

Nov. 22, 1949

E. J. LIME
CUP DISPENSER

2,489,096

Filed June 30, 1947

3 Sheets-Sheet 1

Fig. 1.

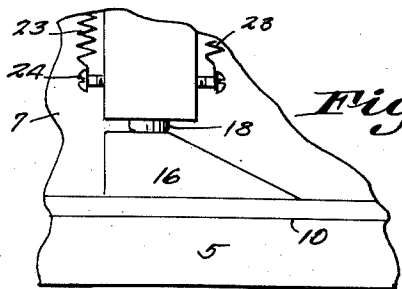
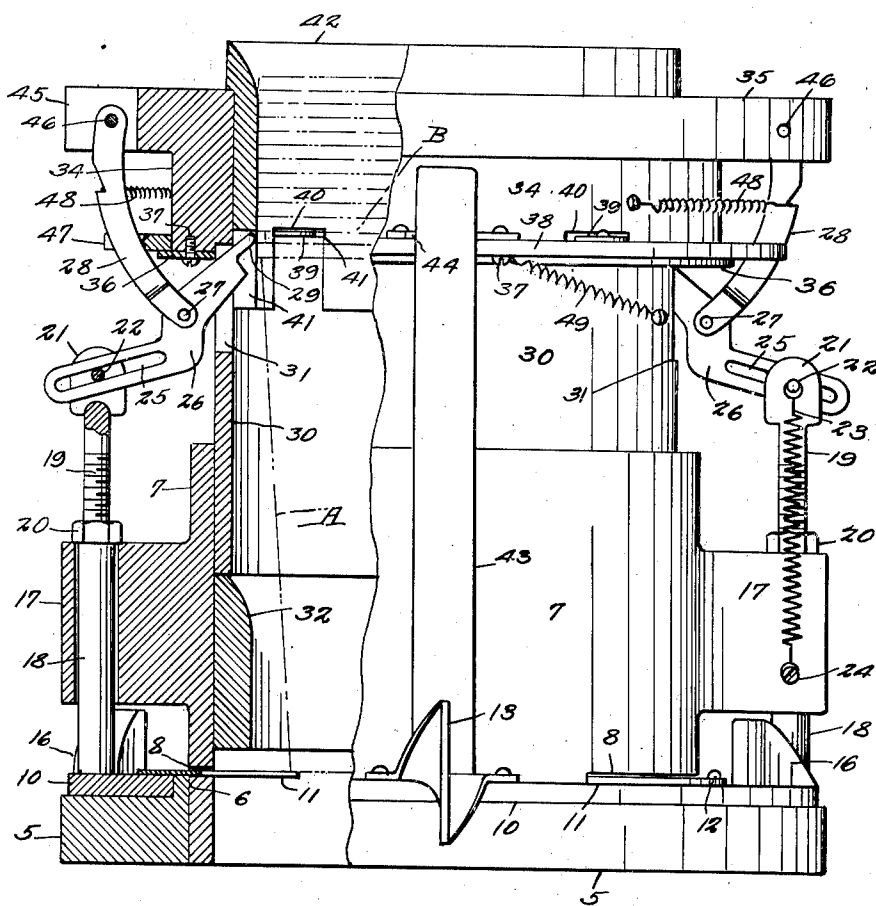


Fig. 8.

