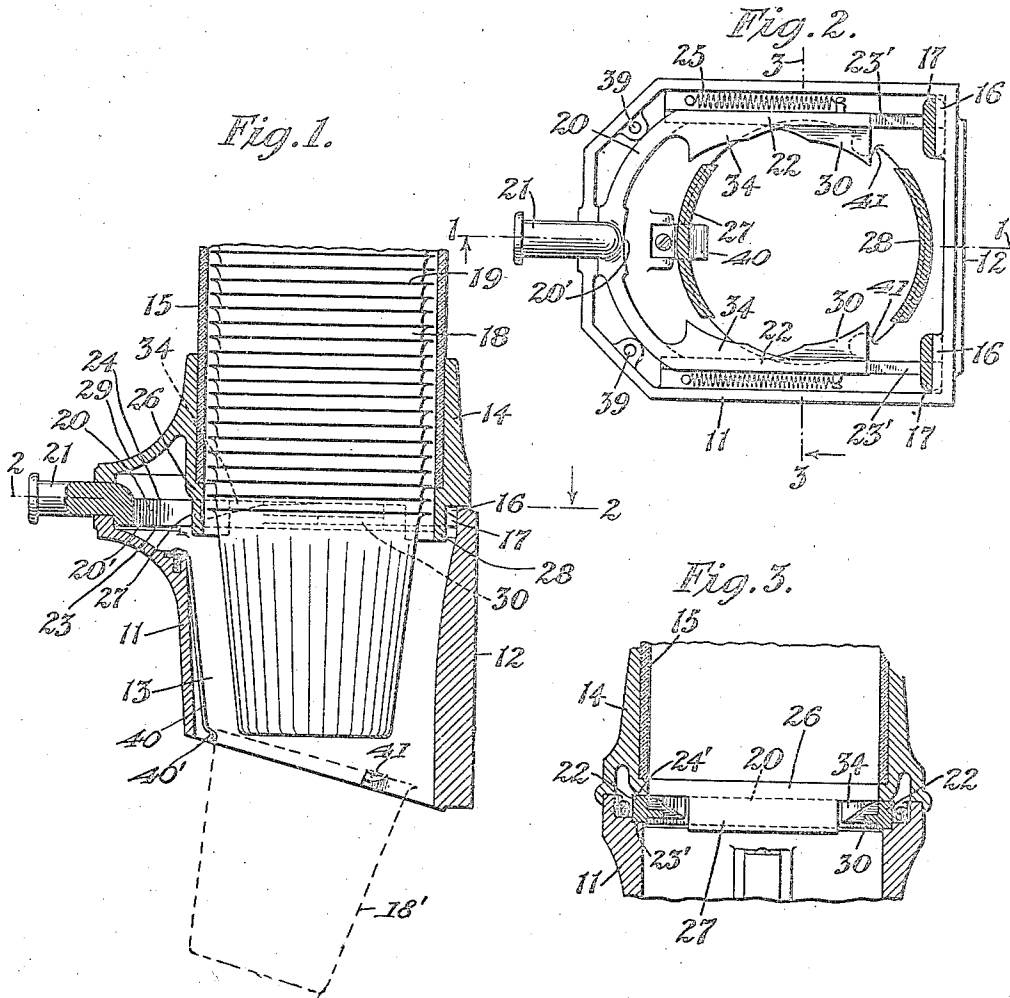


1,260,432.

Patented Mar. 26, 1918.
2 SHEETS—SHEET 1.



