AUTOMATIC DETERMINING DEVICE FOR PHONOGRAPHS.

No. 430,277. Patented June 17, 1890.
To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Automatic Determining Devices for Phonographs, (Case No. 925), of which the following is a specification.

In my application, (Case No. 818), Serial No. 299,490, filed January 15, 1889, I have described a preferred form of device for determining automatically the exact position of the recording and reproducing points on the phonogram-cylinder, whether thick or thin, and referred in general terms to other forms of device to accomplish the same purpose which I had tried.

My present invention relates particularly to that form of device referred to in said application, wherein the movement of the determining-point locks the presser-foot by its direct movement; and it consists in the several novel devices and combinations of parts, as fully hereinafter explained, and pointed out by the claims.

In the accompanying drawings, forming a part hereof, Figure 1 is a side elevation of a form of automatic determining device embodying my invention, showing the determining-point resting upon the surface of the phonogram-blank. Fig. 2 is a top plan view thereof, showing a small portion of the spectacle-frame. Figs. 3 to 7 show a modified form of device embodying my invention, of which Fig. 3 is a side elevation, Fig. 4 a top plan view, Figs. 5 and 6 are detail views of the locking-piece; and Fig. 7 is a section through the line 7 7 of Fig. 4.

The spectacle-frame A, bearing the recording or reproducing points, is similar in construction and mode of operation to the spectacle-frame described in my application above referred to and comprises two arms, but one of which B is shown, one for each eye of the frame. These arms project forward over the guide-rest C, and each arm is provided with a presser-foot D, which bears upon the guide-rest and supports the spectacle-frame as it moves along in a definite relation to the surface of the phonogram-blank E.

Referring to Figs. 1 and 2, the presser-foot D is a plate mounted upon the lower end of a bar F, which passes up through arm B. A spring (shown in dotted lines) is connected to a pin at the upper end of the bar F and with another pin upon the side of the arm B, and drawing downwardly upon the bar F tends to project the presser-foot downwardly to the lowest limit of its movement. The bar F is provided with a V-shaped spirally-cut thread, and with this thread engages a locking-piece H, which is formed of a plate having a screw-threaded circular hole I, the threads of which correspond to the threads on the bar F. The piece H is located on the rabbit J of the arm B between the rabbit and the plate K, and at one side is pivoted on the bar I, thus forming a gripping-eye which engages with the bar F when it is tilted. This locking-piece H is forced directly into engagement with the bar F by the movement imparted to the determining-point M when it comes in contact with the surface of the phonogram-blank. The determining-point M in the present instance is the point of an adjusting-screw and is mounted on a lever N, the movement of which is limited by the adjusting-screw O, and is connected with a sleeve P, free to rotate on a set-screw Q, working in the side of the arm B.

On the sleeve P is also mounted the L-shaped arm R, the horizontal portion of which projects under and parallel with the locking-piece, and between the hub of which arm R and the hub of lever N is located a friction disk S, of leather or other suitable material. The object of providing this friction connection between the lever N and arm R is to permit the movement of both these parts in unison until the arm R meets with a resistance, when its further motion will be arrested without wholly preventing further motion of the lever P, which will still remain responsive to the inequalities of the surface of the phonogram-blank, thereby preventing mutilation of said blank.

The pin T, projecting from the presser-foot vertically into a socket on the arm B, serves to prevent the presser-foot from turning on the guide-rest.

The handle V serves to raise and lower the spectacle-frame and connected parts.

By manipulating the finger-piece W, which may be a continuation of the lever P, the
locking mechanism can be adjusted to the opened position when the device is ready for use. As the spectacle-frame is lowered the presser-foot will strike the guide-rest C and bar E will slide upward through the arm F against the tension of the spring. The downward movement continues against the tension of the spring until the determining-point F strikes the surface of the phonogram-blank U, when the slightest further movement rotates the lever N, thereby throwing the rocking arm R upward against the locking-piece H, engaging with the bar E, effectually locks the presser-foot rigidly in the position of adjustment, which is determined by the determining-point. The lever bearing the determining-point, however, still is capable of movement by reason of the friction-connection, so that the determining-point will ride over the surface of the phonogram-blank without injury thereto.