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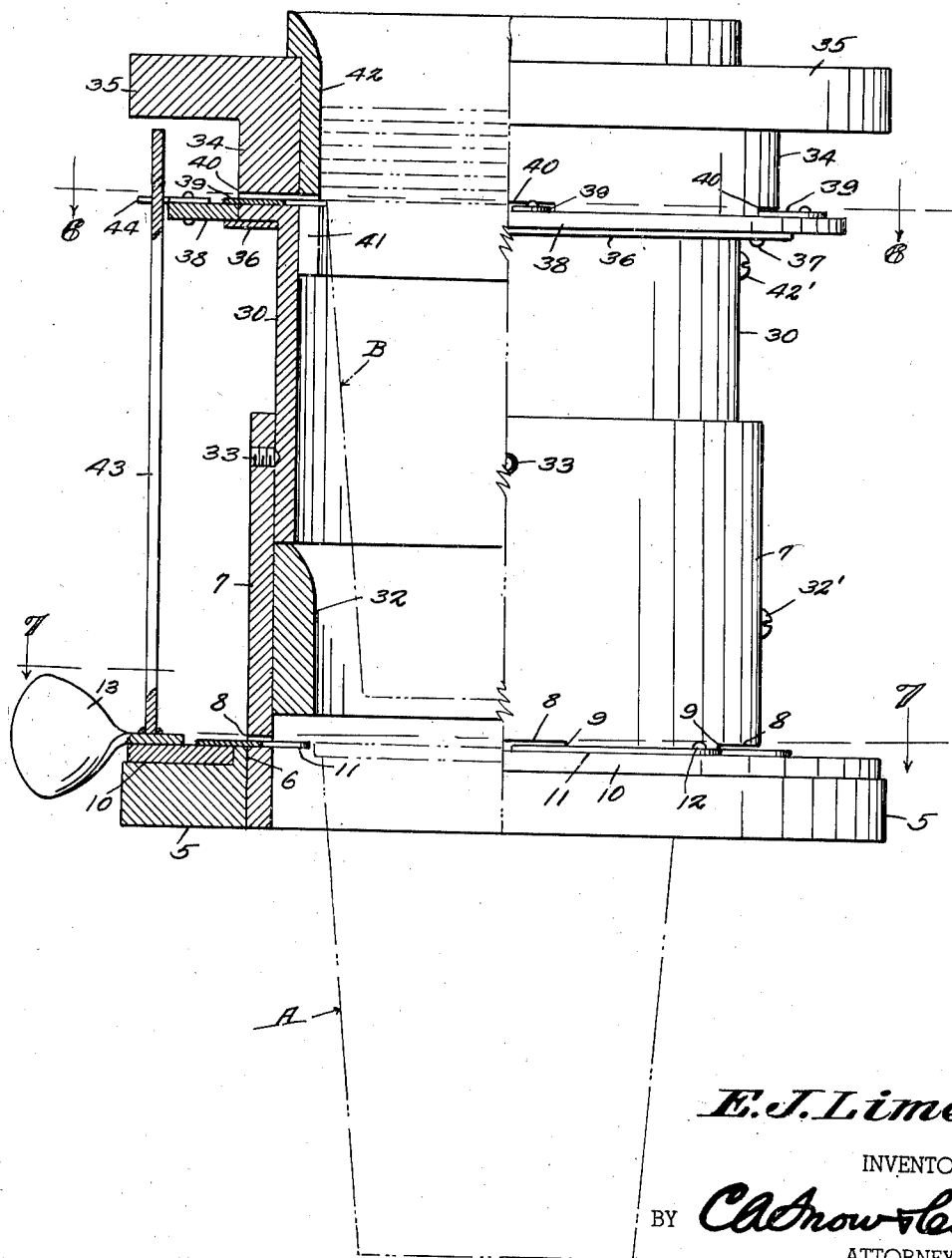
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Fig. 2.



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Fig. 4.

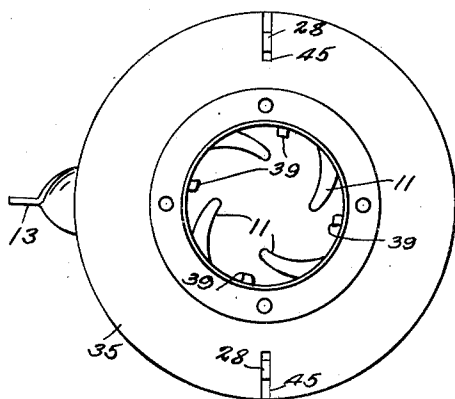


Fig. 6.

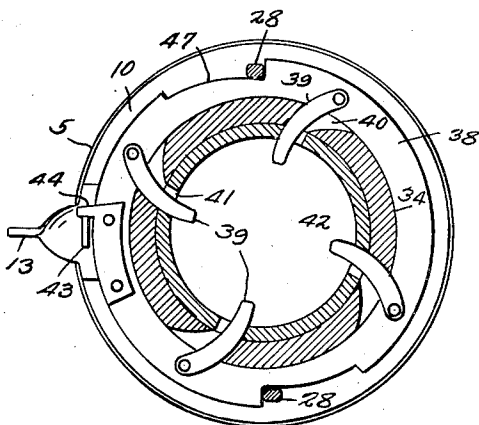


Fig. 3.

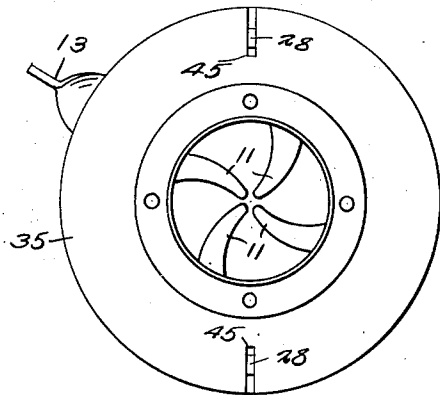


Fig. 7.

