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(54) Improvements in and/or related to a cleansing drawer assembly for linen washing machines.

(57) A drawer assembly for loading therein a cleansing material for linen washing machines comprises, in a tray (2) for a powder cleansing material or detersive, a helical delivery device (4), which is driven by an axial motor-reducing unit (5) mounted on the rear of the drawer and driven by means of a clucht joint (6). On the discharging or outflow nozzle (7) of the detersive tray (2) and of an additive tray (3), in particular, there is provided a half-round diaphragm of baffle plate (17) which can be turned by means of corresponding knob means (18,19).

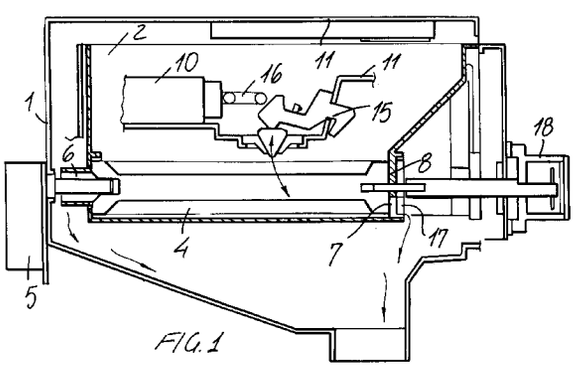

FIG.1

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BACKGROUND OF THE INVENTION

The present invention relates to improvements in and/or related to a cleansing material drawer assembly for linen washing machines.

As is known, conventional washing machines comprise a metering-dispenser assembly for the metering or powder and liquid cleansing or detersive agents, as well as for metering additive materials into the basin of the machine.

Also known is that conventional dispenser assemblies have a comparatively low metering flexibility with respect to a proper metering or dispensing of the used detersives.

On the other hand, continuously increasing environment pollution requirements demande a great reduction in the use of cleansing materials which, even if of a biodegradable nature, are however rather polluting for the environment.

In this connection it is to be pointed out that at present there are available on the market detersives of the so-called "compact" type for which there have been advantageously designed detersive trays having a volumetric capability adapted to allow a sufficient autonomy use period to be obtained.

Such a detersive type, however, since it is held in the detersive tray for a comparatively long period, can originate clots or agglometates, thereby it is of difficult metering to the washing machine basin.

Moreover, the possibility of providing in a modern washing machine a multiple dose of such a detersive requires that openings be formed through the top panel of the washing machine, thereby greatly reducing the possibility of using this top panel as a load supporting surface.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks by providing an improved loading drawer assembly, of a "monthly loading type" which is adapted to assure a proper metering of the detersive.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such an improved monthly loaded drawer assembly which is very flexible with respect to the adjusting operations on the detersive supplied to the washing machine basin.

Another object of the present invention is to provide such an improved monthly loaded drawer assembly which does not require any modifications of the top panel of the washing machine.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an improved drawer assembly, to be used in linen washing machines, of a monthly loaded type, characterized in that said drawer assembly comprises a helical metering device which is driven by an axial motor-reducing unit affixed on the rear of the drawer and being driven by a clutch joint, on a detersive discharging nozzle there being moreover provided a halfround baffle plate adapted to shut off either partially or fully said nozzle, and which can be rotatively driven by knob means.

Thus, while holding unchanged the concept of an automatic supplying of the detersive or cleansing material by the control unit included in the washing machine, it is possible to add a manual metering or dosing feature to the metering device of the detersive.

This possibility is of great importance in the use of a reduced linen load, or in all of the cases in which the detersive dose must be corrected, depending on the different washing requirements such as, for example, the hardness of the washing water or the dirt degree, up to a full lack of detersive, for meeting particular requirements.

That same concept, on the other hand, can also be extended to the metering of the softening material, also depending on the contingent requirements.

Moreover, the drive can also be of an electromechanical type, by the provision of a manual selecting unit (selector) which, by operating on the programmer, will modify the number of control pulses, and the duration thereof, both for driving the helical metering device and for allowing the outflow of the softening material.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the detersive loading drawer assembly according to the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof, which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic cross-sectional view of a powder detersive tray associated with a washing machine;

Figure 2 is a cross-sectional view illustrating an additive material tray associated with the subject washing machine;

Figure 3 illustrates a schematic diagram of a cam actuator which can be used for controlling the outflow of the detersive material;

Figure 4 illustrates two possible positions which can be assumed by a baffle-plate assembly; and

Figure 5 is a front view of the subject drawer assembly with adjusting knobs included therein.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the improved drawer assembly according to the present invention is slidably housed in a container or housing 1 and comprises a suitably sized tray 2 provided for receiving a so-called compact powder detersive, and further including another tray 3 for receiving a concentrated type of additive material.

