Aug. 14, 1962 M. B. LUCAS ETAL 3,048,993

DETERGENT DISPENSER FOR AUTOMATIC CLOTHES WASHING MACHINE

Filed Oct. 11, 1960 2 Sheets-Sheet 1

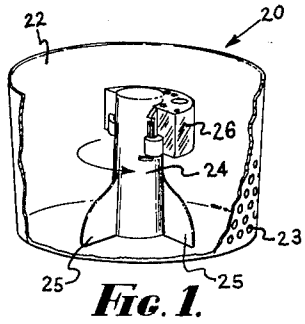


FIG. 1.

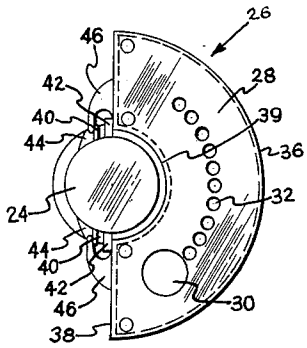


FIG 2

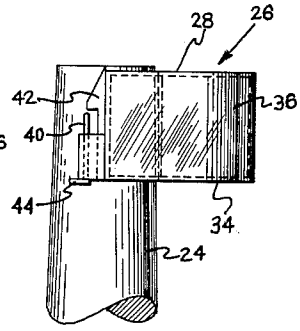


FIG. 3.

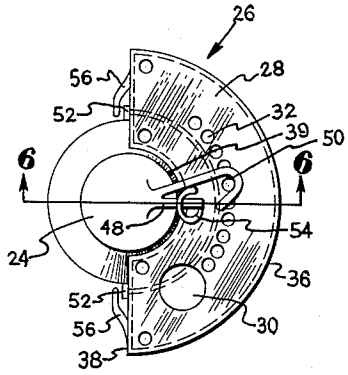


FIG. 5.

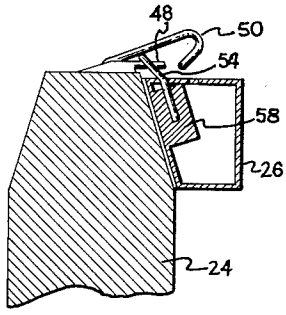


FIG. 6.

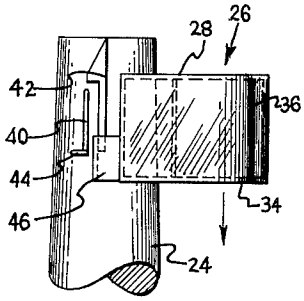


FIG. 4.

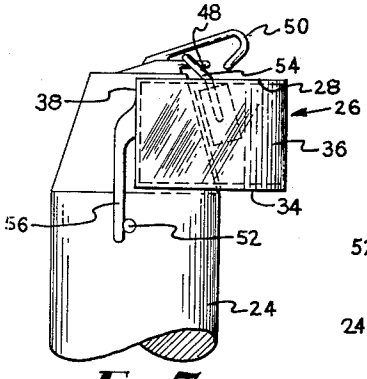


FIG. 7.

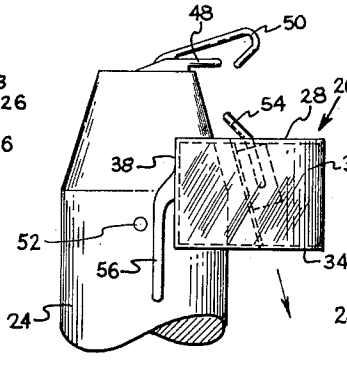


FIG. 8.

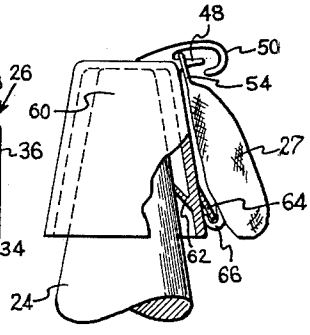


FIG. 9.

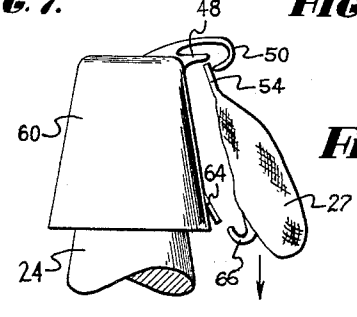


FIG. 10.

INVENTOR.
MALCOLM B. LUCAS
BY CHARLES W. HURST
Frederick H. Braun
ATTORNEYS.

