L. W. LUELLEN.

DISPENSING DEVICE.

APPLICATION FILED DEC. 19, 1914.

1,261,950.

Patented Apr. 9, 1918

2 SHEETS—SHEET 1.

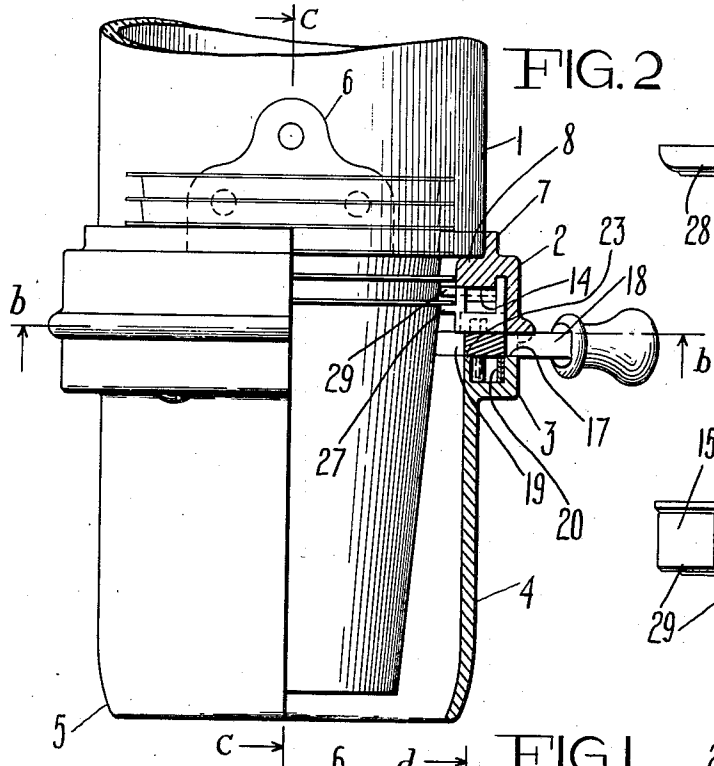


FIG. 2

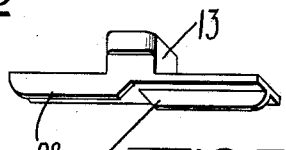


FIG. 7

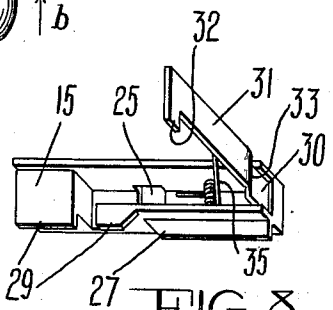


FIG. 8

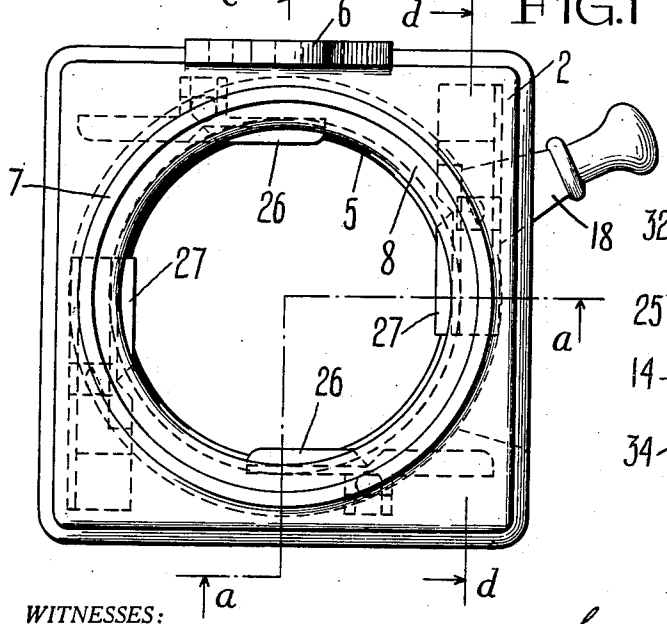


FIG. 1

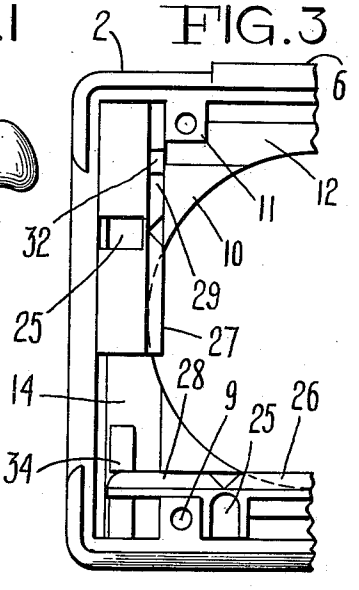


FIG. 3

WITNESSES:

