

No. 818,975.

PATENTED APR. 24, 1906.

M. A. POSSONS.
TALKING MACHINE.

APPLICATION FILED NOV. 28, 1904. RENEWED SEPT. 7, 1905.

2 SHEETS—SHEET 2.

Fig. 4.

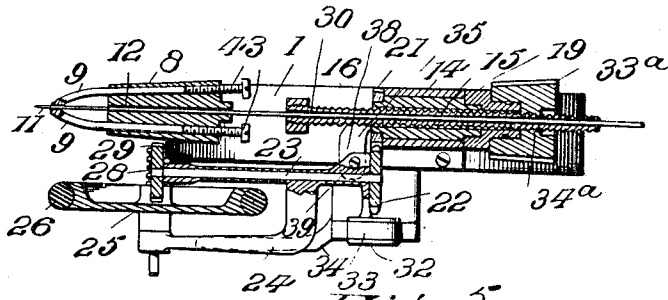


Fig. 5.

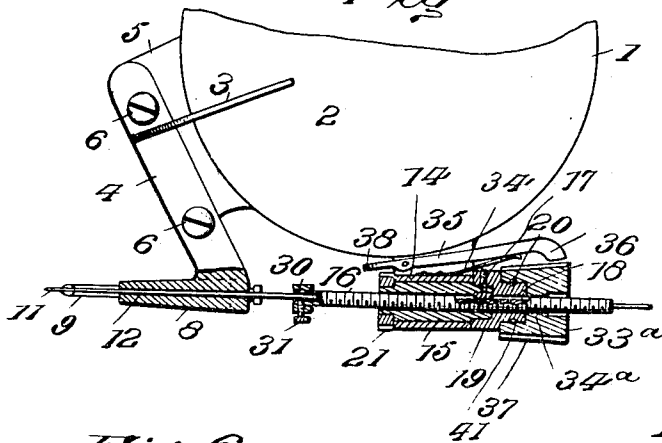


Fig. 6.

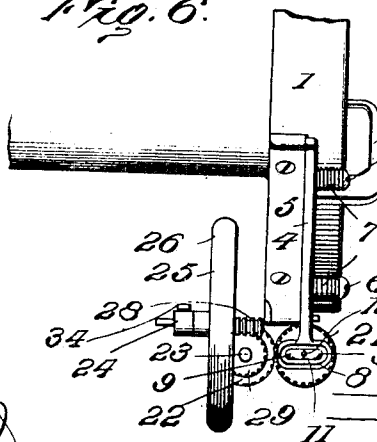
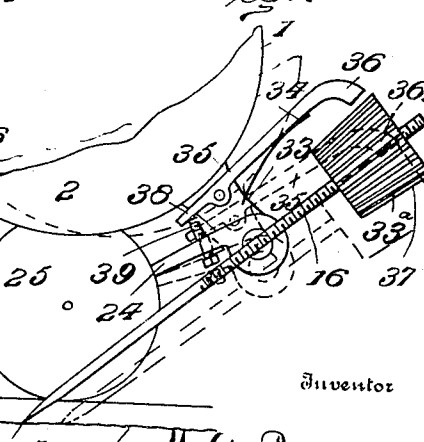


Fig. 7.



Witnesses
J. H. Hume
C. P. Wright, Jr.

Inventor
M. A. Possons,
A. S. Battison
Attorney

UNITED STATES PATENT OFFICE.

MINARD A. POSSONS, OF CLEVELAND, OHIO.

TALKING-MACHINE.

No. 818,975.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed November 28, 1904. Renewed September 7, 1905. Serial No. 277,364.

To all whom it may concern:

Be it known that I, MINARD A. POSSONS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Talking-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in talking-machines and pertains to that class of machines in which a disk record is used and a metal stylus.

One object of my invention is to provide an improved means for rotating the stylus while in contact with the record, whereby the reproducing-point thereof is kept tapered or sharpened and permitting the same stylus or needle to be used continuously until it is too short for further use.

