July 7, 1931. W. C. LAUGHLIN 1,813,299

VENDING MACHINE

Filed Nov. 9, 1927 3 Sheets-Sheet 1

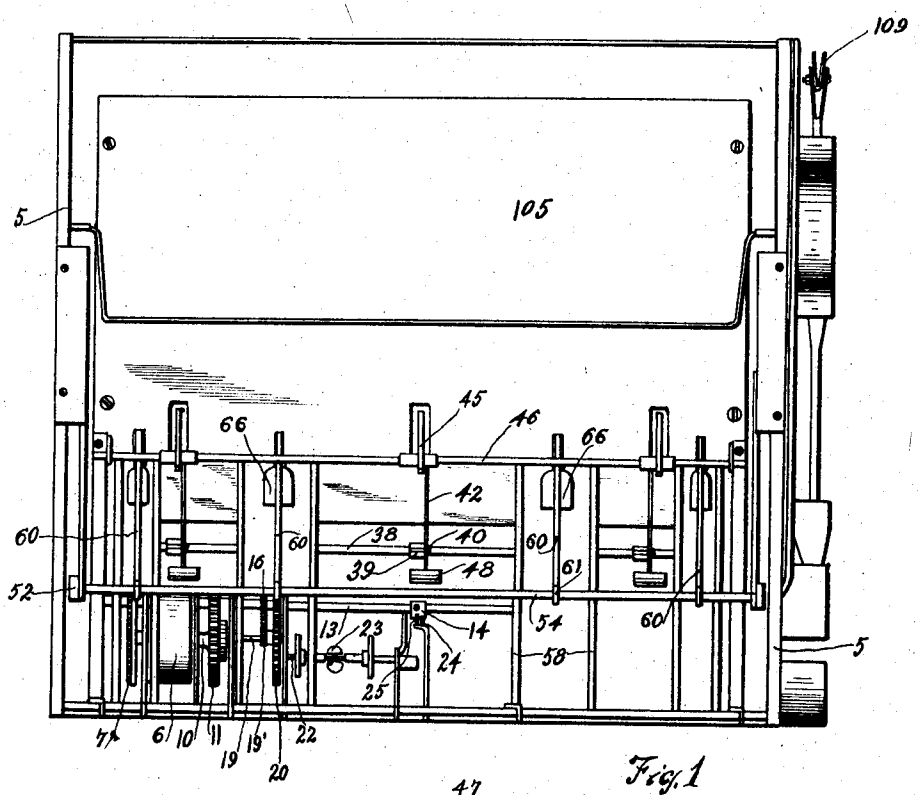


Fig. 1

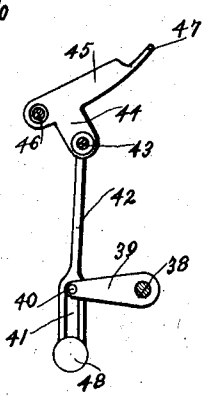


Fig. 6

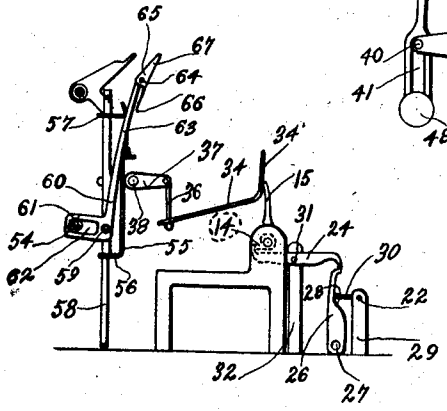


Fig. 5

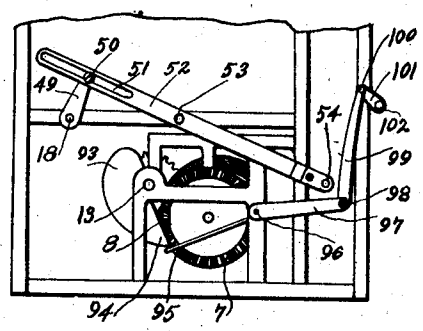


Fig. 4

INVENTOR.

