

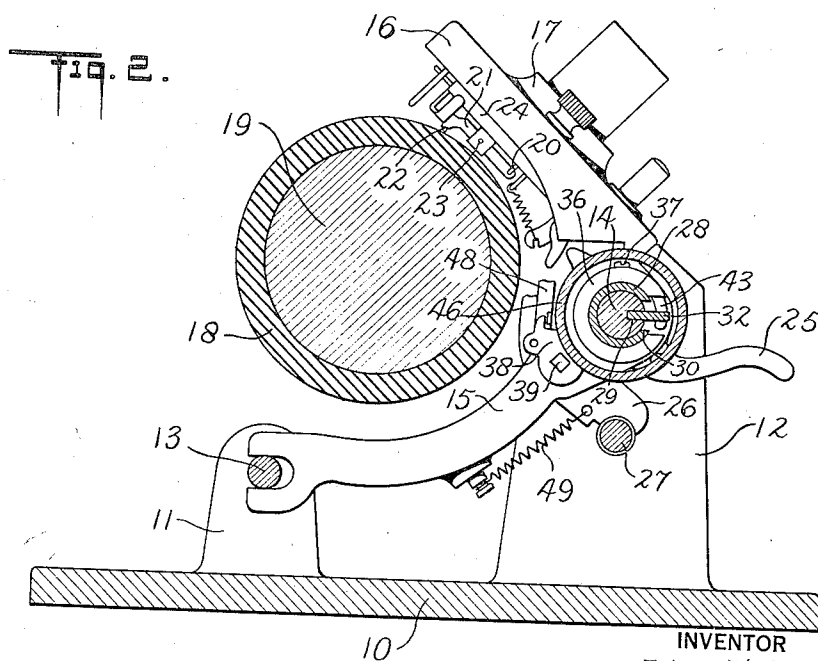
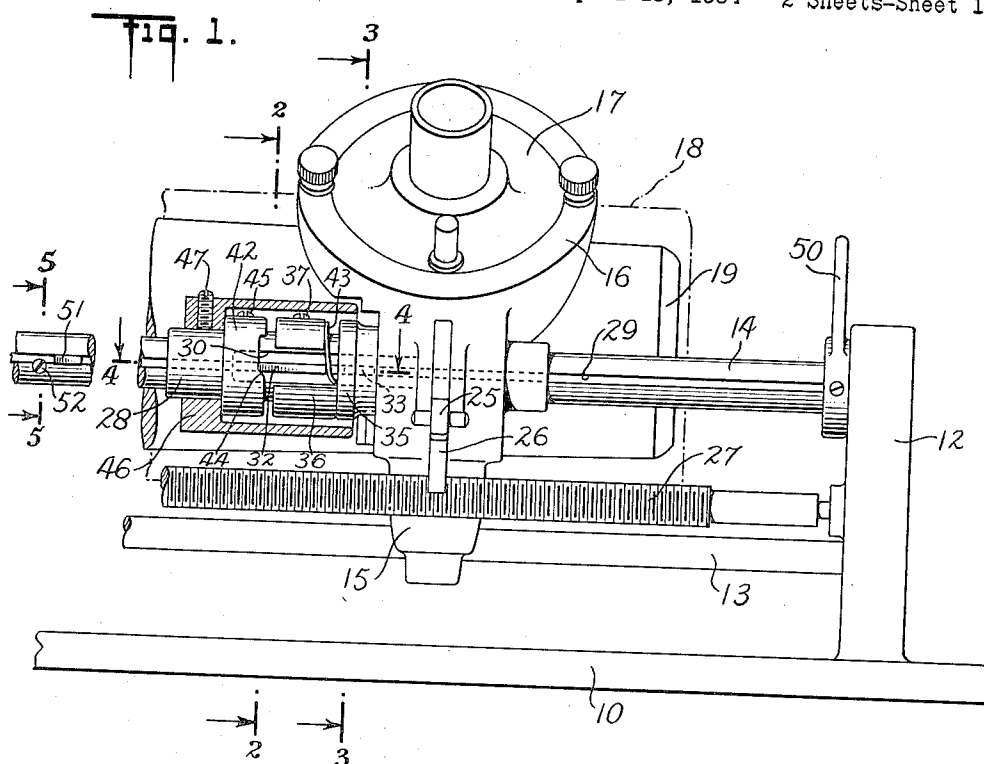
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J. E. RENHOLDT

