

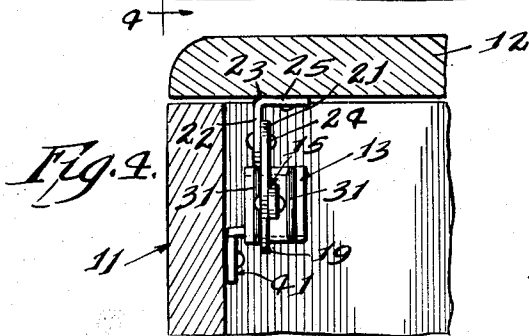
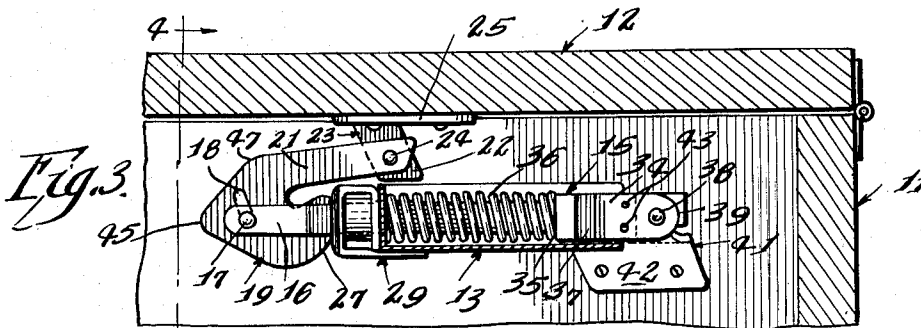
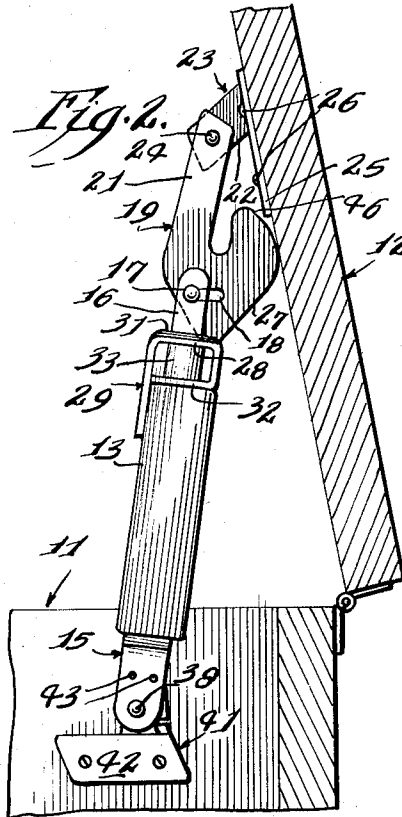
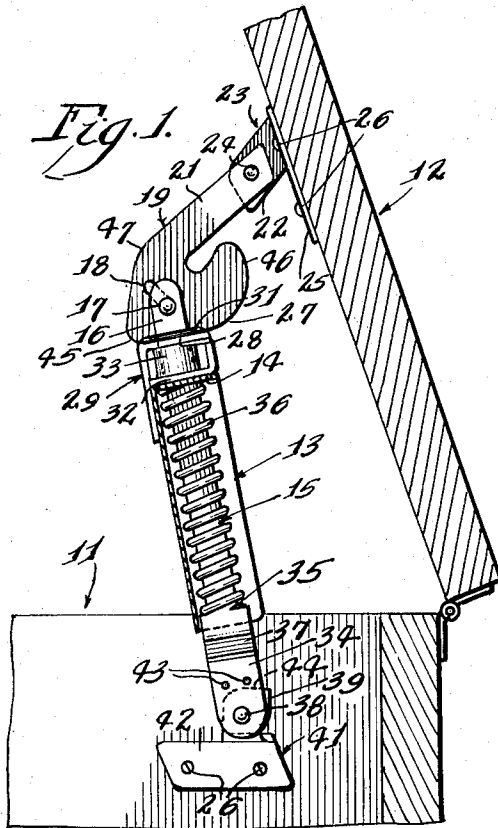
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COUNTERBALANCED COVER LIFT

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1

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COUNTERBALANCED COVER LIFT

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5 Claims. (Cl. 217-60)

The present invention relates to a cover lift for a cabinet assembly such as those employed in housing the assembly or component parts of a record player, radio, and more particularly to a novel counterbalanced cover lift for retaining the cover in fully open or in any intermediate open position.

