United States Patent [19]

Bullock

[11] **3,805,561**

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[54] **GARMENT FINISHING APPARATUS**

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[73] Assignee: **W. M. Cissell Manufacturing Company**, Louisville, Ky.

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[52] **U.S. Cl.** ..... **68/5 C**, 68/12 R

[51] **Int. Cl.** **D06c 1/100**

[58] **Field of Search** ..... 68/5 R, 5 C, 6, 12 R

[56] **References Cited**

UNITED STATES PATENTS

3,049,903	8/1962	Sussman	68/5 C
3,513,669	5/1970	Nirenberg	68/5 C
3,696,523	10/1972	Beeley et al.	68/5 C
3,712,086	1/1973	Payet et al.	68/5 C

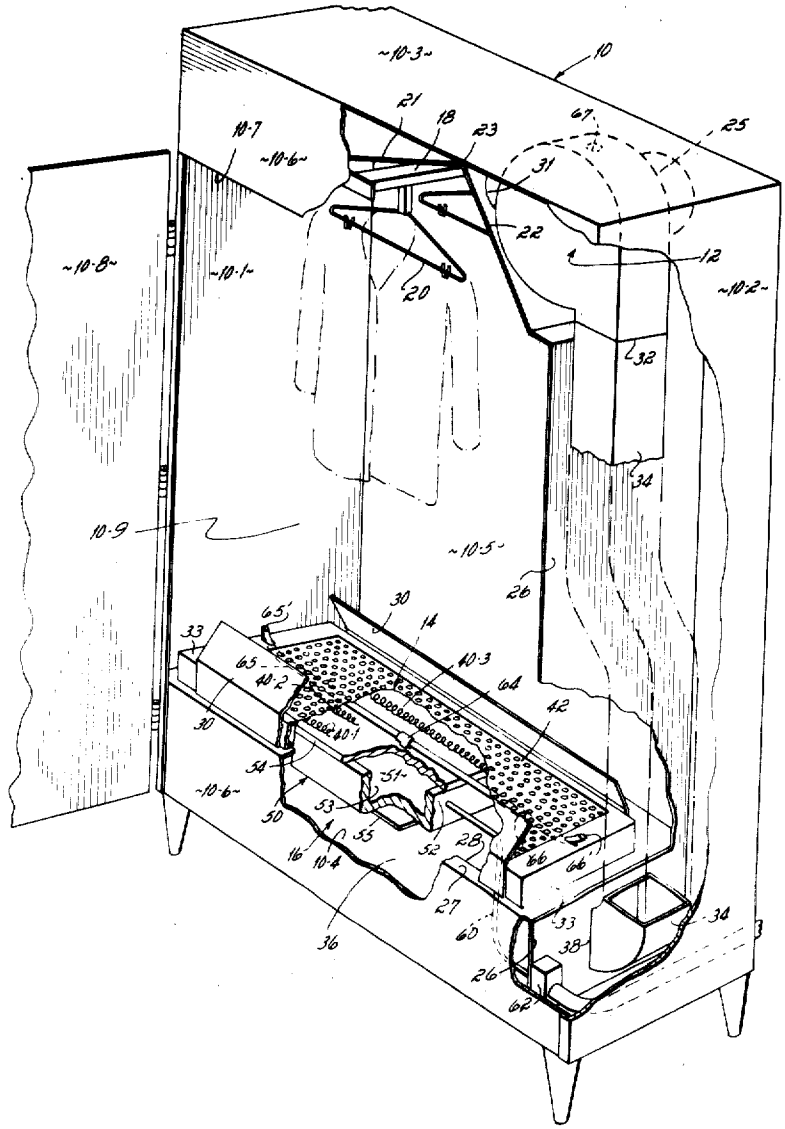
Primary Examiner—William I. Price

Attorney, Agent, or Firm—Wood, Herron & Evans

[57] **ABSTRACT**

A garment finishing apparatus for dewrinkling clothes including a cabinet into the interior of which clothes to be finished are placed via a door, a steam generator for converting water into steam which is then emitted into the interior of the cabinet for dewrinkling the clothes, the steam generator being characterized by instantaneously converting the water into steam and generating a predetermined quantity of steam per garment refinishing cycle irrespective of the pressure at which the water is supplied to the steam generator, and air circulating and heating means for recirculating hot air through the interior of the cabinet to dry the previously steamed clothes.

