

June 1, 1965

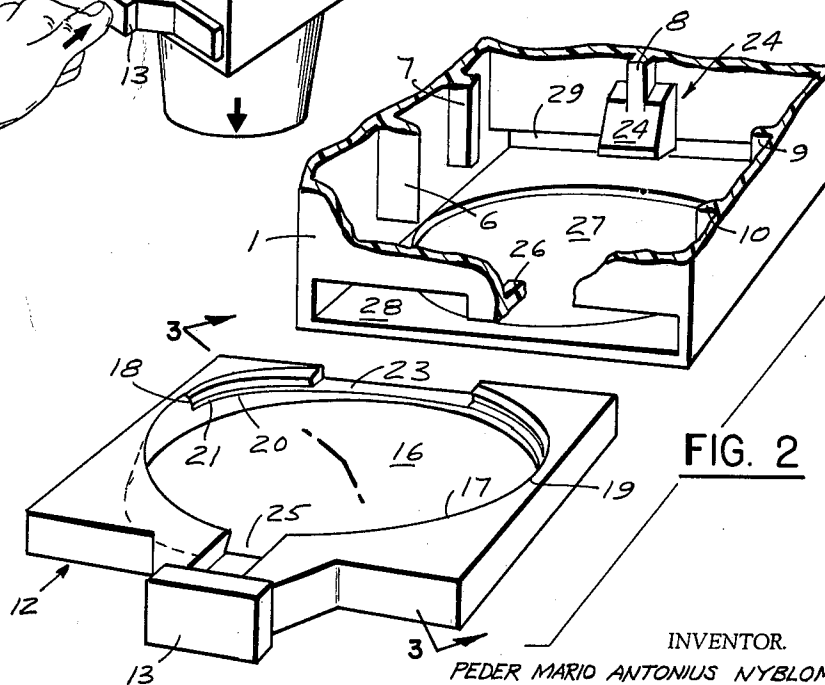
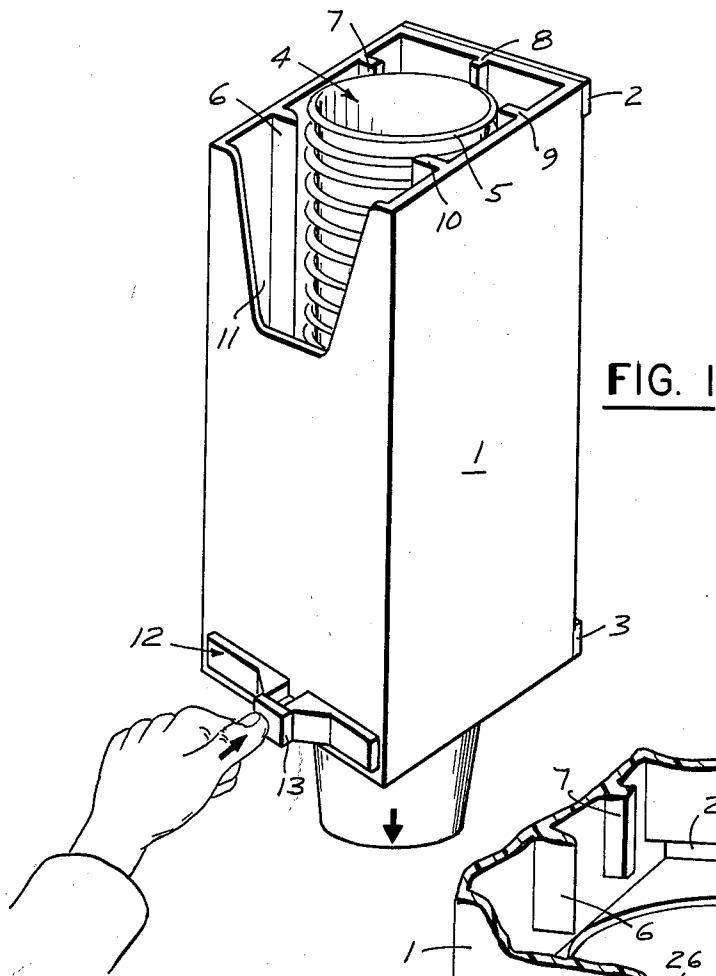
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3,186,594