2,070,180

PHONOGRAPH

Original Filed April 18, 1934 2 Sheets-Sheet 1



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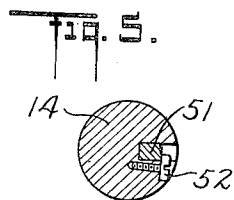
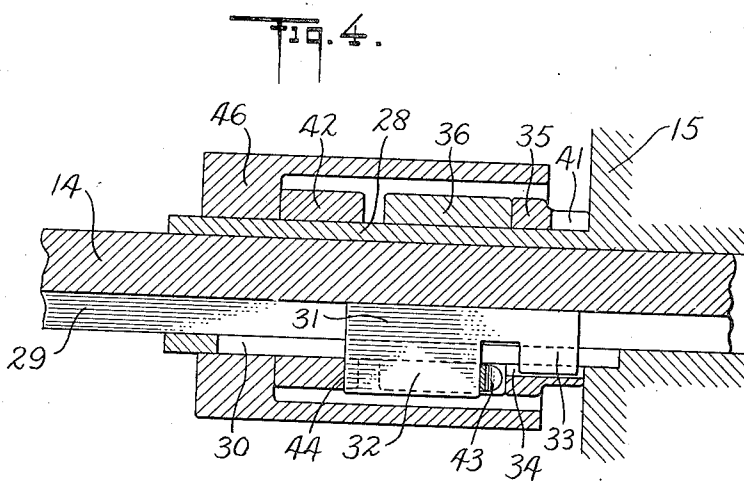
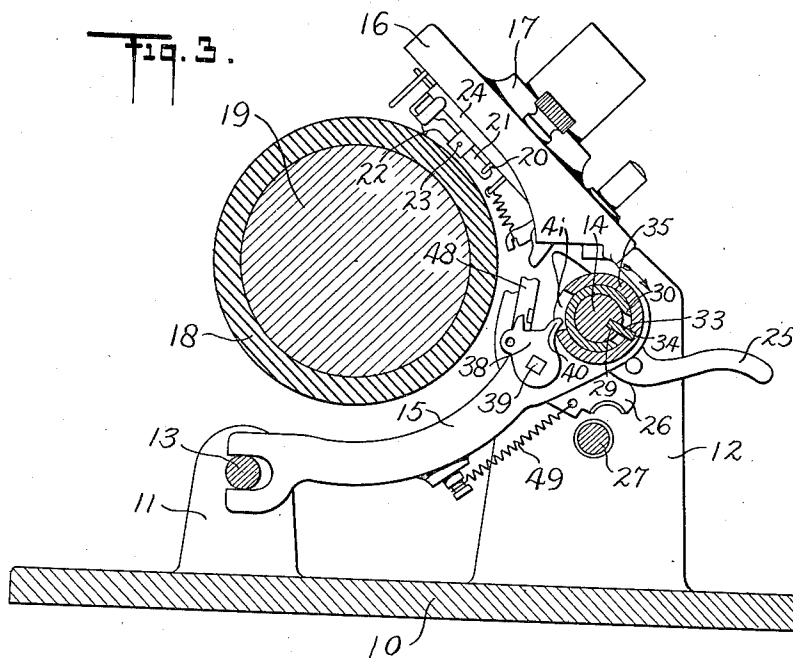
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PHONOGRAPH

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2,070,180

PHONOGRAPH

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Renewed October 28, 1935

12 Claims. (Cl. 274—21)

This invention relates to phonographs and more particularly to phonographic machines used for reproducing dictation. One object thereof is to provide improved means whereby the reproducer stylus can be moved or spaced back for the purpose of causing the repetition of any portion of the record whenever the operator who is transcribing the record so desires.

