

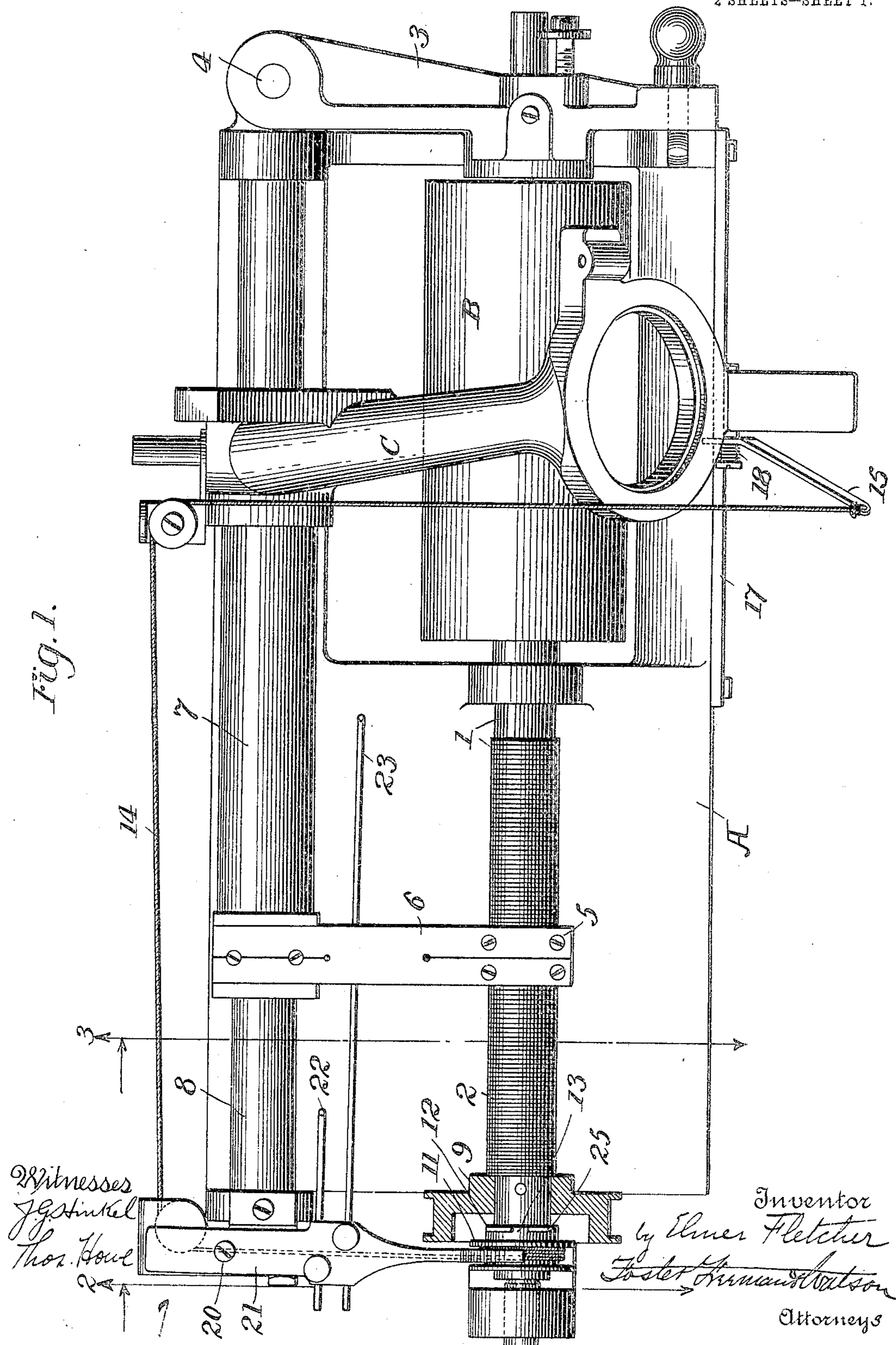
No. 804,714.

PATENTED NOV. 14, 1905.

