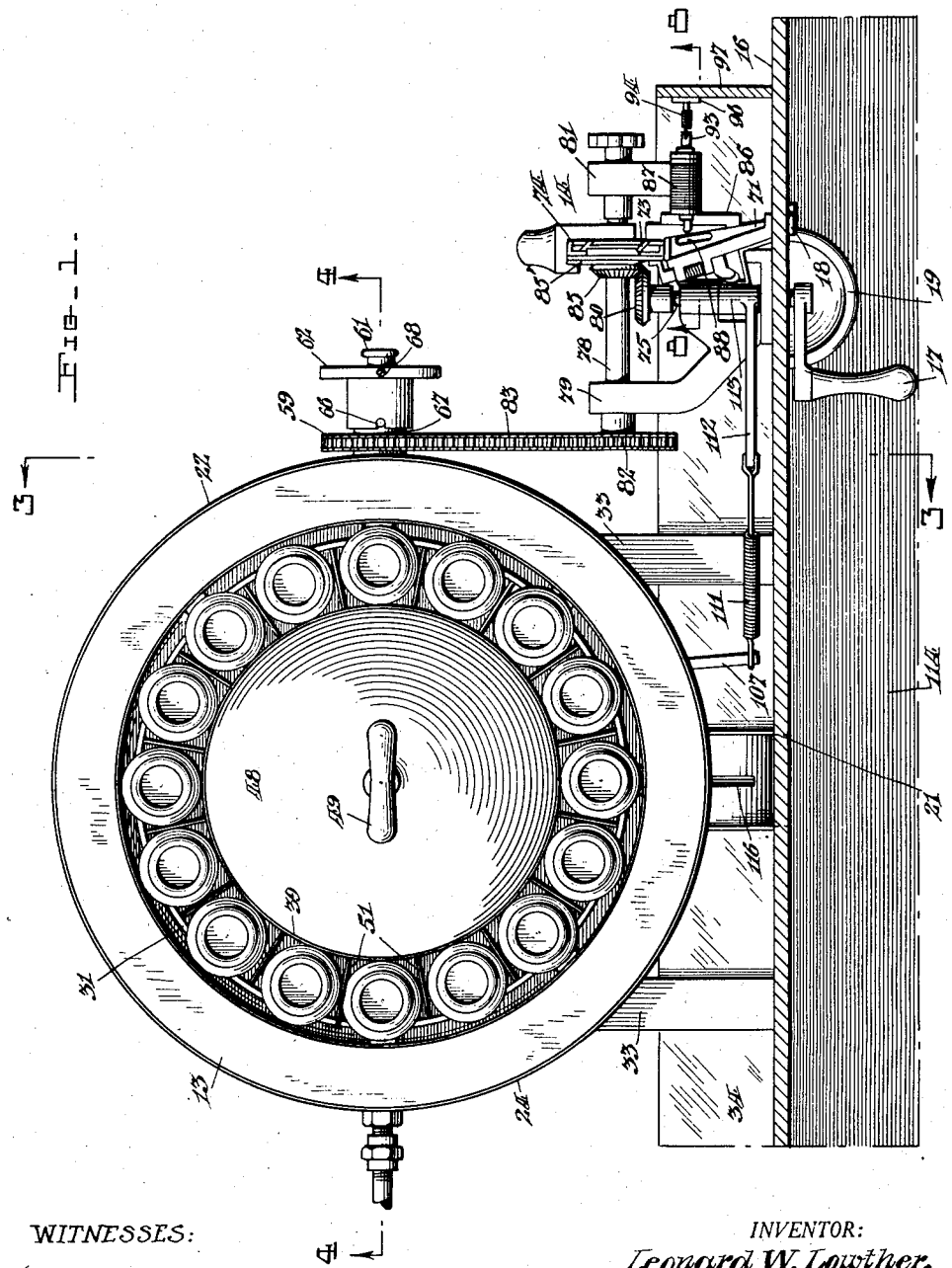
April 25, 1933. L. W. LOWTHER 1,905,180

DISPENSING MACHINE

Filed March 20, 1928 8 Sheets-Sheet 1

Fig. 1.



WITNESSES:

Alfred E. Tschinger.

R. D. Hunt Lewis.

INVENTOR:

Leonard W. Lowther,

BY

Joshua R. H. Potts

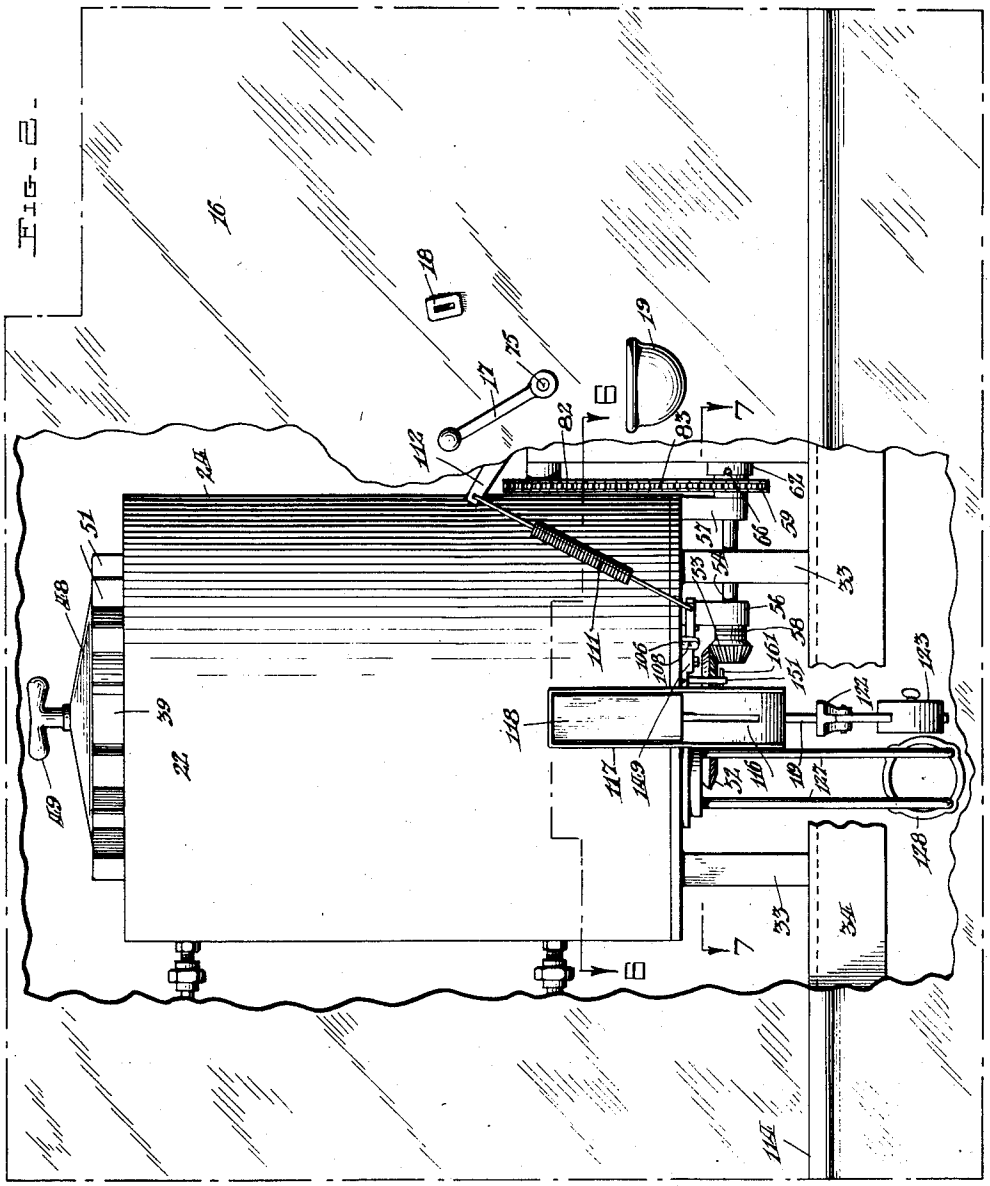
ATTORNEY.

April 25, 1933. L. W. LOWTHER 1,905,180

DISPENSING MACHINE

Filed March 20, 1928 8 Sheets-Sheet 2

Fig. 2.



WITNESSES:

Alfred E. Tschinger.

M. Johnson Plumb.

INVENTOR:

Leonard W. Lowther,

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Joshua R. H. Potts

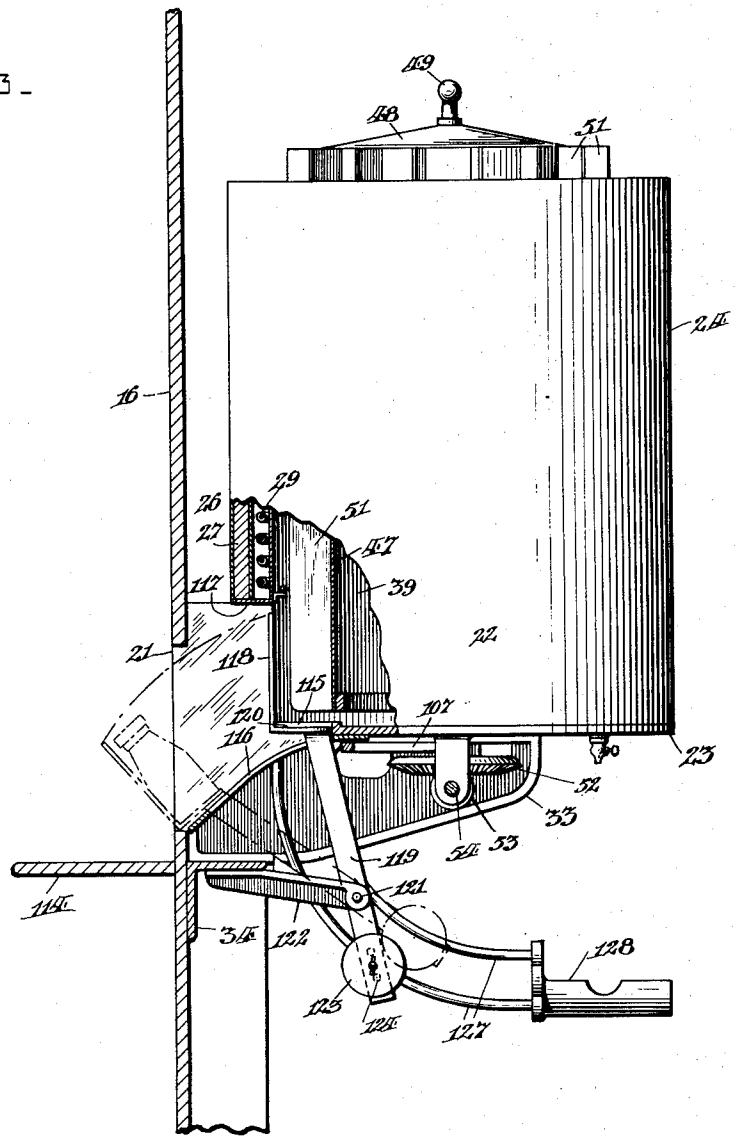
ATTORNEY.

April 25, 1933. L. W. LOWTHER 1,905,180

DISPENSING MACHINE

Filed March 20, 1928 8 Sheets-Sheet 3

Fig. 3.



WITNESSES:

Alfred E. Ischinger.

