

- [54] **LAUNDRY ADDITIVE DISPENSER**
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- [73] **Assignee: General Electric Company, Louisville, Ky.**
- [22] **Filed: June 14, 1974**
- [21] **Appl. No.: 479,288**

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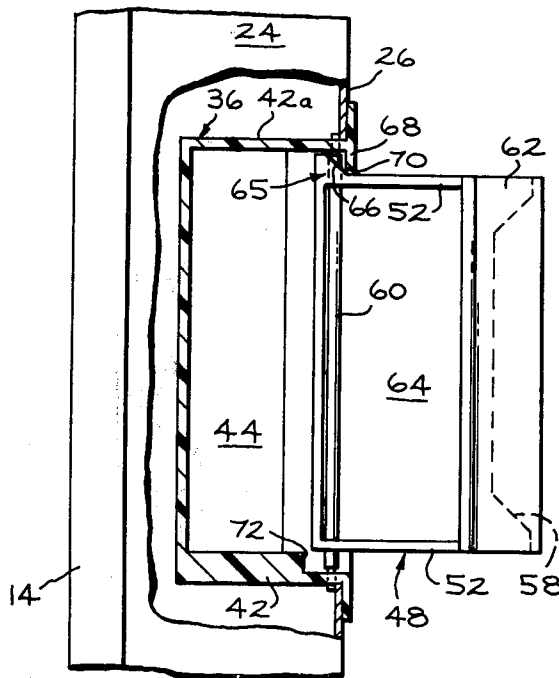