Arthur Choquet

Wm. C. Durbin

INVENTOR.

Lawrence W. Luellen

BY Clifford E. Dunn

ATTORNEY.

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FIG. 4

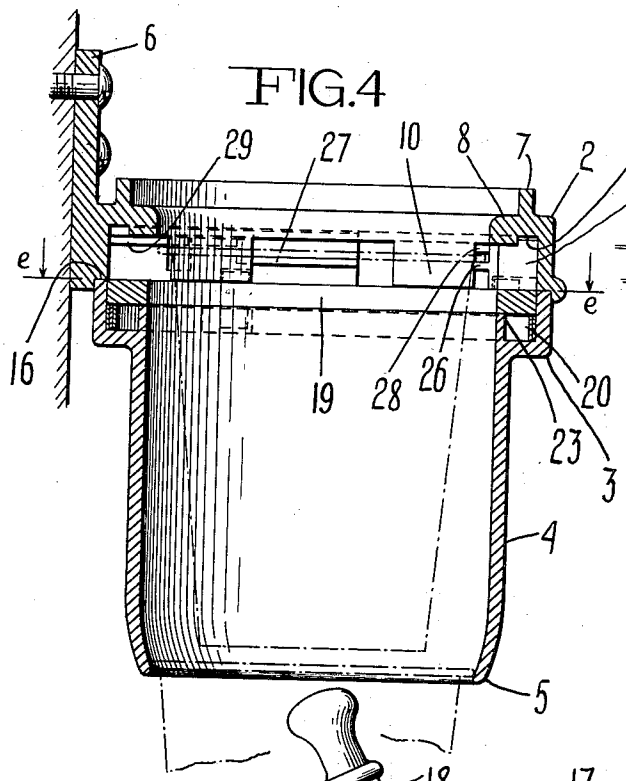
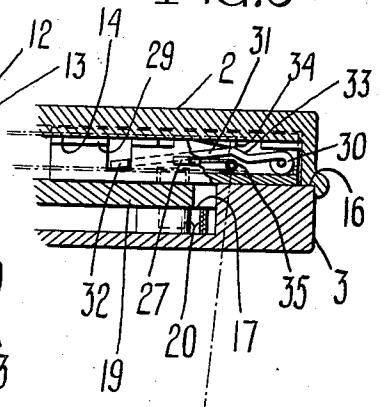


FIG. 5



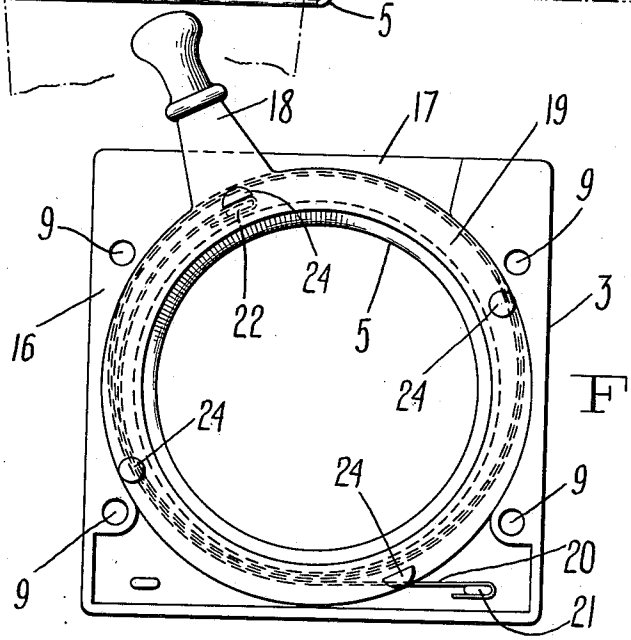


FIG. 6

WITNESSES:
Arthur Chaquet
Wm. C. Dunn

INVENTOR.
Lawrence W. Luellen
BY Clifford L. Dunn
ATTORNEY.

