

Oct. 23, 1962

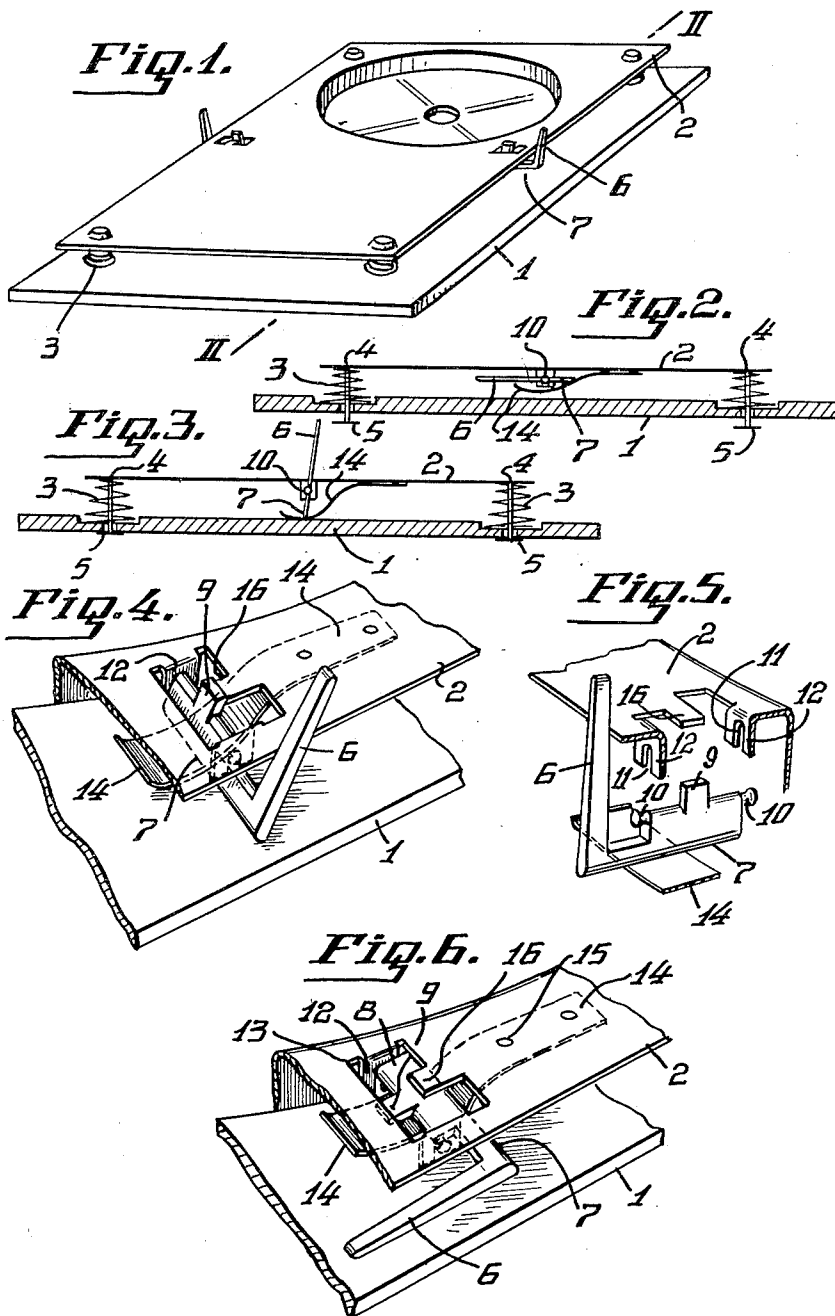
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3,059,882

DEVICES FOR LOCKING THE CHASSIS OF RECORD TURNTABLES, RECORD
CHANGERS AND THE LIKE TURNTABLE APPARATUS

Filed Oct. 6, 1959

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Fig. 7.

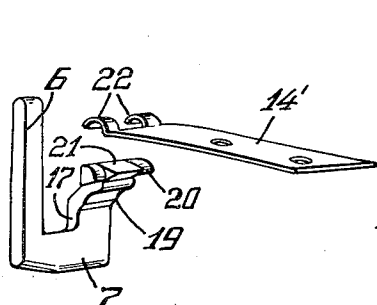


Fig. 8.

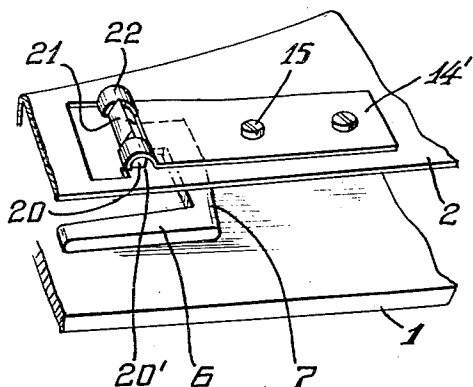
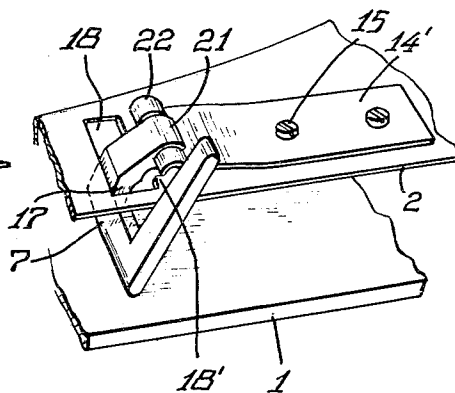


Fig. 9.