- [52] **U.S. Cl.**..... 222/166; 68/17 R
- [51] **Int. Cl.²**..... D06F 39/02
- [58] **Field of Search** 68/17 R; 222/166; 68/210; 214/314, 318; 221/90

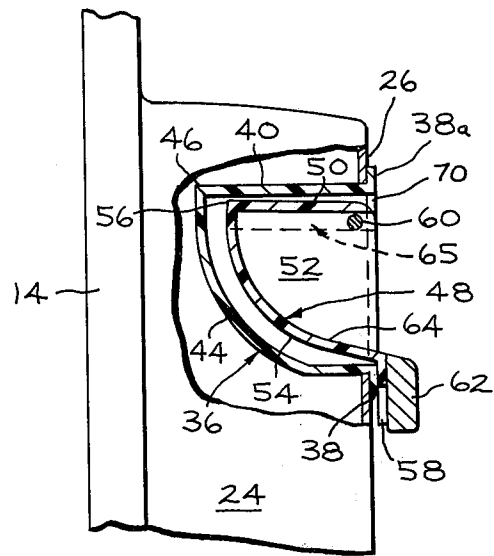
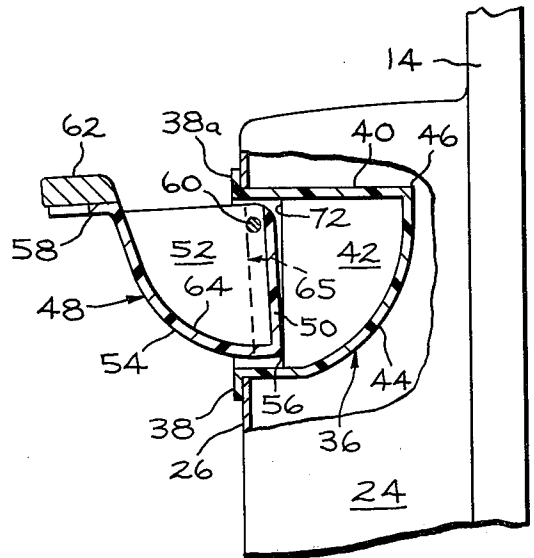
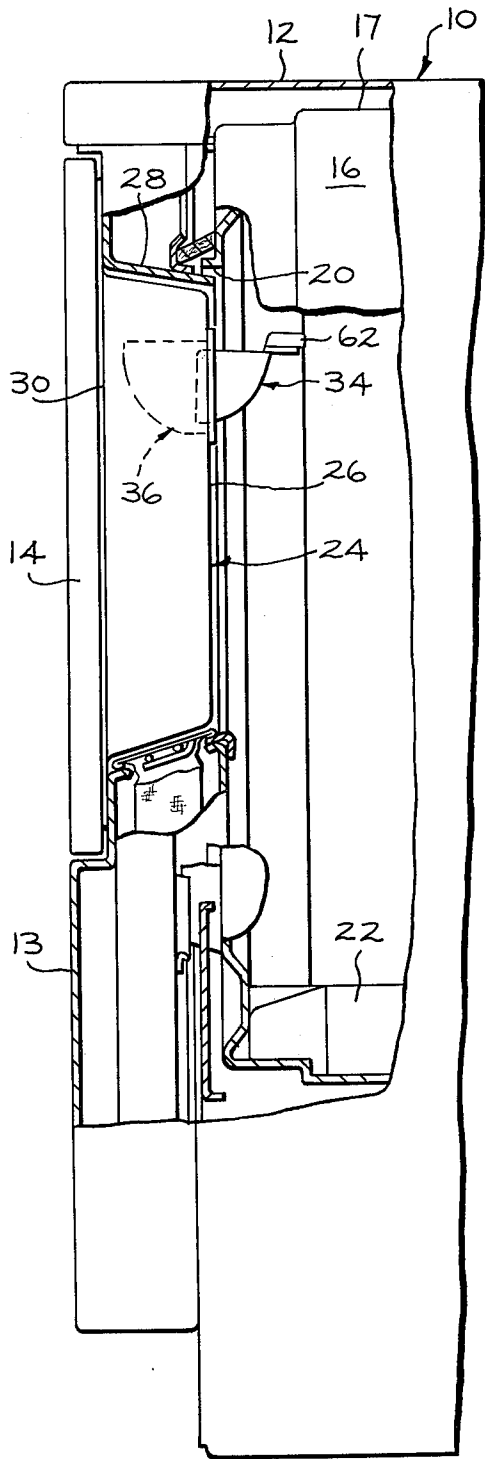
[57] **ABSTRACT**