UNITED STATES PATENT OFFICE.

LAWRENCE W. LUELLEN, OF MOUNTAIN LAKES, NEW JERSEY, ASSIGNOR TO INDIVIDUAL DRINKING CUP COMPANY, OF NEW YORK, N. Y., A CORPORATION OF MAINE.

DISPENSING DEVICE.

1,261,950. Specification of Letters Patent. Patented Apr. 9, 1918.

Application filed December 19, 1914. Serial No. 878,086.

To all whom it may concern:

Be it known that I, LAWRENCE W. LUELLEN, a citizen of the United States, residing at Mountain Lakes, county of Morris, and State of New Jersey, have invented certain new and useful Improvements in Dispensing Devices, of which the following, taken in connection with the accompanying sheets of drawing, is a full, clear, and concise description thereof.

My present invention relates to certain improvements in dispensing devices, that are particularly adapted to dispense paper drinking cups. In United States Letters Patent No. 1,043,854 heretofore issued to me, a dispensing device for paper drinking cups is shown in which a cup reservoir and a supporting bracket is used for storing a nested stack of paper cups in a sanitary condition and in such a position as to enable the cups to be conveniently and individually withdrawn, the terminal cup of the stack projecting beneath the device to be grasped by the hand of the user.

The present invention is an improvement on my said previous patented invention, and comprehends primarily mechanically operated means for separating the terminal cup from the superposed stack and moving the same to delivery position, while retaining the balance of the cups within the device.

A further object of my invention is to provide a new and improved form of bracket support which normally houses the terminal cup of the stack prior to its deliverance, said bracket support being provided with means for arresting the descent of the terminal cup and retaining it in position whereby it can be conveniently grasped for removal. Other and further objects will manifest themselves upon a reading and understanding of the following description.

Referring to the accompanying drawings, in which I have illustrated one preferable embodiment of my invention, I will proceed to describe the same, having it understood that the form shown is illustrative, rather than definitive, as structural changes may be resorted to without departing from the invention as defined by the appended claims.

Figure 1 is a top plan view of the bracket support showing, generally, the cup separating and delivery instrumentalities in dotted outline, illustrating their relative positions.

Fig. 2 is a view in side elevation taken on line *a—a* of Fig. 1, being broken away to illustrate more clearly the cup supporting ledges of the supporting devices, and their operative relationship to the cup flanges.

Fig. 3 is a bottom plan view taken on line *b—b* of Fig. 2 to illustrate the structural characteristics of the top plate of the bracket showing the manner in which the cup separating and supporting instrumentalities cooperate therewith.

Fig. 4 is a cross-sectional view taken on line *c—c* of Fig. 2, illustrative of the manner in which the terminal cup of the stack is retained in delivery position.

Fig. 5 is a view taken on line *d—d* of Fig. 1 showing the position of the cup separating mechanism after functioning.

Fig. 6 is a view taken on line *e—e* of Fig. 4, showing in top plan the spring actuated re-setting mechanism for returning the delivery actuator and supporting instrumentalities to their initial position.

Fig. 7 is a view in perspective of one of the cup supporting members, and

Fig. 8 is a similar view of another of the cup supporting members having combined therewith cup separating mechanism.

The cups shown are frusto-conical in form and are provided with outwardly-directed flanges at their top open ends. The cups are usually though not necessarily, made of paper, which may be water-proofed by a coating of paraffin or similar substance. For compactness and convenience of shipping and handling the cups are nested. Owing to the cohesive properties of the waterproofing material, it frequently happens that two cups become stuck together. It is therefore, desirable to provide a mechanism which will overcome this tendency and positively separate them, one from the other. This I accomplish by the mechanism herein illustrated, without in any way marring or distorting the flanges of the cups. Millions of paraffined paper drinking cups are at present used annually, and, therefore, in this connection my invention possesses great utility.

