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2,265,490

REPEATING DEVICE FOR TALKING MACHINES

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2 Sheets-Sheet 1

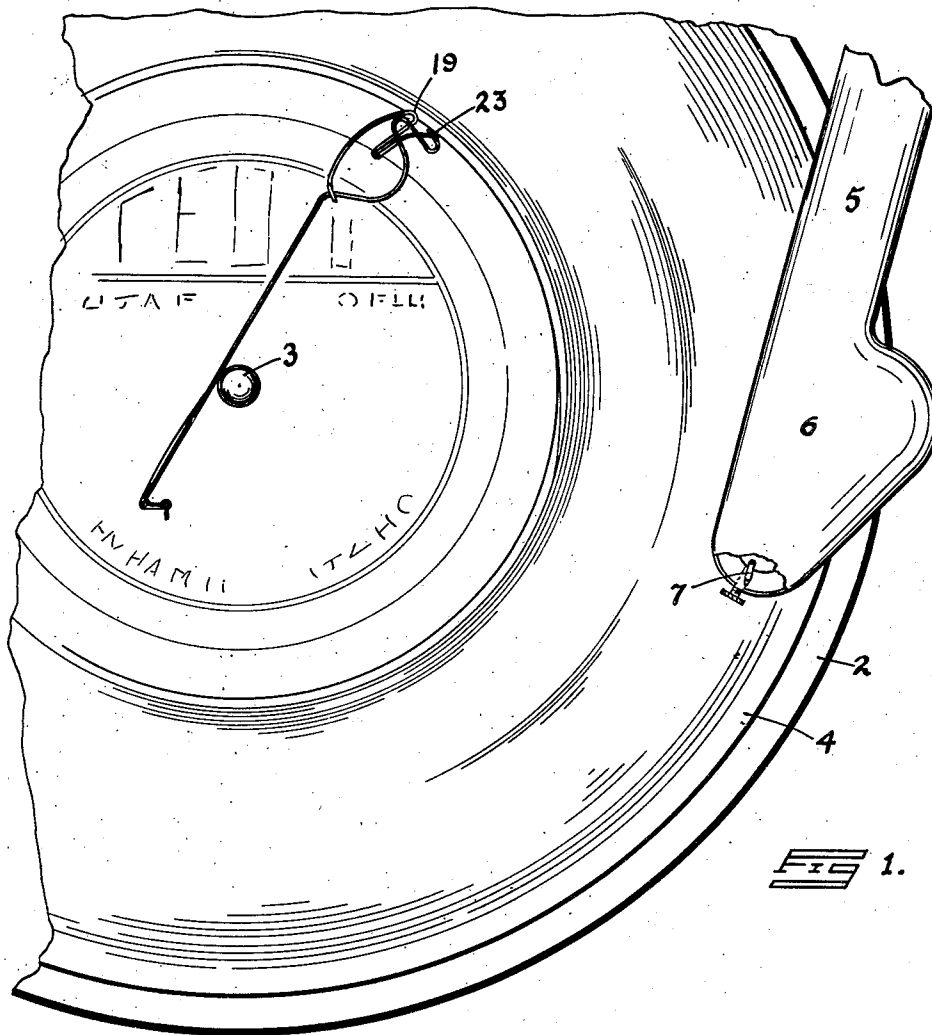


FIG. 1.

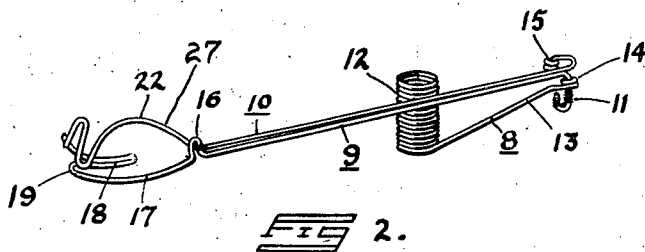


FIG. 2.