Another object is to provide a simple and adjustable device for stepping the stylus backward a predetermined amount each time the device is put in operation.

Another object is to provide a simple and inexpensive backspacing device of the character described which will take up little space, be efficient in operation, and present a neat and pleasing appearance.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings in which is shown one of the various possible embodiments of my invention.

Fig. 1 is a front elevation of the right end portion of a phonographic machine for transcribing dictation or other recorded matter;

Fig. 2 is a cross-section taken on line 2—2 of Fig. 1;

Fig. 3 is a cross-section taken on line 3—3 of Fig. 1;

Fig. 4 is a cross-section taken on line 4—4 of Fig. 1; and Fig. 5 is a cross-section at 5—5 of Fig. 1.

The phonographic machine shown in the accompanying drawings for the purpose of illustrating this invention, is a transcribing machine and has a base 10 provided with standards 11 and 12 at the right end of the base for mounting the carriage-supporting rods 13 and 14, the opposite ends of said rods being suitably mounted in other standards not shown in the present drawings. The upper or front rod 14 is rotatably mounted and serves as a rock-shaft for a purpose to be described hereinafter. The carriage 15 slidably supported on these rods comprises a head 16 adapted to support a sound-box 17 for reproducing the sound recorded on a record 18 carried by a rotatable mandrel 19, in a well-known manner. The sound-box supports the usual diaphragm (not shown) connected by means of a link 20 to one

end of a lever 21 having at its other end a reproducing stylus 22 which engages the record 18. Stylus lever 21 is pivotally mounted, as at 23, upon a floating support 24 of well-known construction, which support is itself mounted to have both up and down and lateral movement with respect to the sound-box.

All of these features are disclosed in detail in United States Patent to Lucarelle et al., No. 1,726,574, to which reference may be had for a more complete understanding of these and other features hereinafter mentioned. The floating support may be raised by means of a carriage release lever 25, in a known manner, when it is desired to move the sound-box carriage freely along the record, or when it is desired to remove the record from the machine. The release lever 25 when operated to raise the stylus from the record will also release a feed-nut 26 which engages a feed-screw 27 of the carriage feed mechanism, all as described in the patent above mentioned.

To move the carriage backwardly a small extent, as when it is desired to repeat the dictation just heard, to verify it, the carriage is moved by backspacing mechanism comprising the rock-shaft 14. The carriage is provided with a long sleeve or tubular bearing 28 formed integrally therewith which is slidably supported upon said rock-shaft.

Before describing the backspacing mechanism in detail it may be well to note that the carriage is backspaced without raising the stylus from the record, at which time the stylus is held against lateral movement by means actuated by the feed-nut when the latter is released from the feed-screw by the backspacing mechanism. Since the means for accomplishing this result has been fully described in the above-mentioned patent no further reference will be made thereto in the following description.

The carriage rod or rock-shaft 14 may be rocked in any suitable manner, as by the lever 50 rigidly mounted thereon, but preferably use will be made of mechanism like that shown in the United States Patent to J. M. Lucarelle No. 1,649,965, which discloses power-operated manually controlled means for intermittently rocking a bail member. This same mechanism with slight modification may be used to actuate the rock-shaft of the present invention.