6 Claims, 2 Drawing Figures



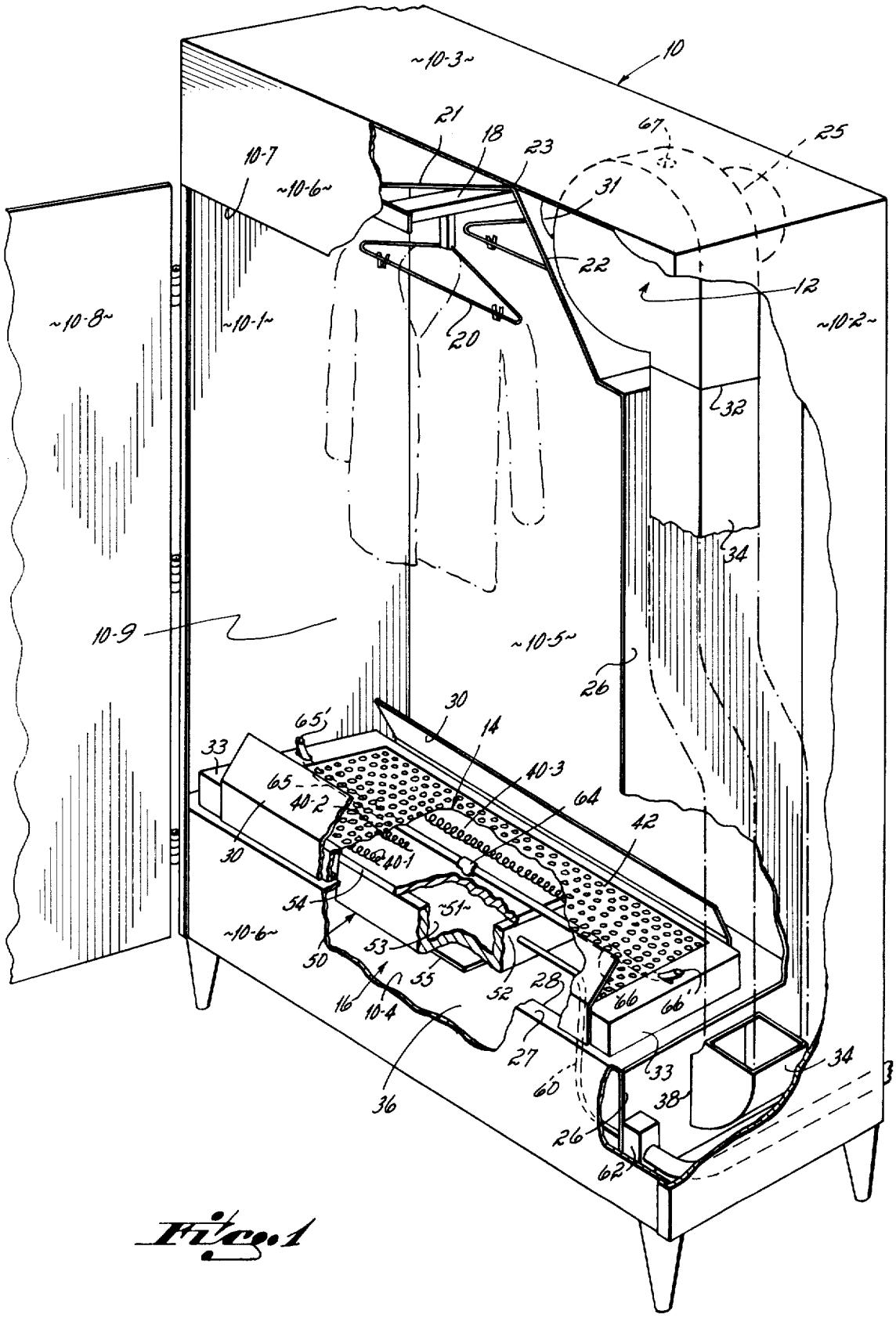

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Fig. 1

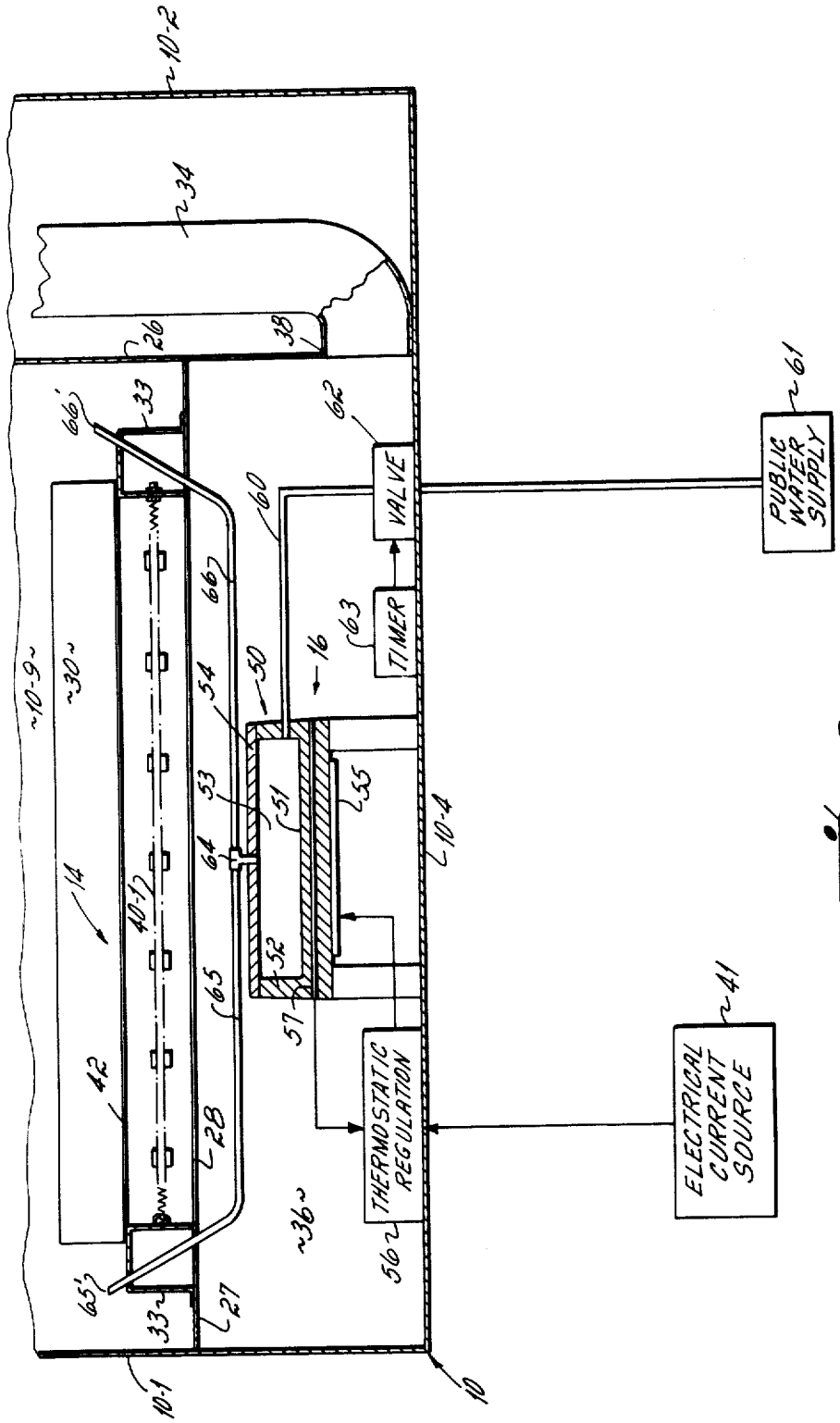
VALVE
TIMER
PUBLIC WATER SUPPLY
THERMOSTATIC REGULATION
ELECTRICAL CURRENT SOURCE

Fig. 2

TREATING AGENT DISPENSER

BACKGROUND OF THE INVENTION

The present invention relates to automatic clothes washing machines that proceed through a sequence of operation in order to wash and spin dry clothes. The sequence ordinarily includes a wash operation, a liquid extraction operation, a rinse operation, and a final extraction operation. Prior art machines have been provided with a second or optional wash cycle. In machines equipped with the optional wash cycles, provision has been made, as in U.S. Pat. No. 3,248,912 to John Bochan assigned to General Electric, assignee of the present invention, to insert a treating agent such as soap or detergent automatically during this second or subsequent wash. Prior art, as in U.S. Pat. No. 3,127,067-Hall et al shows a lid mounted single compartment dispenser that may be filled with treating agent when the lid is in its open position and the agent may then be flushed out of the dispenser after the lid is closed by a flow of water initiated in accordance with the requirements of the machine operation.

It is an object of this invention to provide a new and improved treating agent dispenser for an automatic washing machine which includes a novel arrangement for placing the treating agent in the dispenser and for discharging the treating agent during a second or subsequent wash operation.

