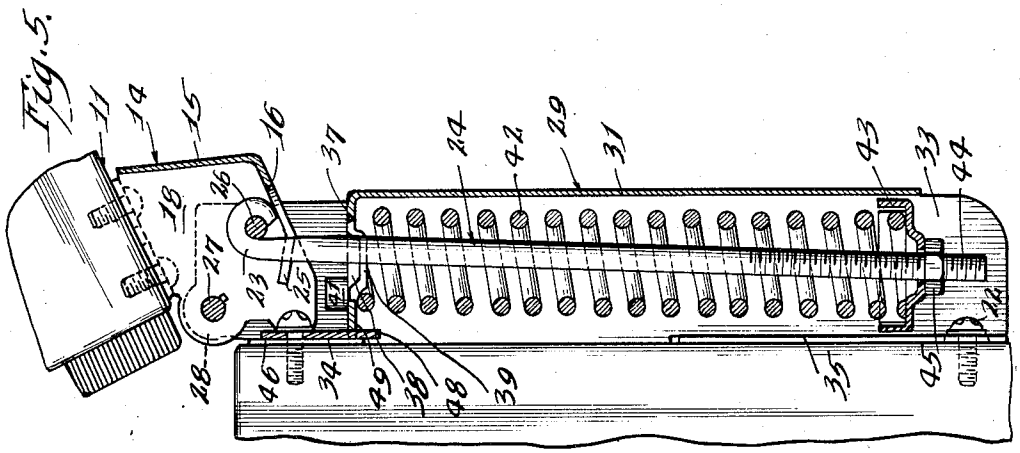
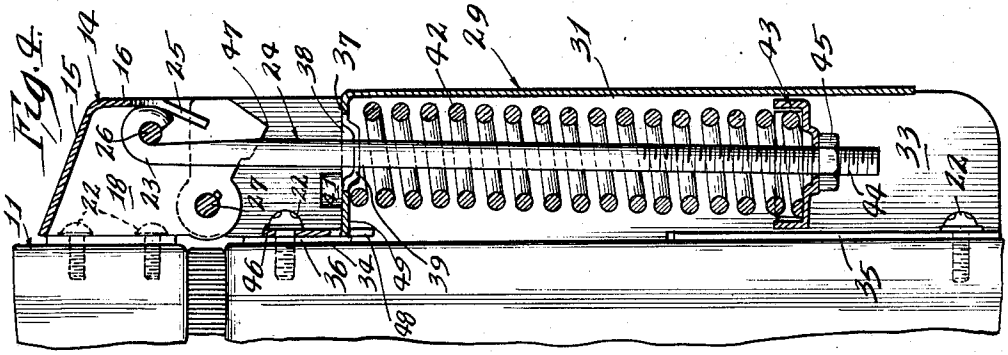
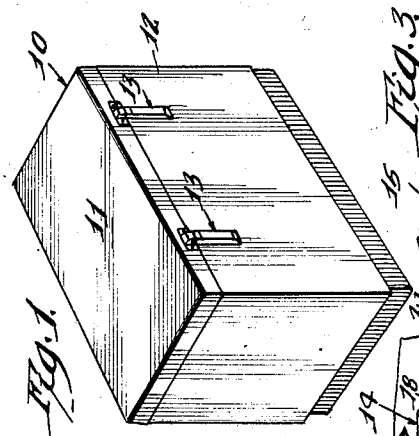
Jan. 15, 1957 W. O. BURKE 2,777,157

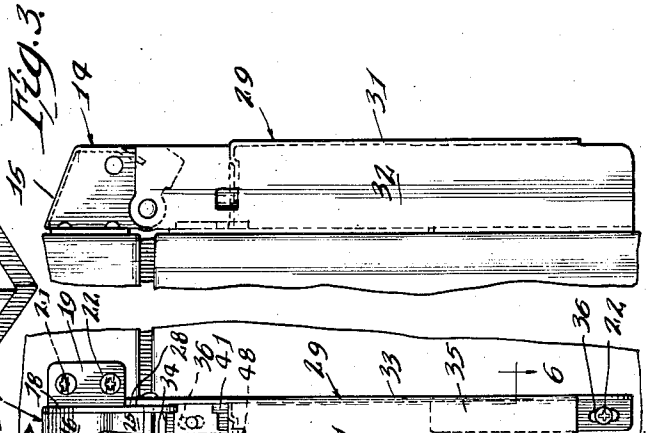
HINGE CONSTRUCTION FOR CABINETS AND THE LIKE

