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This invention relates to a dispenser for granular materials, such as granular detergents used in dishwashing machines and the like.

The primary object of this invention is to provide an improved dispensing device which is of relatively simple and economical construction and operation.

Another object of the invention is to provide a dispenser which provides adequate coverage for granular detergents and which will extend from the flange 18 to a central hub portion 25, and on the opposite side of the hub there is a relatively wider, sector shaped, separating portion 27. On the face of this portion there are formed upstanding lugs 30 and 32, preferably as an integral part of the dispenser body, and defining respectively the open and closed positions of the rotary door 35. This door is mounted for rotary sliding movement within a recessed circular lip or shoulder 36 of the housing 15, and the door is of generally sector shape dimensioned to cover one of the openings 20 or 22. In the normal operating position, as will be explained, the chamber 23 is covered and chamber 29 is open.

The hub portion 25 is provided with a central bore in which the operating shaft 40 is mounted for both rotary and sliding movement. The front end of this shaft extends through a seal ring 41 and into the hub portion 43 of the door 35. A cross pin 44 extends through shaft 40 and into a slot 45 within the door hub 43 to provide for simultaneous rotary movement of the door and shaft while allowing for limited sliding movement of the shaft along its axis and relative to the door. At the other end of shaft 40 there is a latch member 50 mounted to the shaft by a pin 52. The hole 53 in the latch member is somewhat tapered, as shown, to provide for a rocking motion of the latch member on the shaft, but the pin 52 connects these parts for simultaneous rotation, thus latch member and the door rotate together. A latch spring 55 surrounds the end of the shaft 40 within the door hub 43, pressing against the cross pin 44 and thereby urging the latch member 50 into contact with the hub portion 25 of the dispenser body, as shown in FIG. 3. A flexible cover or diaphragm 56 is mounted within the hub of the door, extending over the end of shaft 40 to provide for manual reciprocation of shaft 40 if that should be necessary, while sealing the interior of the door hub from liquid. The reason for this arrangement is described later herein.

The normally upward end 58 of the latch member 50 is widened somewhat, as shown in FIG. 4, and is adapted to fit between stop lugs 60 formed on the back surface of the dispenser housing. There is also a ramp portion 62 provided to guide the end of the latch member up into position between the stops when the door is in its closed position, ready for operation. In this position the opposite end of the latch member 50, provided with a small extension 63, is engaged beneath a stationary plate 64 mounted on the housing as shown particularly in FIG. 4. The power for rotating the door 35 from its closed to its open position (with respect to chamber 22) is provided by a torsion spring 65 anchored at one end to the housing hub 25 and at the other end to the latch member 50.

Above the latch member there is a bracket 70 secured to the dispenser body and mounting a solenoid 72 having an armature 73 and a pair of electrical contact tabs 74. The armature 73 rests on a trigger member 75 which includes a pair of ears 76 mounted on a shaft 78, which in turn is mounted through stationary ears 79 formed on the bracket 70. Surrounding shaft 78 is a small torsion spring 80 acting between the trigger member 75 and bracket 70 tending to move the trigger member against the solenoid armature 73.

For purposes of explaining the operation of the device it will be assumed that a suitable quantity of detergent or other material is placed in chamber 22 and door 35 has been rotated manually to its closed position as shown in FIG. 2. Using the tab 82 on the door at the time the edge 83 of the door engages stop 32 on the front of the dispenser body, and at the same time the end 58 of the latch member 50 drops between the stops 60. The dispenser is then in a cocked or ready position. If desired, some detergent or other material can be placed in the open chamber 20 to be used during a preliminary washing operation of the machine. The detergent in cham-
ber 22 is held there until the timer of the machine completes a circuit through the coil of solenoid 72 when that portion of the operating cycle is reached where it is desired to mix the detergent with the wash water.

At that time, energizing the solenoid will cause the armature 73 to press down against trigger member 75, and in turn it will press against the latch member 50 urging its end 58 outward beyond the stops 60. A relatively small force is required for this operation, but once the latch member is released from the stops, the energy stored in torsion spring 65 will be released and this spring will rotate the shaft 40, and thus the door 35 until its edge 84 engages the stop 30 on the front of the dispensing the open position of cover 22 completely and the door will overlie cover 20.