A dispenser for laundry additive materials. The dispenser has a recessed member secured to a non-rotating internal member of a laundry machine of the horizontal axis drum type and a container pivotally movable from a first position to an elevated second position and dimensioned to be receivable in the recessed member. The container is movable in both directions along its pivotal axis and when the container is moved from the first position to the second elevated position the container is moved laterally and support means operate to maintain the container in an elevated position. When clothes are tumbled within the drum they strike the container causing it to move along its pivotal axis, disengage its support means and pivot downwardly to the first position to dump the additive material into the interior of the rotatable drum.

- [56] **References Cited**
- UNITED STATES PATENTS**
- 2,709,536 5/1955 Yeager..... 222/166
- 3,160,319 12/1964 Patzelt et al. 222/166 X
- 3,333,739 8/1967 Clearman et al. 68/17 R X
- 3,556,343 1/1971 Ungerman 221/90

11 Claims, 7 Drawing Figures





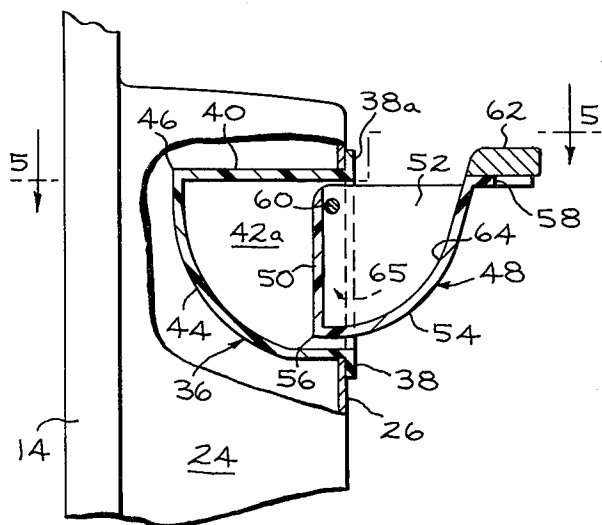


FIG. 4

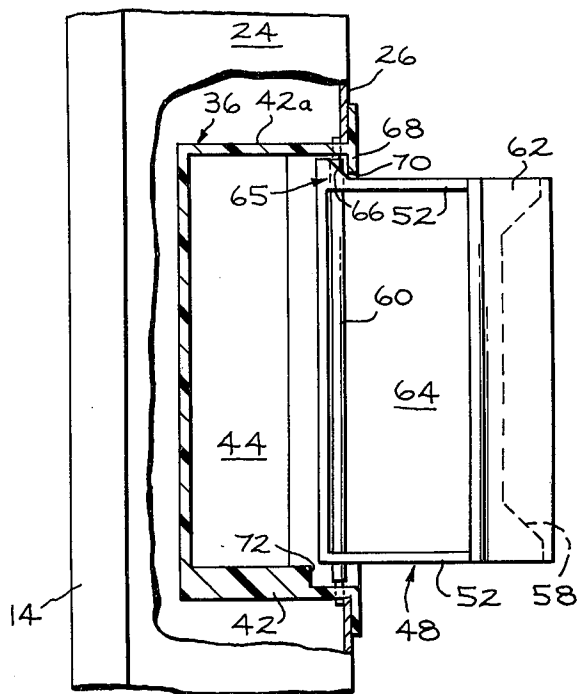


FIG. 5

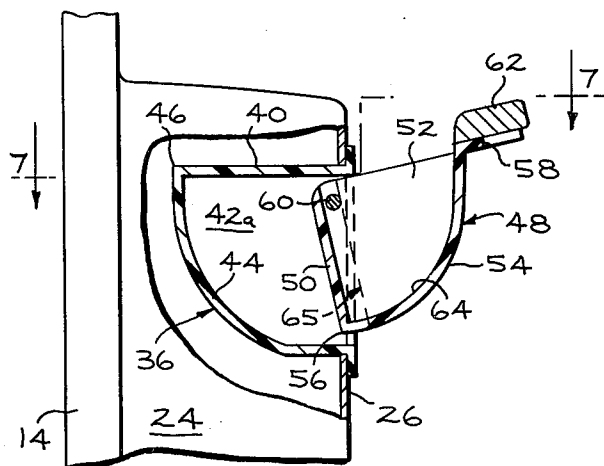


FIG. 6

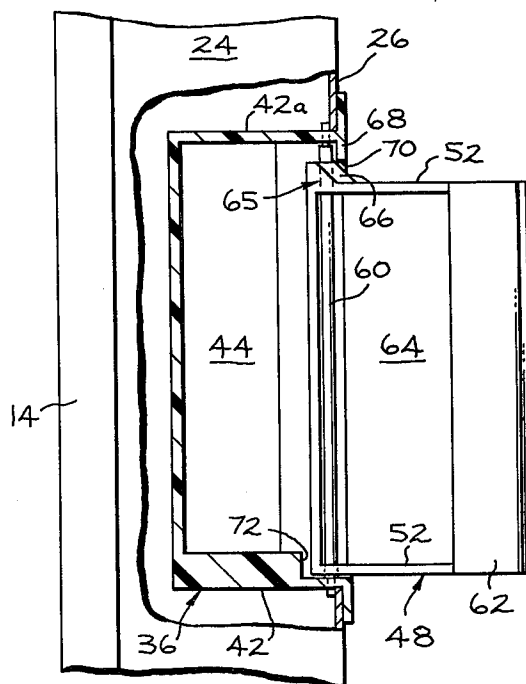


FIG. 7

LAUNDRY ADDITIVE DISPENSER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a dispenser for laundry additive materials, and more particularly to such a dispenser that may be utilized in a laundry machine of the horizontal axis rotatable drum type.

2. Description of the Prior Art

Automatic dispensers for laundry additives such as detergent, water softening agents, fabric conditioning agents, etc., are well known. Dispensers are also utilized in other types of appliances, such as automatic dishwashers, for dispensing additive materials to enhance the washing and drying capabilities of these machines.

