

H. M. HILL.

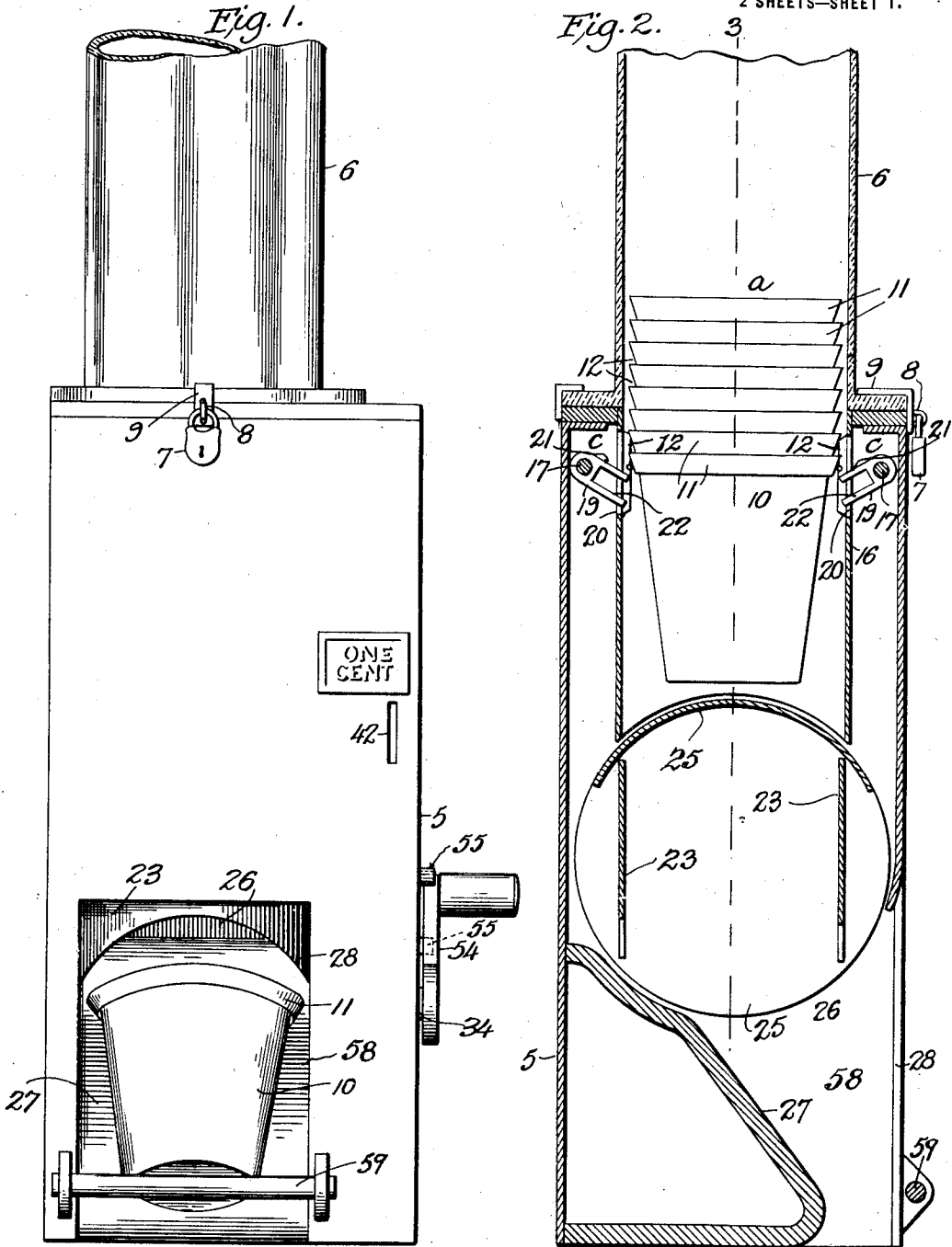
COIN CONTROLLED DEVICE FOR DISPENSING CUPS.

