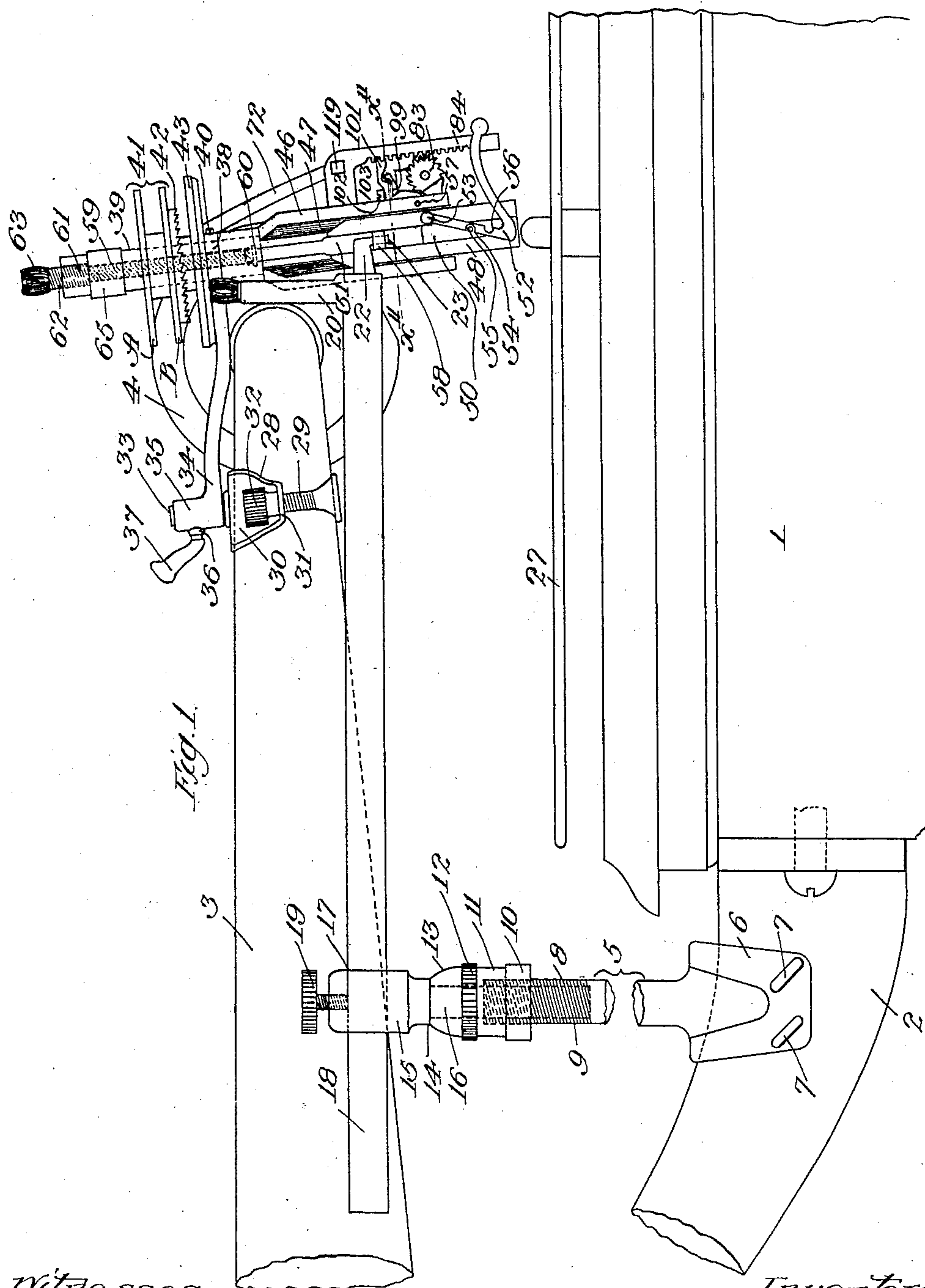


G. BUELNA & A. E. BURSON.
 STYLUS REPLENISHING MECHANISM FOR TALKING MACHINES.
 APPLICATION FILED DEC. 7, 1907.

931,676.

Patented Aug. 17, 1909.