In the case of laundry machines, specifically automatic clothes washers, most of the dispensers have been utilized in machines having a vertical agitator assembly. One such automatic clothes washing machine is shown in U.S. Pat. No. 3,513,866, assigned to the same assignee as the present invention, wherein the laundry additive may be placed in a receptacle and the additive subsequently flushed out of the container by a flow of fluid through the receptacle and thereby dispensed into the clothes being washed. In the case of automatic dishwashers one type of additive dispenser is shown in U.S. Pat. No. 2,969,072 wherein compartments are filled with the additive and upon initiation of the wash stage water flows into the machine and in doing so flushes the detergent from the compartment. At this time water fills another container causing the dispensing device to pivot and then subsequently when the water is drained thereby reducing its weight the dispenser again pivots releasing the detergent into the machine.

Another dispenser is shown in U.S. Pat. No. 3,333,739 wherein an additive container is disclosed having an inlet and outlet chamber which swings into position and allows the detergent or additive to be flushed by a water inlet stream. Rotation of the container is effected by a water stream. Other dispenser arrangements are shown in U.S. Pat. Nos. 3,268,120 and 3,127,067 that use centrifugal action and a water stream, respectively, to discharge the additive material.

The difficulty with the prior art dispensers is that they are not completely suitable for use in laundry machines that utilize a horizontal axis type rotatable drum. Laundry machines of this type are automatic clothes dryers wherein clothes are tumbled by the rotating drum to effect drying and also some types of automatic washing machines. One such horizontal axis drum type washing machine is a combination washer-dryer wherein washing, extraction, and drying operations are performed. The clothes to be washed or dried are placed in the rotating drum and in the case of washing, liquid is introduced into the drum and after the clothes are saturated negative or vacuum pressure is utilized to withdraw the liquid from the drum during the wash operation. When the wash operation is complete then the introduction of liquid into the drum is discontinued but the vacuum pressure continues. In these horizontal axis rotatable drum type machines, one of the difficulties is to provide a dispenser that will effectively dispense additive material to the interior of the drum after the machine is in operation. It is desirable to be able to have a dispenser

for such a laundry machine that is efficient in operation and low in manufacturing cost.

SUMMARY OF THE INVENTION

There is provided in a laundry machine having a horizontal axis rotatable drum a dispenser for dispensing additive laundry material into the interior of the drum. A recessed member is secured to a non-rotating internal member of the laundry machine and a container pivotably movable from a first position to an elevated second position is dimensioned to be receivable in the recessed member. The container is movable in both directions along its pivotal axis. Means are provided for moving the container along its pivotal axis when the container is moved from the first position to the elevated second position and when in the second position support means is operative to maintain the container in an elevated position. When the machine starts operation and clothes are tumbled within the drum the tumbling clothes strike the elevated container thereby causing it to move along its pivotal axis and disengage the support means thereby allowing the container to pivot to the first position and dump the additive material into the interior of the rotatable drum.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic, side elevational view of a horizontal axis drum type laundry machine including the dispenser, the view being partly broken away and partly in section to illustrate details of the machine.

FIG. 2 is an enlarged fragmentary side plan view of the dispenser in position for loading, partly broken away and partly in section for illustration.

FIG. 3 is a similar view to FIG. 2 showing the dispenser in its dumping position.

FIG. 4 is an enlarged, fragmentary side plan view of the dispenser in an elevated position.

FIG. 5 is a top plan view of the dispenser taken along lines 5-5 of FIG. 4.

FIG. 6 is an enlarged, fragmentary side plan view showing the dispenser container in its uppermost elevated position.

FIG. 7 is a top plan view of the dispenser taken along lines 7-7 of FIG. 6.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings and particularly to FIG. 1 thereof, there is illustrated a laundry machine 10 including an appearance and protective outer cabinet 12 having an access door 14 which is hinged secured to the front wall 13 of the cabinet 12. Within cabinet 12 there is provided a clothes tumbling container or drum 16 mounted for rotation about a horizontal central axis. Drum 16 is cylindrical in shape with a cylindrical side wall 17 and a circular front drum portion 18 that has a circular access opening 20. On the interior surface of cylindrical side wall 17 of the drum 16 there is a plurality of clothes tumbling ribs or baffles 22 so that the clothes are lifted up when the drum rotates and then permitted to tumble back down to the bottom of the drum. The access opening 20 of the drum is substantially closed by means of a bulkhead secured to the door generally indicated by the numeral 24. Bulkhead 24 is made up of a number of members including the inner wall 26 of the access door 14, a stationary frame 28 formed as a flange on front wall 13 of the cabinet

and a front door liner 30. It should be noted that the inner wall 26 of the bulkhead is a stationary member relative to the rotatable drum 16 and is located in the access opening 20.

