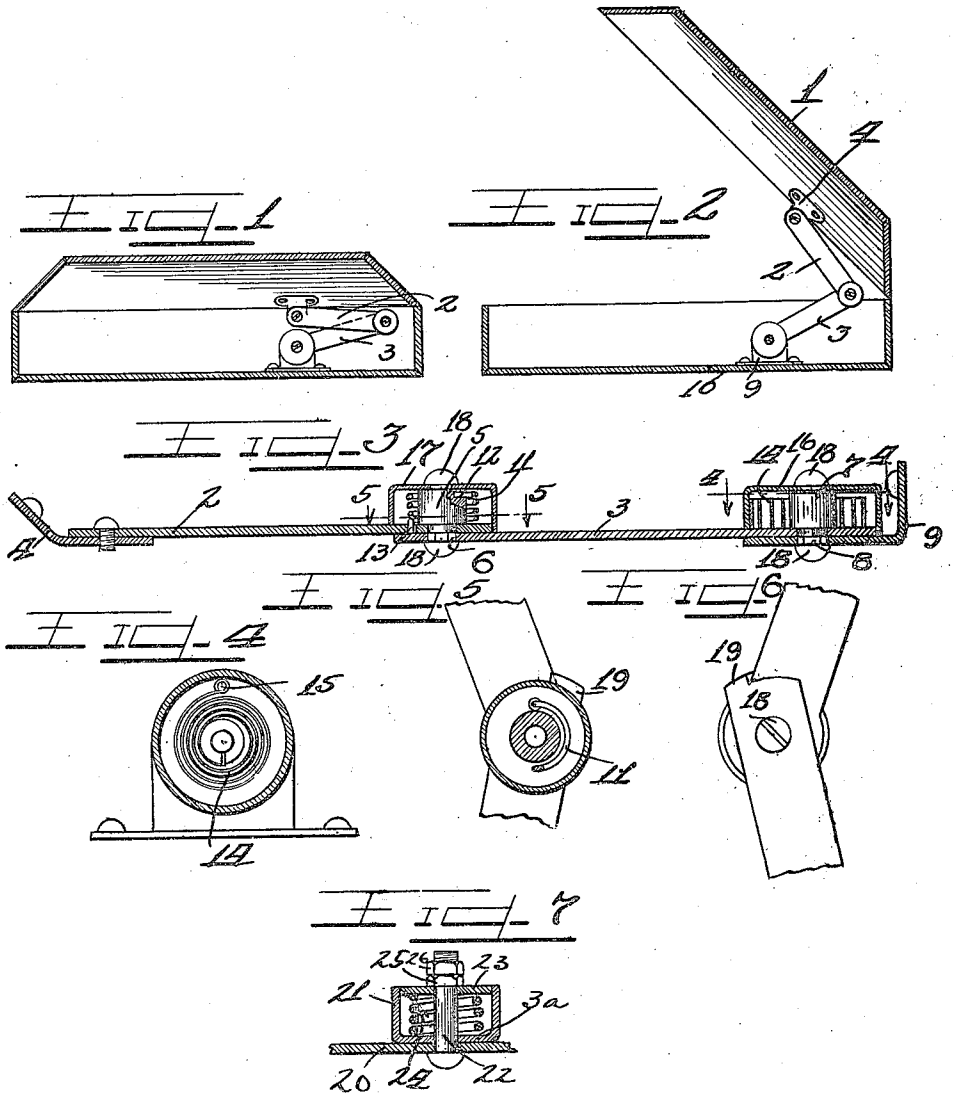
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BALANCING COVER SUPPORT.

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1,424,550. Patented Aug. 1, 1922.



Witnesses

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BALANCING COVER SUPPORT.

1,424,550. Specification of Letters Patent. Patented Aug. 1, 1922.

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To all whom it may concern:

Be it known that I, FREDRICK C. ASCHBURNER, a citizen of the United States, a resident of Chicago, county of Cook and State of Illinois, have invented a new and useful Improvement in Balancing Cover Supports; and I do hereby declare that the following is a full and clear description of the same, reference being had to the accompanying drawings and the numerals of reference marked thereon, which form a part of the specification.

