

(No Model.)

3 Sheets—Sheet 1.

T. A. EDISON.
AUTOMATIC DETERMINING DEVICE FOR PHONOGRAPHS.
No. 406,573. Patented July 9, 1889.

FIG. 1.

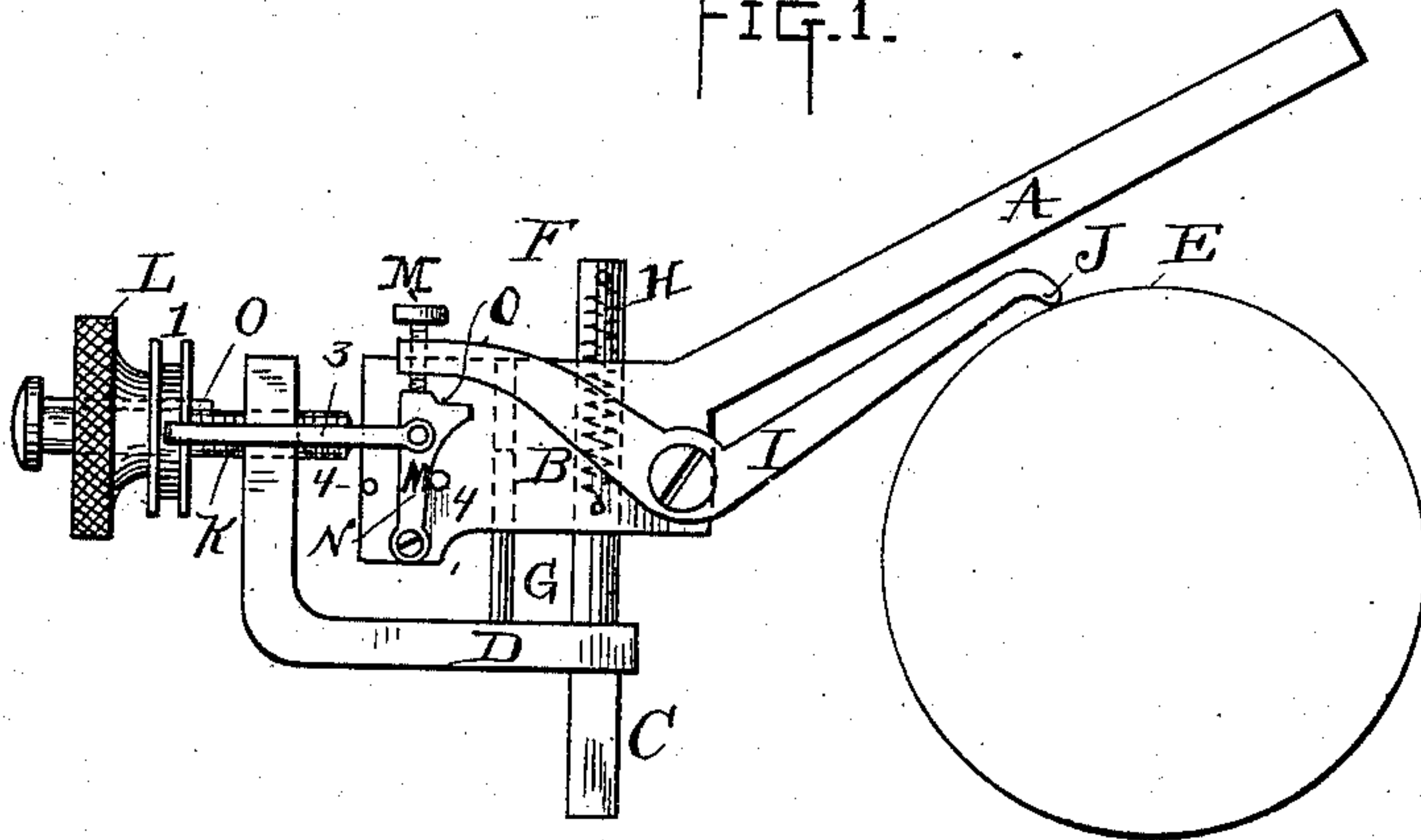
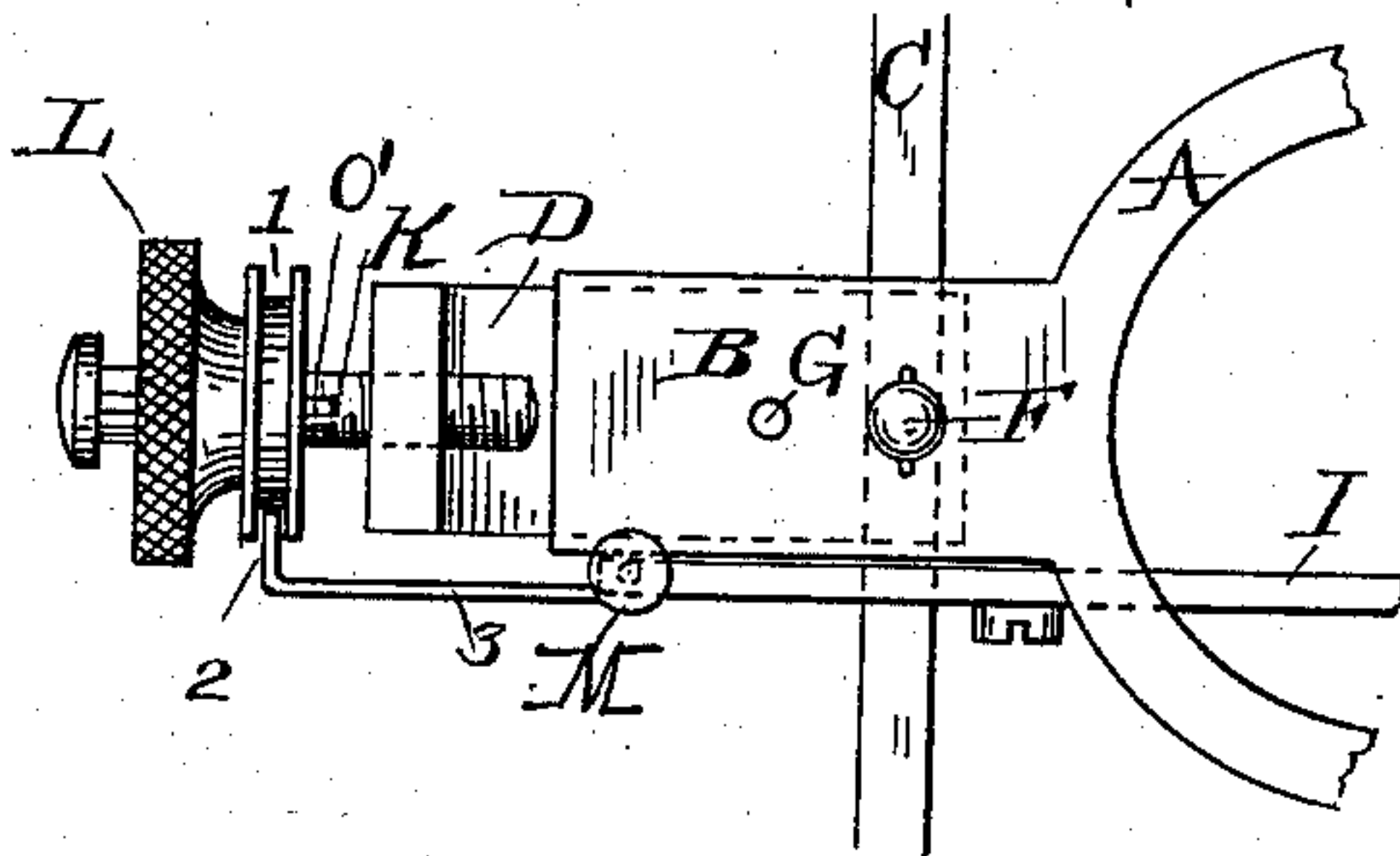


FIG. 2.