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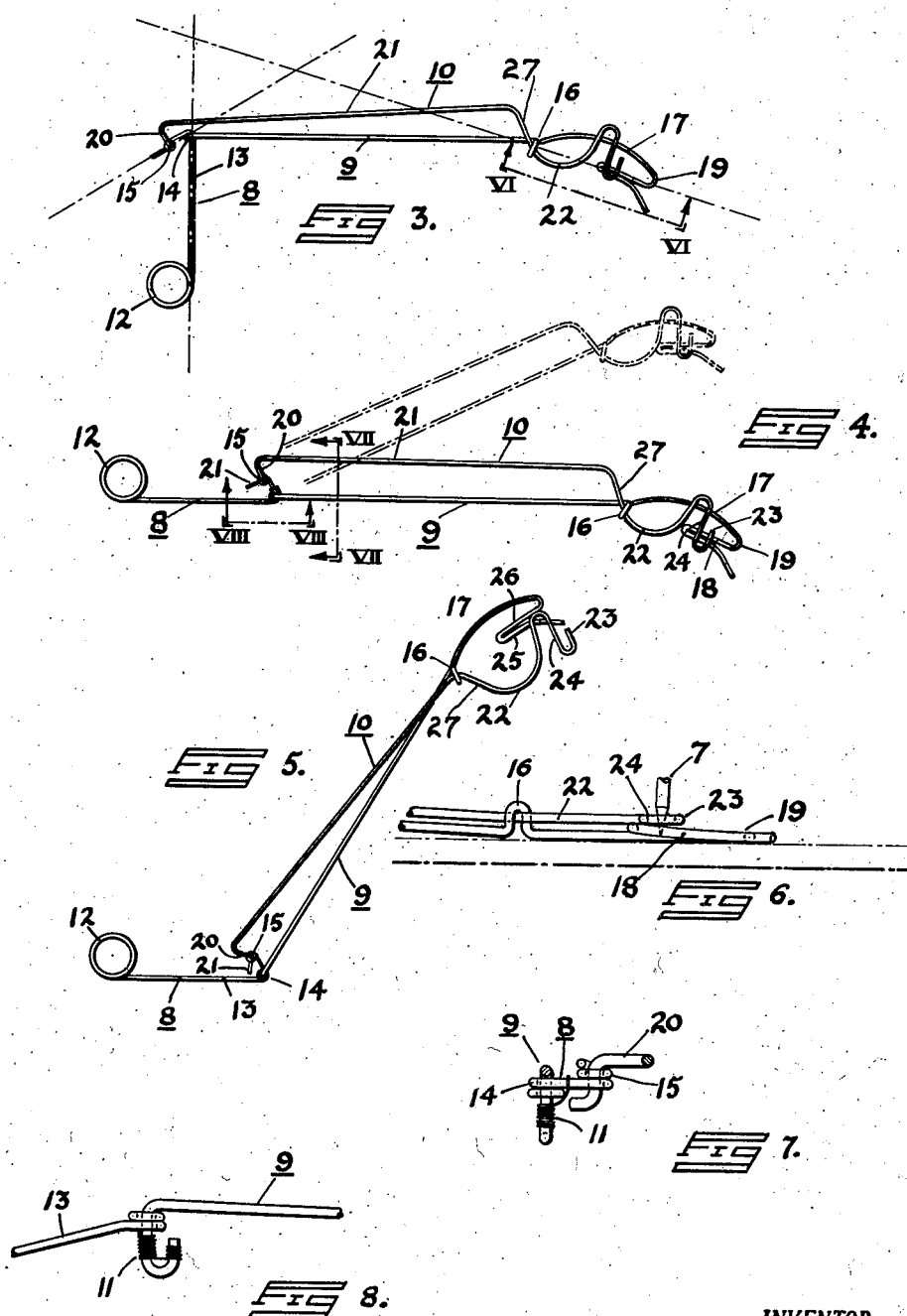
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REPEATING DEVICE FOR TALKING
MACHINES

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7 Claims. (Cl. 274-15)

This invention relates to repeating devices for talking machines and more particularly to the kind adapted to reproduce disc sound records and it has for one of its objects a device of this type, which is simple in construction and easy to manufacture, and efficient and certain in its use.

Another object of the invention is to provide a repeating device which can be manufactured wholly by the forming of wire into the various members of the device, thus enhancing its cheap manufacture. Still another object of the invention is to provide a repeating device which may be easily applied as an attachment to existing machines, without modifying the machine or scratching the sound record or any part of the machine.

Generally my invention comprises a repeating device for talking machines, including members pivoted to each other and adapted to be mounted upon the record support and to be rotated thereby, one of said members being adapted to pick up the reproducer and another one thereof being adapted to move the reproducer on the pick-up member and to release it from the pick-up member when the reproducer has been returned to a predetermined starting position.

My invention is capable of being carried out by a variety of mechanical means, one of which is shown on the accompanying drawings, but it is to be clearly understood that the drawings are for purposes of illustration only and are not to be construed as defining the limits of the invention, reference being had to the claims for that purpose.

Referring to the drawings, wherein the same reference characters are used to designate corresponding parts in the figures, Figure 1 is a partial plan view of a talking machine showing one embodiment of my invention in stylus receiving position thereon.