In my co-pending application, Serial No. 779,231, I have illustrated a paper drinking cup which is provided with what I term a rolled edge. This cup is not waterproofed and is more readily destructible than a paraffined paper cup, a feature which is desirable as conducive toward single use. The frailty and unsubstantial character of

this unparaffined cup makes desirable a dispensing mechanism which is capable of dispensing the cups in a positive, but yet non-destructive or injuring manner. The apparatus comprising my present invention accomplishes this purpose.

Referring to the accompanying drawings in detail, 1 indicates a vertically supported cup reservoir, which is preferably made of glass and is normally closed at the top. This cup reservoir is supported by a supporting bracket which comprises the parts 2 and 3, the reservoir being removable from the part 2 for the purpose of replenishing the device with cups. The bracket part 3 is provided with a cylindrical extension or petticoat 4, serving to house the lower portion of the terminal cup as well as several of those superposed above it. The lower end of the housing is constricted as at 5, forming a throat of slightly less internal diameter than the diameter of the flange of the cup, so that the terminal cup, when it drops into delivery position (see Fig. 4) will be retained by the engagement of the cup flange with the throat, from which position the cup may be readily removed by a slight pull. The two-part bracket support is rectilinear in outward form, as shown clearly in Fig. 1, excepting that portion which forms the petticoat or housing for the terminal cup, this being cylindrical. The part 2 of the support is provided with a bracket 6 cast integral therewith and serving to afford means by which the device may be fastened to a support. It is also provided with an upwardly extending circumferentially arranged flange 7 and an inwardly directed ledge or seat 8 both of which serve to support and retain the removable glass reservoir 1 in its proper position. The parts 2 and 3 are held together by suitable screws, four in number, passing through alined apertures 9. Both of these parts are cast in the special forms shown so as to provide the required seats for the accommodation of the actuating instrumentalities to be presently described. The part 2 is cast with two pairs of projections 10, diametrically opposite to each other. These, in combination with the lugs 11, through which the screws, fastening the parts together, pass, serve to form rectangularly disposed passages or channels along and through which the cup sustaining and delivery devices reciprocate during manipulation. The channels 12 accommodate the pair of cup supporting members 13, while the channels 14 accommodate the combination cup supporting and delivery members 15. The part 3 of the two part bracket is cast with an upwardly extending wall 16, the interior of which is of circumferential or curved form, extending entirely around three of its sides and partly around its fourth side leaving a gap 17 to accommodate and permit the movement of the handle 18 of the actuator ring 19. Within the space formed by the upwardly-extending wall 16 is a spring 20, one end of which is anchored to a lug 21 cast integral with the part 3. The other and opposite end of this spring is anchored to a corresponding lug 22, which projects beneath and is cast integral with the actuator ring 19. The spring 20 is located beneath the actuator ring 19, said actuator ring resting upon the annular projection 23. The spring 20 is put under tension when the handle 18 of the actuator ring has been operated, and serves to return the same to its initial position.

The actuator ring 19 is provided with two sets of diametrically opposed projections 24, which engage and actuate the escapement mechanism consisting of the cup-supporting and separating members 13 and 15. These cup supporting and separating members are given a rectilinear movement along the channels in which they are located by the partial rotary movement of the actuator ring 19, sufficient lost motion being allowed between the projections 24 and the depressions or apertures 25 of the cup-supporting members to accomplish this. The cup supporting members 13 are positioned and move in opposite direction, but in parallel relation. The cup supporting and separating members 15 are similarly located and similarly move in the passages or channels provided therefor. The four members comprising the escapement mechanism are thus simultaneously actuated and move in definite relationship to dispense the cups one at a time.

The cups are sustained within the device by the rim of the terminal cup, which normally rests upon projecting shelves or ledges 26 and 27 of the members 13 and 15. The members 13 normally are disposed diagonally opposite each other at the extreme end of their rectilinear travel when the dispensing mechanism is inactive, prior to operation. The same may be said with respect to the members 15. In this position, as shown clearly in Fig. 1, these shelves or ledges, which are all in a common plane project within the annular dispenser opening of the device, and directly under the flange of the lowermost cup. These supporting ledges do not extend the length of the member, but terminate at a point near the center thereof, so that when the members travel the extreme length of their movement upon the rotation of the actuator ring, they pass beyond the cup dispenser opening so as to permit the flange of the terminal cup to pass and drop upon its egress from the device.

