in elevation.

Figure 2 is a right hand side elevation of the dispensing unit alone.

Figure 3 is a front elevation of the unit.

Figure 4 is a top view of the unit.

Figure 4ª is an elevation of the carriage detached, as viewed from the right.

Figure 5 is a cross section of the dispensing unit alone on the line 5 of Figure 2.

Figure 6 is a fragmentary section longitudinally of the unit medially of Figure 5,

showing the back check for holding the ticket strip against return toward the roll.

Figure 7 is a cross section on the line —7 of Figure 2.

Figure 8 is a detail rear elevation of the magazine rotating dog and assembly plate.

Figure 9 is a top view of one of the magazines.

Figure 10 is a top view of the bottom of the case.

Figure 11 is a perspective view of the complete machine.

Figure 12 is a detail of the formation of the lugs 31.

Figure 13 is a plan of a section of ticket strip.

There is illustrated a machine comprising a case, including a bottom section 15 and a top section 16, set removably thereon and secured thereto by locks 17 at respective ends. The meeting edge portions of the two sections are rabbetted, or otherwise formed to interfit, whereby to provide a snug joint and prevent relative lateral displacement of one from the other. The fronts of the sections comprise in the present instance cast plates 18 and 19 respectively, having flanges 20 at the outer sides to which sheet metal plates are riveted, forming the top, bottom and ends of the case. The top plate 21 of the case is arched from front to rear to prevent stacking anything thereon and for economy in material and other reasons. The back 22 and bottom of the case are also of sheet metal, and the meeting edges of the sheet metal plates of the case are secured together or stiffened by being riveted to suitable angle plates 23, and bars 24, as shown.

All mechanism is mounted entirely on the bottom section of the case, and the top section is entirely free of any connection directly therewith so that it may be lifted off, exposing the entire mechanism of the machine.

Further, the mechanical units are also set removably on the bottom section so that they may be removed without the use of tools or detachment of parts, in such manner that little time is required therefor, and no liability of displacement of parts from proper operative relation is involved. The bottom section is provided at the front and back upper edges with ledges 25 (Figure 1); that at the front being formed integrally with the front plate 18, while the rear ledge comprises an angle piece secured to the plate 22′ forming the back of the bottom section.

The mechanism includes a series of dispensing units all of which are identical in operative parts, and require only modifications in width of slots for different denominations of coins, and in the sizes of the coin magazines. The units have individual operating levers extending forwardly therebelow and movable vertically in the slots 26 (Figure 1) in the lower front plate 18, these slots opening on the upper edge of said plate. The upper front plate 19 is provided with coin slots 27 therein and the respective units have channels alined therewith to conduct the coins properly.

As seen in Figures 1 to 5, each unit includes a frame or assembly plate 28 and an integral bottom plate 30. The latter projects at the front and rear so as to afford a rest for the unit on the ledges 25. Any suitable means may be provided to prevent displacement of the units from proper position casually, and in the present instance (Figures 10 and 12) this comprises lugs 31 on the ledges between which the ends of the plates 30 may fit, and a flange or lugs 32 on the top section of the case which will lie closely over the plates 30 and hold them against upward movement from the ledges. The plate 30 is rectangular and the plate 28 is located near and parallel to one side thereof, the lesser part of the plate 30 forming a guide flange 33 on which ram and plunger parts may operate as will be described. The plate 28 is provided on the left side with integral ribs 34 forming an inclined coin chute 35, and similar ribs 36 parallel to the flange 32 to form with the flange 33 a guide channel 29 for the ram and plunger parts. A chute cover plate 37 is secured upon the ribs 34 to form the left side of the chute, its lower end being trimmed parallel with the ribs 36 but projecting slightly therebelow, and retainer plates 38 are secured on the ribs 36 projecting similarly.

