

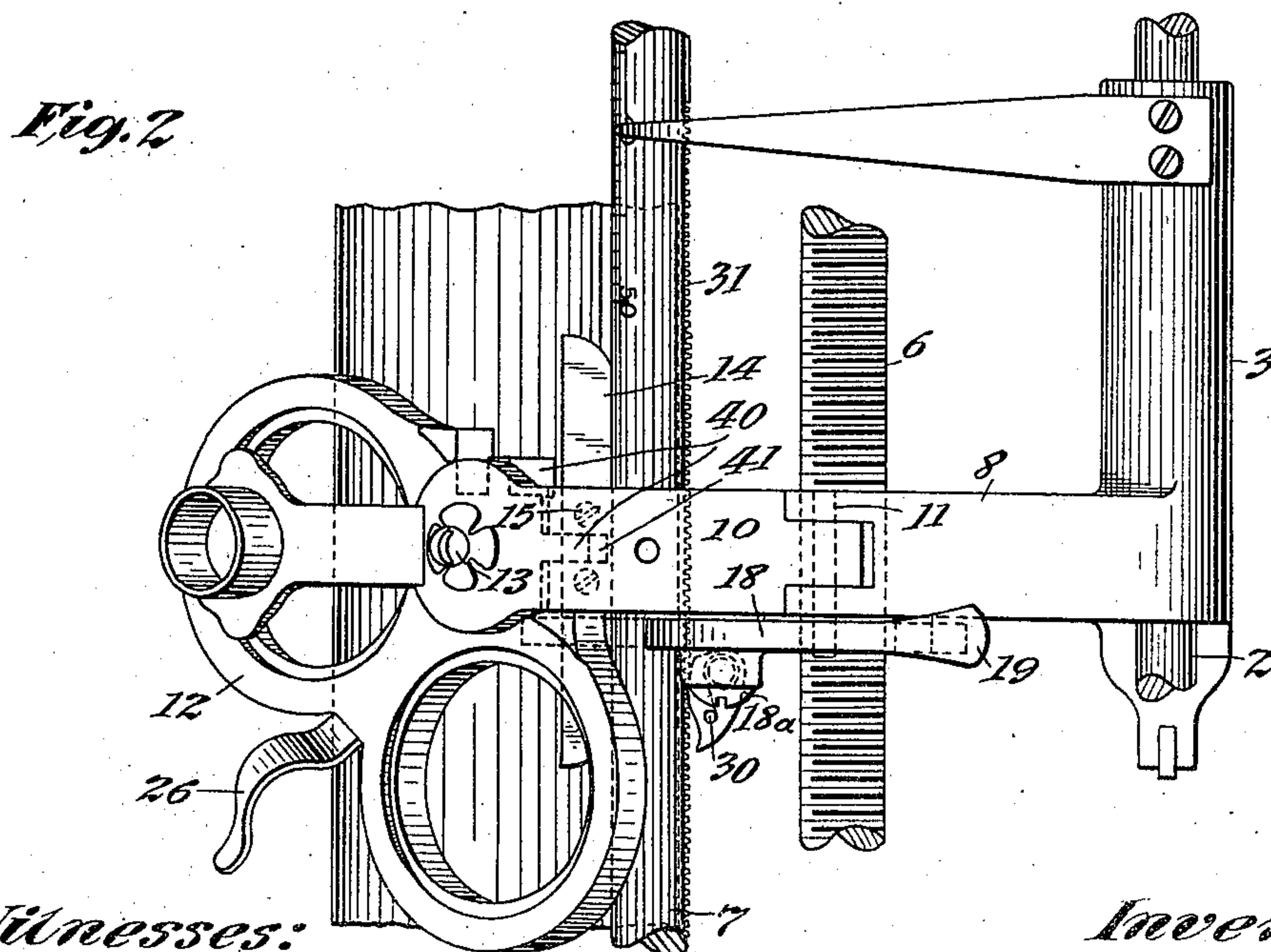