Figure 2 is a perspective view of the repeating device shown in Figure 1;

Figures 3, 4 and 5 are plan views showing different relations of the parts as they are moved to accomplish return of the stylus;

Figure 6 is an enlarged view showing the parts as on line 6-6 of Figure 3;

Figure 7 is an enlarged view showing the parts on line 7-7 of Figure 4; and

Figure 8 is an enlarged view showing the parts viewed on the line 8-8 of Figure 4.

Referring to Figure 1, 2 designates a record support rotated by a spindle 3 and carrying a sound record 4 thereon. A tone arm or sound

conveyor 5 is shown having a sound box or reproducer 6 to which is attached the actual needle or stylus 7.

This repeating device is designed to be mounted upon and rotated with the record support and is preferably not attached to said support or record and in this manner avoids any special construction or disfigurement of such elements. In this manner the device is especially adapted for use as an attachment for the existing machines.

In the form shown the repeating device comprises a central support member, generally designated as 8, a stylus carrying arm pivoted to the support member 8 and generally indicated at 9, and a second arm generally indicated as 10, also pivoted to the center support 8 and adapted to move the stylus with respect to the arm 9, either to move it up the stylus receiving groove or to remove the stylus from the groove and replace it on the record. As shown in Figures 2, 7 and 8 a small spring 11 is attached to the inner end of carrying arm 9, the other end of the spring being secured to the center support 8, whereby tension on the spring 11 tends to keep the various members in the position shown in Figures 1 and 2, which is the stylus receiving position.

Referring to Figures 2 to 5, both inclusive, it will be seen that the inner end of the center support member 8 is formed up into a coil spring 12. This coil spring 12 fits snugly about the spindle 3 and can be easily placed thereon by grasping the member 8 and rotating it about the spindle and pressing it firmly downward at the same time. The device is removed from the spindle by grasping the member 8 and rotating it about the spindle, preferably in a clockwise direction, as shown in Figure 1, so that the pressure of rotation tends to open the coil 12 and loosens the member from the spindle. Extending from the springlike center 12 of the member 8 is a leg extending outwardly and upwardly, this leg being designated 13 and at the outer end thereof is formed a bearing 14. Adjacent the bearing 14 and nearer the center of the spring 12 is formed another bearing 15.

As shown in Figure 3 the angle between the plane of the leg 13 and a line drawn through the bearings 14 and 15 is approximately 59°.

Pivoted at the bearing 14 is a reproducer carrying arm 9, the outer end of which is looped up in order to form a bearing 16 for the arm 10. On the opposite side of the loop 16 from the bearing 14 the arm is made into an arc shape 17 and a portion thereof is bent back upon itself as at 18.

and forms a stylus carrying groove between the two sides of the member. The extreme end of the stylus carrying member is bent away from the groove as shown at 19 in order to form a stylus engaging loop.

Pivoted in the other bearing 15 of the center support is an arm 10 having a short leg 20 adjacent its bearing and another leg 21 at an angle thereto. A curved portion 22 is formed therein and adapted to slide in the loop 16 of the member 9. The end of the member 10 is bent adjacent the curved portion 22 into a double U shape, so that the outer end of the member 23 forming one leg of the outer U is substantially at right angles to the stylus receiving groove. The opposite leg 24 of the end U shape is provided for forcing the stylus out of the stylus groove when the parts are rotated as hereinafter more fully explained. Between the curved portion 22 and the long straight portion of member 10 is a short straight portion 27, which acts as a cam member to move the outer end of member 10 across the stylus receiving groove. That is, the cam-like member 27 moves the U shaped end across the groove so as to hold the stylus securely in the groove during movement of the reproducer arm.

It will be appreciated by reference to Figures 3, 4 and 5 that during the first part of the rotation of members 9 and 10 about their respective pivots 14 and 15, that the U shaped member at the end of the member 10 is moved up the stylus groove until the bearings 14 and 15 come into alignment with the stylus groove; that is, until all three of these lie on the same line. After the members have passed this "dead center" position, the stylus engaging end of member 10 reverses its movement with respect of the stylus groove and tends to move outwardly with respect thereof carrying the stylus outwardly in this motion.

Referring now to Figure 6, it will be seen that the inner end of the stylus groove 18 is formed upwardly from the surface of the record, so that when the stylus is drawn inwardly on the groove it is also raised upwardly off the record. The stylus receiving groove at all points will, of course, keep the stylus out of contact with the record. This will prevent marring of the record.