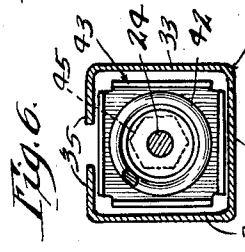
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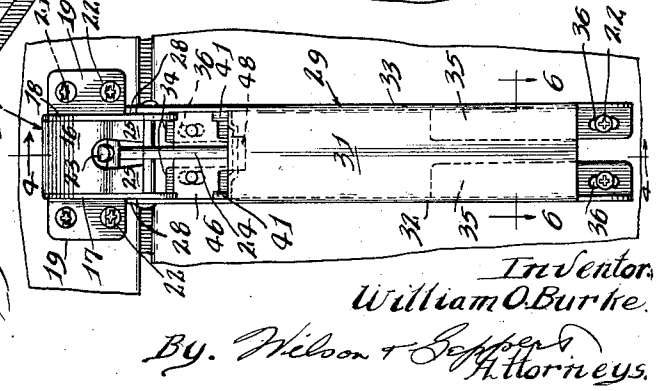












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HINGE CONSTRUCTION FOR CABINETS AND THE LIKE

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3 Claims. (Cl. 16—190)

The present invention relates to hinge constructions and more particularly to a novel spring hinge assembly for pivotally and swingably mounting a relatively heavy lid or cover of the type employed as a closure for a refrigerator or frozen food cabinet.

Although the present hinge construction is of the type disclosed in my Patent No. 2,641,019, the present embodiment comprehends a novel simplified, economical and compact form of spring-loaded hinge unit adapted for pivotally mounting and effectively supporting and retaining a heavy lid or closure in open position to permit free and ready access to the interior of a chest or cabinet.

Among the objects of the present invention is the provision of a novel spring-loaded hinge assembly for pivotally mounting and supporting a relatively heavy lid or closure whereby a person may lift the lid with a minimum of effort, be assured that such lid will be retained in elevated position while access is being had to the interior of the cabinet, and the lid may again be lowered with a minimum of effort and without danger to the person or user.

Another object of the present invention is to provide a novel hinge assembly for a chest type freezer in which the manual raising and lowering of the heay lid or closure is effectively assisted thereby resulting in a substantial reduction in the manual effort or force required of the user in raising and opening the lid restraining the weight and leverage of the lid or closure so as to prevent its dropping and injuring the user, and assisting in the lowering and closing of the lid.

Further objects are to proivde 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 inherently possessed thereby.

In the drawing:

Figure 1 is a perspective view taken from the rear of a cabinet or the like equipped with a pair of the novel hinge assemblies for pivotally and swingably mounting the lid or closure upon the body of the cabinet.

Fig. 2 is an enlarged view in rear elevation of one of the hinges and showing the means and manner of attaching the hinge to the lid and body or box of the cabinet.

Fig. 3 is a view in side or end elevation of the assembly of Fig. 2.

Fig. 4 is a further enlarged view of the hinge assembly in vertical cross section, the view being taken in a plane represented by the line 4—4 of Fig. 2 and viewed in the direction of the arrows.

Fig. 5 is a view in vertical cross section taken in the same plane as Fig. 4, but showing the component parts of the hinge assembly in the position these parts occupy when the lid or cover of the cabinet is moved to open position.

Fig. 6 is an enlarged view in horizontal cross section

taken in a plane represented by the line 6—6 of Fig. 2 and viewed in the direction of the arrows.