R. C. Humphries.

INVENTOR:

Leonard W. Lowther,

BY

Joshua R. H. Potts

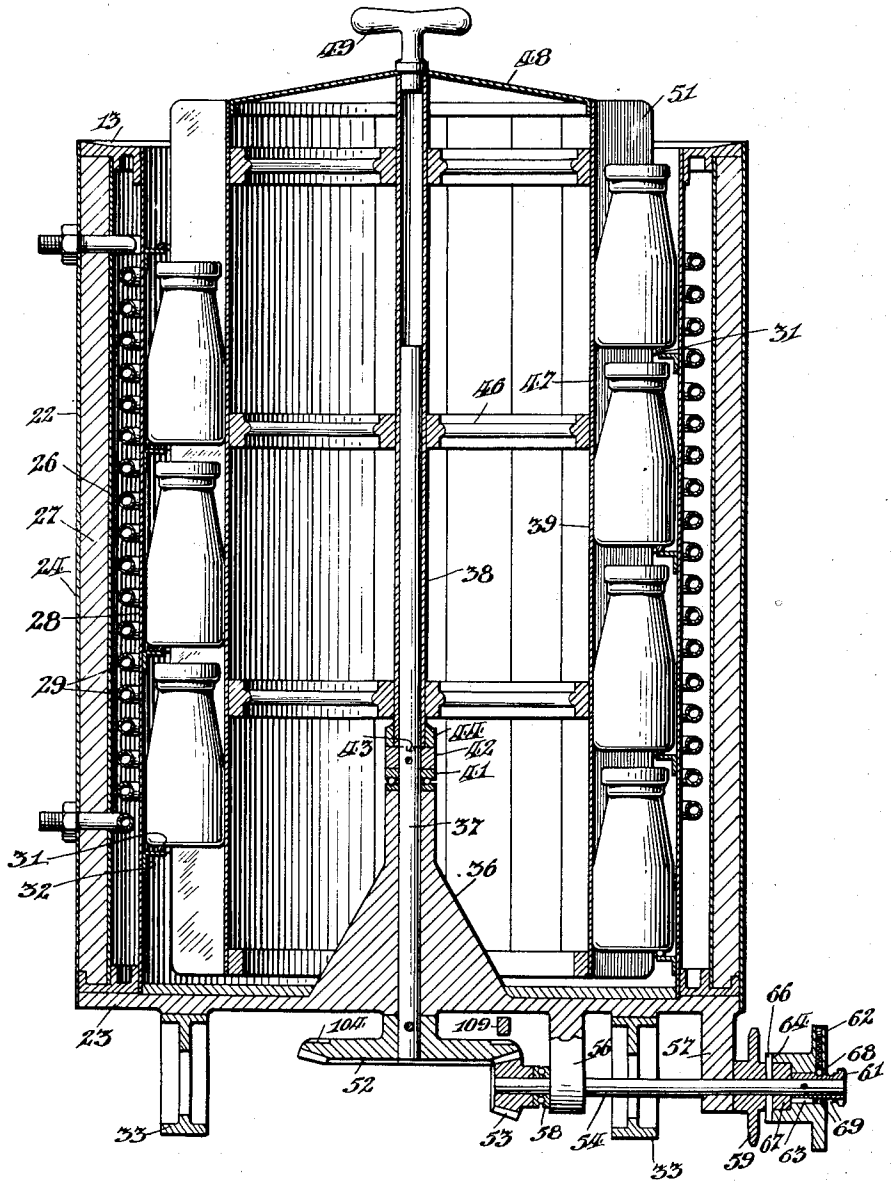
ATTORNEY.

April 25, 1933. L. W. LOWTHER 1,905,180

DISPENSING MACHINE

Filed March 20, 1928 8 Sheets-Sheet 4

Fig. 4.



WITNESSES:

Alfred E. Schinger.

T. B. Humphris

INVENTOR:

Leonard W. Lowther,

BY

Joshua R. H. Potts

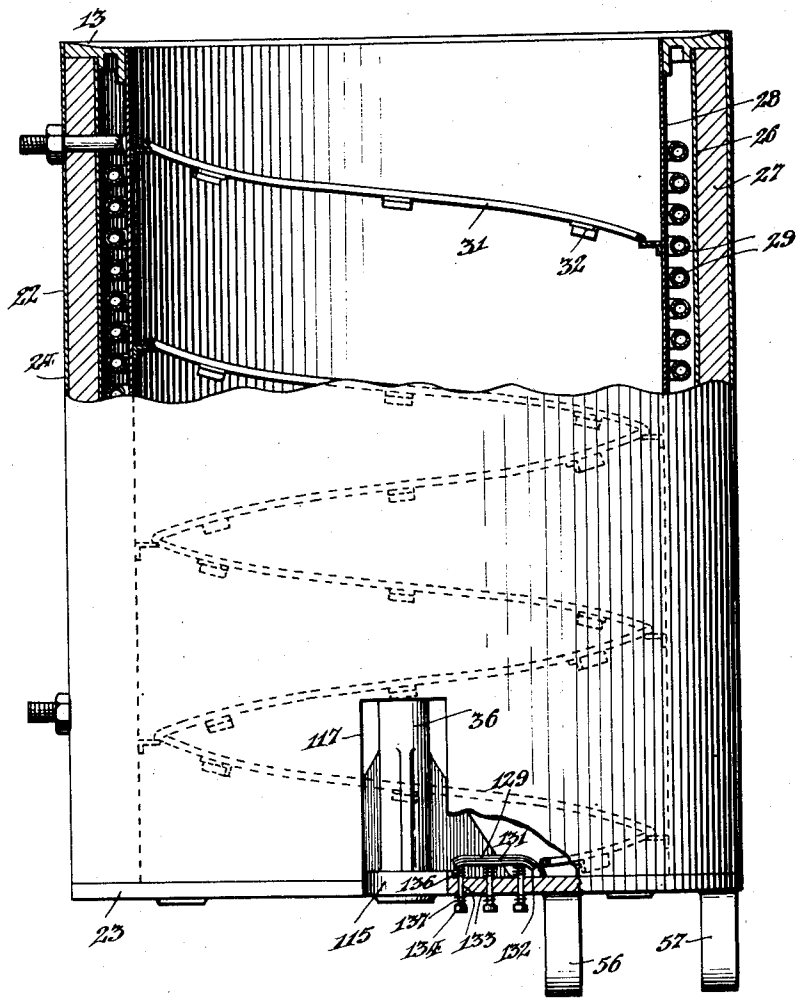
ATTORNEY.

April 25, 1933. L. W. LOWTHER 1,905,180

DISPENSING MACHINE

Filed March 20, 1928 8 Sheets-Sheet 5

Fig. 5.



WITNESSES:

Alfred E. Ischinger.

T. B. Humphris.

INVENTOR:

Leonard W. Lowther,

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Joshua R. H. Potts

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April 25, 1933. L. W. LOWTHER 1,905,180

DISPENSING MACHINE

Filed March 20, 1928 8 Sheets-Sheet 6

FIG. 6.