It is, therefore, an important object of the present invention to provide a novel cover lift assembly for a cabinet in which the cover is readily and easily moved to open position and is tensionally retained in such open position without danger of the cover dropping and injuring the operator or causing damage to the mechanism within the cabinet. For example, in record players or in high fidelity units, dropping of the cover or a sudden jar as may occur when the cover is carelessly thrown open, may result in damage to the stylus, records and/or other parts and such damage could involve substantial expense for repair or replacement of the damaged parts.

A further object of the present invention is the provision of a novel cover lift assembly capable of rigidly and securely retaining the cover in any desired elevated position and effectively compensating for the weight of the cover in any such positions of adjustment.

The present invention further comprehends the provision of a novel spring-loaded cam unit for a counterbalanced cover lift whereby the cover or lid of a cabinet may be elevated and retained in its normal fully open position or in any intermediate open positions, and also provided with novel means permitting the cover to be opened to an extreme open position without disconnection of any of the cover lift in the event complete access to the mechanism housed within the cabinet is required. This is of particular importance in the assembly, repair or replacement of the record changer or other component parts of a record player or the like when service is required.

Another object of the present invention is the provision of a novel cover lift including a spring-loaded cam member so constructed and arranged as to automatically and effectively compensate for the weight of the cover in any position to which it may be opened and to positively retain the cover in such elevated position.

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 inherently possessed thereby.

The invention further resides in the construction, combination and arrangement of parts illustrated in the accompanying drawing, and while there is shown therein a preferred embodiment it is to be understood that the same is susceptible of modification and change, and comprehends other details, arrangement of parts, features and constructions without departing from the spirit of the invention.

In the drawing:

Figure 1 is a view in side elevation of the novel counterbalanced cover lift shown in position with the cover or

2

lid of a cabinet held in its normal, fully open position, the housing being longitudinally sectioned or broken away to disclose the internal assembly.

Fig. 2 is a view in side elevation of the assembly of Fig. 1 but with the housing complete and the cover moved or elevated to its extreme and maximum open service position to permit ready access to the mechanism contained within the cabinet by a service man or to facilitate assembly or replacement of the component parts of a record player or other mechanism housed within the cabinet.

Fig. 3 is a view of the assembly of Fig. 1 when the cover or lid has been lowered to closed position.

Fig. 4 is a view in vertical cross section through the cover and cabinet and showing in end elevation the novel cover lift with the cover closed, the view being taken on the line 4-4 of Fig. 3 and viewed in the direction of the arrows.

Referring more particularly to the disclosure in the drawing in which is shown an illustrative embodiment of the present invention, the novel counterbalanced cover lift is disclosed in a cabinet assembly 11 in which a cover or lid 12 is intended to be elevated and retained in partially or fully open position, and when moved to its lowered position is to be retained closed but with the pressure on the cover relieved whereby to prevent warping.

The novel counterbalanced cover lift assembly of the present invention comprises a substantially U-shaped housing 13 provided at its outer or upper end with an end wall 14 having a slot for conformably but slidably receiving a spring guide 15 in the form of an elongated flat bar that projects through the slot and beyond the end wall 14 of the housing where its outer end 16 is provided with a transverse rivet or pin 17 projecting through an elongated slot 18 in the cam member 19.

The cam member 19 is formed or provided with an arm 21 pivotally connected to a projecting leg 22 of an L-shaped bracket 23 by means of a rivet or pin 24, the other leg or base 25 of this bracket being affixed by screws or other attaching means 26 to the underside of the lid 12 adjacent one corner thereof. The disclosed cam member is provided with a cam face 27 with the contiguous surface on the outer or upper ledge 28 of a slide member 29 maintained in frictional contact with this cam face. This slide member which is located and carried upon the exterior of the end wall 14 and the housing 13 is preferably formed of solid brass to minimize wear and to substantially prolong its life. It is also provided with spaced upstanding ribs 31 on its upper or outer surface of the ledge 28 with one of the ribs being disposed alongside the face of the cam member 19 to prevent buckling or lateral displacement of this member. Two of these ribs are provided and so spaced apart whereby the cam member 19 may be disposed at and pivotally connected to either side of the outer end 16 of the spring guide 15.

