United States Patent

Filipak

[15] **3,670,530**

[45] **June 20, 1972**

[54] DISPENSER FOR CLOTHES WASHING ADDITIVES

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[22] Filed: **June 9, 1971**

[21] Appl. No.: **151,196**

[52] **U.S. Cl.** ..... **68/17 A, 233/26**
[51] **Int. Cl.** **D06f 39/02**
[58] **Field of Search** ..... 68/17 R, 17 A; 233/26

[56] **References Cited**

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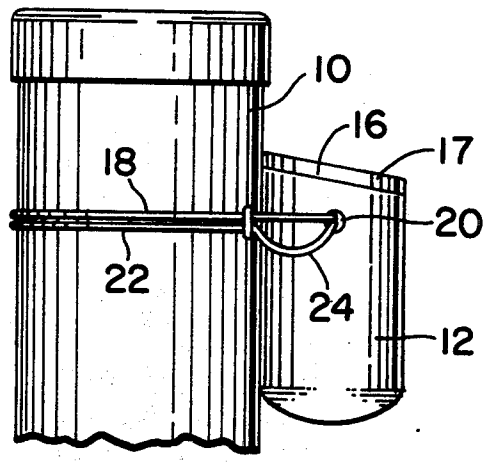
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Primary Examiner—Walter A. Scheel
Assistant Examiner—Philip R. Coe
Attorney—Oberlin, Maky, Donnelly & Renner

[57] **ABSTRACT**

An additive dispenser for clothes washing machines or the like having a container that pivots from a vertical additive-retaining position to a substantially horizontal additive-dispensing position in response to centrifugal force developed by spinning of the agitator. The container is maintained in the retaining and dispensing positions by an elastic band urging the side and top walls, respectively, against the agitator, the elastic band stretching during agitator spin to allow the container to change positions. In another embodiment of the invention, the container is pivotally mounted to the agitator by a bracket that has a leaf spring depending therefrom, the leaf spring being operative to engage the top of the container after agitator spin to hold the same in its dispensing position.