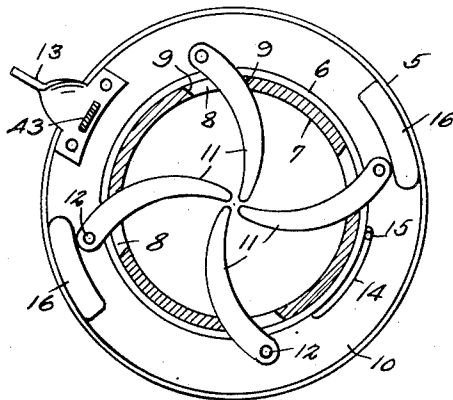
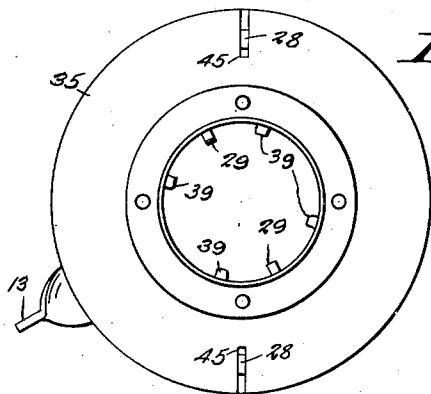


Fig. 5.



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UNITED STATES PATENT OFFICE

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CUP DISPENSER

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Application June 30, 1947, Serial No. 758,150

11 Claims. (Cl. 312-44)

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This invention relates to cup dispensers, and has particular reference to a cup dispenser designed primarily for attachment to an automatic beverage brewing and vending machine, wherein it is desired that an individual cup be dispensed and dropped in position to receive the fluid issuing from the spout of such a machine.

The primary object of the invention is to provide a dispenser of improved and novel design, which will be sure and positive in its dispensing of an individual paper cup on each operation thereof.

Another important object of the invention is to provide a cup dispenser which will be capable of ready adjustment so that a single dispenser will be capable of adjustment to receive cups varying in length or width, or both length and width, from the cups previously dispensed.

Another important object of the invention is to provide a cup dispenser wherein, at the start of the operation whereby a cup is dispensed, the cups will have been previously positioned properly, and wherein, as the operation proceeds from beginning to end thereof, means will cooperate to position one cup for dispensing, retain all the other cups separate therefrom, forcibly kick the first-named cup out of the dispenser, and reposition the remaining cups properly for the next operation of the dispenser.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings

Figure 1 is a view of a dispenser constructed in accordance with the invention, partly in elevation, and partly in vertical section.

Figure 2 is a view, partly in elevation and partly in vertical section, taken from the right of Figure 1, paper cups held by the dispenser being shown in dotted lines, the bottom cup being shown dropping from the dispenser.

Figure 3 is a top plan view, showing the position of parts of the dispenser at the initial or starting point of the operation.

Figure 4 is a top plan view, showing the position of parts at an intermediate point of the operation.

Figure 5 is a top plan view showing the position of parts at the completion of the operation of dispensing a paper cup.

Figure 6 is a view taken on line 6—6 of Figure 2.

Figure 7 is a view taken on line 7—7 of Figure 2.

Figure 8 is a fragmentary elevational view, showing a means for actuating kicker fingers em-

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bodied in the invention, the position of parts being shown as they appear at the completion of the operation wherein a cup has been kicked from the dispenser.

Referring to the drawings in detail, reference character 5 designates a stationary base, annular in form, that has an upstanding flange 6, also of annular formation, which constitutes an extension of the inner wall of the base 5.

Upstandingly and fixedly mounted in the base 5 is a lower barrel 7, which, as shown in Figures 1 and 2, is generally of sleeve-like or cylindrical formation. Adjacent the lower end of the lower barrel 7, and preferably at a point level with the upper surface of the flange 6 of the base, a plurality of horizontal cam slots 8 are formed in the wall of the lower barrel, these being disposed in suitably spaced relation around the circumference of the lower barrel, as best shown in Figure 7. Each slot 8 is formed with obliquely disposed end walls 9, that constitute cam surfaces adapted to engage the side edges of lower fingers extended through the cam slots, which fingers will be described in detail hereinafter. A lower finger ring 10 (Figures 1 and 7) is slidably positioned on the upper surface of the base 5, the upstanding flange 6 of the base serving as a guide whereby rotary sliding movement of the lower finger ring on the base is maintained in a proper channel, and without lateral or eccentric deviation. A plurality of lower fingers 11 are pivotally connected to the lower finger ring, this pivotal connection being designated at 12. The lower fingers 11 are so connected at one end, which may be designated as the outer end of each finger, the other or inner ends of the fingers being free, this construction being best shown in Figure 7. The lower fingers 11 are preferably curvingly formed, and preferably taper towards their inner ends. These may be conveniently formed from the flat pieces of metal material, stamped out to provide fingers having the desired tapering curve.