DISPENSING DEVICE FOR CUPS

Filed June 11, 1963

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

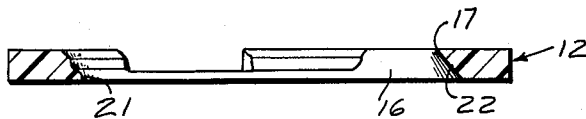


FIG. 3

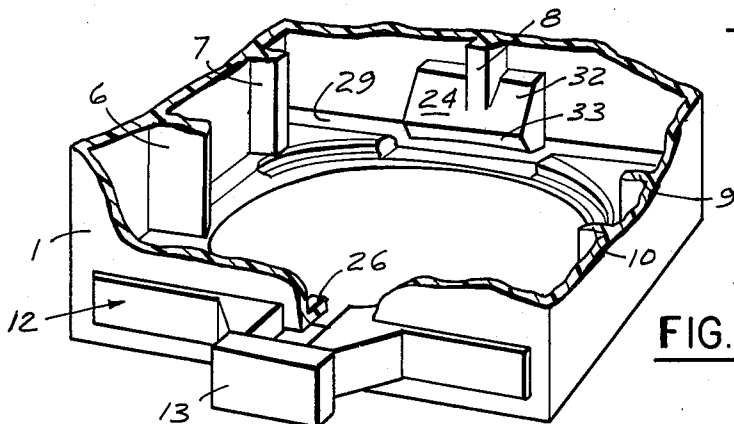


FIG. 4

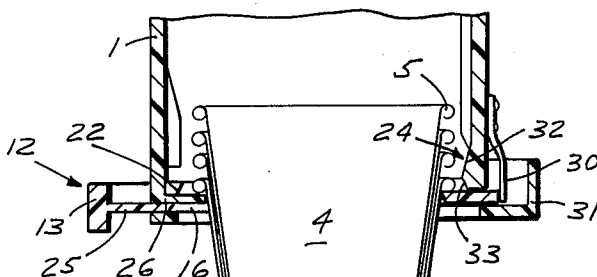


FIG. 5

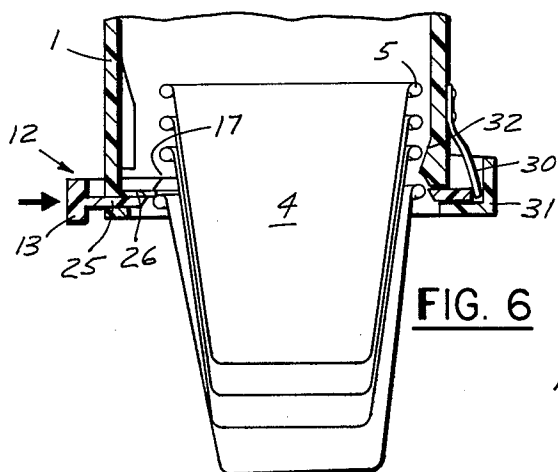


FIG. 6

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DISPENSING DEVICE FOR CUPS

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7 Claims. (Cl. 221-299)

The invention relates to a dispensing device for drinking cups, such as disposable paper drinking cups.

Cups of this kind are usually of slightly tapered shape and have at the rim a reinforcing bead formed by turning the rim of the cup over, singly or doubly. The cross section of a bead thus formed is usually substantially circular. A supply of such cups is nested to form a stack of generally cylindrical peripheral outline, in which the beads of the individual cups are slightly spaced from each other lengthwise of the stack. The entire stack is placed in a tubular container of the dispensing device, to be withdrawn therefrom at the bottom of the container. For sanitary reasons, the top of the container may be closed by a cover. To facilitate withdrawal of cups, there is provided at the bottom of the container a discharge device, frequently in the form of a conical constriction through which the lowermost cup may be pulled by grasping the end of the cup protruding from the container. If the lowermost and protruding cup is carefully manipulated, only one cup at a time will be withdrawn, but if the lowermost cup is less carefully handled, as is frequently the case in practice, two or more cups will be simultaneously pulled out, thereby wasting cups.

It is a broad object of the present invention to provide a novel and improved dispensing device of the general kind above referred to, which affords the advantage that only one cup at a time can be withdrawn from the device, thus eliminating waste of cups.

A more specific object of the invention is to provide a novel and improved dispensing device in which each withdrawal of a cup requires a separate manipulation of the discharge device, thus automatically limiting the number of dispensed cups to the number actually intended.

Another specific object of the invention is to provide a novel and improved dispensing device in which the supply stack of nested cups in the dispensing device automatically relocates itself after withdrawal of a cup, for withdrawal of the next following and now lowermost cup by another manipulation of the discharge device.

Other and further objects, features and advantages of the invention will be pointed out hereinafter and set forth in the appended claims constituting part of the application.

In the accompanying drawing, a preferred embodiment of the invention is shown by way of illustration, and not by way of limitation.