Another object of my present invention is to combine with the rotating feature of the stylus or needle an automatic means for feeding the stylus longitudinally as it is worn away.

My present invention also involves other details of construction which will be particularly pointed out hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of my invention. Fig. 2 is a side elevation looking from the opposite side shown in Fig. 1. Fig. 3 is a top plan view of the mechanism which embodies my invention. Fig. 4 is a longitudinal sectional view taken through the adjustable needle and its cooperating mechanism. Fig. 5 is a sectional view at right angles to Fig. 4. Fig. 6 is an inverted plan view. Fig. 7 is a diagrammatic view showing the operation of the parts. Fig. 8 is an enlarged perspective view of the clamping-jaws for holding the adjustable needle.

My United States Patent, No. 741,543, of October 13, 1903, shows and describes a rotatable needle and a certain form of means for rotating it. My present invention involves a specific means for revolving the needle, involves means for automatically feeding the needle longitudinally, and also certain details of construction, neither of which is shown in my prior patent.

Referring now to my present improvements, 1 indicates a sound-box of the ordinary construction. The diaphragm 2 has the usual connection 3 therewith, the opposite end of the connection 3 being connect-

ed with a member 4, which is supported or rather connected with a bracket 5 through the medium of screws 6 and springs 7. Rigidly connected with the member 4 is a jaw-holding extension 8. This extension 8 carries the adjustable jaws 9, the outer ends 10 of which are suitably shaped to clamp the pointed end of the needle 11, as shown in Fig. 8. Formed in the jaw-holding extension 8 is a longitudinal needle passage-way 12, through which the needle 11 may freely rotate and move longitudinally.

Projecting from the side of the sound-box 1 is a suitable bracket 14, in which is journaled a rotatable sleeve or equivalent member 15, through which passes a needle-carrying member 16. This member 16 is provided with an external longitudinal groove 17, in which a pin or feather 18, carried by the member 15, engages. The said groove 17 extends throughout the length of the needle-carrying member 16 and permits the said member to be moved longitudinally through the rotating member 15, but locks the members 15 and 16 against independent rotation. A cap 19 is secured to the upper end of the rotatable member 15 through the medium of a pin or screw 20, thus locking these parts together and making them practically one element, so far as operation is concerned, after the parts are assembled. The cap being removable, however, it enables the member 15 to be placed in position within the bracket 14 or to be removed therefrom.

Secured to the lower end of the member 15 is a gear 21, and this gear 21 meshes loosely with a gear 22, which is attached to the upper end of a shaft 23. This shaft 23 is journaled in a suitable bracket 24. Journaled to the lower end of the bracket 24 is an actuating-wheel 25, preferably carrying a rubber rim 26 for engagement with the record 27. Concentrically connected with the actuating-wheel 25 is a worm 28, and this worm is in operative engagement with a worm-gear 29, attached to the lower end of the previously-mentioned shaft 23. The needle 11 is connected with the needle-carrying member 16 by passing into a longitudinal opening therein and being held by a thumb clamp-screw 31.

From the foregoing description it will be understood that as the record rotates the wheel 25 in engagement therewith is rotated, and through the medium of the worm 28, gears 29, 21, and 22 the member 15 is ro-

tated and in turn rotates the needle-carrying member 16. The needle being rotated and supported at an inclination the point thereof will always be tapered and will accurately follow the indentations of the record and will at all times make as good a reproduction as a new needle and, in fact, better, because the needle is not dulled by contact with the record, as in a non-rotatable needle.

Thus far I have only described that part of my present invention which pertains to the means for rotating the needle irrespective of whether the needle is adjusted longitudinally, automatically, or otherwise. The primary object of rotating the needle is to avoid the necessity of using a new needle for each record, as is the case with a non-rotatable needle, and to permit the needle to be continuously used until it becomes too short to be held by the clamping member. It therefore follows that to obtain the full advantage of a rotatable needle it must be moved longitudinally as it is worn away. My previously-mentioned patent shows means whereby the operator may adjust the needle. I will now explain that part of my present invention which accomplishes the automatic adjustment or longitudinal movement of the needle as it is worn away.

