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1,595,977

H. SEGAL

PHONOGRAPH REPRODUCER

Filed Dec. 22, 1922

Fig. 1.

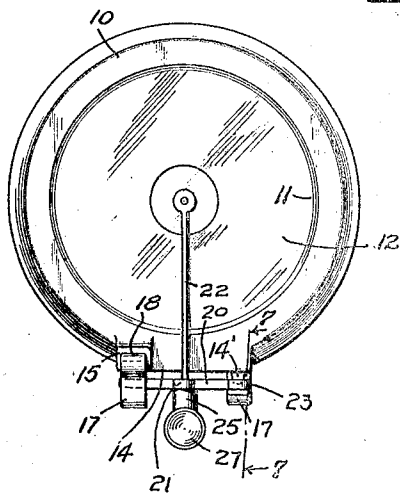


Fig. 2.

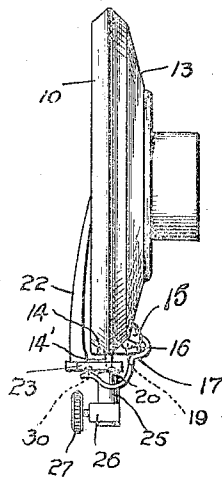


Fig. 3.

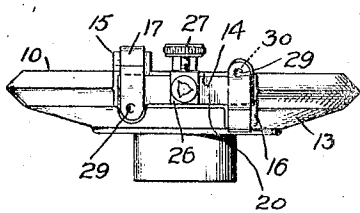


Fig. 4.

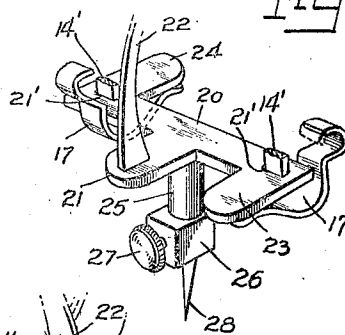


Fig. 5.

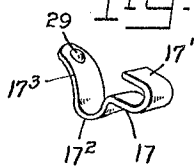


Fig. 6.

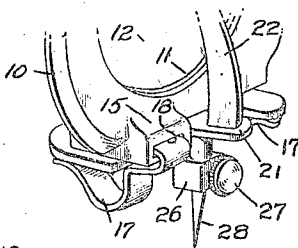
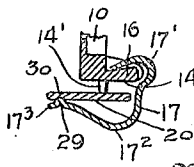


Fig. 7.



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UNITED STATES PATENT OFFICE.

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PHONOGRAPH REPRODUCER.

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My invention relates generally to sound boxes for phonographs and has specific reference to the construction of an automatically adjustable tensioning arrangement for a stylus suspension.

In the general construction of the suspension arrangements the latter are connected to the main portion of the sound box by means of screws or other similar devices. It has been found that through constant vibration of the parts during operation of the sound box, the screws soon become loosened and the proper adjustment of the tensioning device is lost.

With the above defect in mind it is the principal object of the present invention to obviate the possibility of the proper adjustment and balance of the suspension bar becoming disarranged. I accomplish this object by providing a spring clamp at opposite ends of the suspension bar, the said clamp being disposed to yieldably engage the bar with suitable fulcrum points on the sound box proper to hold the stylus suspension in a constantly balanced position with respect to the diaphragm.

The invention is illustratively exemplified in the accompanying drawings, in which Figure 1 is a front elevational view of a sound box embodying my improved spring clamp suspension; Figure 2 is a side elevational view of the same and Figure 3 is a bottom plan view of the sound box showing the relative positions of the spring clamps; Figure 4 is a perspective view of the suspension bar and spring clamps; Figure 5 is a perspective view of one of the spring clamps; Figure 6 is a detail perspective view of the lower segment of the sound box showing the suspension bar and spring clamps; and Figure 7 is a cross section through a spring clamp and lug for holding the same, the section being taken on line 7—7 of Fig. 1.

Referring to the drawing, 10 denotes the outer shell of the instrument comprising an annular member provided with the usual internal shoulder to receive the gaskets 11 and diaphragm 12. The latter members are pressed towards the front of the shell 10 and against the shoulder therein by a back plate 13, which in turn is connected to the outer shell by screws or other suitable fastening means.

The lowermost segment of the annular member 10 is provided with a tangentially disposed surface 14 which projects from face

to face of the shell and which carries depending aligned tongues or fulcrum points 14'. These points 14' are disposed adjacent opposite ends of the surface and are arranged on substantially the same vertical plane as the diaphragm 12. At opposite ends of the surface 14 and projecting from opposite sides thereof are projecting lugs 15 and 16, the former, 15, being directed forwardly, is disposed on the left side of the instrument, as shown in Figure 1; while the latter lug, 16, is disposed rearwardly of the shell and arranged on the right side thereof. The front wall of both lugs is provided with a slot to receive the end of a spring clamp 17. The slot designated 18 in lug 15 is parallel with the plane of the surface 14 and is cut to a substantial depth into the body of the lug so as to firmly grip or embrace the end of the spring clamp inserted therein. The slot 19 in the other lug 16 is merely a guideway composed of parallel upstanding ears to embrace opposite edges of the end of the spring clamp. The stock of the lug 16 between the ears is slightly tapered towards the rear so as to permit play of the spring thereabout, as shown in Figure 7. The purpose of this particular construction will be more fully disclosed hereinafter in connection with the description of the spring clamps themselves.