SUMMARY OF THE INVENTION

By this invention, there is provided a treating agent dispenser that is removably mounted on the access lid of the washing machine. The dispenser is provided with a hinged cover which is located on the top of the dispenser when the access lid is in the open position, so that a treating agent may be placed therein. The inner surface of the cover becomes the bottom wall of the dispenser when the machine access lid is in the closed position. The dispenser ingress opening is located near the top of the dispenser when the access lid is in the open position so as to be located in a plane generally with the inner surface of the egress opening so that treating agent placed in the dispenser locates on the inner surface of the cover when the access lid is closed and is in the path of the flow of water entering the ingress opening.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plane view of an automatic fabric washing machine incorporating one embodiment of the invention, with parts broken away to show certain details;

FIG. 2 is an enlarged, fragmentary side elevational view taken along lines 2—2 in FIG. 1;

FIG. 3 is a perspective view of the dispenser of the present invention shown positioned to be mounted on the washing machine access lid;

FIG. 4 is a perspective view of the dispenser with parts broken away to show the interior;

FIG. 5 is a bottom view of the dispenser;

FIG. 6 is an end view of the dispenser taken along line 6—6 of FIG. 1 showing the machine lid in the open position;

FIG. 7 is an enlarged, fragmentary, side elevational view taken along line 7—7 of FIG. 1 showing the diverter gate in the closed position; and

FIG. 8 is a view similar to FIG. 7 showing the diverter gate in an open position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, there is shown therein an agitator type clothes washing machine 10 having a clothes basket 11 disposed within an outer imperforate tub 12. The tub 12 is mounted within an appearance cabinet 13 which includes an access lid or cover 14 hinged at 16 for providing access to the clothes basket 11. In the machine shown in the present invention the lid 14 rotates substantially 180° from an open to a closed position. At the center of the basket there is positioned a vertical axis agitator 17. The details of construction of such an automatic washing machine are further disclosed in hereinbefore mentioned U.S. Pat. No. 3,248,912 to John Bochan.

The liquid to be supplied to the basket 11 for collection in the outer tub 12 for washing clothes is supplied through a liquid water inlet body 18. The water inlet body 18 communicates with the inlet of a diverter 19 which is provided with two outlet channels 21 and 22. Channel 21 is provided with a downwardly directed opening 23 which is disposed to normally direct a stream of fluid tangentially along the surface of a filter ring 24 arranged over the basket 11, while the channel 22 terminates at an outlet 26. The outlet 26 is disposed to communicate with an inlet opening 27 of the dispenser 28 which incorporates one embodiment of the dispensing system of the present invention. The diverter 19 and its operation for diverting fluid from outlet 23 to outlet 26 will hereinafter be described in detail. Mounted on the cabinet 13 is a control compartment in which are located control devices, including a conventional cycle controller 30 which conducts the washing machine and the diverter 19 through a cycle of operations.

Referring now to FIGS. 1–3 and more particularly to FIG. 3, it will be seen that the dispenser 28 is removably supported on the undersurface of the access lid 14 by a mounting member 29. The mounting member 29 is secured to the access lid 14 by the same fastening means used to secure the hinges 16 to the lid 14. The member 29 is provided with a recess portion 31 and side walls 32 and 33. In order to facilitate the insertion or the removal of the dispenser 28 from the member 29, the walls 32 and 33 are provided with grooves 34 adjacent the bottom wall of the recess 31.

The dispenser 28 is provided with projections or rails 36 which are dimensioned to slidably engage the grooves 34 to guide the dispenser 28 into or out of the recess 31 of the member 29. Latching means are provided in the present embodiment to properly locate the inlet 27 of the dispenser relative to the outlet 26 and to prevent the force of water entering the opening 27 from dislodging the dispenser from the mounting member 29. Accordingly, notches 37 are located on the side walls 32 and 33 near the open end of the recess 31. A pair of projections 38 are formed on the side walls of the dispenser 28 to engage the notches 37 when the dispenser is properly located in the recess 31. The dispenser, as viewed in FIGS. 3 and 4, is positioned so that a treating agent may be inserted into a chamber 39 formed therein. The chamber 39 is positioned in one corner of the dispenser 28 so as to provide a distribution or manifold area 41 (FIG. 5) around two sides of

walls 42 and 43 of the chamber 39. As seen in FIG. 4, sides 42 and 43 are provided with inlet openings 44 located along the upper edges adjacent the top of the dispenser 28. The ingress opening 27 is located on the dispenser front wall along the upper edge adjacent the top of the dispenser so as to be in substantially the same plane as the openings 44 (FIG. 2) in chamber walls 42 and 43. Access to the chamber 39 is provided by a cover 46 (FIG. 3) which has a hinge portion 47 along the rear outer wall which is formed integral with the dispenser body 28. A latch 48 formed integral with the dispenser 28 is provided for holding the cover 46 in a closed position. The cover 46 is formed with raised side walls 49 along three of its sides that engage the top surface of the dispenser 28. The open end of the cover 46 forms one side of an egress opening 51 as viewed in FIG. 6. The cover, as seen in FIG. 5, extends beyond the dispenser body so as to provide a lip or spout 52.