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3 Sheets—Sheet 2.

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FIG. 3.

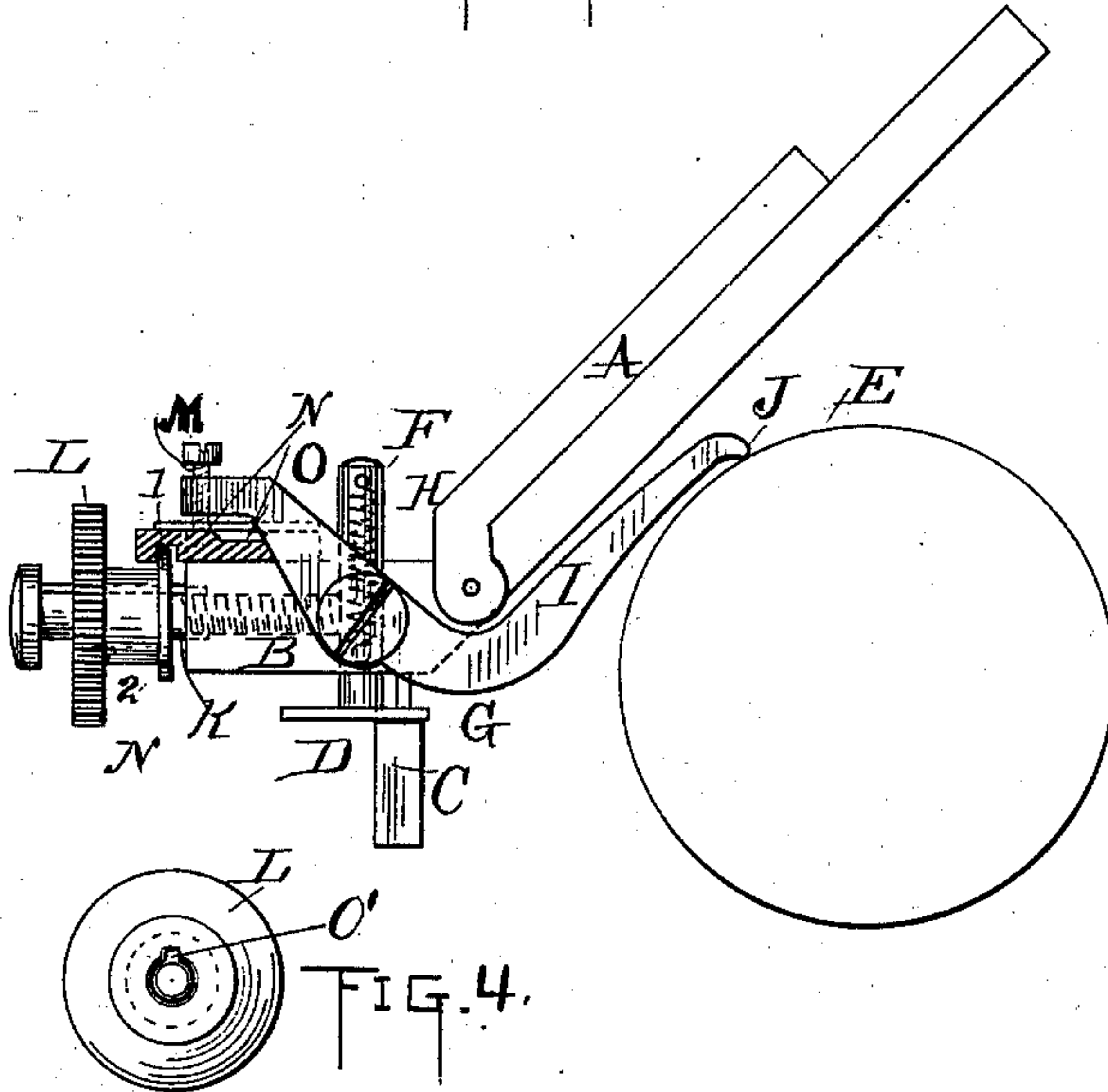
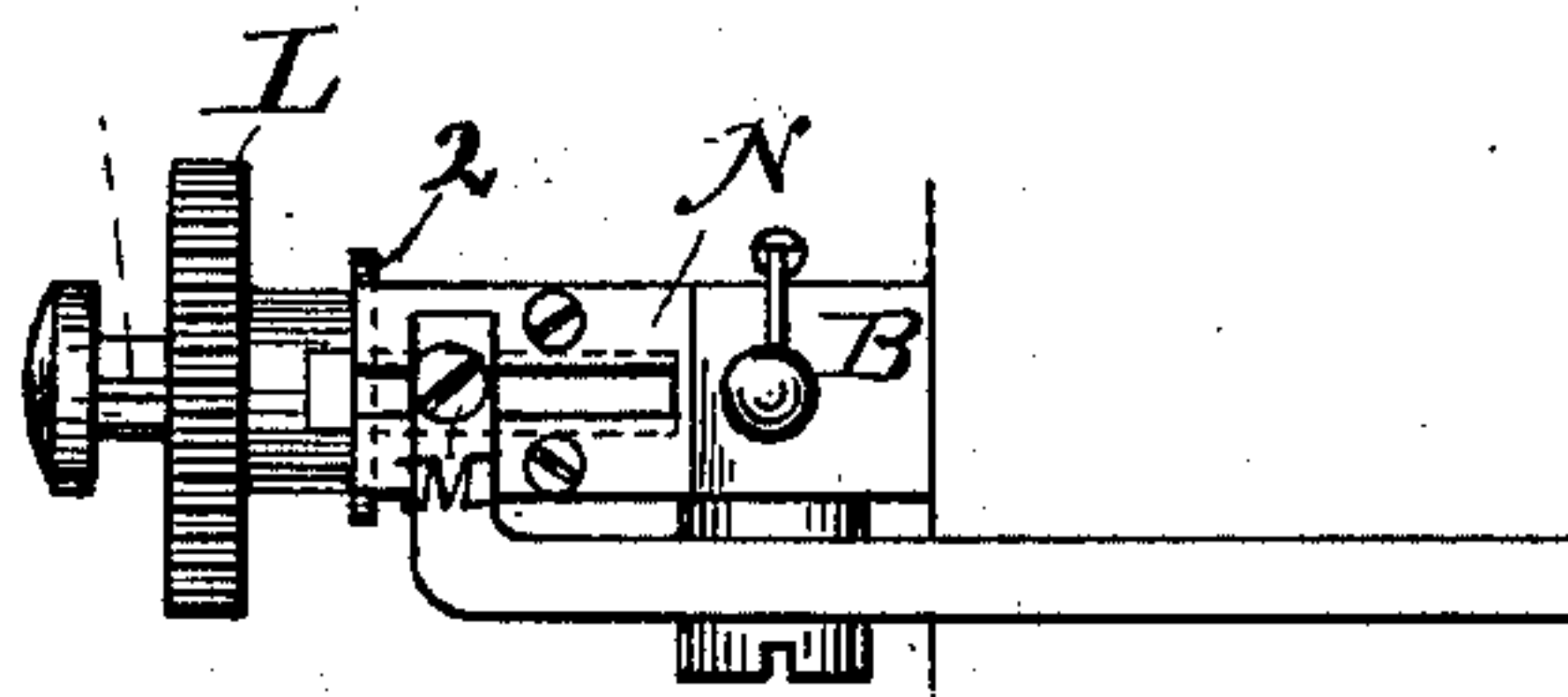


FIG. 5.



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FIG. 6.