Aug. 14, 1962 M. B. LUCAS ETAL 3,048,993

DETERGENT DISPENSER FOR AUTOMATIC CLOTHES WASHING MACHINE

Filed Oct. 11, 1960 2 Sheets-Sheet 2

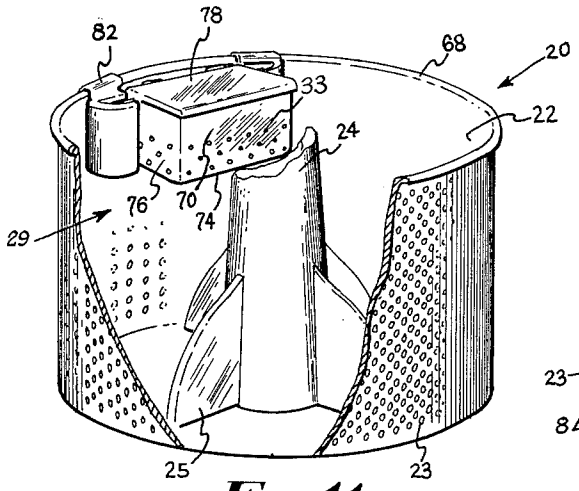


FIG 11

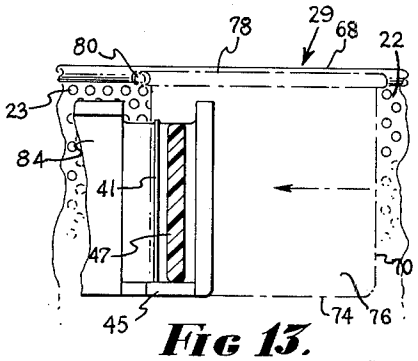


FIG 13.

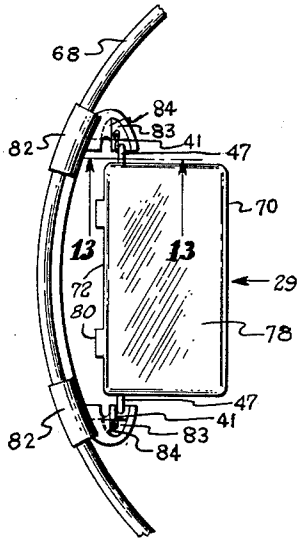


FIG. 12.

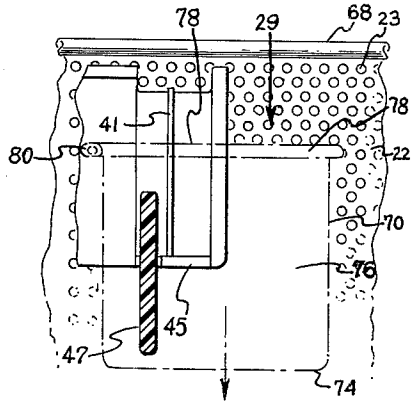


FIG. 14.

INVENTOR.
MALCOLM B. LUCAS
BY CHARLES W. HURST
Fredrick H. Braun
ATTORNEYS.

United States Patent Office 3,048,993 Patented Aug. 14, 1962

3,048,993

DETERGENT DISPENSER FOR AUTOMATIC CLOTHES WASHING MACHINE

Malcolm B. Lucas and Charles W. Hurst, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio, a corporation of Ohio

Filed Oct. 11, 1960, Ser. No. 61,949
8 Claims. (Cl. 68—17)

This invention relates to a granular detergent dispenser for automatic clothes washing machines.

In recent years, the design trend in clothes washing machines has been in the direction of making the machines fully automatic so that the operator can go about other chores while the clothes are being washed. The development of top-loading clothes washing machines having two complete washing cycles has given rise to the problem of providing granular detergent material for usage during the second wash cycle without requiring the attention of the operator.

The broad object of this invention is the provision of a granular detergent dispenser provided with means for automatically dispensing a granular detergent into a top-loading two-wash cycle clothes washing machine upon completion of the first washing cycle and prior to the commencement of the second washing cycle.

Briefly stated, the granules dispenser is composed of a receptacle held by suitable means to the upper portion of the agitator post, or to the rim of the basket, of a top-loading two-wash cycle automatic clothes washer during the oscillating portion of the first wash cycle. Various secondary holding means are provided for receiving the receptacle after it becomes disengaged from the first holding means and holding said receptacle only while the washer is in the spin-dry portion of the first wash cycle. At the end of the first wash cycle, the receptacle falls by gravity into the washer, thereby providing granular detergent material for use during the second wash cycle.