8 Claims, 6 Drawing Figures



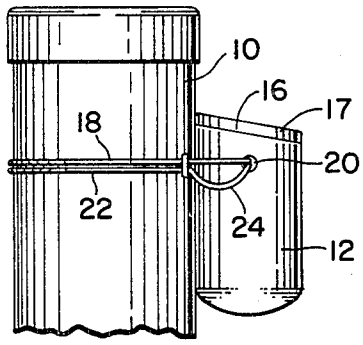


Fig. 1

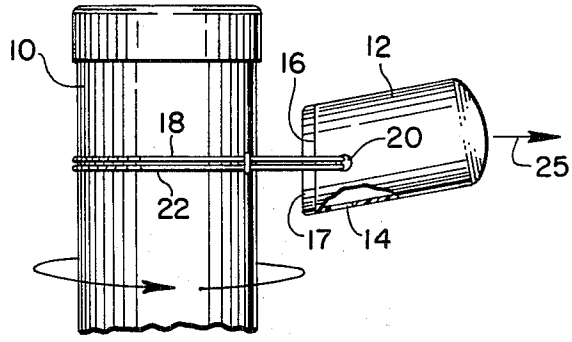


Fig. 2

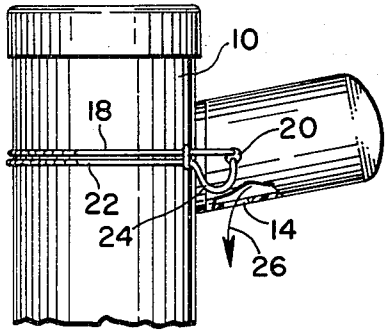


Fig. 3

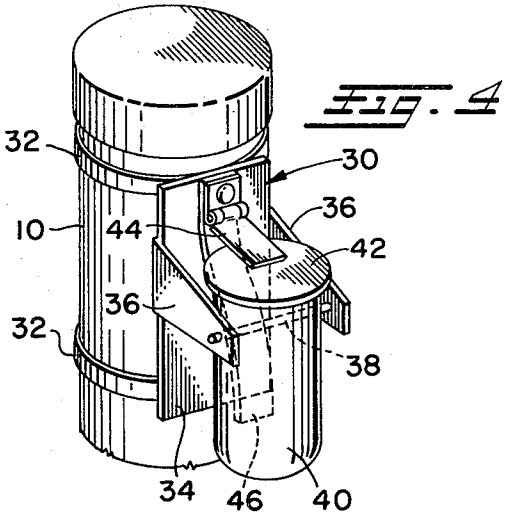


Fig. 4

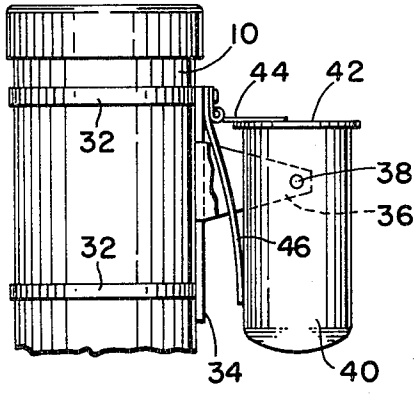


Fig. 5

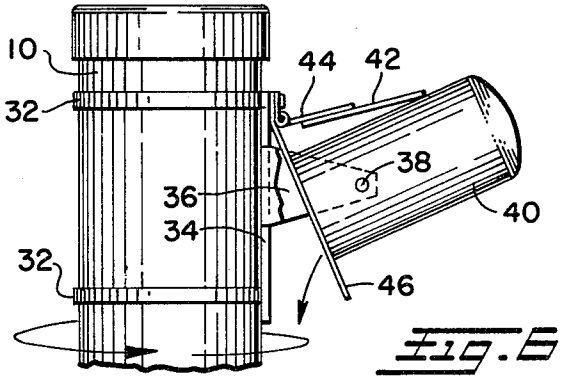


Fig. 6

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DISPENSER FOR CLOTHES WASHING ADDITIVES

The present invention relates to an additive dispenser for clothes washing machines, and, more particularly, to a simplified dispenser that may readily be used with a number of different machines efficiently to discharge the additive to the washing basket at the proper time in the washing cycle.

The conventional washing cycle includes at least four distinct operational steps after inserting the items to be laundered into the washing basket. The first step is the washing sequence in which the basket is partially filled with water and a soap additive, and the clothes are moved through the water by oscillation of the agitator member. The second step is the extraction of the wash water by simultaneously spinning the washing basket and agitator, with the water exiting through holes in the annular sidewall of the washing chamber under centrifugal force. The third step is the rinsing of the clothes in water freshly supplied to the washing basket by oscillation of the agitator member. The fourth and final step is the extraction of the rinse water by centrifugal force as described above.

It may additionally be desirable to add laundering-aid materials, such as fabric or water softening solutions, and a number of different devices have been developed to accomplish this purpose.

For example, U.S. Pat. No. 2,967,416 discloses a dispenser assembly including an elongated arm that has a liquid agent cup pivotally suspended from one of its ends. The cup is in an upright position during impeller or agitator oscillation but pivots to a horizontal position in response to the high speed rotation of the basket during wash water extraction. A latch or catch is provided on the arm to hold the cup in its horizontal position for dispensing the liquid agent after the basket has completed its rotational cycle. Other dispenser devices, such as U.S. Pat Nos. 2,949,025 and 3,268,120, include agent containers having internal baffling to accomplish the dispensing at the proper time in the cycle. All of the patents have fairly complicated structure that involves a particular machine association for operation and mounting, thereby precluding the use of such additive dispensers with more than one specific machine model.

Accordingly, it is the primary object of the present invention to provide a relatively simplified dispensing device that is readily adaptable to existing machines of varying designs. This object is accomplished by having elastic or adjustable straps for mounting the dispensing cup or container to the top portion of the agitator post.

It is another important object of the present invention to provide a resilient member that is adapted to maintain the cup in its additive-dispensing position after the agitator member has completed its spin. In one embodiment of the invention, the propensity of the elastic mounting strap to return to its original shape is employed to urge the top of the horizontally positioned dispensing cup against the agitator post, thereby to maintain the cup in the additive-dispensing position.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but two of the various ways in which the principle of the invention may be employed.