Where the laundry machine is an automatic clothes dryer, an air outlet from the drum would also have to be provided. In this case, the air outlet from the drum would be provided by a perforated opening at the bottom of the inner wall 26 of the bulkhead 24 and then a passageway through the bulkhead downwardly through suitable ducts. That air could then either be exhausted from the machine or passed through a condenser unit that removes the moisture from the air and the air returned back through the clothes dryer system.

The dispenser assembly 34 is located in a stationary member of the machine, such as the bulkhead 24, and specifically on the inner wall 26 so that it is in direct communication with the interior of the drum 16. With reference to FIGS. 2 and 3, the dispenser assembly 34 comprises a recessed member 36 that is hollow and fits into the bulkhead 24 and is secured thereto by any suitable means such as by flanges 38 and 38a affixed to inner wall 26 of the bulkhead. It will be noted that the top wall 40 and the side walls 42 and 42a of recessed door member 36 are flat while the rear wall 44 is curved and extends from the back of the top wall 40 to the front of the recessed door member where it joins flange 38. The dispenser assembly 34 also includes a container member 48 which is open at the top and is of the same shape but slightly smaller than the recessed door member 36 so that it may be received therein. Specifically, the rear wall 50 of the container member 48 and the side walls 52 are flat while the front wall 54 is curved from the bottom 56 of rear wall 50 and extends upwardly and outwardly therefrom terminating at and joining a right angle, outwardly extending flange 58. The container member 48 is pivotally fixed as by a pin 60 through the side walls 52 so that the container member 48 may pivot when acted on by gravity force about the pin 60 and be received within the recessed member 36. To assist in pivoting the container member into the recessed door member there may be affixed to the flange 58 an added weight 62.

FIG. 3 shows the container member 48 in its down or first position wherein it has pivoted and been received within recessed member 36. FIG. 2 shows the container member 48 in its elevated second position ready for receiving laundry additive material, such as detergent, into the open receptacle formed by the walls.

Turning now to FIGS. 4-7 the operation of positioning the container member for loading it with laundry additive material will be described. The container member 48 is raised from its first position as shown in FIG. 3 to the position shown in FIG. 4 by the machine operator manually pivoting the container by gripping the flange 58 and raising the container member 48 thus pivoting the container member 48 about pin 60 in a counter-clockwise direction as viewed in FIG. 3. When the container member 48 pivots to the position shown in FIG. 4, wherein the top wall 40 of the recessed door member 36 and flange 58 of the container member 48 are in the same horizontal plane the top plan view of the relative position of the components of the dispenser is shown in FIG. 5. When the flange 58 is moved above the plane of top wall 40, the side walls 52 of the container member 48 will abut the top wall 40 and any further upward movement is prevented. This position of