As disclosed, this slide member 29 is of substantially P-shape with its upper or outer ledge 28 and its inturned end 32 maintained in spaced relation by a hollow spacer 33 mounted therebetween. Each of these spaced parallel surfaces 28 and 32 is provided with a slot with these slots and the opening in the spacer 33 aligned to conformably receive and through which projects and moves the outer or upper portion of the spring guide 15 adjacent its end 16.

The spring guide 15 adjacent its inner or lower end 34 is enlarged to provide laterally projecting shoulders at 35 providing a seat for the lower or inner end of a coil spring 36, the outer or upper end of the spring seating against the interior of the end wall 14 of the housing 13 whereby this coil spring is maintained under compression. Beyond its enlargement 35 and between this enlargement and its inner or lower end 34, this spring guide is offset

at 37 and its lower end is pivotally connected by a rivet or pin 38 to one leg 39 of a Z-shaped bracket 41. The other leg or base 42 of this bracket is affixed to the interior of a side wall of the cabinet 11 by screws or attaching means 26.

The end 34 of the spring guide 15 is also provided with spaced embossments projecting from the face of the end 34 opposite to that shown in Figs. 1, 2 and 3 in which the indentations 43 for such embossments or protuberances are shown. These embossments are located adjacent the outer or upper edge 44 of the leg 39 of the bracket 41, the latter being rounded at one corner and at the other corner extended, whereby relative movement between the end 34 of the spring guide 15 and the leg 39 of the bracket 41 is permitted in one direction but limited in the other direction.

In the operation of the present cover lift, Fig. 1 shows the cover or lid 12 manually raised to its normal, fully elevated position with the flat portion of the cam surface 27 retained in contact with the upper surface 28 of the slide member 29.

The contour of the cam face is such as to compensate for the weight of and retain the cover or lid at any angle or degree of opening. The reverse cam action eliminates sudden jar when the cover is carelessly moved or thrown to open position, thus protecting the stylus and record of a record player.

When the novel lift is employed in a radio, record player, etc., the cover may be elevated to the maximum open position shown in Fig. 2 whereby the component parts of the mechanism housed in the cabinet 11 may be most conveniently assembled or serviced, the person assembling or servicing being assured that the cover will be maintained in this extreme elevated position until again manually lowered. This requires no disconnection and resting of the cover at angle of approximately 180° from its closed position, frequently resulting in injury to the butt hinges or loosening of its attaching screws.

All that is required to move the cover from the normal fully elevated position in Fig. 1 to that of Fig. 2 is for the operator to press his thumb against the cam member at approximately the point designated by the reference character 47 and thereby shift the position of the rivet from the rear end of the slot 18 (Fig. 1) to the other or forward end of this slot (Fig. 2), whereupon the corner or angular portion 45 of the cam member seats upon the surface of the ledge 28 of the slide member 29 and the cover 12 is locked or rigidly held in this fully open position. To release the cam member 19 and cover lift for lowering the cover 12 merely requires that the operator engage the rear of the housing 13 and pull forwardly whereupon the cam member 19 pivots and the position of the rivet or pin 17 shifts to other end of the slot (Fig. 1).

When the cover 12 is moved to its lowered position as in Fig. 3, the rounded portion 46 of the cam surface 27 seats against the surface of the ledge 28 of the slide member 29. In this position, the cover is relieved or pressure and possible warping.

The cover lift being connected by the Z-bracket 41 to a side rather than to the back of the cabinet 11, torsional rigidity is attained by such mounting and alignment of the back and corner joints of the cabinet is effectively maintained. While there is shown but a single cover lift positioned in one corner of the cabinet, another may be provided in the opposite corner, if required or desired.