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter regarded as constituting the present invention, it is believed the invention will be better understood from the following description taken in connection with the drawings in which:

FIGURE 1 is a cut away perspective showing one form of receptacle mounted on the upper portion of the agitator post; and

FIGURE 2 is a plan view of the receptacle mounted on the upper portion of the agitator post during the oscillating portion of the first wash cycle; and

FIGURE 3 is an elevation showing the receptacle mounted on the upper portion of the agitator post during the oscillating portion of the first wash cycle; and

FIGURE 4 is an elevation showing the receptacle falling by gravity into the washer basket at the end of the first wash cycle; and

FIGURE 5 is a plan view showing a receptacle mounted by modified means on the upper portion of the agitator post during the oscillating portion of the first wash cycle; and

FIGURE 6 is a cross-section, taken along the line 6—6 of FIGURE 5, showing the receptacle mounted on the upper portion of the agitator post during the oscillating portion of the first wash cycle; and

FIGURE 7 is an elevation showing the receptacle of FIGURE 5 mounted on the upper portion of the agitator post during the oscillating portion of the first wash cycle; and

FIGURE 8 is an elevation showing the receptacle of FIGURE 5 falling by gravity into the washer basket at the end of the first wash cycle; and

FIGURE 9 is an elevation showing a modified form of receptacle mounted by another means on an adapter during the oscillating portion of the first wash cycle, said adapter being fitted to the upper portion of the agitator posts; and

FIGURE 10 is an elevation showing the receptacle of FIGURE 9 falling by gravity at the end of the first wash cycle; and

FIGURE 11 is a cut away perspective showing a modified form of receptacle which can be mounted on the washer basket rim; and

FIGURE 12 is a plan view of the receptacle of FIGURE 11 mounted on the basket rim during the oscillating portion of the first wash cycle; and

FIGURE 13 is an enlarged fragmentary cross section, taken along the line 13—13 of FIGURE 12, showing the position of the parts which comprise the mounting means during the oscillating portion of the first wash cycle; and

FIGURE 14 is an enlarged fragmentary cross section similar to FIGURE 13 but showing the receptacle (in broken lines) falling by gravity into the washer basket at the end of the first wash cycle.

Referring now to the drawings and particularly to FIGURE 1, the reference numeral 20 is used to indicate generally the internal portion of a conventional top-loading two-wash cycle automatic clothes washing machine. The washing machine is usually composed of a basket 22 having perforations 23 and an agitator post 24 having agitator blades 25. The granules receptacle 26 is mounted on the upper portion of the agitator post 24 during the first wash cycle. The receptacle 26 is preferably prepared from plastic or other light weight material.

FIGURES 2–4 show the receptacle 26 which is composed of a top wall 28 having a filling opening 30 and a plurality of holes 32. A bottom wall 34 is connected to the top wall 28 by an arcuate front wall 36 and a back wall 38. The back wall 38 has a concavity at 39 so that the receptacle 26 fits closely around the near surface of the agitator post 24 during the oscillating portion of the first wash cycle.

Various means for holding the receptacle 26 on the agitator post 24 can be provided. One holding means is shown in FIGURES 2–4. A pair of flexible members 40 are attached to the agitator post 24, as indicated. Both the upper and lower ends of these flexible members 40 are attached to the agitator post 24. A pair of rigid members 42 and a pair of rigid support members 44 are mounted on opposite sides of the agitator post 24 as shown. Attached to the receptacle 26 are a pair of generally hook-shaped rigid members 46. Normally, the members 46 engage the corresponding flexible members 40, sliding downwardly thereon until the bottom of the members 46 rest upon the corresponding rigid support members 44 as in FIGURE 3.

In operation, the operator adds the desired quantity of granular detergent material to the receptacle 26 through the filling opening 30. The receptacle 26 is mounted on the upper portion of the agitator post 24 by sliding the generally hook-shaped rigid members 46 around the corresponding flexible members 40, until the bottom portion of the rigid members 46 rests upon the corresponding rigid support members 44, as shown in FIGURES 2 and 3. The operator then places a load of clothes in the washer basket 22, adds the quantity of granular detergent material required for the first wash cycle, closes the top-loading lid and starts the machine; such action being well known and conventional to those having skill in the automatic washer art. During the spin-dry portion of the first wash cycle, centrifugal force disengages the rigid members 46 from the flexible members 40 and the rigid support members 44. However, the centrifugal force is sufficient to hold the rigid members 46 against the

rigid members 42. The receptacle 26 is held in this position until the end of the spin-dry portion of the first wash cycle, at which time it falls by gravity into the basket 22 of the washing machine, as shown in FIG-4. Once in the washing machine basket 22, the wash water enters and exits from the receptacle 26 through the holes 32 and the filling opening 30, removing and dissolving the granular detergent material.