the container member 48 is shown in FIG. 6. During the distance moved by the container member 48 above the plane of the top wall 40 of the recessed member 36 from that in FIG. 4 to that in FIG. 6 a camming action is performed to effect lateral movement of the container member 48 along its pivotal axis. The camming action is provided by a cam element 65 having cam surface 66 which is formed as part of the side wall 52 of the container member 48. This cam surface 66 contacts an inwardly turned flange 68 formed as part of the recessed member 36. When cam surface 66 comes in contact with terminal end 70 of the inwardly turned flange 68 and upward movement of the finger gripping flange 58 is continued the entire container member 48 is forced to move laterally along pin 60 which is the pivotal axis of the container member 48 and assume the position shown in FIG. 7. When the machine operator releases the finger gripping flange 58 from the position shown in FIG. 5, the container member 48 will tend to pivot downwardly about pin 60, however, since the container has been moved to a position in front of a stop member in the form of a shoulder 72 which is vertically disposed in side wall 42 of the recessed member 36 the back wall thereof will rest against vertical shoulder 72 and any further downward movement is thereby prevented. This position is shown in FIG. 2. The container member 48 is now ready for the machine operator to deposit the desired laundry additive material, which may be in liquid or granular form, into the open container member 48. Thereafter the access door that includes the bulkhead 24 is closed carrying with it the attached dispenser assembly 34 and the laundry machine set into operation. When the drum 16 is rotated and clothes are tumbled therein it is the tumbling action of the clothes that will come in contact with the inwardly extending container member 48 so that they will strike the container member and force it to be moved laterally along its pivotal axis, pin 60, to a point where the rear wall of the container member will be urged inwardly beyond the shoulder 72. When that happens the container member will pivot downwardly by gravity assisted by the weight 62 thereby causing the additive material within the container member 48 to be dumped and fall out and into the interior of the drum 16. It will be noted that flange 58 of container member 48 will strike flange 38 of the recessed member 36 and be retained in a position for the operator to grip it when need be. When the laundry operation is complete and a new load is to be treated then the above-described dispenser operation is again followed.

While the preferred embodiment of the dispenser 34 described above and shown in the drawings has the cam element 65 on the container member 48 and the flange 68 that contacts the cam surface 66 is on the recessed member 36, these respective elements or components may, of course, be reversely located and still provide the desired lateral movement of the container along its pivotal axis by their cooperative operation. Also, the stop member that prevents downward movement of the container member 48 in elevated second position may be located differently and provide the same desirable function.

It is, of course, desirable for the efficient operation of the dispenser to have it positioned such that the side of the dispenser having the supporting shoulder 72 is toward the direction that the clothes are more apt to

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force the container member to be disengaged from the shoulder 72.

The foregoing is a description of the preferred embodiment of the invention and variations may be made thereto without departing from the true spirit of the invention, as defined in the appended claims.

What is claimed is:

1. A dispenser for an automatic laundry machine having a horizontal axis rotatable drum for tumbling clothes comprising:

- a. a container pivotally secured to a stationary member of the laundry machine and movable about an axis from a first position to an elevated second position and movable along its pivotal axis,
- b. means for moving the container along its pivotal axis when moved from the first position to the elevated second position,
- c. means operative to support the container when it is in the elevated second position, and
- d. means including the tumbling clothes adapted to move the container along its pivotal axis to disengage said support means and allow the container to pivot to said first position.

2. The dispenser of claim 1 wherein the container has a curved bottom wall extending from the rear wall to the front of the container.

3. The dispenser of claim 1 wherein the means for moving the container along its pivotal axis is a cam element that forces the container to move when the container is raised from the first position to the elevated second position.

4. The dispenser of claim 1 wherein the stationary member is an access door bulkhead.

5. The dispenser of claim 2 wherein the container in the first position is received in a recessed member

which is of the same shape and slightly larger than the container.

6. The dispenser of claim 2 wherein the curved bottom wall joins an outwardly extending lifting flange at the front of the container.

7. The dispenser of claim 6 wherein the outwardly extending lifting flange has secured thereto an added weight.

8. The dispenser of claim 5 wherein the means to support the container is a stop member on the recessed member that supports the container only when in the elevated second position.

9. A dispenser for an automatic laundry machine having a horizontal axis rotatable drum for tumbling clothes comprising:

- a. a container pivotally secured to a stationary member of the laundry machine and movable about an axis from a first position to an elevated second position and movable along its pivotal axis,
- b. means for moving the container along its pivotal axis including a cam element that forces the container to move when the container is raised from the first position to the elevated second position,
- c. means operative to support the container when it is in the elevated second position, and
- d. means to move the container along its pivotal axis to disengage said support means and allow the container to pivot to said first position.

10. The dispenser of claim 9 wherein the cam element is on the container.

11. The dispenser of claim 9 wherein the means to move the container along its pivotal axis to disengage said support means and allow the container to pivot to said first position includes the tumbling clothes.

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