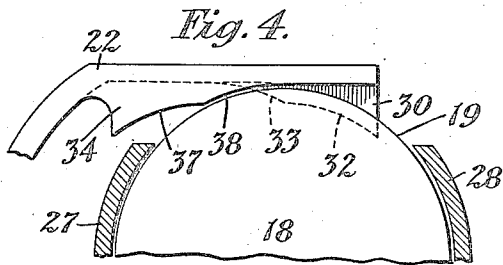
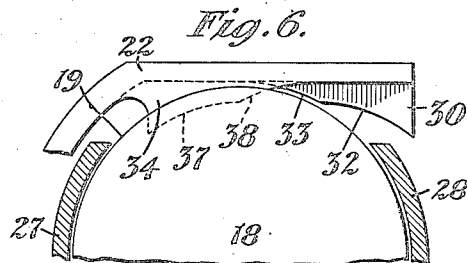
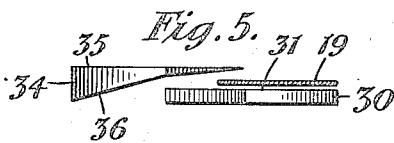
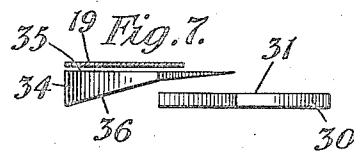
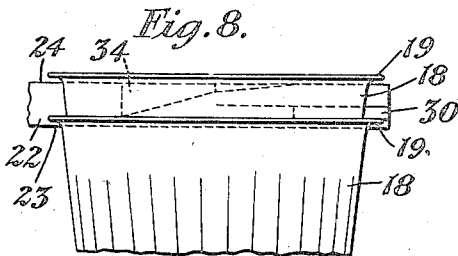
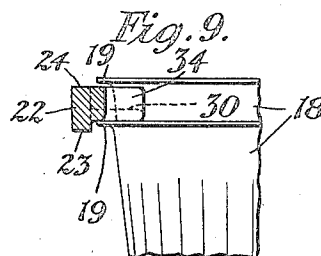
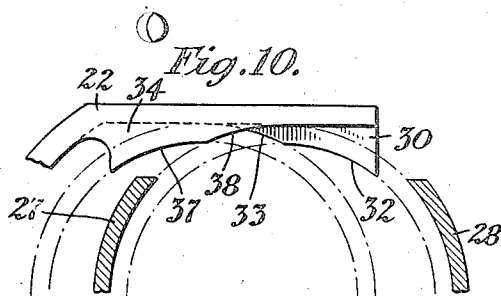
Witnesses:
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Chas. W. LaRue

Inventor:
Henry Nias
By *Charles J. Connelley*
his Attorney.

H. NIAS.
CUP DISPENSER.
APPLICATION FILED MAY 10, 1915.

1,260,432.

Patented Mar. 26, 1918.
2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY NIAS, OF BROOKLYN, NEW YORK, ASSIGNOR TO PUBLIC SERVICE CUP COMPANY,
OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

CUP-DISPENSER.

1,260,432.

Specification of Letters Patent. Patented Mar. 26, 1918.

Application filed May 10, 1915. Serial No. 26,971.

To all whom it may concern:

Be it known that I, HENRY NIAS, a citizen of the United States, and a resident of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Cup-Dispensers, of which the following is a specification.

This invention relates to mechanism for removing and dispensing cups from a nested stack, such as drinking cups, one at a time from the stack, the object of the invention being the provision of an improved ejector escapement for use in such dispensing mechanism and one which, while positively removing the lowermost cup of the stack, holds the next succeeding cup and the stack stationary until the cup has been ejected and the period in the cycle of operation has arrived to permit the settling of the stack and the incidental placing of another cup in position for engagement by the ejector. My improved construction is peculiarly designed for maintaining a positive hold on the cups at all times and for effecting and controlling the cup movements by simple parts having short range of actuating movement, which are easily constructed and assembled and not easily gotten out of order.

In the drawings one practicable form of my invention is shown by way of illustration in which drawings—

Figure 1 is a sectional side elevation taken on line 1—1 of Fig. 2.

Fig. 2 is a plan view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional elevation taken on line 3—3 of Fig. 2.

Fig. 4 is a plan of portions of the ejector escapement slide and cups in normal or idle positions.

Fig. 5 is a diagrammatic elevational view of some of the parts shown in Fig. 4 and in the positions of that figure.

Fig. 6 is a plan similar to Fig. 4 but with the parts at the completion of the inward or dispensing stroke.

Fig. 7 is a diagrammatic elevational view similar to Fig. 5 and with the parts in the Fig. 6 positions.

Fig. 8 is a side elevational view corresponding with Fig. 6 and showing the lower cup separated.

Fig. 9 is an end elevation corresponding to the showing of Fig. 8.

Fig. 10 is a plan of a portion of the slide, with circles drawn in continuation of the various circular faces.

The housing of the device is shown formed of two castings. The lower housing member or casting 11, having an attaching face 12, and being provided with an open ended chamber 13 through which the cups are discharged. The upper housing member or casting 14 carries and supports the container 15 for the stack of nested cups. The two housing members are shown connected at the rear by a separable hinge formed by interlocking flanges 16 and 17. Screw holes 39 are provided to receive screws for connecting these members at the front. A bead is shown overhanging the cleft between members 11 and 14.

This improved mechanism is useful for dispensing many articles, but especially paper drinking cups. Although constructed to operate on cups of various designs, the illustrative example of the invention is shown in connection with a commercial form of paraffin treated paper cup. A vertically disposed stack of nested cups 18 is shown in the container 15, each of these cups having tapering sides and a flanged lip 19. When nested there is a substantially uniform space between flanges.

