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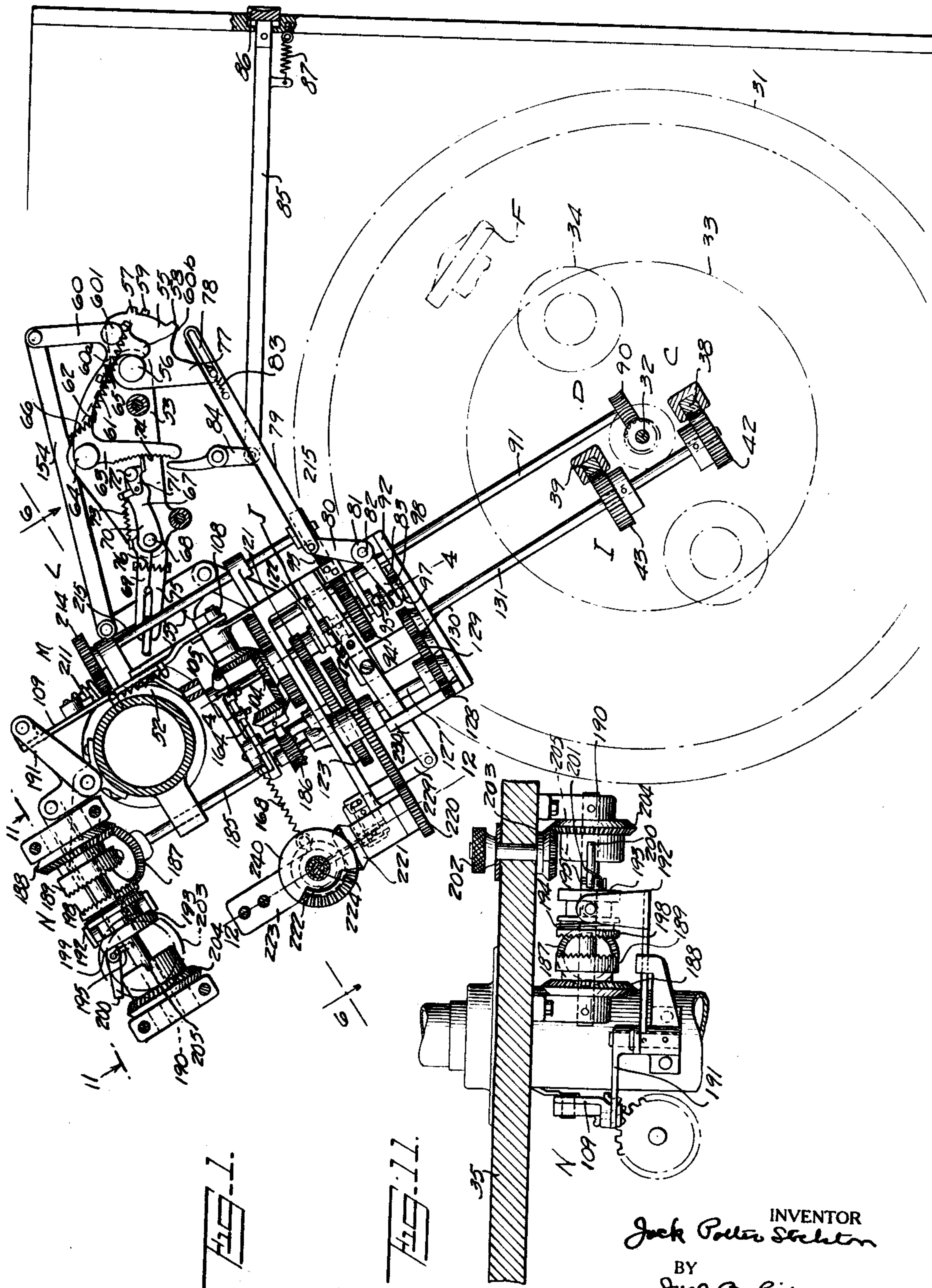
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1,873,358

PHONOGRAPH

Filed March 18, 1927

11 Sheets-Sheet 1



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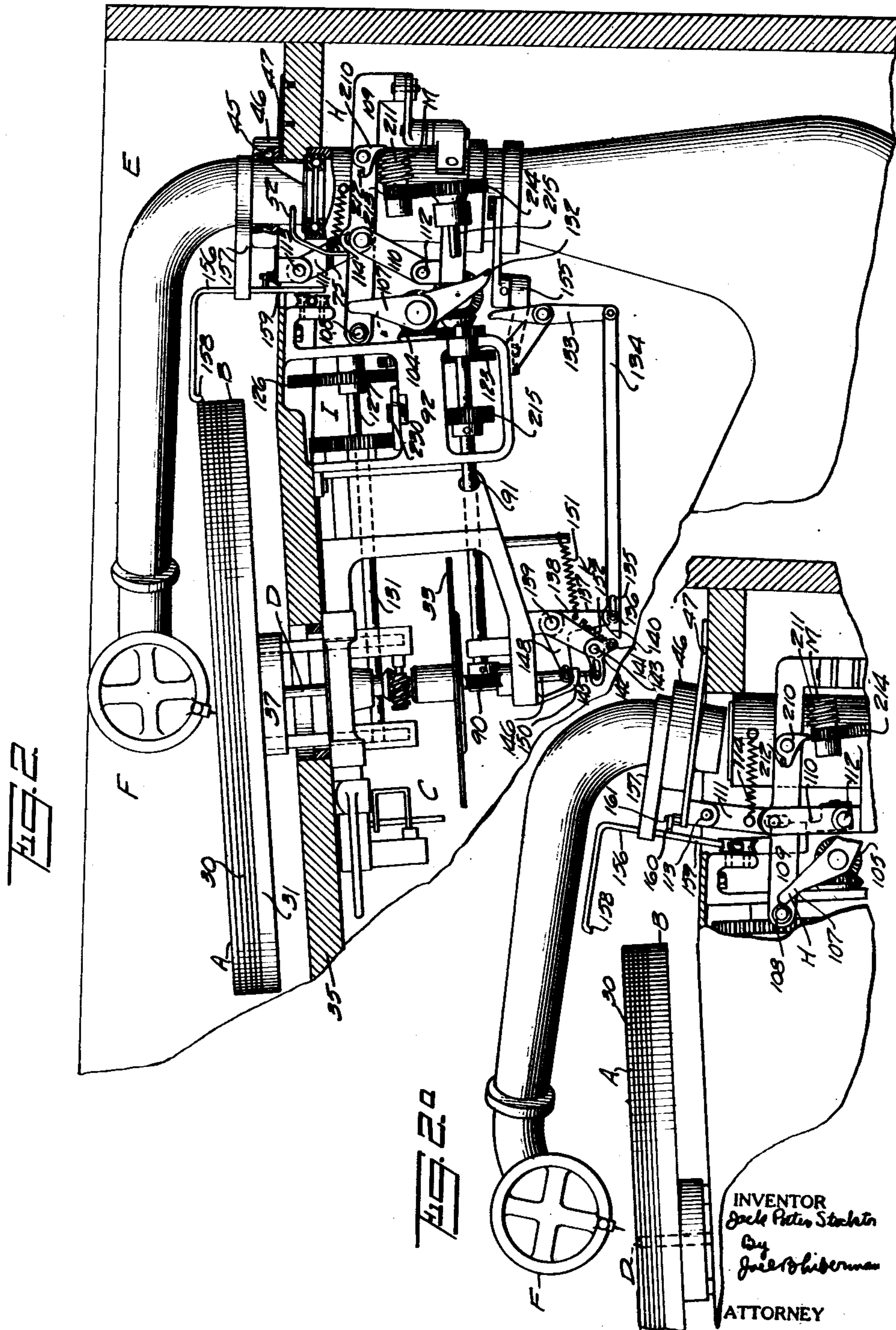
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PHONOGRAPH

