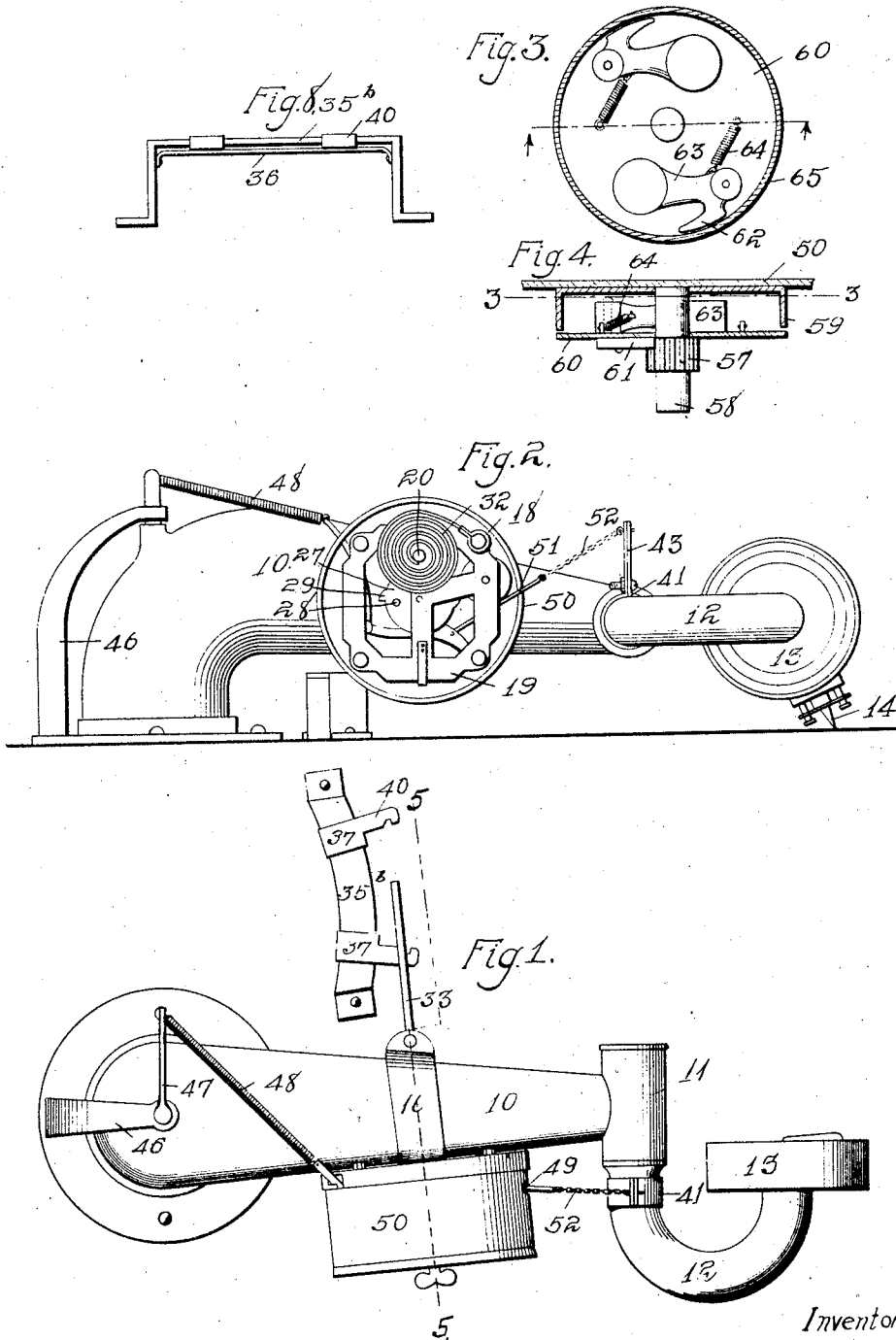


W. A. SHARP.
ATTACHMENT FOR TALKING MACHINES.
APPLICATION FILED MAY 14, 1917.

1,259,916.

Patented Mar. 19, 1918.
2 SHEETS—SHEET 1.