In the drawing:

FIG. 1 is a fragmentary elevation of the additive dispensing device mounted to the agitator post prior to or during its oscillation in the washing step;

FIG. 2 is a fragmentary elevation similar to Fig. 1 showing schematically the position of the dispensing cup during agitator spin;

FIG. 3 is a fragmentary elevation similar to FIG. 1 showing the container in its additive-dispensing position after the agitator spin cycle has been completed;

FIG. 4 is a fragmentary perspective showing a second embodiment of the present invention prior to or during oscillation of the agitator in the washing step;

FIG. 5 is a fragmentary elevation of the dispensing device of FIG. 4 before the agitator spin cycle; and

FIG. 6 is a view similar to FIG. 5 showing the container in its additive-dispensing position during and after the agitator spin step.

Referring now in more detail to the drawing and initially to the first embodiment shown in FIGS. 1–3, the top portion of an agitator post **10**, of conventional design and forming no part of the present invention, is shown with the dispensing device mounted thereon.

The dispensing device includes a substantially cylindrical cup or container **12** into which the additive charge of water or fabric softener solution is inserted. The container is provided with an aperture **14** in the sidewall, such aperture being positioned against the agitator member in the vertical additive-retaining position shown in FIG. **1**. Additionally, the top of the annular sidewall is tapered slightly downwardly with respect to a plane transverse to the longitudinal axis of the container, as shown at **16** in FIG. **1**, and is covered and sealed by cap **17** to prevent loss of charge or dilution of the same during agitator oscillation. As an alternative structural form to prevent loss of charge during oscillation, the container may be provided with a longitudinal internal baffle or partition to divide the volume of the container into smaller chambers, thereby to minimize splashing of the additive solution. A container measuring 2 inches deep and 1½ inches in diameter has been found to be particularly well adapted to the additive dispensing function, although, of course, other sized or shaped containers may likewise be employed.

The container **12** is mounted to agitator **10** by an elastic band or strap **18** that extends around the agitator. At its free ends, the elastic strap **18** is joined at **20** to opposite sides of the container sidewall in such manner as to pivotally suspend container **12** from agitator **10** as shown in FIG. **1**. Alternatively, elastic strap **18** could be an endless loop extending around the agitator **10** and through the top portion of container **12**. A nonelastic limiting cord **22** likewise extends around agitator post **10** and is connected at its free ends to the container **12** at **20**. Limiting cord **22** is longer than elastic strap **18** in the relatively unstretched FIG. **1** and FIG. **3** positions of the latter; therefore, slack loops **24** are formed in the limiting cord by clips **25** encircling both strap **18** and cord **22**, such clips additionally acting to position the limiting cord on the agitator post.

In operation, the additive charge is placed in the container, and the dispenser device is positioned in its additive-retaining vertical position of FIG. **1** by stretching elastic strap **18** around agitator post **10**. The contents of the container are sealed against either dilution or loss during the washing cycle by cap **17** and the positioning of aperture **14** against the agitator post. During the agitator spin centrifugal force causes the container **12** to move radially outwardly as shown by arrow **25** in FIG. **2** and to swing to a substantially horizontal position after clearance is obtained from the agitator. The radial outward movement of the container **12** is permitted to a limited extent by both slack loops **24** in limiting cord **22** and extension of elastic strap **18** by stretching. The non-elastic limiting cord **22** upon becoming taut, as shown in FIG. **2**, precludes further stretching of strap **18** and limits the distance between top **17** of container **12** and agitator post **10**. The centrifugal force developed by the agitator spinning at between 500 and 600 rpm is sufficient to keep the additive charge in the bottom of container **12** during spin, thereby to preclude the dispensing of any additive from aperture **14** during the spin cycle.

Upon completion of the spin cycle, the elastic strap **18** contracts, due to the propensity to return to its normal configuration, and draws the top **16** of container **12** against the agitator post. The limiting cord by establishing the maximum distance between the container and agitator insures that the top **16** will be urged against the agitator before the container may pivot out of its horizontal additive-dispensing position. Slanted top **16** acts to hold the container **12** in a slightly inclined position, as shown in FIG. **3**, such position promoting the flow of the additive solution from the container as shown by arrow **26**.

Referring now to FIGS. 4–6, a second embodiment of the invention, applying the same general principle of using centrifugal force to pivot a container to additive-dispensing position, is shown in association with a conventional agitator post 10. A bracket member 30 is attached to agitator 10 by two elastic or adjustable plastic retaining straps 32, although any number of retaining straps might be used. The bracket consists of an elongate vertically disposed section 34 and two laterally spaced, outwardly extending arms 36. A pivot pin 38 extends between arms 36 and passes through container 40, thereby pivotally to suspend such container.