It will be evident, of course, that the embodiment shown in FIGURES 2–4 can be modified and still operate satisfactorily by attaching only the upper ends of the flexible members 40 to the agitator post 24. When the members 40 are attached in this manner, the centrifugal force generated during the spin-dry portion of the first wash cycle is sufficient to cause the rigid members 46 to disengage the unattached lower ends of the flexible members 40.

A modified form of the invention is shown in FIGURES 5–8 wherein similar parts are identified by the same reference numerals used in describing the embodiment of FIGURES 1–4. FIGURES 5–8 show this modification to differ from the preceding embodiment primarily in the means for holding the receptacle 26 on the agitator post 24. A rod 48 and a J-shaped hook 50 are attached to the upper portion of the agitator post 24. The lower portion of the hook 50 lies at such an angle that it will not retain the receptacle 26 excepting when the force of gravity is overcome by centrifugal force. A pair of pins 52 are mounted on opposite sides of the agitator post 24. Attached to the receptacle 26 are a ring member 54 and a pair of hook-like members 56. This modification can also include a block member 58 for embedding the ring member 54. The ring member 54 can be made integral with the receptacle 26, rather than being made as a separate member and then being fixed to the receptacle 26, as by the block member 58.

During the oscillating portion of the first wash cycle, the receptacle 26 is mounted on the upper portion of the agitator post 24, as shown in FIGURES 5–7. The ring member 54 engages the rod 48, and the hook-like members 56 slidably engage the corresponding pins 52. During the spin-dry portion of the first wash cycle centrifugal force disengages ring member 54 from the rod 48 and engages the ring member 54 with the J-shaped hook 50. This force then disengages the hook-like members 56 from the pins 52. The receptacle 26 remains held by this means throughout the remainder of the spin-dry portion of the first wash cycle, at the end of which it falls by gravity into the washer basket 22, as shown in FIGURE 8.

Another embodiment of this invention is shown in FIGURES 9 and 10. Again, similar parts are identified by the same reference numerals used in describing the previous embodiments shown in FIGURES 1–8.

FIGURES 9 and 10 show the granules receptacle 27 to be a pliable bag instead of the relatively rigid receptacle 26 of the hereinbefore described embodiments. In the preferred practice of the invention, the bag is prepared from a porous material, such as cotton fabric, through which the wash water can permeate and intimately contact the granular detergent contained in the bag. It will be evident, of course, that the receptacle 27 can be constructed of a material of such a type as will disintegrate in the wash.

The receptacle 27, shown in FIGURE 9, is mounted on an adapter 60 during the oscillating portion of the first wash cycle. This adapter 60 is slidably engaged on the top portion of the agitator post 24 by means of support members 62 projecting from the inner surface of the adapter and contacting the surface of the agitator post 24 with the closed end of the adapter 60 resting on the top of the agitator post 24.

The holding means of this embodiment differs from the holding means of the preceding embodiments. A rod 48 and a J-shaped hook 50 are attached to the upper

portion of the adapter 60. The lower portion of the hook 50 lies at such an angle that it will not retain the receptacle 27 excepting when the force of gravity is overcome by centrifugal force. A second rod 64 is attached to the lower portion of the adapter 60. Attached to the receptacle 27 are a ring member 54 and a hook 66.

In operation, the receptacle 27 is mounted on the adapter 60 during the oscillating portion of the first wash cycle, as shown in FIGURE 9. The ring member 54 engages the rod 48 and the hook 66 engages the rod 64. Centrifugal force created by the spin-dry portion of the first wash cycle disengages the ring member 54 from the rod 48, the hook 66 remaining engaged with the rod 64. This same force then causes the ring member 54 to engage the J-shaped hook 50. The receptacle 27 remains mounted by this means throughout the remainder of the spin-dry portion of the first wash cycle and falls by gravity at the end of the cycle into the wash basket 22, as shown in FIGURE 10.