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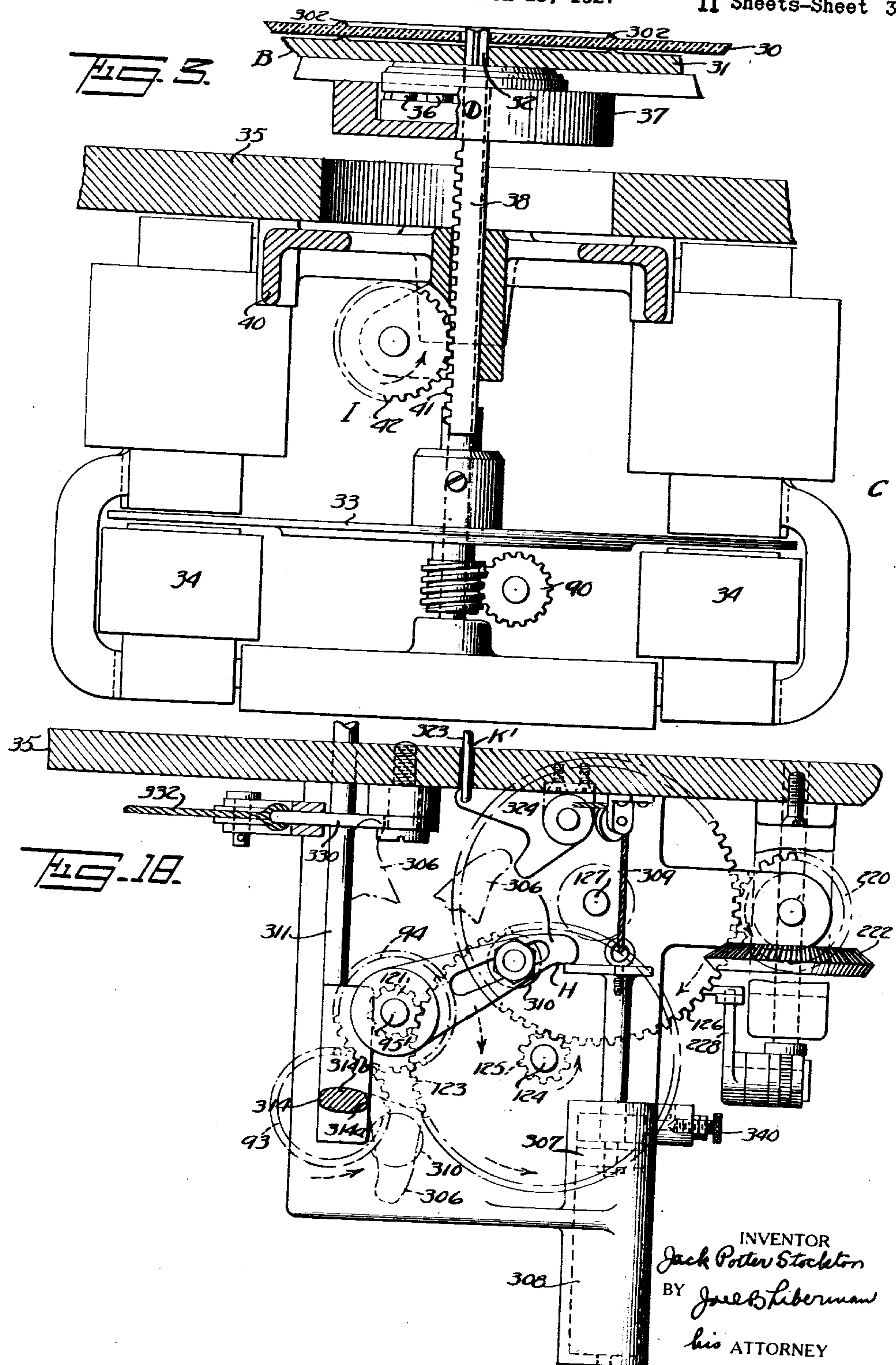
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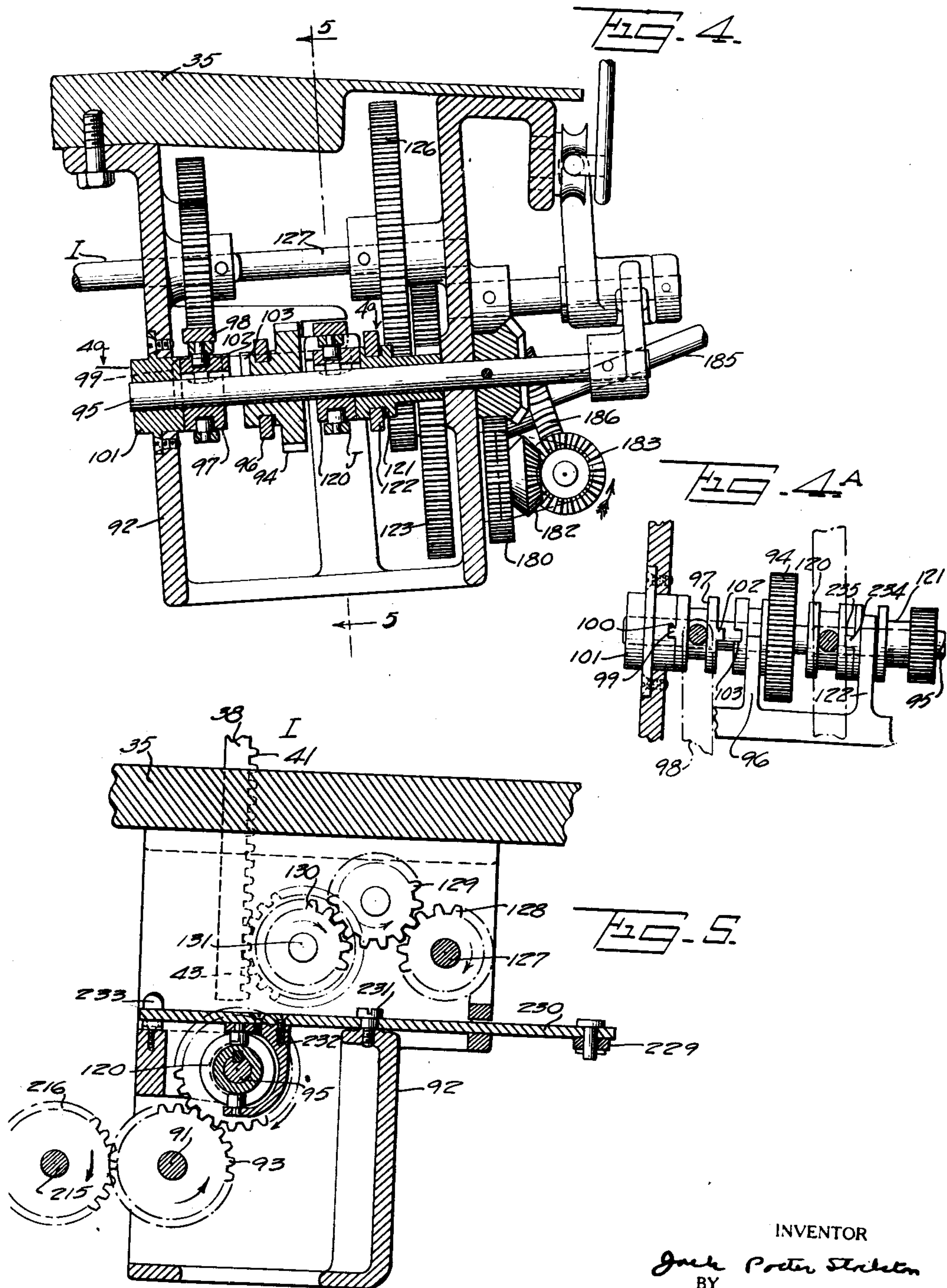
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PHONOGRAPH

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11 Sheets-Sheet 4



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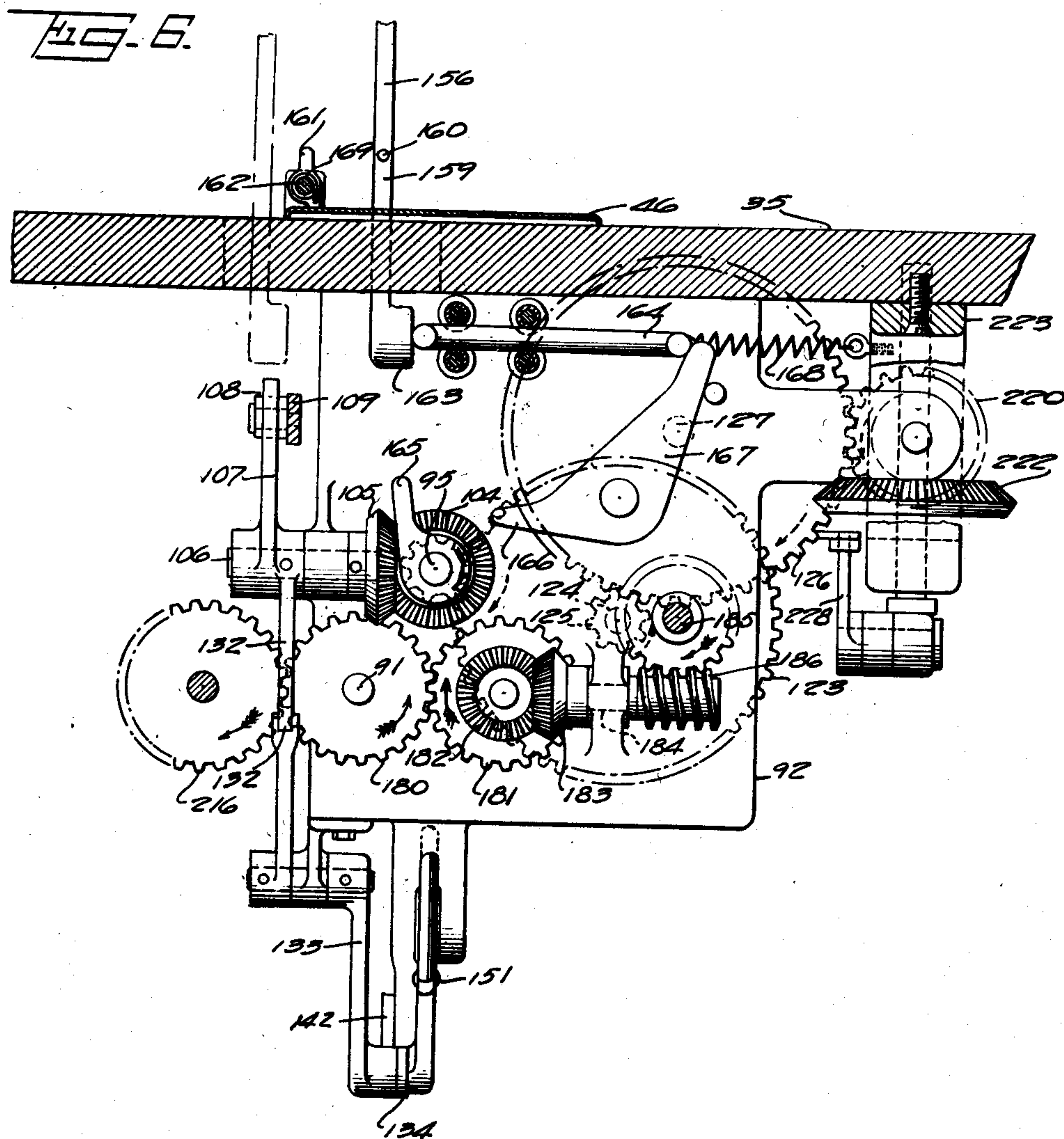
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PHONOGRAPH