William C. Laughlin

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ATTORNEYS

July 7, 1931. W. C. LAUGHLIN 1,813,299

VENDING MACHINE

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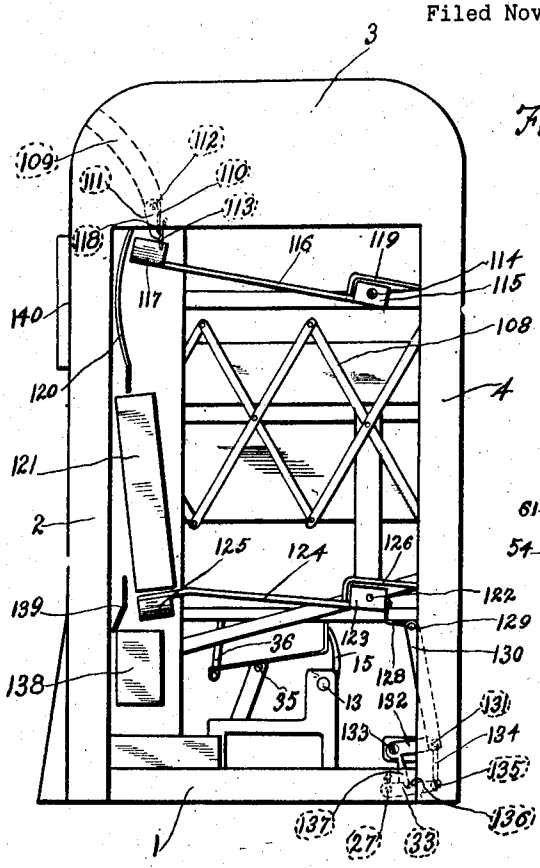


Fig. 3

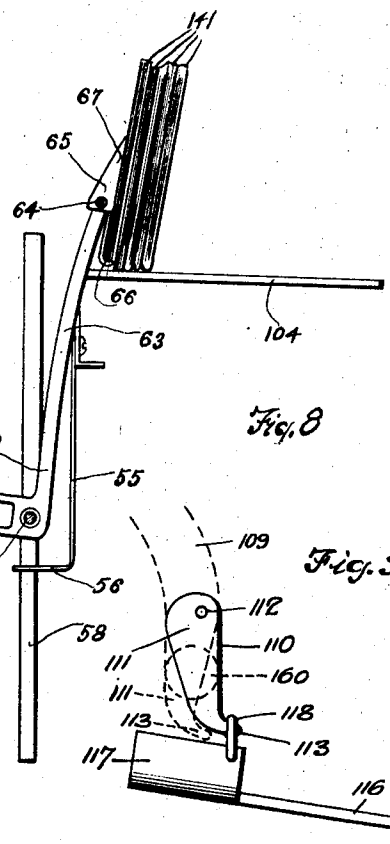


Fig. 8

Fig. 9.