Still another embodiment of the invention is shown in FIGURES 11–14. Here again, similar parts are identified by the same reference numerals used in describing the previous embodiments shown in FIGURES 1–10.

FIGURE 11 shows the receptacle 29 mounted on the basket rim 68. The structure of the receptacle 29 is seen to differ from the structure of the receptacles 26 and 27 of the preceding embodiments. FIGURES 11 and 12 show the receptacle 29 to be composed of a front wall 70, a back wall 72, which are connected by a bottom wall 74 and side walls 76, and a lid 78 pivoted on hinges 80. Moreover, it will be noted that a plurality of holes 33 are disposed in the lower portion of the receptacle 29.

The means provided for mounting the receptacle 29 to the basket rim 68 are essentially the same as shown for receptacle 26 in FIGURES 1–4, and described above. A pair of brackets 82 are mounted on the basket rim 68. Attached to each bracket 82 are a flexible member 41 and a rigid support member 45. Both the upper and lower ends of the flexible member 41 are attached to the bracket 82. The surface facing the receptacle 29 of each bracket 82 has a recess 83, as shown in FIGURES 11 and 12. The recess wall 84 of each bracket 82 corresponds functionally to the rigid member 42 of the first embodiment described. Attached to the receptacle 29 are a pair of rigid members 47.

In operation, the operator raises the receptacle lid 78 and then adds the desired quantity of granular detergent material to the receptacle 29. The receptacle 29 is mounted on the brackets 82 by sliding the rigid members 47 downward along the corresponding flexible members 41 until the bottom portion of the rigid members 47 rests upon the corresponding rigid support members 45, as shown in FIGURES 12 and 13. Then the operator places a load of clothes in the washer basket 22, adds the quantity of granular detergent material required for the first wash cycle, closes the top-loading lid and starts the machine; such action being well known to those having skill in the automatic washer art. During the spin-dry portion of the first wash cycle, centrifugal force slidably disengages the rigid members 47 from the flexible members 41 and the rigid support members 45. However, the centrifugal force is sufficient to hold the rigid members 47 against the corresponding recess walls 84. The receptacle 29 remains in this position until the end of the spin-dry portion of the first wash cycle, at which time it falls by gravity into the basket 22 of the washing machine, as shown in FIGURE 14. Once in the washing machine basket 22, the wash water enters and exits from the receptacle 29 through the holes 33 removing and dissolving the granular detergent material.

It will be evident, of course, that the parts which constitute any one of the hereinbefore described embodiments of this invention can be substituted for a corresponding part of another embodiment. For example, the granules receptacle 26 shown in FIGURES 1–4 can

have a lid similar to the lid 70 shown in FIGURES 11 and 12. Furthermore, the various holding members can be interchanged without requiring more than relatively simple mechanical adaptation. It will also be noted that although the adapter 60 is shown only in FIGURES 9 and 10, it can also be employed in the embodiments of FIGURES 1–4 and of 5–8.

What is claimed is:

1. A dispenser for a dual cycle automatic washing machine having a washer basket and an agitator post comprising the combination of a granules receptacle, said receptacle having means for permitting the entrance and exit of liquid substances, means for holding the receptacle in the upper portion of the washer basket during the first wash cycle, said holding means comprising a first means for holding the receptacle while the agitator is in the oscillating portion of the first wash cycle and a second means for receiving the receptacle after it becomes disengaged from the first means, said second means holding the receptacle while the agitator is in the spin-dry portion of the first wash cycle so that the receptacle will fall into the washer basket by gravity at the end of the first wash cycle.

2. A dispenser for a dual cycle automatic washing machine having a washer basket and an agitator post comprising the combination of a granules receptacle, said receptacle having means for permitting the entrance and exit of liquid substances, means for holding the receptacle on the upper portion of the agitator post while said agitator is in the oscillating portion of the first wash cycle, a second means for receiving the receptacle after it becomes disengaged from the first holding means, said second means holding the receptacle while the agitator is in the spin-dry portion of the first wash cycle so that the receptacle will fall into the washer basket by gravity at the end of the first wash cycle.