5 SHEETS—SHEET 1.



Witnesses:
 J. A. Burson
 J. A. Coates

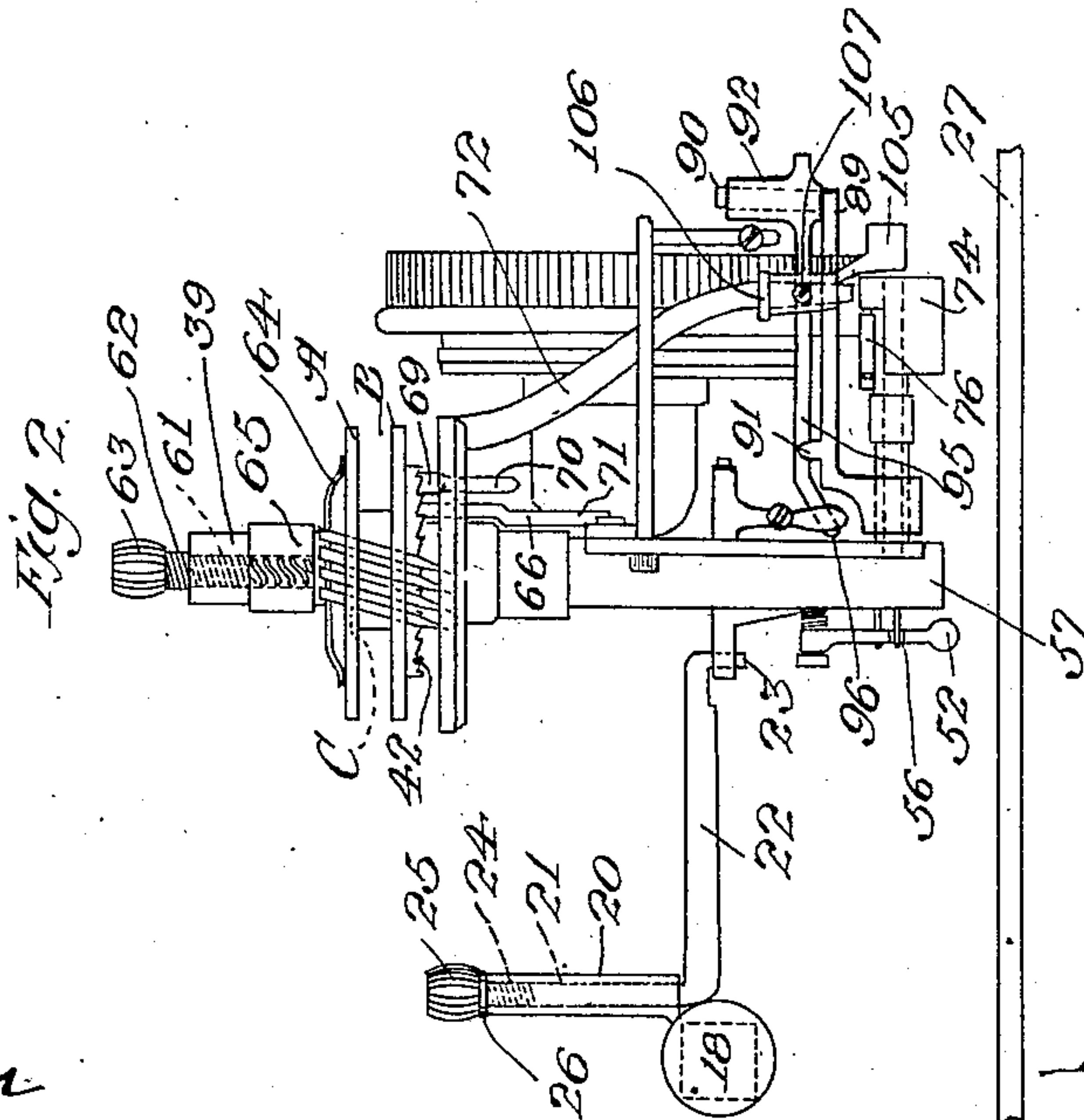
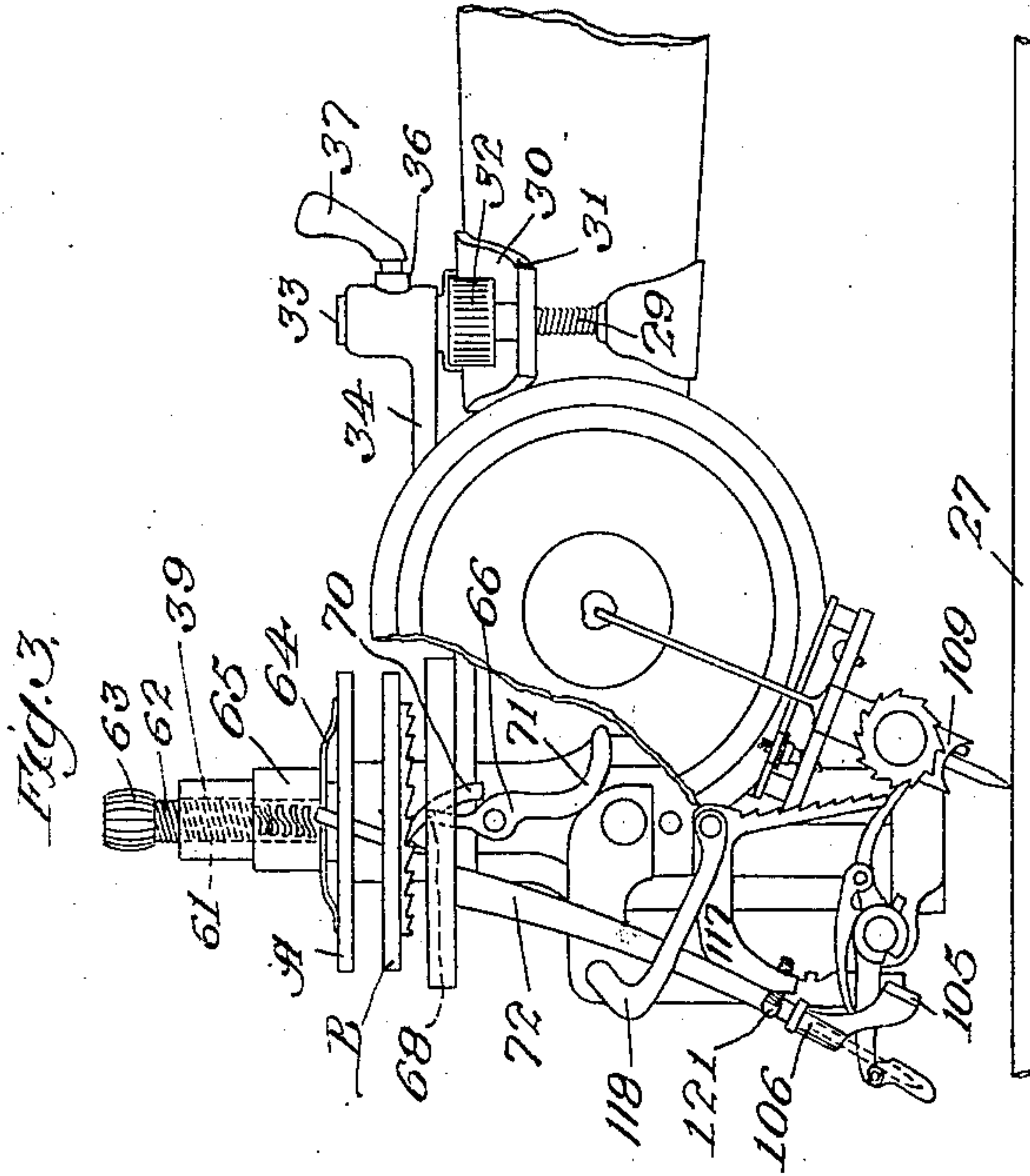
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