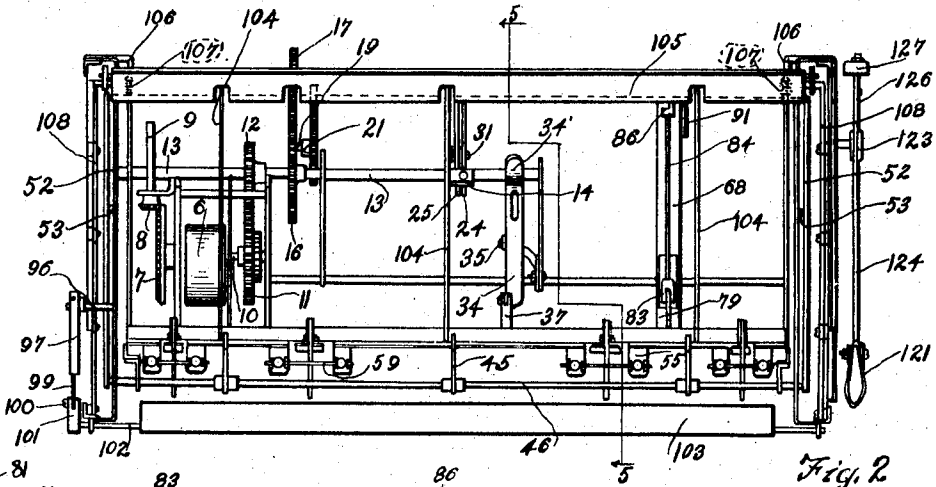


Fig. 2

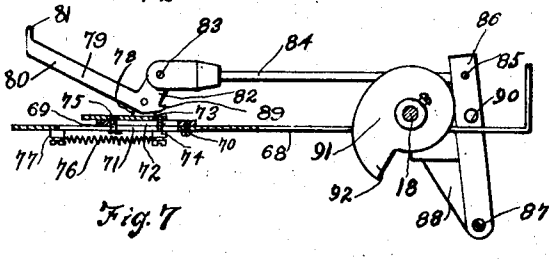


Fig. 7

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VENDING MACHINE

Filed Nov. 9, 1927 3 Sheets-Sheet 3

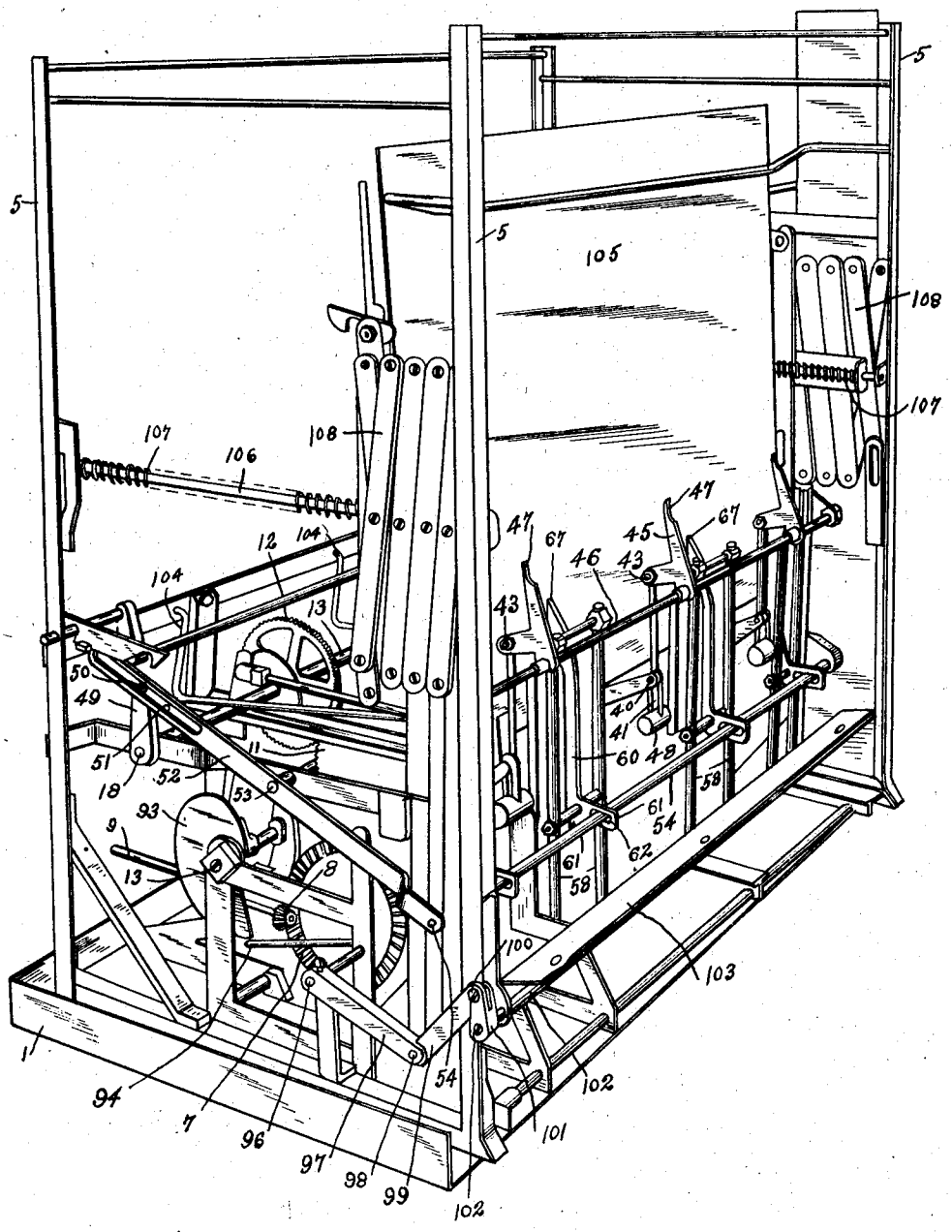


Fig. 10

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Patented July 7, 1931

1,813,299

UNITED STATES PATENT OFFICE

WILLIAM C. LAUGHLIN, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-THIRD TO JOHN P. FIFE, OF CLEVELAND, OHIO, AND ONE-THIRD TO WILLIAM T. FIFE, OF ATLANTA, GEORGIA

VENDING MACHINE

Application filed November 9, 1927. Serial No. 232,076.

The present invention, as indicated, relates to a machine for vending articles, and is primarily intended for automatically vending newspapers, though it may be applied to dispensing almost any type of article which is relatively thin and which is stiff enough to be raised by pressure applied to its lower edge. The primary object of the invention is to provide such a machine which will be certain in its operation, which will dispense a newspaper or other article immediately upon the deposit by the customer of the proper number of coins, and which will thereafter move another article into position to be dispensed, and which will carry out its intended movements with great certainty in spite of rough handling to which such a device is likely to be subjected. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:

Fig. 1 is a front elevation of a machine, the front wall and display case having been removed; Fig. 2 is a plan view of the machine, the top wall of the casing having been removed; Fig. 3 is a side elevation of the machine, one side wall having been removed, and looking from the right of Fig. 2; Fig. 4 is a fragmental side elevation looking from the left of Fig. 2; Fig. 5 is a more or less diagrammatic sectional view taken substantially on the line 5—5 of Fig. 2, and looking in the direction of the arrows; Fig. 6 is a sectional view of a detail; Fig. 7 is a more or less diagrammatic view of one of the retaining fingers and its operating mechanism; Fig. 8 is a diagrammatic view of one of the details shown in Fig. 5 and showing the manner in which the articles to be vended are operated upon by the lifting members; Fig. 9 is an elevation of a detail on an enlarged scale; and Fig. 10 is a perspective view of the machine.

