W. E. SWIFT.

VENDING CABINET FOR COLLAPSIBLE DRINKING CUPS OR THE LIKE.

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1,259,927. Patented Mar. 19, 1918.

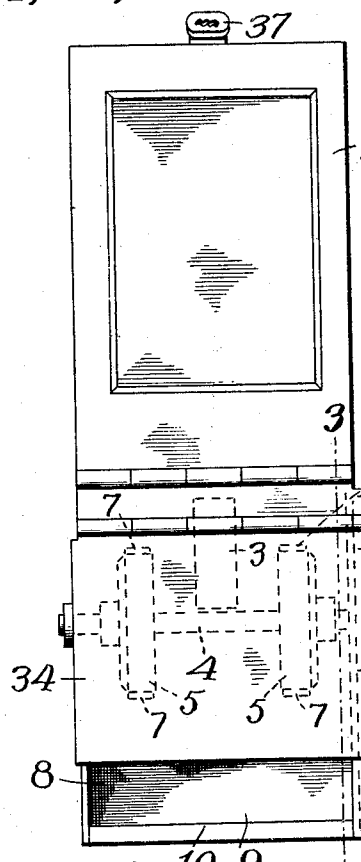


Fig. 1.

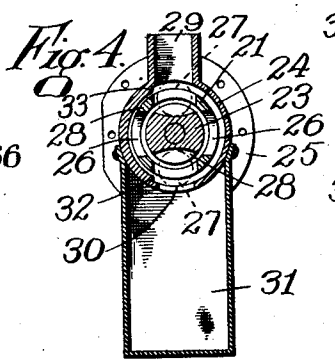


Fig. 4.

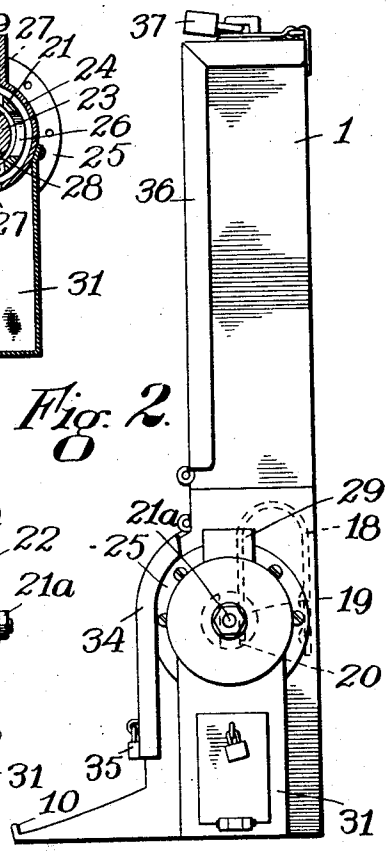


Fig. 2.

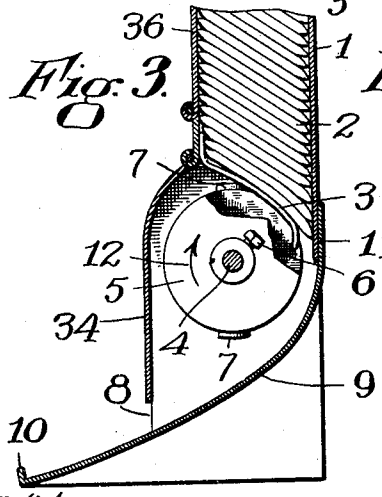


Fig. 3.

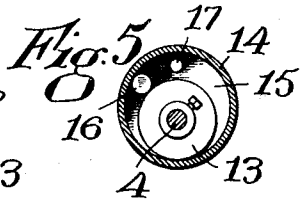


Fig. 5.

Witnesses

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VENDING-CABINET FOR COLLAPSIBLE DRINKING-CUPS OR THE LIKE.

1,259,927. Specification of Letters Patent. **Patented Mar. 19, 1918.**

Application filed December 2, 1912. Serial No. 734,440.

To all whom it may concern:

Be it known that I, WILLARD E. SWIFT, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Vending-Cabinets for Collapsible Drinking-Cups or the like, of which the following, together with the accompanying drawing, is a specification.

My invention relates to vending cabinets for collapsible drinking cups or the like and more particularly to cabinets of this class provided with an improved form of coin controlled mechanism for projecting the cups from the cabinet.

An object of the invention is to provide such a cabinet with an improved form of coin controlled mechanism that will be certain to project a predetermined number of cups from the cabinet for each coin deposited.

Another object of the invention is to provide a coin controlled mechanism of the type indicated which shall be simple in construction so as not to get out of order easily, but which shall, at the same time, be efficient and certain in its operation.

Other objects and advantages will appear from the following description taken in connection with the accompanying drawing, in which Figure 1 is a front elevation of one form of the invention, certain details being shown by broken lines; Fig. 2 is an end elevation of the form of invention shown in Fig. 1, certain details being shown by broken lines; Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 1; Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 1; and Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 1.