My invention relates more particularly to a flexible or jointed support in which springs or friction are utilized to balance the weight imposed upon the support in any adjusted position. In supporting a horizontal hinged member, cover, or the like in adjusted positions the vertical load component varies according to the distance the cover is opened. This is well illustrated in opening a hinged phonograph cover as shown in the drawing in which the vertical load component is greatest when the cover is closed and decreases as the cover is raised. In my preferred construction, my invention contemplates the use of coil spring in a joint or joints and these springs are wound up as the cover is lowered and unwound as the cover is raised, and the increase or decrease of the tension of the spring is substantially proportional to the increase or decrease of the moment of force of the weight computed according to its supporting leverage so that the cover may be held balanced at any desired point. In the past, friction means has been employed for such a purpose but the same has not proved satisfactory where there is a varying load of any consequence as the friction means would have to be clamped sufficiently tight to sustain the greatest load making the operation of the cover or lid rather difficult and further under such circumstances, the friction means would quickly wear and become inoperative, since it must support the weight. But under different circumstances I may employ a friction joint as will hereinafter be described. It is therefore an object of my invention to provide a jointed supporting means for a lid or cover in which tension or friction means are utilized to balance the lid or cover.

It is further an object of my invention to provide spring means for a supporting joint that varies in proportion to the sustained load and supporting leverage.

It is also an object of my invention to construct a cover support which is simple, compact, durable, and efficient.

Other objects and advantages not now enumerated will be more apparent from the following description and disclosure.

My invention is more fully described and is illustrated in the accompanying drawings, in which

Figure 1 is a longitudinal section through a phonograph cover showing the jointed supporting means upon one side.

Figure 2 is a section similar to Figure 1 showing the lid raised and held in supporting balance.

Figure 3 is a section through my improved jointed support showing the structure of the coil springs.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a section on the line 5—5 of Figure 3.

Figure 6 is an elevational view of the middle joint.

Figure 7 is a sectional view of a detail illustrating a modification.

As shown in the drawings:

For the purpose of illustration I have shown a phonograph lid or cover supported by my improved support, but it should be understood that my device is applicable for supporting any hinged lever or member. And while I have shown a load compensating spring in but the lower and middle joints, it is obvious that either one of the two springs may be omitted if the tension of the remaining one is designed with reference to the total load to be supported. In accordance with the foregoing, the reference numeral 1 represents a hinged cover or member which is supported by means of a pair of jointed levers 2 and 3. The lever 2 is pivoted at its upper end to a clip 4 which is secured to the inner or under surface of the member 1; the other end of the lever 2 is pivotally secured upon a stub shaft 5 in a reduced portion thereof. Adjacent the reduced portion, the shaft 5 is provided with a polygonal portion 6, upon which the lever 3 is non-rotatably secured, at one end, the opposite end of lever 3 is

rotatable, mounted upon a reduced portion of a shaft or lug 7 which is non-rotatably secured by means of a polygonal portion 8 to a clip 9 secured upon a stationary support 10 which in the present instances represents the floor of a phonograph box. While I have only shown a single supporting device it is contemplated that a second one may be used on the opposite side, and intermediate ones if desired.

In the present embodiment of my invention I have illustrated two load compensating springs, one at the middle joint and the other at the lower joint. The spring 11 at the middle joint is coiled around the non-revoluble shaft 5; one end of said spring being secured in an aperture 12 in the shaft 5 while the other end is secured in an aperture 13 in the lever 2. The spring 14 at the lower joint is coiled around the shaft 7, and one end of this spring is fastened in an aperture in the shaft 7 while the other end is fastened to the lever 3 at the point 15. Circumferentially flanged cap members 16 and 17 fit over the respective shafts 7 and 5 and house the springs. Each of the cap members having a cut out portion on the edge of the flange thereof to fit the levers 2 and 3, screw bolts 18 are screwed into threaded bores in the ends of the shafts 5 and 7 to secure the shafts in place and the cap members on the shafts. The upper end of the lever 3 has preferably an inturned shoulder 19, which engages the lever 2 when the same is brought into substantial alignment with said lever 3 and thus prevents further relative movement of the levers.