Referring to the drawings, it will be seen that the rock-shaft is provided with a longitudinally extending keyway 29 which registers with a wider slot 30 formed in the carriage sleeve 28. Slidably seated in the keyway 29 is a key or spline 31,

having two spaced portions 32 and 33 extending radially beyond the periphery of sleeve 23 through the slot 30. The key portion 33 extends into registry with a keyway 34 in the interior of an annular collar 35 loosely mounted on the carriage sleeve 23 and bearing at its right end against the body of the carriage and held against endwise movement in a left-hand direction by means of an adjustable annular collar 36 also loosely mounted upon the carriage sleeve 23 but adapted to be held rigidly in any adjusted position by means of an adjustment screw 37 in order to hold the collar 35 in its proper position and to provide adjustment facilities in a rotational direction, for reasons more fully described hereinafter. The collar 35 serves as a means for releasing the feed-nut from the feed-screw when the carriage rod 14 is rocked to back-space the carriage and stylus any desired amount. For that purpose a lever arm 38 is carried by the squared end of a shaft 39 upon which the feed-nut 26 is immovably mounted. The arm 38 is provided with a finger 40 which lies within a slot 41 cut in the wall of the collar 35 at a point substantially opposite the keyway 34. In the position of the parts shown in Fig. 2 the feed-nut is in engagement with the feed-screw. If, however, the rock-shaft 14 be rocked in the direction of the arrow in Fig. 3 the projecting portion 33 of the key 31, owing to its keyed connection with the collar 35, will cause rotation of that collar in the same direction, and rotation of the shaft 39 in an anti-clockwise direction to lift the feed-nut 26 out of engagement with the feed-screw 27.

The projecting portion 32 of the key 31 cooperates with a cam sleeve 42 and a spring 43 to produce a backward movement of the carriage each time the rock-shaft is oscillated. Cam sleeve 42 has on its right-hand face a camming surface 44 adapted to coact with the left-hand end of the key portion 32. The spring 43 is preferably a leaf spring secured to the collar 36 and held in a position to engage the right-hand end of the key portion 32. Sleeve 42 is held in any adjusted position by means of a screw 45.

When backspacing the operation is as follows: The first effect of movement of the rock-shaft in the direction of the arrow is a tendency for the left end of the key portion 32 to ride up on the camming surface 44. However, this action is opposed by the spring member 43 which exerts sufficient pressure upon the right end of key portion 32 to cause the key to be cramped in its seat by a lateral component of the reactive force exerted by the camming surface 44. This cramping action prevents endwise movement of the key. As rotation of the rock-shaft continues the feed-nut becomes disengaged from the feed-screw, as above described, after which the continued turning of the rock-shaft and the pressure of the key portion 32 upon the camming surface 44 results in a movement of the whole carriage to the left as the key rides up to the high point of the camming surface.

When the rock-shaft is returned to its original position the feed-nut again comes into engagement with the feed-screw, the key 31 becomes slidable in its seat and is forced by the spring 43 to the left until it is again in engagement with the low portion of camming surface 44. Thus the key is moved to the left a distance equal to that travelled by the cam sleeve when the carriage is backspaced and is again in position to produce another stepping back of the carriage should motion be again imparted to the rock-

shaft. The extent to which the carriage is backspaced at each movement of the rock-shaft is determined by the position in which the cam sleeve 42 is set. For the setting of the sleeve determines whether the end of the key will ride up the full slope of the cam to its high point or only part way thereof.

All of the parts of the backspacing mechanism as above described are enclosed and protected by means of an enveloping sleeve 48 which at its left end loosely fits the carriage sleeve 23 and is formed throughout most of its length as an annular housing completely surrounding the before-mentioned parts of the backspacing mechanism. This sleeve is held in place by a set screw 47.

In the drawings the upwardly extending end of the feed-nut 26 and the arm 48 carried by the lever arm 38 are broken away so that their position is merely indicated. Their purpose, however, will be clearly understood by reference to Patent No. 1,726,574. It is sufficient merely to state here that the rearward projection of the feed-nut cooperates with a rearward projecting arm connected with the release lever 25 to release the feed-nut when the lever 25 is operated to lift the stylus from the record. It may be noted, too, that the arm 48 serves to operate means holding the stylus against lateral movement during backspacing. The feed-nut 26 is normally held in engagement with the feed-screw 27 by means of a spring 49.