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Fig. 10.

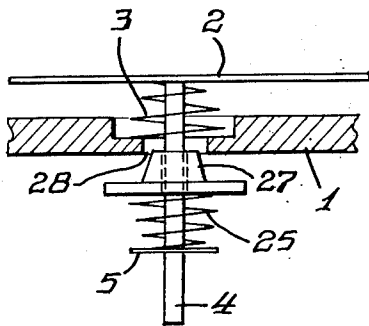


Fig. 11.

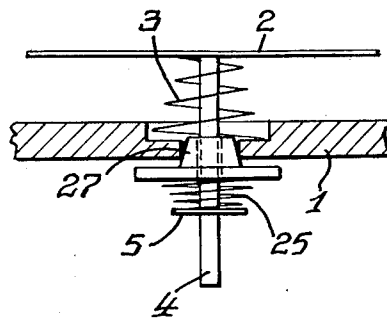
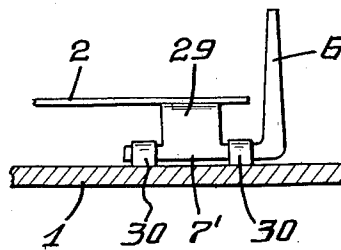


Fig. 12.



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DEVICES FOR LOCKING THE CHASSIS OF RECORD TURNTABLES, RECORD CHANGERS AND THE LIKE TURNTABLE APPARATUS

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5 Claims. (Cl. 248—20)

The present invention relates to apparatus for arresting the movement of record turntables, record changers and like turntable apparatus of the type which is resiliently mounted by springs and the like on a fixed support and which is associated with stops which limit the movement thereof.

Mechanisms of the invention are particularly necessary when the associated apparatus is being transported such as, for example, from the factory to the user, but is also desirable if it is to be moved about by the user, and particularly when the chassis forms part of a portable set.

In present day devices provided for this purpose, use is generally made of screws or similar parts which are introduced into holes in the chassis and are accessible so that they remain visible.

This arrangement has the disadvantages of requiring the use of tools for tightening and loosening the screws and of impairing the aesthetic appearance.

The object of the present invention is to avoid the drawbacks of known arrangements and to provide for a positive, rapid and aesthetic locking without the need for tools and while avoiding unnecessary compression of associated springs which can thus retain their resilience and full efficiency when actually used.

To this end the apparatus of the invention is characterized by an element of lever form which is disposed between a chassis and the associated support and has a part which, when rotated about the axis thereof, is brought into contact with the support or with the chassis and slides over the same so as to act as a cam and lift the chassis into a locking position, this element co-operating with one or more resilient means which are mounted in such a way that, when the lever is rotated and as a result of the action of the latter, the resilient means are placed under stress and in a condition to maintain a resilient bias between the lever on the chassis or on the support and stops limiting the upward displacement of the chassis.

According to one embodiment of the invention, the element is in the form of a lever interposed between the chassis and the support and is formed with two arms arranged one on either side of its axis of rotation, one of which forms a manipulating lever which is substantially horizontal when idle.

The resilient means may be a leaf spring which is fixed to the chassis in a position in which it is subjected to the action of the control lever and establishes the resilient bias which is to be maintained after the locking of the apparatus. In addition this resilient means can serve to hold the locking device in its non-locking position.

The said resilient means may instead comprise auxiliary springs which, like conventional springs, are each placed around a rod passing through the fixed support, but in this case between the stops which limit the upward displacement of the chassis and the bottom face of the support.

A number of embodiments of the invention are herein-after described, for the purpose of clarifying the invention, with reference to the accompanying drawings in which:

FIGURE 1 is a perspective diagrammatic view illustrating the mounting of a chassis provided with a locking device forming the subject of the present invention;

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FIGURES 2 and 3 are sections on line II—II of FIGURE 1 showing the action of the manipulating lever and the stops which limit the ascending movement;

FIGURES 4, 5 and 6 are perspective views relating to a first embodiment of the invention;

FIGURES 7, 8 and 9 are concerned with a second embodiment of the invention, and FIGURES 10 and 11 illustrate a third such embodiment; and

FIGURE 12 shows a modification of the manipulating lever, in which this lever is mounted on the fixed support and is devised so as to contact and slide on the bottom face of the chassis.

In the drawings, 1 designates a base or board that ordinarily forms a portion of a piece of furniture and 2 the chassis of a record turntable or record changer. Between elements 1 and 2, suspension springs 3 are provided which are disposed around rods 4. Those rods 4 pass through the base and terminate in stops 5 (FIGS. 2 and 3).