It will be seen that the coin chute opens directly into the upper side of the channel 29. A plunger 39 is reciprocable in the channel 29 retained by the plates 38 at the upper side and having a receiving slot 40 alined with the lower end of the chute 35 when the plunger is at the rear limit of its movement. At the forward end the plunger rests on the flange 33 but its lower part is cut away for the major part of its length to the rear, permitting a ram 41 to reciprocate thereunder within the channel 29, the forward end of the ram stopping just at the rear of the slot 40 when at the rear limit of its movement, and the plunger permitting free movement of the ram thereunder to the forward limit of ram movement. The rear part of the plunger rests upon the ram, but the forward part clears the ram so as to avoid liability of casual co-engagement.

The height of the ram in each unit is less than the diameter of the particular coin to be used therein, and the forward part of the plunger beside the slot 40 is also at a height from the lower side of the channel 29 to engage against and well below the upper side of a coin if introduced in the slot. In the pres-

ent instance, the front end of the ram is inclined forwardly from its upper to its lower edge, and the forward side of the slot 40 is cut away on an incline at its lower part as at 40'. The space between these inclined edges is just sufficient to receive a coin therebetween when the parts are at the rear limits of their movement. The plunger comprises a forward plate 42 and a rear plate 43 connected by a side plate 44 at their outer sides, the plates 42 and 43 of the ram being of slightly greater thickness than the coin to be used. The plate 44 serves as a retainer for the coin when engaged in the plunger, and also to guide the forward end of the ram. The flange 33 is slotted to receive a coin therethrough when the coin is thrust forward by the full movement of the ram and released as will be described. For coins of different diameter the plates 43 and the ram are proportionately lengthened or shortened and the height of the ram and cut-away part of the plate 42 correspondingly proportioned.

At the opposite or right hand side of the plate 30 a vertical plate 45 is secured, extending upwardly at the rear part to provide a slotted spool rest 46 for a ticket spool 47 as shown, the plates 28 also having a similar rest formed thereon alined with the first rest. The distance between the plates 28 and 45 is much greater than the width of the ticket strip 48, and the rests 46 are set inwardly from the planes at the respective plates to center the roll as shown.

The forward part of the plate 45 extends only a short distance above the plate 30 forming thereover a channel 49 for the reciprocation of a carriage 50 as will be described. The plates 28 and 45 are formed with forward alined horizontal slots 51 the length of which corresponds to the movement of the plunger, and they extend from beside the forward end of the plunger forwardly intermediately of the height of the forward part of the plate 45. Similar slots 52 are formed at the rear part of the same plates alined with each other and with the first mentioned slots. The carriage 50 in the present instance is formed of sheet metal, though it may be otherwise constructed if desired. It includes a bottom 53, sides 54 and forward top portion 55. The sides are formed at the rear part with respective alined slots 56, alined with and of the same extent as the slots 52 when the carriage is at the rear limit of its movement, a transverse pin 57 is inserted through the last named four slots, and fixed upon or in the ram 41, while a similar pin 58 is fixed in the forward part of the carriage, its ends projected through the slots 51 and fixed in the plunger.

For the operation of the ram a T-shaped bell crank lever 59 is pivoted between brackets 60 secured to the lower side of the plate 30. The shank of the lever, with the parts in initial position, extends through the upper part of the slot 26 its upper arm being connected to a link 61 extending rearwardly and having a vertical extension operating in slots 30' and 50' in the plate 30 and carriage 50, this extension encircling the pin, so that upon downward operation of the lever 59 the ram is moved forwardly and the pin 57 is free to move forwardly without moving the carriage.