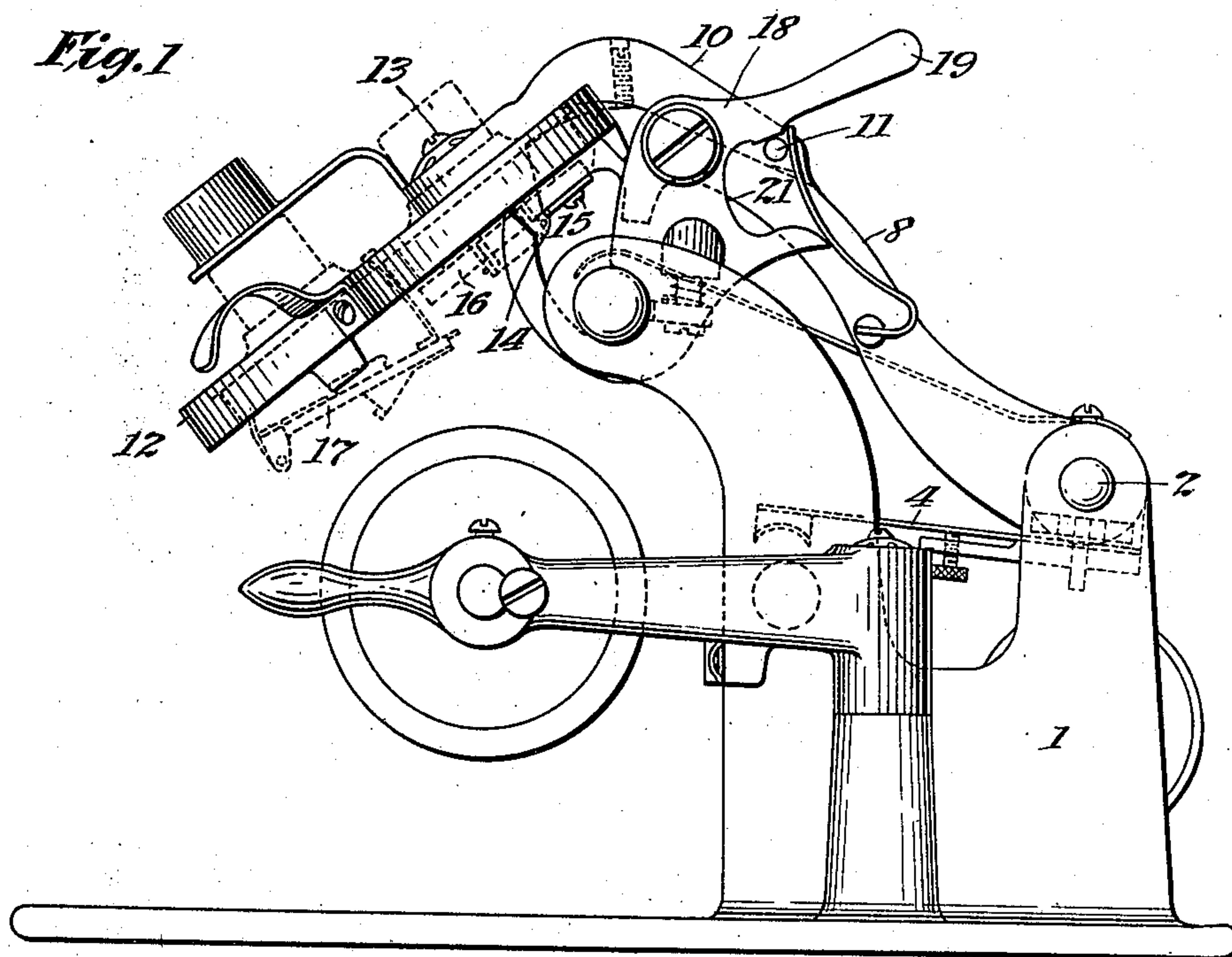
No. 847,631.