Like reference characters refer to similar parts in the different figures.

The upper portion 1 of the cabinet is of a suitable size and shape to accommodate a stack of collapsible drinking cups 2, or the like, the stack of cups being supported by a slanting arm 3 attached rigidly at its forward end to a fixed portion of the cabinet. Below the stack of cups in the base of the cabinet is supported in suitable bearings a shaft 4, carrying a pair of cup feeding members 5 secured to the shaft by set screws 6. Each cup feeding member is preferably circular and carries at its periphery, preferably at two diametrically opposite points thereof, two friction pads 7 of soft rubber, or other suitable material, for engaging and moving the cups in succession from the stack toward the opening 8.

The individual cups 2 are supported in a rearwardly and downwardly slanting position by the similarly slanting arm or support 3, as shown in Fig. 3, so that a rotation of the shaft 4 and the feeding members 5 will cause the pads 7 to come into contact with the lower cup 2 of the stack and move it rearwardly and downwardly by friction through the space between the feeding members 5 and a guideway 9 until the cup being fed has passed along the guideway 9 so far as to be beyond the reach of the pads 7. In order that the rear wall of the cabinet may more easily divert the lower cup into the space back of the feeding members 5, the arm 3 is convex upwardly or, in other words, its free end is curved downwardly and spaced from the rear wall of the cabinet. This allows the rear portion of the lower cup to be curved downwardly by the pressure of the cups above it so as to meet the rear wall of the cabinet at a more acute angle. The guideway 9 is given a considerable slant downwardly and forwardly so that, after a cup has left the feeding members, it will slide along the guideway and through the opening 8 until it strikes a flange or stop 10 at the bottom of the guideway, the cup then being in such position that it may be easily picked up.

The friction of the support or arm 3 upon the under face of the lower cup 2 tends to retard the feeding of the cup and, in order that there may not be any appreciable turning moment caused by the action of this arm 3 and the feeding members, the arm 3 is located under the center of the stack of cups and the feeding members are spaced at equal distances upon each side of the arm 3, the turning moment exerted upon the lower cup by one of the feeding members being neutralized by that exerted by the other feeding member. The second cup 2 from the bottom of the stack, that is, the cup next above the one being fed, has a tendency, of course, to be fed also by the friction between the two, but this friction is substantially equaled by the friction be-

tween the former cup and the one lying against its upper face, and all movement of the second cup with the lower one is prevented by the lower rear edge of the second cup striking against the back wall of the cabinet, as shown at 11 in Fig. 3. The feeding members 5 and the arm 3 are in such relative positions that rotation of the feeding members by the shaft 4 will carry the friction pads 7 slightly beyond the upper face of the arm 3 so as to come into effective frictional engagement with the lower cup.

It is, of course, desirable that the feeding members 5 be always rotated in the direction indicated by the arrow 12, shown in Fig. 3, that is, in a direction to feed the lower cup properly for, if these feeding members were rotated in the opposite direction, they would tend to displace and damage the cups at the bottom of the stack. In order to obtain the desired result, a circular disk 13 is attached rigidly to the shaft 4 so as to rotate therewith. This circular disk 13 is inclosed by a shell 14 inclosing a circular space 15 within which the disk 13 rotates. The shell 14 is located eccentrically with respect to the disk 13 and is secured firmly in fixed position against the framework of the cabinet. A small ball 16 lies within the space 15 between the periphery of the disk 13 and the inner wall of the shell 14. It is obvious that the ball 16 will not prevent rotation of the disk 13 and the shaft 4 in the direction proper for feeding the cups, but, if it is attempted to turn the shaft in the opposite direction, the ball 16 will wedge between the disk 13 and the shell 14 so as to prevent such rotation of the shaft. A stop 17 is provided to retain the ball 16 in the proper position to perform its function.

A spring 18, having one end attached rigidly to the frame of the cabinet, has a flat free end which presses firmly against a cam 19 carried rigidly upon the shaft 4. This cam 19 has two flat faces 20 which are substantially parallel with each other and also with the diameters of the feeding members 5 which pass through the friction pads 7. The pressure of the free end of the spring 18 against the flat faces 20 of the cam 19 tends to hold the shaft 4 normally in such position that the friction pad 7 is just about to engage the lower cup 2. When the shaft 4 is rotated to feed a cup, the free end of the spring 18 will yield to allow the cam 19, shaft 4 and feeding members 5 to rotate, but after these rotating parts have turned through a half revolution, the free end of the spring 18 will engage the other flat face 20 of the cam 19 and tend to stop further rotation. It is obvious from Fig. 3 that such a half revolution of the feeding members 5 is sufficient to feed the lowermost cup from the stack through the opening 8. Another important advantage of the cam 19 and spring 18 is that, just before the half revolution of the cam and feeding members is completed, the pressure of the spring 18 against the advancing edge of the face 20, which is approaching the spring, causes the cam together with the shaft 4 and feeding members 5 to jump forward slightly until the face 20 rests flatly against the free end of the spring. This causes a slight throw or impetus to be given to the cup being fed just as it leaves the feeding members, so that the cup is not dependent solely upon gravity to insure its passage along the guideway 9 from the feeding members 5 to the stop 10.