APPLICATION FILED NOV. 26, 1918. RENEWED MAY 3, 1920.

1,344,692.

Patented June 29, 1920.

2 SHEETS—SHEET 1.



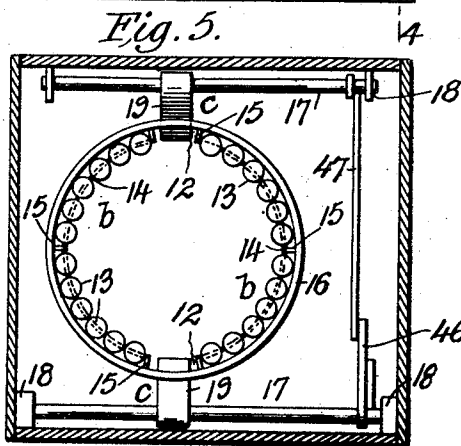
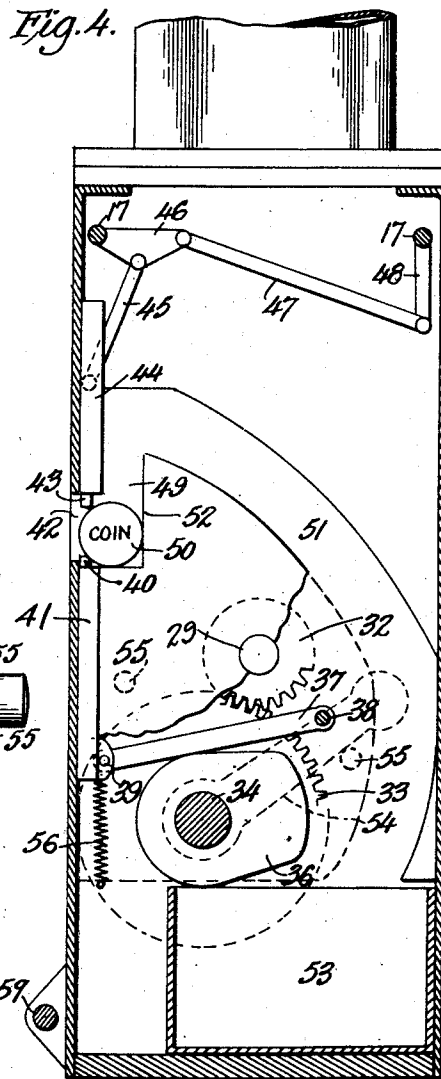
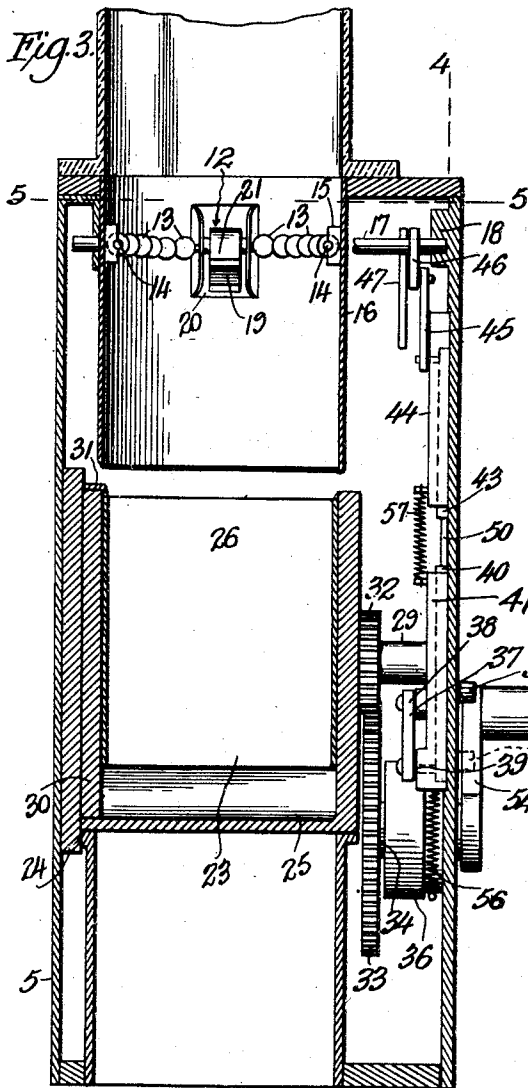
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Inventor  
 Herbert M. Hill  
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# UNITED STATES PATENT OFFICE.

