

[54] **APPLIANCE LID INTERLOCK MECHANISM
WITH LID OPERATED SWITCH AND
SOLENOID CONTROLLED LID LATCH**

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[56]

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[57]

ABSTRACT

An arrangement for holding the lid of a vessel closed and locked whilst simultaneously relieving the load on the hinge of the lid closing mechanism of said vessel.

4 Claims, 5 Drawing Figures

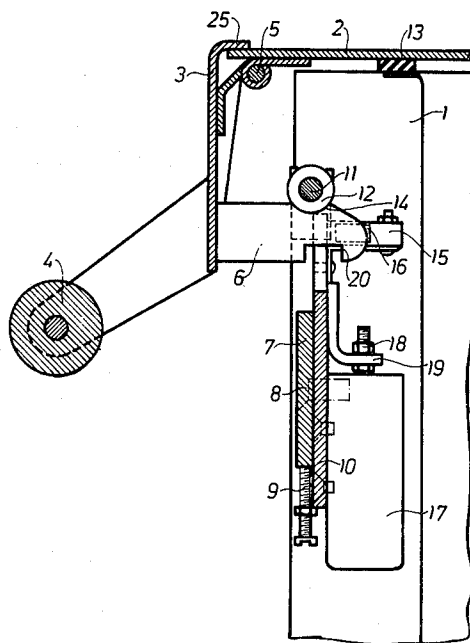


Fig.1

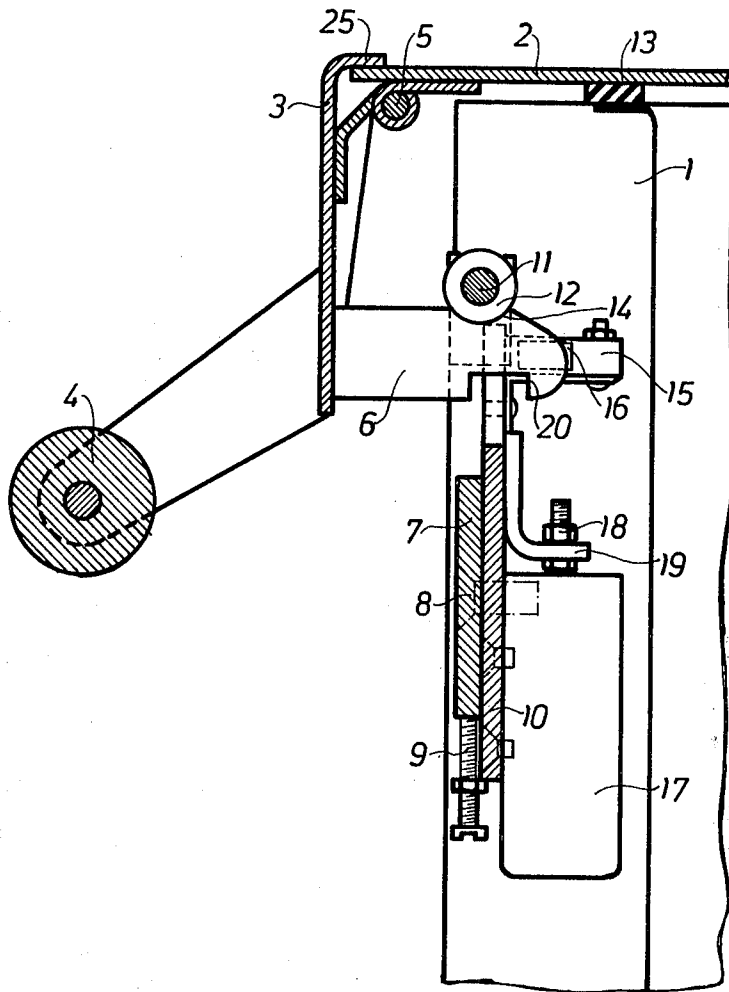
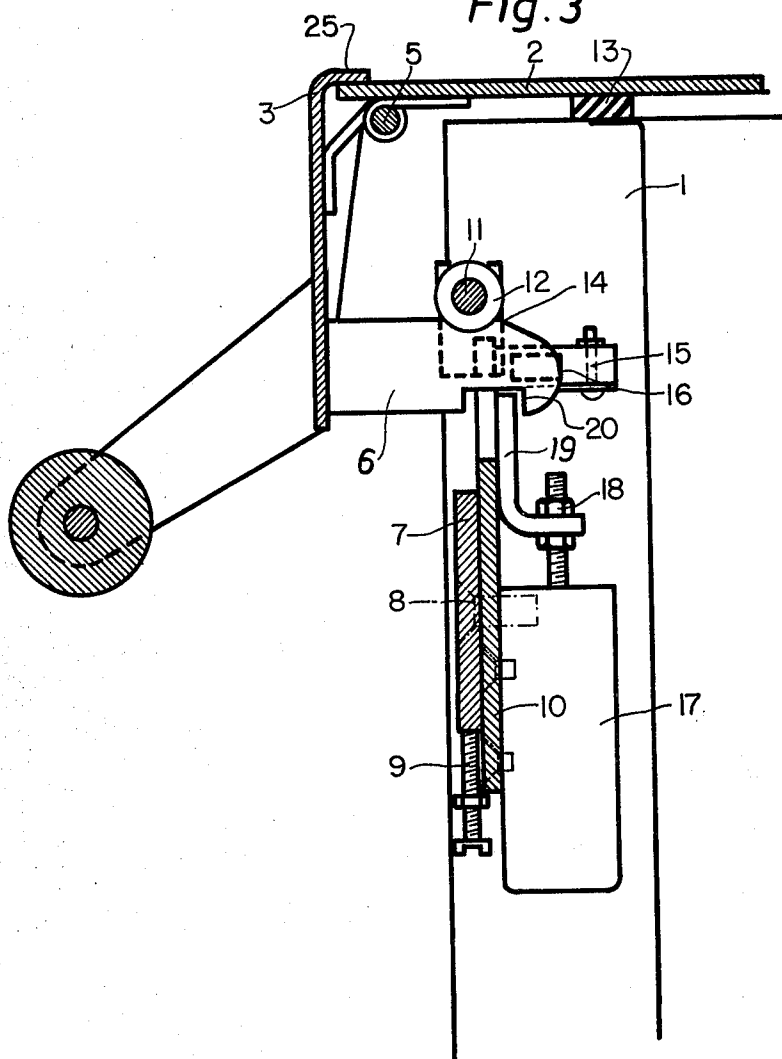
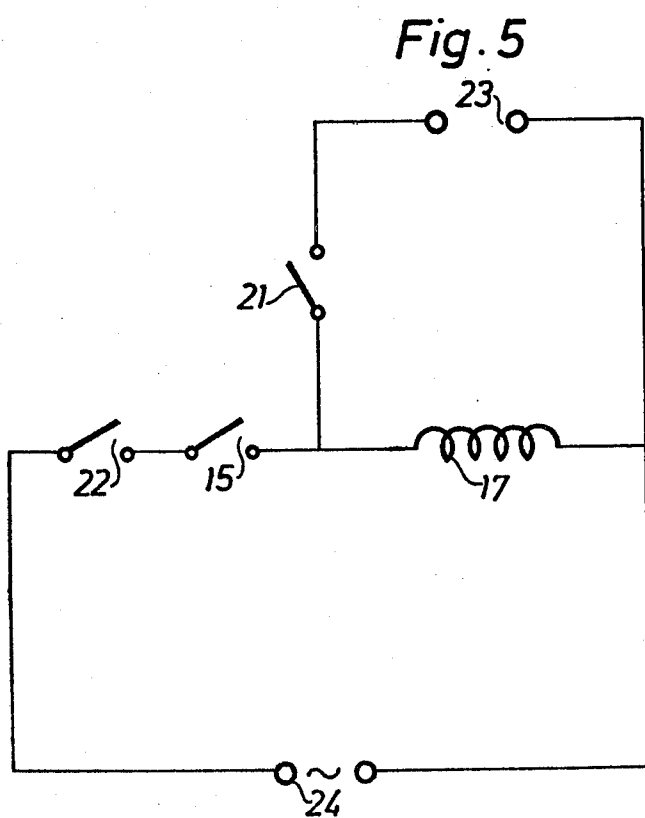
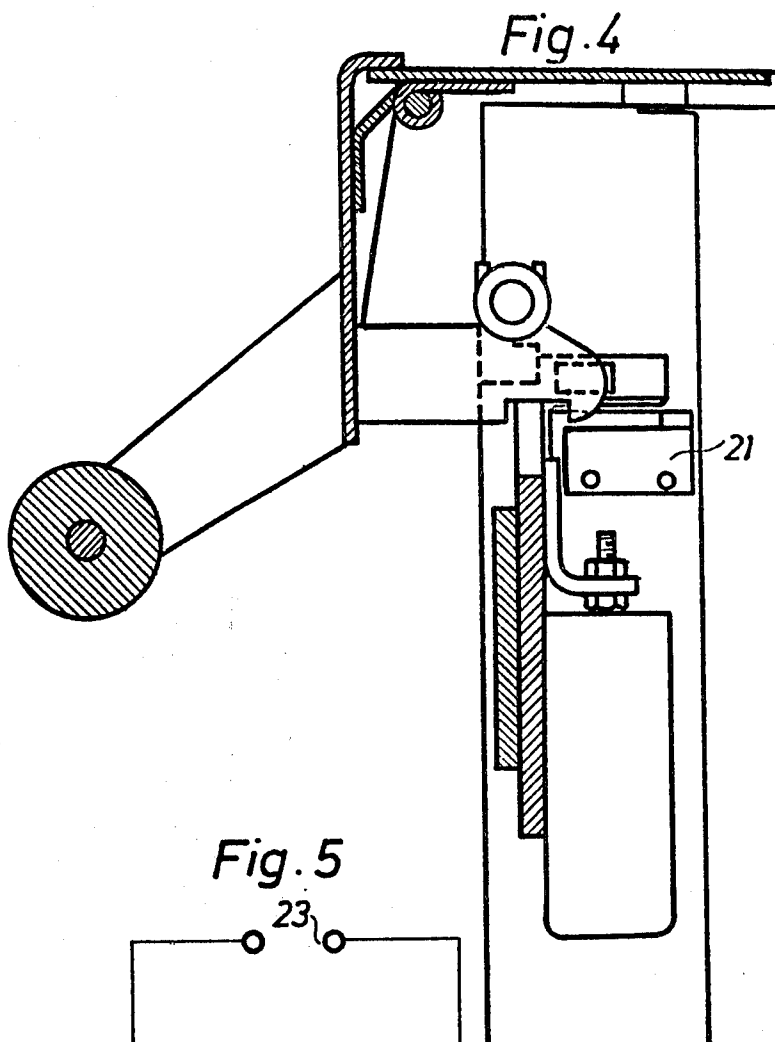