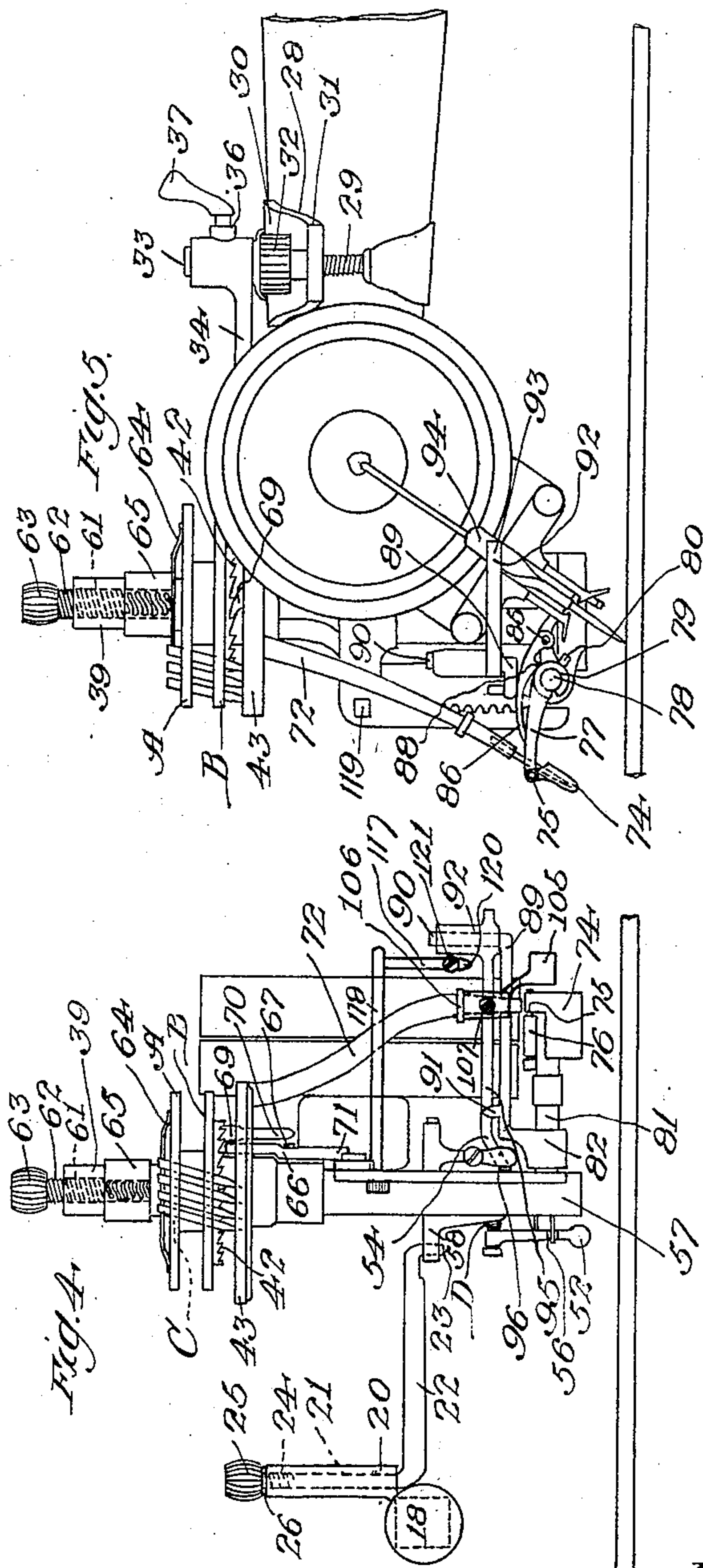
Witnesses:
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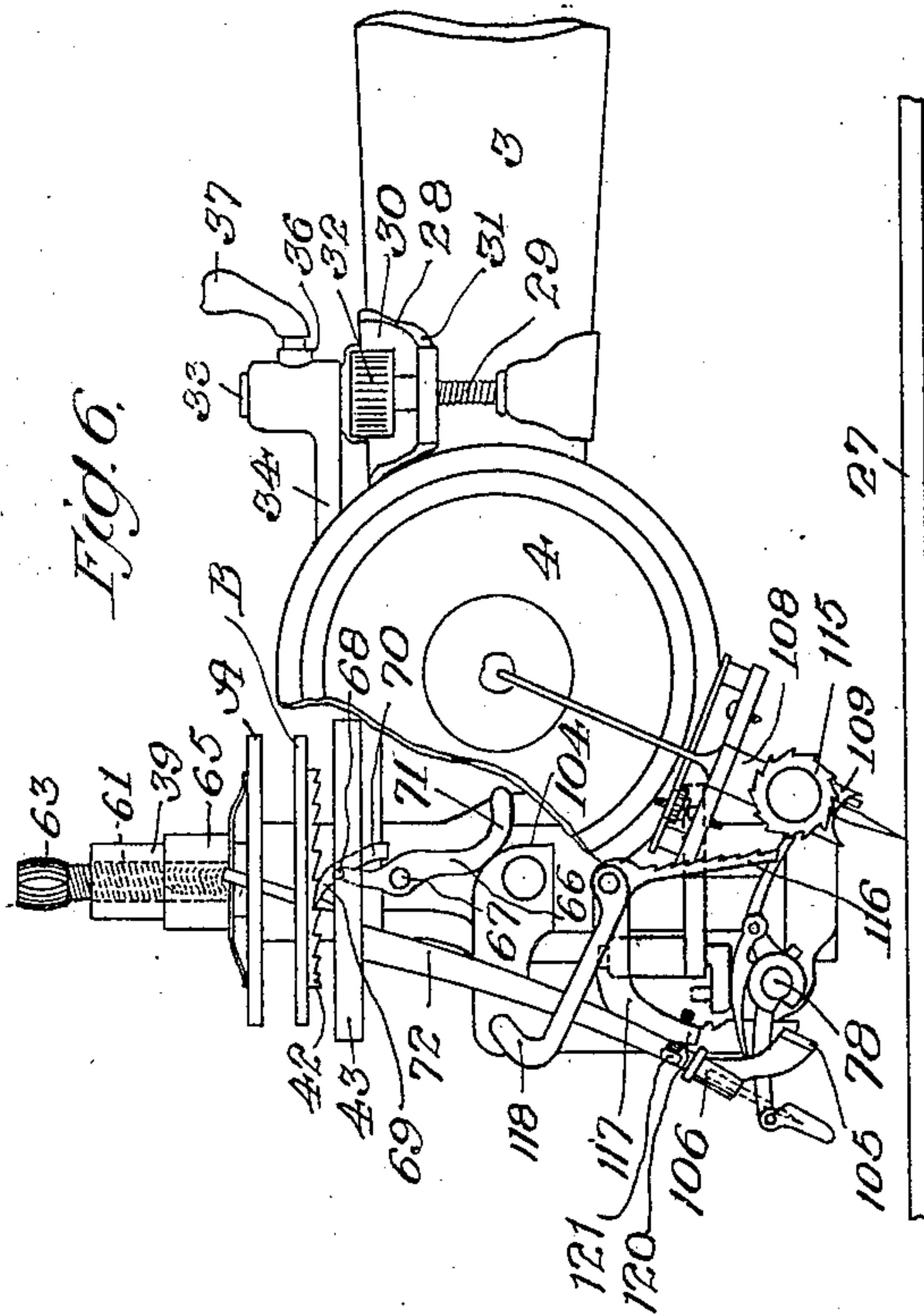