The container 40 is generally cylindrical in shape and has an open top through which the additive charge may be poured. The open top of container 40 is covered in its vertical or upright additive-retaining position by circular plate 42, which is pivotally connected to bracket section 34 by hinge plate 44. A leaf spring 46 is likewise connected to the top portion of bracket section 34 and extends downwardly and outwardly therefrom. The spring 46 is selected to be of a strength or rigidity slightly to bow as shown in FIG. 5 when the container has the additive charge placed therein, thereby to allow the container to maintain its vertical or upright position.

It will be appreciated that the cup attaching mechanism of the second embodiment could be built as a part of or fixedly connected to the agitator post. For example, the arms 36 could be made as an integral extension of the agitator member, with the cover 42 and leaf spring 46 being connected directly to such member.

In operation, the container 40 will pivot about pin 38 during the agitator spin cycle due to centrifugal force. Such pivoting of the container will move the same to a substantially horizontal additive-dispensing position as shown in FIG. 6, with the cover 42 pivoting upwardly and away from the top of container 40 to allow such movement. The spring 46 will flex and extend across a portion of the container top, thereby to maintain the same in a slightly inclined position and to provide an opening for the container around the spring edges. As in the first embodiment, the centrifugal force developed by the agitator spin is sufficient to keep the solution against the bottom of the container, thereby to preclude premature dispensing of the additive. After the spin cycle has been completed, the additive solution will pass downwardly along the side of the container and be discharged into the washing basket through the top opening.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a clothes washer having a washing basket and an agitator member, an additive dispenser comprising a container having an aperture therein, said container being pivotally suspended from the agitator member to spin with the same in such a manner as to swing from a substantially vertical additive-retaining position to a substantially horizontal additive-dispensing position in response to centrifugal force developed by spinning of said agitator member, and resilient means associated with said agitator member operative to maintain said container in its additive-dispensing position after said agitator member completes its spin, thereby to allow said additives to be discharged through said opening into said basket.

2. A dispenser as set forth in claim 1, wherein said resilient means comprises an elastic strap that extends around the agitator member and is connected to opposite sides of the container to form the pivotal connection, said elastic strap stretching during agitator spin to allow the container to swing to a substantially horizontal position and contracting after agitator spin to draw the top of the container against the agitator to maintain the container in its additive-dispensing position.

3. A dispenser as set forth in claim 2, further including a non-elastic limiting cord that likewise extends around the agitator member and is connected to opposite walls of the container at substantially the same location as the elastic member, said limiting cord being of predetermined length to be slack while said container is in its additive-retaining position and to be taut when said container is in its additive-dispensing position during spin, thereby to limit the extent to which the elastic member stretches during spin so that after spin the top of said container will be brought against the agitator member by the contraction of the elastic member before the container pivots from its additive-dispensing position. position.

4. A dispenser as set forth in claim 3, wherein prior to agitator spin, the elastic strap urges a side of the container against the agitator to hold the container in its substantially vertical additive-retaining position, said container having the aperture in the side wall thereof, with such aperture being positioned against the agitator, thereby to preclude entry of water into the container.

5. A dispenser as set forth in claim 3, wherein the top of the container is tapered with respect to a plane transverse to the longitudinal axis of the container, so that when the top of the container is against the agitator, the container is inclined slightly upwardly away from the agitator to promote additive flow to the aperture.

6. A dispenser as set forth in claim 1, wherein said container is pivotally suspended from the agitator member by a bracket connected thereto having a pivot pin passing through opposite walls of the container.

7. A dispenser as set forth in claim 6, wherein the opening in the container is in the top wall thereof, the opening being covered in the additive-retaining position of the container by a cover plate pivotally connected to the bracket, said cover plate being adapted to pivot away from the top when the container is in the additive-dispensing position.

8. A dispenser as set forth in claim 7, wherein said resilient means comprises a leaf spring depending from said bracket, said leaf spring being adapted to extend across a portion of the top of said container when in its additive-dispensing position, thereby resiliently to maintain the same in such position and to allow the additive to be dispensed from the uncovered portions of the top opening after spin.

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