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SPRING BALANCED HINGE

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Fig. 1

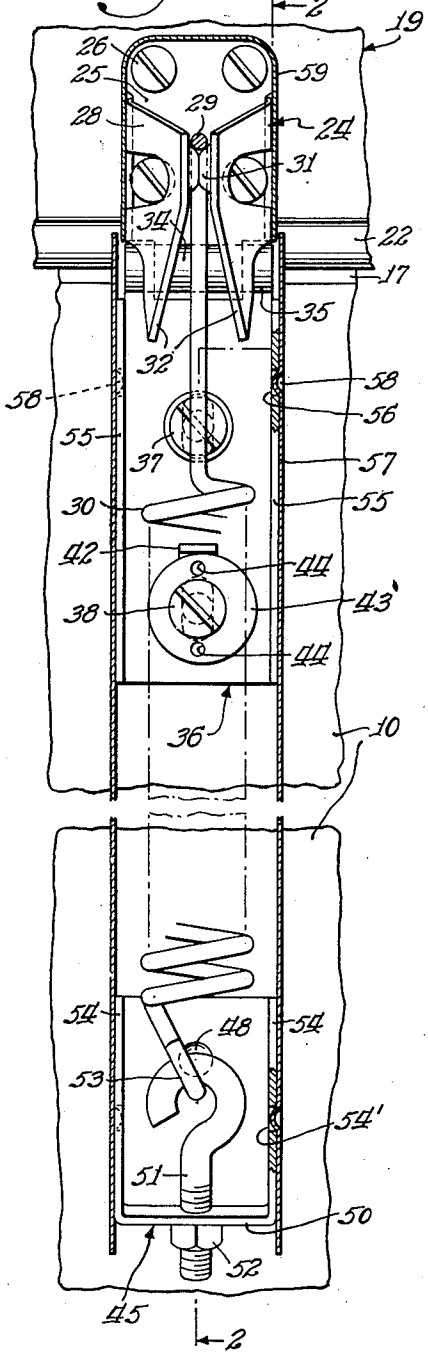
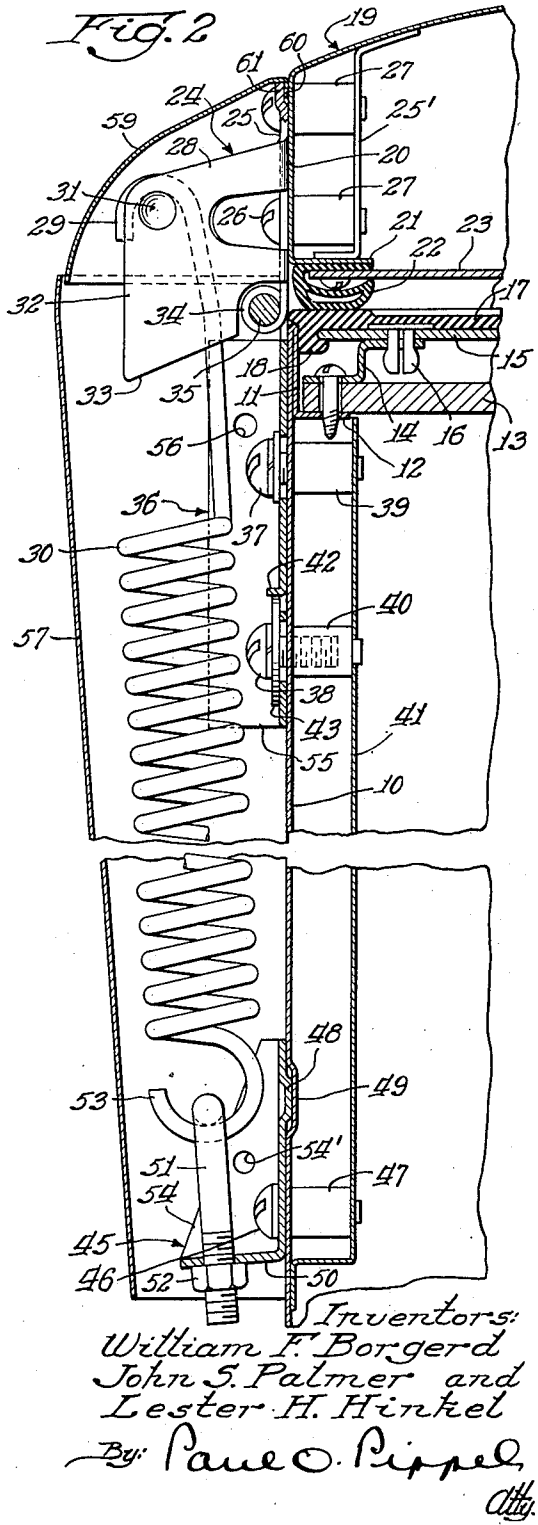


Fig. 2



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SPRING BALANCED HINGE

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2 Claims. (Cl. 16—180)

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This invention relates to a spring-balanced hinge. More particularly it relates to a balanced spring construction particularly adapted for horizontally arranged doors of considerable weight such as are used on refrigerator cabinets.