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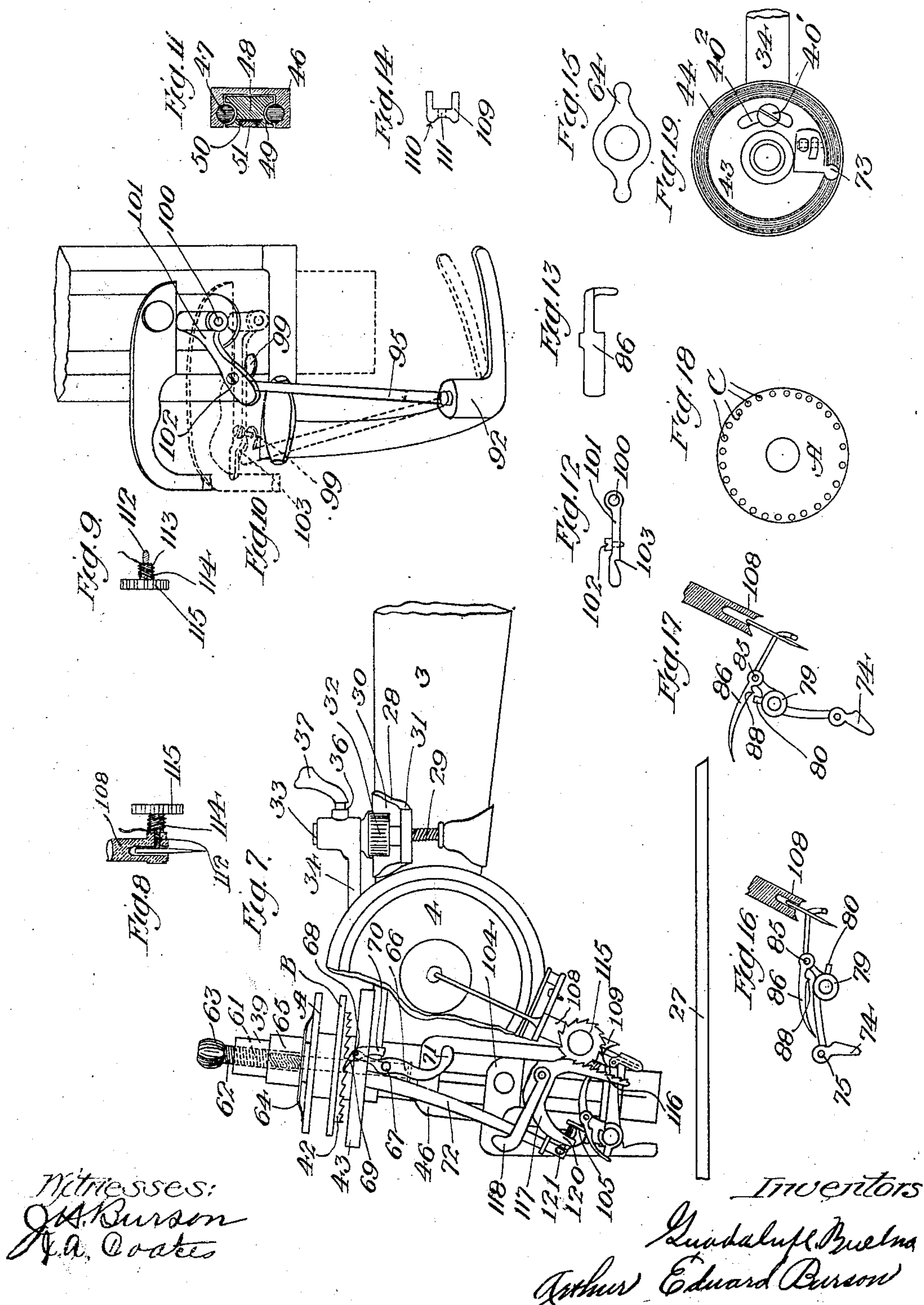
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5 SHEETS—SHEET 5.