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COIN-CONTROLLED DEVICE FOR DISPENSING CUPS.

1,344,692.

Specification of Letters Patent. Patented June 29, 1920.

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*To all whom it may concern:*

Be it known that I, HERBERT M. HILL, a citizen of the United States, and a resident of the city, county, and State of New York, whose post-office address is 329 Lexington avenue, New York city, have invented a new and useful Improvement in Coin-Controlled Devices for Dispensing Cups, of which the following is a specification.

This invention has relation to machines for dispensing such articles as paper cups of the kind commonly known as sanitary drinking cups, and has for its general object to adapt a cup dispensing machine to accommodate a stack of upright cups and to deliver these successively in an upright position and ready for use without being subjected to the action of adjusting mechanism. And to this end the invention resides in arranging a hollow support, conforming to the cross sectional contours of the cups to be dispensed, but of less diameter than the cups at their upper ends, so as to receive the lowermost cup of a stack; providing a cup detaching member adapted to engage the said lowermost cup and further in adapting the support to permit the cup detaching member to force the lowermost cup there-through and to cooperate with the said member to contract the edge portion of the said cup.

Other objects will appear and be better understood from the embodiment of my invention, of which the following is a specification, reference being had to the accompanying drawings forming part hereof, and in which:

Figure 1 is a front elevation of my improved device.

Fig. 2 is a longitudinal section of the same.

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

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 3.

Throughout the various views of the drawings, similar reference characters designate similar parts.

The embodiment about to be described is illustrated as a coin-controlled machine, but it will be apparent from what will hereinafter appear that the part of the mechanism, which is made sectional so as to cooperate with a coin may be made integral if it is

found desirable to use the device as, what is known as, a "free" machine.

The machine of the present invention includes the usual base or body portion 5, and the magazine 6, which is superimposed on body 5, and detachably secured thereto in any suitable manner as for instance by a lock 7, which passes through a staple 8, that extends through the eye of a strap 9. The base 5, is hollow and its upper open end communicates with magazine 6. The latter is closed at its upper end and is preferably, though not necessarily, formed of some transparent substance, as for instance glass, in order that the contents thereof may be readily observed. The cups 10, to be dispensed, are nested one within the other so as to form a stack "a" which is arranged in the magazine 6. In this connection it will be noted that the several cups forming the stack are arranged right side up and that each cup is provided with a flange 11, and flared to such extent that a space 12, of perceptible width is present between the flanges or rims of adjacent cups. The stack "a" is supported adjacent to the lower end of magazine 6, by a sectional cup support "b." In the present instance, and on account of showing cups of circular contour as the material to be dispensed, the sections of the support "b" are arranged on opposite arcs or segments of the same circle the radius of which is less than that of the cups at the rim portion thereof. With this construction it is obvious that the lowermost cup in the stack will be engaged by the support "b" at or adjacent to the flange 11.

The cup detaching mechanism includes members "c" which are disposed between adjacent sections of support "b" and are arranged so as to turn in planes which intersect the plane of the circular support "b." The members "c" are so disposed and constructed as to enter the space 12, between the lowermost and next succeeding cup of the stack and bear downwardly on the lowermost cup approximately at the time of their moving into the plane of the cup support "b." In each operation of the machine the cup detaching members move downwardly for such distance as will cause the lowermost cup to pass through the support "b." This action on the part of the cup detaching members "c" causes the rim portion of a cup on passing through the support to

contract to the size of the support "b." The amount of contraction which the rim portion of the cup undergoes does not however operate to damage or permanently distort the cup, because the latter on account of its inherent elastic properties resumes its normal shape after the relatively slight degree of distortion which it undergoes in passing through the support "b."