The purpose of the device is to remove the cups one at a time from the lower end of a stack of nested cups accurately and reliably, without injury to the cups and by means of a short actuator stroke. Among the problems involved is the pulling apart of the cups when there is a tendency for them to adhere together and to hold the stack and the next to the lowest cup in position during the separation of the lowest cup and to arrest the stack movement after it has been permitted to advance. These problems are successfully solved in the present mechanism by the ejector escapement designated in a general way by 20, and comprising, in the illustration in addition to the actuating plunger 21, a member of U shaped construction mounted in ways provided in the housing for reciprocation in a plane transverse to the stack movement. In the illustration the ejector escapement 20 is shown formed as an integral structure.

For brevity the ejector escapement 20 will be termed the slide. The side mem-

bers 22 of the slide are provided on the bottom and the top respectively with bearing faces 23 and 24 for engaging bearing faces 23¹ and 24¹ on the lower and upper housing members and between which the slide is held in position. An extension spring 25 is provided for normally holding the slide in its forward position.

An annular flange 26 is shown conforming substantially interiorly to the interior dimensions of the stack container 15. The flange is of such dimensions that the cups pass freely through it with but slight clearance. The lower portion of the flange 26 is cut away, and the openings formed thereby receive the side members of the slide. Said lower portion of the flange presents two depending portions 27 and 28 for steadying and guiding the cup after it has passed beyond the control of the cup engaging portions of the stack.

The outward movement of the slide responsive to the springs is limited by the front wall of an extension 29 of the housing, and the inward actuation movement by the flange portion 27.

When the slide is in its normal or forward position the lowermost cup of the stack rests at each side a little backwardly of the center on a shelf 30 carried by the respective slide member 22 and at the front against the flange portion 27. The shelves 30 are constructed to engage the underside of the cup lip on their upper sides 31 and the side of the cup with their edges 32, which latter are curved to conform to the curvature of the cup at the points engaged. This edge of the shelf is also curved at 33 to conform to the curvature of the cup lip at the point of passage past the shelf when the slide is in its rearward or cup discharging position. The slide is provided forwardly of each shelf 30 with a cup separator 34. The upper face 35 of this separator is shown disposed parallel to the plane of its movement. The inward movement of the slide causes the separator to enter the space between the lowermost cup flange and that next above it and assume a position which enables it to sustain the stack upon the withdrawal of the shelf 30 from the support of such lowermost cup. The lower face 36 of the separator is beveled to act as a wedge for releasing the lowermost cup from the stack and permitting it to pass into the chamber 13. The edge 37 of the separator is shown curved to conform to the side of the cup at the point engaged. Upon the release of the slide to the influence of its springs the shelf surface 35 of the separator is withdrawn from under the lip of the cup which has now become the lowermost of the stack and the stack is permitted to settle until such lip rests upon the shelf 30. The separator edge is shown

curved at 38 to conform to the curvature of the cup lip at the point of passage. During the support by the separator the cups at times find engagement with the rear of the flange 26.

The lower casting, 11, forms a protecting housing for the lowermost cup of the stack. This housing is provided with means for supporting the cup after its release from the stack in a convenient position for removal. At the front of the housing there is shown a downwardly extending spring 40, having an abutment 40¹ for engaging the upper rim, the flange 19 in the illustration, of the released cup. At each side of the rear of the housing there is shown a lug 41. These lugs form abutments for engaging said flange at the rear, and are shown in the illustration in lower positions than the front abutment 40¹ which causes the lower end of the cup to tilt forwardly. See dotted line position 18¹ Fig. 1. The angular disposition of the cup places it in a convenient position for the hand.

Although but one form of the invention is illustrated, it will be understood that changes within the scope of the claims may be made without departing from the spirit of my invention.

I claim—

1. A cup dispenser including in combination a housing, a container for a stack of nested flanged cups supported on said housing, a U-shaped slide member mounted for reciprocation in said housing, a pair of primary supports fixed to said slide and movable into and out of supporting engagement with the lowermost cup of the stack, a pair of secondary supports fixed to said slide and movable into and out of supporting engagement with the next to the lowermost cup of the stack and having their rearward extremities respectively of greater thickness than the space between adjacent cup flanges, said primary supports being adapted to withdraw from engagement with the lowermost cup after the secondary supports engage the next to the lowermost cup and said secondary supports being curved to conform to the body of the cup when the slide is at the end of its forward stroke whereby the cup is discharged with a minimum of slide movement, and a push rod fixed to the slide and extending without the housing for operating said slide.