Understanding that the bottoms of the paper cups are slightly removed from their ends, the flanges will consequently be spaced

one from another when the cups are in nested position. This spacing of the flanges of the cups affords an opportunity of providing a mechanism for dispensing the cups from the device individually or one at a time. As the shelves 26 and 27 of the members 13 and 15 move away from the delivery aperture, other shelves 28 and 29 of the members 13 and 15, which are formed integral therewith and are located on a higher plane than the shelves 26 and 27, are projected into the delivery aperture underneath the flange of the cup next succeeding the terminal cup, engaging the rim of the second cup and coming into substantial supporting position thereunder before the lowermost shelves 26 and 27 pass from beneath the flange of the terminal cup. When the shelves 28 and 29 are in their full cup sustaining position, the lowermost shelves 26 and 27 have passed from beneath the flange of the terminal cup and have permitted the terminal cup to descend.

In the event that there should be slight adhesion between the cups, which would prevent the terminal cup from dropping by gravity after the lowermost shelves 26 and 27 have passed from beneath its flange, the ejecting mechanism which I have provided comes into action and operates to loosen or pry them apart by exerting a downward pressure upon the rim of the terminal cup, and this automatically as the device is operated. This ejecting mechanism is combined with a pair of the cup supporting members 15. There being two of these mechanisms, both being of the same general construction, a description of one will suffice. Pivotally mounted on the carrier at 30 is an ejector 31 having a flange engaging part 32 which forms in inactive position, a prolongation of the shelf 29. This ejector is mounted so as to move downwardly within the member 15, which is made in channel form for the purpose. The pivoted end of the ejector is provided with a wedge surface 33, which engages an inclined lug 34 (see Fig. 5), when the member 15 has been moved to its extreme position under the rotation of the actuator ring 19. During this movement, the lug 34 forces the ejector 31 downwardly, bringing the part 32 into engagement with the top of the rim of the terminal cup and pressing it downwardly, causing the terminal cup to separate and drop by gravity. It will be noticed that this ejector does not start to move until the member 15 has almost reached the limit of its movement and the supporting ledges or shelves 26 and 27 have passed from beneath the flange of the terminal cup. In order to retract the ejector 31 to normal inactive position, I mount a torsion spring 35 beneath it, having one end engaging the base of the member 15 and the other free end engaging the underside of the actuator, so that the actuator when moved to eject a cup, is operating against the tension of the spring. As the terminal cup passes from the supporting shelves of the members 13 and 15, and has been separated from the adjacent cup by the ejectors 31, the cup descends or drops by gravity. The cup is halted in its descent by the engagement of its flange with the contracted throat 5 of the bracket (see Fig. 4). The cup is thus supported and retained in position with its major portion projecting beneath the device in position to be grasped by the hand. The proportions or diameters of the cup flange and the contracted delivery aperture or throat, need only be such as to afford slight engagement between the two, because an individual cup has very little weight and no substantial point of contact need be necessary between the cup flange and the engaging throat of the device. The cup will be sustained in delivery position and will require but slight pressure to remove it, so that no possibility of distortion or disfiguration of the cup or its flange will result due to flexure or otherwise.

Having thus described my invention what I claim as new herein and desire to secure by Letters Patent is:

1. An escapement mechanism for delivering singly cups provided with projections, including a member adapted to move rectilineally between the projections of adjacent cups, said member including relatively movable portions adapted to engage the projections of said adjacent cups to positively separate the same.

2. In an escapement for delivering singly cups provided with projections, a movable escapement member having a two-part ledge movable rectilineally between the projections of adjacent cups, the parts of said ledge being relatively movable and adapted to engage the projections of said adjacent cups respectively, and means for moving said ledge parts relatively to each other to positively separate said cups.

3. In an escapement for delivering singly nested cups provided with projections, a movable escapement member having a portion adapted to separate a stack of cups by engagement with the terminal cup thereof, and a second portion movable between the projections of the terminal cup and the adjacent cup when the first portion of the escapement is moved out of engagement with the terminal cup, said second escapement portion including a member movable relatively thereto and adapted to engage the terminal cups while said portion engages and supports the next to the terminal cup, said movable member acting to forcibly detach the terminal cup from the stack.