When it is desired to reload the dispenser for another operation, it is merely necessary to place a charge of granular detergent or the like in chamber 22, and rotate cover 35 manually back to its starting or ready position. If for some reason this should be done accidentally, or if the operator should be unsure that a charge was placed in the chamber 22 before the dispenser door was closed, the door may be released manually by depressing depressor 56 to slide the shaft 40 rearward in its bore. At such time, the contact point between member 63 and the latch member and the stationary ears 64 will form a pivot point and the shaft will act through pin 52 to swing the latch member 50 outward beyond the stops 60, thereby releasing the dispenser door manually and opening it.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A device for dispensing a quantity of cleansing detergent or the like comprising, a body having formed therein at least one cavity with an opening to said cavity being formed by an arcuate outer edge and at least two other edges defining the opening as a segment of a circle, a cover dimensioned to fit over said opening and close said cavity, means mounting said cover for movement about a pivot axis at the focal point of said arcuate edge and arranged to move between an open position uncovering said cavity and a closed position overlying said cavity, an operating shaft extending along an arcuate path intersecting said focal point and attached to said cover, stop means defining the open position of said cover, torsion spring means acting on said shaft tending to move said cover into engagement with said stop means, a latch member carried by said shaft and movable therewith along an arcuate path in relation to opening and closing movements of said cover, stop means defining the closed position of said cover, means defining the closed position of said cover, latch spring means acting on said latch member to move said latch member away from said stop means and to allow said driving means to open said cover.

2. A device for dispensing a quantity of cleansing detergent or the like at a predetermined time during the operating cycle of a dishwashing machine, comprising a body having formed therein at least one cavity with an opening to said cavity being formed by an arcuate outer edge and at least two other edges defining the opening as a segment of a circle, a cover dimensioned to cover said opening and close said cavity, means mounting said cover for sliding movement about a pivot axis at the focal point of said arcuate edge and arranged to move between an open position uncovering said cavity and a closed position overlying said cavity, an operating shaft extending along an arcuate path intersecting said focal point and attached to said cover, stop means defining the open position of said cover, torsion spring means acting on said shaft tending to move said cover into engagement with said stop means, a latch member carried by said shaft and movable therewith along an arcuate path in relation to opening and closing movements of said cover, stop means defining the open position of said cover, latch spring means acting on said latch member to move said latch member away from said stop means and to allow said driving means to open said cover.

3. A device for dispensing a quantity of cleansing detergent or the like comprising, a body having formed therein at least one cavity with the openings to said cavities being formed by an arcuate outer edge and at least two other edges defining each opening as a same size segment of a circle, a cover dimensioned to cover one of said openings and close at least two other edges defining each opening as the same size segment of a circle, a cover dimensioned to cover one of said openings and close the corresponding said opening, means mounting said cover for sliding movement about a pivot axis at the focal point of said arcuate edge and arranged to move between an open position uncovering one of said cavities and covering the other cavity and a closed position overlying said one cavity and uncovering the other cavity, an operating shaft extending along an arcuate path intersecting said focal point and attached to said cover, stop means defining the open position of said cover, torsion spring means acting on said shaft tending to move said cover into engagement with said stop means, a latch member carried by said shaft and movable therewith along an arcuate path in relation to opening and closing movements of said cover, stop means defining the closed position of said cover, latch spring means acting on said latch member to move said latch member away from said stop means and to allow said latch member to open said cover.

4. In a dishwashing machine having a timer mechanism establishing an operating cycle and having walls defining a washing chamber, a device for dispensing a quantity of cleansing detergent or the like into the chamber, comprising a body adapted for mounting in one of said walls and having formed therein at least one cavity, said cavity including an opening formed by an arcuate outer edge and at least two other edges defining the opening as a segment of a circle, a cover dimensioned to cover said opening and close said cavity, means mounting said cover for sliding movement about a pivot axis at the focal point of said arcuate edge and arranged to move between an open position uncovering said cavity and a closed position overlying said cavity, an operating shaft extending along an arcuate path intersecting said focal point and attached to said cover, stop means defining the open position of said cover, torsion spring means acting on said shaft tending to move said cover into engagement with said stop means, a latch member carried by said shaft and movable therewith along an arcuate path in relation to opening and closing movements of said cover, stop means defining the closed position of said cover, latch spring means acting on said latch member to move said latch member away from said stop means and to allow said latch member to open said cover.
latch spring means acting on said latch member to engage said latch member with said stop means for holding said cover in its closed position against the force of said torsion spring means, and a releasing mechanism selectively operable by said timer mechanism and engageable with said latch member to move said latch member away from said stop means and thereby to cause said torsion spring means to open said cover at a predetermined time during the operating cycle of the machine.

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