The cabinet is designed primarily for use in various public places where there is a demand for drinking cups, or the like, and where it is desired that a predetermined number of cups, usually one, be delivered by the cabinet in return for a coin deposited therein.

As a means for rotating the shaft 4, a hollow cylinder 21 having one end closed and provided with a knurled edge 22 is provided. This hollow cylinder incloses a cylindrical enlargement 23 on the shaft 4 and is adapted to rotate within a casing 24 attached to the frame of the cabinet by a flange 25. The cylinder 21 is secured in place between the enlargement 23 and the casing 24 by a nut 21^a screwed onto the threaded end of the shaft 4, which extends through an opening in the closed end of the cylinder. The end of the shaft 4 fits loosely in this opening so as to permit the cylinder to rotate independently of the shaft.

The hollow cylinder 21 is provided with one or more slots 26, of suitable size to receive a coin 27 of some particular denomination, such as one cent. These slots 26 are arranged in a plane perpendicular to the axis of the shaft and in the same plane with these slots are one or more shallow slots or depressions 28 in the enlargement 23. The casing 24 is provided with a coin slot 29 in the plane of the slots 26 and 28. By dropping a suitable coin into the coin slot 29 and turning the cylinder 21 until one of its slots 26 is in register with the coin slot 29, the coin will drop through the slot 26 until it strikes the bottom of one of the slots 28 in the enlargement 23, the slots 28 being so located in the enlargement 23 that the spring 18 and cam 19 will hold one of the slots 28 directly under the coin slot 29 at all times except when the shaft is being rotated to feed a cup. The difference between the radial distance of the bottoms of the slots 28 from the axis of the shaft 4 and enlargement 23 and the radial distance of the inner face of the casing 24 and the same axis is the same as, or slightly greater than, the diameter of the coin to be used.

It will be seen from Fig. 4 that, when the cylinder 21 is rotated by turning the knurled edge 22, the coin extending through the slots 26 and 28 will act as a lock to prevent relative rotation of the cylinder 21 and enlargement 23 and that, therefore, the enlargement 23 together with the shaft 4 and other parts carried thereby will be rotated to feed a cup.

Another slot 30 is provided in the bottom of the casing 24 and in the plane of the slots 26 and 28 so that, after the cylinder 21 and enlargement 23 have been rotated through a half revolution to feed a cup, the coin will drop out of the slots 26 and 28 through the slot 30 into a coin receptacle 31. A shoulder or stop 32 is provided on the inner wall of the casing 24 and, if the coin does not drop out of the cylinder 21 and enlargement 23, it will strike against this stop and prevent further revolution of the parts and a consequent feeding of a second cup. Inasmuch, however, as a line connecting the trailing end of the slot 26 containing the coin with the advancing end of the corresponding slot 28 cuts off less than half the coin, the pressures exerted upon the coin by these portions of the two slots will tend to force the coin outwardly against the inner face of the casing 24, or through the slot 30 when this latter slot is reached by the coin. A second shoulder or stop 33 is provided on the inner face of the casing 24 just back of the coin slot 29, and a backward rotation of the enlargement 23 and cylinder 21 is prevented when a coin is in place in the slots therein by the coin striking against this shoulder or stop 33. The shoulder 33 coöperates effectively with the shell 14 and the parts inclosed thereby in preventing backward rotation of the feeding members 5. When no coin is in any of the slots, of course the cylinder 21 may rotate in either direction without any effect on any of the other parts of the mechanism.

In order that the support or arm 3, the various members carried by the shaft 4, and the lowermost cups within the receptacle may be reached for purposes of adjustment, etc., the space containing these parts is inclosed by a pivoted cover 34 secured in closed position by a lock 35. A hinged cover 36 for the upper portion of the cabinet containing the stack of cups is provided and is secured in closed position by a lock 37.

While I have described in detail one form of my invention for the purpose of illustrating the principle thereof, I do not wish to be limited to the details described as certain changes may be made without departing from the spirit of the invention; but having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

A cabinet for collapsible drinking cups or like articles, comprising a rotatable article feeding means, means for rotating said feeding means in one direction to deliver articles from the cabinet, and means, comprising a stationary member, surrounding and disposed eccentrically to the shaft of said feeding means, and a coöperating friction device confined between said member and said shaft for preventing reverse rotation of said feeding means.

Dated this 26th day of November 1912.

WILLARD E. SWIFT.

Witnesses:
PENELOPE COMBERBACH,
NELLIE WHALEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."