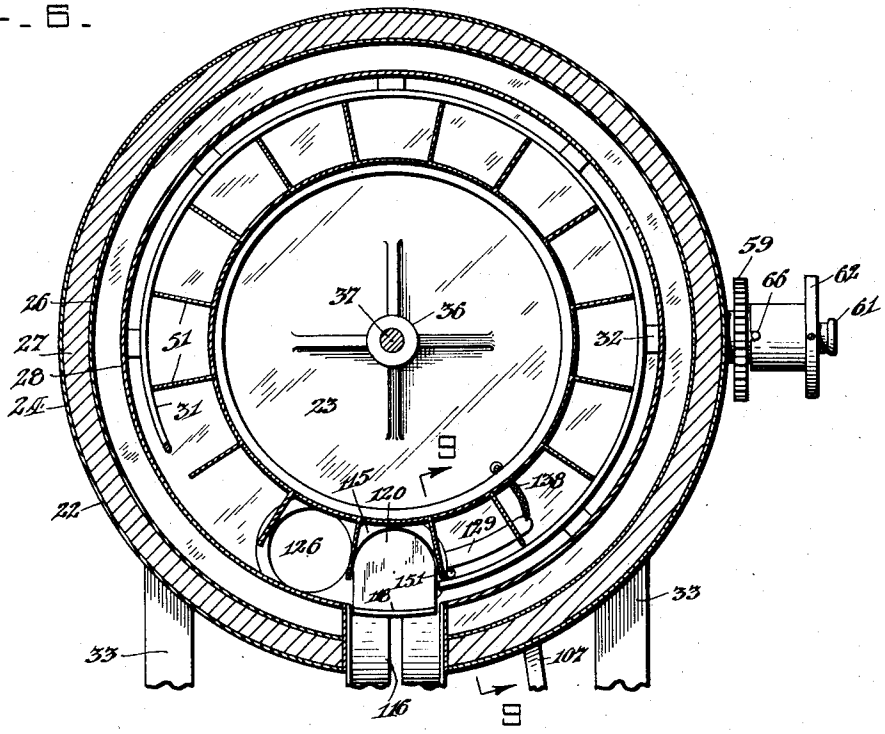
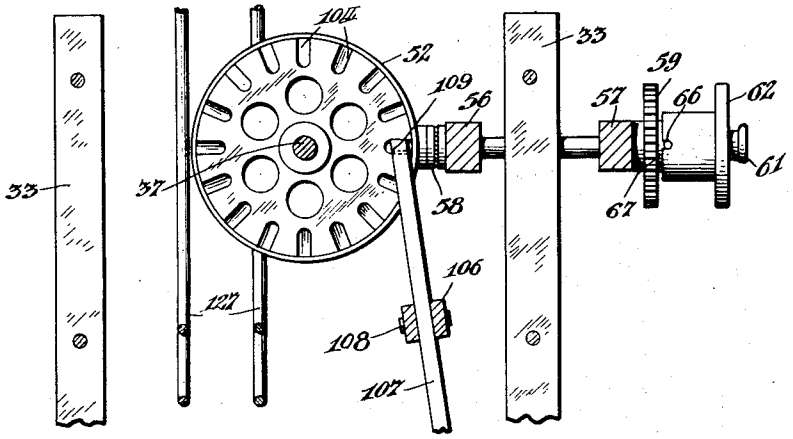


FIG. 7.



WITNESSES:

Alfred E. Tschinger.

M. B. Hunt Jr.

INVENTOR:
Leonard W. Lowther,

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Joshua R. H. Potts
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April 25, 1933. L. W. LOWTHER 1,905,180

DISPENSING MACHINE

Filed March 20, 1928 8 Sheets-Sheet 7

FIG. 8.

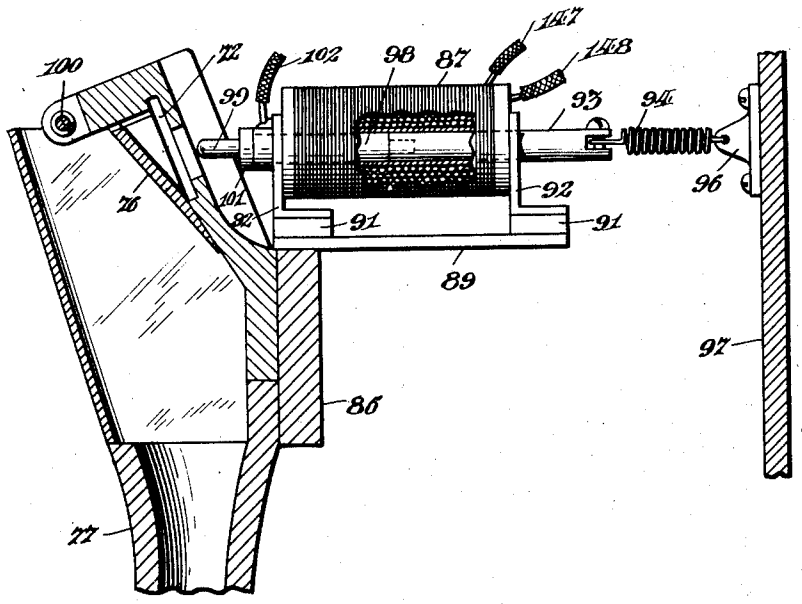
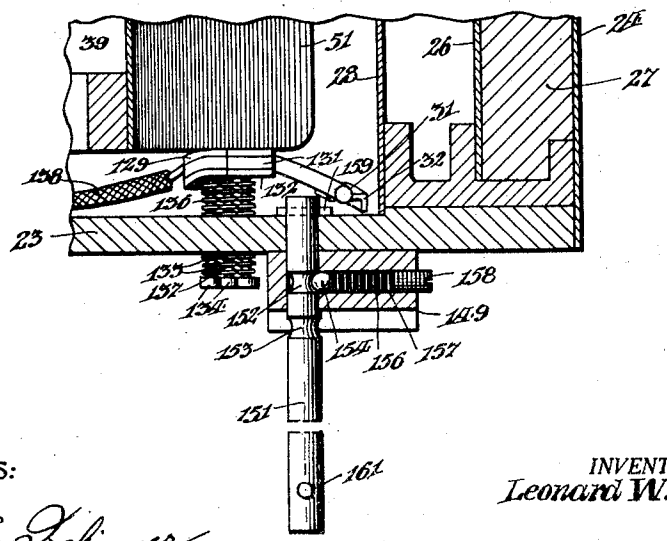


FIG. 9.