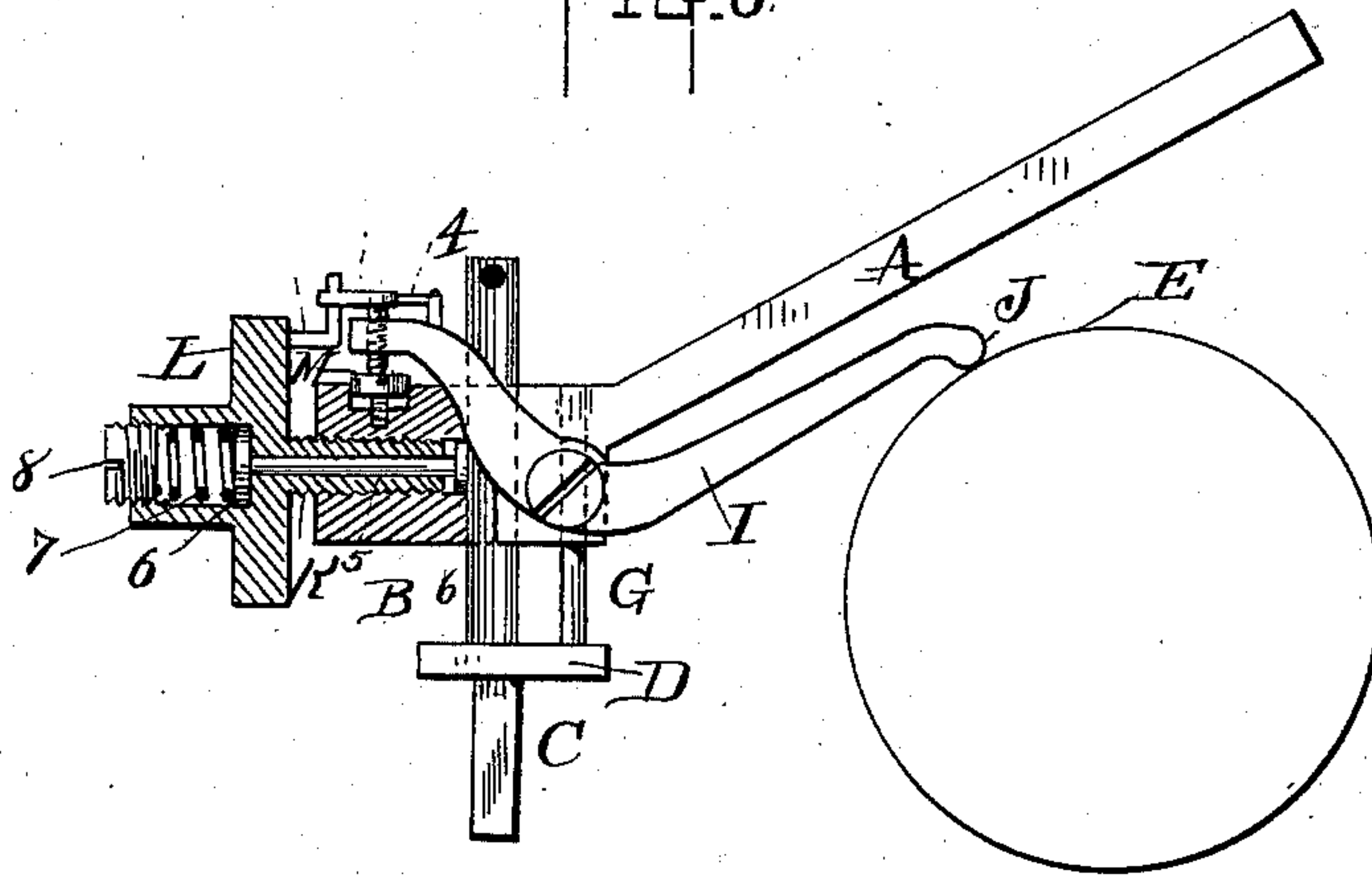