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11 Sheets-Sheet 5



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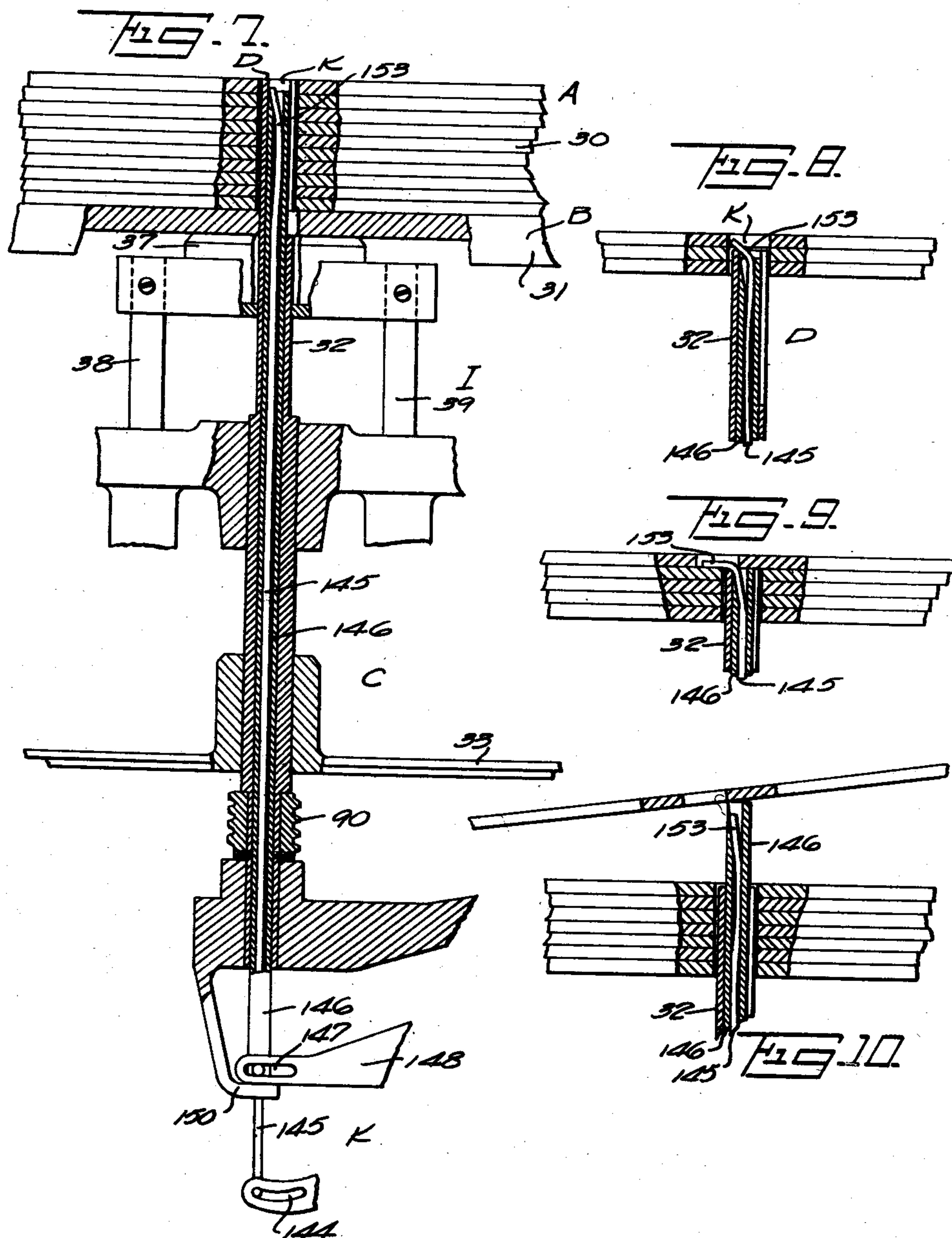
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PHONOGRAPH

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11 Sheets-Sheet 6

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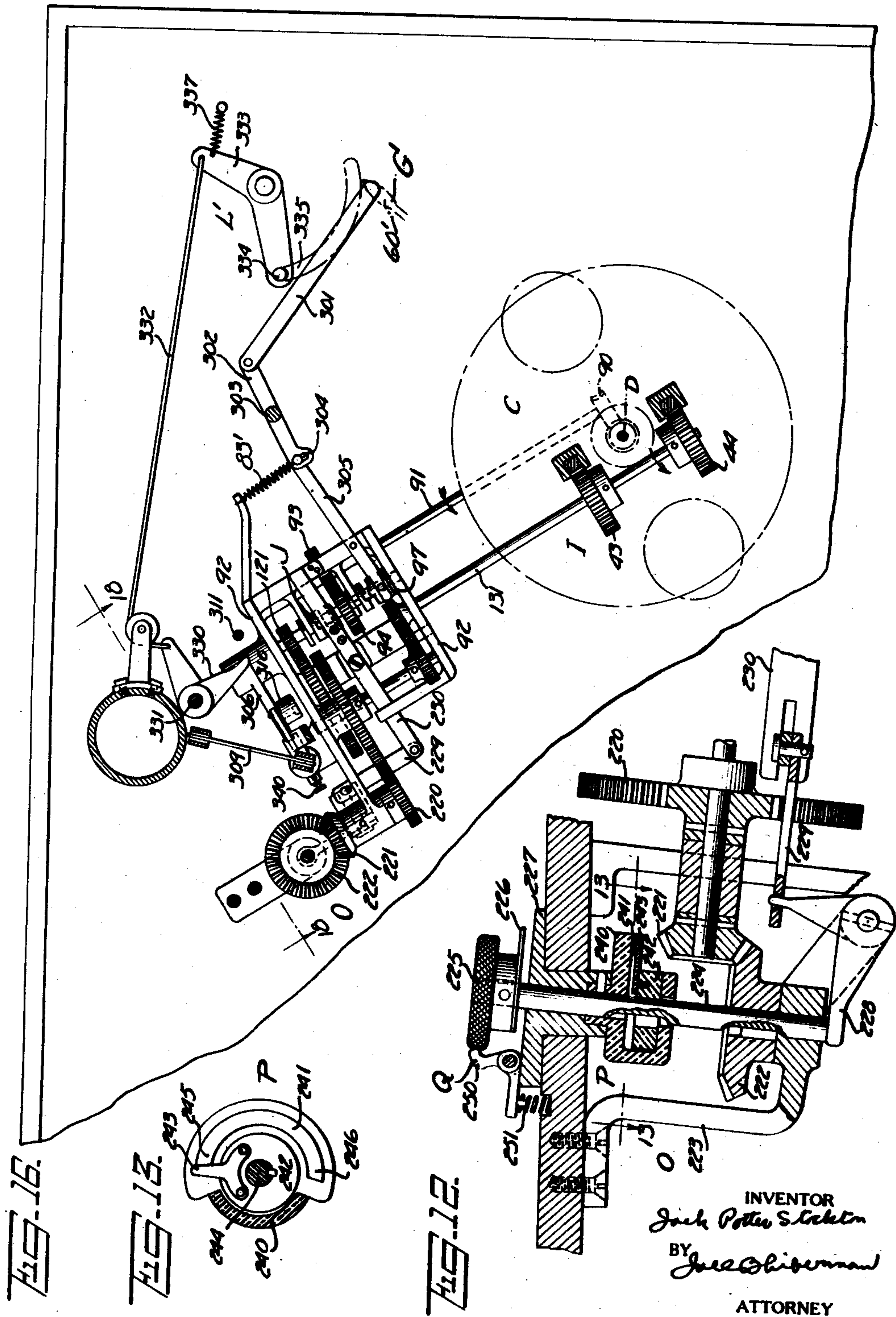
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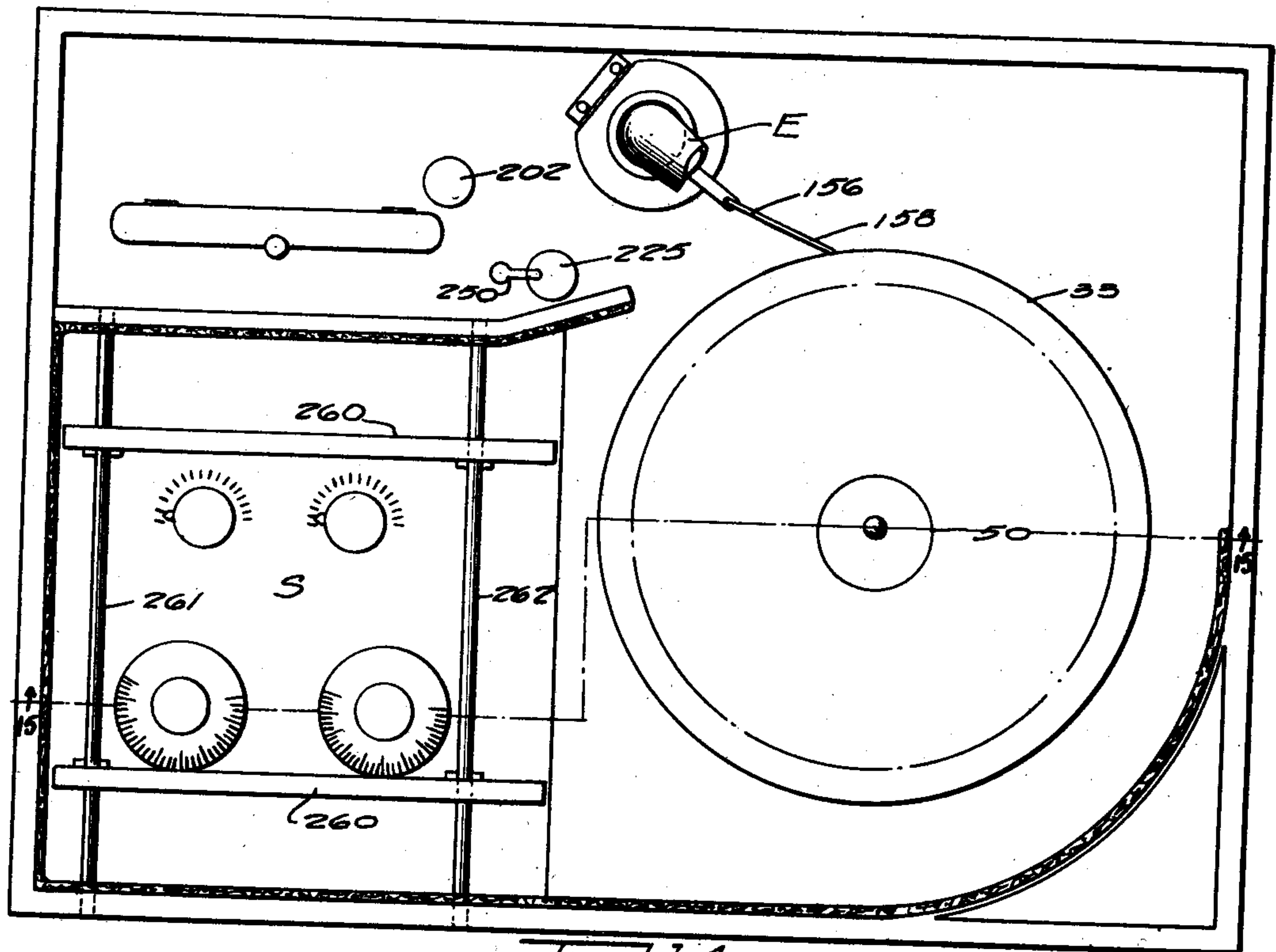


FIG. 14.