Fig.3





APPLIANCE LID INTERLOCK MECHANISM WITH LID OPERATED SWITCH AND SOLENOID CONTROLLED LID LATCH

The present invention relates to an arrangement for holding the lid of a vessel, such as the lid of a bedpan washing basin for example, closed and locked, whilst simultaneously relieving the load on the hinge of the lid closing mechanism of said vessel.

It is known to close the lid of a bedpan washing basin with the assistance of a non-adjustable, movable pin which when occupying its activated position locks against some portion of the lid. The pin, however, can be readily acted upon by external forces, and as a result thereof may be distorted so as to prevented it from returning to its starting position, thereby preventing the lid from being opened.

It is also known to use closing mechanism hinges with which the load acting on said hinges is not relieved. The disadvantage with such hinges is that they readily become worn, thereby causing a reduction in the pressure acting on the seal located between the lid and the basin, so that the desired sealing effect is not obtained. This is especially the case when the seal is old and a high pressure is required to act thereupon in order to seal the basin effectively.

The object of the present invention is to provide an arrangement by which these disadvantages are at least substantially eliminated, and to provide a lid closing and lid locking mechanism which is more reliable in operation than known mechanisms.

Accordingly, the arrangement of the present invention is mainly characterized in that a clasp plate mounted on a hinge is provided with a locking plunger having a recess into which a locking member projects when the current circuit operative in effecting a washing operation is energized.

The invention will now be described in more detail with reference to the accompanying drawing, in which

FIG. 1 is a side elevation in section of the arrangement mounted to a bedpan washing basin only a fragment of the basin being seen, and shows the position of the apparatus prior to the commencement of a washing operation,

FIG. 2 is a rear view of the arrangement,

FIG. 3 shows the same view as that in FIG. 1, but with the washing operation commenced and the lid locked,

FIG. 4 illustrates the provision of an additional microswitch, by means of which still greater reliability in operation is obtained,

FIG. 5 is a wiring diagram of the electric circuit operative in locking the lid.