From the above, it will be apparent that when the lower finger ring 10 is moved in one direction, the side edges of the fingers will be engaged by end walls 9 of the cam slots 8, and the resulting cam action will cause the inner ends of the fingers to be swung inwardly toward the center of the lower barrel 7, until in their innermost position, they will appear as shown in Figure 7, and also in Figure 3. This is the starting or normal position of the inner fingers 11.

For the purpose of moving the lower finger ring 10, I provide a finger piece 13, which may be mounted at any desired point on the ring, within convenient access of an operator, who may manually thus effect the operation of the dispenser. In this connection, other means, not constituting a part of the present invention, may obviously be used to give the lower finger ring 10 the

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desired movement for operating the device, and these means may quite conceivably be automatic, and connected for operation concurrently with operation of a beverage brewing and vending machine.

As will become apparent from the description to be provided hereinafter, the movement of the lower finger ring provides the initial or basic force whereby the entire operation of the dispenser is permitted.

The rotary movement of the lower finger ring 10 is limited in either direction by the provision of an arcuate recess 14 preferably provided in the inner wall of the ring, a pin 15 stationarily mounted and upstanding from the base 5 being received in this recess (Figure 7). Thus, it is seen that the lower finger ring 10 is movable in one direction until pin 15 is engaged by one end wall of the recess 14, and is movable in the other direction until pin 15 is engaged by the other end wall.

Mounted on the lower finger ring 10, and movable therewith, are opposed wedge-shaped cams 16, which are preferably mounted upstandingly at the outer margin or periphery of the ring 10. These are best shown in Figures 1 and 8, and as shown, present inclines extended upwardly from the upper surface of the ring to level tops or table portions of said cams.

Intermediate the ends of the lower barrel 7, opposed ears 17 are extended outwardly from the outer wall of the lower barrel, these being preferably cast integral with the barrel. These are each formed with vertically disposed openings or bores, so that the ears 17 may constitute guides or slidable mountings for sleeves 18 that are movable in the ears in lines parallel to the axis of the lower barrel 7.

The sleeves 18 are interiorly threaded for engagement with the respective lower ends of correspondingly threaded rods 19, and this construction, as will be seen, permits longitudinal adjustment of the threaded rods 19 relative to the sleeves 18. The sleeves 18 and their rods 19 constitute adjustable actuating rods for kicker fingers to be described in detail hereinafter. For the purpose of locking the threaded rods 19 in their adjusted positions, lock nuts 20 are provided, that are threadable against the ends of the sleeves 18.

On the upper ends of the threaded rods 19 are fixedly mounted by any suitable means yokes 21 in the arms of which opposed openings are formed receiving removable pins 22. To the ends of the pins 22 are detachably connected the upper ends of springs 23, these springs being extended downwardly along the sides of each ear 17, as particularly shown in Figure 8, and being connected at their lower ends to opposed screws 24 or the like projecting from the sides of the ear.

From the above, it is seen that the springs 23, when the threaded rods 19 are moved upwardly relative to the ears 17, will tend always to return the rods 19 to their lowermost position, under the normal tendency of the springs to compress. Normally, the lower ends of the sleeves 18 are positioned in engagement with the upper surface of the finger ring 10. When, however, the finger ring 10 is moved in one direction, the lower ends of the sleeves will travel up the cams 16, raising the threaded rods 19. When the lower finger ring 10 has been moved to its limit in one direction, the lower ends of the sleeves 18 will rest on the level tops of the cams 16, in the position shown in Figure 8. However, when the ring 10 is moved

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in the other direction, springs 23 will urge the rods 19 and sleeves 18 downwardly, so that they will normally be in the position shown in Figure 1.

Pins 22 extend between the arms of yokes 21, through longitudinal slots 25 formed in the outer ends of angularly formed kicker fingers 26. Intermediate their ends, kicker fingers 26 are fulcrumed to the lower ends, by pins 27, of opposed arms 28. The inner or free ends of the kicker fingers 26 are narrowed, as best shown in Figure 1, to provide tongues 29 thereon.