Some of the many advantages to be noted in respect to backspacing mechanism embodying features of the present invention are the following: As compared with ratcheting devices of the ordinary sort the present mechanism is much more silent in operation. Also with the ordinary ratcheting mechanism the step-by-step movement of the carriage is always determined by the pitch of the ratchet member. In the present instance, however, because of the adjustability of the parts the distance backspaced each time the rock-shaft is operated may be varied as desired. All of the parts are enclosed in a nicely finished sleeve which not only protects them from dust and dirt, but also adds to the whole machine something of the streamline effect now so popular in mechanical design.

Another very practical advantage is that when the carriage has been stepped to the left until the key reaches the end of the key-seat or comes into engagement with an auxiliary key 51 set in the key-seat, there is no danger of damaging the parts because of the tendency of the machine to continue backspacing since, with the key so engaged, the spring member 43 will be prevented from causing the key to follow up the last backspace movement of the carriage cam member. Hence, any further rocking of the rock-shaft will merely cause an idling movement of the parts of the backspacing mechanism. Such a key 51 is shown in Figs. 1 and 5. It may be formed as shown and adjustably held in place in the keyway 29 by means of a screw 52. This safety feature is a distinct advantage over backspacing mechanism as heretofore known.

It will be seen that in carrying out the present invention there is provided a construction of an essentially practical nature well adapted to attain the several objects hereinbefore set forth.

As many possible embodiments may be made of the above invention without departing from the scope thereof, it is to be understood that all

matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a dictation-transcribing machine, in combination, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a cam member, a spline seated in said keyway movable along said shaft with said reproducing means and having limited freedom of movement with respect to said cam member, said spline being adapted by the rocking of the shaft to be brought by said cam member into binding engagement with said keyway and to react upon said cam member to shift said reproducing means along said shaft.

2. In a dictation-transcribing machine, in combination, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a cam member, a spline seated in said keyway movable along said shaft with said reproducing means and having limited freedom of movement with respect to said cam member, said spline being adapted by the rocking of the shaft to be brought by said cam member into binding engagement with said keyway and to react upon said cam member to shift said reproducing means along said shaft, and resilient means tending to hold said spline in engagement with said cam member.

3. In a dictation-transcribing machine, in combination, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a cam member, a spline seated in said keyway movable along said shaft with said reproducing means and having limited freedom of movement with respect to said cam member, said spline being adapted by the rocking of the shaft to be brought by said cam member into binding engagement with said keyway and to react upon said cam member to shift said reproducing means along said shaft, and resilient means tending to hold said spline in engagement with said cam member, said cam member being adjustable relatively to said reproducing means to determine the degree of shifting movement of said reproducing means.

4. In a dictation-transcribing machine, in combination, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a cam member, a spline seated in said keyway movable along said shaft with said reproducing means and having limited freedom of movement with respect to said cam member, said spline being adapted by the rocking of the shaft to be brought by said cam member into binding engagement with said keyway and to react upon said cam member to shift said reproducing means along said shaft, and means for rocking said shaft.

5. In a dictation-transcribing machine, in combination, a support for a record, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a stylus adapted to engage the record, feeding means for moving the sound-reproducing means in a given direction along said shaft, a spline seated in said keyway movable along said shaft with said reproducing means, having limited endwise and rotational movement relatively to said reproducing means and adapted upon meeting resistance to rotational movement

to cramp in said keyway, rotative means on said reproducing means adapted when said shaft is rocked in a given direction to cooperate with said spline for rendering said feeding means inoperative, and means on said reproducing means resisting rotational movement of said spline and adapted to cooperate with said spline to shift said sound-reproducing means in the opposite direction along said shaft while permitting said stylus to remain in engagement with said record.