WITNESSES:

Alfred E. Zschinger.

R. B. Newbury.

INVENTOR:
Leonard W. Lowther,

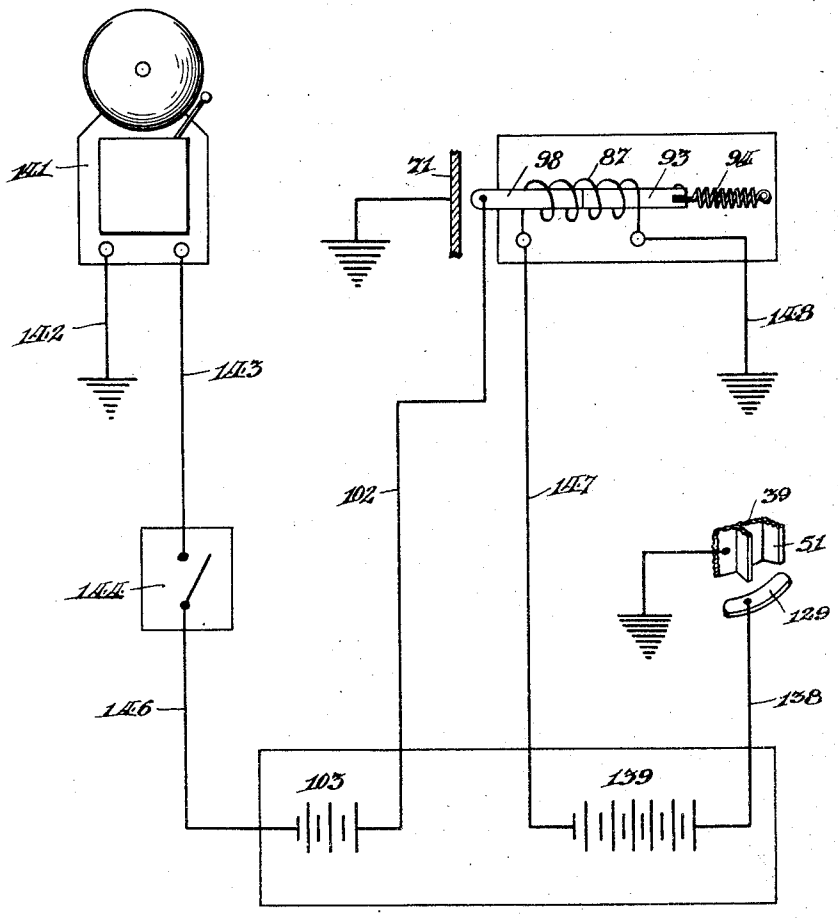
BY Joshua R. H. Potts
ATTORNEY.

April 25, 1933. L. W. LOWTHER 1,905,180

DISPENSING MACHINE

Filed March 20, 1928 8 Sheets-Sheet 8

FIG. 10.



WITNESSES:

Alfred E. Ischinger.

F. B. Hunsdorfer.

INVENTOR:

Leonard W. Lowther,

BY Joshua R. H. Potts

ATTORNEY.

Patented Apr. 25, 1933 1,905,180

UNITED STATES PATENT OFFICE

LEONARD W. LOWTHER, OF AUDUBON, NEW JERSEY, ASSIGNOR TO HORN & HARDART BAKING CO., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF NEW JERSEY

DISPENSING MACHINE

Application filed March 20, 1928. Serial No. 263,100.

This invention relates to a dispensing machine and particularly to a machine which is rendered operative upon the insertion of a coin or coins.

The object of this invention is to provide mechanism which upon the insertion of a coin and the operation of a lever will deliver to the operator a sealed bottle of beverage, such as milk, etc. or a carton filled with the desired commodity.

Another object is to provide such a machine which is so constructed as to keep the bottles or cartons at a constant and predetermined temperature.

Another object is to equip the machine with automatic signals which give notice when the machine is empty.

Still another object is to provide means for unloading the machine when it is desired to discontinue the use of the same.

According to the invention the machine is provided with a cylindrical casing having a cooling compartment in the wall thereof, a slidway or track in the interior of the cylinder, a spider rotatable in said cylinder and having partitions which extend in proximity to said slideway to form movable retaining spaces with said slideway and casing for advancing bottles or cartons therein, mechanism coin-set for permitting the hand-operation of said spider to deliver a bottle or carton to the operator, means limiting the rotation of said cylinder to prevent more than one bottle or carton being delivered therefrom, means for signalling the attendant when the machine is empty, and means for disconnecting the operating mechanism from the spider for filling said cylinder and for emptying the same.

The drawings illustrate an embodiment of the invention and the views therein are as follows:—

Figure 1 is a top plan view of the complete mechanism showing the coin operating device mounted on the wall or partition with the coin slot, coin return cup and operating handle presented to the customer,

Figure 2 is a front view showing a portion of the wall or partition broken out to expose the container,

Figure 3 is a side view of the container, partly in section, with a part broken away to disclose the mechanism for delivering a bottle to a customer, and may be regarded as being taken on the line 3—3 of Figure 1,

Figure 4 is a vertical section of the container and spider showing the cylinder loaded with bottles and this view is taken on the line 4—4 of Figure 1,

Figure 5 is a front view of the container showing the upper portion in section and a small portion at the lower end in section to disclose the alarm switch,

Figure 6 is a cross-sectional view on the line 6—6 of Figure 2,

Figure 7 is a cross-sectional view on the line 7—7 of Figure 2, with the front broken away,

Figure 8 is a vertical sectional view on the line 8—8 of Figure 1,

Figure 9 is a section taken on the line 9—9 of Figure 6, and shows the signal switch and stop mechanism used when loading the container, and

Figure 10 is a wiring diagram showing the electrical connections for automatically ringing the alarm when the container is empty.

The dispensing machine comprises a container 13 and operating mechanism 14 located on the rear of a partition 16; an operating handle 17, coin slot 18 and coin-return cup 19 located on the front of the partition and in full view of the customer.