Having thus disclosed the invention, I claim:

1. A cover lift for retaining the hinged cover of a cabinet in elevated position, comprising a cam member having an arm pivotally attached to the cover, an elongated spring guide pivotally connected at one end to said cam member and at its other end pivotally connected to said cabinet, said spring guide having a shoulder adjacent its other end, a housing for said spring guide and through which projects the end of said spring guide that is con-

nected to said cam member with said spring guide longitudinally movable in said housing, a coil spring encompassing said spring guide with one end seating within and against one end of said housing and the other end of said spring seating upon said shoulder on said spring guide whereby said coil spring is maintained under compression, a slide member disposed upon an end of said housing adjacent said cam member and having a ledge against which the cam face of said cam member engages and slotted to slidably receive the adjacent end of said spring guide whereby said slide member and said housing are bodily shiftable upon said spring guide, said slide member having spaced parallel slotted portions one of which provides said ledge that is maintained in contact with said cam member and a spacer therebetween through which spacer and said slotted portions said spring slide projects and is movable.

2. A cover lift for retaining the hinged cover of a cabinet in elevated position, comprising a cam member having an arm pivotally attached at one end on a fixed axis to the cover and at its other end provided with a cam face and an elongated slot adjacent the cam face, a one-piece, flat spring guide pivotally and slidably connected at one end in the slot of said cam member and at its other end pivotally connected to said cabinet, a housing through which said spring guide projects and through which it is longitudinally movable with said housing provided with a slotted end wall through which an end of said spring guide projects for connection to the slot in said cam member, a coil spring encompassing said spring guide within said housing with one end of said spring seating against the slotted end wall of the housing and the other end seating upon a shoulder provided on said spring guide intermediate its length, a slide member disposed at the exterior of and upon an end of said housing adjacent said cam member and having a ledge against which the cam face of said cam member engages and slotted to slidably receive the adjacent end of said spring guide whereby said slide member and said housing are bodily shiftable upon said spring guide by engagement of said cam face with the slide member, said slide member having a part projecting along one side of said housing, slotted spaced parts one of which provides said ledge and a hollow spacer therebetween, the slots in said spaced parts slidably receiving said spring guide with said ledge tensionally pressed into contact with said cam face.

3. A cover lift for retaining the hinged cover of a cabinet in elevated position, comprising a cam member having a cam face and a part pivotally connected to the cover upon a fixed axis, a spring guide pivotally and slidably connected at one end to said cam member and at its other end pivotally connected to said cabinet, a projection on said spring guide adjacent said other end, embossments on the other end of said guide to limit its pivotal movement in one direction, a housing through which said spring guide projects and within which it is longitudinally movable with said housing provided with a slotted end wall through which an end of said spring guide projects for connection to said cam member, a coil spring encompassing said spring guide within said housing with one end of said spring seating against the slotted end wall of the housing and the other end seating upon said projection on said spring guide, a slide member loosely arranged and longitudinally movable on said spring guide on one end of said housing adjacent said cam member and maintained in contact with the cam face whereby said slide member and said housing are bodily shiftable upon said spring guide and the spring is maintained under compression.

4. A cover lift for retaining the hinged cover of a cabinet in any one of a plurality of elevated positions and to compensate for the weight of the elevated cover, comprising a cam pivotally connected at one end upon a fixed axis to the cover and having a cam face at its other end, a spring guide pivotally connected at one end to the

5

other end of said cam member adjacent said cam face and at its other end pivotally connected to said cabinet, an abutment on said spring guide adjacent its other end, a housing for said spring guide and through which the latter is longitudinally movable with the end of said spring guide projecting beyond said housing and connected to said cam member, a coil spring encompassing said spring guide within the housing with one end seating against one end of said housing and the other end of said spring seating upon said abutment on said spring guide whereby said coil spring is maintained under compression, and a slide member disposed upon an end of said housing adjacent said cam member and having spaced parts against one of which the cam face of said cam member engages and slotted to slidably receive the

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adjacent end of said spring guide whereby said slide member and said housing are bodily shiftable upon said spring guide, said slide member having spaced ribs on said one spaced part engaged by said cam member with said ribs extending alongside said cam member.

5. A cover lift as set forth in claim 4 in which the pivotal connection between said spring guide and cam comprises an elongated slot in the cam and a pin on the spring guide projecting through said slot and movable from one to the other end of said slot.

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