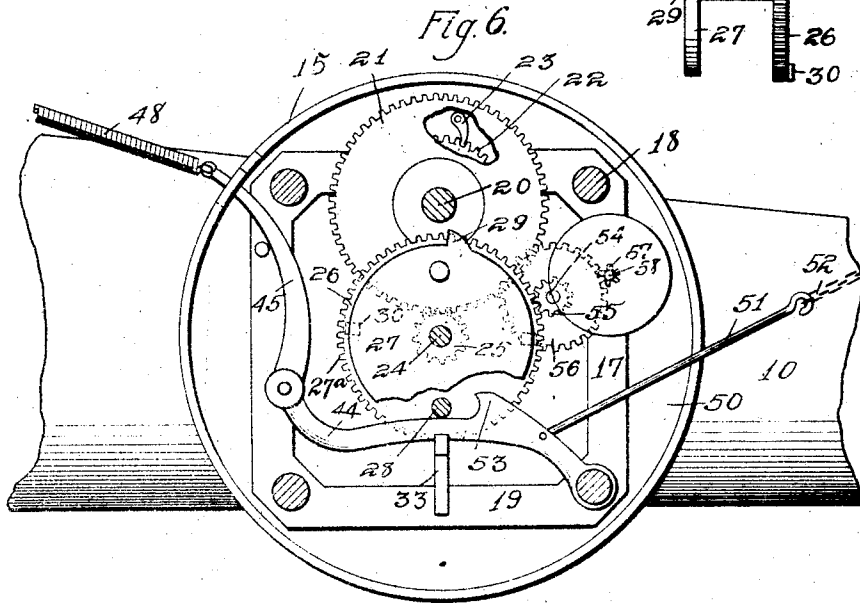
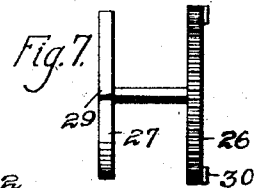
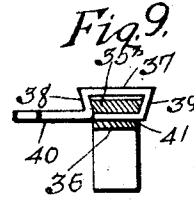
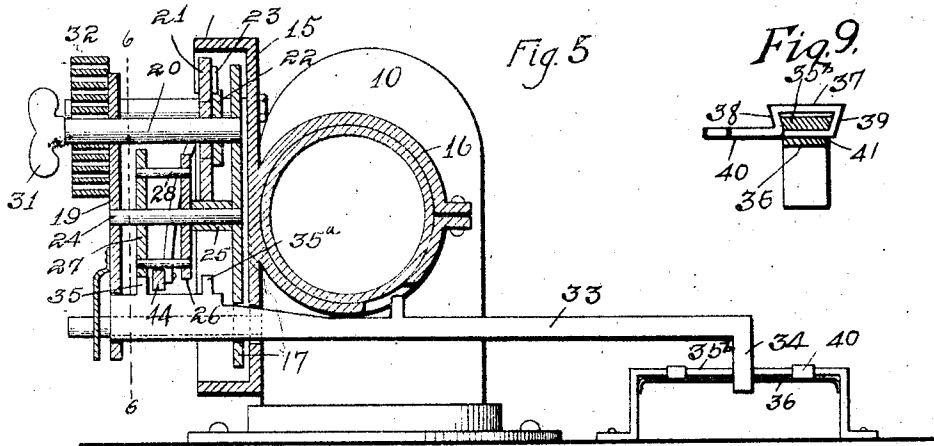
Witness
R. J. Hamlin.

Inventor
W. A. Sharp.
By Craig & Dair, Attys

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UNITED STATES PATENT OFFICE.

WILLIAM ATWOOD SHARP, OF DES MOINES, IOWA.

ATTACHMENT FOR TALKING-MACHINES.

1,259,916.

Specification of Letters Patent.

Patented Mar. 19, 1918.

Application filed May 14, 1917. Serial No. 168,617.

To all whom it may concern:

Be it known that I, WILLIAM ATWOOD SHARP, a citizen of the United States, and resident of Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Attachment for Talking-Machines, of which the following is a specification.

The object of my invention is to provide an attachment for talking machines, adapted to automatically lift the needle when the phonograph arm reaches one position of its movement, and automatically return the arm to its opposite movement and drop the needle again to position for engaging the record.

More particularly it is my object to provide means carried by a phonograph tone arm adapted when the record has been played to automatically operate for lifting the sound box, and the needle carried thereby, and then to swing the tone arm back to its starting position, and when the arm has reached such position to gently lower the sound box for lowering the needle to operative position.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Figure 1 shows a top or plan view of a phonograph tone arm with the sound box thereon, the device being equipped with an attachment embodying my invention.