4. In apparatus for dispensing nested

cups provided with projections, the combination of a reservoir for holding the stack of cups, of escapement mechanism for delivering said cups one at a time, said escapement mechanism including a movable escapement member having a portion adapted to engage the projections of a terminal cup and support the stack and having a two-part supporting surface adapted to enter between the projection of the terminal cup and a projection of the adjacent cup, means for moving said escapement member to carry the portion of the same upon which the projection of the terminal cup rests out from under said projection and to move the divided supporting surface of said escapement member between the projection of the terminal and next to the terminal cup, and means for moving one portion of said divided surface downward after said surface has entered between the projections of adjacent cups so as to positively separate said terminal cup from the stack.

5. In an escapement for delivering singly cups provided with projections, a movable escapement member provided with a supporting ledge and a movable dog, said ledge and dog adapted to be moved between the projections of adjacent cups and adapted to engage the projections of said adjacent cups respectively, means for moving the dog into engagement with the projection of one cup to separate it from the adjacent cup, said means comprising a cam located in the path of movement of said dog.

6. In an apparatus of the character described, the combination of a cup reservoir, a support therefor, means carried by said support for supporting a stack of nested paper drinking cups, said means comprising two pairs of escapement members adapted to move in a rectilinear direction, the members of each pair moving in opposite directions, and common means for actuating all of said members simultaneously to permit the terminal cup of the stack to move from its terminal position in the stack.

7. An apparatus for dispensing paper drinking cups, comprising a reservoir, a support therefor, said support being provided with cup supporting and delivery instrumentalities operating to engage the cup flanges successively while releasing the cups from the stack individually, comprising two pairs of escapement devices, the devices of each pair being arranged in parallel relation and a rotatable actuator ring coöperatively associated with said members for imparting a retilinear movement thereto.

8. The combination of a cup reservoir, a supporting bracket therefor, said supporting bracket being provided with an escapement mechanism, the members of which move in a rectilinear direction, and an annular delivery aperture of less diameter than the greatest diameter of the cups to be dispensed, said escapement members operating to separate the terminal cup from the stack and cause it to descend to its delivery position in engagement with the delivery aperture of the device.

9. In an apparatus of the character described, an escapement mechanism comprising two pairs of cup supporting members adapted in their normal position to engage the flange of the terminal cup of a nested stack of cups, means for imparting a rectilinear movement to said supporting devices to release the flange of the terminal cup and means carried by said members for engaging the top of the flange of the terminal cup to positively separate said cup from the stack and cause it to drop by gravity therefrom and means carried by said members for engaging the flange of the next succeeding cup to support the stack in its position within the device.

10. In a dispensing device for flanged paper cups, a removable cup reservoir, a supporting bracket therefor, said supporting bracket being provided with an escapement mechanism which operates to dispense the cups individually, said mechanism comprising two pairs of devices provided with ledges or shelves normally adapted to engage and support the flange of the terminal cup, means for imparting rectilinear movement to said members so as to translate said shelves from beneath the flange of the terminal cup and means carried by said members for engaging the flange of the next succeeding cup and supporting it in stacked position.

11. In a dispensing device for flanged paper cups, a cup reservoir, a supporting bracket therefor, said supporting bracket being provided with an escapement mechanism which operates to dispense the cups individually, said mechanism comprising two pairs of rectilinearly movable devices provided with ledges or shelves normally adapted to engage the flange of the terminal cup to support the cups within the reservoir, means for moving the members so as to translate said shelves out from beneath the flange of the terminal cup and means carried by and translated by the movement of said members for engaging the flange of the next succeeding cup to support and prevent the same from being delivered from the stack, and means carried by certain of said members for positively separating the terminal cup from the stack when the supporting means is removed from beneath its flange.

12. In a dispensing device for flange paper cups, the combination of a reservoir, a supporting bracket therefor, an escapement mechanism for delivering the cups from the reservoir individually, said mechanism com-

prising members provided with cup supporting ledges adapted to engage the underside of the flange of the terminal cup of the stack, a ring operably associated with said members adapted to partially rotate and by such rotation move said members in a rectilinear direction, to remove the supporting ledges from beneath the flange of the terminal cup, and means carried by said members for supporting the balance of the stack during the delivery of the terminal cup.