3. A dispenser for a dual cycle automatic washing machine having a washer basket and an agitator post comprising the combination of a granules receptacle comprising a top wall, a bottom wall connected to the top wall by an arcuate front wall and a back wall, said back wall having a recess for receiving the agitator post, a filling opening and a plurality of holes in said receptacle, means for holding the receptacle on the upper portion of the agitator post while said agitator is in the oscillating portion of the first wash cycle including a plurality of flexible members oppositely disposed on the agitator post, a plurality of rigid support members, each rigid support member being disposed on the agitator post below the corresponding flexible member, and a plurlity of rigid members disposed on the receptacle and engaging the said flexible members and rigid support members, a second means for receiving the receptacle after it becomes disengaged from the first holding means, said second means holding the receptacle while the agitator is in the spin-dry portion of the first wash cycle so that the receptacle will fall into the washer basket by gravity at the end of the first wash cycle, said second means including a plurality of rigid members oppositely disposed on the agi-

4. A dispenser for a dual cycle automatic washing machine having a washer basket and an agitator post comprising the combination of a granules receptacle comprising a top wall, a bottom wall connected to the top wall by an arcuate front wall and a back wall, said back wall having a recess for receiving the agitator post, a filling opening and a plurality of holes in said receptacle, means for holding the receptacle on the upper portion of the agitator post while said agitator is in the oscillating portion of the first wash cycle including a rod disposed on the agitator post, a plurality of pins oppositely disposed on the agitator post below the rod, a ring member disposed on the receptacle and engaging the rod, and a plurality of hook-like members disposed on the receptacle and engaging the said pins, a second means for receiving the receptacle after it becomes disengaged from the first holding means, said second means holding the receptacle while the agitator is in the spin-dry portion of the first wash cycle so that the receptacle will fall into the washer basket by gravity at the end of the first wash cycle, said second means including a J-shaped hook disposed on the agitator post for receiving the ring member on the receptacle.

5. A dispenser as claimed in claim 4, wherein the granules receptacle includes a block member in which the ring member is imbedded.

6. A dispenser for a dual cycle automatic washing machine having a washer basket and an agitator post comprising the combination of a pliable, permeable granules receptacle, an adapter engaged on the upper portion of the agitator post, means for holding the receptacle on the upper portion of the agitator post while said agitator is in the oscillating portion of the first wash cycle including a rod disposed on the adapter, a second rod disposed on the adapter below the first rod, a ring member disposed on the receptacle and engaging the first rod, and a hook disposed on the receptacle and engaging the second rod, a second means for receiving the receptacle after it becomes disengaged from the first holding means, said second means holding the receptacle while the agitator is in the spin-dry portion of the first wash cycle so that the receptacle will fall into the washer basket by gravity at the end of the first wash cycle, said second means including a J-shaped hook disposed on the adapter for receiving the ring member on the receptacle.

7. A dispenser for a dual cycle automatic washing machine having a washer basket and an agitator post comprising the combination of a granules receptacle, said receptacle having means for permitting the entrance and exit of liquid substances, means for holding the receptacle on the rim of the washer basket while the agitator is in the oscillating portion of the first wash cycle, a second means for receiving the receptacle after it becomes disengaged from the first holding means, said second means holding the receptacle while the agitator is in the spin-dry portion of the first wash cycle so that the receptacle will fall into the washer basket by gravity at the end of the first wash cycle.

8. A dispenser for a dual cycle automatic washing machine having a washer basket and an agitator post comprising the combination of a granules receptacle comprising a front wall connected to a back wall by a bottom wall and sidewalls, a pivotable lid and a plurality of holes in said receptacle, means for holding the receptacle on the rim of the washer basket while the agitator is in the oscillating portion of the first wash cycle including a plurality of brackets disposed on the rim of the washer basket, a flexible member disposed on each bracket, a rigid support member disposed on each bracket below the corresponding flexible members, and a plurality of rigid members disposed on the receptacle and engaging corresponding flexible members and rigid support members, a second means for receiving the receptacle after it becomes disengaged from the first holding means, said second means holding the receptacle while the agitator is in the spin-dry portion of the first wash cycle so that the receptacle will fall into the washer basket by gravity at the end of the first wash cycle, said second means including a recessed wall in each bracket for receiving the corresponding rigid members on the receptacle.

References Cited in the file of this patent

UNITED STATES PATENTS

2,956,709 Nison ---------- Oct. 18, 1960
2,967,416 Devery ---------- Jan. 10, 1961

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,048,993 August 14, 1962

Malcolm B. Lucas et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 5, line 50, for "plurlity" read -- plurality --; line 59, after "agi-" insert -- tator post for receiving the corresponding rigid members of the receptacle. --.

Signed and sealed this 8th day of January 1963.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents