

No. 780,730.

PATENTED JAN. 24, 1905.

E. P. RIESSNER.  
MECHANICAL MUSICAL INSTRUMENT.

APPLICATION FILED OCT. 3, 1902.

6 SHEETS—SHEET 1.

FIG. 2.

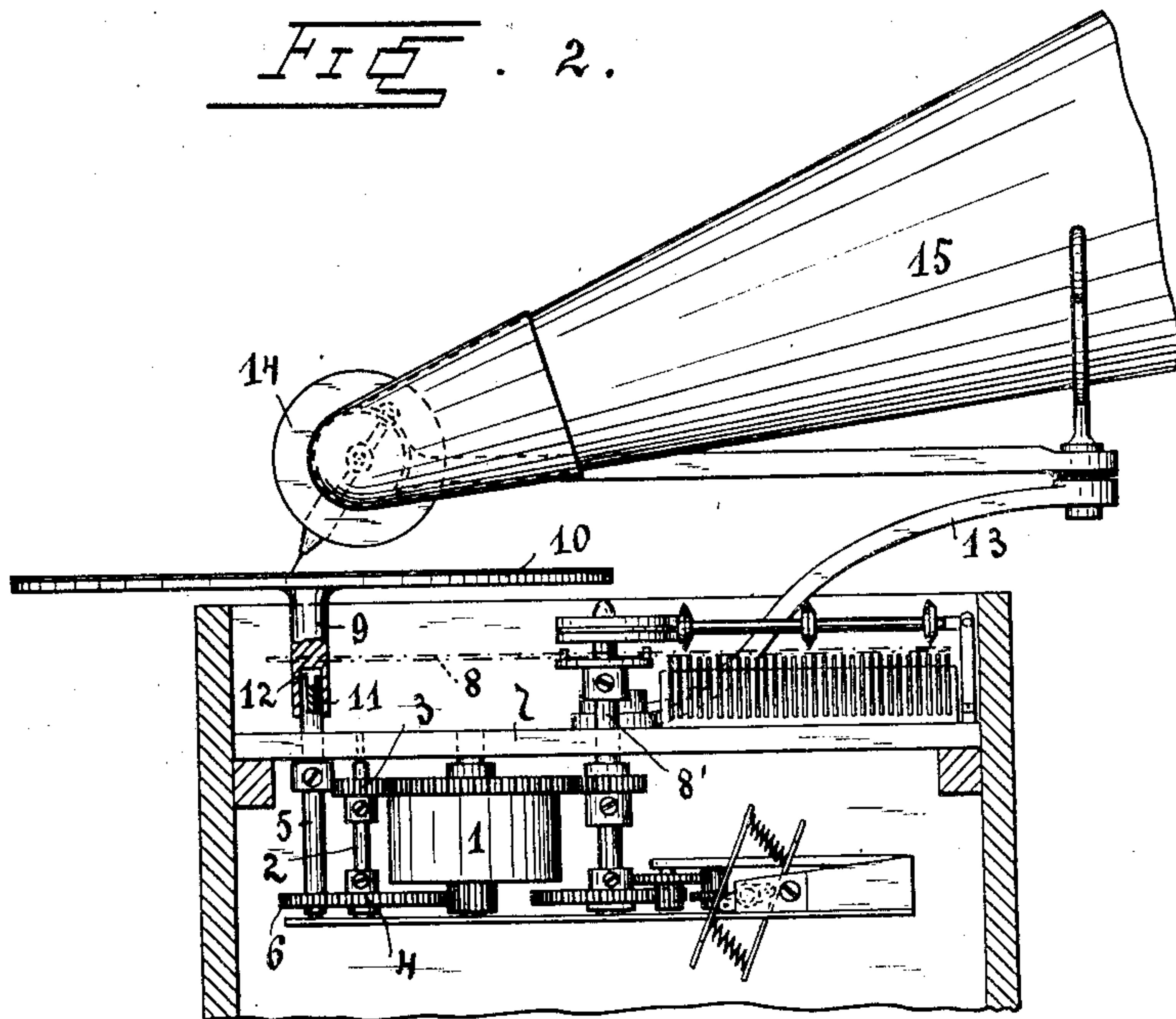
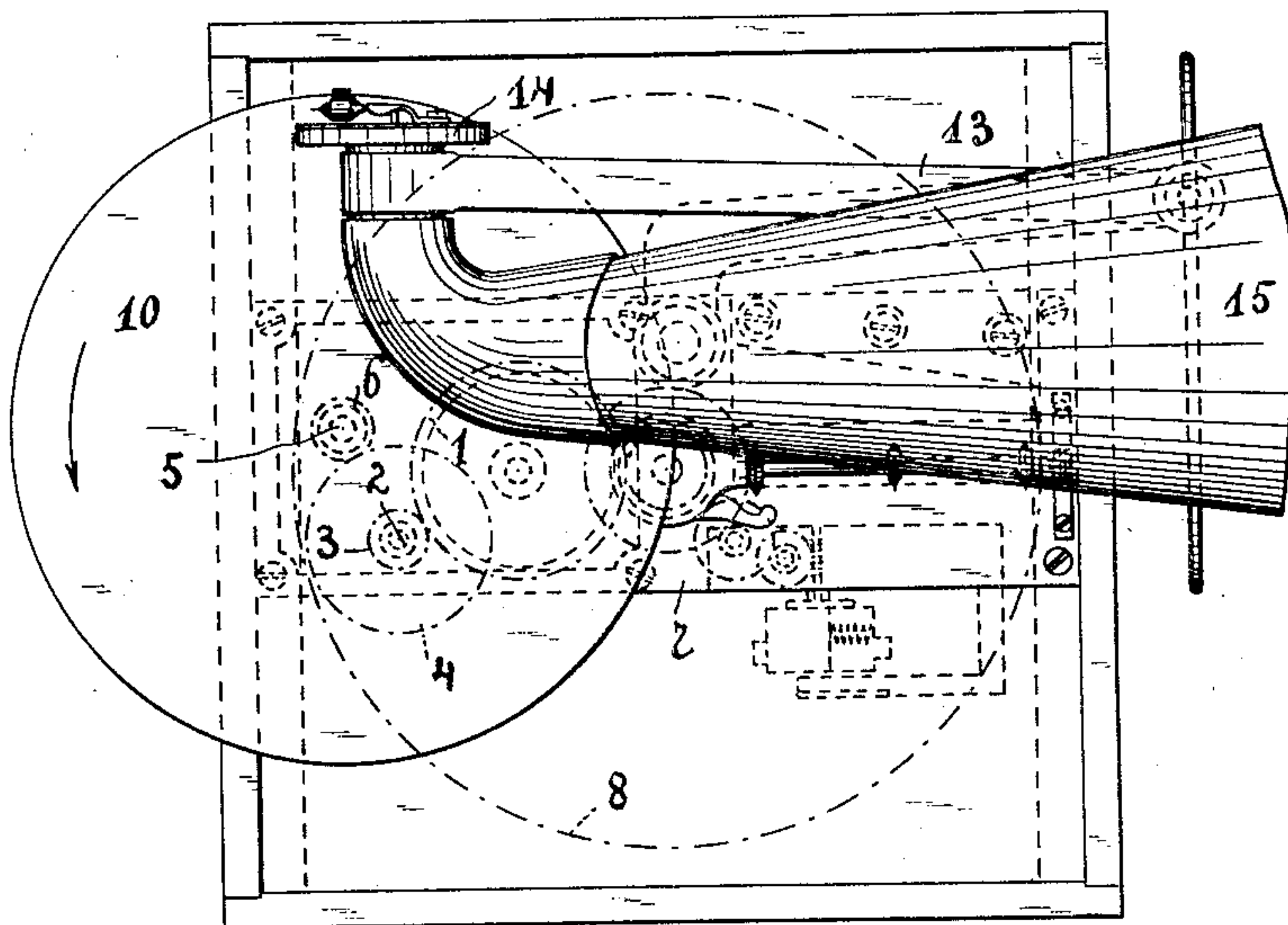


FIG. 1.



Witnesses:-  
B. Munster  
C. A. Jarvis

Inventor:-  
Ernst Paul Riessner  
By his Attorney,  
F. H. Richard.

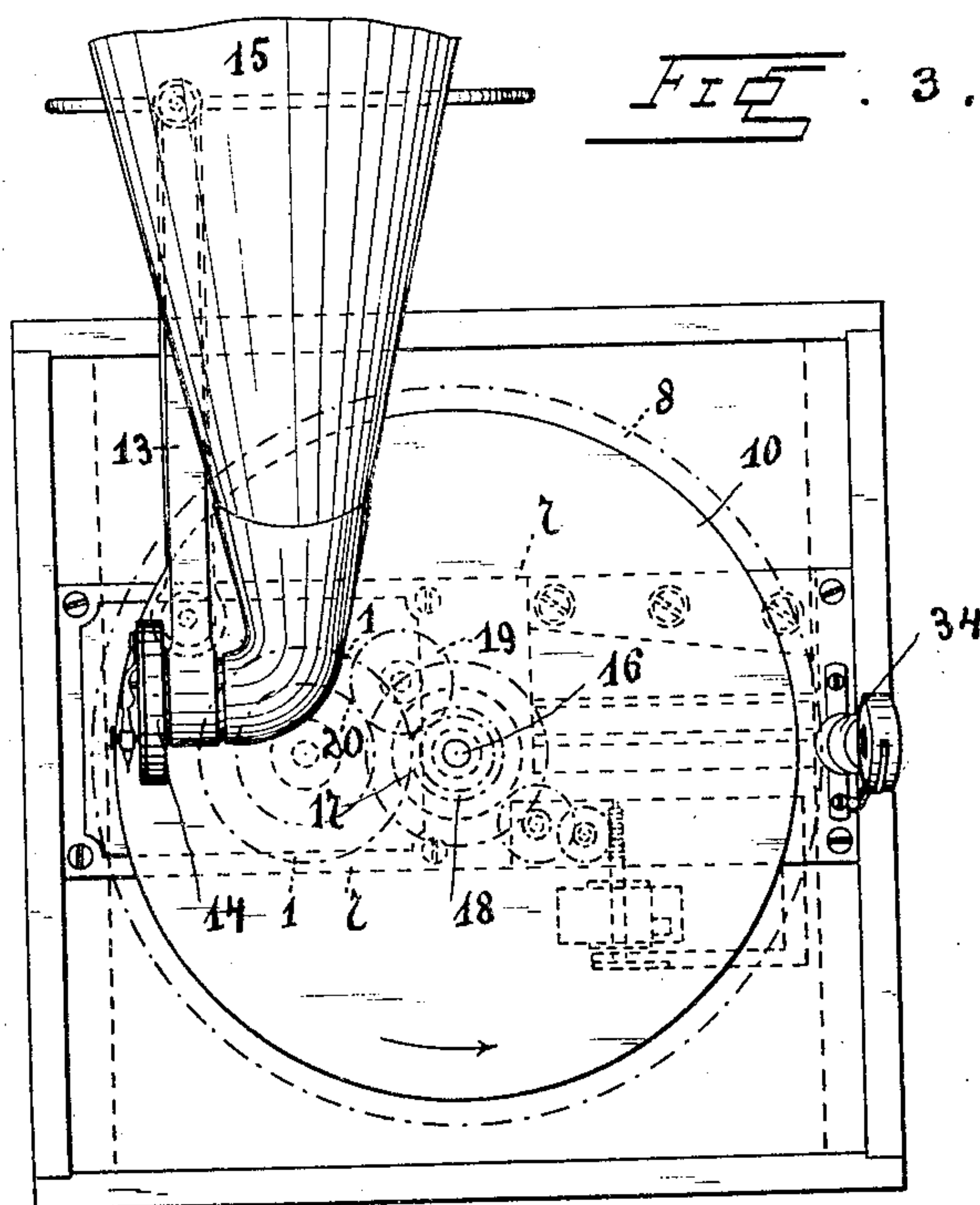
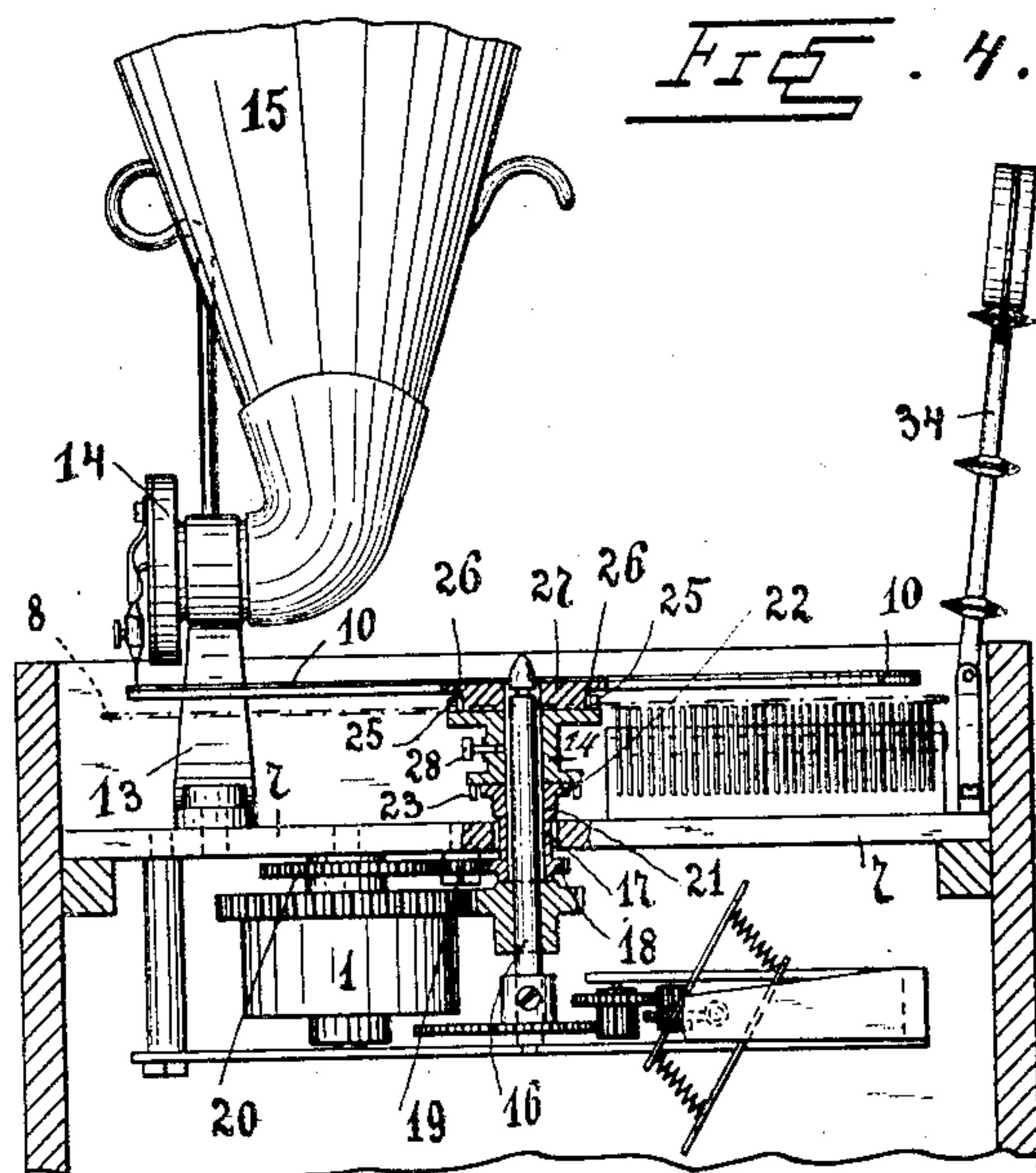
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6 SHEETS—SHEET 2.



Witnesses:-

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6 SHEETS—SHEET 3.

FIG. 6.

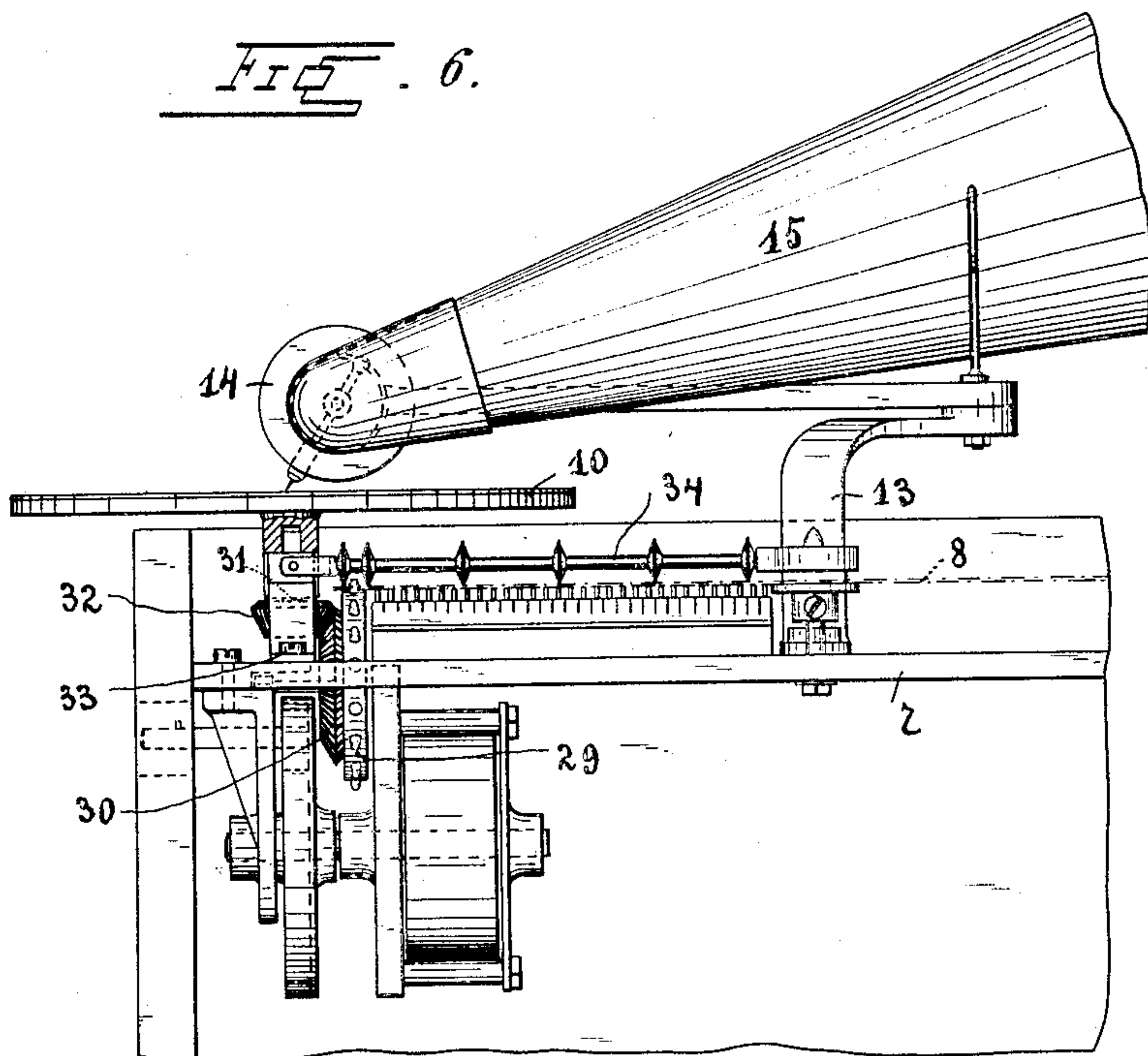
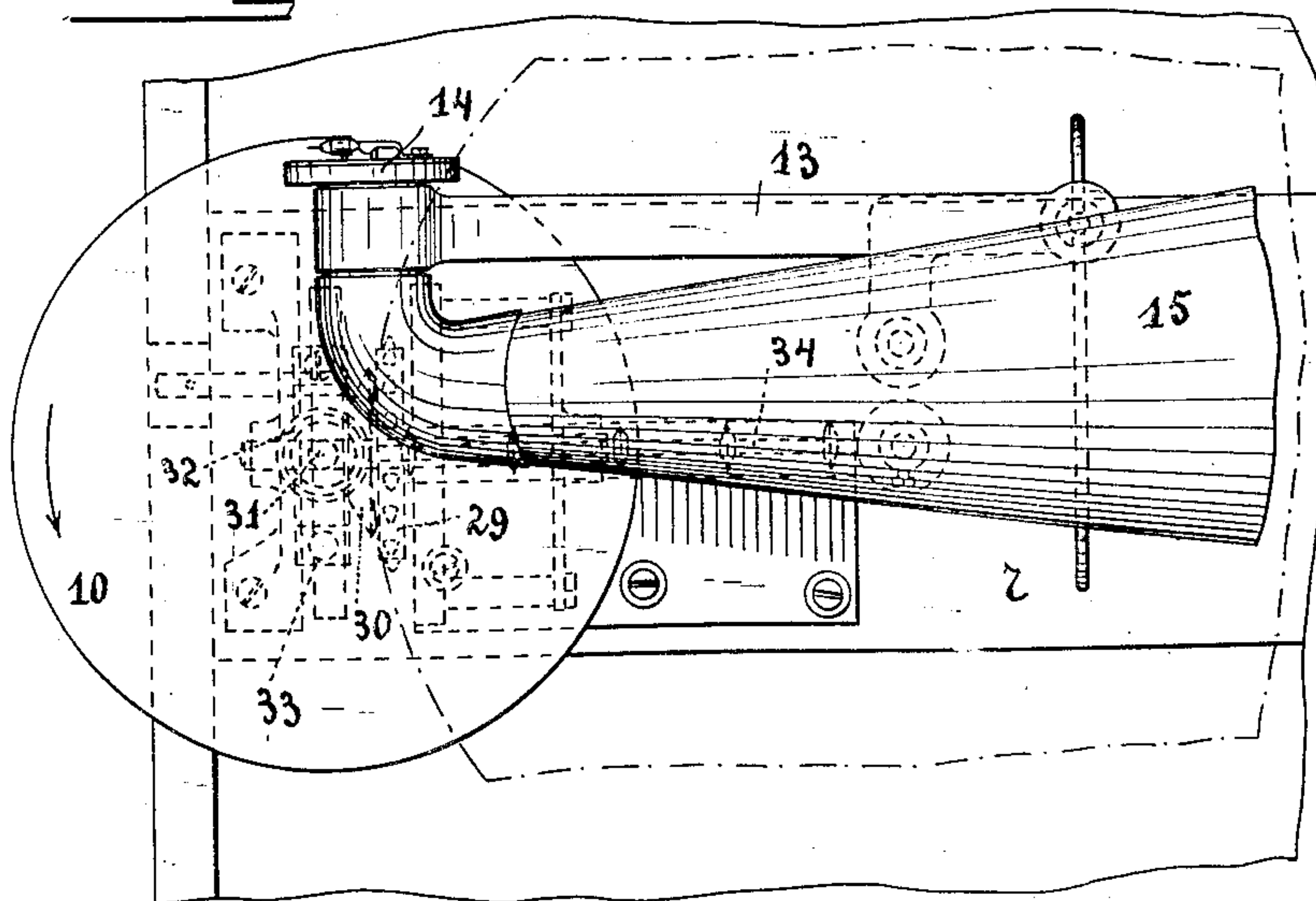


FIG. 5.



Witnesses:-

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6 SHEETS—SHEET 4.

FIG. 8.

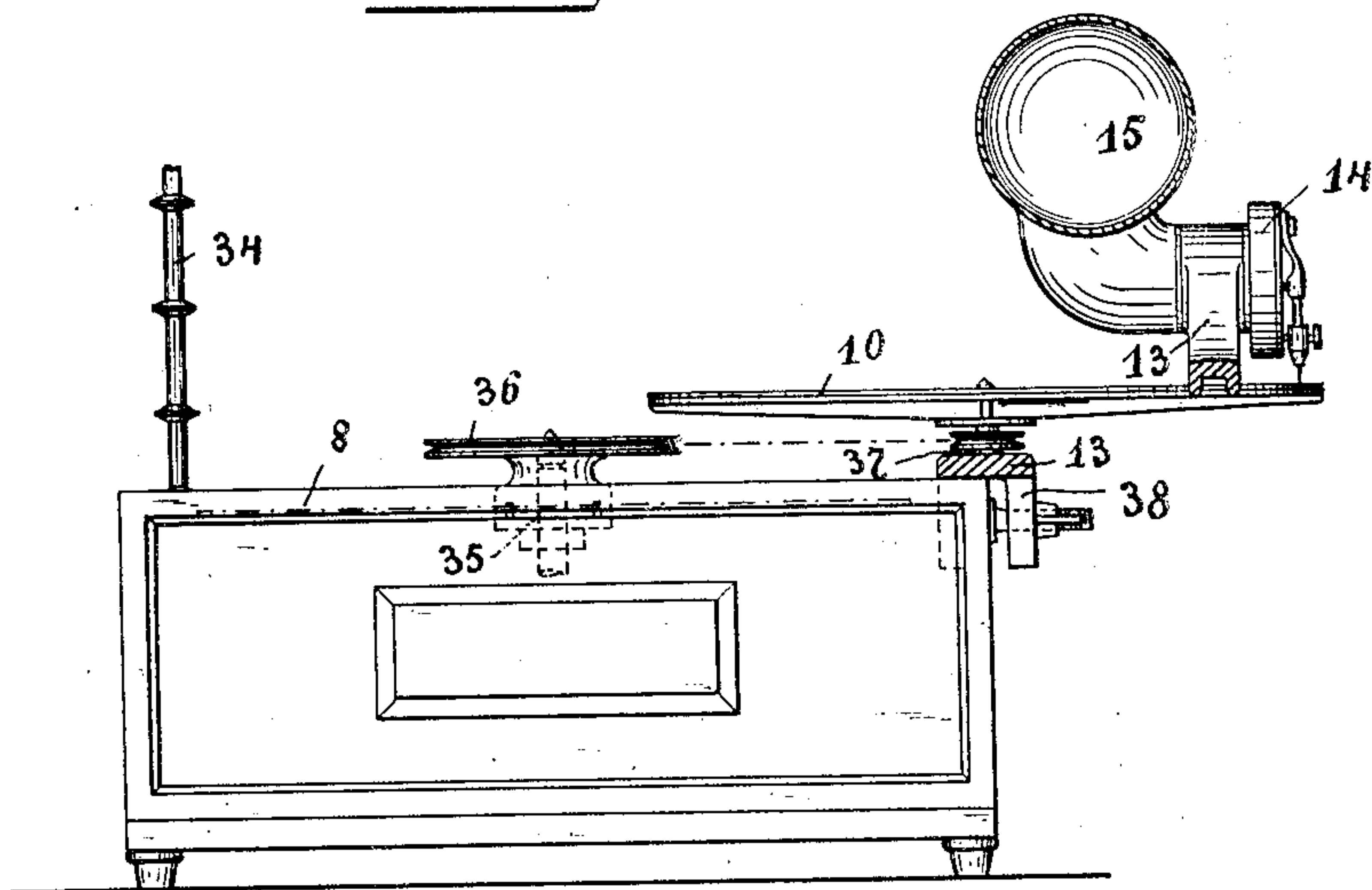
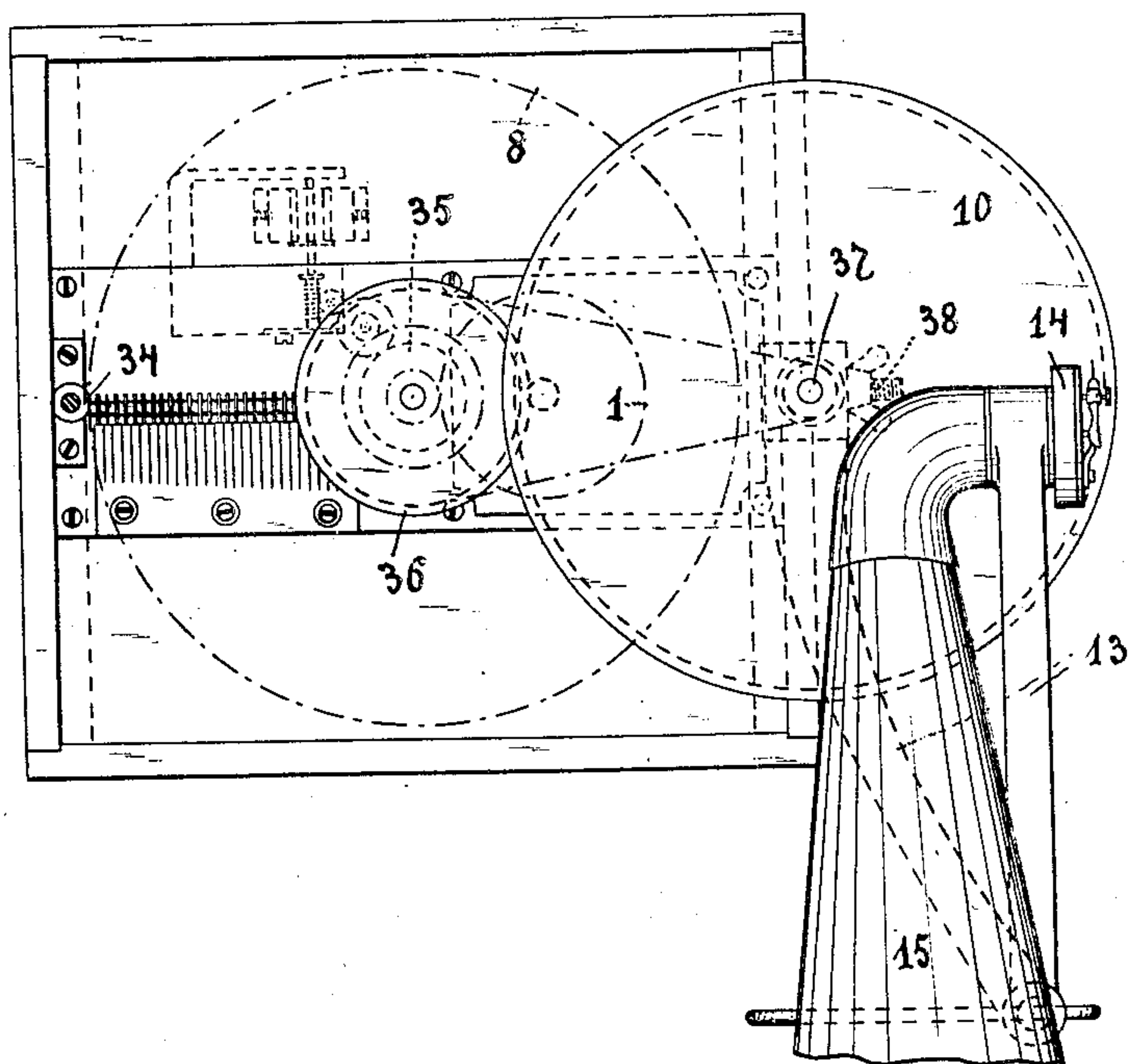


FIG. 7.



Witnesses:-  
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6 SHEETS—SHEET 5.

FIG. 10.

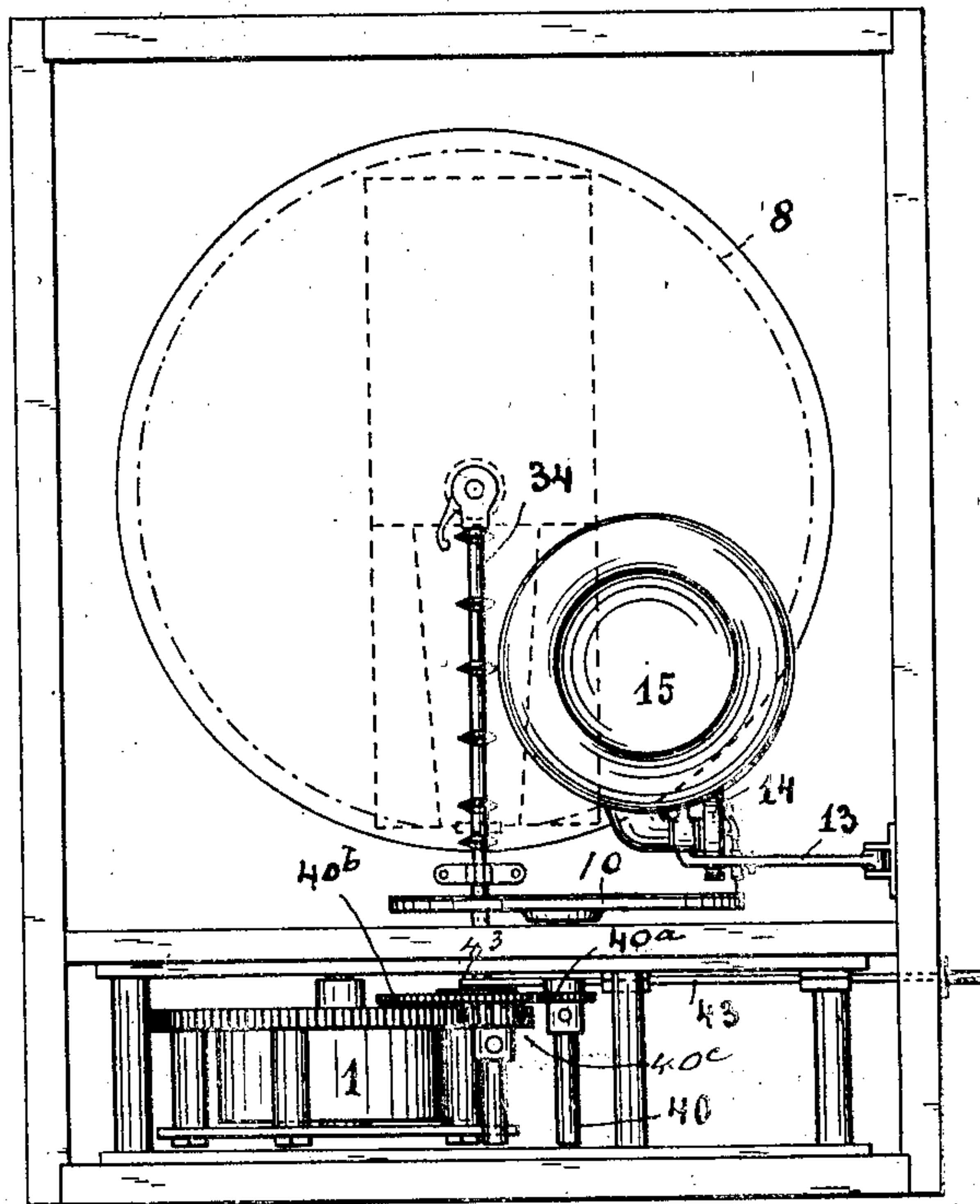
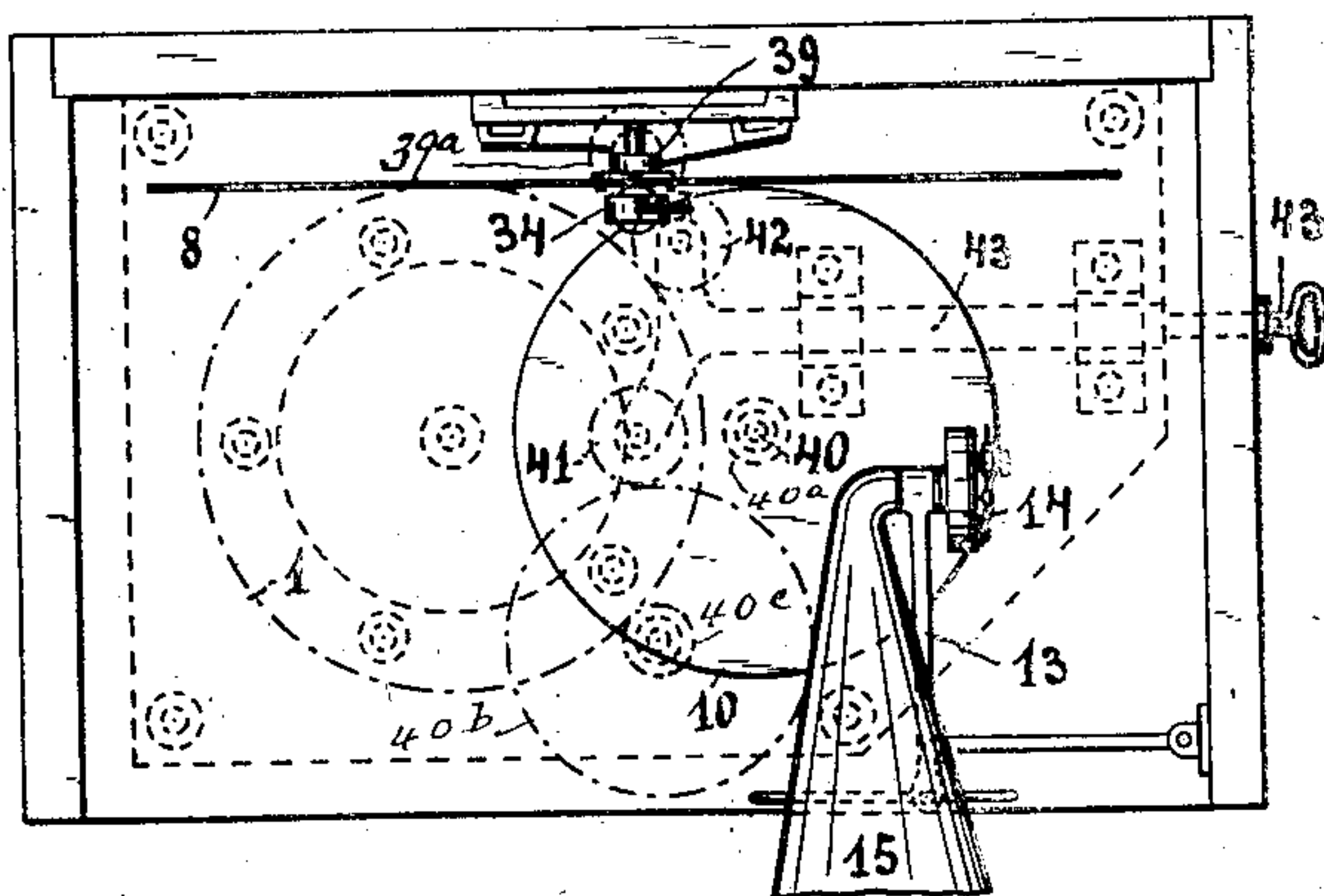


FIG. 9.



Witnesses:-  
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6 SHEETS—SHEET 6.

Fig. 12.

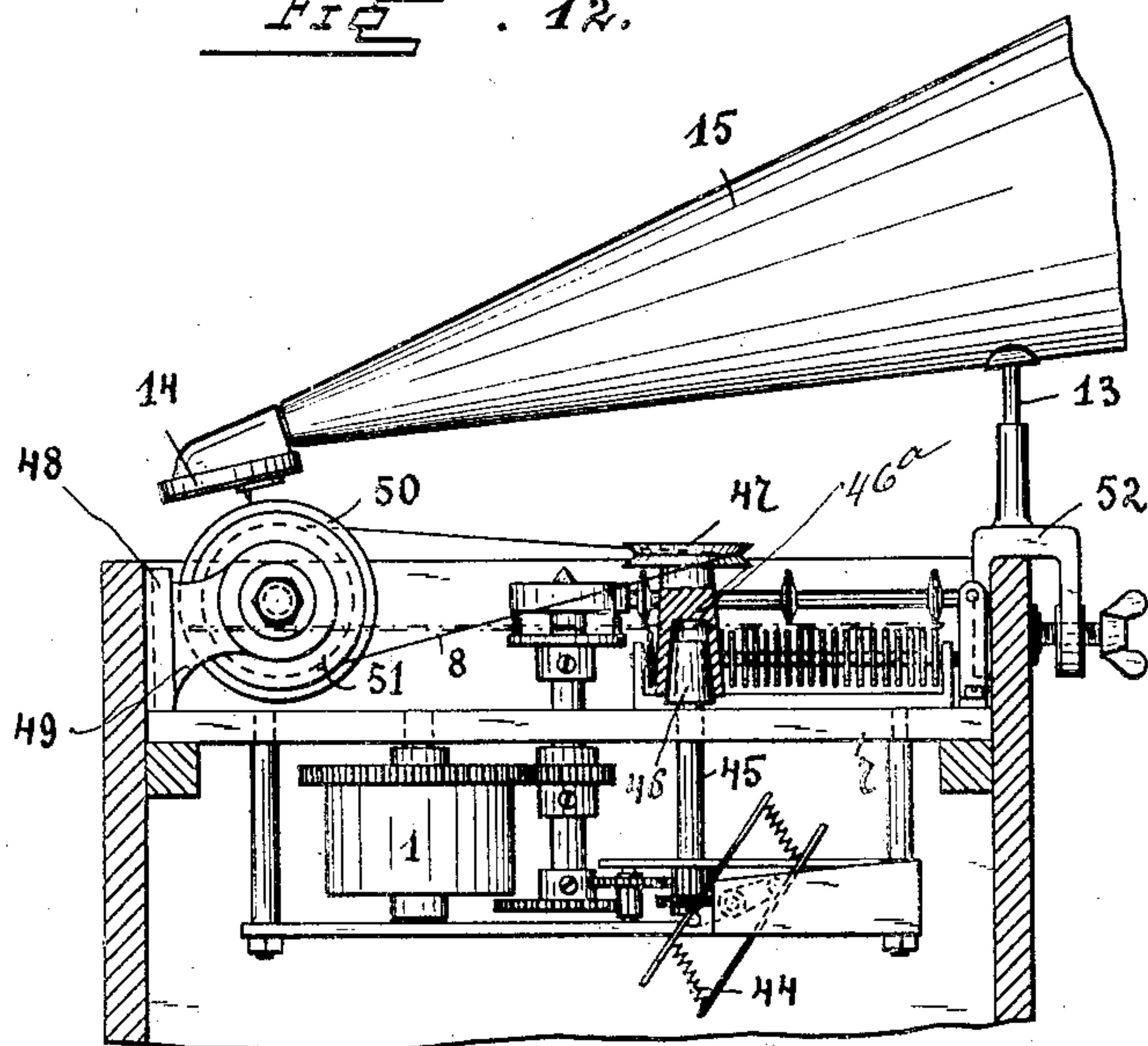
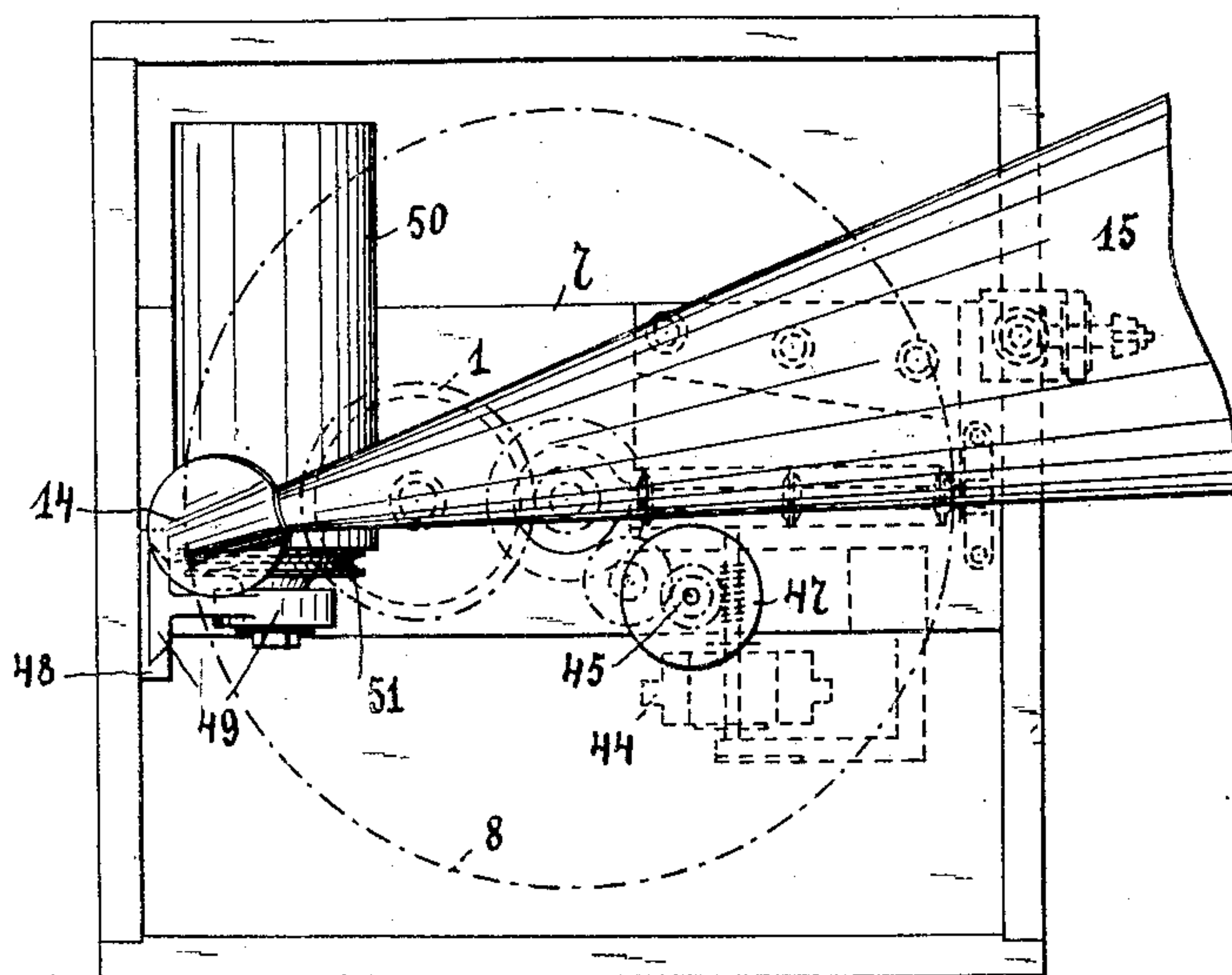


Fig. 11.



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C. A. Jarvis.

Inventor:-

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by his Attorney.

F. H. Richards.



# UNITED STATES PATENT OFFICE.

ERNST PAUL RIESSNER, OF WAHREN, GERMANY.

## MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 780,730, dated January 24, 1905.

Application filed October 3, 1902. Serial No. 125,740.

*To all whom it may concern:*

Be it known that I, ERNST PAUL RIESSNER, a subject of the King of Prussia, Emperor of Germany, residing at Wahren, near Leipsic, Kingdom of Saxony, Germany, have invented a new and useful Improvement in Mechanical Musical Instruments, of which the following is a clear and full specification.

The object of the present invention is to provide means for converting an ordinary mechanical musical instrument operated by a note sheet or disk into a gramophone or phonograph, or vice versa, at will and without materially altering the mechanism of either of the instruments. In order to attain this object, it is only necessary to provide means for increasing the speed of a spindle adapted to carry the roll or disk for actuating the gramophone or phonograph to the necessary extent from the driving mechanism of the disk-carrying spindle or sheet-moving spindle of the mechanical musical instrument. This may be accomplished in a variety of ways, as hereinafter set forth.

In order to render the present specification easily intelligible, reference is had to the accompanying drawings, in which like numerals of reference denote similar parts throughout the several views.

Figure 1 is a plan, and Fig. 2 an elevation, of one form of embodiment of the invention. Figs. 3 and 4 are similar views of a modified form of the same. Figs. 5 and 6 are similar views of a further modification; Figs. 7 and 8, similar views of yet another modification; and Figs. 9, 10, 11, and 12 similar views, respectively, of two further modifications.

Referring first to Figs. 1 and 2, the drum 1 of the clockwork of the mechanical musical instrument drives the central spindle of the note-disk 8 in the ordinary manner. In proximity to the teeth of the said drum 1 a vertical shaft 2 is mounted, carrying a pinion 3, which engages with the teeth of the said drum. At the lower end of the spindle 2 a gear 4 is keyed to the same, which meshes with a pinion 6, mounted on a second vertical spindle 5, so that this spindle will be driven by the clockwork of the music-works at a much higher speed than that of the note-disk spindle. The

spindle 5 is prolonged upwardly through the supporting-plate 7 of the musical works and provided at the top with a vertical incision or slot 12. The grooved disk 10 for the gramophone or phonograph is provided with a downwardly-extending stem 9, hollowed out to fit over the top of the spindle 5 and provided with a transverse pin 11, adapted to fit the incision or slot 12 of the said spindle 5 and engage therewith, so as to couple the said grooved disk 10 of the gramophone to the said spindle 5. When the note-disk 8 of the music-works is in position on its central spindle 8', it will lie in a plane above the top of the spindle 5, (the gramophone-disk 10 having been previously removed from the latter,) and the musical works will operate in the ordinary manner, the series of note-producing instrumentalities 8<sup>a</sup> cooperating with the note-disk 8, as usual. When it is required to put the phonograph into operation, the note-disk 8 must first be removed and the grooved disk 10 placed with its sleeve 9 over the top of the spindle 5 and its pin 11 in the slot 12 of the said spindle. An arm 13 is screwed to the plate 7 and serves to carry the funnel 15 of the gramophone or phonograph, and with it the membrane 14 of the same, so that when these parts are placed in position on the arm 13 and the disk 10 on the spindle 5 the clockwork of the musical instrument may be used as a gramophone or phonograph. During this time the note-disk 8 is removed.

In the device shown in Figs. 3 and 4 the grooved disk 10 is driven from the central spindle 16 of the clockwork by means of a sleeve 17, carrying a gear 18, which meshes with a pinion 19, mounted on the plate 7 and in engagement with the large gear 20 of the drum-housing 1. The sleeve 17 carries at the top a flange 21, having two or more recesses at the point 22, into which downwardly-extending pins 23 of a collar 24 engage and thus couple the said collar to the said sleeve 17. The collar is provided at the top with a larger flange having two or more pins 25 therein, which engage corresponding recesses at the point 26 of a flange 27 at the under side of the grooved disk of the phonograph, so that, as will be readily understood, when this disk 10



is in position on the collar 24 it will be driven by the sleeve 17 at the higher speed necessary for this apparatus, while when the apparatus is used as a musical instrument the disk 10 is removed, the collar 24 turned upside down with the larger flange downward, so that the pins of the same will be out of range of the recesses of the flange 21 of the sleeve 17, while the pins of the top smaller flange serve to attach the note-disk, and the collar is locked to the spindle 16 by means of the set-screw 28, so that the note-disk 8 will now be driven by the said spindle of the musical works at the slower speed necessary for the purpose. The arm 13 is in this case also fixed to the plate 7. While the instrument is being used as a phonograph the guide-arm for the note-disk is thrown back, as at 34.

In the modification shown in Figs. 5 and 6 the note-disk of the musical instrument is turned by means of the pin-wheel 29, and in order to attain the increased speed necessary for the phonograph-disk 10 a spindle 31 is provided near the pivot of the guide-arm 34, but in its bearing-block 33, said vertical spindle 31 carrying a small bevel-gear 32, which meshes with a larger bevel-gear 30, fast on the pin-wheel 29. The spindle 31 is squared at the top and carries the grooved disk 10 of the phonograph, which fits on the same with its socket. The operation of this modification will be obvious without further explanation.

In the modification shown in Figs. 7 and 8 the arm 13, carrying the funnel and membrane 15 and 14 of the phonograph, may be clamped to the side of the casing of the musical works, and the said clamp 38 carries a spindle to receive the disk 10 and a cord-disk 37, which latter is driven at the increased speed from the larger cord-disk 36, having a coupling 35, by means of which it may be coupled to the driving-spindle of the clockwork of the musical works. In this case the phonograph when not in use may be entirely removed from the musical works.

In the device shown in Figs. 9 and 10 the spindle 39 carries a gear 39<sup>a</sup> for driving the music disk or record 8. The spindle 40 carries a gear 40<sup>a</sup> for driving the disk or record 10 of the phonograph. A sliding arm or bar 43 is mounted upon the frame or housing of the instrument, and at its outer end is provided with a handle. At its inner end said slide is branched and upon the branches carries two gears 41 and 42 within the housing. According to the position of the said slide 43, either the music-spindle or the phonograph-spindle is connected to the motor-gear 1. If the slide is thrust in, as illustrated at Fig. 9, the gear 42 will connect the musical-disk-driving gear 39<sup>a</sup> to the clockwork—that is, to the motor-gear. If said slide is pulled out, said gear 42 is withdrawn from the driving-gear 39<sup>a</sup>, while the gear 41 is caused to connect the gear 40<sup>a</sup>

on the spindle 40 to the gear 40<sup>b</sup> of higher speed for driving the disk or record of the phonograph. It will be seen that the gear 40<sup>b</sup> is provided with a pinion 40<sup>c</sup>, which meshes with the motor-gear 1. It will also be observed that the gear 41 is constantly in mesh with a gear 40<sup>b</sup>, but may be thrown into or out of mesh with the pinion 40<sup>a</sup> by pulling out or thrusting in the slide 43. It will be seen that this form of the invention requires no removable parts, but may at any time act as a phonograph or as a mechanical musical instrument, according to the adjustment of the slide 43. It will be understood, however, that the funnel and the record or record-carrier of the phonograph mechanism may be made detachable, as in other views.

Figs. 11 and 12 illustrate a device for driving a phonograph roller record, as 50, instead of a disk record. This roller 50 is mounted on a cylinder or arbor 51, carried in a suitable bearing 49, which may be slid into a dovetail groove 48 at the side of the casing. The cylinder and roller are rotated by means of a pulley which is driven by a cord from the regulating-spindle of the clockwork of the instrument. The spindle 45, which is the worm-spindle of the regulating-fan 44 of the clockwork, has the required speed for the phonograph-roller, and this spindle is prolonged in the present case upwardly through the plate 7 and provided at the top with a cone 46, upon which a bell-shaped cap 46<sup>a</sup> is fitted, carrying a pulley 47. This pulley 47 is connected by a driving-cord to the pulley of the roller 50 and drives the same. In putting the phonograph into operation the note-disk must first be removed. The arm 13 in this case may be supported by a suitable clamping mechanism, as at 52.

I claim as my invention—

1. An instrument having music-playing mechanism, phonographic mechanism, a single clockwork for driving both of said mechanisms, and means for enabling either of said mechanisms to be connected to or disconnected from said clockwork at will; said connecting and disconnecting means including a coupler mounted within the instrument and provided with two coupling-gears both movable into and out of effective position; one of said coupling-gears when in use forming part of the phonographic mechanism, the other of said coupling-gears when in use forming a part of the music-playing mechanism.
2. The combination with a mechanical musical instrument, including clockwork and a note-disk rotated thereby, and also including a series of note-producing instrumentalities mounted for cooperation with the note-disk, of a graphophone mounted upon said instrument, said graphophone including a spindle for carrying the record and also including a membrane, as 14, for cooperation with the record, movement-multiplying gearing for



driving said spindle from said clockwork at a speed greater than that at which the note-disk is driven, and shiftable means for coupling said clockwork either to the note-disk or to said spindle at will; said coupling means being mounted between said clockwork and said movement-multiplying gearing.

3. The combination with a mechanical musical instrument, including clockwork and a note-disk rotated thereby, and also including a series of note-producing instrumentalities mounted for coöperation with the note-disk, of a graphophone mounted upon said instrument, said graphophone including a spindle for carrying the record and also including a membrane, as 14, for coöperation with the record, movement-multiplying gearing for driving said spindle from said clockwork at a

speed greater than that at which the note-disk is driven, and shiftable means for coupling said clockwork either to the note-disk or the said spindle at will; said coupling means being mounted between said clockwork and said movement-multiplying gearing; said coupling means including a slide and a pair of gears upon said slide; said slide being mounted for movement to bring either one or the other of said gears into position to couple either the note-disk or the phonograph-record spindle to said clockwork.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ERNST PAUL RIESSNER.

Witnesses:

MORITZ SPREER,

RUDOLPH FRICKE.