Witnesses:
 J. A. Burson
 J. A. Coates

Inventors
 Guadalupe Buelna
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UNITED STATES PATENT OFFICE.

GUADALUPE BUELNA AND ARTHUR EDWARD BURSON, OF SANTA BARBARA, CALIFORNIA.

STYLUS-REPLENISHING MECHANISM FOR TALKING-MACHINES.

No. 931,676.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed December 7, 1907. Serial No. 405,522.

To all whom it may concern:

Be it known that we, GUADALUPE BUELNA and ARTHUR EDWARD BURSON, citizens of the United States, residing at Santa Barbara, in the county of Santa Barbara and State of California, have invented new and useful Improvements in Stylus-Replenishing Mechanism for Talking-Machines, of which the following is a specification.

10 This invention relates to a stylus replenishing mechanism and particularly to such mechanisms for use in connection with talking machines employing disk records.

15 An object of this invention is to provide a device for this purpose, in which the stylus of a sound box is caused to be ejected from the stylus holder, and a new stylus inserted in its stead by suitable stylus setting mechanism.

20 A further object of this invention is to supply such stylus setting mechanism with a fresh stylus whenever the stylus supplied thereto has been delivered to and inserted in the stylus holder, and to so arrange such mechanism that the various functions of the mechanism for carrying out these objects are performed in predetermined succession, all of such mechanism being controlled by the mere movement of the carrier arm for the sound box of a talking machine.

25 With these and other objects, not specifically mentioned herein, in view, this invention consists in the features, details of construction, and combination of parts, as will be described in connection with the accompanying drawings, and then be more specifically pointed out in the claims.

30 In the drawings: Figure 1 is a side elevation of our improved replenishing device, showing the same attached for operation to a talking machine; parts of the view are broken to contract the same. Fig. 2 is a front elevation. Fig. 3 is a side elevation showing the device attached to a talking machine (the sound box being shown in fragment) and proper mechanism for adapting the replenishing mechanism to such machines known as the Zonophone or Victor. Fig. 4 is a front elevation showing the application of the replenishing mechanism to a Columbia talking machine. Fig. 5 is a side elevation looking to left of Fig. 4. Fig. 6 is a side elevation showing the application of the replenishing mechanism to a Zonophone or such machines in which the sound boxes are provided with screws for

clamping the stylus. Fig. 7 is a fragmentary side elevation showing the stylus setter in the act of delivering a stylus to the stylus-holder. Fig. 8 is a fragmentary sectional detail of stylus retaining mechanism for Zonophones. Fig. 9 is a detail of the stylus retaining toothed wheel and spring. Fig. 10 is a perspective view, illustrating the mechanism for actuating the stylus clamp to release a used stylus, preparatory to inserting another, the dotted lines indicating the active, and the full lines, the passive position of such mechanism. Fig. 11 is a detail sectional view of the trackway and carriage. Fig. 12 is a detail of the link for controlling the stylus releasing mechanism. Fig. 13 is a detail of the lever for releasing the stylus from frictional hold in the stylus holder. Fig. 14 is a detail of a funnel arranged to be fitted on the stylus holder of a Zonophone sound box. Fig. 15 is a detail plan of the spring arranged to hold the disk A of the magazine in place. Fig. 16 is a fragmental detail showing position of mechanism for releasing the stylus from the stylus holder, before the actuation thereof. Fig. 17 is a similar view showing the stylus releasing mechanism in position to cause the stylus to drop from the stylus holder. Fig. 18 is a plan view of one of the magazine disks, and Fig. 19 is a plan view of the platform, showing the opening in the delivery chute, the magazine proper being omitted.

35 1. designates the motor containing receptacle of the ordinary talking machine. 2 is a support in the nature of an arm removably attached to said motor containing receptacle. 3 is a sound box carrier arm swiveled, or otherwise attached and movable relatively to said supporting arm 2. 4 is a sound box carried by said carrier arm 3. Mounted on and detachably secured to said supporting arm 2 is a furcated post 5, the tines 6 of which straddle the supporting arm 2 and are provided with elongated slots 7 for the accommodation of set screws, or other fastening means not shown. The upper terminus of said post 5 is externally screw threaded, as seen at 8 and provided with a central bore 9, shown in dotted lines.

40 10 is an adjusting nut adapted to engage the threads 8 of the post 5. Said nut is united with a sleeve 11 having a threaded central bore, the said sleeve having integrally united therewith a thumb piece 12, by

means of which the adjustment of the nut is effected. 13 is a bearing on said thumb piece 12 for the shoulder 14 of the member 15, which is provided with a shank 16, extending within the bore 9 of the post 5. The said member 15 is provided with an aperture 17 rectangular in cross section to receive a bar 18 in which aperture the said arm is secured by the set screw 19. The bar 18 terminates in a hollow sleeve 20 into the bore 21 of which is fitted a bent supporting arm 22, which terminates in a tang 23. One end of the bent supporting arm is screw threaded as seen at 24, and 25 designates a set nut which engages the threads 24 of the said supporting arm 22.

26 is a washer interposed between the nut 25 and the upper end of the sleeve 20.

By the mechanism thus far described, it will be seen that the distance of the bar 18 from the surface of the record 27 is capable of regulation to render the mechanism to be presently made the subject of more detailed description, susceptible of use with all talking machines of the disk type, where variations in mechanical construction are not infrequently present.

28 is a strap adapted to encircle the sound box carrier arm 3. This strap 28 terminates on one end in a screw threaded shank 29 and on the other end in a cup 30, which is provided with an orifice 31. The shank 29 is arranged to extend through the orifice 31 of the cup 30 and there to be engaged by a thumb nut 32, which is adapted to tighten the strap on the sound box carrying arm of the talking machine.