It will next be noted that on account of the cups being flared, the pressure applied to the next succeeding cup by the rim of the lowermost cup while undergoing contraction as just described, tends to move the first named cup and stack upwardly whereby detachment of more than one cup from the stack is prevented. Thus it will be seen that the upper portion of the next succeeding cup is engaged by the support "b" after the lowermost cup has been removed from the stack.

For purposes of illustration I have shown the support "b" as being comprised of a plurality of rolls or beads 13, which may be formed of any material found suitable for the purpose as for instance glass. The rolls are bored and receive two pieces, 14—14, of resilient wire which pass through lugs 15, on the interior of base 5. When the rolls are arranged as just described they will bear on opposite arcs or segments of the flange 11, of the lowermost cup and a space will exist between the lining 16 of the base 5, and the rolls. With this construction it is obvious that when the lowermost cup is forced downwardly by the cup detaching members "c," the frictional contact between the flange 11, and rolls 13 causes the latter to rotate and at the same time the resistance which the rim portion of the cup offers to contraction by the action of the rolls 13, and wires 14, operates to cause the wires to yield until the rolls are approximately in contact with the lining 16. When the support "b" yields or expands by the reaction of the cup, wires 14—14, are tensioned and this tension operates to energize the support "b" to move inwardly and bear downwardly upon the edge of the cup as the same passes the middle of the rolls and thereby operate to forcibly project the cup downwardly.

The cup detaching mechanism may be of any suitable construction to function as heretofore described. In the present instance I have shown this mechanism as being comprised of transversely disposed shafts 17—17, journaled in bearings 18—18, in the upper end portion of the base 5. Substantially U shaped lugs 19—19, are secured to shafts 17—17, and are disposed so as to extend through slots 20—20, in the lining 16. The shafts 17—17, are so disposed that when turned in one direction the upper sides 21—21, of the lugs 19, will occupy positions

above and to one side of the rim of the lowermost cup and the upper sides 21—21, are so proportioned in point of length that they will move into the space 12, and bear on the edge of the lowermost cup and so continue to bear until the edge has passed through support "b." In the present instance the shafts 17—17, are adapted to oscillate and consequently when the upper side portions 21—21, are moving to positions above and beyond the rim of the lowermost cup opposite portions of the base of the flange 11, of the lowermost cup will be engaged by the sides 21—21, whereupon the stack will be moved bodily upward but will descend when the sides 21—21, move away from the base of flange 11. When the stack descends as just described the flange of the lowermost cup abuts the lower sides 22—22, of lugs 19 so that when the shafts 17—17, are caused to turn in the opposite direction the sides 22—22, operate to effect the gradual lowering of the stack and the even positioning of the same on the said flange 11.

It will of course be understood that the foregoing construction of the lugs 19, is susceptible of many modifications for instance, the side portions 21—21 may be provided with end portions which may operate to yield in contact with the lowermost cup during the upward movement of the lugs. And the side portions 22, may be retained or eliminated.

When the lowermost cup is projected downwardly, as previously described, it falls into a stationary, open ended, hollow, cylindrical container 23 which is in axial alignment with the support "b" and secured to the interior of base 5, as for instance to a plate 24. A horizontally disposed rotatable drum 25, surrounds the container 23, and this drum has a lateral opening 26, through which the lowermost cup, on being detached, from the stack, passes and falls into the container 23. The drum 25, is positioned directly above an inclined platform 27, which forms the back wall of the laterally disposed outlet or delivery opening 28. The provision of the drum and its construction prevents access to the cups by the act of inserting the hand through the opening 28, because the blank portion of the drum forms a closure for the lower end of the container 23, and the upper end of the delivery opening 28, when the opening 26, of the drum is in alignment with the upper end of the container 23, or in the cup receiving position; and the same blank portion of the drum operates as a closure for the upper end of the container 23, when the opening 26 is turned into alignment with the upper portion of the outlet opening 28.