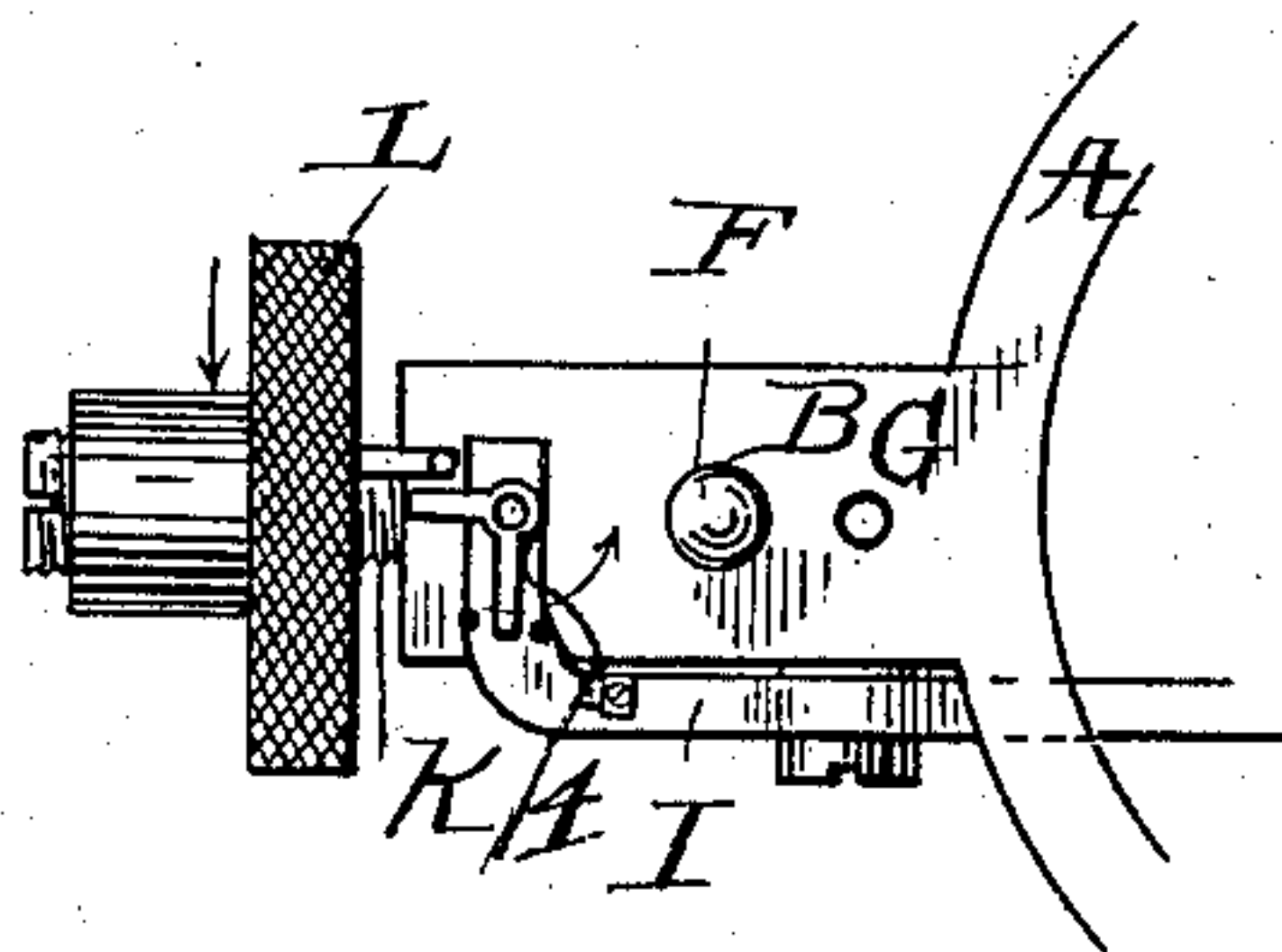