In the detersive tray there is included a helical metering device 4, driven by an axial motor-reducing unit 5, and connected to the rear wall of the mentioned casing and including a clutch joint 6 adapted to allow the metering device to operate exclusively with the drawer in its closed condition.

This helical metering device, by means of a conventional mixing, crushing and pushing or delivery operation, will allow precise doses to be obtained, and will overcome all of the drawbacks related to the hygroscopicity and not homogeneous condition of the detersive formulations.

The above two mentioned trays, moreover, are provided with a discharging nozzle or opening 7, the outflow port thereof can be doubly adjusted.

More specifically, in the powder detersive tray and in the liquid material tray there is provided a separating wall 8 allowing the detersive flow to be introduced into the washing machine basin to be properly adjusted.

In the additive material tray, the outflow opening is adjusted by a rubber membrane 12, which can also be made of another elastomeric material or the like, which can swing in a seat 13 under the action of an articulated lever system, generally indicated at the reference number 14 and also driven by an actuator 10′.

More specifically, as shown in figure 2, this actuator, of any known suitable type, can be driven or controlled by a temperature responsive element PTC.

On the other hand, such a device, while having a comparatively high power, is very slow in operation, because of a comparatively great thermal inertia.

Accordingly, it has been preferred to use a mechanical device including cams 15 and springs 16 allowing to impress more pulses, during the extension stroke, to the lever system controlling the opening, and disengaging the cams during the return stroke or step, so as to prevent an excessive pressure to be exerted on the system.

On the tray discharging or outflow nozzle, moreover, there is provided a half-round baffle plate 17, adapted to provide either a partial or full shut-off, which can be rotatively driven by means of corresponding knob elements, respectively indicated at 18 and 19, mounted on the front portion of the drawer.

Accordingly, the detersive and additive flows through the opening 7 can be adjusted with a great accuracy, depending on the contingent requirements.

From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations all of which will come within the spirit and scope of the appended claims.

Claims

1. An improved drawer assembly, to be used in linen washing machines, of a monthly loaded type, characterized in that said drawer assembly comprises a helical metering device which is driven by an axial motor-reducing unit affixed on the rear of the drawer and being driven by a clutch joint, on a detersive discharing nozzle there being moreover provided a half-round baffle plate adapted to shut off either partially or fully said nozzle, and which can be rotatively driven by knob means.

2. A detersive drawer assembly, according to Claim 1, characterized in that said drawer assembly is slidably held in a housing and comprises a detersive tray adapted to hold therein a compact powder detersive and a tray adapted to hold therein a concentrated additive material, said detersive tray further including said helical metering device which comprises a metering device shaft having a clutch joint which allows the metering device to operate exclusively with the drawer assembly in its closed condition.

3. A detersive drawer assembly according to one or more of the preceding claims, characterized in that both said two trays have a discharging nozzle the outflow port of which can be doubly adjusted.

4. A detersive drawer assembly, according to one or more of the preceding claims, characterized in that said drawer assembly comprises a powder detersive tray and a liquid additive tray therein there is provided a separating wall for adjusting the detersive and additive flows to be supplied to the washing machine basin.

5. A detersive drawer assembly, according to one or more of the preceding claims, characterized in that the outflow port of the additive tray is controlled by a rubber elastomeric material membrane which can swing in a membrane seat, under the action of an articulated lever system driven by an actuator.

6. A detersive drawer assembly, according to one or more of the preceding claims, characterized in that said actuator comprises a cam and spring device adapted to apply a plurality of driving pulses to the opening driving lever system and adapted to disengage the cams so as to prevent an excessive pressure from being applied to the system.