A barrel 30 of generally cylindrical formation is fitted into the upper end of the lower barrel 7, and the kicker fingers 26 extend through opposed vertical slots 31 formed in the wall of the upper barrel 30. Also mounted within the lower barrel 7, and positioned below the lower end of the upper barrel 30 is an annular lower guide collar 32, this serving the purpose of guiding the paper cups, if necessary, so that they will be centrally positioned when they drop from the lower end of the dispenser. This is mounted in position in the lower barrel 7 by means of one or more set screws 32', which may be removed if necessary, so that the collar 32 can be removed from the dispenser, should it be desired to dispense cups of greater diameter, the inner wall of the upper barrel 30 serving as the guide in such cases.

The upper barrel 30 is mountable in the lower barrel 7 in adjusted positions, the upper barrel being capable of being adjusted longitudinally of the lower barrel by means of one or more set screws 33. This is for the purpose of permitting the dispenser to dispense cups of varying lengths. The connected barrels comprise a cylindrical main or body portion, in which the cups are supported and dispensed.

At its upper end, the outer wall of the upper barrel 30 is thickened to provide a collar 34, and from this thickened portion is laterally extended an annular flange 35. As will be obvious, the upper barrel 30, collar 34 and flange 35 can all be cast integral.

A flat annular ring bearing member 36 extends around the upper barrel 30, and is secured to the under surface of the collar 34 by screws 37 or the like. The periphery of the bearing member 36 projects beyond the wall of the collar 34, defining in cooperation with collar 34 a channel for a movably mounted upper finger ring 38. Referring now to Figure 6, the outer ends of upper fingers 39 are pivotally connected to the upper finger ring, and these fingers are extended through cam slots 40 formed in the collar 34. The upper fingers 39, as clearly shown by the drawings, are substantially shorter than the lower fingers 11, so that when the inner ends of the upper fingers are moved to their innermost position, they extend into the upper barrel 30 a comparatively short distance. The upper fingers 39 also extend through square notches 41 cut deeply from the bottom edge of a cylindrical upper guide collar 42. One or more set screws 42' serve to mount the upper guide collar 42 removably in the upper barrel 30. The upper guide collar 42, in this connection, serves to retain centrally disposed cups of a particular diameter at their upper ends. Should cups of greater diameter be used, the upper guide collar 42, like the lower guide collar 32, is removed.

The upper finger ring 38 is movable in opposite directions, and for the purpose of moving it in one of these directions, I provide a standard 43, which may be fixedly mounted, as by welding or the like, to the finger piece 13 at its lower end.

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This is extended upwardly in spaced relation from the sides of the lower barrel 7 and upper barrel 30, and in parallel relation thereto. Adjacent its upper end, it is brought into engagement, for the purpose of moving the upper ring 38 in one direction, with a projection 44 fixedly connected to and laterally extending beyond the ring 38.

Cut into the flange 35 are diametrically opposed radial slots 45, and extended between the walls of these slots are pins 46, which serve as pivotal connections for the upper ends of the arms 28. As clearly shown in Figure 1, the arms 28 are downwardly extended from these pivotal connections, and curve inwardly toward their pivotal connections 27 with the kicker fingers 26. Referring now to Figure 6, there are formed in the peripheral edges of the upper finger ring 38 diametrically opposed cam recesses 47, the longitudinal or inner walls of which are inclined relative to the circumference of the upper finger ring 38, for the purpose of providing cam surfaces engageable with the arms 28. Normally, at the start of the operation of the dispenser, the arms 28 are positioned at the narrow or shallow ends of the cam recesses 47. When, however, the upper finger ring 38 is moved, the arms 28, urged by springs 48 (Figure 1) are urged inwardly, being permitted to do so by the inclined walls of the cam recesses 47. Referring now to Figure 1, it is seen that this causes the lower ends of the arms 28 to travel inwardly a short distance, drawing with them the kicker fingers 26. These are permitted to move inwardly by reason of the provision of their longitudinal slots 25. This positions the kicker fingers 26, or more properly the tongues 29 thereof, in proper position to be swung downwardly for the purpose of kicking a paper cup out of the dispenser.

As previously stated, movement of the lower finger ring 10 is adapted by reason of the construction illustrated and described to move the upper finger ring 38 only in one direction. For the purpose of normally urging the upper finger ring 38 in the opposite direction, back to a normal position, a spring 49 is connected at one end to the ring 38 and at the other end to the upper barrel 30, as shown in Figure 1. While this spring is of a strength sufficient to exert a pull upon the upper finger ring 38 to accomplish the result stated, it is nevertheless not of such strength as to permit it to also move the lower finger ring 10.

Obviously, more than one spring 49 can be used, but the combined strength of all these springs should not be such as to be capable of imparting movement to the lower finger ring 10, it being the spirit of the invention that the lower finger ring 10 be movable only by outside means.