With the dispenser 28 secured to the mounting member 29 and the chamber 39 containing the treating agent to be dispensed, the cover 46 is latched and the lid 14 rotated substantially 180° to its closed position as shown in FIGS. 1 and 2 to place the dispenser 28 over the basket 11. As indicated at 53 (FIG. 2), the treating agent locates on the inner surface of the cover 46 which, due to the 180° rotation of lid 14, now becomes the lower or bottom wall of the chamber 39. As mentioned hereinbefore, in this position the opening 27 in the dispenser wall is in alignment with the outlet 26 of the diverter 19. Due to the volume of the manifold area 41 and the dimension of the openings 44, the flow of water entering through the opening 27 will first tend to fill the area 41 before it is directed through the openings 44 and across the bottom or inner wall of cover 46 to flush the treating agent 53 through the opening 51 whenever water is diverted into the dispenser inlet 27. This arrangement insures that water will enter the compartment 39 through all of the openings 44 even in the event of low water pressure.

Means are provided in the present invention to effectively retain the treating agent in the dispenser and prevent its spilling out of the inlet opening 27 during rotation of the lid 14 to its closed position and in the event the lid 14 is rotated to its open position prematurely prior to the dispensing of the treating agent. To this end a segmented baffle or wall 54 is located in the manifold area 41 between the openings 44 on wall 43 and the inlet 27. The solid portions or segments 55 of the baffle 54 are located opposite the openings 44 of the wall 43. The slots or spaces 56 between segments 55 are arranged opposite the solid portions of wall 43 between the openings 44. As can easily be understood, with this arrangement any treating agent that may pass through the openings 44 during rotation of, or premature opening of the lid 14, will engage the segments 55 and thereby be prevented from spilling out of the opening 27. The slots 55 are dimensioned to allow water to pass through them while at the same time offer resistance to the passage of powdered treating agent. To further retain the treating agent in the dispenser in the event the lid 14 is rotated to its open position prior to the dispensing of the treating agent, the cover 46 is provided with ribs or baffles 57. The baffles 57 are notched to accommodate the outer wall of the dispenser so that they extend from a position within the chamber 39 through the opening 51 and terminate in the area of spout 52. The baffles 57 are angled to project upwardly through the opening 51 as the lid is rotated past a vertical position to form effective retaining walls that prevent the treating agent from spilling out of opening 51. The free ends of the walls 49 are provided with portions 58 (FIG. 3) that extend upwardly to complete the spout 52 and provide an area to contain any treating agent that may escape past the baffle 57.

According to the present invention, means are provided for diverting the normal flow of water to the tub 11 from outlet 23 to outlet 26 and into the dispenser.

Referring to FIGS. 1, 7 and 8, the flow control or diverter means includes a flapper or gate valve 59. The gate 59 is provided at its upper end with stub shafts which are pivotally mounted in the side walls of the diverter body 19. Formed on the end of one of the stub shafts is crank arm 61 which when rotated opens the normally closed gate 59. The crank arm 61 of the gate 59 is operated by an arm 62 which is pivotally arranged in the cabinet 13 of the machine to engage the arm 61. The arm 62 is actuated by a solenoid 63 which may be energized at predetermined times in a washing machine cycle to open gate 59 and allow water to flow through channel 22 and into the dispenser inlet 27 to flush the treating agent 52 out at the appropriate pre-selected time.

In operation, when it is determined that a second wash or a soak cycle is needed due to the condition of the clothes to be washed, the user of the machine, with the dispenser locked in the member 29, places treating agent into the chamber 39 and locks the cover 46. It can be understood that the treating agent may be inserted into the dispenser chamber 39 prior to its being placed into the holding member 29. This option is made available to the user because the latch member 48 holds the cover 46 in its closed position over the chamber 39, and the baffles 57 and the wall 54, under normal use and conditions, prevent the treating agent from falling out of the dispenser outlet 51.