2. A cup dispenser including in combination a housing, a container for a stack of nested flanged cups supported on said housing, a U-shaped slide member mounted for reciprocation in said housing, a pair of primary supports fixed to said slide and movable into and out of supporting engagement with the lowermost cup of the stack, a pair of secondary supports fixed to said slide and movable into and out of supporting engage-

ment with the next to the lowermost cup of the stack and having their rearward extremities respectively of greater thickness than the space between adjacent cup flanges, said primary supports being adapted to withdraw from engagement with the lowermost cup after the secondary supports engage the next to the lowermost cup, the primary supports conforming to the body of the cup when the slide is in normal position and the secondary supports conforming to the body of the cup when the slide is at the end of its forward stroke whereby the cup is discharged with a minimum of slide movement, a push rod fixed to the slide and extending without the housing for operating said slide, and yieldable means for restraining the slide to its normal position.

3. A cup dispenser including in combination a housing provided with an annular flange having a depending portion, a container for a stack of nested flanged cups supported on said housing, a U-shaped slide member mounted for reciprocation in said housing, a pair of primary supports fixed to said slide and movable into and out of supporting engagement with the lowermost cup of the stack, a pair of secondary supports fixed to said slide and movable into and out of supporting engagement with the next to the lowermost cup of the stack, said primary supports being adapted to withdraw from engagement with the lowermost cup after the secondary supports engage the next to the lowermost cup and said secondary supports being curved to conform to the body of the cup and adapted to force said next to the lowermost cup against said depending portion whereby said cup is distorted circumferentially and the lowermost cup released therefrom, and a push rod fixed to the slide and extending without the housing for operating said slide.

4. A cup dispenser including in combination a housing provided with an annular flange having a depending portion, a container for a stack of nested flanged cups supported on said housing, a U-shaped slide member mounted for reciprocation in said housing, a pair of primary supports fixed to said slide and movable into and out of supporting engagement with the lowermost cup of the stack, a pair of secondary supports fixed to said slide and movable into and out of supporting engagement with the next to the lowermost cup of the stack, said primary supports being adapted to withdraw from engagement with the lowermost cup after the secondary supports engage the next to the lowermost cup and said secondary supports being curved to conform to the body of the cup and adapted to force said next to the lowermost cup against said depending portion whereby said cup is distorted circumferentially and the lowermost

cup released therefrom, and said primary and secondary supports having their adjacent ends widely spaced apart whereby the lowermost cup may freely fall by gravity upon being released, and a push rod fixed to the slide and extending without the housing for operating said slide.

5. In a dispensing apparatus for cups, the combination of a housing provided with an annular flange having a depending portion, and a reciprocable member adapted to support a stack of nested cups and to force the next to the lowermost cup thereof against said depending portion, whereby said cup is distorted circumferentially and the lowermost cup of the stack released therefrom.

6. In a cup dispenser, the combination with means for supporting a vertically disposed stack of nested cups, of means for releasing the lowermost cup of the stack, and means for receiving the released cup, comprising rigid means for engaging the rim of the cup at the rear and spring means for engaging the rim at the front for tilting the lower end thereof forwardly into a position convenient for the hand.

7. In a cup dispenser, the combination with means for supporting a vertically disposed stack of nested cups, of means for releasing the lowermost cup of the stack, an open ended housing for surrounding such lowermost cup, said housing carrying lugs at its rear, and a spring carried by the front of the housing for receiving the released cup and tilting the lower end thereof forwardly into a position convenient for the hand.

8. In a cup dispenser, the combination with means for supporting a vertically disposed stack of nested cups, of means for discharging the lowermost cup, and means releasably engaging the discharged cup.

9. In a cup dispenser, the combination with means for supporting a vertically disposed stack of nested flanged cups, of means for discharging cups one at a time from said stack, and means including fixed means and yieldable means for engaging the flange of the discharged cup.

10. In a cup dispenser, the combination of a casing having a delivery opening, means for delivering the cups one at a time to said delivery opening, and means comprising fixed lugs and a spring finger for releasably supporting the cup in said delivery opening.

11. In a dispensing apparatus for cups the combination of a housing, a U-shaped slide member mounted for reciprocation in said housing, primary supports fixed to said slide for at one time supporting a stack of nested flanged cups by the lowermost cup thereof, and secondary supports fixed to said slide for at another time supporting said stack by the next to the lowermost cup thereof, said

secondary supports having their rearward
extremities of greater thickness than the
space between adjacent cup flanges and be-
ing curved to conform to the body of the
5 cup when in supporting position.

Signed at New York, N. Y., this 8th day

of May, 1915, before two subscribing wit-
nesses.

HENRY NIAS.

Witnesses:

CHAS. W. LERUE,
MORRIS E. LEVY.