33 designates a short post provided on the strap 28.

34 is an arm provided with a sleeve 35, having a screw threaded opening 36 to receive a lever 37 by the manipulation of which the arm 34 is locked in any position of adjustment. This arm 34 terminates in a loop 38 which fits over a tube 39. 40 designates a screw for preventing the accidental movement of said tube 39 relatively to the arm 34. Fitting over the tube 39 is a magazine 41, consisting of two separated disks A and B, each of which is provided with a circumferential row of perforations C which perforations in the respective disks A and B are out of perpendicular alinement relatively to each other, so that a stylus extending through the perforations of both disks stands at an angle to the vertical axis of the tube 39 as seen in Figs. 2-3-4-5 and 6. The disk B is provided on its under surface with an annular rack 42. 40¹ designates a set screw extending through a slot 40² provided in the platform 43 under the magazine disk B and arranged to secure the carriage and trackway on the arm 34 and against rotation, and also to permit of the adjustment of the same to adapt it to varying angles.

43 is a disk like platform, secured to or made a part of said tube 39. This platform is dished as seen at 44 Fig. 19 and has an up-turned peripheral edge whose function is to prevent the stylus from escaping from the magazine.

The tube 39 above referred to terminates in a bifurcation 46, which forms substantially a carriage, the said bifurcation 46 being provided with rails 47. 48 is a trackway, having grooves 49 arranged to engage said rails 47 and ride thereon. The said trackway is slotted centrally thereof as seen at 50 to receive a plunger 51, whose upper end extends into tube 39. The plunger 51 is normally connected with said trackway, to have contemporaneous movement therewith, by a crank 52 pivoted to said carriage at 53. A spring D is coiled about the shank of the pivot 53, which spring exerts its tension against the crank, thereby causing the crank to frictionally bear against the head of the pivot, in this manner preventing the accidental release of said crank when the detent is in engagement with the pin of the trackway or the pin of the carriage, respectively, which release is apt to be caused by the vibratory action of the stylus while traversing the sound waves of the record. The crank 52 is provided with a detent 54 on one side to engage the pin 55 fixed on the plunger 51 whereby the trackway and plunger are mutually interlocked. A similar detent 56 is provided on the opposite side of said crank 52 to engage a pin 57 provided on the bifurcation 46, for normally holding the crank out of operative position. In this position of the crank, that is to say, when the detent 56 is in engagement with the pin 57, the plunger is free to move independently of the trackway 48, which provision is made for the purpose of permitting of the movement of the carrier arm for the sound box, without operating the stylus replenishing mechanism for the sound box.

The plunger 51 has an apertured lug 58, into which the tang 23 of the supporting arm 22 is arranged to fit and to be secured therein. In this manner it will be noted that the trackway 48 is stationary relatively to the carriage 46, and the constituent parts thereof, which trackway as has been before described is rigidly attached to the sound box carrier arm, while the trackway itself is rigid with the supporting arm 22.

59 is a spiral spring located within the bore of the tube 39 and arranged to impinge against the collar 60 fixed on to the plunger 51. The tube 39 at its upper extremity is internally threaded as seen at 61 to receive the shank 62 of an adjusting member 63. By this construction the carriage and the magazine etc. are resiliently supported on the plunger 51 and the height and the movement of the carriage and sound box rela-

tively to the trackway regulated and limited by the adjusting member 63.

To prevent the accidental rotation of the magazine proper, we provide a spring 64, loosely fitting over the tube 39 and caused to engage the upper surface of the magazine disk A by a sleeve 65, which snugly and frictionally engages the tube 39 and which when in its correct position presses the spring 64 against the disk A.

66 designates a lever fulcrumed by a fulcrum pin 67 on to the tube 39. On one end of said lever is pivoted by a pivot pin 68, a pawl 69, having free movement in one direction, but a limited movement in another direction. For this purpose the end of the pawl is extended as seen at 70 and so arranged that it is in direct line with the fulcrum pin 67 of the lever 66. Thus upon the operation of the lever 66, the fulcrum pin 67 strikes the extended portion 70 of the pawl and causes said pawl 69 to travel with said lever. Both lever 66 and pawl 69 extend through an opening provided therefor in the platform 43, the said pawl 69 being in direct line and in engagement with the annular gear face 42 provided on the underside of the disk B forming part of the magazine 41. Upon the operation therefore of the lever 66, the pawl 69 moving therewith, produces a rotation of the magazine 41, equal to one tooth in the annular gear face 42. The end of the lever 66 is weighted as seen at 71, so that upon the recession of the mechanism for operating said lever 66, the said lever by gravity drops back to its normal position, carrying with it the pawl 69 which, having an operating tendency in but one direction, rides over the teeth of the annular gear face 41, preparatory to the succeeding operation of the lever for rotating said magazine to cause a fresh stylus to drop and travel in the chute provided therefor.

To the platform 43 is attached a tube, or more properly, a delivery chute 72, the entrance to the bore of which is located at or near the outer periphery of the same, as seen at 73, and in a direct line with the points of the styli with which the magazine 41 is supplied. The rotation, therefore, of the said stylus magazine for a distance equal to one tooth of the gear face 42 on the disk B, causes a stylus at each such predetermined rotation of the magazine, to enter the delivery chute 72. From this chute it is discharged into a stylus setter 74 hingedly hung from a pintle 75, which extends through a sleeve 76 provided on a crank arm 77. The crank arm 77 is secured to a shaft 78, the said crank arm being provided with a strap 79, which is provided with a lug 80 for purposes to be more fully hereinafter set forth. The said shaft 78 extends through a sleeve 81, which is fixedly secured to a boss 82,