Suitable mechanism is provided for operating the drum 25, and the cup detaching

members "c" and this mechanism is constructed so that the opening 26, of the drum will be moved into alinement with the support "b" at the time of effecting the lowering of the lowermost cup. The mechanism may be of any approved construction and in the embodiment shown consists of shaft 29, which is secured to one end of the drum and journaled at one end in a side wall of the base. The shaft operates as a support for one end of the drum, the opposite end of which may be supported by a stationary circular head 30, secured to plate 24, and which is adapted to form a bearing for a marginal flange 31, on the side of the drum 25. 32 is a toothed pinion on shaft 29, which meshes with a toothed wheel 33 on shaft 34, which is journaled in a side wall of the base 5. A cam 36, carried by shaft 34, is so arranged that when shaft 34 is turned in one direction, the cam 36 will lift one end of the link 37. The link 37 is pivotally connected at one end to the base as indicated by 38, and its opposite end is suitably connected as by pin and slot connections 39, to the lower end of rod 40, which is disposed in the guide 41. When the free end of link 37, moves upwardly it moves rod 40, likewise. In the present instance I have shown rod 40, as being disposed with its upper end adjacent to the lower end of a coin receiving slot 42, and in alinement with an upper rod section 43, which is disposed in a guide 44 and arranged with its lower end adjacent to the upper end of slot 42. A connection herein shown in the form of a link 45, is established between upper rod section 43 and a bell crank 46, which is secured to one of the shafts 17, and connected to the other of such shafts in any suitable manner, as by a connecting rod 47 and a crank 48. A coin pocket 49, disposed on the inner end of slot 42, is so constructed as to hold a coin 50, with a small segment of the coin in alinement with the lower and upper rod sections 40—43. The upper end of pocket 49, has a lateral passage which leads into a coin chute 51. Now when coin 50 is in pocket 49, and rod 40 moves upwardly, the coin is held between the upper end of rod section 40 and the back wall 52 of pocket 49, and consequently the coin is required to move upwardly with said rod. During the upward movement of the coin the same moves into contact with the lower end of rod section 43, whereupon the said rod section is caused to move upwardly until the coin, on moving into alinement with the lateral passage of pocket 49, is directed therethrough and into coin chute 51, by the pressure of rods 40—43. When the coin enters the chute 51, it gravitates to the coin box 53, but prior to being released from rod sections 40—43 the coin causes section 43 to move upwardly far enough to impart to

shafts 17—17, through their connections, an amount of turning movement sufficient to effect an arrangement of lugs 19—19, in one of their positions of adjustment. Shaft 34 is turned by means of an operating handle 54, whose movement in either of the directions is limited by stops 55, and the ratio of the gear wheel 33 to the pinion 32 is such that a movement of the handle from one stop to the other will turn pinion 32 for one half of a revolution or approximately so.

Any suitable means may be employed for causing the parts to automatically assume their normal positions when the coin 50, passes into chute 51 and upon releasing handle 54. In the present instance I have shown cam 36 so proportioned in point of length that it will extend obliquely to shaft 34, after having operated link 37 to raise rod section 40 the required distance for the purpose heretofore described; and in addition I have arranged a retractile spring 56 so as to be tensioned by the upward movement of rod 40. A similarly constructed spring 57, is connected to rod section 43 and to the base 5, and this spring is tensioned by the upward movement of rod 43. Thus it will be seen that spring 57 will restore the cup detaching member "c" to their normal positions when coin 50 moves from engagement with rod 43, and likewise the pressure exerted by spring 56, on link 37, will cause cam 36, and shaft 34, together with the parts connected thereto, to turn when the handle is released.