It is also desirable to have the near edge of the stylus groove, as viewed in Figure 6, higher than the far edge, so as to prevent the stylus from jumping out of the groove and jumping forward when it is first picked up by the device; that is, the side 25 of the stylus groove will be higher than the side 26.

As shown in Figures 7 and 8 the tension spring 11 is secured to one end of the arm 9 and at the other end to the connection between the bearings on the center support 8. It is evident to those skilled in the art that this spring could be fastened to the center support and to either of the pivoted arms.

In operation the device is placed on a talking machine spindle in the manner heretofore described and the tension spring keeps the parts in the relation shown in Figures 1 and 2. After a record is completely played, the stylus engages the lip 19 on the end of arm 9 and continued rotation of the table and spindle causes the arms 9 and 10 to rotate about their respective bearings 14 and 15 and due to the off-center location of these bearings, arm 10 tends to retract during the first part of this motion with respect of arm 9, so that the leg 23 pulls the stylus up the stylus groove 18 to a position such as shown in Figure 3.

Thereafter continued rotation of the table causes the parts to successively extend to positions such as shown in Figures 4 and 5. In Figure 4 the arm carrying the stylus engaging members 23 and 24 has started to move outwardly with respect to the stylus groove and leg 24 in the position of Figure 4 has engaged the stylus and started to push it down the groove. In the position shown in Figure 5 the stylus will be disengaged from the groove and again placed on the outer edge of the record in playing position.

After the stylus becomes completely disengaged from the stylus groove 18, the tension spring 11 causes the parts to return to their pick-up position as shown in Figures 1 and the device is again set and ready to receive the stylus at its innermost position, to pick it up and replace it at the outer edge of the record for a repeat playing thereof.

While the device, as illustrated, is shown as completely formed from wire, it is evident that these parts can be manufactured from some other material, however, light piano wire has the advantage of its resiliency and also of the fact that it is light in weight and will not cause any extreme jar on the mechanism, either when picking up the stylus or when placing it back on the record. This construction further has the advantage in manufacture that it can be turned out in production by the use of simple jigs, thus producing a cheap and highly efficient finished article.

While the repeating device illustrated herein and described has been constructed to engage a certain type of stylus, it is to be understood that the device may be so constructed as to engage any other suitable part of the reproducer or any other kind of stylus and wherein in the appended claims the word stylus is used, it is to be understood to include various forms of reproducers as well as styluses.

To those skilled in the art many modifications of and widely different embodiments of my invention will suggest themselves without departing from the spirit and scope of the appended claims. The disclosure and description herein are purely illustrative and are not intended to be in any sense limiting.

What I claim is:

1. An attachment for a phonograph employing a disk type of record comprising in combination a member adapted to be fixed in relation to the record and to rotate therewith, said member having a portion positioned radially outward from the axis of rotation of said record, an arm normally extending across the center part of said record and pivotally mounted on said portion for rotation relative thereto about an axis parallel to said axis of rotation of said record and adapted to overlie the record in close proximity thereto, means normally retaining said arm against rotation relative to said member, the outer free end of said arm being provided with an inwardly directed groove adapted to receive the reproducing stylus as the same advances radially inward of the record and to raise said stylus from engagement with said record as the stylus moves inwardly therealong due to the outward movement of the outer end of said arm, a second arm pivotally mounted on said portion at a point spaced from said first mentioned pivotal connection for rotation about an axis parallel with said first mentioned axes whereby said arms are moved relative to each other upon engagement of the stylus with said

groove and the consequent cessation of rotation of the grooved outer end of said first mentioned arm, said second arm having a hook at its outer free end adapted to overlie the grooved end of said first mentioned arm in close proximity thereto, said hook being operative to retain the stylus in said groove during movement of the stylus to the outer edge of the record and to maintain the stylus in outer position while the first mentioned arm is moved free of the stylus.

2. An attachment for a phonograph employing a disk type of record comprising in combination a member adapted to be fixed in relation to the record and to rotate therewith, said member having a portion positioned radially outward from the axis of rotation of said record, an arm normally extending across the center part of said record and pivotally mounted on said portion for rotation relative thereto about an axis parallel to the axis of rotation of said record and adapted to overlie the record in close proximity thereto, means normally retaining said arm against rotation relative to said member, the outer free end of said arm being provided with an inwardly directed groove adapted to engage the reproducing stylus as the same advances radially inward of the record and to raise said stylus from engagement with said record as the stylus moves inwardly therealong due to the outward movement of the outer end of said arm, a second arm pivotally mounted on said portion at a point spaced from said first mentioned pivotal connection for rotation about an axis parallel with said first mentioned axes whereby said arms are moved relative to each other upon engagement of the stylus with said groove and the consequent cessation of rotation of the outer end of said first mentioned arm, said second mentioned arm having a hook at its outer free end adapted to engage said stylus after the latter enters said groove to hold the stylus in said groove during movement of the stylus to the outer edge of the record and to maintain the stylus in outer position while the first mentioned arm is moved free of the stylus, and resilient means to return said arms to their original positions relative to said member.