PATENTED MAR. 19, 1907.

E. L. AIKEN.
PHONOGRAPH.

APPLICATION FILED FEB. 20, 1906.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3

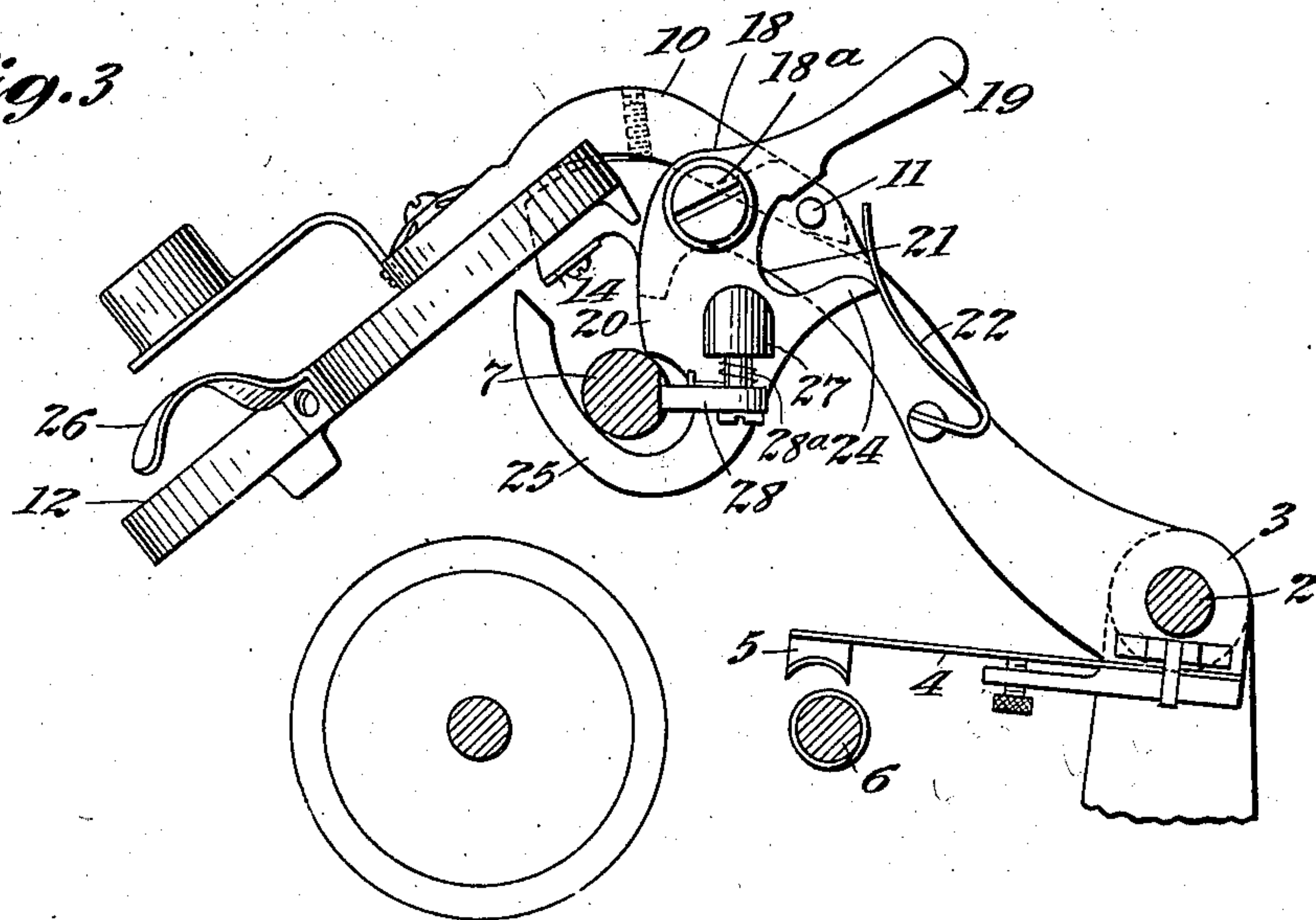


Fig. 5

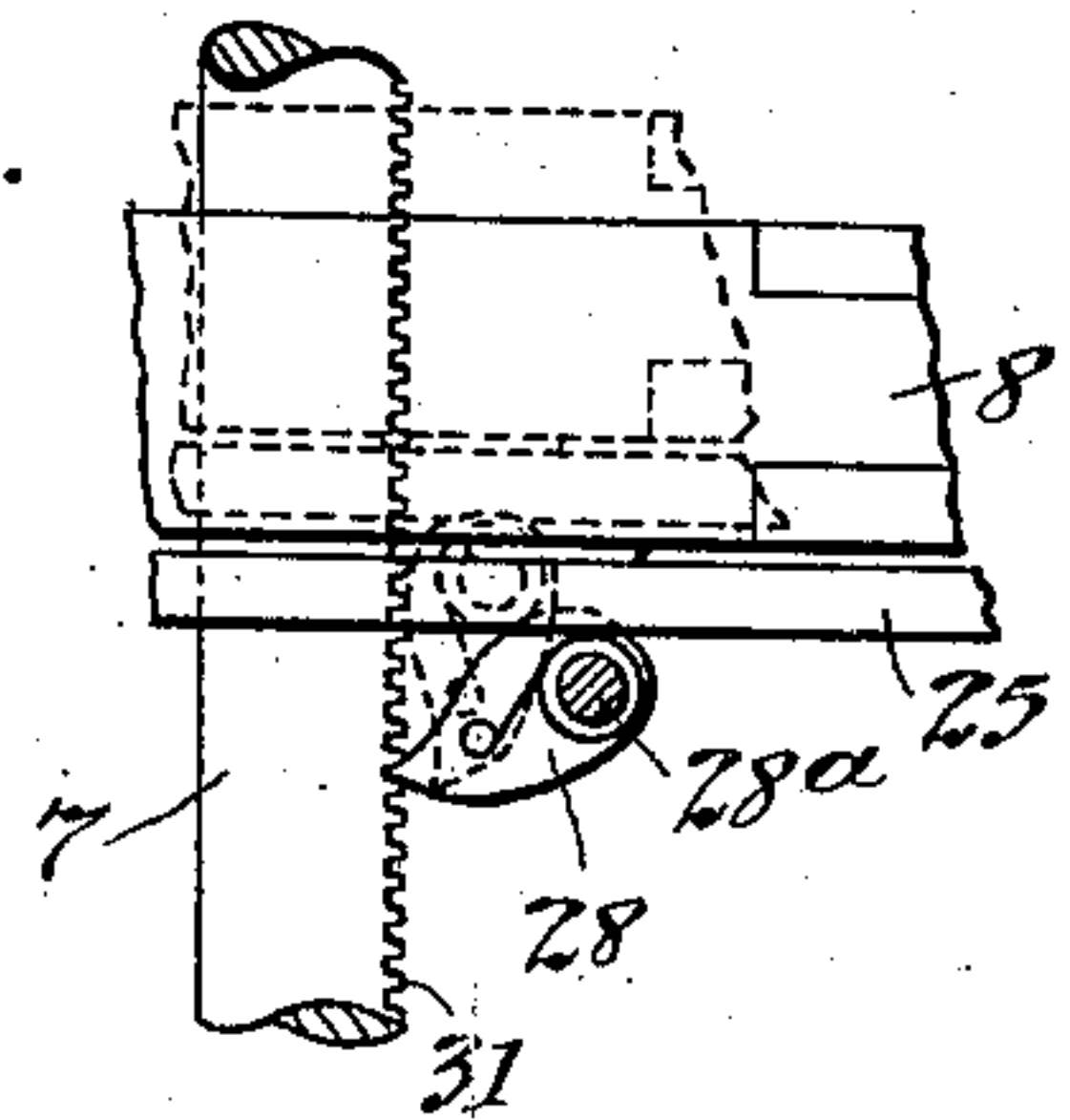
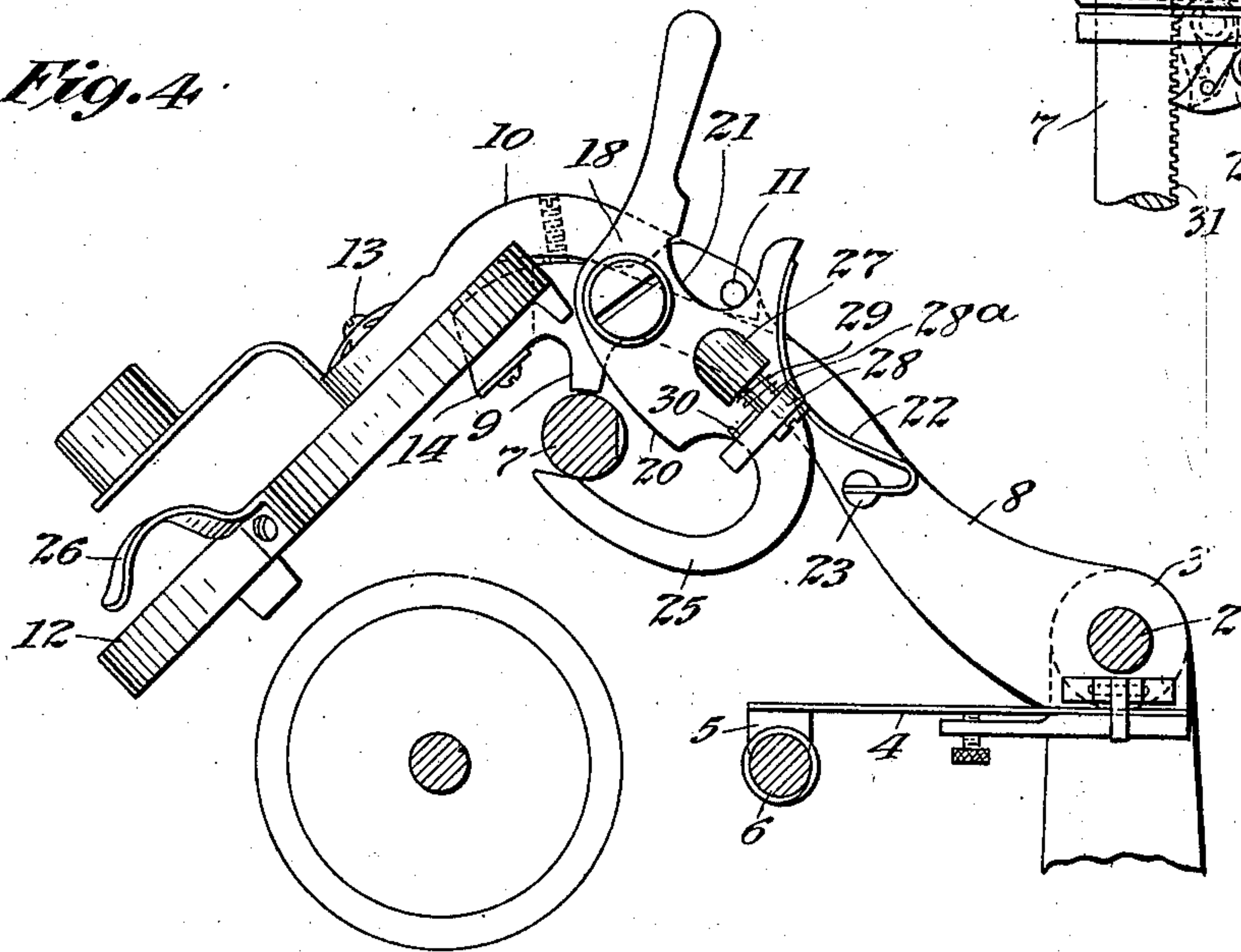