A locking element is arranged between the chassis 2 and the base 1 and comprises a lever having two arms 6 and 7 arranged at an angle of 90°. The arm 6 forms a manipulating member while the arm 7 is adapted to act between the board 1 and the chassis 2 so as to lift the latter.

As shown in FIGS. 4 to 6, the arm 7 carries a projection 9 and lateral studs 10 engaging in slots 11 in downwardly extending lugs or tabs 12 formed on the edges of an opening 13 in the chassis. A leaf spring 14 is fixed by screws 15 to the bottom face of the chassis 2. The free end of spring 14 engages between the arm 7 and the base 1.

The locking member including arms 6 and 7 is maintained in non-locking position by the leaf spring 14 (FIG. 6). When the locking member is brought into its operative position, it is rotated about studs 10 causing stops 5 to contact the lower face of base 1 (FIG. 3). The rotation of arms 6 and 7 is limited by the engagement of the projection 9 with a tongue 16 which is provided at one of the edges of the opening 13.

The maximum spaced relation of board 1 and chassis 3 occurs when the lever is rotated through 90°, the rotation of the lever 6—7, however, being continued through an additional 20° during which additional rotation it acts on the leaf spring 14 and places it under a bias.

In this way a resilient stress is developed between the bearing point of lever 7 on the chassis and the stops 5 which limit the upward displacement of the chassis. This stress operates in such a manner that the chassis is maintained in a fixed position relative to the board and the springs 3 are not compressed. During this rotation, the lever acts on the leaf spring and places it under a bias.

In the embodiment according to FIGURES 7 to 9, the arm 7 carries a tongue 17 which is engaged through a slot 18 formed in the chassis and is cranked so as to present a part 19 which contacts one of the edges of the slot and carries at its upper end a part-circular member 20 provided with a projection 21.

On the upper face of the chassis 2 is fixed by means of screws 15 a leaf spring 14¹. This spring is provided at one end with hooks 22 engaging the pins 20 of the lever arm 7 and between which a free space is provided for the stop or projection 21.

The non-holding position of the lever is shown in FIG. 9. In this position the arm 7 is arranged parallel to the base 1 and chassis 2. The lever is maintained in this position by the leaf spring 14¹ and by the member 20 acting as a cam.

When the lever is brought into the holding position, it is rotated around the member 20 so that the active edge of the arm 7 bears against the upper face of the base 1. To that end, a rotation of about 110° is necessary and at the end of this movement, the holding member takes the

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position illustrated in FIG. 8. In this position, the projection 21 situated between the hooks 22 is in contact with the leaf spring 14¹.

During this rotation, the holding member tilts the chassis 2 until the upward movement of the chassis is stopped by abutment of the stops 5 on the base 1. Immediately when the stops 5 come into contact with the base, an elastic tension is secured between the chassis and the mounting through the elastic mounting of the holding member.

In the arrangements of FIGS. 3 to 6 and 7 to 9 the chassis is held in a raised position.

In a modification in accordance with FIGURES 10 and 11, the resilient means referred to above is constituted by auxiliary springs 25 which, like the suspension springs 3, are each mounted around a rod 4, but in this case between the stops 5 and the bottom face of the support 1.

In this arrangement, the springs 25 have the same function as the leaf springs 14 or 14¹.

Moreover to effect as precise as possible a lateral locking of the chassis, there may be provided between the springs 25 (in the case of the modification of FIGURES 10 and 10-11) or between the stops and the bottom face of the support 1 (in other cases) a washer 26 with a conical upper face 27, and each stop 5 is so provided that when, under the action of the lever 6-7, the chassis 2 is lifted (FIGURES 10-11) the cone 27 engages in the opening 28 in the support and considerably reduces the lateral displacement of the chassis.

In the modification illustrated in FIGURE 12, the part 7' of the lever forms a part-circular member which turns in eyes 30 rigid with the support 1 and has a projection 29 which contacts, and slides over, the bottom face of the chassis 2. The lever thus turns around an axis carried by the support 1.

What I claim is:

1. Apparatus comprising relatively displaceable support and chassis members, a post on one of said members

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extending through the other of said members to guide relative movements between said members, a compression spring between said members for yieldingly holding the members apart, said members defining a space therebetween, a stop element on said post outside of said space to limit relative movement of said members, a lever element pivotally coupled to one of said members and adapted to extend between said members to urge the same apart, and a further spring between one of said elements and one of said members to enable a yieldable displacement of the latter said member with said lever element holding the members apart.

2. Apparatus as claimed in claim 1, wherein said lever element and further spring are both supported on the same member and said further spring extends between said lever element and the other of said members.

3. Apparatus as claimed in claim 1, wherein said further spring pivotally supports said lever element on the member to which said lever element is coupled.

4. Apparatus as claimed in claim 1, wherein said further spring is positioned between the stop and the member through which said post extends.

5. Apparatus as claimed in claim 1, wherein said lever element includes a first arm between said members and a second arm on said first arm for pivoting the same, said first arm having a cross-section adapted selectively to permit said first arm to be accommodated between said members in a position of rest and to force said members apart.

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