Between the plates 28 and 45 forwardly of the rests 46 for the ticket spool there is provided a check grip device 62 (Figures 2, 4, 5 and 6) for engaging the ticket strip or other material fed to the dispensing unit. This comprises a cross plate 63 having upturned sides riveted to the plates 28 and 45 upon which there is fixed a forwardly extending tongue 64 which lies in a slot 65 formed in the top 55 of the carriage body (Figure 7). Upon a small bridge plate 66 mounted on the plate 63 a pivoted spur grip lever 67 is pivoted, having a forwardly extended point to engage upon the tongue 64 and having an arm extended rearwardly over the bridge and confining a spring 68 thereunder on the bridge. It has also a finger piece 69 extended forwardly by which it may be manually raised to release position when desired. The bridge plate is also formed with a resilient tongue 70 extended forwardly over the tongue 64, which is preferably of heavier material, the tongue 70 being offset downwardly at its forward part so as to bear lightly upon a ticket strip passing between the two tongues and hold it flattened.

Upon the top of the carriage at each side of the slot 65 therein as before mentioned and spaced apart slightly more than the width of the ticket strip shown, there are plates 71 and over these in turn there are fixed plates 72 joined integrally at their forward ends extending inwardly so as to overlie the ticket strip when fed thereunder, their rear ends being upturned. The top 55 of the carriage and the rear ends of the plates 72 stop short of and adjacent the check grip 62 when the carriage is at the rear limit of its movement. The plates 71 and 72 are notched on their outer sides as at 73 and pivoted on the top of the carriage there are dog members 74 mutually connected by a tension spring 75 and arranged to swing into the notches, being normally inclined forwardly from their pivots, so that a forwardly moving ticket strip engaged between and under the plates 71 and 72 will bear the dogs outwardly, permitting the dogs to move into notches 76 of the strip to engage it for forward movement when the carriage is so moved.

The forward end of the carriage has inturned ears 77 thereon at each side, upon

which there is bolted an anvil 78 formed with a horizontal slot 79 therethrough alined with the plates 71 and the space under the plates 72. Upon the front planiform side of the anvil and adjacent the right hand side of the carriage there is pivoted a knife 80, having a V-shaped cutting edge at the lower side, the knife being movable to lie initially over the slot and clear thereof. A spring 81 is provided to hold the knife yieldingly in raised position. The knife has an upper arm 82 extended toward the left adapted to be operated by a wiper or cam plate 83 mounted on the plate 28. Normally, with the carriage in initial position, this plate sets with an inclined flange 84 at the lower side adapted to engage the arm 82 when the carriage is moved forward, bearing the knife downwardly by movement of the carriage, for a full stroke shortly before the carriage completes its forward movement. The plate 83 is pivoted at its forward part and provided with a pin 85 at its rear part movable in a slot 86 in the plate 28 by which movement of the plate is limited. A spring 87 is engaged with the plate 83 under tension to hold the plate yieldingly in initial position. Upward movement of the knife is checked by a stop 88 on the anvil, and when the carriage returns from the forward limit of its movement, the arm 82 engages the upper side of the flange 84 moving the same downwardly until cleared by return of the carriage to initial position.

The bottom of the case has mounted thereon a series of pivot blocks 89 recessed to receive the lower ends of shafts 90 fixed in circular upper and lower magazine plates 91 and 92 in the former of which there is a concentric series of circular openings alined with corresponding recesses in the lower plate. Inserted through the openings named there are coin tubes 93 set in the recesses of the lower plates. The lower plate is formed with a bearing boss 94 to rest upon one of the blocks 89. A guide framing 95 is mounted in the bottom of the case to sustain the magazines in erect position, being at a level to permit the upper plates 91 to bear thereon in case the magazines should become inclined. The lower plate is provided with a series of notches 96 and spring-pressed keepers 97 are mounted on small assembly plates 98 fixed on the bottom of the case, to bear against the periphery of the lower plate 92 and engage the notches so as to hold the magazines yieldingly in proper positions to receive coins from the mechanical units thereover.