FIG. 7.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC DETERMINING DEVICE FOR PHONOGRAPHS.

SPECIFICATION forming part of Letters Patent No. 406,573, dated July 9, 1889.

Application filed February 11, 1889. Serial No. 299,458. (No model.)

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. 826,) of which the following is a specification.

In my application, (Case No. 818,) Serial No. 296,420, 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 a fixed determining-point adapted to strike the surface of the phonogram-blank as the spectacle-frame is lowered is held in that position until a lock is operated by hand to fix the relation of the parts, when the determining-point will be moved away from the surface of the wax, to prevent it from wearing such surface, by an independent movement of the locking mechanism; and the invention consists in the several novel devices and combinations of parts hereinafter explained, and pointed out in the claims.

In the accompanying drawings, forming a part hereof, Figure 1 is a side elevation of a form of device embodying my invention, showing the determining-point in contact with the phonogram-blank just prior to the operation of the mechanism which locks the parts and removes the determining-point from the phonogram-blank. Fig. 2 is a plan view thereof. Fig. 3 is a side elevation of a modification of the device shown in Figs. 1 and 2. Fig. 4 is a detail of the sliding connection between the locking-nut and locking-piece. Fig. 5 is a plan view of the device shown in Fig. 3 with the spectacle-frame omitted. Fig. 6 is a side elevation of still another modification of my invention with the parts in the same position as in Figs. 1 and 2, and Fig. 7 is a plan view thereof.

Similar letters of reference in all the figures indicate corresponding parts.

Referring to all the figures, the spectacle-frame A, which carries the recorder and reproducer, 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 in the drawings—one arm 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 in a definite relation to the phonogram-blank E.

The presser-foot D is an L-shaped plate mounted upon the lower end of a bar F, which passes up through the arm B, said plate being provided, also, with a pin G to prevent its turning on the guide-rest. A spring H 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 lowermost limit of its movement.

I is the bell-crank lever, the short arm of which is heavier than the long arm, the long arm of which bears the determining-point J, the contact of which with the phonogram-blank determines the position of the spectacle-frame and connected parts with relation to the phonogram-blank.

K is a screw-threaded locking-piece working in the arm B, which is operated by hand by turning the thumb-nut L until the locking-piece is forced into contact with the bar F, thereby locking the parts from further movement.

M, in all the figures save 6 and 7, is a position-screw working in the end of the short arm of the bell-crank lever I, and the point of which rests upon the upper surface of the tripper N, which is formed with a depression O, and is operated by a movement of the thumb-nut L beyond the point where the bar F is locked by it. In Figs. 6 and 7, M works in the bar B, and upon its head rests a screw-pin bearing an L-shaped arm of the determining-lever.

Referring particularly to Figs. 1 and 2, it will be seen that the thumb-nut L has a sliding connection with the locking-piece K by reason of a spline O' on that piece fitting into

a groove in the hub of the nut L, whereby the tripper N is tripped to throw the determining-point out of contact with the phonogram. The nut L in these figures is provided also with a grooved flange 1, into which engages a downwardly-projecting lip 2 of the tripping-lever 3, the other end of which lever is connected to the tripping-piece N, the motion of which is limited by the stop-pins 4 4.

Referring particularly to Figs. 3, 4, and 5, it will be seen that there the thumb-nut L also has a sliding connection with the locking-piece K, but the lip 2 is on the nut and the groove 1 in the tripping-piece N.