The present device includes a casing having a bottom wall 1 and a front wall 2, top wall 3, back wall 4, and side walls 5, said casing enclosing the mechanism to be described.

Referring particularly to Fig. 2, a motor 6 which has been illustrated as a spring motor, but which may take any well-known form, is mounted in said casing and carries on one end of its spindle a beveled gear 7 which cooperates with a beveled gear 8 on a winding shaft 9. The other end 10 of the motor spindle carries a driving gear 11 which meshes with a gear 12 on a cam shaft 13. Said cam shaft carries a latch trip 14 and a finger actuating cam 15 (see Fig. 5) as well as a cog wheel 16.

The cog 16 meshes with a main shaft gear 17 mounted on a shaft 18 (see Fig. 4) which will be more particularly referred to hereinafter. A short independent shaft 19 is journalled adjacent said gears 16 and 17 and carries a pinion 19′ in mesh with the cog 16. Said shaft 19 further carries a gear 20 which meshes with a governor drive gear 21 mounted on the governor shaft 22 (see Fig. 1) which drives the governor 23. A pair of latch fingers 24 and 25 are adapted to cooperate with a latch 26 (see Fig. 5) mounted on a rock shaft 27 and provided with a latch shoulder 28. The end of the governor shaft 22 is journalled in a support 29 and carries a dog 30 for cooperation with said shoulder 28. The latch fingers 24 and 25 are pivoted at 31 to a support 32. The right hand end of the shaft 27 as viewed from the front of the machine carries a latch operating lever 33 (see Fig. 3).

A lever 34 is pivoted as at 35 on a support in said casing and one end 34′ thereof is positioned for cooperation with the cam 15 (see Fig. 5). The other end of said lever cooperates with a link 36 which is pivoted to an arm 37 secured to a rock shaft 38. Said rock shaft 38 carries a plurality of arms 39 (see Fig. 6) all of which are identical in their structure, connections and operation. Therefore only one will be described. The free end of said arm 39 carries a pin 40 which is

received in a slot 41 in a link 42 pivoted as at 43 to a projection 44 on a finger 45. Each of said fingers 45 is mounted on the rock shaft 46 which extends completely across the front of the casing as will be clear from an inspection of Figs. 1 and 2. The finger 45 is provided with a reduced extension 47, the purpose of which will be hereinafter explained, and a weight 48 is secured to the lower end of the link 42.

Each end of the shaft 18 carries a lever arm 49, (see Fig. 4) and each of said lever arms is provided at its free end with a pin 50 received in a slot 51 formed in one end of a lever 52 pivoted at 53 to the machine frame. At its opposite end, each lever 52 has attached thereto, one end of a lifting rod 54. The machine skeleton carries a plurality of guide frames 55 (see Figs. 2 and 5), and each such frame is provided with a lower projection 56 and an upper projection 57, said projections being perforated to receive pairs of rods 58 slidable therein. Each pair of rods carries a pivot rod 59, and pivotally mounted on each of said rods 59 is a bell crank lever 60. One arm 61 of said bell crank lever is provided with a slot 62 receiving the lifting rod 54. The other arm 63 of the bell crank lever is substantially longer than the arm 61 and is provided at its free end with a pivot 64 mounting a lifting finger 65. Each lifting finger comprises a hook 66 rigidly secured to a presser member 67, and it will be noted that by this arrangement, pressure exerted toward the left in Fig. 5 on the presser member 67 will tend to throw said hook 66 toward the right.