For obtaining large capacity in the magazines, while still using short tubes, the large number are employed and means provided to rotate the magazines so that coins will be dropped in the tubes in rotation. For this purpose the upper plate of the magazine is provided with a series of lugs 99 corresponding in numbr to the tubes in the magazine, and fixed on the plate 44 there is a bracket 100 having a pivoted dog 101 thereon which by gravity or otherwise lies normally at the lower limit of its movement with its lower part in the path of the lugs. The dog is free to swing forward and upward by engagement with a lug, but is checked by an extension 102 of the bracket against rearward movement, so that under forward movement of the plunger the dog will engage one of the lugs and move a new cylinder into receiving position with respect to the mechanism. One of the tubes 93 is distinguished from the others by being distinctively colored or made of distinctive material, as indicated at 105, so that the order of the coins or checks in the tubes may be coordinated with the numbers of tickets or slips issued by the machine. Thus, in case of use of counterfeit coins, or blank discs, the ticket secured thereby may be declared forfeit or invalid. The tubes may be transparent or slots formed therein. To insure emplacement of the magazine in proper initial position, a single notch 103 is formed on the upper plate 91 of the magazine and a setting device comprising a lug 104 or projection formed on the guide framing 95 of the case The lug is so positioned that it will strike the plates if presented for mounting without a notch alined with the lug, and when initially positioned the first operation of the machine properly will bring the distinctive tube of the magazine into position to receive the first coin used. Therefore the coin at the bottom of this tube represents the one deposited to secure the first ticket or slip. The lug 104 is at a height to clear the upper plate 91 when the magazine is in proper position. By numbering the tickets or slips, and making note of the number of the first ticket to be issued by operation of the machine, in case a counterfeit or blank is discovered, it may be determined just which ticket was secured thereby. This is of value where the machine is used for banking, as well as for other uses.

Means is also provided for insuring proper operation of the machine by patrons so as to prevent partial movements of the operating lever successively with a view to ejecting more than one ticket before the coin is freed. This consists of a ratchet rack bar 106 secured to the edge of the flange 33 at the forward part and a double pawl 107 pivoted on the side plate 44 engaging the bar. The pawl comprises a crescent-shaped lower part centrally pivoted, the points of which may be moved downwardly to alternately engage the rack bar. A medial stem 108 extends upwardly therefrom, and resting upon the stem there is a spring-pressed

keeper 109 having a V-shaped lower part 110 centrally disposed over the pawl so that the latter may be easily swung from either position to the other, warding the keeper upward, and the latter falling behind the arm of the pawl to retain it yieldingly at either limit of its movement. At the same time the extent of the faces of the V-shaped portion 110 of the keeper is such that the movement of the pawl in rising over the teeth of the bar 106 will not swing the stem 108 past the vertex of the part 110, and it serves the added function of keeping the pawl properly engaged at all times during its operation. At each end of the bar 106 combined stops and pawl shifts 111 are provided, extending inwardly over the bar 106 and spaced thereabove. It should be noted that the lower part of the pawl is so shaped and its pivot so located with respect to the bar 106 that at either position of the pawl the elevated point will have an upper side inclined downwardly toward its outer end. The inturned parts of the stops 111 are at a height to engage the upper side of the raised point of the pawl as the plunger moves to either limit of its movement, and reverses the position of the pawl as well as stopping the movement, unless other means is preferred for this purpose. The teeth upon the bar 106 are very closely spaced so that the return of parts from an intermediate position will be checked after a very slight degree of movement. This compels the machine to be operated completely before return movement may be effected, and also requires that the full return movement to initial position be completed before a dispensing operation may be begun.

Return of the parts to initial position may be effected manually by lifting of the lever 59, although it is believed preferable that a spring be provided for this purpose, which is indicated at 112, Figure 1.