E. FLETCHER.  
REPEATING DEVICE FOR PHONOGRAPHS.

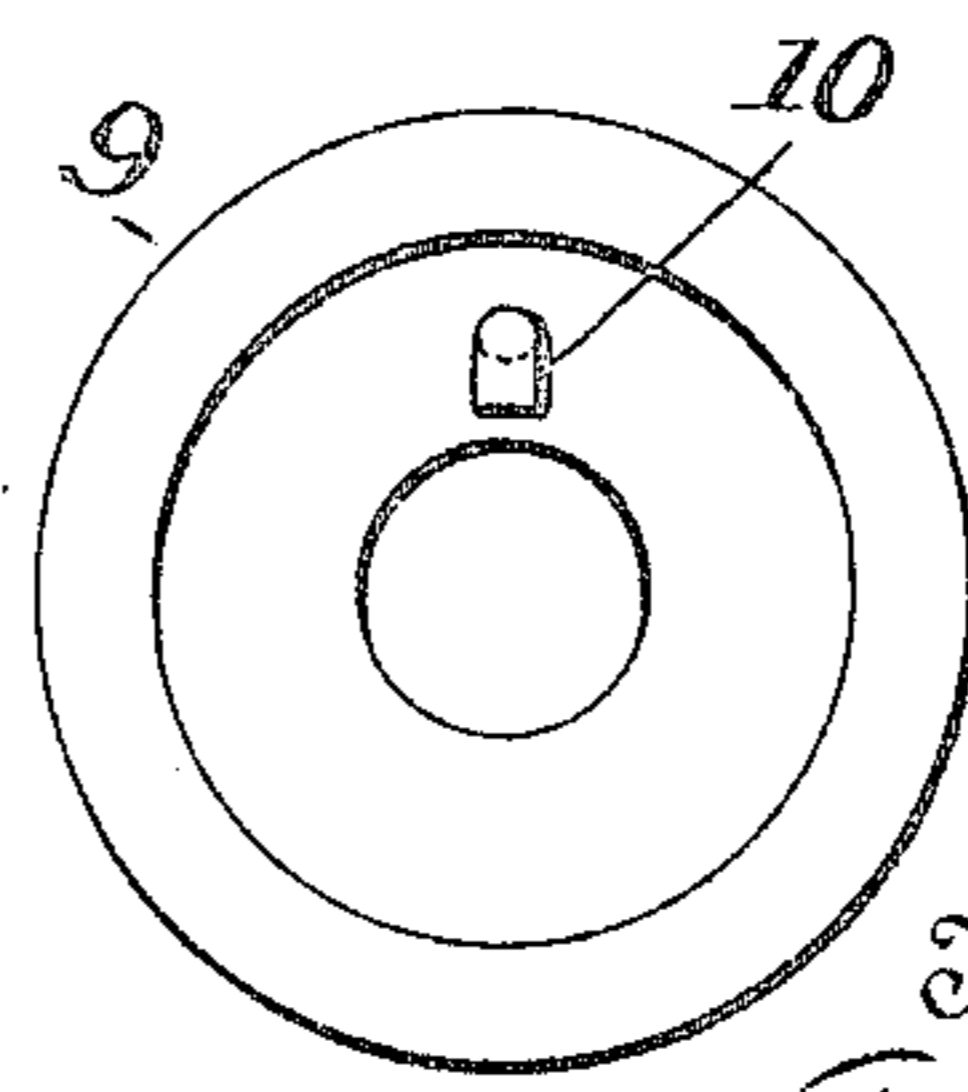
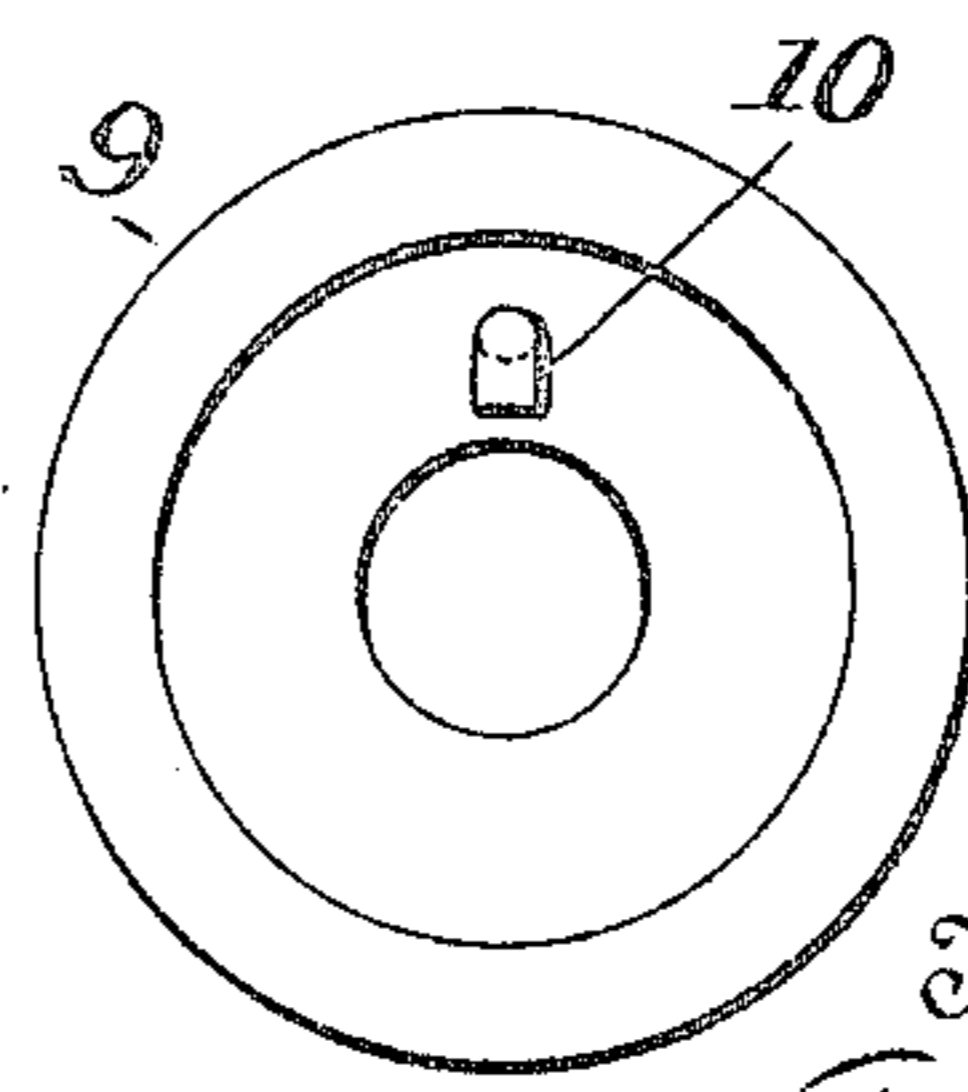