In the drawing:

FIG. 1 is a perspective view of a dispensing device according to the invention;

FIG. 2 is a sectional view of the bottom part of the dispensing device on an enlarged scale, the discharge control means of the device being shown in one operational position;

FIG. 3 is a sectional view taken on line 3—3 of FIG. 2;

FIG. 4 is a sectional view similar to FIG. 2, but showing the discharge control means in another operational position;

FIG. 5 is an elevational sectional view of the lower part of the dispensing device, showing a stack of nested cups in the device and the discharge control means in a position for retaining all the cups in the dispensing device, and

FIG. 6 is an elevational sectional view similar to FIG. 5, but showing the lowermost cup while being discharged

from the device by operation of the discharge control means.

Referring now to the figures in detail, the exemplified dispensing device comprises a tubular container 1. The container is shown as being of generally rectangular cross section, but it may also be of cylindrical cross section. The dispensing device may be mounted on a wall or on a water cooler by any suitable means. There are shown, by way of example, brackets 2 and 3. As the discharge of the cups from the container is effected by gravity discharge, as will be more fully described hereinafter, container 1 should be mounted in a vertical position.

A stack of nested cups 4, each having an outwardly beaded rim 5, as previously described, is placed in the container. Each individual cup is in the usual form of a truncated cone. Instead of a bead of substantially circular cross section, any other suitable collar may also be provided, such as an outwardly extending flange, which may be double or single.

The stack of cups is centered within the container by five guide bars 6, 7, 8, 9 and 10. A peephole 11, shown as a cut-out in a wall, is preferably provided to permit the user to ascertain whether a sufficient quantity of cups is in the container. The open top of the container may be closed by a lid. Cups of the kind here involved are usually supplied in the form of stacks of nested cups which can be simply slipped into the container with the bottom side of the cups facing downwardly.

The bottom of the container includes a circular discharge opening 27 of a diameter appreciably greater than the maximum width of the cup at the beaded rim 5 thereof. One of the side walls of the container is formed with a slot 28 for receiving and guiding a slide 12. This slide, together with certain components at the lower end of the container 1, constitutes the discharge control means of the dispensing device, as will be more fully described hereinafter.

The slide is generally in the shape of a rectangular plate fitting slot 28 and matching the peripheral outline of container 1. It has on one side a protruding grip 13, against which pressure may be exerted by a finger of the user, as is indicated in FIG. 1. The slide is formed with a circular opening 16, the diameter of which is such that it will just permit passage of rim 5 of a cup 4. As seen in the direction of movement of the slide in slot 28, opening 16 on the top side of the slide is defined by a rim portion 17 extending between points 18 and 19 on the trailing side of the slide, and a rim portion 20 extending between points 18 and 19 on the leading side of the slide. Portion 20 is recessed to form a support surface 21 located at a lower level than the support surface bounded by rim portion 17. The lower surface 21 and the upper surface of the slide as defined by rim portion 17 are used as supporting surfaces for the rim 5 of a cup, as will be more fully described hereinafter. The side wall 22 defining slide opening 16 along rim portion 17 is outwardly tapered, as can best be seen in FIG. 3. Part of rim portion 20 is cut down to the level of surface 21 to form a recess 23, and part of rim portion 17 is cut down to form a recess 25. The two recesses are diametrically opposite in the direction of displacement of the slide in reference to container 1. Recess 23 coacts, in a manner to be described more fully hereinafter, with a shoulder portion 24 protruding from the inner wall of container 1 on the side thereof opposite slide 28. The inwardly facing wall of shoulder 24 is shaped to form an inwardly slanted guide surface 32 and an outwardly slanted guide surface 33, as seen in the direction of the center axis of the container. Recess 25 accommodates a tongue 26 protruding inwardly from the side wall of the container. The thickness of the slide is such that when a stack of nested cups 4 is placed in the container, the upper supporting surface defined by

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rim portion 17 may underlie rim 5 of the cup following the lowermost one.

A spring 30, such as a leaf spring, is secured to the container wall from which shoulder portion 24 protrudes, and serves to bias the slide into a position in which it retains or locks the cups in the dispensing device. The slide coacts with spring 30 by protruding through a slot 29 formed just below shoulder portion 24. A wall 31 serves to limit movement of the slide against the action of spring 30.

Turning now to FIGS. 5 and 6, FIG. 5 shows the slide in its locking or retaining position. The rim of the lowermost cup is supported by tongue 26 and the support surface 21, which are both at the same level. As is clearly shown in FIG. 5, tongue 26 protrudes into the peripheral outline of the slide opening 16 in the slide position according to FIG. 5. When now the slide is pushed inwardly to discharge a cup from the device, the lowermost cup will be somewhat laterally displaced by the advancing edge portion 17 of the slide. As a result, rim 5 of the cup is pushed off tongue 26, and support surface 21 will move away from the part of rim 5 supported by it. The cup, being centered with the slide opening, will fall through the same due to gravity.