Referring to Figs. 3 and 7 of the drawings, wherein parts similar to parts of Figs. 1 and 2 are similarly lettered, it will be seen that the modification consists principally in providing two bars F and P and a locking-piece H, capable of engaging with either bar, the locking-piece being thrown into engagement by the action of the short arm, which the lever N is provided with, which abuts against the recess 2 of the locking-piece. In this modification, as two screw-threaded bars F and P are used, the pin T of Figs. 1 and 2 may be dispensed with. The thread of these bars F P may be of one-half the pitch of the bar E of Fig. 1 if they are adjusted in the relationship shown in Fig. 7, where it will be seen that the broken straight line X X passes on the base of any thread on one of the bars F, but is about half a thread above the base of any thread on the other bar. By adjusting the threads of the bars F P, as just described, and providing the locking-piece H with a set of threads for each bar parallel to each other it follows that one or the other set of threads on the locking-piece will engage with one or the other of the bars F P, and thereby lock the arm of the spectacle-frame from further descent.

I have shown in Figs. 3 and 7 a coiled spring 3, situated under the locking-piece H. The object of this is to insure a readier locking of the parts, as the spring permits of a slight up-and-down motion of the locking-piece, so that it can adjust itself to the threads on the bars F, which may be in either a slightly higher or lower plane. The depth of the locking-piece H will be sufficiently less than the depth of the space between the rab- bet J and plate K to permit of this slight movement. The depth of the threads on the locking parts is sufficiently great to permit the locking thereof before the moving locking-piece reaches the bottom of the V-threads on the bar for the purpose of forming a variable connection. This variable connection permits the determining-point M to ride lightly on the surface of the phonogram-blank, as if it meets with an unusually high protuberance on the surface of the phonogram-blank the determining-point will force the moving locking-piece deeper into the V-threads on the bar; but when a lower portion of the blank is reached the determining-point will fall onto it, leaving the moving locking-piece, and a space will then be left between the moving locking-piece and lever bearing the determining-point, which permits a play between those parts.

Instead of providing the bars F P with 8o threads approximately one-half out in position, they may be provided with threads which are parallel, and the piece H may be provided with threads approximately one-half out in position.

What I claim is—

1. In a phonograph, the combination, with the recording or reproducing frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a determining-point carried by said frame and making contact with the phonogram-surface, and a lock locking the spectacle-frame, operated directly by the movement of the determining-point after it touches the phonogram-surface, substantially as set forth.

2. In a phonograph, the combination, with the recording or reproducing frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a pivoted lever carrying a determining-point, said determining-point making contact with the phonogram-surface, and a lock locking the spectacle-frame, operated directly by the movement of the determining-point after it touches the phonogram-surface, substantially as set forth.

3. In a phonograph, the combination, with the recording or reproducing frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a determining-point carried by 115 said frame and making contact with the phonogram-surface, a lock locking the spectacle-frame, operated directly by the movement of the determining-point after it touches the phonogram-surface, a movable determining-point carried by said frame and making contact with the phonogram-surface, a direct lock locking the spectacle-frame, and a variable connection between the locking parts, whereby the determining-point is enabled to ride lightly on the phonogram-blank, substantially as specified.

4. In a phonograph, the combination, with the recorder or reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot, supporting the said frame from the guide-rest, of a determining-point mounted on a pivoted lever, and a lock comprising a bar of
the presser-foot, and a piece actuated by the lever bearing the determining-point, substantially as set forth.

5. In a phonograph, the combination, with a movable frame and guide-rest, of a lock for locking said movable frame, comprising a bar and a piece movable toward and from said bar actuated by the contact of a movable determining-point with the phonogram, whereby the determining-point is enabled to ride lightly on the phonogram-blank, substantially as set forth.

6. In a phonograph, the combination, with a movable frame and guide-rest, of a lock for locking said movable frame, comprising two bars screw-threaded and set with relation to each other half a thread out, and a movable piece engaging with one or the other of said bars, actuated directly by the contact of the determining-point with the phonogram-blank, and having a spring whereby a slight up-and-down play is given to said movable piece, substantially as and for the purpose set forth.

This specification signed and witnessed this 1st day of February, 1889.

Witnesses:

W. FELZER

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