Referring more particularly to the disclosure in the drawing and to the illustrative embodiment therein shown, the present novel hinge assembly is shown as mounted upon a cabinet or chest **10** generally of the type employed for the refrigeration and storage of frozen foods and the like. Such a cabinet is provided with a pivotally mounted lid or cover **11** hinged for swinging movement along its rear edge to the upper rear edge of the body, box or container **12** of the cabinet, the lid or cover being generally of a relatively thick, insulated construction and of substantial weight, so that when moved to its lowered, closed position it forms a tight closure that effectively seals and insulates the storage space in the cabinet from the exterior.

Due to the weight and size of the lid or closure **11** for such cabinets, substantial effort and leverage is required for the housewife or user to lift the lid or closure to its partially or fully raised and open position and to lower the lid to its closed position. Unless such a lid is effectively counter-balanced to maintain it in an elevated position and to facilitate its being lowered to closed position, injury may readily result should it fall freely or unchecked.

To counteract the weight and effort normally required for a lid or cover **11** of the type employed, and to permit the use of such a cabinet in a minimum of space, the novel hinge assembly **13** of the present invention provides effective means for counter-balancing such weight and leverage in such manner as to relieve the housewife or user of the considerable effort that would normally be required in opening and closing the lid or cover.

One or more of the novel hinge constructions and assemblies **13** may be mounted upon the cabinet in suitably spaced relation, depending upon the size and weight of the lid. Fig. 1 shows two of these hinge assemblies mounted in spaced relation with each assembly comprising a lid wing or hinge member **14** which when the lid is in closed position includes a top wall **15** inclined downwardly and rearwardly, a rear wall **16** and spaced side walls **17** and **18**. Each side wall is provided with a laterally projecting flange **19** having spaced and laterally elongated openings or slots **21** for the reception of screws, bolts or other attaching means **22** for securing these flanges to the rear edge of the lid **11**.

To permit the lid **11** and its lid wing **14** to swing to open position, the rear wall **16** (Figs. 2, 4 and 5) is provided with a downwardly opening notch or recess adjacent and in alignment with the upper hook-shaped end **23** of a hook bolt or spring retainer rod **24**, the depending upper end of the bolt or rod **24** being adapted to be received in the slot and between the inturned bifurcations **25** of the wall **16** when the lid is raised to open position. The upper hook-shaped end **23** of this bolt or rod is anchored upon a transverse pivot pin **26** bridging and having its opposite ends anchored in the opposite side walls **17** and **18** of the lid wing or hinge member **14**, the latter being pivotally mounted for swinging movement upon a cross pin **27** having its opposite ends carried in the upper, spaced extensions **28** of a fixed hinge base or member **29** anchored upon or secured to the body or container **12** of the cabinet **10**.

The fixed hinge base or member **29** is of substantially channel shape having a rear wall **31** and side walls **32** and **33** which project above and below the upper and lower ends of the rear wall **31**, the upper ends providing the spaced extensions **28**. At the inner end of each side wall there are spaced, inturned flanges **34** and **35** adapted to bear against the rear wall of the body or container **12** of the cabinet, and each flange is provided with an elongated and longitudinally extending slot **36** for the passage

therethrough of a bolt, screw or other attaching means 22.

The rear wall 31 of the hinge base is provided with an inturned flange providing a top plate 37 that is centrally depressed at 38, and this depression is provided with an elongated, transverse slot 39 for the passage therethrough of the hook bolt or spring retainer rod 24, the slot being of such length as to permit lateral movement of the upper end of the hook or rod from the substantially vertical position of Fig. 4 to the inclined position of Fig. 5, as the lid or cover 11 is moved from closed to open position. Each of the opposite sides 32 and 33 is indented at 41 to provide stops or abutments to locate and retain the top plate 37 in the position shown, the underside of which plate is engaged by the upper end of a relatively heavy compression spring 42 located by the depressed portion 38.