In operation of the device, the initial or starting position of the lower finger ring 10 is that shown in Figure 7. Pin 15 is at one end of recess 14, and the lower fingers 11 are extended into the lower barrel, fully closing the lower end of the lower barrel. In this position, also, standard 43 is in engagement with projection 44, and the arms 28 are at the shallow end of the cam recesses 27. The bottom ends of the sleeves 18 rest on the surface of the lower finger ring 10, and are spaced away from the cams 16. Therefore, since arms 28 are in their outermost positions, the tongues 29 of the kicker fingers 26 are withdrawn into the slots 31 of the upper barrel 30. Further, in this position, the upper finger ring 38 is so disposed relative to cam slots 40 as to cause the

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upper fingers 39 to be fully withdrawn into their slots.

From the above, it is seen that the upper barrel is entirely clear of projections, in the form of the kicker fingers and upper fingers, and a column of cups deposited in the dispenser will therefore move as far downwardly as they are permitted, that is the bottom cup A will rest on the inwardly extended lower fingers 11 and these lower fingers will as a result be supporting the entire column.

The arrangement of parts in this initial or starting position is shown in Figures 3 and 7.

As the lower finger ring begins to move in one direction, which may be termed a forward direction, the lower fingers 11 will begin to withdraw partially into their slots. The standard 43 will move in a direction away from projection 44 on the upper finger ring 38. However, the projection 44 will follow the standard during this first movement, under the compressing action of spring or springs 49. This causes the arms 28 to move toward the deeper ends of the recesses 47, and they will, of course, draw the kicker fingers 26 inwardly and substantially laterally a short distance. Since during this initial movement springs 49 are moving the upper finger ring 38, the upper fingers 39 will also move inwardly, and they are proportioned to move inwardly a sufficient distance during this initial movement to engage the rim of the paper cup next above the bottom cup, designated in Figures 1 and 2 by the reference character B.

Thus, concurrently with partial withdrawal of the lower fingers 11, the upper fingers 39 have been moved inwardly a sufficient distance to engage cup B and thus support the entire column of cups. This is the maximum movement in this direction of the upper finger ring 38, further movement being restrained by the end wall of each of the recesses 47, engaging arms 28.

This intermediate position of the lower finger ring 10, and forwardmost position of the upper finger ring 38, is shown in Figures 1, 4, and 6.

As forward movement of the lower finger ring 10 continues, the cams 16 reach sleeves 18, and cause the upward movement of the rods 19. This swings tongues 29 downwardly, causing them to engage the upper edge of the bottom cup A and kick it downwardly. During this further forward movement of the lower finger ring, the lower fingers 11 are fully withdrawn, or substantially so, into the slots 3, and thus, cup A drops from the dispenser. Cup A preferably drops to a support therefor, spaced away from and below the dispenser, so that fluid may be poured into the cup. This support is not shown, constituting no part of the present invention.

The purpose of the kicker fingers 26, as will be seen, is obvious, in that cups packed in a column tend to stick together. In this device, it is an important object that the operation of dropping a cup be insured on each and every use of the dispenser.

The lower finger ring 10 has now reached its forwardmost position, and the parts of the device will be as shown in Figures 5, 2, and 8.

As the lower finger ring is moved in a rearward direction, back to its normal position, the sleeves 18 first slip off cams 16, swinging the kicker fingers upwardly. Then, standard 43 comes into engagement with projection 44, causing the upper finger ring 38 to begin its own reverse movement. Arms 28 are accordingly urged outwardly, withdrawing the kicker fingers fully into slots 31. At the same time, the upper fingers 39 are also withdrawn fully into their slots, and as soon as they

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are disengaged from cup B, the entire column of cups drops downwardly, and is supported on the lower fingers 11, which again will have been brought into position to close the bottom of the dispenser.

Should it be desired to use cups of greater lengths, the upper barrel 30 is adjusted longitudinally of the lower barrel, and is repositioned. Standard 43, in this connection, has been shown as being of sufficiently long length that it will still be capable of engaging the projection 44 should the device be so adjusted. Obviously, standard 43 can itself be made of adjustable length, if desired.

Should the device be so adjusted to provide for longer cups, it will then be necessary to adjust rod 19 relative to sleeve 18. This is done by detaching springs 23 from the pin 22, removing pin 22 from yoke 21, and freeing the rod 19 in this manner for rotation.

Should it be desired to adjust the device for cups of different width, the guide collars 32 and 42 can be removed in the manner previously described.