Referring now to the suspension bar, designated 20, the latter comprises a straight strip of metal of a width and length substantially the same as those of the surface 14, and having its upper surface adjacent opposite ends provided with grooves 21' into which the fulcrum points or tongues 14' seat to support the bar. The bar 20 is further provided with a lateral central projection 21 disposed towards the front of the instrument and in which the lower end of the stylus bar 22 is mounted, the opposite upper end of the latter being connected to the center of the diaphragm 11 in the usual manner. In addition to the lug or projection 21 the bar 20 has lateral angular end projections 23 and 24 which project in opposite directions, i. e. the right projection 23 extends towards the front while the left projection 24 extends towards the rear. When the suspension bar is in assembled position, as shown in any of the figures, the projections 23 and 24 are directed oppositely to the overlying lugs 15 and 16. The stylus bar 20 carries a depending stylus holder

25 midway of its length comprising a tubular member having a square portion 26 at the lower end, the portion 26 being provided with a set screw 27 to engage the stylus 28 in the usual manner.

The spring clamps 17, which are the particular feature of the invention, and which are both similar in construction, consist of a strip of flat spring steel material bent to form an ogee curve, i. e. a spring having a laterally disposed U-shaped curve 17' at one end to be inserted into the slots in the lugs 15 and 16, a downwardly curved portion 17² adjacent the mid-section thereof, and an outwardly curved tip 17³ at its opposite end. The upper faces of the tips 17³ are provided with slight projections 29 which are adapted to seat in depressions 30 disposed in the under surface of the projections 23 and 24 as shown in Figure 7.

In order to assemble the parts just described, the suspension bar 20 is fulcrumed on the tongues 15 and the U-shaped ends 17' of the spring clamps 17 are inserted into the slots 18 and 19. By means of a suitable tool the opposite ends of the clamps are expanded and the tips 17³ brought up under the projecting lugs 15 and 16 and the portions 29 are then seated in the depressions 30 of the suspension projections 23 and 24. As will be apparent particularly from Figures 3 and 4, the balance of the suspension bar is maintained by the yieldable pressure exerted equally at opposite sides of the axis of the bar itself, such pressure being produced by the action of the spring clamps 17. However, it has been found in practice that the diaphragm exerts greater pressure towards the front than towards the rear, and in order to overcome or at least neutralize this pressure from the diaphragm 11, the end of the spring clamp 17 which is held in the slot 18 is, as previously stated, firmly engaged in the slot. This construction rigidly supports the spring clamp and causes it to offer more resistance to movement of the diaphragm outwardly than is exerted by the other clamp in the opposite direction, due to the loose connection between the spring and the lug 16. By the provision of spring material having the proper strength a constant bal-

ance is maintained in the suspension bar with respect to the diaphragm and sound box. The spring clamps 17 offer further possibility of adjustment against the possible expansion of parts affecting the position of the stylus suspension bar, such adjustment resulting from the resilient nature of the spring clamps themselves which will expand and contract as the parts may change either in size or position.

Having described my invention what I claim is:

1. A means for supporting the suspension bar of a sound box having at its ends forwardly and rearwardly extending projections comprising lugs arranged on opposite faces of said box, two transversely disposed spring clamps engaging the projections of said suspension bar on opposite sides of the axis of the same, one of said clamps anchored in one of said lugs and curved to extend forwardly into engagement with said suspension bar, and the other of said spring clamps anchored in the other of said lugs on the opposite side of said box and curved to extend rearwardly into engagement with said suspension bar to allow a free rocking movement.

2. A means for supporting the suspension bar of a sound box having at its ends forwardly and rearwardly extending projections comprising lugs located at opposite faces of a sound box, two transversely disposed spring clamps engaging the projections of said suspension bar on opposite sides of the axis of the same, one of said clamps anchored at one of its ends in the lug at the front face of said box, and having its other end curved to extend forwardly, upwardly and rearwardly into engagement with said suspension bar, and the other of said clamps anchored at one of its ends in the lug at the rear face of said box oppositely disposed to said first named lug, and having its other end curved to extend rearwardly, upwardly and forwardly in a direction opposite to the direction of the first named clamp into engagement with said suspension bar to allow a free rocking movement.

In testimony whereof I affix my signature.

HERMAN SEGAL.