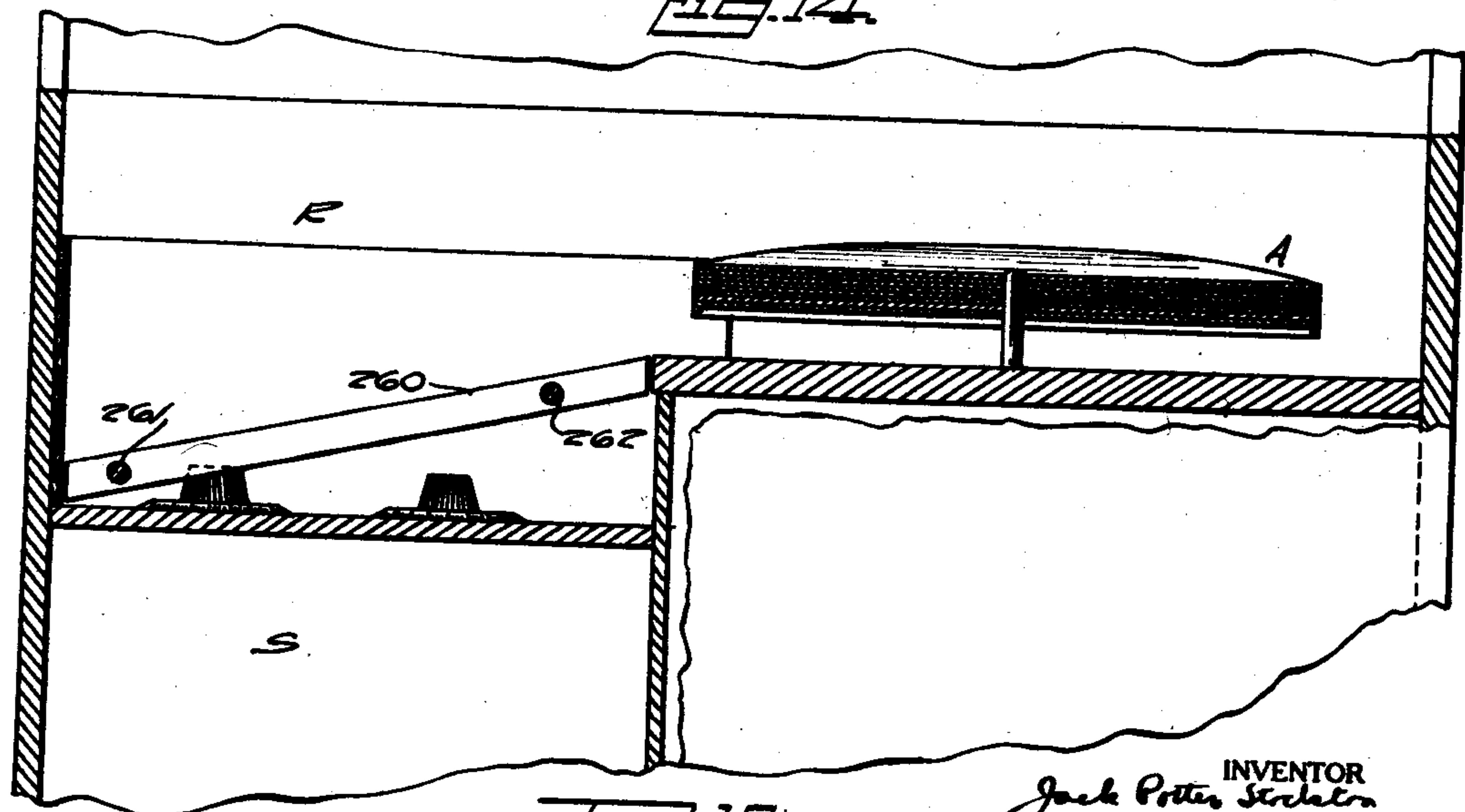


FIG. 15.

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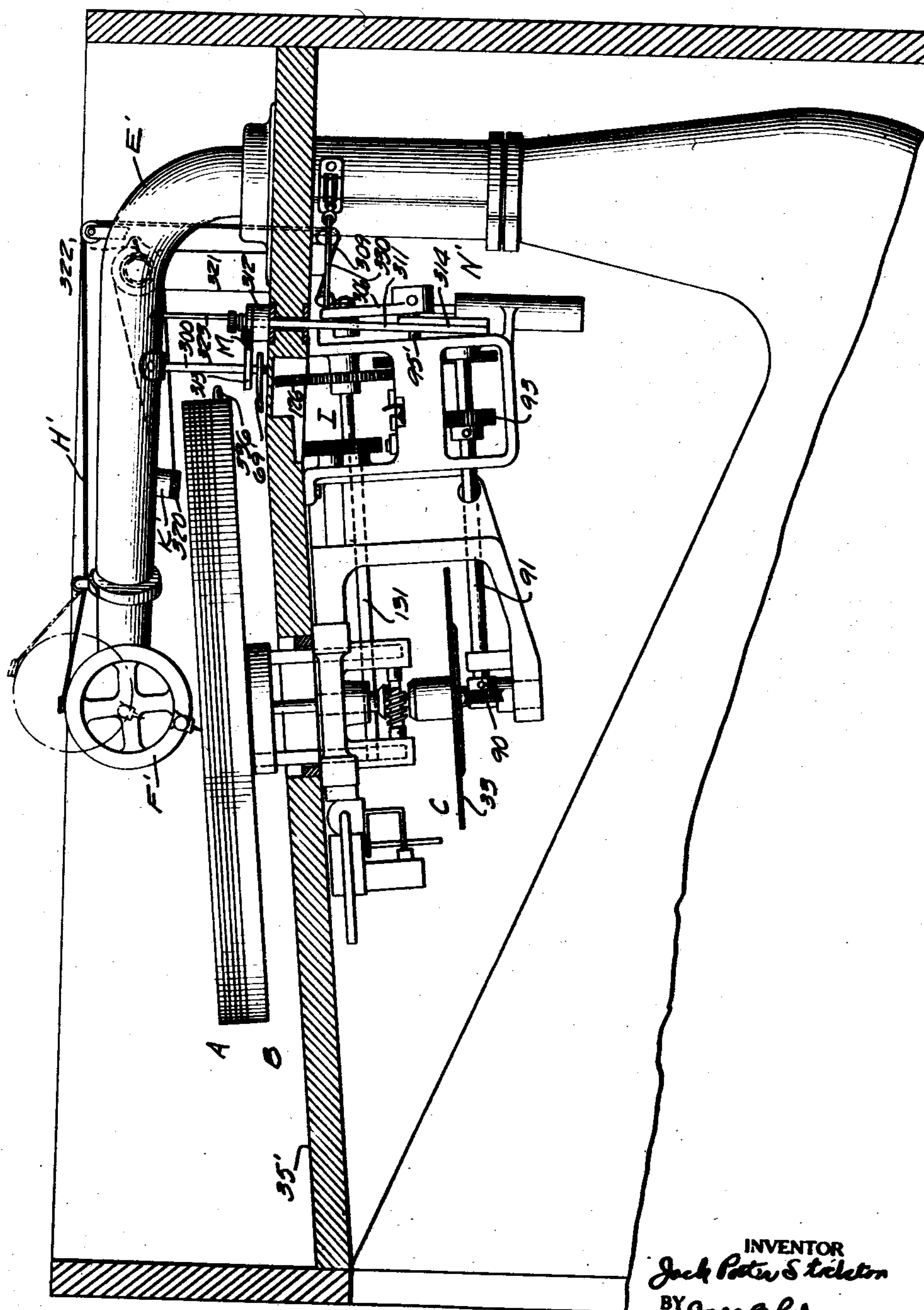
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Fig. 17.