Bottles or cartons are delivered through the aperture 21.

The machine has been illustrated as a device for vending bottles but may be used for dispensing package goods of any description.

The container 13 comprises a cylindrical container or drum 22 having a cast base 23 and has between its outer wall 24 and intermediate concentric wall 26 a filling of heat insulating material 27 such as asbestos, celotex or the like. Between the intermediate wall 26 and the concentric inner wall 28 are a plurality of refrigerating coils 29.

The cylindrical container or drum is provided with a track of slideway 31 which may

be formed of a single piece of heavy wire or rod and which is arranged in spiral form and mounted on short angle sections 32 fastened to the inner wall 28 thereof.

The base 23 is mounted on a pair of supporting members 33 which are in turn mount on the angle bars 34 fastened to the inside of the wall or partition 16, (see Fig. 3).

The base has a bearing member 36 formed integrally therewith and this bearing member has a shaft 37 extending therethrough and into the tubular hub 38 of a spider 39. On the upper end of the bearing 36 is a ball bearing 41 whose lower race rests on the upper part of said bearing and whose upper race is connected with a collar 42 pinned to said shaft. This collar is rotatably connected with the tubular hub 38 through ribs 43 on a collar 44 fastened securely to said hub, fitting within complementary slots in the collar 42 pinned to said shaft.

It will therefore be seen that upon the turning of the shaft 37, the spider 39 will be rotated while at the same time the entire spider may be lifted vertically from the container.

The spider is provided with a number of supporting members 46 which support the shell 47 and a cover 48 fits on said shell and closes the same to prevent the entrance of any dirt or other matter to the interior thereof. The upper end of the hub 38 is also provided with a handle 49 which is securely fastened therein and which extends above the cover 48 and which is utilized for turning the spider to load or unload the machine.

The shell 47 is provided with a plurality of vertical radial partitions 51 which extend the full length of the same and which with the inner wall 28 of the cylinder and the tracks 31 form movable retaining spaces for the bottles or cartons.

The shaft 37 extends below the bottom of the cast base 23 and is provided on its lower end with a beveled gear 52 which meshes with a beveled pinion 53 on a shaft 54 which operates in the housing 56 and 57 formed integral with said base. This pinion is provided with a thrust bearing 58 and with an idler sprocket 59 on the other side of said bearings.

The outer end of said shaft 54 is provided with a sleeve 61 which is pinned to said shaft and with a clutch member 62 which is slidably mounted on said sleeve and held against rotation by the key 63.

The inner face of the clutch is provided with a series of slots 64 which are adapted to mesh with pins 66 located in the hub 67 of said sprocket.

The clutch is provided with a seating device which consists of a spring-pressed ball 68 adapted to drop into the annular grooves 69 on the sleeve 61 when the clutch is moved inward and outward so as to seat the same and releasably hold it in the desired position.

The coil device for locking the mechanism to operate the spider through the operating handle 17 is shown and described in Patent No. 1,421,680, granted July 4th, 1922 to J. Fritsche and now owned and controlled by the assignee hereof. The device as shown in the patent per se forms no part of the invention herein except insofar as it is rendered adaptable for the operation of the mechanism of the present invention.

The coin is inserted in the coin slot 18 and passes downward through the guide channel 71 and is positioned in the coin groove 72 from which it drops into one of the sloping notches 73 on the coin wheel 74. If a smaller coin than that required is placed in the coin slot 18, when it reaches the coin groove it will fall upon the plate 76 and, as this plate swings outward upon the operation of the operating handle 17, the coin will fall into the return-channel 77 and will be delivered to the operator in the return cup 19.

If, however, the coin is of the proper size to fit the coin groove 72 and falls into the sloping notch 73, it locks the coin wheel 74 to the shaft 78 so that upon the operation of the operating handle 17 the shaft 75 will be rotated, and as this shaft is provided with a beveled gear 80 meshing with the beveled gear 85 on the disk 85′ which is locked with the coin wheel, the shaft 78 is thus rotated. This shaft 78 is mounted in suitable bearings 79 and 81 and is provided at its inner end with a sprocket 82 and with a sprocket chain 83 which extends over the same and over the sprocket 59 on the shaft 54.

The coin device is mounted on the frame 86 and is provided with a solenoid 87 which is mounted in line with a slot 88 in the side wall of the guide channel 71. This solenoid is mounted on a platform 89 and insulated therefrom by insulating blocks 91 upon which the brackets 92 for holding the coil are fastened so that the said coil will be electrically insulated from the frame of the apparatus.

The armature 93 of the solenoid is normally adapted to extend a short distance into the interior of the solenoid and is provided at its outer end with a spiral spring 94 whose one end is held in an insulating bracket 96 mounted on a support 97. Fastened to the forward end of the armature 93 is a plunger 98 formed of non-magnetic material which is reduced at its forward end 99 and which, when the armature is drawn into the solenoid, is pushed outward and across the guide channel so that any coin placed thereafter in the coin slot 19 will be stopped and upon operation of the operating handle 17, which operates the plate 76, will be dropped into the return-channel 77 and

delivered to the customer in the return cup 19. The plunger is provided with a collar 101 which prevents it being drawn too far into the solenoid 87 by the spring 94.

By reference to Figure 10 in connection with Figure 8, it will be seen that the forward bracket 92 is connected by a wire 102 with a battery 103 and, when the solenoid is operated to push the plunger 98 forward, electrical contact is made between the collar 101 and the frame of the machine as later described in connection with the wiring diagram of Figure 10.

The upper face of the beveled gear 52 is provided with a series of slots 104 which are equal in number to the partitions 51 on the spider 39.

The bottom of the cast base 23 is provided with a lug 106 on which a stop bar 107 is pivotally mounted at 108. This stop bar has a finger 109 at its inner end while its outer end is fastened to one end of a spiral spring 111. The other end of the spiral spring is fastened to an arm 112 formed integral with a shank 113 fixedly mounted on the shaft 75 of the operating mechanism.

The cast base 23 of the cylinder is elevated a short distance above the counter 114 on the operating side of the partition 16 and a plate 116 curves from the bottom of the aperture 21 to the bottom of the cast base and is fastened thereto.

The front of the container 13 is provided with a vertical recess 117 registering with the aperture 21 in the partition 16 and the base 23 is provided with a recess 115 radially centered therewith. An arcuate gate 118 is adapted to normally rest in said recess 117 and this gate is provided with a horizontal plate 120 which is complementary to the recess 115 and which normally rests therein flush with the upper surface of the cast base 23. A lever 119 is fastened to the plate 120 and said lever is pivotally mounted at 121 on a bracket 122. The outer end of the lever 119 is provided with a counterweight 123 which may be adjusted as desired in the holes 124 in said lever.

Immediately at the left of the recess 117 and removed therefrom a distance equal to the distance between any two adjacent partitions on the spider 39 at such radius, the cast base 23 is provided with a hole 126 and extending below this hole is a curved wire guide 127 terminating in a delivery pocket 128 for emptying the machine as later explained.

Immediately to the right of the recess 117 and mounted above the cast base 23 is a contact 129 which is suitably insulated by the insulation 131 from a supporting plate 132.

This supporting plate is mounted on sliding pins 133 passing through the cast base 23 and having heads 134 on their lower ends. These pins are each provided with a spiral spring 136 located between the supporting plate 132 and the upper face of the cast base 23 and with smaller spiral springs 137 located between the bottom of said cast base and the heads 134 on the pins 133. The tension of the springs 136 is slightly greater than the tension of the springs 137 so that when where is no weight on the contact 129, the excess tension on the springs 136 will move said contact upward where it will contact with the bottoms of the partitions 51 on the spider 39. The contact 129 is electrically connected through the wire 138 to a battery 139 as will be later explained in connection with the wiring diagram in Figure 10.

Considering Figures 6 and 9, the pad 149 is placed approximately beneath that partition shown to the right of the gate in Figure 6 and a post 151 is slidably mounted therein. This post is provided with semicircular grooves 152 and 153 for receiving the ball 154 which is pressed by a spring 156 into slot 157. The slot is closed and tension regulated upon the spring by the plug 158. The inner end of the post is provided with a pin 159 for preventing its removal and the outer end is provided with a pin 161 which is of greater length and which is used for shifting the position of the upper end of the post in the interior of the container. The position of this post is shown in Figure 6 where it comes in contact when raised with the side of the bottle which is resting upon the contact 129 and which is the next bottle to be fed onto the plate 120 to be delivered through the aperture 21.

Referring now to the wiring diagram of Figure 10, an alarm bell 141 is located at any desirable point and one of the binding posts of this bell is connected by the wire 142 to ground which in this case will be the frame of the machine. The other binding post is connected by the wire 143 with one end of a single pole single throw switch 144. The other end is connected by a wire 146 with one side of the battery 103. The other side of the battery is connected to the forward bracket 92 of the solenoid and which bracket is electrically connected with the plunger 98. It has been formerly described that the contact 129 is connected by the wire 138 to one side of the battery 139 and the other side of the battery is connected by the wire 147 with the winding of the solenoid 97 and the other end of the solenoid winding is connected by the wire 148 to ground which is, of course, the frame of the machine.

The use and operation of the improved dispensing machine is described as follows: —

Considering that the container 13 is entirely empty, it is loaded to its capacity,

which in the present case consists of sixty-four bottles, in the following manner. The post 151 is first raised in the container 13 by pressing the same upward so that the ball 154 will be pressed back from the groove 152 and will drop into the groove 153.

The clutch 62 is pulled outward towards the end of the shaft 54 in order to disconnect the slots 64 therein from the pins 66 in the shank of the sprocket 59 so that upon the turning of the spider 39, the beveled gear 52 will freely rotate the shaft 54 through the beveled pinion 53 regardless of the sprocket connection between the sprocket 59 and the sprocket 82 on the shaft 78. In other words, the sprocket 59 is now idle and bottles may be placed on the track or guideway 31 at the top of the machine and as the spider 39 is rotated by the handle 49 they will be passed by the partitions 51 on the spider downward along the track until the machine is filled to its capacity, such as shown in Figure 4.

The post 151 will prevent excessive filling as the first bottle to reach the space immediately to the right of the aperture cannot pass beyond the same until the post has been withdrawn. When the spider 39 will no longer turn in the container, that will serve as a signal to the attendant that the container is full.

The post 151 is now retracted to the position shown in Figure 9 so that it will not interfere with or interrupt the passage of the bottles from the track onto the plate 120 where they are delivered through the aperture to the customer.

The clutch 62 is now pressed back into clutching position which is accomplished by placing sufficient pressure thereon to lift the ball 68 out of the end groove 69 and drop the same into the groove behind the same on the sleeve 61, and as the clutch is freely slidable by reason of the key 63 upon said sleeve, the slots 64 will re-engage the pins 66 so that upon operation of the sprocket 59, the spider will be rotated through the medium of the pinion 53 on the shaft 54 meshing with the bevel gear 52 on the shaft 37 on which said spider operates.

The machine is now ready for vending purposes and the customer places one or more coins, depending upon the shape of the sloping notches 73 on the coin wheel 74, into the coin slot 18 where the coin passes down through the guide channel 71 and into the coin groove 72. If it is of sufficient diameter to fill the same, it is passed into one of the sloping notches 73 in the coin wheel 74. If it is smaller in diameter than the width of said coin groove, it will fall upon the plate 76.

The operating handle 17 is now pressed to the right which rotates the shaft 75 and the beveled gear 80 thereon and which latter in turn rotates the beveled gear 85 and, as the coin has locked the coin wheel 74 to the shaft and as the beveled gear 85 is connected to the coin wheel, the shaft 78 will be rotated. The sprocket 82 on the inner end of the shaft 78 will be rotated thereby and this rotation of the sprocket 82 will rotate the sprocket 59 through the sprocket chain 83. The sprocket 59 rotates the shaft 54, thereby rotating the pinion 53 which meshes with the beveled gear 42 on the shaft 37 and the spider 39 is thus rotated.

One of the bottles, in fact the lowermost one, has been resting on the contact 129 and between the partitions shown directly above the same in Figure 6.

As the shaft 75 of the coin device is rotated, the arm 112 will be raised which will place tension upon the spring 111 so as to cause the finger 109 on the inner end of the stop bar 107 to ride firmly on that part of the upper face of the gear 52 between the slots 104 so that when it reaches the succeeding slot it will enter the same and stop the rotation of the spider. The bottles in the entire container have been advanced by the movement of the partitions 51 on the spider limiting their gravity advance. This, of course, positions the lowermost bottle immediately back of the arcuate gate 118 and the aperture 21 and resting on the plate 120.

As the handle is released and returns to its original position, the arm 112 will reassume its normal position releasing the tension on the spring 111 and allowing the finger on the stop bar 107 to be withdrawn from the slot so that the machine is again ready for operation.

As the coin wheel 74 rotates, the coins which are dropped into the sloping notches 73 will fall by gravity into a box or collector (not shown).

As the bottle slides from the track or guide 31 onto the plate 120 of the gate 118, its weight will overcome the action of the counterweight 123 and will pull the lever 119 downward so as to dispose the bottle in front of the customer as shown in dotted lines in Figure 3.

When the bottle is removed from the gate the counterweight will immediately draw the same up into the position shown by the full lines in said Figure 3 so that it will be again in position ready to receive the next bottle which is delivered to it by the rotation of the spider.

It will be seen that as a bottle is leaving the contact 129, another bottle is being passed onto the top of the same so that as long as there are any bottles in the container, this contact will be depressed and will not make contact with the partitions 51 of the spider.

However, when the last bottle passes from the contact 129 onto the platform 120 of the gate 118, the contact will rise by reason of the action of the springs 138 overcoming the action of the springs 137 and the contact will make contact with the said partitions and the battery 139 will send a current through the wire 147 and through the solenoid 87 where it will complete the circuit through the ground wire 148 and through the frame of the machine back to the partitions of the spider.

The energizing of the solenoid 87 will draw the armature 93 into the same and push the plunger 98 outward so that the collar 101 thereon will make contact with the guide channel 71 and a complete electrical circuit will be formed from the battery 103, through the wire 102, the collar 101, the channel 71 to the wire 142 thence through the bell, through the wire 143, the switch 144 and the wire 146 back to the battery. This will signal to the attendant that the container is empty. When the attendant's attention has been called to the necessity of replenishing the container, the switch 144 can be opened so that the annoyance of the ringing bell may be eliminated.

When the container 13 has been emptied and the contact 129 is in contact with one or more of the partitions 51 on the spider, the electric circuit from the battery 139 through the solenoid 87 and through said partitions and contact back to the battery will always be maintained until a bottle has been presented ready for dispensing and resting on the contact 129 so as to break contact between it and the said partitions and thus break the electric circuit. During all the time that this circuit remains closed, the reduced portion 99 of the non-magnetic plunger 98 will be pressed outward by the magnetic armature 93 which is drawn into the solenoid 87 and this reduced end will bar the passage of the coin from the coin groove 72 into one of the sloping notches of the coin wheel 74; the coin, being thus held against completing the setting of the machine when the operating handle 17 is turned; the plate 76, which is pivotally mounted at 100, will be swung outward, and the coin will be returned to the customer through the channel 77 which leads to the coin return cup 19.

If desired, the container 13 may be emptied in exactly a reverse direction to the manner in which the same is filled, that is to say, the clutch 62 may be drawn outward so as to disengage the slots 64 from the pins 66 on the sprocket 59 which will permit the idle rotation of the shaft 54 and will therefore permit the spider 39 to be rotated in a reverse direction so that the bottles will ride upward on the slideways or tracks 31 and, as they emerge from the top of the machine, they may be lifted therefrom.

While the machine has been explained as a bottle dispensing apparatus it will be understood that with slight variations, it may be utilized for dispensing packages or containers of any size and dimensions.

It will also be understood that while the container has been shown as providing for the housing of sixty-four bottles it may be made to house more or less than this number by enlarging or decreasing the diameter of the container and the spider or by making its height greater or less.

The coin mechanism for setting the machine for operation has been selected as one capable of performing the necessary function but this particular type is not essential to the operation of the machine as other coin setting devices may be incorporated with equally good results.

Of course, the dispensing machine herein illustrated may be modified and changed in various ways without departing from the invention herein set forth and hereafter claimed.

I claim:—

1. A dispensing device comprising a stationary container having a base plate, a spider rotatably mounted in said container on said base plate and means operable for rotating the spider, a chamber between said container and spider for retaining a plurality of articles to be dispensed, a recess in said container for dispensing said articles upon the rotation of said spider, and a stop spring actuated through the spider rotating means for limiting the rotation of said spider to the successive dispensing of a single article for each operation of the spider rotating means.

2. An article dispensing machine including a casing having a delivery outlet, a shaft rotatable therein and having means thereon for moving articles along a course in said casing successively to said outlet, a gear on said shaft, a second shaft having a handle associated therewith and having a pinion in driving connection with the said gear, said gear having slots in one face thereof, a lever pivoted to said casing and having one end riding on the slotted face of said gear, said end of the lever being actuated to project into said notches incident to the operation of said handle.

3. A dispensing apparatus comprising a cylindrical body having a floor, a cylindrical drum rotatably mounted therein, fins extending from said drum, a trap door in said floor at the edge thereof, and a spiral track along the inner wall of said body extending from a point directly above said trap door to said floor.

4. A dispensing device comprising a container, a spider rotatably mounted in the container and having a plurality of partitions forming receptacles for articles to be

dispensed, a spiral track in the container for supporting the articles, a platform at the bottom of said track, an opening in the container adjacent the platform, a lever pivotally mounted and supporting said platform, and a weight on said lever below said pivotal point which is overcome by the weight of the article, whereby said platform is moved to deliver said article through said opening.

5. A dispensing device comprising a container, a spider rotatably mounted in the container and having a plurality of partitions forming receptacles for articles to be dispensed, a spiral track in the container for supporting the articles, a platform at the bottom of said track, an opening in the container adjacent the platform, a gate on said platform normally closing the platform, a lever pivotally mounted and supporting said platform, and a weight on said lever below said pivotal point which is overcome by the weight of the article, whereby said platform is moved to deliver said article through said opening.

In testimony whereof I have signed my name to this specification.

LEONARD W. LOWTHER.