The automatic feature of my present invention for adjusting the needle longitudinally may be varied in detail of construction without departing from the spirit and scope of my invention, since, so far as I am aware, a rotatable and automatically longitudinally-adjusted needle for talking-machines has not been previously devised. I therefore herein show for the purpose of enabling my invention to be understood one convenient form for accomplishing automatically the adjustment of a rotatable needle. The particular form here shown consists in pivoting the bracket 24, which carries the operating wheel 25, and the pivotal point here shown is indicated at 32 in a suitable support or bracket 33, which is secured to the sound-box 1, whereby the bracket and wheel are permitted to swing or oscillate upon the said pivotal point. A spring 34 engages the bracket and serves to hold the wheel 25 in contact with the record 27. As is understood by those skilled in this art, the sound-box is supported by the needle, which in turn is in engagement with the record 27. The wheel 25 is therefore yieldingly held in contact with the record 27, so that the sound-box 1 may move downward as the point of the needle wears away. In the form here shown the automatic longitudinal adjustment of the needle is controlled by the movement of the sound-box independent of the wheel and bracket, which are movably supported by the sound-box, the movement of the sound-box being occasioned, as just stated, by the wearing away of the point of the needle.

The downward movement of the sound-box 1 in the form of mechanism herein disclosed effects the automatic longitudinal adjustment of the needle through the following instrumentalities: Loosely swiveled to the upper end of the member 15 is a screw-head or ratchet 33, and the needle-carrying member 16 is externally screw-threaded for the purpose of engaging the internal screw-threads of the opening 34 in said ratchet or screw-head 33. A locking member 35 is provided and is here shown in the form of a pivoted lever, one end 36 of which is adapted to be moved into and out of engagement with the roughened or ratchet-shaped outer surface 37 of the said screw-head 33. The opposite end 38 of the said lever 35 is adapted to be engaged by a projection, screw, or pin 39, but preferably a screw, whereby it is capable of adjustment. Means is provided for normally holding the end 36 of the lever 35 out of engagement with the screw-head 33, and the means here shown consists of a suitable spring 40. The means here illustrated for swiveling the screw-head 33 to the member 19, which is rigidly connected to the member 15, consists in providing the member 19 with a circumferential groove 41 and the screw-head with a pin or projection 42, loosely engaging the said groove. For the purpose of facilitating the description and assisting in the understanding of this automatic feature of my invention the diagrammatic view, Fig. 7, will be referred to. The solid lines of this diagrammatic view show the parts in their normal positions and the automatic adjusting feature out of operation. The dotted lines show the position of the parts when the automatic feature of adjusting the needle longitudinally is in operation. Referring to the position of the parts, as shown in solid lines, the friction between the screw-threaded portions of the head 33 and the needle-carrying member 16 is sufficient to cause the screw-head to rotate with the member 16. The needle being the support for the sound-box, as the point of the needle wears away the sound-box will move downward to the position indicated in dotted lines, and which will carry the screw or projection 21 in contact with the end 38 of the lever 25 and cause the opposite end 36 of the lever to be moved in contact with the roughened or ratchet surface of the screw-head 33 and lock or hold it against rotation. The screw-head being locked against rotation and the needle-carrying member 16 continuing to rotate, the engaging screw-threads of the head 33 and member 16 will cause the member 16 to move longitudinally and force the point of the needle outward between the jaws 9 until the sound-box has been raised sufficiently to prevent the projection 39 from holding the end 36 of the lever 35 in engagement with the screw-head 33. From the foregoing it will

be understood that the needle will be longitudinally adjusted, as may become necessary on account of the wearing away thereof, and without any attention on the part of the operator.

For the purpose of enabling a long needle to be used the member 16 has the opening 30, extending entirely therethrough, which will enable a long needle to be held thereby.