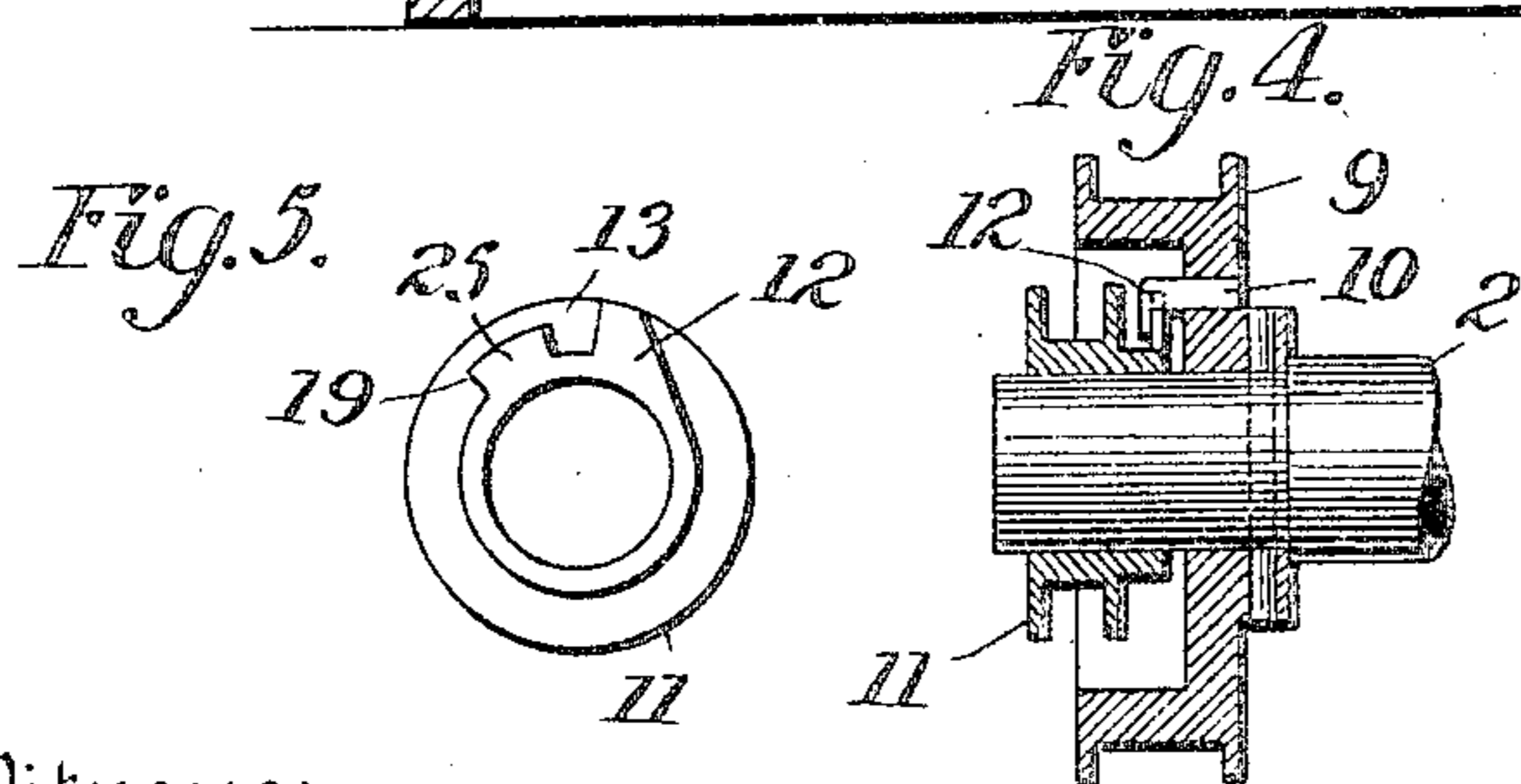
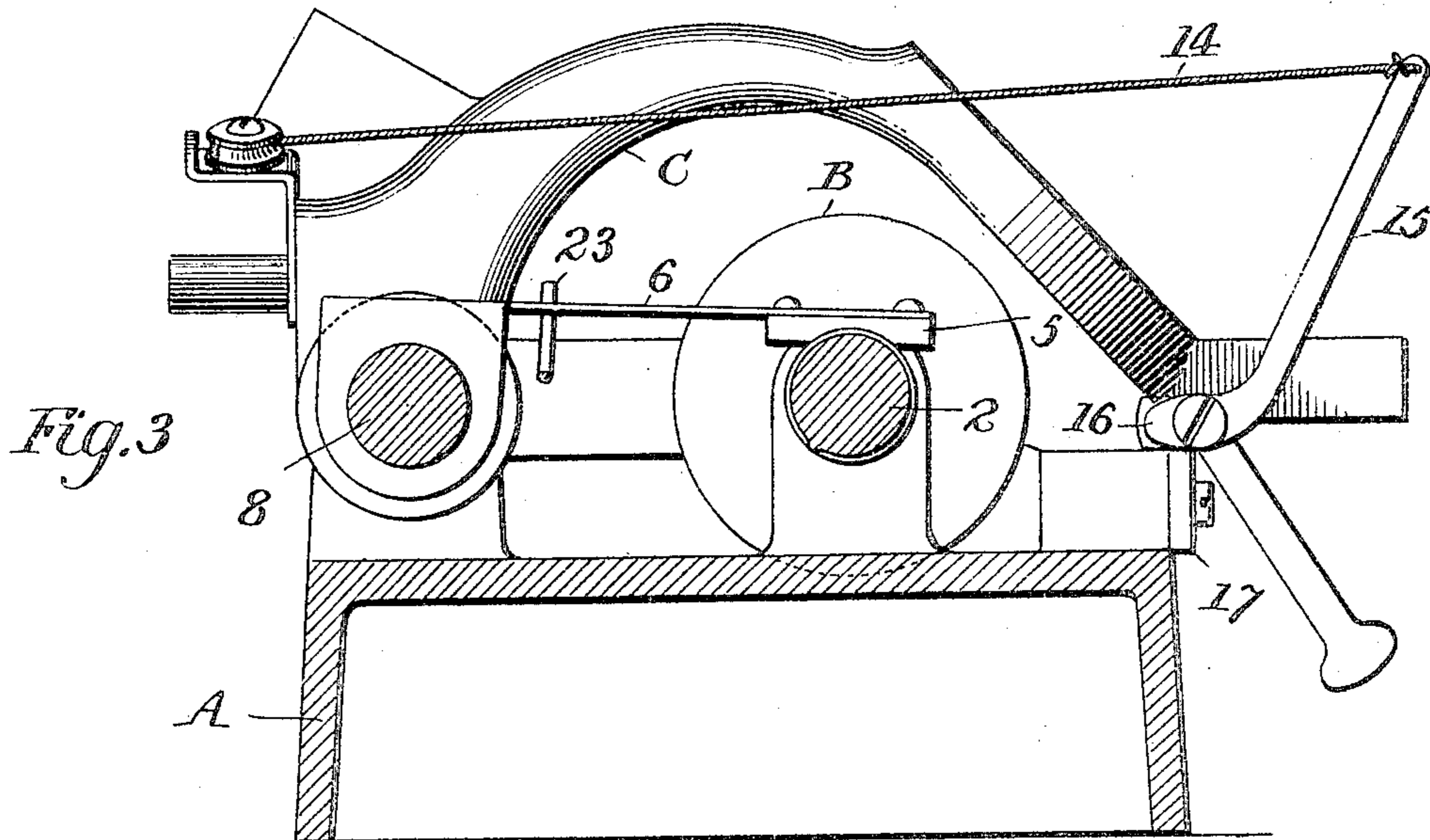
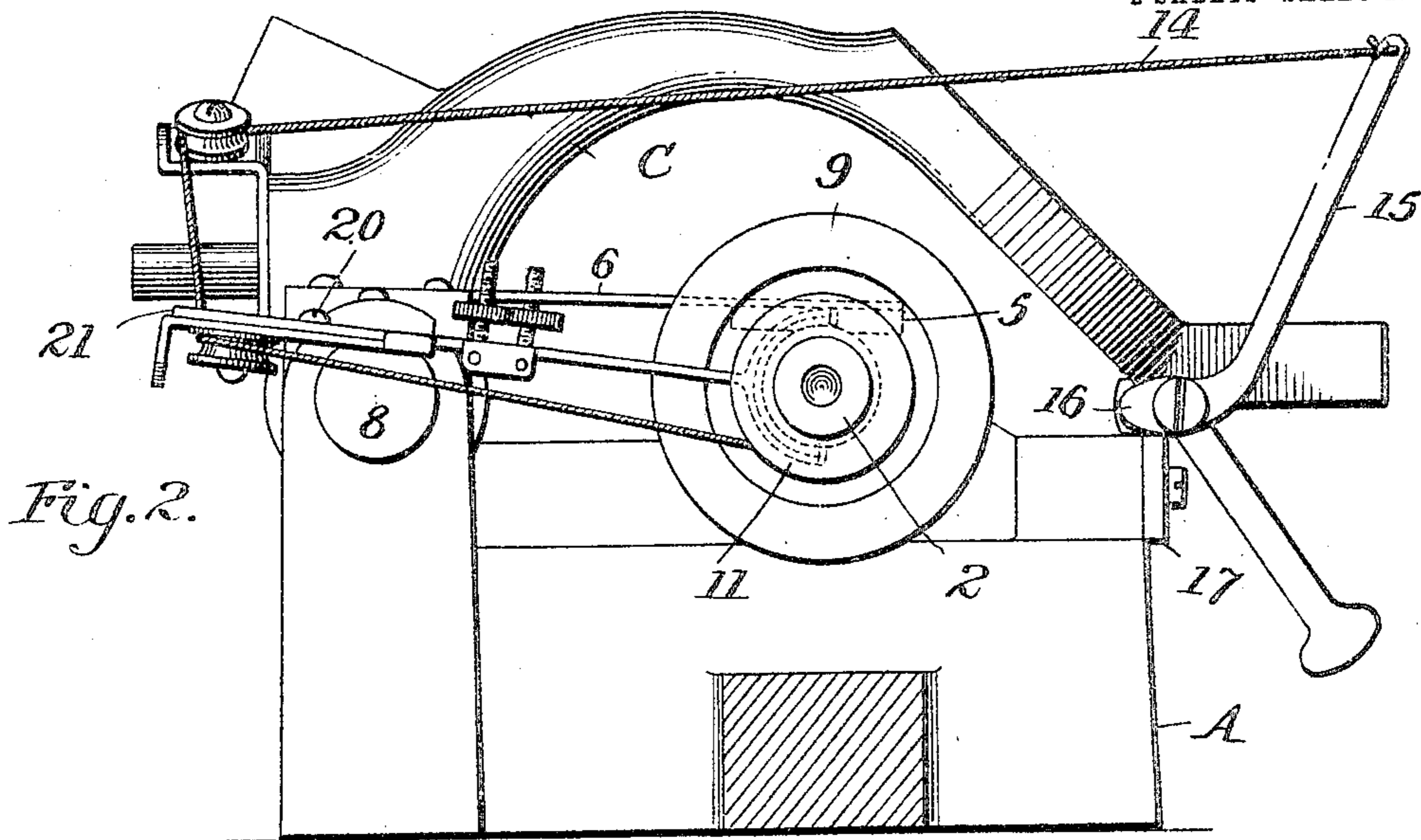
APPLICATION FILED NOV. 11, 1904.

2 SHEETS—SHEET 1.



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REPEATING DEVICE FOR PHONOGRAPHS.  
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2 SHEETS—SHEET 2.



Witnesses  
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# UNITED STATES PATENT OFFICE.

ELMER FLETCHER, OF INDIANAPOLIS, INDIANA.

## REPEATING DEVICE FOR PHONOGRAPHS.

No. 804,714.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed November 11, 1904. Serial No. 232,313.

*To all whom it may concern:*

Be it known that I, ELMER FLETCHER, a citizen of the United States, residing at Indianapolis, in the county of Marion, State of Indiana, have invented certain new and useful Improvements in Repeating Devices for Phonographs, of which the following is a specification.

This invention relates to repeating devices for phonographs whereby the recorder and reproducer is returned to its initial position after it has completed its operative movement.

The object of the invention is to provide improvements in apparatus of the character described, as will be hereinafter set forth.

In the accompanying drawings, Figure 1 is a top plan view of an apparatus embodying my invention. Fig. 2 is an end view of the apparatus shown in Fig. 1 looking in the direction of the arrow. Fig. 3 is a section on the line 3 3 of Fig. 1 looking in the direction of the arrow. Fig. 4 is a central vertical section of the clutching means for connecting the driving means with the recorder and reproducer to return it to its starting position, and Figs. 5 and 6 are details of the clutching means shown in Fig. 4.

Referring to the drawings, the apparatus comprises a frame A, in which is rotatably supported a cylinder B, upon the surface of which is carried the record or upon which the record is to be formed. Adapted to engage with the surface of the cylinder in a well-known manner is a recorder and reproducer, (not shown,) carried in the usual hinged bracket C. Means are also provided for moving the bracket C in one direction, so that the stylus of the reproducer and recorder is in contact with the cylinder B. Means are also provided for moving the bracket in the other direction and disengaging the stylus from the cylinder and the means which was employed to drive it in the opposite direction.

The apparatus will now be described in detail.

Rotatably supported in the frame A is a shaft 1, carrying a worm 2, which is fixed to the shaft, and the cylinder B, which is also fixed to the shaft. To permit the removal of this shaft, the end 3 of the frame A is hinged at 4, so that it may be swung out of the way and the shaft withdrawn from that end of the apparatus. Engaging with the worm 2 is a section 5 of a nut fixed to an arm 6, which is preferably a spring, to hold the nut in engagement with the worm. The arm 6 is fixed to a sleeve 7, which may turn upon a rod 8, fixed

to the frame A. Also fixed to the sleeve 7 is the bracket C, before described. Fixed to the shaft 1 is a pulley 9, which may be driven from any suitable source of power, having an L-shaped projection 10, which is laterally wedge-shaped. Loosely mounted upon the shaft 1 is a pulley 11, having a projection comprising two parts 12 and 25, which are separated by a slot 13, the part 12 being higher than the part 25, as shown. The lateral edge 19 of the part 25 is wedge-shaped, as shown. This projection is adapted to engage with the projection 10 upon the pulley 9 to connect the pulley 11 with the source of power. Upon the pulley 11 is wound a cord 14, which after passing over suitable guide-pulleys is secured to one end of a lever 15, pivoted to the bracket C near its front end and having a cam projection 16, adapted to engage with the top of a longitudinal bar 17. The end of the lever to which the cord is secured is normally forced outwardly by a coiled spring 18, so that the projection 16 is moved into a position whereby the bracket C is permitted to keep its lowest position, so that the stylus of the recorder and reproducer may come in contact with the surface of the cylinder B and also that the nut-section 5 may engage with the threads of the worm 2. If, however, a pull is exerted on the cord 14, the projection 16 is thrown downwardly and coming against the bar 17 raises the bracket C, thereby removing the stylus of the recorder and reproducer from contact with the surface of the cylinder B, and through the sleeve 7 and arm 6 raises the nut-section 5 out of engagement with the worm 2.

Pivoted upon the frame A at 20 is a lever 21, carrying fixed rods 22 and 23, one of which is adapted to engage with the arm 6 at one end of its travel, while the other rod is adapted to engage with said arm near the other end of its travel. The end of the lever 21 engages with the pulley 11, so that this pulley is shifted along the shaft 1, according to the movement of the lever, and is thus shifted into engagement with the driving-pulley 9 to raise the recorder and reproducer out of engagement with the surface of the cylinder and the nut-section 5 out of engagement with the worm and return the bracket C to its initial position when it has reached the end of its travel, and therefore the arm 6 has come against the bent end of the rod 23. The end of the lever 21 which engages the pulley is preferably forked, as shown, so that the pulley is engaged on opposite sides, where-

by binding of the pulley upon the shaft, as would be the case if the pulley were engaged on one side only, is prevented. When the bracket C has reached its initial position, the arm 6 comes against the bent end of the rod 22, thereby shifting the pulley 11 out of engagement with the pulley 9, when the stylus will again be permitted to come in contact with the surface of the cylinder B and the nut-section 5 to engage with the worm.

The operation may be briefly described as follows: The parts being in the positions as shown, the bracket C, and with it the reproducer and recorder, the stylus of which is in engagement with the surface of the cylinder B, is moving toward the right, being driven by the nut-section 5, which is in engagement with the worm 2, driven by the pulley 9. Upon nearing the end of the right-hand travel the arm 6 comes in contact with the bent end of the rod 23, thereby drawing the pulley 11 toward the pulley 9, so that the lateral wedge-shaped edges of the projection 10 and part 25 overlap each other, thereby causing engagement of the pulley 9 with the pulley 11, when the turning of the pulley 11 will exert a pull upon the cord 14, which will operate, as before described, to raise the reproducer and recorder and the nut-section 5 out of engagement. The wedge-shaped edges of the projections are knife-edges. Generally the pitch of the worm is one one-hundredth of an inch or less, and consequently the overlapping of the projections would be very slight and uncertain if means were not employed which would increase the overlapping of the projections beyond that which would occur from the shifting of the lever by the screw after the ends of the projections had come into the same plane. With the present apparatus it will be seen that the pull upon the cord transmitted through these overlapping projections will cause them on account of their wedge shape to draw the pulleys 9 and 11 more closely together, until finally the projection 10 will rest against the part 12 of the projection on the pulley 11, when the engagement between the pulleys will be secure. The sleeve 7 and its connected apparatus having been thus moved to the left, near the end of its travel the arm 6 will come against the bent end of the rod 22, thereby pushing the pulley 11 away from the pulley 9, when the projection 10 will pass through the slot 13 and the pulleys become disengaged from each other. The apparatus will then be in readiness for a repetition of the movement toward the right.

Without being limited to the precise construction shown and described, what I claim is—

1. In a phonograph, the combination with a reproducer and recorder, of means for driving said reproducer and recorder, and connecting means between said driving means and

said reproducer and recorder such that the driving effort tends to more securely connect said reproducer and recorder with said driving means, substantially as described.

2. In a phonograph, the combination with a reproducer and recorder, of means for driving said reproducer and recorder, projections connected to said driving means, and projections connected to said reproducer and recorder and overlapping the projections connected to said driving means, the whole being so constructed and arranged that the driving effort tends to increase the overlapping of said projections, substantially as described.

3. In a phonograph, the combination with a reproducer and recorder, of means for driving said reproducer and recorder, wedge-shaped projections connected to said reproducer and recorder, wedge-shaped projections connected to said driving means, and means for causing said projections to overlap each other near the end of the travel of said reproducer and recorder, substantially as described.

4. In a phonograph, the combination with a reproducer and recorder, of a worm engaging with said reproducer and recorder, means for driving said worm, laterally-wedge-shaped projections connected to said worm, laterally-wedge-shaped projections connected to said reproducer and recorder, and means for disengaging said reproducer and recorder from said worm and causing the overlapping of the wedge-shaped edges of said projections near the end of travel of said reproducer and recorder, substantially as described.

5. In a phonograph, the combination with a reproducer and recorder, of means for driving said reproducer and recorder, wedge-shaped projections connected to said driving means and said reproducer and recorder, and a slot in one of said projections whereby the projection engaging therewith may pass outwardly to disengage said reproducer and recorder from said driving means, substantially as described.

6. In an attachment for reversing the movement of a reproducer on a phonograph, a feed-shaft and record-mounting drum, means for rotating the said shaft, a carriage movably mounted and in close proximity to the record and provided with a reproducer, rotatable means movably mounted on the feed-shaft, shift means pivotally mounted and adapted to engage the rotatable means on the feed-shaft, and means on the carriage for contacting the shift means so that the rotatable means on the feed-shaft may be longitudinally moved on the latter.

7. In an attachment for reversing the movement of a reproducer on a phonograph, a feed-shaft and record-mounting drum, means for rotating the shaft, a carriage movably mounted in close proximity to the record and provided with a reproducer, a collar rotatably and movably mounted on the feed-shaft, shift

means pivotally mounted and engaging the collar, and means on the carriage for engaging the shift means, so that the collar may be longitudinally moved on the feed-shaft.

- 5 8. In an attachment for reversing the movement of a reproducer on a phonograph, a feed-shaft and record-mounting drum, means for rotating the said shaft, a carriage movably mounted in close proximity to the record and  
10 provided with a reproducer, a collar rotatably and movably mounted on the feed-shaft and provided with circumferentially - disposed

grooves, shift means pivotally mounted and engaging the grooves in the collar, and means on the carriage for engaging the shift means 15 and operating to move the collar longitudinally on the feed-shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELMER FLETCHER.

Witnesses:

L. GOWER,  
L. SEIBERT.