made integral with the carriage. This shaft 78 has mounted on one end of the same a mutilated pinion 83, being provided for a portion only of its peripheral circumference with teeth. This pinion 83 is in direct line with a rack 84, rigidly fastened to the trackway 48, and arranged to remain stationary during the movement of the carriage 46, which movement, as the rack engages the pinion, causes the shaft 78 to revolve and at the same time carry with it the stylus setter carried thereby, which stylus setter, describing the arc of a circle, brings the stylus in direct line with the opening in the stylus holder wherein it is thereupon clamped. On the strap 79 is a pivot 85 for pivoting a lever 86, one end of which is designed to extend in the rear of the stylus and the other end of which extends over and in direct line with the lug 80, this said other end being heavier, so that gravity normally holds the said lever in position. The heavier part of this lever has a shoulder 88. The travel of the stylus setter to deliver a fresh stylus into the stylus holder in the sound box, causes the lug 80 on the strap of the stylus setter to strike against said shoulder 88 and in this manner to actuate said lever so that it is brought to bear against the rear of the stylus thereby causing it to be released from its frictional hold and to escape from the stylus holder. The said boss 82 has united therewith an arm 89 terminating in a pivot 90 and also provided with a yoke 91. Pivoted to the pivot 90 is a bell crank lever 92, one arm of which, namely 93, is arranged to extend in operative relation to the resilient jaws of the stylus holder 94, where such stylus holding mechanism is employed; the other end 95 of said bell crank lever 92 extends between the yoke 91 and curves downwardly toward its end as seen at 96, where it terminates in a shelf 99.

On the carriage 48 is pivotally mounted by the pivot 100 a link 101, provided with an adjustable set screw 102 and with an abrupt shoulder portion 103, shown in dotted lines in Fig. 10. This shouldered portion 103 is normally in engagement with the extremity of the arm 95 of the lever 92 so that the movement of the carriage relatively to the trackway causes said arm 95 of the lever 92 to turn on its pivot 90 and thereby exert pressure against the jaws of the stylus holder, thus relieving the tension and allowing the stylus to fall. The continued elevation of the trackway carrying with it the bell crank lever 92 carries the link 101 with it until it approaches a horizontal position where the set screw 102 strikes the shelf 99 and removes the pressure of the arm 93 of the bell crank lever 92 from the clamping stylus holder 94 the moment that the stylus is inserted in the stylus holder, thus causing it to be clamped while

at the same time the action of the spring, assuming its normal position; bears against the bell crank lever and resets it preparatory to the next operation.

5 In order to accomplish the setting of the stylus in the stylus holder, an upward movement of the trackway relatively to the carriage is necessary. Upon the return movement of the carriage relative to the trackway, the weighted lever 71 strikes against an abutment 104 whereby the magazine is caused to travel a distance equal to one tooth of the annular gear face 42 provided on the disk B.

15 The mechanism thus far described, which relates to the means for releasing a used stylus, is applicable to such machines known as the Columbia and Victor talking machine, in which resilient means, specifically a spring, are employed to clamp the stylus in place, and to all sound boxes employing a lever to clamp the stylus.

In order to render the replenishing mechanism susceptible of use with machines known as the zonophone or Victor with sound boxes employing a screw to clamp the stylus, we have made the following provision: On the chute 72, is a shelf 105 made integral with a socket 106 arranged to be detachably fitted over the end of the chute 72, and to be secured in place by screw 107. 109 designates a funnel or guide arranged to frictionally engage the end of the stylus holder 108. Said funnel is provided with an orifice 111 which when in place registers exactly with the opening in the stylus holder 108. It is also provided with a curved face 110 at the center of the curvature of which is the aforesaid opening or orifice 111 through which the stylus is arranged to extend. This curved face is designed to prevent the stylus from missing the opening in the funnel when the stylus setter traverses the distance from the chute end to the stylus holder. The new stylus, when by reason of any defective adjustment of the stylus setter, strikes against the curved face, and is caused in this manner to enter the orifice or opening 111 of the curved face 110. Extending through the stylus holder 108 is a screw threaded shank 112 provided with a shoulder 113 arranged to bear against the stylus holder 108. Around this shoulder portion is coiled a spring 114 one end of which is fixed to said shoulder 113, and the other end of which is fixed to the stylus holder 108. A toothed wheel 115 is integrally united with the shoulder-portion 113. This shoulder portion is provided for the purpose of permitting the screw threaded shank to rotate but for a limited extent when the stylus holder is not supplied with a stylus, which limited rotation however is sufficient to clamp an inverted stylus. Adapted to be thrown into engagement with

said toothed wheel 115 is a rack 116, made a part of an inverted U-shaped member 117, which is pivotally mounted on an arm 118, removably fitting into an opening 119 provided in the rack 84 of the carriage. The 70 time 120 of the inverted U-shaped member 117 has an adjusting screw 121, which upon the operation of the carriage relative to the trackway strikes against the shelf 105, thereby causing the rack 116 to engage the toothed wheel 115 for a predetermined 75 period sufficient to actuate the toothed wheel to release the used stylus and allow a fresh stylus to be inserted, whereupon the adjusting screw clearing the shelf 105 causes the immediate disengagement of the rack with the toothed wheel 115, which by reason of the spring clamps the new stylus in the stylus holder. 80

What we claim is:

1. In a stylus replenishing device for talking machines, etc., a carriage attachable to a movable part of such machine, a trackway attachable to a stationary part of such machine, and mutually cooperating means carried by each such mechanism for inserting a stylus in the stylus holder of a sound box. 85 90

2. In a stylus replenishing mechanism for talking machines, etc., movable mechanism, stationary mechanism, a stylus setter, a pinion on said stylus setter, and means carried and operable by the relative movement of such mechanisms for operating said stylus setter to release a used stylus and insert another. 95 100

3. In a stylus replenishing mechanism for talking machines, etc., movable mechanism provided with a magazine, stationary mechanism, means carried and operable by the movement of one mechanism relatively to the other for releasing a used stylus from the sound box and inserting another, and means carried by said stationary mechanism for actuating said magazine. 105