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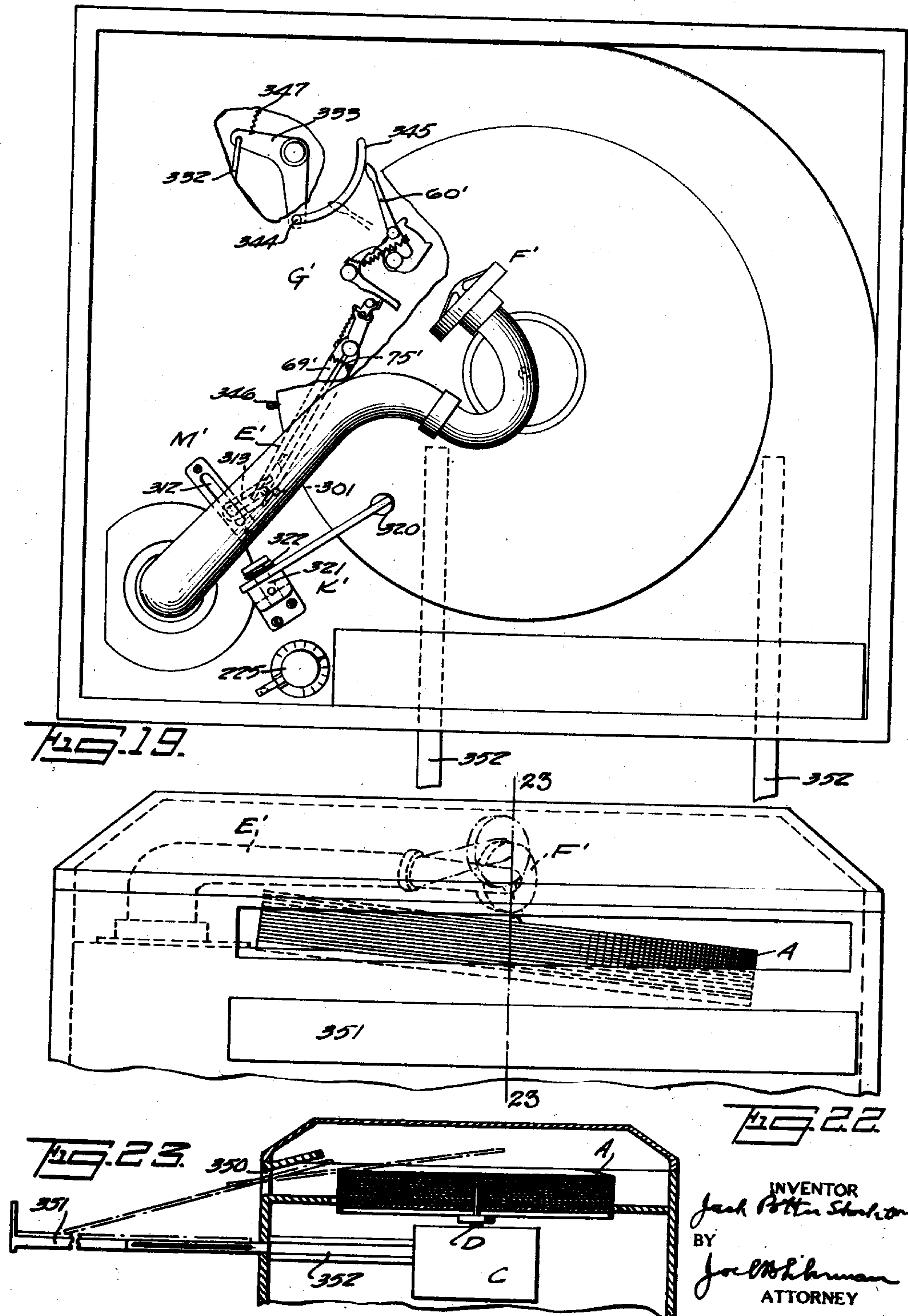
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Fig. 20.

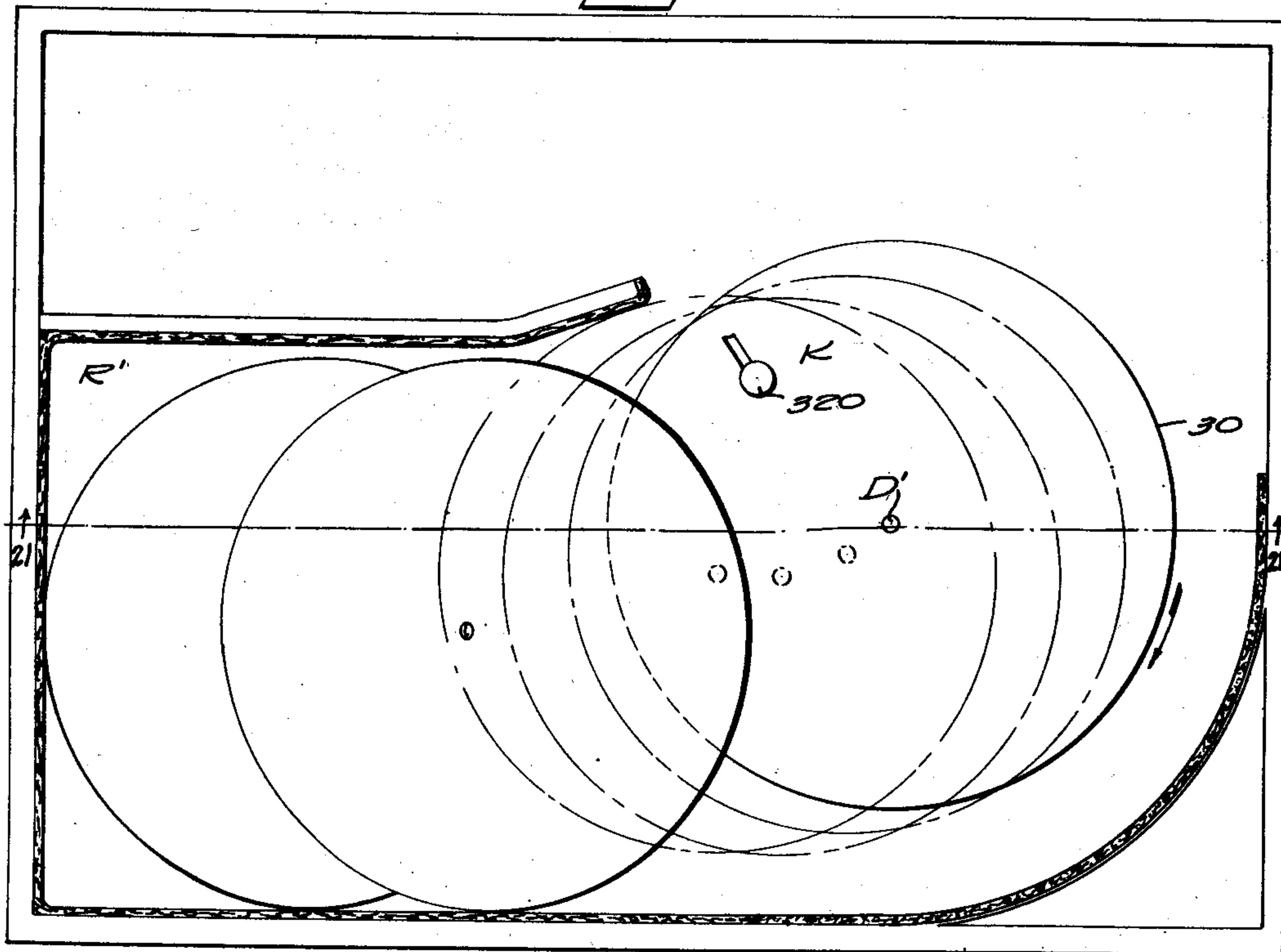
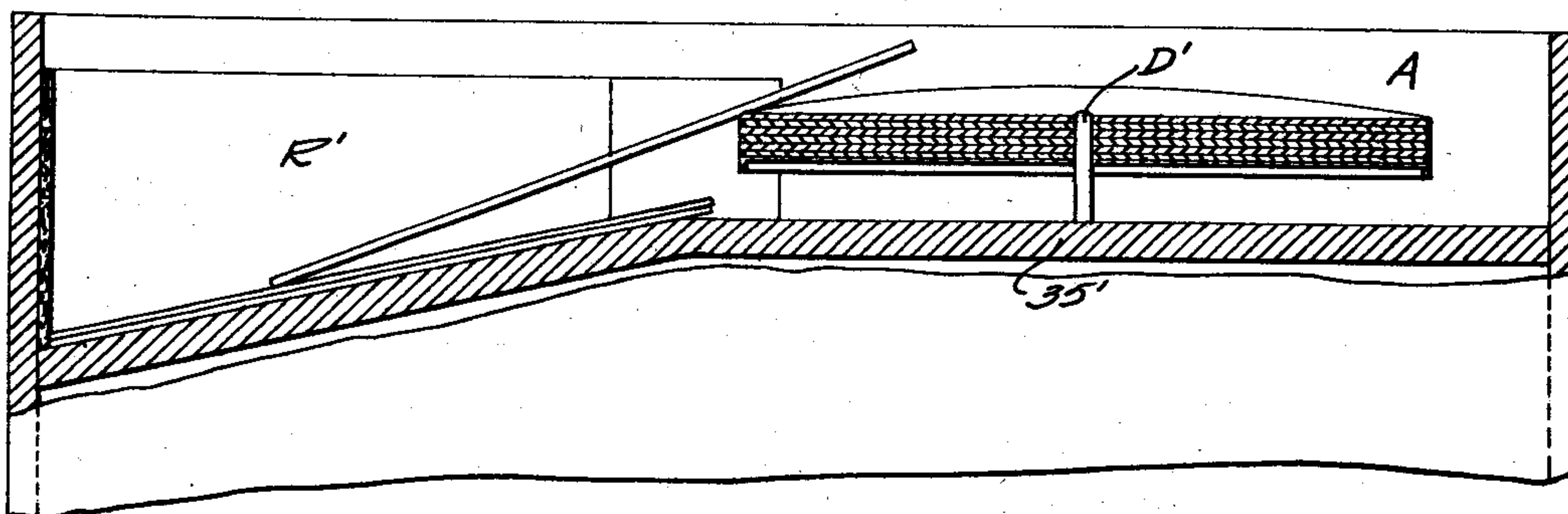


Fig. 21.



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UNITED STATES PATENT OFFICE

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PHONOGRAPH

Application filed March 18, 1927. Serial No. 176,432.

The present invention relates to phonographs and is more particularly directed toward the provision of a phonograph or talking machine having suitable devices for automatically playing a series of records one after another, or a single record a number of times, the instrument being preferably so arranged that a single adjusting device may be utilized for controlling the playing of the series of records, or the single record, or repeating the playing of a desired record in the series.

According to the present invention, the repeating phonograph is characterized by a rotatable playing platform provided with a suitable centering means, such as a pin, for holding the records on the center of the platform, and the phonograph is free of obstruction above the playing platform which might interfere with placing a series of records on the platform or removing them. This provides an instrument wherein the records may be handled without removing obstructing mechanism.

