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H. B. WOODS

DISPENSING MACHINE

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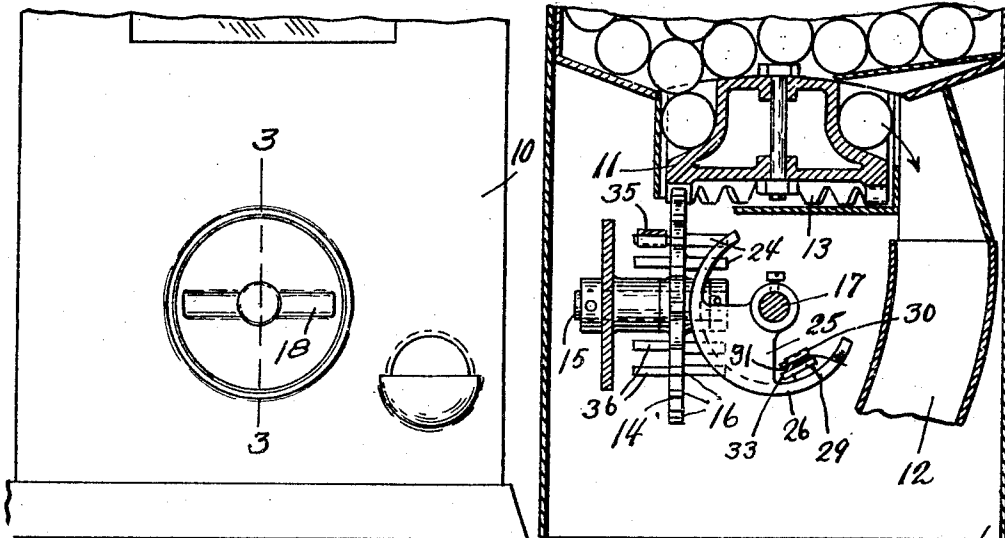


Fig. 1.

Fig. 2.

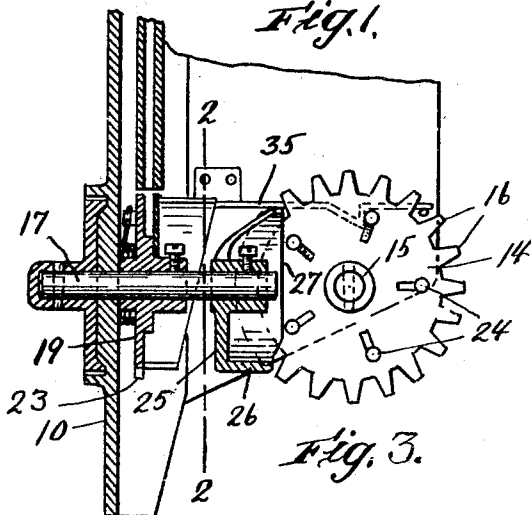


Fig. 3.

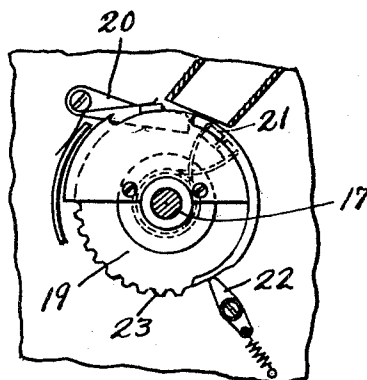


Fig. 4.

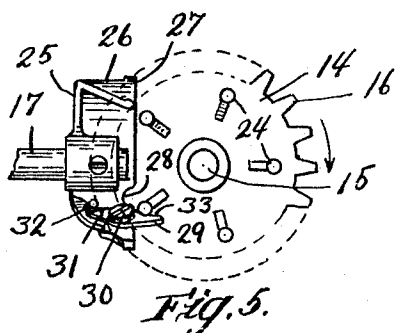


Fig. 5.

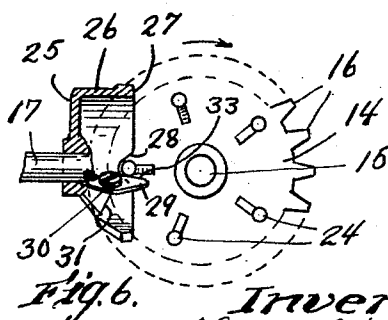


Fig. 6.