Fig. 4



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UNITED STATES PATENT OFFICE.

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PHONOGRAPH.

No. 847,631.

Specification of Letters Patent.

Patented March 19, 1907.

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To all whom it may concern:

Be it known that I, EDWARD L. AIKEN, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Phonographs, of which the following is a description.

My invention relates to phonographs, and more particularly to phonographs of the type shown in United States Patent No. 772,485, granted October 18, 1904, to Weber and Hibbard.

My invention has for its object the provision of improved means for raising and lowering the arm which carries the reproducer or recorder and for causing the same to be stepped in a rearward direction whenever desired, said means being adapted to prevent accidental displacement of the recorder or reproducer with respect to the record-surface, especially when the instrument is being used by beginners or those not particularly skilful in its use.

My invention also comprises certain other details of construction, which will be hereinafter fully set forth.

Referring to the accompanying drawings, Figure 1 is an end view of a phonograph embodying my invention, the recorder or reproducer frame being elevated so that the feed-nut is disengaged from the feed-screw. Fig. 2 is a broken plan view of the same. Fig. 3 is a view similar to Fig. 1, certain of the parts being removed for the sake of simplicity and clearness and shows the positions assumed by the parts when the recorder or reproducer carrier-arm is elevated and is being stepped in a rearward direction. Fig. 4 is a similar view showing the parts when the recorder or reproducer is in operative position with respect to the rotating record or blank. Fig. 5 is a detail plan view of the mechanism for stepping the carrier-arm rearward.