The present invention contemplates an automatically repeating phonograph wherein the desired records are stacked on top of one another on a rotatable playing platform having a central pin and preferably slightly tilted; and the platform is continuously driven while the instrument is in operation while playing the records in the stack. According to the present invention, the uppermost record is played in the same manner that one plays an ordinary non-repeating phonograph. It is, however, unnecessary to stop the platform and records before the next record is played, or the same record replayed.

According to the preferred construction, the reproducer is raised or lifted from the record while the record is still rotating, and the record is then disengaged from the center pin, as for example, by changing the relation between the playing platform and the central pin the thickness of one record after the record is disengaged from the pin, it is then caused in any suitable manner to change, for an instant, the center about which it is rotating, thereby shifting the center of the record laterally from the center of rotation

of the platform. This record, while still rotating is resting on top of the rotating support and being off center is quickly removed and then rolls or whirls into a storage magazine or chamber. The utilization of the kinetic energy in the rotating record for accomplishing the removal of the record, is an important factor in the operation of the present repeating phonograph when successively playing records.

The invention also contemplates suitable time control devices such as an adjustable mechanism operating with the phonograph driving motor, or a dash pot, for predetermining the time that the reproducer is held out of playing position. In this manner one is able to vary the intermission between the playing of records from a few seconds to a long interval.

The invention also contemplates the provision of a phonograph of the above type in which substantially all the operating mechanism for effecting repeat operation is concealed underneath the table of the phonograph, thereby leaving the top of the table and record platform unobstructed by a storage magazine for the records to be played or devices for moving the records to and from the playing platform. By so constructing the instrument, one is enabled to place the controls in a convenient position, do away with unsightly cumbersome mechanisms and leave the top of the phonograph open and suitable for playing records singly in the ordinary manner, or for the manipulation of a radio receiving set placed in the same cabinet.

In accomplishing the foregoing, one may use a sound box (with or without a goose neck) mounted on the tone arm in the usual manner. The tone arm is hinged about a horizontal axis at the throat, and mechanism underneath the table is connected with the tone arm near the throat so as to bodily raise the tone arm and reproducer to remove the needle from the record and hold it elevated until the next record is ready to be played and the time control mechanism above referred to has functioned to lower it to playing position.

A still further object of the invention is the provision of a single control element, such as a shaft, which is set into operation when the playing of a record has been completed to control the sequence of operation of the various mechanisms by which the played record is removed and the playing of the succeeding record begun.

While the foregoing has more specially referred to the playing of a series of records one after another, it is, of course, to be understood that the invention also contemplates that the same instrument is capable of repeatedly playing a single record a desired number of times with the desired intermission between records.

The accompanying drawings show, for purposes of illustrating the invention, two of the many possible embodiments in which the present invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a top plan view of one embodiment of operating mechanism for the automatic phonograph, the parts being shown in the playing position;

Figure 2 is a side elevational view of the phonograph of Figure 1, with the parts shown in playing position, certain parts being shown in section, and other parts omitted for the sake of clearness;

Figure 2a is a fragmentary elevational view taken in the same direction as Figure 2 and showing the parts in position after the tone arm has been raised;

Figure 3 is a vertical sectional view through the motor and rotating platform showing the rack and pinion for elevating the platform;

Figure 4 is a vertical sectional view on the line 4—4 of Figure 1, showing the control shaft and parts carried thereby;

Figure 4a is a fragmentary elevational view taken in the direction of the arrow 4a of Figure 4 and showing the clutches and gears carried on the control shaft;

Figure 5 is a sectional view taken through the gear box on the line 5—5 of Figure 4 and in the direction of the arrows;

Figure 6 is a view taken along the lines 6—6 of Figure 1 looking in the direction of the arrows;

Figure 7 is a vertical sectional view through the centering pin and record removal mechanism in playing position;

Figures 8, 9 and 10 are fragmentary views of the upper part of the mechanism shown in Figure 7 showing these parts in different positions;

Figure 11 is an elevational view taken in the direction of the arrow 11 of Figure 1 and illustrating the variable time control mechanism

for predetermining the interval between the records;

Figure 12 is a sectional view taken on the line 12—12 of Figure 1 and showing the mechanism for presetting the rotating platform;

Figure 13 is a sectional view taken on the line 13—13 of Figure 12 and showing the automatic switch for opening the motor circuit after the last record of the series has been discarded from the platform;

Figure 14 is a top plan view of a combined radio receiving set and phonograph;

Figure 15 is a diagrammatic sectional view taken on the line 15—15 of Figure 14;

Figure 16 is a top plan view similar to Figure 1 and showing a modified embodiment of the automatic phonograph;

Figure 17 is a side elevational view of the phonograph of Figure 16 with parts shown in playing position, certain parts being in section and others omitted for the sake of clearness;

Figure 18 is a view taken in the direction of the arrows 18—18 of Figure 16;

Figure 19 is a top plan view of a phonograph employing the mechanism shown in Figure 16, with parts broken away to show the automatic trip and resetting mechanism;

Figure 20 is a diagrammatic plan view illustrating the removal of a record from the rotating platform;

Figure 21 is a fragmentary sectional view taken on the line 21—21 of Figure 20;

Figure 22 is a side view of an automatic phonograph wherein the played records are discharged into a receptacle at the side of the cabinet and

Figure 23 is a sectional view on the line 23—23 of Figure 22.

As previously indicated, the phonograph to be described in detail herein is one in which it is possible to either play a series or group of records up to the capacity of the machine, one after the other, or to repeat the playing of a selected record a predetermined number of times under the control of a dually functioning mechanism which may be set manually. It is also possible according to the present construction to have the phonograph repeat a record several times and then play the remaining records successively. It is also possible to so set the control mechanism that the phonograph will play a single record indefinitely. All of these functions are carried out by the same mechanism depending upon the number of records placed on the playing platform and the setting of a single control device. To carry out the foregoing operations, the phonograph is provided with a number of mechanisms. The mechanisms employed in the normal operation of the phonograph by which a series or group of records is played

successively will first be referred to in general and then described in detail.

The series or group of records A is placed on a rotating playing platform B which may be driven in any suitable manner from a motor C. The records are held in place by centering means such as a pin D while the relative elevation of the platform and centering means may be adjusted so as to hold all of the records of the group or any lesser number. The motor and playing platform are preferably tilted slightly to facilitate record removal. A swinging reproducer support such as a tone arm E carries a conventional reproducer F of the sound box type, or an electrical pick up. The arm E is mounted so that the reproducer may cooperate with the playing surface of the record in the ordinary manner. The motor C is provided with a suitable speed governing mechanism, and also preferably operates all the mechanisms for effecting the above operations automatically depending upon the presetting of the control mechanism. This motor driven mechanism includes a shaft and associated apparatus which is automatically set into operation after the completion of the playing of a record for carrying out the desired cycle of operations whereby the records are played successively. This apparatus is normally disconnected from the motor drive and is idle except during the interval between the playing of the records.

In the embodiment of the invention shown in Figures 1 to 15; inclusive, the means for automatically setting this apparatus into operation after the completion of the playing of a record is in the form of an automatic trip G which may be actuated by the movement of the tone arm brought about by eccentric grooves in the record to clutch a motor driven shaft to the apparatus for carrying out the cycle of operations. This apparatus includes a tone arm elevating device, designated generally by the letter "H"; a platform elevating mechanism, designated generally by the letter "I", and normally operably connected by a clutch J; mechanism for effecting the removal of the top record from the rotating playing platform, designated generally by the letter "K"; mechanism, designated generally by the letter "L", for resetting the automatic trip G so that it will again function and also preferably resetting the clutch control to open the clutch at the proper time; mechanism M for returning the reproducer support or tone arm to the initial position above the next record; and an adjustable time control mechanism N, preferably set into operation by the tone arm lifting mechanism H and actuated directly from the phonograph motor C, which acts as a clock, whereby the lowering of the tone arm is delayed and the interval between

records is controlled. There is also interconnected with the platform elevating mechanism I, a presetting mechanism O for placing the platform at the desired height to accommodate the desired number of records. This presetting mechanism is so arranged that it moves with the playing platform as the records are discarded and the presetting mechanism O is preferably provided with an automatic switch P which will open the motor circuit after the last record has been played.

In order to permit the repeat playing of a record as distinguished from the successive playing of records of a series or group, the presetting mechanism O is so arranged that the mere setting of this mechanism to a desired position predetermines the number of times the record is played before it is discarded from the playing platform and the automatic switch P opened. When one desires to play the same record an indefinite number of times a locking mechanism Q associated with the presetting mechanism O may be actuated to disconnect the clutch J whereby the platform elevating mechanism I is disabled without affecting the operation of any of the other apparatus.

A number of phonograph records 30, making up the series or group A, is placed on a rotatable playing platform 31 which is keyed to a centering pin 32. This pin is drivingly connected to the motor C which, as here shown, has a rotating disk 33 driven from stationary pole pieces 34. The motor C is mounted in any convenient manner underneath the top or table 35 of the phonograph and the table and motor are preferably slightly tilted as indicated in Figure 2.

The playing platform 31 is rotatably carried on a ball bearing 36 mounted in a bearing supporting member 37. This bearing supporting member is provided with two downwardly extending supporting rods 38 and 39 which are slidably mounted in a casting 40 preferably rigidly attached to the motor C. The rods 38 and 39 are each provided with rack teeth as indicated at 41 which mesh with gears 42 and 43 connected to the platform elevating mechanism I above referred to, by means of which the platform may be moved relative to the centering means or pin 32.

The tone arm E, carrying the reproducer F on a goose neck, if desired, is mounted on ball bearings 45 supported in a cage 46 so that it may swing over the record in the usual manner. As shown in Figures 2 and 2a, the cage 46 is hinged or pivoted at 47 behind the throat of the tone arm so that it may be swung bodily upward about this axis to raise the reproducer off the record. The swinging tone arm E carries a finger which is moved with the tone arm as it plays over the record and is raised off the record.

This finger actuates the automatic trip mechanism.