4. In a stylus replenishing device for talking machines, etc., movable mechanism provided with a stylus magazine, stationary mechanism, provided with means for imparting motion to said magazine, a stylus setter on said stationary mechanism, arranged to be operated by the movement of the said movable mechanism relative to said stationary mechanism, and means to hold said stylus setter inoperative during the movement of said movable mechanism relative to said stationary mechanism. 110 115 120

5. A sound box support, a carriage stationary relatively to said support, a trackway movable relatively to said carriage and with said sound box support, and means connected with said carriage and trackway respectively, mutually cooperating to release a used stylus from the sound box and insert another. 125

6. In a stylus replenishing device for talk- 130

ing machines, etc., mechanism attachable to a movable part of such machine, said mechanism being provided with a stylus magazine, mechanism attachable to a stationary part of such machine and provided with a stylus setter, means carried by said stationary mechanism to actuate said stylus setter and to release a used stylus from the sound box and insert another in the sound box, and means operable for the movement of said movable mechanism for actuating said magazine to discharge a fresh stylus therefrom.

7. In a stylus replenishing device for talking machines, etc., the combination with a trackway, adapted to be attached to a stationary part of a talking machine, a stylus setter on said trackway, a carriage carried by said trackway and operable relatively thereto, a magazine on said carriage, means for operating said stylus setter to feed a fresh stylus to the sound box, means carried by said carriage for releasing a used stylus from the sound box, and means carried by said trackway and operable by the movement of said trackway relatively to said carriage for actuating said magazine.

8. In a stylus replenishing device for talking machines, etc., the combination with a trackway, of means on said trackway for feeding a fresh stylus to the sound box of a talking machine, a carriage operable on said trackway, a magazine on said carriage, and means for actuating said feeding means.

9. In a stylus replenishing device for talking machines, etc., the combination with a trackway and a support therefor, of a stylus setter on said trackway, a carriage operable on and relatively to said trackway, a magazine on said carriage and means operable by the movement of said carriage relatively to said trackway for actuating said stylus setter.

10. In a stylus replenishing device for talking machines, etc., the combination with a trackway and a rigid support therefor, of a stylus setter on said trackway, a carriage on said trackway, and means carried by and operable by the movement of said carriage relative to said trackway for actuating said stylus setter to set a fresh stylus in the sound box.

11. In a stylus replenishing device for talking machines, etc., the combination with a trackway and a support therefor, of a stylus setter on said trackway provided with a pinion, a carriage on said trackway, a magazine on said carriage, means carried by said carriage for actuating said pinion to cause said stylus setter to set a stylus in the sound box and means actuable by the movement of said carriage relatively to said trackway for releasing a used stylus from the sound box.

12. In a stylus replenishing device for talking machines, etc., the combination with

a trackway, and a support therefor, of a stylus setter and a stylus releasing mechanism on said trackway, a carriage operable on said trackway, a magazine on said carriage, means operable by the movement of said carriage in one direction to release a used stylus from the sound box, and insert a new stylus, and means controllable by the movement of said carriage in another direction to deliver a stylus in said stylus setter.

13. A trackway provided with a stylus setter, a carriage operable on said trackway, means carried by said carriage to actuate said stylus setter to release a used stylus and insert another, and a magazine carried by said carriage.

14. A stationary element, a stylus setter carried by said stationary element, a pinion on said stylus setter, a movable element, means carried by said movable element to engage said pinion and actuate said stylus setter, and means operable by the relative movement of said stationary element and said movable element to release a used stylus and insert another.

15. In a talking machine, the combination with a stylus setter, of means positively engaging the stylus to dislodge it from the sound box, and means to actuate both said setting mechanism and said dislodging means.

16. In a talking machine, the combination of a stylus releasing mechanism, a mechanism positively engaging the stylus to dislodge the same, a stylus setting mechanism, means for supplying a stylus to said stylus setting mechanism, and means for actuating said stylus supplying mechanism.

17. In a talking machine, the combination of a mechanism positively engaging the stylus to dislodge the same, a stylus setting mechanism, a supply for the setting mechanism, and means for successively operating said mechanisms.

18. In a talking machine, the combination with a sound box, a carrier therefor and a support for said carrier, of a trackway, means for adjustably mounting said trackway on said support, a stylus setter on said trackway, a pinion for operating said stylus setter, a carriage mounted on said carrier, a stylus magazine on said carriage, means carried by said carriage to engage said pinion for actuating said stylus setter, means actuable by the movement of said carriage relatively to said trackway for operating said stylus magazine to deliver a fresh stylus to said stylus holder, and mechanism periodically operable for releasing a used stylus and clamping another.

19. In a stylus replenishing device for talking machines, etc., the combination with a trackway, and an adjustable support therefor, of a stylus setter on said trackway, a pinion connected with said stylus setter, a

stylus releasing lever on said trackway, a carriage on said trackway, a stylus magazine on said carriage, means carried and operable by the movement of said carriage relative to said trackway, for operating said stylus releasing lever for rotating said pinion to actuate said stylus setter, and means for rotating said magazine.

20. In a stylus replenishing device for talking machines, etc., the combination with a sound box, having a stylus holder, and a carrier therefor, of mechanism attachable to a stationary part of such machine provided with a stylus releasing and setting mechanism, mechanism attachable to a mov-

able part of such machine provided with a stylus magazine, and means actuable by the movement of said movable mechanism in one direction for operating said stylus releasing and setting mechanism, and in the opposite direction for actuating said stylus magazine.

In testimony whereof we affix our signatures, in presence of two subscribing witnesses.

GUADALUPE BUELNA.

ARTHUR EDWARD BURSON.

Witnesses:

J. H. BURSON,

IDA M. BAGLEY.