3. An attachment for a phonograph employing a disk type of record comprising in combination a member adapted to be fixed in relation to the record and to rotate therewith, said member having a portion positioned radially outward from the axis of rotation of said record, an arm normally extending across the center part of said record and pivotally mounted on said portion for rotation relative thereto about an axis parallel to the axis of rotation of said record and adapted to overlie the record in close proximity thereto, means normally retaining said arm against rotation relative to said member, the outer free end of said arm being provided with an inwardly directed groove adapted to engage the reproducing stylus as the same advances radially inward of the record and to raise said stylus from engagement with said record as the stylus moves inwardly therealong due to the outward movement of the outer end of said arm, a second arm pivotally mounted on said portion at a point spaced from said first mentioned pivotal connection for rotation about an axis parallel with said first mentioned axes whereby said arms are moved relative to each other upon engagement of the stylus with said groove and the consequent cessation of rotation of the outer end of said first mentioned arm,

said second mentioned arm having a hook at its outer free end adapted to engage said stylus after the latter engages said groove to hold the stylus in said groove during movement of the stylus to the outer edge of the record.

4. An attachment for a phonograph employing a disk type of record comprising in combination a member adapted to be fixed in relation to the record and to rotate therewith, said member having a portion positioned radially outward from the axis of rotation of said record, an arm pivotally mounted on said portion for rotation relative thereto about an axis parallel to the axis of rotation of said record and adapted to overlie the record in close proximity thereto, said arm being spring biased to a position adjacent the axis of rotation of said record, the outer free end of said arm being provided with an inwardly directed groove and a shoulder outwardly of said groove adapted to engage the reproducing stylus as the same advances radially inward of the record to direct said stylus into said groove, the side edges of said groove being operative to engage the stylus intermediate its ends to raise said stylus from engagement with the record as the stylus moves inwardly along said groove, a second arm pivotally mounted on said portion at a point spaced from said first mentioned pivotal connection for rotation about an axis parallel with said first mentioned axes whereby said arms are moved relative to each other upon engagement of the stylus with said shoulder and the consequent cessation of rotation of the outer end of said first mentioned arm, said second arm having a hook at its outer free end adapted to hold said stylus in said groove during movement of the stylus to the outer edge of said record.

5. Apparatus according to claim 4 further characterized in that said hook is provided with a surface to maintain the stylus in position adjacent the outer convolutions of the record while the first mentioned arm is moved free of the stylus upon continued rotation of said first mentioned member.

6. An attachment for a phonograph employing a disk type of record comprising a member adapted to be fixed in relation to the record and to rotate therewith, an arm pivotally mounted on said member at a point spaced from the axis of rotation of said record and adapted to overlie said record in close proximity thereto, a second arm movably connected with said first arm and pivotally mounted on said member at a point spaced from said axis and said first mentioned point whereby said arms are moved relative to each other upon relative rotation between said arms and member, means biasing said arms to positions fixed with respect to said member and wherein the arms extend across the center part of the record and the outer free ends of the arms overlie the innermost convolutions of the record, said outer free ends having cooperating means to engage and raise the reproducing stylus as the same reaches an advanced inner position and engages one of said ends whereby said stylus may be moved to the outer edge of said record, and to lower said stylus into one of the outer convolutions of said record.

7. An attachment for a phonograph employing a disk type of record comprising a member adapted to be fixed in relation to the record and to rotate therewith, an arm pivotally mounted on said member at a point spaced from the axis of rotation of said record and adapted to overlie said record in close proximity thereto, a second

arm movably connected with said first arm and pivotally mounted on said member at a point spaced from said axis and said first mentioned point whereby said arms are moved relative to each other upon relative rotation between said arms and member, means biasing said arms to positions fixed with respect to said member and wherein the arms extend across the center part of the record and the outer free ends of the arms overlie the innermost convolutions of the record, the outer free end of said first arm be-

ing provided with means to engage the stylus intermediate its ends and raise the same as the same reaches an advanced inner position, the outer free end of the second arm being provided with means to engage the stylus intermediate its end to secure said stylus in position relative to said first mentioned means whereby said stylus may be moved to the outer edge of the record in an elevated position.

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