Fig. 2 shows a side elevation of the same, part of the case for the operating mechanism being removed.

Fig. 3 shows a vertical, sectional view taken on the line 3—3 of Fig. 4.

Fig. 4 shows an inverted horizontal, sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 shows a transverse, vertical, sectional view taken on the line 5—5 of Fig. 1.

Fig. 6 shows a vertical, sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 shows a front elevation of part of the mechanism.

Fig. 8 shows a detail view of part of the device, and

Fig. 9 shows a detail, sectional view of the device shown in Fig. 8.

In the accompanying drawings, I have

used the reference numeral 10 to indicate generally the swinging tone arm of a phonograph having at its free end a transverse member 11, in which is pivotally mounted the supporting arm 12 of the sound box 13, which carries the needle 14.

My improved attachment comprises a casing 15 detachably secured by means of a clamp 16 to the arm 10, as shown. Within the casing 15 is a frame 17, adjacent to what I shall call the rear wall of the casing, and suitably held in position by screw-bolts 18 extended through the opposite walls of the casing.

Mounted on the bolts 18 and spaced from the frame 17 within the casing wall is a second frame 19. Mounted in the frames 17 and 19 is a shaft 20. On the shaft 20 is rotatably but nonslidably mounted a gear 21, adjacent to which is a ratchet wheel 22 fixed on the shaft 20. On the gear 21 is a spring pawl 23, the free end of which is held in yielding engagement with the ratchet wheel 22.

A shaft 24 is mounted in the frame members 17 and 19.

On the shaft 24 is a small gear 25 which meshes with the gear 21.

Fixed on the shaft 24 are spaced annular disks 26 and 27 which are connected by rods or pins 28 spaced from the shaft 20, on opposite sides thereof inwardly from the periphery of said disks. On the periphery of the disk 27 are opposite lugs 30 arranged quartering with relation to the lugs 29. The disk 27 has gear teeth 27^a.

The shaft 20 projects through the casing member 15^a and is designed to receive on its outer end a key 31. Outside the casing, a coil spring 32 has one end fixed to the casing member 15^a and the other end fixed to the shaft 20. By means of the key, the shaft 20 can be rotated for winding up the spring 32 and the pawl and ratchet are so arranged as to prevent the rotation of the gear 21 against the spring tension, except when the shaft is given rotation.

Extended transversely through suitable openings in the walls of the casing is a bar 33, adapted to slide longitudinally. The bar 33 has at its end, farthest from the casing 15, a downwardly extending arm 34. The bar 33 is provided on its upper surface within the casing with lugs 35 and 35^a. The lug 35 is so arranged that in one position of

the bar 33 it registers with the path of travel of the lugs 29, and in another position of the bar, the lug 35 is out of the path of travel of the lugs 29. In the first of said positions of the lug 35 the lug 35^a is out of the path of travel of the lugs 30, while in another position of the bar 33, the lug 35^a is in the path of the lugs 30.

Suitably supported adjacent to the lower end of the arm 34 is a stop device comprising an inverted U-shaped bracket 35^b. The upper bar or cross member of the bracket 35 is beveled at its side edges, as shown in Fig. 9. Below said bar is a spring 36 adapted to press upwardly toward said bar.

Mounted on the upper bar of the bracket 35^b is a pair of adjustable supports, each of said arms comprising a horizontal member 37, resting on top of said bar having at its ends downwardly inclined members 38 and 39 adapted to engage the beveled edges of said bar.

At the lower end of the member 38 is a laterally-projecting arm 40 extending in the path of movement of the arm 34. At the lower end of the arm 39 is a laterally projecting arm 41, between the spring 36 and the horizontal bar of the bracket 35^b, and spaced from the member 37 a distance greater than the thickness of said bar.

The spring 36 engages the members 41 of the adjustable engaging arms, and tends to normally hold said adjustable engaging arms in their raised positions where the members 37 and 39 frictionally engage the beveled edges of the bracket 35^b.

When it is desired to adjust said adjustable arms longitudinally of the members 35^b, the operator presses downwardly on the member 37 against the pressure of the spring 36, until the members 38 and 39 are free from frictional engagement with the bracket 35^b, and slides the adjustable engaging arms longitudinally on said bracket.