6. In a dictation-transcribing machine, in combination, a support for a record, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a stylus adapted to engage the record, feeding means for moving the sound-reproducing means in a given direction along said shaft, a spline seated in said keyway movable along said shaft with said reproducing means, having limited endwise and rotational movement relatively to said reproducing means and adapted upon meeting resistance to rotational movement to cramp in said keyway, means on said reproducing means adapted when said shaft is rocked in a given direction, to cooperate with said spline for rendering said feeding means inoperative, means on said reproducing means resisting rotational movement of said spline and adapted to cooperate with said spline to shift said sound-reproducing means in the opposite direction along said shaft while permitting said stylus to remain in engagement with said record, and means for rocking said shaft.

7. In a dictation-transcribing machine, in combination, a support for a record, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a stylus adapted to engage the record, feeding means for moving the sound-reproducing means in a given direction along said shaft, a spline seated in said keyway movable along said shaft with said reproducing means and having limited endwise and rotational movement relatively to said reproducing means, a relatively fixed means on said reproducing means adapted when said shaft is rocked in a given direction to cramp said spline in said keyway and be moved by said spline to shift said sound-reproducing means in the opposite direction, and relatively movable means on said sound-reproducing means adapted when said shaft is so rocked to coact with said spline for rendering said feeding means inoperative.

8. In a dictation-transcribing machine, in combination, a support for a record, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a stylus adapted to engage the record, feeding means for moving the sound-reproducing means in a given direction along said shaft, a spline seated in said keyway movable along said shaft with said reproducing means and having limited endwise and rotational movement relatively to said reproducing means, a relatively fixed means on said reproducing means adapted when said shaft is rocked in a given direction to cramp said spline in said keyway and be moved by said spline to shift said sound-reproducing means in the opposite direction, relatively movable means on said sound-reproducing means adapted when said shaft is so rocked to coact with said spline for rendering said feeding means inoperative, and means for adjusting the position of said relatively fixed means to regulate the dis-

tance that the reproducing means will be shifted by the said spline.

9. In a dictation-transcribing machine, in combination, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a relatively adjustable cam member, a spline seated in said keyway movable on said shaft with said reproducing means and having limited freedom of movement with respect to said cam member, said spline being adapted by the rocking of the shaft to be brought by said cam member into binding engagement with said keyway and to react upon said cam member to shift said reproducing means along said shaft, and a spring adjustably mounted on said reproducing means and tending to hold said spline in engagement with said cam member.

10. In a dictation-transcribing machine, in combination, a rock-shaft having a longitudinal keyway therein, sound-reproducing means slidably mounted on said shaft and comprising a cam member, a spline seated in said keyway movable along said shaft with said reproducing means and having limited freedom of movement with respect to said cam member, said spline being adapted by the rocking of the shaft to be brought by said cam member into binding engagement with said keyway and to react upon said cam member to shift said reproducing means along said shaft, and means on said shaft adapted to engage with said spline whereupon con-

tinued rocking of said shaft will be ineffective to shift said reproducing means.

11. In a phonograph, in combination, a rock-shaft having a longitudinal keyway therein, a carriage slidably mounted on said shaft and comprising a cam member, a spline seated in said keyway movable along said shaft with said carriage and having limited freedom of movement with respect to said cam member, said spline being adapted by the rocking of the shaft to be brought by said cam member into binding engagement with said keyway and to act upon said cam member to shift said carriage along said shaft.

12. In apparatus of the character described, in combination, a movable member, means for moving said member in an advancing direction and means for imparting a step-by-step backspace movement to said member comprising a rock-shaft supporting one of said members and having a longitudinally extending keyway, and a spline seated in said keyway movable along said shaft with said one member and having limited freedom of movement with respect to a camming surface on said one member, said spline being adapted by the rocking of said shaft to be brought by said camming surface into binding engagement with said keyway and to react upon said camming surface to shift said one member along said shaft.

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