13. In a dispensing device for flanged paper cups, the combination of a reservoir, a supporting bracket therefor, an escapement mechanism for delivering the cups from the reservoir individually, said mechanism comprising members provided with cup supporting ledges adapted to engage the underside of the flange of the terminal cup of the stack, a ring operably associated with said members and adapted to partially rotate and move said members in a rectilinear direction to remove the supporting ledges from beneath the flange of the terminal cup, and means carried by said members for supporting the balance of the stack during the delivery of the terminal cup, said means comprising ledges arranged at a higher plane than the beforementioned ledges adapted to be moved beneath the flange of the succeeding cup of the stack to support it and the balance of the cups in the device as the terminal cup is being delivered.

14. In a device of the character described, the combination of a cup reservoir, a supporting bracket therefor, supporting and delivery instrumentalities comprising two pairs of members adapted to move in a rectilinear direction, an actuator ring adapted to be partially rotated coöperatively associated with said members, said members being provided with supporting ledges for engaging the flange of the terminal cup when in normal supporting position, and other ledges adapted to be brought into engagement with the flange of the next succeeding cup when the lower ledges are moving from beneath the flange of the terminal cup and a spring associated with the actuator ring for returning the members to their initial position to release the cup from the upper ledges and permit it to drop upon the lower ledges and assume the terminal position of the dispensed cup.

15. In a cup vending machine, the combination of a stack supporting member, a cup-detaching member, and mechanism for moving said latter member into a space between a pair of superimposed cups and then moving the cup-detaching member relatively to the cup-supporting member to positively remove the lowermost cup.

16. In a dispensing device for paper cups, a plurality of stack supporting members arranged in a horizontal plane and immovable therefrom, a plurality of delivery members movable relatively to the first said members for engaging with a terminal cup of the stack to cause discharge of said cup, and means for actuating the second said members.

17. In a dispensing device for paper cups, a plurality of stack supporting members arranged in a horizontal plane and immovable therefrom, a plurality of pivotally mounted delivery members movable relatively to the first said members for engaging with a terminal cup of the stack to cause discharge of said cup, and means for actuating the second said members.

18. In a dispensing device for paper cups, a pair of substantially oppositely disposed stack supporting members arranged in a horizontal plane and restrained against possible movement out of said plane, a pair of substantially oppositely disposed members movable relatively to the first said members for engaging with a terminal cup of the stack to cause discharge of said cup, and manually operable means for actuating the second said members.

19. In a dispensing device for paper cups, a pair of substantially oppositely disposed stack supporting members arranged in a horizontal plane and restrained against possible movement out of said plane, a pair of substantially oppositely disposed pivotally mounted members movable relatively to the first said members for engaging with a terminal cup of the stack to cause discharge of said cup, and manually operable means for actuating the second said members.

20. In a dispensing device for paper cups, a pair of stack supporting ledges having a continuous arrangement in a horizontal plane, a pair of pivotally mounted cup delivery fingers simultaneously movable relatively to said ledges and into and out of engagement with a terminal cup of the stack, and means for actuating said fingers into engagement to assist in discharge of the terminal cup and out of engagement in order that the next successive cup of the stack may subsequently move to a supported position on said ledges.

21. In a cup vending machine, the combination of a container for a stack of flanged nested drinking cups, a reciprocating member provided with primary and secondary supporting means, the primary supporting means being adapted to support the stack when said member is in normal position, and the secondary supporting means being adapted to support the stack in an elevated parallel plane when said reciprocating member is operated, said reciprocating member being provided with relatively movable means for positively removing the lower cup approximately at the time the stack is freed by said primary supporting means.

22. In a cup vending machine, a container for a stack of nested cups, a member provided with two sets of flanges, the active portions of which are in superposed planes, one set of flanges constituting primary supporting means and the other set of flanges constituting secondary supporting means, the primary supporting means being adapted to support the stack when said member is in normal position, and the secondary supporting means being adapted to support the stack in a higher plane when the member is reciprocated, the flanges which constitute the secondary supporting means being provided with two parts, one portion of said divided surface being adapted to be moved downwardly prior to the reciprocating member reaching the end of its travel.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LAWRENCE W. LUELLEN.

Witnesses:
WM. C. DUNN,
LILLIAN L. MALZER.