In order to effectively soak the clothes in the basket 11, the user may place treating agent into the basket 11 to be mixed with the initial fill water. The user then closes the lid 14 which places the dispenser 28 in its operative position as shown in FIG. 2. It will be noted that the soak cycle may be extended over a period of up to 10 hours so that treating agent placed in the dispenser chamber 39, at the option of the user, may remain there for a considerable amount of time. At the preselected time, the machine will wash and spin out the water and proceed to the next fill cycle which will, in accordance with the present invention, energize solenoid 63 to divert water through channel 22 and into the dispenser inlet 27 to mix and flush the treating agent therein with the second wash fill water.

From the above description of the embodiment described hereinbefore, it is obvious that the dispenser may be divided into several chambers and the diverter may be provided with outlets communicating with each of the chambers so that treating agent may be dispensed automatically during the soak or first wash cycle and also during the subsequent wash operation of the machine.

While in accordance with the Patent Statutes there has been described what at present is considered to be the preferred embodiment of the invention, it will be obvious to those skilled in the art that various changes

and modifications may be made therein without departing from the invention and it is, therefore, the aim of the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A top loading automatic washing machine of the type having a tub to receive liquid and clothes to be washed and a lid hingedly mounted above said tub, treating agent dispenser system for said washing machine comprising:

means for removably mounting said treating agent dispenser on said lid;

said dispenser including a body forming a chamber for storing said treating agent, and having an ingress and an egress opening connecting with said chamber;

a cover means formed in said dispenser operable from a closed to an open position for access to said chamber to insert treating agent therein;

the inner surface of said cover means forming the bottom wall of said dispenser when said lid is closed and the dispenser is positioned over said tub;

said cover means being spaced from the dispenser body in its closed position to form the lower surface of said egress opening;

liquid supply means having a liquid outlet arranged for normally supplying liquid to said tub, and another liquid outlet positioned to communicate with said dispenser ingress opening when said lid and dispenser are rotated to the lid closed position;

diverter means in said liquid supply means operable at predetermined times in a machine cycle to divert liquid from said tub to said dispenser ingress opening and across said bottom wall for flushing out the treating agent stored in said chamber through said egress opening.

2. A top loading automatic washing machine according to claim 1 wherein said lid is rotatable substantially 180° from an open position to a closed position.

3. A top loading automatic washing machine according to claim 2 wherein said cover has a hinge portion formed integral with the dispenser body along one edge of said chamber and a latch means formed integral with said dispenser body on the opposite side of said chamber from said hinge portion for holding said cover in a closed position.

4. A top loading automatic washing machine according to claim 2 wherein inlet openings are provided in at least two walls of said chamber and a liquid distribution area located around said walls for distributing said liquid through said inlet openings.

5. A top loading automatic washing machine of the type having a tub to receive liquid and clothes to be washed, and an access lid hingedly mounted above said tub, said access lid being rotatable substantially 180° from an open position to a closed position, an improved treating agent dispenser system for said washing machine comprising:

means for removably mounting said treating agent dispenser on said access lid;

said dispenser including a body forming a chamber for storing said treating agent, and having an ingress and an egress opening connecting with said chamber;

said chamber, being located so as to provide a distribution area for receiving liquid from said ingress opening;

said chamber being provided with inlet opening communicating with said distribution area;

a cover means hinged along the outer edge of said second wall for access to said chamber when said access lid is in an open position, the inner surface of said cover means forming the bottom wall of said dispenser when said dispenser is positioned over said tub;

means on said cover for spacing said cover from the dispenser body in its closed position to form the lower surface of said egress opening;

liquid supply means having a liquid outlet means arranged for normally supplying liquid to said tub, and another liquid outlet means positioned to direct liquid into said dispenser ingress opening when said access lid and dispenser are rotated to the lid closed position;

baffle means in said distribution area between said ingress opening and said inlet openings in said first wall for preventing said treating agent to transfer from said inlet opening to said ingress opening during rotation of said lid;

diverter means operable at predetermined times in a machine cycle to divert liquid from said first liquid outlet to said second liquid outlet for directing liquid into said dispenser ingress opening and across said bottom wall for flushing out the treating agent stored in said chamber through said egress opening.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,805,561 Dated April 23, 1974

Inventor(s) Norman J. Bullock

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Cancel the original printed columns 1 through 6 and substitute the corrected columns 1 through 8, as shown on the attached sheet.

Signed and sealed this 10th day of September 1974.

(SEAL)
Attest:

McCOY M. GIBSON, JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334.