The automatic trip and clutch

5 The automatic trip mechanism G shown herein is one which is designed to be actuated by the movement of the tone arm away from the centering pin, which movement is brought about by eccentrically located
10 grooves 50 (see Figure 14) into which the stylus on the reproducer passes after the sound record has been played. This movement of the tone arm will cause the arm 52 to swing a slight amount in a counter clockwise direction after the record has been
15 played.

This automatic trip mechanism is mounted on a supporting plate 53 carried in any convenient manner, preferably underneath the
20 table 35 of the phonograph. A swinging plate 55, pivoted on a post 56 on this supporting plate 53, is provided with prongs 57 and 58 which cooperate with a fixed stop 59 carried by the supporting plate to limit the
25 movement of the pivoted plate 55. A lever 60, pivoted at 601 on the plate 55, is bifurcated as indicated at 60a and 60b to have a limited freedom of movement relative to the pivot post 56, the lever 60 being held normally against the pivot post by a spring 61
30 carried by it and connected to a stationary abutment 62 carried by the supporting plate 53. The swinging plate 56 may be moved to the position shown in the drawings by the arm 60, and is adapted to be held there by
35 means of a bell crank trigger member 63 pivoted at 64 on the supporting plate 53 and having a nose 65 which engages behind the bifurcation 60a on the lever 60, the bell crank being held in this position by a small spring
40 66 also connected to the abutment 62. A swinging lever 67 is pivoted at 68 on the supporting plate 53 and this lever has one arm 69 which extends toward the arm 52 carried by the swinging tone arm and a second arm
45 70 which extends toward the bell crank member 63. The end 70 of this swinging arm is provided with a pawl 71 pivoted at 72 and under the control of a spring 73, and adapted to pass by teeth 74 on the arm of the bell
50 crank 63. An arm 75 is also pivoted about the pivot 68 and extends alongside the arm 69 and is held close to it by a spring 76.

When the stylus on the reproducer is being
55 carried toward the center of the record by the sound grooves, the arm 52 on the tone arm will swing the lever 67 and arm 75 bodily about the pivot 68 and carry the pawl 71 in a counter clockwise direction past the
60 teeth 74 on the bell crank 63. As soon, however, as the stylus is passed by the innermost part of the eccentric groove in the central part of the record, the arm 52 will be caused to move in a counter clockwise direction
65 which will cause the pawl 71 to swing slight-

ly about the pivot 72 and thereby apply pressure to swing the bell crank arm in a counter clockwise direction and release it from the arm 60 and swinging plate 55. These parts may then under the influence of the spring
70 61, swing counter clockwise to bring the projection 58 against the fixed stop 59.

In order to actuate the clutch mechanism, the swinging plate 55 is provided with an arm 77 which has a lost motion pin and slot
75 connection 78 with a link 79 connected to an arm 80 of a bell crank member 81 pivoted at 82 and adapted to be shifted slightly (after the lost motion connection 78 has been taken up) to shift the clutch. During the take up
80 of this lost motion connection, a spring 83 is tensioned for a purpose to be described. The shifting of these parts is adapted to clutch the motor driven shaft, above referred to, to
85 apparatus for carrying out the cycle of operations as above described.

The motor C is provided with a worm wheel drive 90 by which a shaft 91 is continuously rotated at a predetermined speed relative to the turn table or playing platform.
90 This shaft is mounted in the lower part of a gear box 92 and carries a gear 93 in mesh with a gear 94 held in place on a one-revolution control shaft 95 by a yoke 96 carried by the
95 gear box.

A shiftable clutch member 97 slidably keyed on the shaft 95 is connected to the inner arm 98 of the bell crank 81. The member is provided with a projection 99 entering into a recess 100 in the face of the bearing member 101 for the control shaft 95, thereby locking the control shaft and all parts connected to it in a predetermined position. When the clutch is shifted by means of the trip mechanism which actuates the bell crank lever 81,
105 the clutch is freed from the bearing member and a projection 102 on the clutch member 97 enters a recess 103 in the continuously moving gear 94 thereby connecting the one-revolution shaft 95 with the power drive
110 from the motor and setting into operation the parts carried by it.

The automatic trip G is associated with a manually operable device to actuate the trip when desired. A lever 84 near the trigger
115 63 is connected with a push rod 85 extending out through the cabinet and provided with a button 86. When the button is pressed in against the spring 87, the lever 84 engages the trigger 63 to release the automatic trip
120 and cause the clutch to start the one-revolution shaft 95 as though the trip had been actuated by the completion of the playing of a record.

Tone arm elevating

The first operation carried out by the shaft 95 is to raise the reproducer away from the record. The tone arm elevating mechanism H shown for this purpose, includes an op-
130

erating bevel gear 104 mounted on shaft 95 and meshing with a bevel gear 105 mounted on a shaft 106. This shaft carries an arm 107 normally spaced from a roller 108 carried on a slidable member 109 so that the member 109 will be shifted from the position shown in Figure 2 to the position shown in Figure 2a when the arm is rotated. This slidable member 109 is slotted to receive a pin at the knee of a toggle formed by links 110 and 111. The lower link is mounted about a fixed pivot 112 while the upper link 111 is pivoted at 113 to the cage 46 supporting the tone arm, so that the tone arm is raised to the position indicated in Figure 2a when the member 109 is actuated by the arm 107 after which the arm passes by the roller. A spring 114 is connected to the knee of the toggle to be stressed as the tone arm is raised, and mechanism, described in detail in the description of the time control mechanism N, holds the tone arm elevated after the arm 107 has passed by the roller 108. The raising of the tone arm by this mechanism also starts the operation of the time control mechanism N which controls the lowering of the tone arm by the motor.

Platform elevating mechanism

The platform elevating mechanism I is operated from the one-revolution shaft 95 through a second clutch, referred to above as the clutch J, and shown in detail in Figures 4 and 4a, in the form of a sliding member 120 keyed to the shaft and normally engaged with a pinion 121 held on the shaft by a yoke 122 so that the pinion is normally revolved with the control shaft. The pinion 121 meshes with the gear 123 carried on a countershaft 124 while a pinion 125 on the countershaft 124 meshes with a large gear 126 mounted on a shaft 127 carried from the gear box. A gear 128 on the shaft 127 drives a gear 129 which in turn drives a gear 130 carried on a shaft 131, which shaft also carries the gears 42 and 43 in mesh with the racks carried by the platform supporting bearing 37. The gear ratios of the gear train set into operation by the pinion 121 is such that the playing platform is elevated the thickness of a record for each revolution of the one-revolution shaft 95. When the clutches 97 and 120 are in the position indicated in Figures 4 and 4a, the parts are so adjusted that the centering pin is just underneath the playing surface of the record so that the upper end of the pin will not interfere with the lateral removal from the stack of a record which has been played.

The shaft 106 which is operated by the one-revolution shaft 95 through the medium of gears 104 and 105 carries a second arm 132 which is arranged so that it engages the upper end of a lever 133 to move this lever during the latter part of the rotation of the

one-revolution shafts 95 and 106. The lever 133 is connected by a link 134 having a slot 135 cooperative with a pin 136 carried by the arm 137 of a bell crank 138 pivoted at 139 on the frame of the motor C. The end of the link 134 is beveled as indicated at 140 to cooperate with a roller 141 on a bell crank 142 pivoted at 143. This bell crank has a pin and slot connection 144 with an upwardly extending wire 145. This wire passes inside a tubular member 146 which extends up through the center pin 132. The lower end of the tubular member has a pin and slot connection 147 with the arm 148 of the bell crank 138. This bell crank is held against a stop 150 by a spring 151 and the bell crank 142 is held to the right by a spring 152. The upper end 153 of the wire 145 is bent at a sharp angle a short distance below the end, and, when the bell cranks 137 and 142 are in the position indicated in Figures 2 and 7, the wire 145 and tube 146 are a short distance below the upper end of the center tube or pin 32.

After the platform elevating mechanism has functioned to raise the platform, the upper record is above the upper end of the center pin 32 as indicated in Figure 8. The arm 132 on the one-revolution shaft 95 then engages the lever 133 and pushes the link 134 to the left to bring the beveled surface 140 on the link against the roller 141 thereby actuating the bell crank 142 to cause the wire member 145 to move upwardly in the tube 146. The previously bent end of this wire member will, as indicated in Figure 8, tend to move laterally from the center pin and push the upper record sidewise to the position indicated in Figure 9. After the lost motion connection between the pin 136 and slot 135 has been taken up, the bell crank 137 is moved and, through the pin and slot connection 147, has caused the tube 146 to raise up as indicated in Figure 10, thereby raising the center of the record off of the lower record and allow the edge of the record to rest on the next lower record. As the record is now off center and the platform is still rotating, the record will be very quickly rolled off from the rotating platform and discharged into a receptacle R, shown in Figure 15.

Trip resetting mechanism

The trip resetting mechanism L is operated at any convenient time. When the automatic trip G actuates the clutch 97, it also moves a link 154 connected to the lever 60 and through this link a finger 155 is shifted to bring it from the full line position shown in Figure 1 to a position in the path of the arm 107. When the arm 107 engages this finger 155, it swings the links back to the full line position and resets the automatic trip mechanism G to the position shown in full

lines without affecting the tension in the spring 83.

Tone arm return

5 After the tone arm is raised to bring the reproducer away from the record, it is swung to the left to bring the reproducer above the starting position on the next record. The mechanism M for swinging the tone arm is
10 operated from the control shaft 95, and the extent of movement of the tone arm is automatically controlled by a feeler engaged by the upper record on the platform.