The principal object of the invention is to provide an improved balanced hinge construction having a minimum of simplified parts.

Another important object is to provide a structure which is easily enclosed by readily removable enclosing means so that access may be had to the balancing spring and the attaching means for the hinge parts.

Other objects will be apparent from the detailed description to follow.

In the attached drawing:

Figure 1 is a rear view of portions of a cabinet and a horizontally arranged closure therefor with a hinge incorporating the invention mounted thereon, portions of the closures for the hinge elements being broken away in section to better view the hinge construction.

Figure 2 is a vertical transverse section through the cabinet, showing the hinge elements in section, the section line being indicated by 2—2 in Figure 1.

Only portions of such walls of a cabinet are illustrated as are necessary to show the attaching points of the hinge construction of the invention and how it operates to balance a closure for the cabinet. A refrigeration cabinet is illustrated which has a particular breaker strip construction for sealing the cabinet against flow of air and also to maintain the heat leak to a minimum.

In the construction shown, an outer rear wall 10 has a folded-over upper portion 11 to form a double-edged upper portion of the wall 10. This provides a reenforcement and additional strength at the upper edge of the wall. A flange 12 bent outwardly at the bottom edge of the folded portion 11 provides supporting means for a horizontal rigid strip 13. Said strip also provides means for supporting a member 14 which in turn supports a thin strip 15, said strip being secured by snap fasteners 16 one of which is illustrated. A resilient breaker strip 17 fitted over the strip 15 has a portion overlapping the top edge of the upper portion of the wall 10 and a depending portion 18 which is fitted around the terminating edge of the strip 15 to hold the resilient breaker strip 17 in position. The lid or closure for the cabinet includes an outer wall 19 having a curved upper portion and a vertical rear wall 20. At the lower end of the wall 20 a right-angled flange extension 21 provides means for securing a resilient sealing member 22 and an inside wall 23.

To provide the balanced hinge construction of the invention, a bracket designated in its entirety by the reference character 24 has a flat face portion 25 which is secured by four threaded securing members 26 to the end wall 20 of the cabinet cover. To provide reenforcing means for securing said bracket, a metal reenforcing strip 25' is secured inside the cover or lid to the upper curved wall and to the flange 21 spaced from the end wall 20. Bushings 27 between the strip 25 and the wall 20 provide means for receiving and securely anchoring the threaded elements 26.

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The bracket 24 is formed with integral rearwardly and inwardly projecting extensions 28. Said extensions are spaced apart a sufficient distance to receive a hooked end 29 formed on a tension spring 30. To provide retaining means for said spring end, two inwardly pressed complementary and circular projections 31 are formed on the adjacent portions of the extensions 28, said circular projections 31 being welded together and adapted to serve for pivotally securing one end of said spring.

The extensions 28 on the bracket 24 are formed with further extensions 32 projecting downwardly, said extensions being formed with angularly positioned edge portions 33 adapted to abut surfaces of the hinge member mounted on the cabinet, as will be hereinafter described, to limit opening movement of the cabinet lid or cover.

The bracket 24, in addition to providing a securing means for the balancing spring, extends downwardly and is provided with a cylindrical portion 34 of substantial length to provide a bushing for a hinge pin 35. As best shown in Figure 2, the bracket extensions 32 are cut out adjacent the hinge axis to provide clearance for the cooperating portions of the hinge which are formed on the cabinet hinge member to be hereinafter described.

A hinge member designated in its entirety by the reference character 36 is mounted on the rear wall 10 of the cabinet, being secured thereagainst by an upper threaded member 37 and a lower threaded member 38. Said members are threaded into bushings 39 and 40, respectively, secured between the wall 10 and a reenforcing member 41 spaced from said wall.

The bracket member 36 is formed with vertical slots at the points where the threaded members 37 and 38 are located to permit vertical adjustment of said hinge member. A bent-out abutment 42 formed on the member 36 is adapted to abut a circular member 43 rotatably mounted with respect to the lower threaded securing element 38. As best shown in Figure 1, the circular member 43 is eccentrically mounted on the securing element 36 whereby by rotation of said member against the abutment 42 the hinge member 36 may be adjusted vertically on the cabinet. Recesses 44 are shown in the member 43 to provide engaging means for rotating said eccentrically mounted member. By loosening the

threaded elements 37 and 38, the hinge member 36 may be adjusted, and by tightening said elements, the member may be secured to carry a substantial load without slipping in a downward direction due to the provision of the member 43 and the abutment 42.