In Figure 7 I have illustrated a modification of my device which may be used under certain circumstances, and as shown a base or clip 20 is secured to a stationary support. A lever 3^a is rotatably mounted upon a journal bolt 22 which is supported in the base 20. This lever 3^a has a circular spring housing 21 integral therewith through which the bolt 22 extends, a spring 24 is coiled around said bolt within the housing and compressed therein by means of a head 23 fitting in the circular housing 21 and retained therein by means of the adjustable nuts 25 and lock nut 26. This modification differs from my aforedescribed preferred form in that the said spring housings are integral with the levers and that the levers are held by friction and not by the action of spring, the spring 24 being free in the housing 21 and utilized merely for keeping the lever 3^a in frictional engagement with the stationary parts that support it.

In cases where the weight of the hinged member is not appreciable to any great extent or where it is otherwise arranged, in a vertical frame for example, so that its weight is not borne by the yieldable joint, such a friction joint as illustrated in my modification may be used.

Operation.

While the operation of the parts of my invention are clearly apparent from the above description and disclosure, it will only be necessary to state that in the preferred form of my invention the springs 11 and 14 are both wound around their respective shafts to a certain extent as the lid member 1 is lowered from a raised position such as is shown in Figure 2 to the position as shown in Figure 1. This winding of the springs produces a tension which increases as the lid member is lowered and the tension is sufficient at any point to hold the hinged lid or member at that point. For as the vertical load component of the hinged member increases as the lid is lowered so the resisting tension of the springs 11 and 14 likewise increases; in this manner the springs 11 and 14 are what might be called compensating springs. And if for some reason there should arise at any time a slight difference between the resisting force of the springs and the vertical load component of the hinged cover or member, the screws 18 can be tightened to apply a certain amount of frictional resistance between the levers and between the lower lever and its supportive clip, to compensate for the difference. When however my device embodies such a friction joint as is illustrated in Figure 7 it is contemplated that the nuts 25 and 26 should be kept sufficiently adjusted to supply the proper resisting friction between the parts to hold the hinged member in any selected position. In this construction sufficient power must be exercised to overcome the friction, when it is desired to raise or lower the lid or hinged member while in my preferred form it is only necessary to apply a slight force to the lid or hinged member to overbalance the force of the resisting springs. This is a decided advantage of my preferred construction for the springs assist in raising the hinged member and in lowering the hinged member, only a slight force is required to be added to the hinged member to overbalance the resisting force of the springs.

It will thus be seen that I have provided an improved yieldable support in which a spring may be utilized to a fine advantage to hold a horizontally hinged member in adjusted position and which lends itself to the adaptation of friction means in cases where it is desired to use the same and which is also simple and neat in construction but nevertheless strong and durable for the functions for which it is designed.

I am aware that numerous details of construction may be varied through wide range without departing from the principles of

this invention, and I therefore do not purpose limiting the patent granted, otherwise than necessitated by the prior art.

I claim as my invention:

1. In a device of the class described, a stationary support, a lever, a spring for yieldingly anchoring said lever to said support, a second lever, means comprising a spring for yieldingly securing said second lever on the free end of said first member and a hinged member pivotally supported by said second lever.

2. A yielding support comprising a shaft, a lever rotatably mounted on said shaft, a coil spring connected to said lever and anchored to said shaft, a second shaft non-rotatably connected to the end of said lever, a second lever rotatably mounted on said second shaft, a coil spring surrounding said second shaft and anchored thereto and also to said second lever, and a hinged member pivoted to said second lever.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

FREDRICK C. ASCHBURNER.

Witnesses:
EARL M. HARDINE,
CHARLES W. HILLS, JR.