Referring again to Fig. 2, the machine is provided with two supports 68 extending from the front to the back thereof. Only one of said supports 68 is shown in the drawings, since the other support overlies the gear train shown at the left of Fig. 2 and would obscure said train if it were included in the drawings, but it is to be understood that the support 68 and its cooperating parts illustrated at the right in Fig. 2 and illustrated in detail in Fig. 7 is duplicated in all respects at the left end of the machine as seen in Fig. 2. Said support 68 comprises a channel member receiving a block 69 which is secured therein by means of a screw 70. Said support is provided adjacent its forward end with a slot 71, and the block 69 is formed with a slot 72 registering with said slot 71. Slidably mounted on the block 69 is a slide member 73 retained in position on said block 69 by means of screws 74 and 75 secured to the slide 73 and having their heads engaging the bottom surface of the support 68, said screws 74 and 75 passing through the slots 71 and 72 and acting as stops. An extension spring 76 is secured at one end to the screw 74 and at its other end to a screw 77 mounted in the support 68. The slide 73 carries a pair of ears 78 between which is pivoted a bell crank lever 79, the long arm 80 of which is provided with an upwardly extending finger 81. The other arm 82 of said lever 79 has pivotally secured thereto as at 83 a link 84, the opposite end of which is pivoted as at 85 to a lever 86 pivoted at 87 to a support 88. The lever 79 is provided adjacent its apex with a lug 89. The lever 86 carries a roller 90, and a cam 91, having an abrupt tooth 92, is mounted on the shaft 18 in cooperative relation with said roller 90.

Referring now to Fig. 4, it will be seen that the shaft 13 carries a cam 93 at the left end of the machine as viewed in Fig. 1, and that said cam 93 is formed with an abrupt tooth 94 for cooperation with a lever 95. Said lever 95 is mounted on a rock shaft 96 journalled in a support on the machine frame, and carrying an arm 97, to which is pivotally attached as at 98, a link 99, pivoted at its opposite end as at 100 to a short lever 101 mounted on a shaft 102 journalled at the front of the machine frame. Said shaft 102 carries a narrow platform 103 (see Fig. 2) which forms the bottom of a display case hereinafter to be described.

Fig. 2 clearly discloses a plurality of article-supporting rack bars 104 which extend from the front to the rear wall of said machine. These rack bars are slightly tilted as is shown in Fig. 8, the front ends of said bars being at a slightly higher level than the rear ends thereof. A supporting back member 105 is slidably mounted on bars 106 extending from the front to the rear of the machine, and compression springs 107 are mounted between said back member 105 and abutments formed at the rear ends of said bars 106, and said springs tend to move said back member forwardly, thus exerting a forward pressure on the articles supported on the bars 104. Said back member is braced and steadied by means of Jacob's ladders 108 secured thereto and to supports on the machine at either end of the back member.

Referring now to Fig. 3 which discloses the coin-operating release mechanism, it will be seen that a coin slot 109 is formed in the upper end of the machine. The lower end 110 of the slot 109 is open at its front edge, and a channel-shaped latch member 111 is pivoted thereto at 112 and closes said open front edge. The latch member 111 is formed with a rearwardly projecting latch finger 113, the purpose of which will be hereinafter described. Adjacent the rear portion of the machine and at the right hand end thereof, there is mounted a short rock shaft 114 on which is secured a block 115 carrying a forwardly projecting arm 116. At the free front end of said arm 116 there is mounted a coin cup 117 carrying an upwardly projecting loop of wire 118 for cooperation with the finger 113 of the latch member 111. Said

block 115 also carries a rearwardly projecting arm 119, the free end of which carries an adjustable weight (not shown). A guard strip 120 is mounted adjacent the open front end of the cup 117 and tends to guide coins discharged from said cup into a second coin chute 121. A second short rock shaft 122 is mounted directly below the rock shaft 114 (see Figs. 2 and 3) and carries a block 123 similar to the block 115. Said block 123 carries an arm 124 similar to the arm 116 attached to the free front end of which is a cup 125 disposed immediately below the lower end of the chute 121. Said block further carries a rearwardly projecting arm 126 similar to the arm 119, and said arm 126 carries an adjustable weight 127 (see Fig. 2). The block 123 has attached to its rear end a bracket 128 to the free end of which is pivotally attached as at 129, a link 130 pivotally attached at its opposite end as at 131 to one arm 132 of a bell crank lever pivotally mounted as at 133 on a support in the machine frame. A second link 134 is attached to the arm 132 and is pivoted as at 135 to the latch-operating lever 33. Said latch operating lever 33 is formed on its upper edge with a notch 136 adapted to receive the latch arm 137 of said bell crank lever. A storage cup or box 138 is provided to receive coins discharged from the cup 125, and a guard strip 139 guides such coins into said box.

The front wall 2 includes a display chamber or chute which is provided with a transparent panel 140, and it is this chamber which is closed at its bottom by the platform 103.

The operation of the machine is as follows: Newspapers 141 or other similar articles are loaded into the chamber, the bottom of which is formed by the bars 104, the back member 105 having been retracted to its rearmost position in which the springs 107 are completely compressed. Latch members (not shown) are provided for holding said back member 105 in its retracted position during loading of the machine, and when the articles to be vended have been loaded into the machine, said latch members are disengaged from the back member 105. The springs 107 are thus released to effect a pressure on the articles 141, and this pressure is transmitted to the presser members 67 of the lifting fingers 65 to force the hooks 66 beneath the article 141 which is nearest the forward end of the machine. One newspaper or other article is placed in the discharge chute and is thereby visible through the panel 140. A crank is then applied to the winding shaft 9 and is rotated to wind the motor 6 through the medium of the beveled gears 8 and 7. The machine, now ready for operation, is locked and placed on a street corner, in front of a store, or in some other strategic position.