Pivoted to the lower portion of the frame 17 on the side thereof adjacent to the free end of the tone arm 10, is a lever 44, which extends from its pivot above and across the arm 33 between the disks 26 and 27 toward the pivoted end of the tone arm 10, as illustrated in Fig. 7.

Pivoted to what might be called the rearward end of the lever 44 is a slightly curved link 45, extending upwardly and through a suitable opening in the casing 15.

Fixed to the frame 46, which assists in supporting the tone arm 10 is a laterally extending arm 47, to which is secured a coil spring 48, which extends across the upper portion of the tone arm, and is secured to the upper end of the link 45.

Pivoted to the lever 44 and extended through a suitable opening 49 in the casing member 50 is a link 51, the upper end of which is secured to a chain 52. The chain

52 is secured to the upper end of an arm 43 which extends away from the clamp device 41 on the member 12.

The lever 44 is provided on its upper surface with a hook member 53, such as that shown in Fig. 6, and for a purpose hereinafter mentioned.

Suitably mounted on the frame members 17 and 19 is a shaft 54, on which is mounted a gear 55 in mesh with the gear 27. On the shaft 54 is a gear 56 meshing with the gear 57, as shown in dotted lines in Fig. 6, on the shaft 58 similarly shown in the same figure.

Fixed to the casing member 50, and mounted on the shaft 58 to permit the rotation of the shaft 58, is a casing member 59. Fixed on the shaft 58 adjacent to the gear 57 is a disk 60 to which is pivoted a spring pawl 61 adapted to coast with the gear 57.

Pivotaly mounted on the disk 60 are brake shoes 62 on which are weighted arms 63.

The brake shoes 62 are adapted in certain of their positions to engage the peripheral wall 65 of the casing 59.

Secured to each brake shoe 62 and to the disk 60 is a spring 64 adapted to yieldingly hold the brake shoes away from the wall 65.

In the practical operation of my improved device, I will assume that the parts are in the position shown in Figs. 5 and 6, and that the tone arm is substantially midway in its swinging movement from position where the needle 14 is above the center of the disk toward position where the needle is above the disk near its periphery.

It will of course be understood that the operation of the device is substantially the same where a machine is used in which the needle is moved from the center to the periphery of the disk in playing a record.

As the tone arm 10 swings from its position, shown in Fig. 5, toward the right, the arm 34 will engage the member 40. Such swinging movement is caused by the tension on the spring 48.

The tone arm will have some momentum in its swinging movement, and when the arm 34 strikes the member 40, the bar 33 will be shoved toward the left until the lug 35 moves out of engagement with the lug 29, whereupon the tension of the spring 32 will impart rotation to the shaft 20, the gear 21, the gear 25, and the disks 26 and 27. The lug 35^a will move into the paths of the lugs 30.

As the disks 26 and 27 rotate, the lower pin 28 will enter the notch formed adjacent to the hook or catch member 53, tending to swing the arm 44 upwardly. The weight of the sound box will also move the swinging arm 44 upwardly as soon as the lower pin 28 moves upwardly.

The rotation of the disk 26 imparts rotation to the disk 60, and the centrifugal force

of the weighted arms 63 will move the brake shoes 62 into engagement with the wall 65 for causing the tone arm to be lowered gradually and gently on the record.

5 It is obvious that the disk 60 may spin a short distance after the needle has been lowered upon the record on account of the arrangement of the pawl 61 with relation to the gear 57.

10 It should be mentioned in this connection that the gear 57 is wide enough to permit it to engage the pawl 61 and also to engage the gear 56.

After the disks 26 and 27 have moved a quarter revolution, one of the lugs 30 will engage the lug 35^a. The record will then be played until the tone arm swings toward the left, and until the member 34 engages the other member 40, at which time the bar 20 33 will be moved toward the right with relation to the tone arm, moving the lug 35^a out of the path of the lugs 30, and moving the lug 35 into the path of the lugs 29. Another quarter revolution will be imparted to the disks 26 and 27. At the beginning of this quarter revolution, the pin 28 leaves the hook member 53, which has been raised sufficiently to allow it to clear the pin 28, and as the quarter revolution continues the other 30 pin 28 will engage the arm 44 forcing it downwardly and thereby raising the sound box 13, and also imposing greater tension on the spring 48. This tension will tend once more to swing the tone arm 10 toward 35 position where the sound box and needle are above the record near its periphery.