The upper side of the coin slot 35 opens through the upper rib 34 a short distance, immediately adjacent the slot 27 of the case, and pivoted at the inner part of this opening there is a safety gate 113 adapted to swing downwardly across the slot 35 at times and having a sector part arranged to prevent insertion of a coin when the gate is down. This gate is carried by a shaft 114 supported revolubly in the plate 28 and on its right hand end there is fixed an arm 115 connected by a link 116 to a bell crank lever 117 pivoted on the plate 28 at its rear part and formed with an arm extending rearwardly when the gate is open, a transverse pin 118 being fixed thereon supported by the ticket strip to hold the gate in open position. When the strip is exhausted, the pin and the arm by which it is carried fall, drawing upon the link 116 and causing the gate to close, the weight of the gate assisting in this movement. A pin 119 is fixed in the plate 45 inwardly of the path of movement of the pin 118, and stopping short of the path of the lever 117, and the strip 48 is drawn over this pin after passing rearwardly of and forwardly under the pin 118 toward the check grip 62.

In the operation of the device, the parts being in the position shown in Figures 1, 2 and 4, and a ticket strip having been adjusted in the carriage with one ticket projecting past the knife 80, upon insertion of a coin, it will pass by gravity into the slot 40. Pressure on the lever, 59, through link 61 and pin 57 then presses the ram forwardly, no other part being moved directly by pin 57. The coin is thus pressed against the plate 42 of the plunger 39 causing this to move forwardly, the pawl 107 dragging over the rack 106 but being held by the keeper in position to prevent return movement of the plunger until the pawl has been engaged by the forward stop 111 which reverses position of the pawl. Movement of the plunger is communicated by pin 58 to the carriage 50, and the dogs 74 engaging the notches of the ticket strip will propel it forwardly drawing it under the spur 67 of the check grip 62. The arm 82 of the knife engaging the under side of the inclined flange 83 of the cam 82 is forced downwardly thereby as the carriage moves forward, severing the end as it is projected from the slot 27' of the case front. Upon release of the lever, the spring 61 returns to initial position, the check grip 62 holding the strip and causing it to feed forwardly in the carriage as the latter moves to the rear. In the same movement, the arm 82 rides upon the upper side of the flange 83 bearing it downwardly until cleared, when the spring 87 returns the cam to initial position.

I claim:

1. In a machine of the character described, a coin controlled mechanism including a final coin chute, a magazine mounted to receive from said chute including a multiplicity of arranging tubes and having a mounting for rotation, and means to rotate the magazine step by step to aline the tubes successively and repeatedly in receiving position.

2. The mechanism of claim 1 in which the last named means is connected with said coin controlled mechanism and operative through the agency of each coin inserted.

3. The mechanism of claim 1 in which there is a reciprocating member on the coin controlled mechanism, a ratchet on the magazine and a pawl on the reciprocating member to engage the ratchet.

4. The mechanism of claim 1 in which one tube is distinguished from the others optically, and means to govern positioning of the magazine to cause the first coin to be deposited in a given tube.

5. A device of the character described comprising a coin receiving chute, a horizontally reciprocable element manually operable and constructed to receive a coin from said chute as an operative element, and to release such coin at a discharge point, a magazine revoluble on a vertical axis below said reciprocable element, and including a plurality of vertical tubes movable therewith in an orbit alined with said discharge point, a plurality of lugs on the magazine concentrically arranged and a dog device on said reciprocable element positioned to engage the lugs when the said element is under movement by a coin, the lugs and dogs being positioned to produce movement of the magazine to center a tube with said discharge point on completion of movement of a coin to said point.

6. In a device of the character described, a framing including a central bearing, a magazine cage revoluble on said bearing having circular upper and lower members, the upper of said members having a plurality of coin-receiving openings and one notch in the periphery, the lower of said members having peripheral notches spaced to correspond with said receiving opening, setting means on the frame to coact with the first named notch to govern initial position of the cage, a resilient wiper engaged in the lower member to seat yieldingly in the notches, and means to rotate the magazine in receiving relation to coins deposited.

7. The structure of claim 6 in which the said setting means comprises a projection adapted to pass said notches but to engage other peripheral parts of the top and bottom members to govern initial position of the magazine, said projection being above normal level of the top member.

In testimony whereof I affix my signature.

CHARLES F. HUNT.