COUNTERBALANCING LID SUPPORT

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The present invention relates to a counterbalancing lid support and more specifically to a simplified counterbalancing lid support and hinge construction adapted for use on the top-opening lid or closure for cabinets such as an automatic clothes washer.

Among the objects of the present invention is the provision of a counterbalancing lid or closure support and hinge construction for a top-opening lid, door or closure for the cabinet of an automatic clothes washer which provides a spring-biasing arrangement to positively hold the lid in a fully open position at a 90° angle to the top of the cabinet or enclosure. When the lid is open, the spring-biasing means is in its extended condition and when the closure or lid is moved to a closed position, the spring-biasing means is gradually compressed to prevent a sudden slamming of the lid, and the weight of the lid counterbalances the compressed spring-biasing means to retain the lid in its fully closed position.

Another object of the present invention is the provision of a lid support and hinge which is strong and simple in construction and has a minimum number of parts. The housing for the spring-biasing means is formed of a corrosion-resistant material such as a suitable plastic which will resist the deleterious or corrosive effects of the soaps, detergents, bleaches, etc., as well as the hot water, utilized by the housewife in the operation of the washer.

A further object of the present invention is the provision of a lid support and hinge assembly having a cabinet wing which is adapted to be secured to the washer cabinet adjacent the access opening in the top of the cabinet, a lid or door wing pivotally mounted on the cabinet wing and secured to the rear edge of the closure, a spring housing for a compression spring secured to the lid and spaced from the lid wing and a link pivotally mounted at one end on the cabinet wing and pivotally secured at its opposite end to the lower end of the compression spring. The pivotal connection between the cabinet wing and the lid or door wing provides the hinge for the lid.

As the novel closure support and hinge assembly assures retention of the closure in fully open position, easy and complete access for the insertion or removal of the clothes or contents of the washer cabinet is assured.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherent herein will hereinafter be described.

In the drawing:

FIGURE 1 is a vertical cross sectional view taken on the irregular line 1—1 of FIG. 2 and showing the lid or closure and counterbalancing lid and hinge support in their open position.

FIG. 2 is a front elevation view, partially in cross section, showing the underside of the lid in its open position.

FIG. 3 is a vertical cross sectional view similar to FIG. 1, but showing the lid and lid support in closed position.

FIG. 4 is a top plan view of an automatic clothes washer cabinet with a top opening lid closure and embodying the present invention.

Referring more particularly to the drawing wherein is shown an illustrative embodiment of the present invention, FIG. 4 discloses an automatic clothes washer having a cabinet or enclosure 10 with a hinged lid 11 providing a closure for an access opening 12 and a control panel 13 at the rear of the cabinet including the conventional controls for operation of the washer. The lid 11 has downwardly turned sides 14 terminating in inturned flanges 15 which partially conceal a pair of lid support and hinge assemblies 16 mounted at two adjacent corners of the lid.

The hinge assemblies 16 are mirror images of each other so as to be adapted for mounting on either side of the lid 11 (see FIG. 2). Each hinge assembly 16 includes a cabinet wing 16a having a horizontal flange 17 which is secured by rivets 18 or other suitable securing means to a depressed flange portion 19 of the cabinet 10 defining the access opening 12. The lid 11 in its closed position is adapted to be positioned within the depressed portion with the top surface 21 of the lid lying flush with the top cabinet surface 22. The cabinet wing 16a also has a vertical upwardly and rearwardly extending flange 23 which extends substantially adjacent to the interior surface of the lid. A lid wing 16b has a short arm 24 which parallels and is pivotally mounted onto the rear end of the vertical flange of the cabinet wing by a rivet 25, and an elongated arm 26 formed at right angles to the arm 24 which extends inwardly from the hinge assembly as viewed in FIG. 2 and is suitably secured to the adjacent rear edge 27 of the lid 11.

A spring housing 28 which is preferably formed of a suitable plastic material such as high density polyethylene is secured to the side edge 14 of the lid 11 with the housing located under the inwardly extending flange 15. Mounting screws 29 or other suitable fastening means extend into openings 31 in the housing 28. The housing has a longitudinally extending opening 33 which extends and opens through one end of the housing and terminates short of the opposite end 33. The side of the housing adjacent the side 14 of the lid is cut away as at 34 for a substantial distance between the openings 31, 31 to provide for movement of the enlarged head 35 of a pin 36 which extends through opposed aligned elongated openings or slots 37 in the housing 28.

A compression spring 38 is positioned within the longitudinal opening 32 with one end abutting the end 33 of the housing and the other end abutting and biasing the pin 36 toward the open end of the housing; movement of the pin being limited by the end of the housing 28, there being effective movement between the link 39, the pin 36 and the housing 28 so as to compress the spring 38. As the compressed spring will have the tendency to expand, if the lid is dropped in closing, the spring will resist a sudden slamming of the lid. As the closing movement continues, compression of the spring will increase until the lid reaches its fully closed position shown in FIG. 3. When the lid is in its closed position, the spring will tend to bias the lid toward open position, but this force is counterbalanced by the weight of the lid whereby the lid is re-
tained in closed position until manually opened by lifting. Opening movement of the lid will be limited by the elongated slots 37 which restrict movement of the pin 36.

While the invention has been shown and described as being advantageously applicable to the lid of the cabinet of an automatic clothes washer, it is not our desire or intent to unnecessarily limit the scope or the utility of the improved features by virtue of this illustrative embodiment.

We claim:

1. A counterbalancing lid support for the pivotally mounted lid of a cabinet, comprising a cabinet wing having a horizontal flange secured to a cabinet and a vertical flange extending upwardly and rearwardly of the horizontal flange, a lid wing having an arm pivotally mounted on the rear end of said vertical flange and an arm at right angles to the first arm and secured to the rear of the lid for the cabinet, an elongated housing secured to a side of the lid spaced forwardly of the lid wing and provided with a longitudinal passage therethrough closed at the forward end, said housing having aligned elongated slots on opposite sides of the housing and communicating with said passage, a compression spring located in the passage in the housing with one end seating against the closed end of the housing and a free end, a pin slidably mounted in and extending transversely through said housing and said elongated slots and against which the free end of said spring abuts, and an elongated link pivotally mounted at one end to said pin and

at the other end to the vertical flange of the cabinet wing forwardly of and spaced from the pivotal mounting for the lid wing, said link having a length greater than the spacing between said housing and said lid wing.

2. A counterbalancing lid support as set forth in claim 1, in which said housing is recessed along the side adjacent the edge of the lid for a distance greater than the elongated slot to allow movement of the enlarged head on the inner end of the pin.

3. A counterbalancing lid support as set forth in claim 1, in which said elongated slots are positioned adjacent the open end of the housing.

4. A counterbalancing lid support as set forth in claim 3, in which said elongated slots limit movement of said pin in said housing during movement of said lid between open and closed positions, said link acting through said pin to compress the spring as the lid is moved from open to closed position.

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