Most newspapers today sell for two or three cents apiece. Consequently it is necessary, in a machine of the type disclosed, to provide an operating means which will not be actuated by one coin but which will require two or three for actuation. Presuming that the articles in the machine are to be sold for two cents a-piece, the operation is as follows: A penny 160 is dropped into the slot 109. The latch member 111 is hung in such a position that the passage normally defined between it and the lower end 110 of the coin chute 109 is narrower than the diameter of a coin which is to be used. Thus, as the coin falls through the slot 109, it strikes the forward edge of the member 111 and rotates said member in a clockwise direction about the pivot 112, and then falls into the cup 117. The adjustable weight on the end of the arm 19 is set to such a position that the weight of a single coin will move the arm 116 in a counterclockwise direction, but will move said arm rather slowly. As soon as the coin has dropped into the cup 117, the member 111 swings back into the position disclosed in Fig. 3, in which the finger 113 is disposed in the path of the upper end of the loop 118. Thus, as the arm 116 is swung downwardly, the loop 118 catches on the finger 13 and prevents the arm from rotating beyond a horizontal position. If a second coin is now dropped into the chute 109, it strikes the latch element 111 and swings it again in a clockwise direction, releasing the engagement between the finger 113 and the loop 118 and allowing the arm 116 to rotate farther in a counterclockwise direction. The second coin is likewise caught in the cup 117 and, as the arm 116 continues to rotate due to the weight of the coins in the cup 117, the two coins are discharged from the open front end of the cup 117. The guard 120 guides the two coins into the open upper end of the chute 121 which, in turn, guides said coins into the cup 125.

It may be here noted that it is possibile to set the weight on the end of the arm 119 in such a position that the first coin dropped into the cup 117 will not rotate the arm 116 at all. In such case, the second coin operates the mechanism above described in the manner in which the first coin operates it where articles are to be sold for two cents, and it requires a third coin to release the engagement between the hook 113 and the loop 118 and permit the coins in the cup 117 to be discharged into the chute 121.

When the coins fall into the cup 125, they rotate the arm 124 in a counterclockwise direction, and through the agency of the bracket 128, link 130, link 134, and arm 33, the latch shaft 27 is rotated in a counterclockwise direction to rotate the latch 26 to release the dog 30. When the latch 26 is rotated, the latch fingers 24 and 25 drop over the end thereof and retain said latch 26 in such a position that the dog will not, during the

rotation of the shaft 22, strike the shoulder 28.

The engagement of the dog 30 with the shoulder 28 is the only thing which prevents operation of the motor 6, and when such engagement is released, the motor begins to rotate and to drive the gear train. The operations hereinafter to be described occur practically simultaneously, but they will be described individually first and then coordinated. As the motor drives the gear 11, said gear rotates the shaft 13 through the agency of the gear 12, and the cam 14 which, in the position of rest, is engaged with the finger 25 but disengaged with the finger 24, releases said finger 25.

The cam 14 continues to rotate out of engagement with the fingers 24 and 25 and near the end of its single revolution strikes the adjacent end of the latch finger 24. Thus the latch finger 24 is moved out of engagement with the upper end of the latch 26, while the latch finger 25 remains in engagement therewith to prevent any movement of the said latch 26. A slightly further rotation of the cam 14 brings it into engagement with the adjacent end of the latch finger 25, thereby moving the latch finger 25 out of engagement with the latch 26 and allowing the latch to be returned to a position in which the shoulder 28 is disposed in the path of the dog 30. This return movement is caused by the weight 127 which over-balances the empty weight of the cup 125 and rotates the block 123 in a clockwise direction to move the arm 33 in a clockwise direction through the agency of the bracket 128 and the connecting links 130 and 134. The machine is thus brought once more to rest, and in this position, the cam 14 is again engaged with the latch finger 25 and disengaged from the latch finger 24. Thus the latch finger 24 is resting against the top of the latch 26 and is ready to fall into retaining engagement with said latch 26 as soon as said latch is again rotated by the block 123.

As the shaft 13 rotates, the cam 15 cooperates with the end 34′ of the lever 34 to move said lever very quickly about its axis 35 in a counterclockwise direction. Such movement of the lever 34 rotates the arm 37 and rock shaft 38 in a clockwise direction through the medium of the link 36. The arm 39 participates in this movement and, through the medium of the pin 40 moves the link 42 upwardly to rotate the finger 45 in a counterclockwise direction to discharge a newspaper or other article into the display chute.