The compression spring 42 encompasses the spring retainer rod 24 and at its lower end this spring is received in a cup-shaped retainer plate 43 vertically adjustable and movable in the hinge base 29 and having a centrally disposed opening through which projects the lower, threaded end 44 of the hook bolt or spring retainer rod 24. A nut 45 secures the freely adjustable retainer plate 43 upon the hook bolt or retainer rod 24 in proper adjustment, such adjustment controlling the compression on the coil spring 42.

A substantially T-shaped stop plate 46 is located inwardly of the upper, inturned anchoring flanges 34 and provides a stop against which the edges 47 of the side walls 17 and 18 of the lid wing or hinge member 14 abut when the lid is in its fully open position. This stop plate 46 is provided with openings adapted to be aligned with the elongated slots 36 in the flanges 34 for the reception of the attaching screws or bolts 22, and its depending leg 48 is conformably and slidably received in an aligned slot in the inturned edge 49 of the top plate 37.

By locating the openings in the stop plate 46 and the slots 36 in the anchoring flanges 34 and 35 above and below the upper and lower ends of the rear wall 31 of the hinge base 29, the screws or other attaching means 22 may be readily inserted or removed, and by elongating the slots for the attaching screws 22, both the hinge wing 14 and the hinge base 29 may be easily and readily adjusted upon their supporting surfaces.

By means of the present invention the weight of the lid is counteracted by the compression spring 42 whereby the housewife or user is relieved of the considerable effort that would normally be required, especially in raising the lid or cover and retaining it in elevated position when inserting or removing food or other produce stored therein. Furthermore, by adjusting the nut 45 on the threaded, lower end of the hook bolt or spring retainer rod 24, the compression on the coil spring 42 may be readily adjusted whereby the hinge assembly may be adapted to lids 11 of different weights and to retain such lids in open position as well as in desired positions of balance and leverage.

As will be evident from Figs. 4 and 5 which show the position of the lid wing or hinge member 14, the hook bolt or spring retainer rod 24 and the compression spring 42 when the lid is disposed in fully lowered or closed position (Fig. 4) and when the lid is elevated to fully open position (Fig. 5), the hook bolt or spring retainer rod is disposed in substantially vertical position when the lid is closed and the spring is under maximum compression, the lid being held closed and the food compartment sealed at such time by any suitable latch construction.

When the lid is unlatched and raised, the hinge wing 14 on the lid rotates about its pivot pin 27 carried by the upper end of the hinge base 29, and the pivot pin 26 to which the hooked end of the hook bolt or spring retainer rod 24 is attached is swung outwardly and downwardly. In such movement, the coil compression spring 42 expands and carries therewith the cup-shaped retainer plate 43 in which the lower end of the compression spring is carried and which retainer plate is freely movable in the lower end of the hinge base 29. In this fully open position the upper end of the hook bolt or spring retainer rod 24 is moved rearwardly so that the hook bolt or rod assumes an inclined position as in Fig. 5. In this latter position the upper end of the hook bolt or spring retainer rod 24 enters the notch in the rear wall 16 of the lid wing 14 between its bifurcations 25 and moves rearwardly in the elongated slot 39 in central depressed portion 38 of the inturned flange of the hinge base 29.

In the fully open position of Fig. 5, the forces tending to move the lid to its lowered or closed position will be substantially in balance, and as the lid is moved toward its closed position, the effect of its weight and leverage becomes increasingly greater, but the rate of compression and the resistance of the compression spring 42 simultaneously increases and resists this force. Thus the novel hinge construction assists in raising or opening the heavy lid by reducing the effort required, and restrains the weight and leverage of this heavy lid so as to prevent its falling and injuring the housewife or user.

Although the invention is disclosed as applied to a cabinet of the type employed in refrigeration or low temperature storage units, it is to be understood that the present invention is not limited thereto but is adaptable for use wherever a relatively heavy lid or closure must be manually raised or lowered for access to the interior of a receptacle or enclosure.