The spring 32 should be wound up at proper times to keep it under tension during the operation of the machine.

40 It will be seen that the brake shoes, hereinbefore described, with the weighted arms thereon, and the parts connected therewith, serve as a brake or cushioning device for preventing the sudden operation of the machine, and preventing jar or undue vibration of the parts of the mechanism.

The device is a comparatively simple construction, and is so made that it may be mounted as an attachment on a phonograph.

50 Some changes may be made in the construction and arrangement of the parts of my improved device without departing from the essential purposes of my invention, and it is my intention to cover by the claims of the patent to be issued upon my application, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within the scope of my claims.

60 I claim as my invention:

1. In a device of the class described, a swinging tone arm, a sound box pivotally mounted thereon, means for raising and lowering said sound box and for swinging 65 said tone arm on its pivot, said means in-

cluding a spring, a motor device, a flexible member connected with said sound box, a pivoted lever connected with said flexible device and said spring, means actuated by said motor device for moving said lever for 70 increasing the tension of said spring and moving said flexible device for raising said sound box.

2. In a device of the class described, a swinging tone arm, a sound box pivotally 75 mounted thereon, means for raising and lowering said sound box and for swinging said tone arm on its pivot, said means including a spring, a motor device, a flexible member connected with said sound box, a 80 pivoted lever connected with said flexible device and said spring, means actuated by said motor device for moving said lever for increasing the tension of said spring and moving said flexible device for raising said 85 sound box, and means for rendering said flexible device operative when the tone arm reaches one position of its movement, and for making it inoperative when the tone arm reaches another position of its move- 90 ment.

3. In a device of the class described, a swinging tone arm, a sound box pivotally supported thereon, a yielding device operatively connected with said tone arm for 95 tending to swing the tone arm to one position of its movement, a motor device, means including a spring motor for simultaneously raising said sound box and increasing the tension of said yielding device, means for 100 intermittently operatively connecting said last means with said motor device, and a centrifugal brake operatively connected with said motor for regulating its action.

4. In a device of the class described, a 105 swinging tone arm, a sound box pivotally supported thereon, a spring device operatively connected with said tone arm and adapted to swing said tone arm to a certain position of its movement, means for 110 raising said sound box and for increasing the tension of said spring device, said means including a lever operatively connected with said spring device and said sound box, a rotary device, means carried by said rotary 115 device for engaging said lever in certain positions of the rotary device, means tending to rotate said rotary device, and means operated by the swinging tone arm for intermittently locking said rotary device 120 against rotation.

5. In a device of the class described, a swinging tone arm, and a sound box pivotally mounted thereon, in combination with a lever pivotally supported on said arm, a 125 yielding device connected with said lever and with a fixed support, means for operatively connecting said lever with said pivoted sound box, the parts being so arranged that when said lever is in one position the 130

tension on said yielding device is increased and said sound box is raised, and when the lever is in another position such tension is lowered and the sound box is lowered, means
 5 for moving said lever to the first of said positions, a slidable bar carried by said tone arm and adapted in certain positions to render said last means inoperative, and
 10 in other positions to permit said last means to operate, adjustable means for limiting the movement of said bar when said tone arm swings, for thereby limiting the swinging movement of the tone arm and also for
 15 moving said slidable bar to its different positions.

6. In a device of the class described, the combination of a swinging phonograph arm having a sound box pivoted thereon, with means whereby when said arm reaches one position of its movement said sound box is lifted, said arm is swung to another position

and the sound box lowered, said means including a slidable bar carried by said arm, having a projecting member, and adjustable devices arranged to stand in different positions in the path of said member.

7. In a device of the class described, the combination of a swinging phonograph arm having a sound box pivoted thereon with means whereby when said arm reaches one position of its movement said sound box is lifted, said arm is swung to another position and the sound box lowered, said means including a slidable bar carried by said arm, having a projecting member, and means for
 35 limiting the movement of said member comprising a bar, stop devices slidably mounted thereon, and means for normally, yieldingly locking said stop devices on said bar in the path of movement of said member.

Des Moines, Iowa, May 11, 1917.

WILLIAM ATWOOD SHARP.