The gear 16 drives the gear 17 which is mounted on the shaft 18, and rotates said shaft in a counterclockwise direction as viewed in Fig. 4. The arm 49 is thus rotated in a counterclockwise direction, and through the medium of the pin 50 and slot 51 moves the lever 52 to raise the rod 54. Said rod 54, because of its engagement with the arm 61 of the lever 60 tends to rotate said lever in a clockwise direction, but such rotation is impossible because of the engagement of the lifting fingers 65 with the articles 141 which are prevented from rearward movement by the back plate 105. Consequently said rod 54 causes vertical upward movement of the levers 60 and guide rods 58. Since the hook 66 is engaged beneath the forwardmost article in the storage compartment, said forwardmost article is raised also vertically upward, and this must take place at such a time that, at its uppermost limit, the projections 47 on the fingers 45 engage beneath the lower edge of said article.

The shaft 18 also carries the cams 91 for operating the fingers 81 (see Fig. 7). As the shaft 18 rotates, the cams 91 engage the rollers 90 on the levers 86 and move the links 84 rearwardly. The first effect of said links is to rotate the levers 79 about their axes in a clockwise direction, thus raising the fingers 81. The lugs 89 strike the surfaces of the slides 73 at the end of the motion of the links 84, and the further effect of such motion is to move the slides rearwardly along the blocks 69 until the screws 74 come into engagement with the rearward ends of the slots 71 and 72.

The shaft 13 carries also the cam 93 which cooperates with the lever 95. It will be noted from an inspection of Fig. 4 that the tooth 94 of the cam 93 is, in the rest position of the machine, just about to release its engagement with the lever 95. The moment the motor is released, the tooth 94 falls off of the lever 95 and the overbalanced weight of the platform 103 rotates the shaft 102 in a counterclockwise direction as seen in Fig. 4. As the shaft 13 nears the end of its single revolution, the cam 93 engages the lever 95 to rotate it in a counterclockwise direction, thus rotating the lever 97 in a similar direction and, through the medium of the link 99, rotating the arm 101, shaft 102, and platform 103, in a clockwise direction again to close the lower end of the display chute.

All of the above mentioned shafts make only a single revolution during the cycle of operation of the machine. The cog 16, however, drives the pinion 19′ on the shaft 19 which carries also the much larger gear 20 which cooperates with a small pinion on the shaft 22 mounting the governor 23. Consequently said shaft 22, governor 23, and dog 30 rotate very speedily and make a large number of revolutions during one cycle of the machine. Co-ordinating, now, the various movements of the machine, it will be seen that, when the latch 26 is moved out of engagement with the dog 30, the first thing that happens is that the platform 103 is dropped to permit the article retained in the display chute to fall out of the machine and be delivered to the purchaser. As the

rod 54 begins to rise, the cam 91 engages the roller 90 to lift the finger 81. Said finger is so disposed that, as it is raised, it engages the front surface of the second article carried in the storage chamber, and the rearward movement of the slide 73 moves said second article slightly away from the article which is engaged by the hooks 66 and prevents friction between the first two articles from causing the second article to be raised in conjunction with the first. This prevents the discharge of two papers or other articles at a single time, and prevents also "cocking" of the articles in the storage chamber. Such cocking often prevents the proper operation of the machine if it is allowed to take place.

As the forwardmost article is raised, the projections 47 of the fingers 45 drop down into such a position that, when the article has been raised to its uppermost limit, the hooks 66 may be retracted to the position shown in Fig. 8, leaving the article suspended on the extensions 47. The cam 15 then moves said fingers in a counter-clockwise direction about the shaft 46, and said fingers carry the lower edge of the article forwardly and then allow the article to slide downwardly into the discharge chute.

It is at the end of this movement that the cam 14 strikes the ends of the latch fingers 24 and 25 to cause them to release the latch 26, and the latch 26 is moved back into a position to intercept the dog 30 and stop the operation of the machine.

The bell crank 132—137 is provided to prevent possible release of the dog 30 by jostling the machine. It will be readily apparent that, with the arrangement of the latch arm 137, it will be impossible to release the mechanism for operation without dropping coins into the cup 125.

It will be seen that I have provided a machine for vending articles which is flexible in that it may be adapted to the sale of articles for various prices. It will also be obvious that I have provided a machine which is efficient in its operation and which delivers an article to the customer immediately upon deposit of the required number of coins in the machine, whereby the customer is not obliged to wait until the mechanism of the machine has had an opportunity to operate to carry an article from the storage chamber to the discharge chamber, such operation taking place after the customer has received the purchased article.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A vending machine comprising a storage chamber adapted to support articles to be vended in a substantially vertical position, a display compartment adapted to contain one of said articles, a wall separating said compartment from said chamber, means for lifting a single article from said chamber over said wall and allowing said article to fall into said compartment, a gate closing the lower end of said compartment, and common means for opening and closing said gate and for actuating said lifting means.