The phonograph shown comprises a body 1 and back rod 2, which extends transversely thereof and upon which the sleeve 3 is mounted to slide in the usual manner, said sleeve carrying the usual feed-nut spring 4 and feed-nut 5. Parallel with the rod 2 is the feed-screw 6, which operates in the usual manner to impart forward movement to the

sleeve 3. Parallel with the rod 2 is a front guide-rod 7, which is adapted to support the forward end of the carrier-arm 8, extending forward from and preferably integral with the sleeve 3. This arm is provided with a depending projection 9, which rests upon the rod 7 when the feed-nut is in engagement with the feed-screw, as shown in Fig. 4. An auxiliary arm 10 is pivoted on a pin 11, carried by the arm 8. The arm 10 carries a spectacle-frame 12, which is pivoted on a screw 13, carried by the said arm, said spectacle-frame being adapted to turn on its pivot, so as to bring either the recorder or reproducer into operative position, as desired, the spectacle-frame being provided with a pair of lugs 40, which are adapted to engage a notch 41 in the end of the arm 8 and lock the said frame when lowered into operative position and to be disengaged from said notch when the spectacle-frame is raised by lifting upon the finger-piece 26, so that the auxiliary arm 10 turns on the pivot-pin 11.

In order that the recorder and reproducer may operate upon blanks or records which vary gradually in diameter, it is desirable that recorders and reproducers of the floating-weight type be used in which the weights have a large range of movement. In using such instruments it is desirable to provide means for sustaining the weight belonging to the reproducer when the recorder is in operative position, and vice versa, because especially when operating upon a large blank the weight belonging to the inactive instrument would be likely to occupy a position sufficiently low as to bring the stylus thereof into contact with the record-surface. In order to prevent this, a plate 14 is secured to the forward end of the arm 8 by screws 15, its position being such that when the spectacle-frame is in position for the recorder to operate upon the blank, as in Fig. 1, the weight 16 of the reproducer will rest upon one end of the said plate 14, and, vice versa, when the reproducer is in operative position the weight 17 of the recorder will rest upon the other end of the plate 14.

The means for elevating the carrier-arm 8 comprises a lift-lever 18 of peculiar form. This lever is pivoted on a screw 18^a, secured to the arm 8, so as to turn on a horizontal

axis parallel to the rod 7. The finger-piece 19 extends outward from the body of the lever 18, so that it may be readily manipulated by the operator for moving the lever, which is provided with a cam-surface 20, so situated as to be brought into operative contact with the supporting-rod 7 as the lever is turned on its pivot, thus effecting the elevation of the arm 8 from the position of Fig. 4 to that of Fig. 1. The body of the lever 18 is cut away, as shown at 21, to receive the end of the pin 11, which operates as a stop for the lever 18 in both directions, as shown in Figs. 1 and 4. A flat spring 22 is secured at one end to the arm 8 by a stud 23 and is arranged to press against the arm 17 and hold it in either of its extreme positions. In one position the spring presses against a concave surface formed upon the rear edge of the lever 18, as shown in Fig. 4, and in the other extreme position the spring presses upon the end of the tooth 24, as in Fig. 3. The lever 18 also carries a hook 25, the end of which is immediately below the rod 7 when the arm 8 is depressed and the feed-nut in engagement with the feed-screw. In this position the hook 25 prevents the arm 8 from being raised. This is desirable, because in shifting the spectacle-frame the operator seizes the finger-piece 26, so as to raise the arm 10, and as the pivotal movement of said arm on the pin 11 is limited there would be a tendency to move the arm 8, so as to release the feed-nut 5 from the feed-screw, and it would then be possible for the arm 8 to slide along the rod 2, thus displacing the recorder or reproducer with respect to the record-surface. With the structure shown, however, the spectacle-frame may be readily shifted, and it is impossible in this way to move the arm 8 either vertically or laterally.

The lever 18 is provided with a boss or projection 27, in which a screw 28^a is mounted. Pivoted upon said screw is a pawl 28, which is normally held in the position shown in Fig. 4 by a coil-spring 29, secured at one end to the screw 28^a or boss 27 and at the other end to a small pin 30, carried by the pawl. The rear surface of the rod 7 is provided with teeth forming a rack 31, the said teeth being adapted to be engaged by the pawl 28 when it is desired to step the arm 8 a short distance in a rearward direction. This is accomplished by the movement of the lever 18, which first effects the elevation of the arm 8 by the cooperation of the cam-surface 20 and rod 7, so as to separate the feed-nut and the feed-screw, and a further movement brings the end of the pawl 28 into engagement with one of the teeth of the rack 31, as shown in Figs. 3 and 5. A further movement of the lever 18 causes the pawl to move the arm 8 rearward, since the free end or point of the pawl is held by the rack, causing the pin 28^a to move in an arc described about the point