Having thus disclosed the invention, I claim:

1. A spring hinge assembly for pivotally mounting a relatively heavy lid upon the storage compartment of a cabinet and assisting in the raising of the lid and retaining the lid balanced in open position, consisting of a hollow hinge base adapted to be fixedly mounted upon the rear of the storage compartment and providing an enclosure including a rear wall, side walls having their ends projecting above and below the opposite ends of the rear wall and inturned flanges on said projecting ends adapted to anchor the hinge base to the rear of the storage compartment, a hinge wing adapted to be rigidly mounted upon the rear of the lid, means for pivotally connecting the hinge wing to the upper end of the hinge base, a spring-loaded hook bolt longitudinally movable in the hinge base and pivotally mounted at its upper end upon the lid wing, a retainer adjustably mounted on the lower end of the hook bolt for adjusting the spring-loading of said bolt, said hinge base being open at its lower end and adjacent its upper end provided with a transverse plate through which the upper end of the hook bolt projects, an elongated slot in said plate allowing the hook bolt limited lateral movement in said hinge base when the lid is moved to open and closed positions, a vertically arranged stop plate mounted in said hinge base above said transverse plate and connected to said inturned anchoring flanges adjacent the top of the hinge base, and stop members on the opposite sides of the hinge wing adapted to engage the stop plate when the lid and its hinge wing are moved to fully open position.

2. A spring hinge assembly for pivotally mounting a relatively heavy lid upon the storage compartment of a cabinet and assisting in the raising of the lid and retaining the lid balanced in open position, comprising a forwardly opening channel-shaped hinge base provided with spaced, inturned anchoring flanges adapted to be fixedly mounted upon the rear of the storage compartment to anchor the hinge base to said compartment, a hinge wing having spaced sides adapted to be fixedly mounted upon the rear of the lid, means for pivotally connecting the hinge wing to the upper end of the hinge base to permit opening and closing of the lid, a spring-loaded hook bolt longitudinally movable in the hinge base and pivotally mounted at its upper end upon the lid wing and including a coil compression spring, a spring retainer adjustably mounted on the lower end of the hook bolt for adjusting

the spring-loading of said bolt, said hinge base being open at its lower end and adjacent its upper end provided with an inturned flange through which the upper end of the hook bolt projects, one end of the coil spring abutting the underside of the inturned flange and the other end carried in the retainer, an elongated slot in said inturned flange allowing the hook bolt limited lateral movement in said hinge base as the lid is moved from closed to open position, a vertically arranged stop plate mounted in said hinge base above said flange and upon the inturned anchoring flanges on the hinge base, and stop members on the opposite sides of the hinge wing adapted to engage the stop plate when the lid and its hinge wing are moved to fully open position.

3. A spring hinge assembly for pivotally supporting a relatively heavy lid upon the container of a cabinet and assisting in the opening of the lid, comprising a stationary hinge base having a rear wall, side walls each provided with attaching flanges for securing and fixedly mounting the hinge base to the rear of the container and an inturned flange spaced from the upper end of the hinge base to provide a hollow enclosure, a hinge wing having spaced side walls provided with attaching flanges for securing the hinge wing to the lid, means for pivotally mounting the spaced sides of the hinge wing upon the upper end of the spaced stationary side walls of the hinge base to permit opening and closing of the lid, a spring-loaded

hook bolt longitudinally movable in the hinge base and pivotally mounted at its upper end upon the lid wing and including a coil compression spring, a spring retainer adjustably mounted on the lower end of the hook bolt for adjusting the compression on said spring, said hinge base being open at its lower end for longitudinal movement of the lower end of the hook bolt and its retainer and access thereto, one end of the coil spring abutting the underside of the inturned flange and the other end carried in the retainer, an elongated slot in said inturned flange allowing the hook bolt limited lateral movement in said hinge base as the lid is moved from closed to open position, a vertically arranged stop plate mounted in said hinge base upon the attaching flanges thereof and provided with a depending projection received and located in a slot in said inturned flange, and stop members on the opposite sides of the hinge wing adapted to engage the stop plate above said inturned flange when the lid and its hinge wing are moved to fully open position.

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