FIG. 6 shows the lowermost cup in its position just dropping out of the dispensing device. As is indicated in this figure, the dropping cup may become slightly slanted in reference to the remaining cups. The next following cup, which now becomes the lowermost cup, will be temporarily supported by edge portion 17 and guide surface 32. As soon as the slide has fully returned into the position of FIG. 5 upon release of spring 30, the weight of the stack will force the cups into a position in which the now lowermost cup is again supported as shown in FIG. 5. The slanted surfaces 32 and 22 facilitate a smooth discharge of a cup from the dispensing device by gravity. As is apparent from an analysis of the figures, the coacting surfaces provide a safe support, first for the lowermost cup, and then for the next following cup, which becomes the lowermost cup upon discharge of the preceding one.

While the rim portions 17 and 20 are shown as defining a circle, they may of course also be joined by straight wall portions, as long as the afore-described coaction and relative positions of the two curved portions are provided.

While the invention has been described in detail with respect to a certain now preferred example and embodiment of the invention, it will be understood by those skilled in the art, after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention, and it is intended, therefore, to cover all such changes and modifications in the appended claims.

What is claimed is:

1. A dispensing device for dispensing preformed, substantially rigid drinking cups each having an outwardly beaded rim, said device comprising a tubular container for receiving therein a stack of nested cups, said container having a discharge opening at one end thereof, and discharge control means provided at said open end of the container for gravity discharge of cups one by one, said discharge control means including a slide having a circular opening the diameter of which just permits passage of a cup, the diameter of the container opening being greater than the maximum cup diameter, said slide being slidable transverse of the container axis between a discharge position in which the slide opening is clear for discharge of a cup, and a locking position in which the slide opening is blocked for such discharge, first supporting surfaces on the slide and on the inner wall of the container for supporting the lowermost one of said cups in the locking position of the slide, and second supporting surfaces on the slide and the inner wall of the container for supporting the next following one of the cups in the discharge

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position of the slide, movement of the slide from the locking position toward the discharge position pushing the lowermost cup supported on said first supporting surfaces off said surfaces for gravity discharge through the slide opening and the container opening, said second supporting surfaces supporting the cup following the one being discharged during the discharge thereof, and spring means biasing the slide into its locking position.

2. A dispensing device for dispensing drinking cups each having an outwardly beaded rim, said device comprising a tubular container for receiving therein a stack of nested cups, said container having a discharge opening at one end thereof, and discharge control means provided at said open end of the container for gravity discharge of cups one by one, said discharge control means including a slide having a circular opening the diameter of which just permits passage of a cup, the diameter of the container opening being greater than the maximum cup diameter, said slide being slidable transverse of the container axis between a discharge position in which the slide opening is clear for a discharge of a cup, and a locking position in which the slide opening is blocked for discharge of a cup, said slide having rim portions substantially opposite in the direction of movement thereof but at different levels, a tongue extending from said tubular container opposite the lower one of the rim portions of the slide and having a supporting surface about level with said lower rim portion, said tongue overhanging the peripheral outline of the slide opening in the locking position of the slide and being withdrawn from said peripheral outline in the discharge position of the slide, whereby in the locking position of the slide the lowermost one of the cups is supported by said tongue and said lower rim portion of the slide and upon movement of the slide into its discharge position said cup is pushed off said supporting surfaces by the slide for gravity discharge of said cup through the openings of the slide and the container, while the next following cup is supported by the upper rim portion of the slide and a wall portion of the container substantially opposite said tongue, and spring means biasing the slide into its locking position.

3. A dispensing device according to claim 2, wherein the thickness of the slide is such that the upper rim portion of the slide is located at a level above the top side of the rim on the lowermost cup and below the bottom side of the rim on the next following cup when the slide is in its locking position.

4. A dispensing device according to claim 3, wherein the side wall portion of the slide defining said upper rim portion is outwardly slanted.

5. A dispensing device according to claim 2, wherein said opposite wall portion of the container supporting the rim of the next following cup in the stack is located circumferentially spaced from said upper rim portion of the slide and is formed with an outwardly slanted guide surface and a lower inwardly slanted guide surface.

6. A dispensing device according to claim 5, wherein said outwardly slanted guide surface protrudes underneath the rim of said next following cup in the discharge position of the cup.

7. A dispensing device according to claim 1, wherein said container includes a guide slot for the slide adjacent the discharge end of the container.

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