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DISPENSING MACHINE.

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This invention relates to coin released dispensing machines of the type in which a circular tray having a series of delivery chambers is mounted in the bottom of a magazine and is intermittently rotated in one direction, so that the chambers are successively moved into a delivering position, and, more particularly, to the operating mechanism for driving the tray.

As machines of this character are likely to be placed in positions in which they are unprotected, they are liable to be pilfered, unless the construction and operating mechanism is of a character to prevent it. For example, the intermittent action of the tray is usually secured by means of a reciprocatory or oscillatory mechanism, which is actuated by means of a handle. This mechanism is usually locked against advance beyond a certain point, and, when unlocked and advanced beyond this point, must usually be advanced to the extreme limit of its motion before it is permitted to return. As the tray is disconnected from the actuating mechanism during the return motion, it is possible, with certain constructions, to work the tray back and forth, so as to empty the machine, by inserting some instrument thru the article delivery passage, while the actuating mechanism is held in a certain position.

The primary objects of my invention are to produce a coin releasable mechanism of the general type above indicated, in which it is impossible to advance or retract the delivery tray independently of the actuating mechanism and in which the tray is always locked against rearward movement and also against forward movement except when moved by the actuating mechanism upon release thereof by the coin operated means.

I accomplish these objects by means of the construction illustrated in the accompanying drawing in which:

Fig. 1 is a front elevation of the outer casing of the machine.

Fig. 2 is a vertical sectional view thereof, at line 2—2 of Fig. 3.

Fig. 3 is a vertical sectional view, at lines 3—3 of Fig. 1.

Fig. 4 is a detail view of a coin controlled locking wheel for the operating shaft.

Figs. 5 and 6 are detail views of a combined locking and actuating means for the tray.

The main casing 10 is provided with a magazine in its upper portion in the bottom of which a circular tray 11 is mounted to rotate about a vertical axis, to deliver the articles in the magazine to a discharge passage 12, as the chambers in the tray are brought successively to a predetermined position, as described, for example, in Du Grenier Patent #1,562,152. The bottom side of said tray is provided with a circular series of depending gear teeth 13, and a wheel 14 is mounted on a horizontal shaft 15 beneath the tray, so arranged that its axis intersects the axis of the tray at right angles, and is provided with peripherally arranged teeth 16, which are constantly arranged in mesh with the teeth 13 of the tray, so that when the wheel 14 is rotated the tray will be driven thereby.

A main operating shaft 17 is horizontally mounted in the front side of the casing and has a handle 18 on its outer end, said shaft 17 being so arranged that its axis intersects the axis of shaft 15 at right angles. A coin carrying wheel 19 is secured on shaft 17, and a locking pawl 20 is provided, which is normally arranged to engage a tooth 21 on wheel 19 and prevent operative forward movement of the wheel, said pawl being arranged to be lifted to an inoperative position by a suitable coin when delivered to the wheel, so that a complete operative movement will be permitted. A double acting ratchet 22 is arranged to engage teeth 23 on wheel 19, so that, when the locking pawl 20 has been lifted to permit operative movement of shaft 17, this movement must be completed and then, when the return movement has been started, it must be finished or returned to the initial position before it can be moved forwardly again.

The gear wheel 14 is provided on its face side next the shaft 17 with a series of circularly arranged, equally spaced fingers 24, which extend therefrom in parallel relation to the axis of said wheel, the number thereof corresponding to the number of delivery chambers in the tray, and a cup shaped disk 25 is mounted on shaft 17 and has a segmen-