In the normal position, the opening 26 of the drum, is in alinement with the upper end of the outlet opening 28. When a coin is arranged in the pocket 50, and the handle 54 turned in the required direction, the cup will be projected into the container by the mechanism and in the manner previously described. The cup is in an upright position while in the container so that when the drum returns to normal position the cup will fall on to the inclined platform down which it will slide until the edge portion of its bottom enters the socket 58 and the bottom bears on the cross bar 59. When the cup is in this position it is substantially upright and extends part way through outlet opening 28. This disposition of the cup in the outlet opening admits of easy access to the cup and moreover arranges the same in an upright position when presented to the hand of the user.

While I have shown and described one embodiment of my invention, it is to be understood that it is not restricted thereto, but that it is broad enough to cover all structures that come within the scope of the annexed claims.

What is claimed as new is:

1. In a paper cup dispenser, the combination of a hollow sectional stack support em-

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bracing the upper portion of the lowermost cup of the stack and smaller in diameter than the upper end portion of the said cup, and a plurality of oscillatory shafts provided with means which when the said shafts turn in one direction are adapted to pass between adjacent sections of the support and engage the lowermost cup and lift the same from engagement with the support and to control the said cup and to lower it gradually on to and then by the said support when the shafts turn in the opposite direction, and means for receiving and dispensing said cup.

2. In a paper cup dispenser, the combination of a hollow sectional stack support embracing the upper portion of the lowermost cup of the stack and smaller in diameter than the upper end portion of the said cup, and a plurality of oscillatory shafts provided with means which when the shafts turn in one direction are adapted to pass between adjacent sections of the support and engage the lowermost cup and lift the same from engagement with the support and to control the said cup to lower gradually onto the said support when the shafts turn in the opposite direction, said means being further adapted to engage the said lowermost cup and force the same downwardly through the support when the shafts turn in the last named direction.

3. In a cup dispenser, the combination of a hollow sectional stack support embracing the upper portion of the lowermost cup of a stack, a plurality of oscillatory shafts disposed beyond the said support, recessed lugs comprising upper and lower portions secured to said shafts and extending between adjacent sections of said support, the said upper portions of the lugs being adapted to engage and lift the lowermost cup from the support and then disengage the said cup when the shafts turn in one direction, the said lower portions being disposed and adapted to engage and support the cup when the same is disengaged from the said upper portions and to control the cup to lower it gradually onto the support when the shafts turn in the opposite direction, and means for receiving and dispensing said cup.

4. In a cup dispenser, the combination of

a hollow sectional stack support embracing the upper portion of the lowermost cup of the stack, a plurality of oscillatory shafts disposed beyond the said support, recessed lugs comprising upper and lower portions secured to said shafts and extending between adjacent sections of said support, the said upper portions of the lugs being adapted to engage and lift the lowermost cup from the support and then disengage the said cup when the shafts turn in one direction, the said lower portions being disposed and adapted to engage and support the cup when the same is disengaged from the said upper portions and to control the cup to lower gradually onto the support when the shafts turn in the opposite direction, the said upper portion being further adapted to engage with and force the cup through the said support during the last named movement of the shafts.

5. In a cup dispenser, the combination of a hollow sectional stack support, a plurality of oppositely disposed shafts, cup detaching members connected to the said shafts and disposed between sections of the stack support and adapted to first raise and then lower said cup, and means connecting the said shafts one to the other and adapted to cause the same to turn simultaneously in opposite directions, and means for receiving and dispensing said cup.

6. In a cup dispenser, a support from which a cup to be dispensed is discharged, a turnable drum open to receive the cup discharged from the support, and stationary means extending into the drum for holding the cup stationary during the turning of the drum.

7. In a cup dispenser, a support from which a cup to be dispensed is discharged, a drum disposed below the support and having an opening disposed in alinement with the support and through which the cup discharged from the support falls into the drum, said drum being turnable to discharge the cup through the opening and stationary means extending into the drum for holding the cup against movement during the turning of the drum.

HERBERT M. HILL.