In starting the machine with this invention the needle will have its pointed end adjusted to the proper distance beyond the jaws 9 and with the needle-carrying member in its uppermost position and the needle clamped therein by the thumb-screw 31. The machine is now adapted to operate without any attention on the part of the operator, so far as the needle is concerned, until the needle has been worn away sufficiently to cause the lower end of the needle-carrying member 16 to engage the upper end of the jaw-carrying extension 8. At this point it will be necessary to loosen the thumb-screw 31 and to move the needle-holding member 16 to its outermost position, which can be quickly done by rotating the screw-head 33. This being done the clamping-screw 31 is again tightened and the machine is ready for further automatic operation.

In order to get the proper result, the needle must be tightly clamped by the jaws 9, so that it will not have any independent movement therein. Continued long service may cause the engaging portion of the jaws to be worn by the rotation of the needle therein, and I have provided means for permitting the adjustment of these jaws to take up any wear thereof. This means consists in arranging the jaws 9 in the extension 8 at an angle and providing adjusting-screws 43. By forcing the jaws outward through the medium of these screws 43, owing to their relative angular positions, will cause their outer ends to be brought closer together and the needle to be tightly clamped.

In order to permit the free springing movement of the gear 22 in respect to the gear 21 as the bracket 24 swings upon its pivotal point, I preferably make the teeth of the gear 22 of such a shape as to permit this springing movement, as illustrated in Fig. 4.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a talking-machine, a diaphragm, a rotatable needle phonetically connected with the diaphragm, a rotatable needle-carrier, a gear operatively connected therewith, a shaft carrying at one end a gear operatively connected with said needle-carrier gear, a wheel rotated by contact with the record, and a worm-gear connection between the wheel and the opposite end of said shaft.

2. In a talking-machine, a diaphragm, a rotatable needle phonetically connected

therewith, means for rotating the needle, and automatically-actuated means for moving the needle longitudinally as the point thereof wears away.

3. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected therewith, and a means actuated by the movement of the record for rotating the needle and moving it longitudinally as the point of the needle wears away.

4. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected with the diaphragm, means for rotating and longitudinally moving the needle, the latter means controlled by the wearing away of the point of the needle.

5. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected therewith, means actuated by the movement of the record for rotating and longitudinally moving the said needle, the latter means controlled by the wearing away of the point of the needle.

6. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle, means for rotating the needle, means for moving the needle longitudinally, the latter means actuated by the downward movement of the diaphragm caused by the wearing away of the point of the needle.

7. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected therewith, means for rotating the needle, means for moving the needle longitudinally, the former means adapted to be actuated independently of and simultaneously with the latter means, and means controlled by the wearing away of the needle for throwing into operation the longitudinally-movable means.

8. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected therewith, means for rotating the needle, means for feeding the needle longitudinally, the rotatable means adapted to be operated independently of and simultaneously with the longitudinally-feeding means, and movable means in contact with the record adapted to throw the longitudinally-movable means into operation when the point of the needle wears away.

9. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected with the diaphragm, a rotatable screw-threaded longitudinally-movable needle-carrier, a screw-threaded member engaging the screw-threaded needle-carrier and adapted to rotate therewith, and means for holding the screw-threaded member against rotation to cause the longitudinal movement of the needle.

10. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected with the diaphragm,

a rotatable and longitudinally-movable screw-threaded needle-carrier, a screw-threaded member in engagement therewith and adapted to rotate with it, and a lock adapted to hold the screw-threaded member against rotation to effect the longitudinal movement of the needle, the said lock controlled by the wearing away of the point of the needle.

11. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected with the diaphragm, a rotatable and longitudinally-movable screw-threaded needle-carrier, a screw-threaded member in engagement with the screw-threaded portion of the needle-carrier and adapted to rotate therewith, a lock for the screw-threaded member, and a member in engagement with the record adapted to cause the lock to engage the screw-threaded member when the point of the needle wears away.

12. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected with the diaphragm, a rotatable and longitudinally-movable screw-threaded needle-carrier, means actuated by the record for rotating the needle-carrier, a screw-threaded member in engagement with the needle-carrier and adapted to rotate therewith, a lock for the screw-threaded member adapted to be actuated by the downward movement of the diaphragm caused by the wearing away of the point of the needle and thereby carried into engagement with the screw-threaded member and holding it against rotation for causing the longitudinal movement of the needle-carrier.

13. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle, a rotatable and longitudinally-movable screw-threaded needle-carrier, means in engagement with the record for rotating the needle-carrier, said means being movably connected with the diaphragm, a screw-threaded member in engagement with the needle-carrier and adapted to rotate therewith, a lock for the screw-threaded member to cause longitudinal movement of the needle-carrier as it is rotated, the lock adapted to be engaged by the needle-rotating means which is in engagement with the record when the diaphragm is lowered by the wearing away of the point of the needle.

14. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected with the diaphragm, a rotatable and longitudinally-movable screw-threaded needle-carrier, a screw-threaded member in engagement with the needle-carrier and adapted to rotate therewith, a swinging member connected with the diaphragm, the swinging member carrying an operating-wheel in engagement with the record, the operating-wheel connected with the needle-carrier to rotate it, and a lock ac-

tuated by engagement with the swinging member for locking the screw-threaded member when the diaphragm is lowered by the wearing away of the point of the needle.

15. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected therewith, a rotatable sleeve, means actuated by the record and operatively connected with the sleeve to cause it to rotate, a rotatable and longitudinally-movable needle-carrier rotated by the said sleeve, the needle-carrier having a movement longitudinally through the sleeve, and means controlled by the wearing away of the point of the needle adapted to cause the needle-carrier to move longitudinally through the sleeve as the sleeve is being rotated.

16. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle phonetically connected with the diaphragm, a rotatable sleeve, means actuated by the record and operatively connected with the sleeve to cause it to rotate, a rotatable and longitudinally-movable needle-carrier passing through the sleeve and adapted to move longitudinally independently of the sleeve but locked against independent rotation, whereby the needle-carrier is rotated by the sleeve, a screw-threaded member in engagement with the screw-threaded portion of the needle-carrier and adapted to normally rotate therewith, a lock for the screw-threaded member, and means adapted to throw the lock in engagement with the screw-threaded member to hold it against rotation, said lock controlled in its engagement with the screw-threaded member by the wearing away of the point of the needle.

17. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle, a rotatable and longitudinally-movable screw-threaded needle-carrier, means actuated by the movement of the record and operatively connected with the needle-carrier to rotate it, the screw-threaded member adapted to normally rotate with the needle-carrier, a lock normally out of engagement with the screw-threaded member, and means controlled by the wearing away of the needle for causing the lock to be thrown in engagement with the screw-threaded member and holding it against rotation and thereby causing the longitudinal movement of the needle.

18. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle and adjustable jaws adapted to clamp the needle against lateral movement but permitting it to move longitudinally therethrough.

19. In a talking-machine, a diaphragm, a rotatable and longitudinally-movable needle, clamping-jaws for the needle phonetically connected with the diaphragm, and means for adjusting the clamping-jaws to take up any wear caused by the rotation of the needle.

20. In a talking-machine, a diaphragm, a

rotatable and longitudinally-movable needle,
clamping-jaws phonetically connected with
the diaphragm, said clamping-jaws consist-
ing of arms longitudinally movable in a con-
5 verging direction to clamp the needle, and
means for moving the said jaws longitudi-
nally.

21. In a talking-machine, a diaphragm, a
longitudinally-adjustable needle phonetic-
10 ally connected therewith, means automatic-

ally actuated by an operative part of the ma-
chine and adapted to adjust the needle longi-
tudinally in proportion to its wear at the
point.

In testimony whereof I affix my signature 15
in presence of two witnesses.

MINARD A. POSSONS.

Witnesses.

FRED. T. BATCHELOR,

CHAS. H. BEHLEN.