The bedpan washing basin shown in FIGS. 1, 3 and 4 comprises a container or basin 1 and a lid 2. Located at the front of the basin is a means for closing the lid 2, said means comprising a clasp plate 3 pivotally mounted to a hinge 5 and having a handle 4 arranged thereon. Mounted on the inwardly facing side of the clasp plate 3 is a locking plunger or tongue 6 having a recess or depression 14 located in the upper surface thereof and a recess or notch 20 located in the under-surface thereof. The depression 14 is arranged to co-act with a roller 12 which is arranged for rotation about a pin 11 and is located above the tongue 6, so as to roll into the depression as the lid is closed. The tongue 6 of the illustrated embodiment also has a chamfered forward edge thereon which facilitates the co-action of the tongue with the roller 12 as the lid is closed and

opened. The hinge 5 and the upper portion, 25, of the clasp plate 3 are, in conjunction with the lid 2, so constructed that when the lid is closed, as illustrated in the Figure, the hinge 5 is relieved of forces acting thereon; this taking place owing to the fact that when the roller is located in the depression 14 in the locking tongue 6, subsequent to closing the lid, the locking force is transmitted via tongue 6 and the upper portion or lip 25 of the clasp plate 3 directly to the lid 2, without being transmitted through the hinge 5. In this way the hinge 5 is not subjected to overload or undue wear.

An adjustable attachment plate 10 is mounted on the front side of the container or basin 1 in a flat plate 7 by means of screws 8 and an adjusting screw 9. The holes intended for the screws 8 in the flat plate 7 are oval and extend sideways so as to provide for lateral adjustment of the attachment plate, while the holes in the attachment plate 10, although also oval in shape extend vertically, to provide for vertical adjustment of said plate, said adjustment being made by means of the adjuster screw 9.

When the lid 2 is closed and the outer chamfered portion of the locking tongue 6 moves beneath the roller 12 mounted on the shaft 11, a lid seal 13 is compressed therewith to provide a seal between the lid 2 and the container or basin 1.

The roller 12 holds the locking tongue 6 in fixed position by engaging depression 14 disposed therein. Co-acting with the tongue 6 is a microswitch actuating arm 16 which actuates a microswitch 15 forming part of an electric circuit which controls the locking and unlocking function of the lid locking and unlocking mechanism. Also forming part of said circuit is a solenoid 17 and a main on-off switch not shown connected in series with microswitch 15. The solenoid 17 has an armature 18 having adjustably attached thereto a locking member 19, which is arranged to move into the notch 20 located in the under surface of tongue 6, when the solenoid 17 is energized. Thus, when the lid 2 is closed to the position shown in FIG. 1, the arm 16 will actuate the microswitch 15, thereby placing the solenoid in a state of readiness. When the main switch is closed, the circuit to the solenoid 17 is complete and the solenoid is energized. The locking member 19 adjustably mounted on the armature 18 will then move into notch 20 to lock the lid in its closed position.

Upon completion of the washing operation, current to the solenoid 17 is broken by opening the main switch, whereupon the armature 18 and the locking member 19 fall down to release the lid 2. This sequence of events is facilitated by the fact that the forward edge of the notch 20 in the locking plunger 6 is inclined.

The electrical system for controlling the washing operation is described, for example, in the Swedish Patent, Ser. No. 301,123 and does not form part of the present invention.

I claim:

1. In a container having a lid associated therewith for opening and closing the same, in combination, an arrangement for retaining the lid in closed position comprising a clasp plate hinged adjacent at one end to a margin of the interior side of said lid for pivotal movement between operative lid-retaining and inoperative lid-releasing positions, a latching tongue projecting from said plate generally toward said container for movement with said plate, said tongue having a depression on the side thereof facing said lid, detent means

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supported on said container for cooperative engagement with said depression when said clasp plate is pivoted to said operative position to retain said lid in its closed position, and a flange lip projecting rigidly from the hinged end of said clasp plate to positively bear against the adjacent marginal edge of said lid when said clasp plate is in operative position, said lip moving out of such engagement when said clasp plate is pivoted to inoperative position, whereby the latching force active on said clasp plate is carried substantially by said lip bearing against the lid edge rather than by said hinge.

2. The arrangement of claim 1 wherein a resilient seal is interposed between said lid and the adjacent sides of said container, which seal is compressed when said lid is retained in closed position.

3. The arrangement of claim 1 wherein said tongue

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is notched on the side thereof opposite said depression and including a latching plate for engagement with said notch mounted for movement to and from a projected notch-engaging position from and to a retracted position, a solenoid for moving said latching plate to its notch-engaging position when energized, and switch means operated in response to movement of said tongue to operative position with the detent means engaged in said tongue depression to energize said switch means.

4. The arrangement of claim 1 wherein said detent means comprises a roller rotatably supported on a fixed axis perpendicular to the path of pivotal movement of said tongue.

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