What is claimed is:

1. A cup dispenser, comprising a lower barrel, an upper barrel connected thereto for longitudinal adjustment, means insertable in the barrels for adjusting the diameters thereof, lower fingers laterally swingable into the lower barrel, the lower fingers being normally positioned within the lower barrel, upper fingers laterally swingable into the upper barrel, kicker fingers vertically swingable into the upper barrel, the upper fingers and kicker fingers being normally withdrawn from the upper barrel, means for imparting joint movement to all the fingers, whereby to swing the kicker fingers and upper fingers into the upper barrel concurrently with withdrawal of the lower fingers from the lower barrel, and means for returning all of the fingers to normal position.

2. A cup dispenser, comprising a lower barrel, a lower ring slidable thereon, lower fingers swingably connected to the lower ring and normally closing the lower barrel, an upper barrel adjustably connected to the lower barrel, kicker fingers swingably carried by the upper barrel and normally withdrawn from the upper barrel, an adjustable kicker finger actuating means carried by the lower barrel and engageable by the lower ring for actuation thereby, an upper ring slidable on the upper barrel, means operatively connecting the upper and the lower rings, and upper fingers swingably connected to the upper ring and normally withdrawn from the upper barrel, said actuating means and rings constituting means for withdrawing the lower fingers from the lower barrel concurrently with swinging of the upper and kicker fingers into the upper barrel.

3. A cup dispenser, comprising a lower barrel, a lower finger ring slidable thereon, lower fingers on the lower finger ring mounted for lateral swinging movement into the lower barrel on movement of the lower finger ring and normally positioned within the lower barrel, an upper barrel on the lower barrel, there being vertical slots formed in the wall of the upper barrel, depending arms on the upper barrel, kicker fingers pivoted to the arms for vertical swinging movement and extending into the slots, said kicker fingers being normally withdrawn from the upper barrel, means associated with the lower finger ring adapted to impart swinging movement to

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the kicker fingers to swing them into the upper barrel concurrently with withdrawal of the lower fingers, an upper finger ring slidable on the upper barrel, upper fingers thereon mounted for lateral swinging movement into the upper barrel on movement of the upper finger ring and normally withdrawn from the upper barrel, and means connecting the upper and lower finger rings, for joint movement whereby to swing the upper fingers into the upper barrel concurrently with withdrawal of the lower fingers.

4. A cup dispenser, comprising a lower barrel, a lower finger ring slidable therearound, there being cam slots in the wall of the lower barrel, laterally swingable lower fingers on the lower finger ring and normally extending into the lower barrel through the cam slots, means for imparting limited movement to the lower finger ring in opposite directions, cams on the lower finger ring, actuating rods slidably mounted on the lower barrel and engageable by the cams, normally withdrawn kicker fingers slidably and pivotally connected to the actuating rods, an upper barrel on the lower barrel, there being slots in the wall of the upper barrel adapted to receive the kicker fingers, depending arms pivotally connected at their ends to the upper barrel and kicker fingers, an upper finger ring slidable on the upper barrel, there being cam recesses formed therein receiving the arms, means connecting the upper and lower finger rings for simultaneous movement in one direction, means normally urging the upper finger ring in the opposite direction, there being cam slots in the wall of the upper barrel, and upper fingers on the upper finger ring laterally swingable into the upper barrel through the cam slots, and normally withdrawn from the upper barrel, said rings and actuating rods constituting means for withdrawing the lower fingers from the lower barrel concurrently with movement of the upper and kicker fingers into the upper barrel.

5. A cup dispenser, comprising a lower barrel, a lower finger ring slidable therearound, there being cam slots in the wall of the lower barrel, laterally swingable lower fingers pivoted to the lower finger ring and normally extended through the cam slots into the lower barrel, means for imparting movement to the lower finger ring in opposite directions, cams on the lower finger ring, adjustable actuating rods slidably mounted on the lower barrel and engageable by the cams, normally withdrawn kicker fingers slidably and pivotally connected to the actuating rods, an upper barrel connected to the lower barrel, means for adjusting the upper barrel longitudinally of the lower barrel, there being slots in the wall of the upper barrel adapted to receive the kicker fingers, depending arms pivotally connected at their ends to the upper barrel and kicker fingers, an upper finger ring slidable on the upper barrel, there being cam recesses formed therein receiving the arms, means extending between the upper and lower finger rings proportioned to impart limited movement to the upper finger ring on movement of the lower finger ring in one direction, means normally urging the upper finger ring in the opposite direction, there being cam slots in the wall of the upper barrel, normally withdrawn upper fingers pivoted to the upper finger ring and laterally swingable in the last-named slots, said rings and actuating rods constituting means for withdrawing the lower fingers from the lower barrel concurrently with

movement of the upper and kicker fingers into the upper barrel, and removable upper and lower guide collars respectively mounted within the upper and lower barrels.