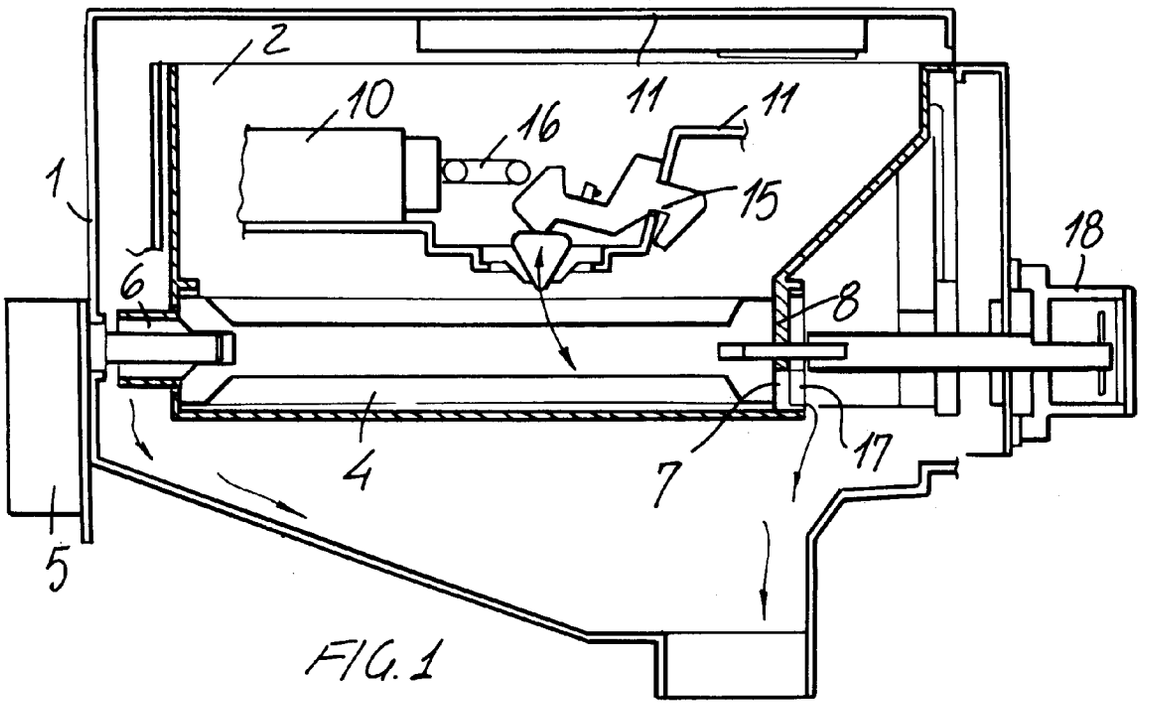

FIG.1

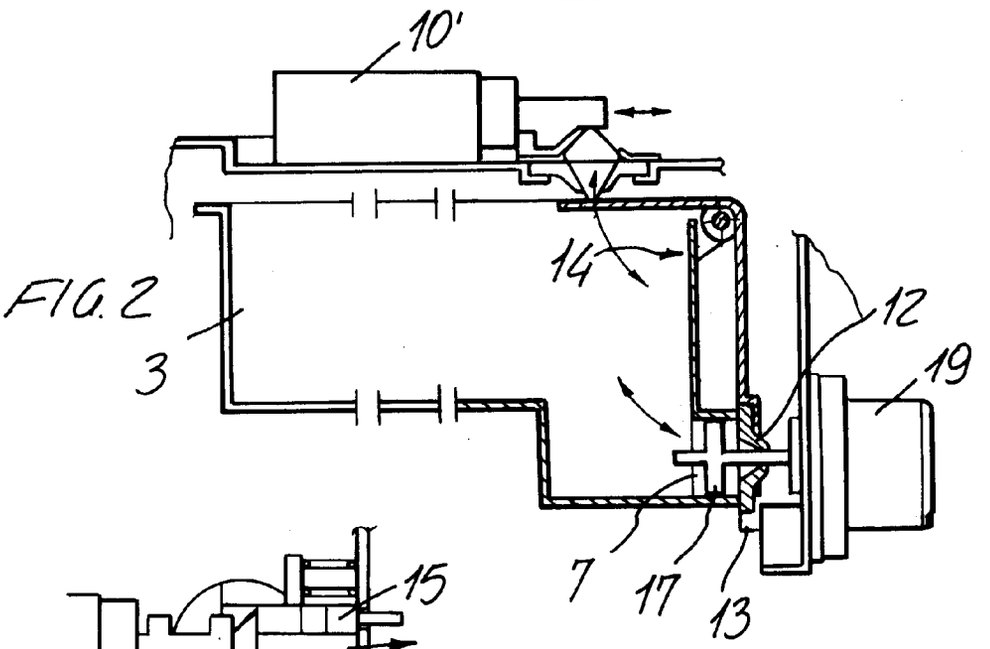

FIG.2

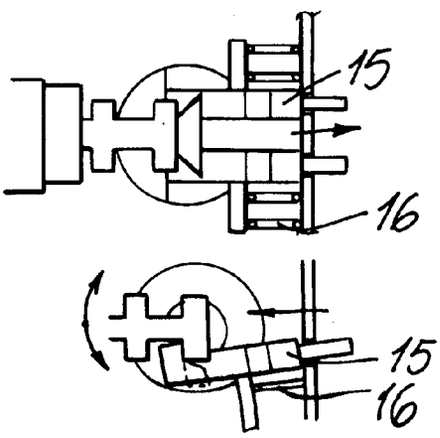

FIG.3

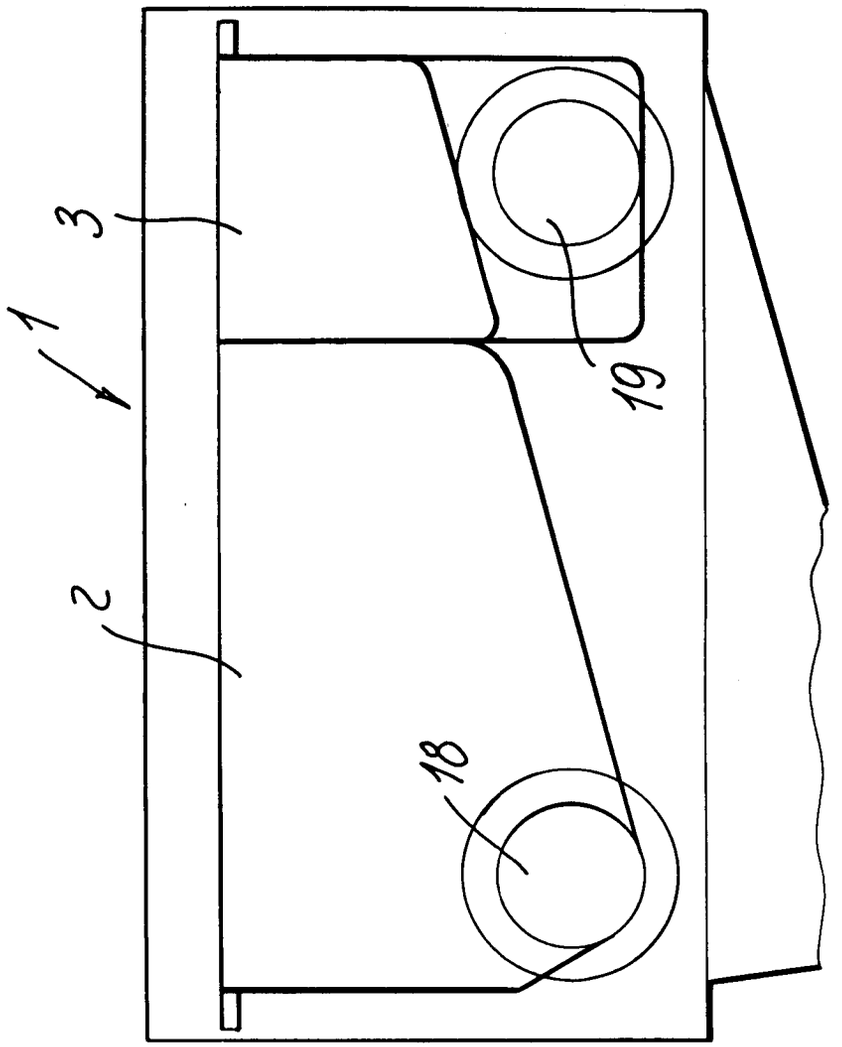

FIG. 5

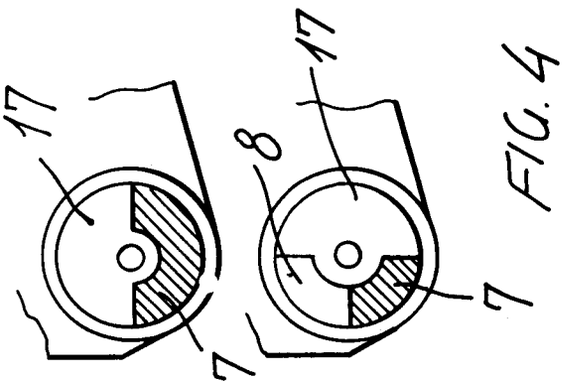

FIG. 4

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EUROPEAN SEARCH REPORT

Application Number

EP 92 83 0292

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	DE-A-1 785 156 (SIEMENS-ELECTROGERÄTE GMBH) * page 6, line 17 - page 9; figures *	1,2,4	D06F39/02
A	US-A-3 207 373 (G. BAUKNECHT GMBH) * claim 1; figure 2 *	5,6	
A	US-A-2 612 034 (AVCO MANUFACTURING CORPORATION) * column 3, line 27 - line 55; figures 3,4,7 * * column 5, line 40 - line 56 *	1	
A	GB-A-1 211 560 (WILKINS & MITCHELL LIMITED) * figures *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24 SEPTEMBER 1992	COURRIER G.L.A.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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