tal cylindrical rim portion 26, on the edge of which a circular face 27 is formed, which extends thru somewhat more than a semi-circumference and is disposed in a plane at right angles to the axis of shaft 17, in such relation to the fingers 24 that any two adjacent fingers will be held in such close proximity thereto that appreciable rotation of the wheel 14 in either direction will carry either one or the other of the adjacent fingers into engagement with said face in all positions of the shaft 17. In other words, the plane of the face 27 intersects the path in which the fingers 24 move when the wheel 14 is rotated, as shown in Figs. 3 and 5, and the rim 26 is so arranged that its edge or face 27 is always held in a position in which it will be engaged by said fingers, so that rotation of wheel 14 in either direction independently is prevented, and whether the disk is in its normal or its advanced position. The rim 26 is provided with a notch 28, adapted to receive any one of said fingers 24, and a pawl 29 is mounted on a pivot 30, secured in said rim 26 at one side of said notch, said pawl being held in such a position by a spring 31, which normally holds one end of the pawl engaged with a stop lug 32, that its side edge 33 is perpendicular to face 27 and flush with one side of notch 28 and its end portion projects axially beyond the face 27, as shown in Figs. 5 and 6.

The parts are shown in their initial position in Figs. 1 to 5, and, in operating the machine, to advance the tray 11 one station, or to the next delivering position, the shaft 17 will be turned to the right and will be unlocked by a suitable coin which has been inserted in the machine, so that the rotation may be continued to the end of the operative movement. In the initial position of the parts, the pawl 29 is held in such relation to the wheel 14 that, during the first portion of the movement of the shaft 17 it is inoperative. As the movement is continued the edge 33 of the pawl is engaged with one side of one of the fingers 24, so that, on further movement, wheel 14 will be rotated in the direction of the arrow in Figs. 5 and 6 and the finger, which is engaged, will be carried into the notch 28, as shown in Fig. 6. This movement is continued until the tray has been rotated to the next station, at which time the shaft 17 will be engaged with a suitable stop (not shown) and an article will be delivered from the tray. The shaft 17 will then be rotated backward to the initial position and, during the return movement, the back edge of the pawl 29 will engage the next finger 24 and be swung aside as it passes it and then will be returned to initial position. To avoid the possibility that the tray will be moved from its station, or the delivering position to which it has been moved, on the return

movement, as by reason of the engagement with a finger by the pawl, means for preventing such backward movement is provided, the means shown being a pawl 35 mounted on the frame and arranged to be successively engaged with a series of projections 36 on the back side of wheel 14, the arrangement being such that, when the tray has been advanced to delivering position, which it must be before the pawl 22 permits reverse rotation of shaft 17, the pawl 35 will be engaged with one of the projections 36, so that the wheel 14 cannot be rotated rearward and the next finger 24 will be positively held in position for engagement by the pawl 29.

However, whether such means for preventing rearward rotation of the tray is employed or not, the combined actuating and locking disk 25 at all times prevents substantial rotation of the tray to a sufficient extent to permit movement thereof except in the manner above described, the tray being held against rotation in either direction independently of the actuating means under all conditions.

I claim:

1. In a dispensing machine, a circular tray arranged for intermittent forward rotation and having a series of chambers arranged to make delivery successively at a predetermined point, an actuator arranged for oscillatory movement between an initial and an advanced position and having a circular face arranged in a plane perpendicular to its axis, driving means for said tray arranged for rotation about an axis which intersects the actuator axis at right angles and having a series of axially projecting, regularly spaced fingers corresponding to said chambers and circularly arranged to be moved in a path concentric with its axis and intersecting said face, so that when the tray is in, or adjacent, a delivering position two of said fingers will be held in close proximity to said face and one or the other thereof will be engaged therewith on rotation of the tray in either direction, and means whereby said actuator, on rotation to its advanced position, will be engaged with one of said fingers to move said tray to the next delivering position.

2. In a dispensing machine, a circular tray arranged for intermittent forward rotation and having a series of chambers arranged to make delivery successively at a predetermined point, an actuator arranged for oscillatory movement between an initial and an advanced position and having a circular face arranged in a plane perpendicular to its axis, driving means for said tray arranged for rotation about an axis which intersects the actuator axis at right angles and having a series of axially projecting, regularly spaced fingers corresponding to

said chambers and circularly arranged to be moved in a path concentric with its axis and intersecting said face, so that when the tray is in, or adjacent, a delivering position two of said fingers will be held in close proximity to said face and one or the other thereof will be engaged therewith on rotation of the tray in either direction, and means for engaging said actuator with one of the fingers which is adjacent said face, when it is rotated forwardly, to advance the tray to the next delivering position, said actuator being recessed from said face to receive the finger during the middle portion of its movement.

3. In a dispensing machine, a circular tray arranged for intermittent forward rotation and having a series of chambers arranged to make delivery successively at a predetermined point, an actuator arranged for oscillatory movement between an initial and an advanced position and having a circular face arranged in a plane perpendicular to its axis, driving means for said tray arranged for rotation about an axis which intersects the actuator axis at right angles and having a series of axially projecting, regularly spaced fingers corresponding to said chambers and circularly arranged to be moved in a path concentric with its axis and intersecting said face, so that when the tray is in, or adjacent, a delivering position two of said fingers will be held in close proximity to said face and one or the other thereof will be engaged therewith on rotation of the tray in either direction, and a pawl mounted on said actuator and arranged to project beyond said face in position to be engaged with one of the fingers which is adjacent the face when the actuator is rotated forwardly, said face being recessed in front of the pawl to receive the finger which is engaged during the middle portion of the forward movement.

4. In a dispensing machine, a circular tray arranged for intermittent forward rotation and having a series of chambers arranged to make delivery successively at a predetermined point, an actuator arranged for oscillatory movement between an initial and an advanced position and having a circular face arranged in a plane perpendicular to its axis, driving means for said tray arranged for rotation about an axis which intersects the actuator axis at right angles and having a series of axially projecting, regularly spaced fingers corresponding to said chambers and circularly arranged to be moved in a path concentric with its axis and intersecting said face, the latter being circularly extended and arranged so that in all positions of the tray and of the actuator substantial rotation independently of the tray in either direction will cause one of said fingers to be engaged with said face

so as to prevent further rotation thereof, and means whereby on forward rotation of the actuator to its advanced position said driving means will move said tray to its next delivering position.

5. In a vending machine, a rotatable member adapted by its movement to effect the delivery of an article, means normally locking said article delivery member comprising a rotatable element having axially projecting studs and a locking member adapted to lock said element by peripheral engagement with a plurality of said studs.

6. In a vending machine, a rotatable article delivery element, locking and driving means for said element comprising a driven gear provided with locking projections, a driver for said gear comprising a locking surface normally engaging certain of said locking projections on said driven gear and thereby locking said driven gear, a driving element on said driver adapted to engage one of the locking projections on said driven gear, and a cut out in said locking surface adapted to receive the locking projection engaged by the driving element, thereby permitting movement of said driven gear by said driving element.

7. In a vending machine, a delivery device, an operating finger piece, driving means for said delivery device associated with said finger piece and comprising a rotatable member having an axially extending pawl thereon, and means associated with said delivery device adapted to be engaged by said pawl.

8. In a vending machine, a delivery device adapted for intermittent rotation in one direction only, a driving finger piece for said delivery device adapted for reciprocal rotation, connecting devices between said finger piece and said delivery device comprising a pivoted pawl associated with said finger piece, studs associated with said delivery device adapted to be engaged and moved by said pawl during the forward movement of said finger piece, said pawl being adapted to rock on its pivot and pass said studs during retrograde movement of said finger piece, and a locking surface adjacent said pawl adapted to engage a plurality of said studs and thereby lock said delivery device against movement except by the operative engagement of one of said studs with said pawl.

9. In a vending machine, in combination a delivery device, an operating finger piece therefor, connecting means between said finger piece and said delivery device comprising a rotating cup shaped member associated with said finger piece, an axially facing locking surface thereon, an axially extending driving pawl projecting forward from said locking surface, and devices associated with said delivery device adapted to

be operatively engaged by said pawl and said locking surface.

10. In a vending machine, a delivery device, a driving gear therefor, a plurality of studs projecting axially from said gear, an operating finger piece, means associated with said finger piece adapted to lock said gear and said delivery device by peripheral engagement with a plurality of said studs, a

driving pawl adjacent said locking means adapted to rotate said gear by engagement with one of said studs, said locking surface being formed to permit such rotation when and only when one of said studs is thus engaged by said pawl.

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

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