of the pawl as a center until the said point leaves the rack 31, as shown in Fig. 2, the lever 18 being then in its extreme position. When the parts assume this relation, the sleeve 3 can be moved freely upon the rod 2 and the recorder or reproducer brought into any desired position with respect to the record-surface. The movement of the lever 18 has stepped the arm 8 a short distance rearwardly, and, if desired, the lever may be operated a second time in order to double this distance, but ordinarily a single movement of the lever will be sufficient to enable the operator to recognize the last few words upon the record, which is the purpose for which the reproducer is usually stepped rearward. Of course a very slight movement of the lever 18 from the position of Fig. 4 will raise the feed-nut from the feed-screw and enable the arm 8 to be moved laterally, if desired.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm and a lift-lever applied to said arm so as to be capable of a simple pivotal movement in a plane and provided with a cam-surface which coöperates with said guide to lift the carrier-arm, and an extension which prevents the raising of said arm when the lift-lever is in its down position, substantially as set forth.

2. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm, and a lift-lever applied to said arm so as to be capable of a simple pivotal movement in a plane and provided with a cam-surface which coöperates with said guide to lift the carrier-arm, and a hook or extension which is located immediately below said guide, when the lift-lever is in its down position, substantially as set forth.

3. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm, and a lift-lever pivoted to said arm on a horizontal axis and provided with a cam-surface which coöperates with said guide to lift the carrier-arm and an extension which prevents the raising of said arm when the lift-lever is in its down position, substantially as set forth.

4. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm, and a lift-lever pivoted to said arm on a horizontal axis and provided with a

cam-surface which coöperates with said guide to lift the carrier-arm, and a hook or extension which is located immediately below said guide when the lift-lever is in its down position, substantially as set forth.

5 5. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm, and a lift-lever pivoted to said arm, said lever being provided with a cam-surface normally below said guide which coöperates with said guide to lift the carrier-arm, and a shoulder beyond said cam-surface adapted to rest upon said rod when the lift-lever is in its up position, substantially as set forth.

6. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm and a lift-lever pivoted to said arm and provided with a cam-surface normally below said guide which coöperates with said guide to lift the carrier-arm, and a spring applied to said lever to hold the same in its down position, substantially as set forth.

7. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm, and a lift-lever pivoted to said arm and provided with a cam-surface normally below said guide which coöperates with said guide to lift the carrier-arm, and a spring applied to said lever to hold it in its up position, substantially as set forth.

8. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm, and a lift-lever pivoted to said arm and provided with a cam-surface normally below said guide which coöperates with said guide to lift the carrier-arm, and a double-throw spring applied to said lever to hold it in either its up or down position, substantially as set forth.

9. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm, and provided with a rack, and a lift-lever pivoted to said arm on a horizontal axis, said lift-lever being provided with a pawl adapted to engage with said rack at or

near the end of the lifting operation of said lever so as to impart a lateral movement to the carrier-arm, substantially as set forth. 60

10. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm and provided with a rack, a lift-lever pivoted to said arm on a horizontal axis, said lift-lever being provided with a pawl adapted to engage with said rack at or near the end of the lifting operation of said lever so as to impart a lateral movement to the carrier-arm, and a stop for limiting the pivotal movement of said lift-lever, substantially as set forth. 65 70

11. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm and provided with a rack, a lift-lever pivoted to said arm on a horizontal axis, said lift-lever being provided with a pawl adapted to engage said rack at or near the end of the lifting operation of said lever so as to impart a lateral movement to the carrier-arm, and a stop for limiting the movement of said lift-lever in both directions, substantially as set forth. 75 80 85

12. In a phonograph, the combination with a traveling carrier-arm, of a pivoted spectacle-frame carried thereby and adapted to sustain a reproducer and recorder, and a support traveling with said carrier-arm and so located as to receive and sustain the floating weight of the reproducer or recorder when the spectacle-frame is turned so as to bring said reproducer or recorder into an inactive position, substantially as set forth. 90 95

13. In a phonograph, the combination with a carrier-arm and means for progressively moving the same when in a lowered position, of a guide for supporting the free end of the carrier-arm, a pivoted spectacle-frame carried thereby and a transverse support secured to said carrier-arm in position to receive and sustain the floating weight of the reproducer or recorder when the spectacle-frame is turned so as to bring said reproducer or recorder into an inactive position, substantially as set forth. 100 105

This specification signed and witnessed this 2d day of February, 1906.

EDWARD L. AIKEN.

Witnesses:

DELOS HOLDEN,
FRANK D. LEWIS.