Referring particularly to Figs. 6 and 7, there it will be seen that instead of a sliding connection and tripping-arm operating a tripper the thumb-nut L has an L-shaped arm projecting inward and upward, which comes in contact, when the nut L is rotated sufficiently, with another L-shaped arm mounted on a threaded pin working through the upper portion of the short arm of the determining-lever, whereby the determining-lever is tripped out of contact with the phonogram by the rotation of the screw in the direction of the arrow, Fig. 7, sufficiently to raise its point, which brings the screw a short distance from the head of the position-screw, when the weight of the short arm of the lever overbalancing the weight of the long arm will drop the distance the screw has been raised from the head of the position-nut, thereby raising the determining-point from the phonogram-blank. A spring 4 throws the arm of the pin back to its original position when the thumb-nut is rotated in the reverse direction. It will also be noticed that the locking-piece K, instead of bearing directly against the bar F to lock it, has a shaft 5 passing through its center, each end of the shaft being provided with a friction-disk 6 6. The inner disk is designed to clamp the bar F in the locked position, and the outer disk receives the thrust of a coiled spring 7, located in a recess of the thumb-nut when the adjusting-screw 8 is rotated to compress the spring. The object of this arrangement is to permit the locking of the bar F by the locking-piece and yet permit a further rotation of the thumb-nut to effect the removal of the determining-point from the phonogram-blank.

When the parts are properly adjusted to begin operations, the bar F, as the spectacle-frame is lowered, will be projected to its lowest position with reference to the bar B by the tension of the spring H. As soon as the presser-foot strikes the guide-rest its motion is arrested; but the downward motion of the spectacle-frame continues against the tension of the spring H, thereby producing an easy motion, which is communicated to the determining-point, obviating a jarring contact of the determining-point and phonogram-blank, which might injure the blank. The downward motion of the spectacle-frame continues until the determining-point comes in

contact with the phonogram-blank, when the operator locks the parts from further descent by means of the thumb-nut on the locking-piece. The parts being locked, it is desirable to withdraw the determining-point from contact with the phonogram-blank. This is done by a further movement of the thumb-nut either by pulling the same out on the spline, which connects it with the locking-piece, as in Figs. 1 to 5, inclusive, or by still further rotating it, as in Figs. 6 and 7. This further movement of the thumb-nut in Figs. 1 to 5, inclusive, moves the tripper, so that the high portion thereof is withdrawn from under the short arm of the determining-lever and the depression thereon brought into position under it. The short arm of the determining-lever, being heavier than the long arm thereof, will drop into the depression, thereby raising the long arm with the determining-point out of contact with the surface of the phonogram. The further rotation of the thumb-nut shown in Figs. 6 and 7 after the locking is effected brings the L-shaped arm thereon into contact with the L-shaped arm on the short arm of the determining-lever and rotates it sufficient to bring the screw-threaded pin, with which it is rigidly connected, out of contact with the position-screw, and the weight of the short arm of the determining-lever will carry it down toward the position-screw the distance the screw of the determining-lever has been withdrawn from it, thereby raising the determining-point from the phonogram-blank sufficient to prevent mutilation thereof.

What I claim is—

1. 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 carried by said frame and determining by contact with the phonogram-surface the exact position of adjustment of the recording or reproducing point therewith, and a lock operated by hand for locking the position of the spectacle-frame at such point of adjustment, and a tripper tripping the determining-point away from the phonogram-blank operated by a further movement of the locking mechanism beyond that necessary to lock, substantially as specified.

2. 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 lever and a determining-point carried by said lever and determining by contact with the phonogram-surface the exact position of adjustment of the recording or reproducing point therewith, and a lock operated by hand for locking the position of the spectacle-frame at such point of adjustment, and a tripper tripping the determining-point away from the phonogram-blank operated by a further movement of the locking mechanism be-

yond that necessary to lock, substantially as specified.

3. In a phonograph, the combination, with a movable frame, a guide-rest, and adjustable
5 presser-foot, of a lock operated by hand to lock the movable frame and a tripper formed with a depression and a lever bearing the determining-point resting on said tripper, a
sliding head on the locking-piece, and a connection between the tripper and sliding head,
10

whereby the tripper is operated to trip the determining-point away from the phonogram-blank, substantially as specified.

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

THOMAS A. EDISON.

Witnesses:

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D. H. DRISCOLL.