6. A cup dispenser, comprising an annular base, a lower barrel mounted thereon, a lower finger ring slidable on the base, lower fingers pivoted thereto, there being cam slots in the wall of the lower barrel through which the lower fingers are extended, said lower fingers being normally extended into the lower barrel, the walls of said slots being proportioned to swing the lower fingers inwardly and outwardly when the lower finger ring is moved in opposite directions, inclined cams on the lower finger ring, ears, having openings, on the lower barrel, adjustable actuating rods slidable in said openings, the lower ends of the rods being engageable by the cams, whereby to move the actuating rods upwardly, yielding means normally urging the actuating rods downwardly, an upper barrel adjustably connected to the lower barrel, there being vertical slots in the wall of the upper barrel, kicker fingers normally withdrawn from the upper barrel and extendable through the vertical slots, the outer ends of the kicker fingers being slidably and pivotally connected to the actuating rods, depending arms pivotally connected at their upper ends to the upper barrel, the lower ends being pivotally connected to the kicker fingers intermediate the ends of the kicker fingers, an upper finger ring slidably mounted on the upper barrel, a standard on the lower finger ring, means carried by the upper finger ring engageable by the standard, whereby to move the upper finger ring in one direction on movement of the lower finger ring in said direction, yielding means normally urging the upper finger ring in the other direction, there being cam recesses formed in the upper finger ring, the depending arms being engageable in the recesses, yielding means normally urging the arms into the recesses, normally withdrawn upper fingers pivoted to the upper finger ring, there being cam slots in the upper barrel through which the upper fingers are extended, means for imparting limited movement of the lower finger ring whereby to withdraw the lower fingers from the lower barrel concurrently with movement of the upper and kicker fingers into the upper barrel, and means for adjusting the diameters of the upper and lower barrel.

7. A cup dispenser including a cylindrical body portion, lower fingers laterally swingable into the body portion, the lower fingers being normally positioned within the body portion, upper fingers laterally swingable into the body portion, kicker fingers vertically swingable into the body portion, the upper fingers and kicker fingers being normally withdrawn from the body portion, and means for imparting joint movement to all the fingers, whereby to swing the kicker fingers and upper fingers into the body portion concurrently with withdrawal of the lower fingers.

8. A cup dispenser including a lower barrel, an upper barrel connected thereto for longitudinal adjustment, means insertable into the barrels for

adjusting their diameters, lower fingers laterally swingable into the lower barrel, the lower fingers being normally positioned within the lower barrel, upper fingers laterally swingable into the upper barrel, the upper fingers being normally withdrawn from the upper barrel, and means for imparting joint movement to all the fingers, whereby to swing the upper fingers into the upper barrel concurrently with withdrawal of the lower fingers from the lower barrel.

9. A cup dispenser including a lower barrel, an upper barrel connected thereto for longitudinal adjustment, lower fingers laterally swingable into the lower barrel, the lower fingers being normally positioned within the lower barrel, upper fingers laterally swingable into the upper barrel, kicker fingers vertically swingable into the upper barrel, the upper fingers and kicker fingers being normally withdrawn from the upper barrel, means for imparting joint movement to all the fingers, whereby to swing the kicker fingers and upper fingers into the upper barrel concurrently with withdrawal of the lower fingers from the lower barrel, and means for returning all of the fingers to normal position.

10. A cup dispenser including a cylindrical body portion a lower ring slidable thereon, lower fingers swingably connected to the lower ring and normally closing the lower end of the body portion, kicker fingers swingably mounted on the body portion and normally withdrawn therefrom, kicker finger actuating means carried by the body portion and engageable by the lower ring for actuation thereby, an upper ring slidably mounted on the body portion, means operatively connecting the upper and lower rings, and upper fingers swingably connected to the upper ring and normally withdrawn from the body portion, said actuating means and rings constituting means for withdrawing the lower fingers from the body portion concurrently with swinging of the upper and kicker fingers into the body portion.

11. A cup dispenser including a lower barrel, a lower ring slidable thereon, lower fingers swingably connected to the lower ring and normally closing the lower barrel, an upper barrel adjustably connected to the lower barrel, an upper ring slidable on the upper barrel, means operatively connecting the upper and the lower rings, and upper fingers swingably connected to the upper ring and normally withdrawn from the upper barrel, said rings constituting means for withdrawing the lower fingers from the lower barrel concurrently with swinging of the upper fingers into the upper barrel.

ERMAL J. LIME.

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