A bracket 45 is secured to the cabinet wall 10 spaced a substantial distance downwardly below the hinge member 36. Said bracket is secured to the wall 10 by a threaded element 46, a bushing 47 being provided between the wall 10 and the member 41, previously referred to, in order to provide the necessary strength for supporting a strong tension spring.

The bracket 45 is also provided with a pressed-out projection 48 which fits into an indentation 49 in the wall 10 to further secure said bracket against slippage with respect to the cabinet wall.

A right-angled extension 50 of the bracket is provided with an opening through which a hook bolt 51 extends, said bolt being provided with a threaded nut 52 by means of which tension on the spring may be regulated. A hooked end 53 of the spring 30 engages the hook bolt 51.

The bracket 45 has side portions 54 provided with openings 54', and the hinge member 36 has side flanges 55 which are provided with openings 56. An enclosure member 57 substantially channel-shaped in cross-section is fitted over the balancing spring 30 and the associated parts, said channel being provided with a plurality of indentations 58 adapted to snap into the openings 54' and 56 to resiliently secure said enclosure in position at the rear of the wall 10, thereby concealing the balancing mechanism and the attaching brackets. A second enclosure 59 in the form of a hood is mounted over the bracket 24 to enclose said bracket and other associated parts. Said enclosure is formed with a flange 60 which fits over a flange 61 formed around the upper portion of the flat portion 25 of the bracket 24. It will be noted that said enclosure fits within the upper open end of the enclosure 57 slightly overlapping the upper edge of said enclosure, whereby it may telescope within the enclosure 57 during hinging movement of the cabinet lid or cover.

The operation of the balanced hinge construction of this invention has been explained in connection with the description of the parts thereof. Applicant has provided a simplified bracket structure which provides attachment for the tension spring and a stop for limiting the movement of the hinge. The hinge member on the cabinet and the two have been provided with means to support readily detachable enclosure members whereby the balancing mechanism and the hinge construction are completely enclosed without the exposure of securing elements and the like. Such a construction prevents the entrance of dirt and other foreign materials to the spring construction and at the same time provides a functionally correlated enclosure having improved appearance.

It is to be understood that applicants have shown only a preferred embodiment of their improved spring-balanced hinge construction and that they claim as their invention all modifications falling within the scope of the appended claims.

What is claimed is:

1. A hinge construction for a cabinet having a wall and a cover, comprising: a hinge member secured to the wall and having apertured flanges projecting outwardly therefrom and from the wall of the cabinet; a second hinge member pivoted to the first hinge member and secured to the cover, said second hinge member having a pair of spaced integral extensions that extend outwardly and terminate at their ends in parallel closely spaced relation, each of said extensions being provided proximate said ends with a projection extending inwardly toward the other and abutting each other and having said portions welded together to provide a pivot-like spring securing means; a balance spring having one end pivotally connected to said spring securing means; a bracket secured to the cabinet wall spaced below the first hinge member; means for securing the other end of the spring to the bracket, said bracket having apertured flanges extending outwardly therefrom and from the cabinet wall; a shield of generally U-shaped cross-section enclosing the spring, bracket and first hinge member and having indentations resiliently fitting the apertured flanges of the first hinge member and of the bracket for removably securing said shield in position; a shield enclosing the second hinge member and having a wall curved substantially about the hinge pivot axis and being receivable within the upper end of the U-shaped shield whereby it may move into the upper end of the first shield when the cover is opened; and means for securing the second shield to the cover.

2. A hinge construction for a cabinet having a wall and a cover, comprising: a hinge member secured to the wall and having flanges projecting outwardly therefrom and from the wall of the cabinet; a second hinge member pivoted to the first hinge member and secured to the cover, said second hinge member having a portion extending outwardly therefrom; a balance spring having one end connected to the outwardly extending portion of the second hinge member; a bracket secured to the cabinet wall spaced below the first hinge member; means for securing the other end of the spring to the bracket, said bracket having flanges extending outwardly therefrom and from the cabinet wall; a shield of generally U-shaped cross-section enclosing the spring, bracket and first hinge member and having portions resiliently fitting the flanges of the first hinge member and of the bracket for removably securing said shield in position; a shield enclosing the second hinge member and being receivable within the upper end of the U-shaped shield whereby it may move into the upper end of the first shield when the cover is opened; and means for securing the second shield to the cover.

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