2. A vending machine comprising a motor, a storage chamber for articles to be vended, automatic means controlled by said motor for lifting one of said articles, automatic means controlled by said motor for subsequently removing said article from said first-mentioned means, automatic means controlled by said motor for subsequently actuating said second means to release said article, and automatic means controlled by said motor for subsequently stopping the operation of said motor.

3. In a vending machine, a motor, a shaft geared to said motor, an arm on each end of said shaft, a pin carried at the free end of each of said arms, a lever pivotally mounted intermediate its ends adjacent each of said arms, each of said levers being provided with a slot in its end nearest to its respective arm and said pins being received in said slots, each of said levers being provided with an aperture in its opposite end, a rod having its ends mounted in said apertures respectively, a plurality of bell crank levers pivoted in reciprocable frames, each of said bell crank levers being provided with a slot in one of its arms, said rod being received in said bell crank lever slots, and a finger provided with a hook on its lower end pivotally mounted on the other arm of each of said bell crank levers.

4. In a vending machine, a motor, a shaft geared to said motor, a rock shaft journalled in the machine frame, a plurality of fingers mounted on said rock shaft, a projection on each finger, a link pivoted to each projection, each of said links being provided with a slot in its free end, a second rock shaft mounted adjacent said slotted ends of said links, a plurality of arms carried by said second rock shaft and provided with pins at their free ends respectively received in said link slots, a further arm carried by said second rock shaft and having a link connected to its free end, a lever pivoted intermediate its ends and having one end connected to said last-mentioned link, and a cam on said first-mentioned shaft adapted to engage the opposite end of said last-mentioned lever.

5. In a vending machine, a motor, a shaft geared to said motor, a rock shaft journalled in the machine frame, a plurality of fingers mounted on said rock shaft, a projection on

each finger, a link pivoted to each projection, each of said links being provided with a slot in its free end, means tending resiliently to urge rotation of said rock shaft in one direction, means to overcome the tendency of said means comprising a second rock shaft mounted adjacent said slotted ends of said links, a plurality of arms carried by said second rock shaft and provided with pins at their free ends respectively received in said link slots, a further arm carried by said second rock shaft and having a link connected to its free end, a lever pivoted intermediate its ends and having one end connected to said last-mentioned link, and a cam on said first-mentioned shaft adapted to engage the opposite end of said last-mentioned lever.

6. In a vending machine, a storage chamber for articles to be vended, resilient means tending to urge such articles toward the front of said chamber, a plurality of bell crank levers mounted at the front of said chamber and carrying fingers extending into said chamber, a hook depending from each of said fingers and adapted to engage beneath the forwardmost article in said chamber, means to raise and lower said levers, and means to engage said article after such raising to prevent its falling with said levers.

7. In a vending machine, a storage chamber for articles to be vended, resilient means tending to urge such articles toward the front of said chamber, a plurality of bell crank levers mounted at the front of said chamber, each of said levers carrying on one arm a finger extending into said chamber, a hook depending from each of said fingers and adapted to engage beneath the forwardmost article in said chamber, the other arm of each of said levers being provided with a slot, a horizontal rod engaged in all of said slots and adapted to be vertically reciprocated to raise and lower said levers, and means to engage said article after such raising to prevent its falling with said levers.

8. In a vending machine, a storage chamber for articles to be vended, resilient means tending to urge such articles toward the front of said chamber, a plurality of bell crank levers mounted at the front of said chamber, a finger pivotally mounted on one arm of each of said levers and extending into said chamber, a hook depending from each of said fingers and adapted to engage beneath the forwardmost article in said chamber, the other arm of each of said levers being provided with a slot, a horizontal rod engaged in all of said slots and adapted to be vertically reciprocated to raise and lower said levers, and means to engage said article after such raising to prevent its falling with said levers.

9. In a vending machine, a storage chamber for articles to be vended, resilient means tending to urge such articles toward the front of said chamber, a plurality of bell crank levers mounted at the front of said chamber and carrying fingers extending into said chamber, a hook depending from each of said fingers and adapted to engage beneath the forwardmost article in said chamber, means to raise and lower said levers, means to engage the second forwardmost article to prevent disturbance thereof by such raising, and means to engage said first-mentioned article after such raising to prevent its falling with said levers.

Signed by me this 7th day of November, 1927.

WILLIAM C. LAUGHLIN.