The feeler is shown at 156 as being pivoted
15 about a normally vertical axis on an arm 157 carried by the swinging tone arm. The feeler has a finger 158 which extends toward the playing platform and a downwardly extending portion 159 passing through a hole in
20 the top of the phonograph to be in a position to be actuated by mechanism carried near the gear box 92. During the playing of a record, a laterally extending arm 160 on the feeler is carried by the swinging tone arm
25 past a latch 161 pivoted at 162 which latch retards the feeler causing the feeler to be swung in a clockwise direction to bring the finger 158 toward the edge of the upper record. When a 12" record is on the platform,
30 the end of the feeler will be engaged by the record and the movement of the feeler will be limited in this manner. When, however, a 10" record is being played, the finger will swing to a different position. In this manner, the angular position of the lower end 159
35 of the feeler will be varied depending upon the size of the record which is being played. The lower end of this finger, as indicated more clearly in Figure 6, is provided with an
40 enlargement 163 which may be moved into or out of the path of a plunger 164. After the playing of the record has been completed, the feeler 156 will have been moved from the dotted line position of Figure 6 to the full
45 line position to bring the enlargement 163 adjacent the plunger.

After the tone arm elevating mechanism has functioned to raise the tone arm off the record, the one-revolution shaft 95 will bring
50 a finger 165 against the toe 166 of a bell crank 167 the other end of which engages the plunger 164. The movement of the bell crank 167 about its pivot will force the plunger to the left against the tension of the spring 168
55 thereby shifting the feeler mechanism and tone arm to return the tone arm to a position depending upon the angular position of the feeler on its own axis. During this backward movement of the tone arm, the lateral
60 extension 160 on the feeler will engage the latch 162 and will freely pass by the latch which will then be returned to an upright position by a coiled spring 169. The parts are so arranged that the enlargement 163 is only
65 presented in the path of the plunger after

the playing of a 12 inch record thereby causing the tone arm to be swung back a greater distance than would be the case were the enlargement not engaged by the plunger. When the feeler mechanism is twisted to the
70 10 inch position, which occurs during the playing of a 10 inch record, the plunger 164 is moved some distance before swinging the tone arm.

After the one-revolution control shaft 95
75 has actuated the tone arm elevating mechanism, the tone arm return mechanism, the record removal mechanism, and has reset the automatic trip, it is automatically stopped in a predetermined position by the shifting of
80 the clutch member 97 under the influence of spring 83 to disengage the clutch from the driving gear 94 and move the projection 99 into the recess 100 in the bearing member 101.

Time control mechanism

The time control mechanism N is operated through continuously driven mechanism connected with the shaft 91. As shown a spur gear 180 is carried by the shaft 91 and this
90 gear meshes with a second gear 181 which drives a bevel pinion 182 in mesh with a bevel gear 183 carried on the shaft 184. This shaft will therefore rotate continuously while the phonograph motor is in operation, and will
95 actuate a shaft 185 through a worm wheel drive 186. The shaft 185 is connected by means of bevel gears 187 and 188 with a clutch member 189 rotatably mounted on a stationary shaft 190.
100

The horizontal member 109 which is moved by the arm 107 in elevating the tone arm is operably connected to a bell crank 191 pivoted at the rear of the phonograph. This bell crank is connected to a shift yoke 192 which
105 engages a rotatably mounted member 193 carried on the shaft 190. This member 193 is provided with a clutch face 198 which is adapted to engage the slowly driven clutch member 189. The slidable yoke 193 carries
110 a side yoke 199 on which is pivotally mounted a locking dog or finger 200 which is pressed inwardly toward the shaft by a small spring 201. A spring 194 wound around the member 193 and fastened to the member and yoke
115 192 acts on this member to hold it against a stop 195 when the clutch parts 189 and 198 are disconnected.

A setting dial 202 for the time control is suitably placed on the upper part of the instrument as indicated in Figure 11 and this
120 dial is connected to gears 203 and 204, the gear 204 being rotatably carried on the shaft 190 and provided with a notch 205 having an oblique face. These parts permit partially
125 turning the gear 204 to vary the angular position of the notch 205 and locking dog 200.

When the tone arm is being elevated by the tone arm elevating mechanism above referred to, the member 109 will carry a retain-
130

ing dog 210 over a continuously rotating worm 211 and beyond the end of the worm a short distance, as indicated in Figure 2a. The bell crank 191 actuates the yoke 192 to cause the faces of clutch parts 198 and 189 to engage. The movement of the yoke 190 will also carry the locking dog or finger 200 with it, withdrawing it from the hub of the gear 204 and permitting the spring 201 to move it in against shaft 190. This pawl will then engage the face of the hub of the bevel gear 204 and will lock the slidable parts in place thereby holding the toggle in set position and the spring 114 under tension.

The continuously driven clutch member 189 will slowly move the shiftable clutch member 198 with it the yoke and dog 200 causing the end of this dog to move along the face of the gear hub until it has been brought into line with the slot 205. The spring 114 which has been holding the end of locking dog against the gear hub will now cause the nose of this dog to travel outwardly along the beveled surface of slot 205, thereby permitting the yoke 193 to slide along the shaft under the influence of the spring 114. This movement brings the retaining dog 210 against the revolving worm 211, and a stop or abutment 212 prevents further movement of the parts. The separation of the clutch parts 189 and 198 permits the spring 194 to turn the clutch part 198 back against the stop 195 so that the automatic time control mechanism is automatically reset to provide the same interval between succeeding records.

The worm 211 above referred to is continuously driven by a gear 213 in mesh with a gear 214 on a counter shaft 215 which carries a gear 216 in mesh with the gear 93 carried in the shaft 91. The operation of the worm 211 is to feed the retaining dog to the right thereby slowly lowering the tone arm. After the tone arm has been lowered to replace the reproducer on the record, the record will be played in the usual manner until the automatic trip mechanism again starts the apparatus in operation. Should the motor be stopped before lowering of the tone arm is completed, it will be held in elevated position.

The presetting mechanism

The presetting mechanism O, by which the elevation of the playing platform is controlled, is in the form of a gear train interconnected with the gears in the platform elevating mechanism. The gear 126 in the platform elevating gear train is in mesh with a gear 220 which drives a bevel pinion 221 in mesh with a bevel gear 222. The gears 220, 221 and 222 are mounted in a frame 223 conveniently supported underneath the upper back part of the top or table 35 of the phonograph. The gear 222 is keyed to a shaft 224 extending up through the table of the phono-

graph and provided with actuating knob 225 which carries an indicator 226 adapted to be moved over suitable indicia carried on a bearing member or other device 227. The shaft 224 is slidably mounted in its bearings so that it can be pressed downwardly to actuate a bell crank 228 connected to a link 229 which in turn is connected with a lever 230 pivoted at 231 on the gear box 92. The other end of this lever 230 carries the yoke 232 for actuating the shiftable clutch member 120 and tensioning a spring 233.

When the control button 225 is pushed downwardly as above referred to, the clutch member 120 is disengaged from the pinion 121 by being slid along the shaft 95 to separate the projection 234 on the pinion from the recess 235 on the clutch member. This operation disconnects the gear trains from the control shaft 95 and permits one to manually adjust the elevation of the turn table or playing platform by turning the knob 225. As the clutch member 120 and pinion 121 have but one clutching position, it is necessary to actuate the presetting mechanism an amount sufficient to turn the pinion 121 one or more complete revolutions before these clutch parts will be reengaged.

In the ordinary operation of the phonograph for playing records one after the other, the knob is set to an indication representing the number of records to be played, thereby placing the playing platform at such an elevation that the upper end of the center pin 32 is just underneath the upper surface of the top record after the stack of records has been placed on the playing platform. After the playing of each record, the mechanism will automatically pass through the cycle of operations above referred to and will elevate the playing platform the thickness of a record so that the records are discarded one after the other thereby ultimately returning the knob to the zero position.

The automatic switch

The automatic switch P by which the phonograph motor is stopped after the playing of the last record, is shown in Figures 12 and 13. An insulating body 240 is fastened in the bearing member 227 and surrounds the shaft 224. It carries a stationary arc-shaped contact 241 which extends through an arc whose length corresponds with the range of adjustment of the knob 225. A disk 242 of insulating material is keyed to the shaft 224 and is held in place in the insulating body 240 so that the shaft may slide relative to the disk. This disk 242 carries a movable contact 243 which is adapted to cooperate with the fixed contact 241.

The switch is so arranged that when the knob 225 is adjusted to place the playing platform in the lowest position (in which it will receive the largest number of records), the

movable contact 243 is at one end 245 of the fixed contact 241. As above described, the presetting mechanism is moved an amount corresponding to the thickness of a record after the record is played and before it is discarded and hence the movable contact 243 will be caused to sweep over the fixed contact 241 to approach the other end 246 of this fixed contact. The parts are so proportioned that the contact 243 comes to the end of the contact 241 when the platform elevating mechanism has functioned to raise the platform to the thickness of a single record. When this last record has been played, the platform elevating mechanism will be again functioned in the usual manner to elevate the platform and will therefore advance the shaft 224 further on its axis. This will carry the contact 243 off the end of contact 241, and, as these contacts are connected into the circuit of the motor C of the phonograph, this motor will be stopped.

Lock for platform elevating mechanism

The lock Q for the platform elevating mechanism may conveniently take the form of a latch 250 shown in Figure 12 adjacent the presetting knob 225. When the presetting knob 225 is pressed downwardly, the latch is forced by a spring 251 over to engage the top of the knob 225 and prevent its return. In this manner the clutch J may be locked in open or disconnected position thereby disconnecting the gear trains for controlling the elevation of the platform from the control shaft. When these parts are locked in this position, the phonograph will play a record indefinitely, the time between the renditions of the record being under the control of the time control mechanism N.

The cabinet

The operating mechanism for the automatic phonograph which has been heretofore described in detail is one which may be conveniently housed in a phonograph cabinet and especially in a cabinet intended for a combined radio receiving set and phonograph. The top of a cabinet for such a combined automatic phonograph and radio receiving set is illustrated diagrammatically in Figure 14. Here the playing platform B is placed on the righthand side of the top or table 35 of the phonograph and the swinging tone arm E is pivoted in the rear of the cabinet, approximately centrally of the cabinet. The setting dials 202 and 225 for the phonograph time control between records and platform elevating mechanism are placed in the rear of the cabinet adjacent the pivot for the tone arm. By this arrangement, the front left side of the cabinet is unoccupied by any of the phonograph mechanism, and it is possible to utilize this portion of the cabinet as

a record receptacle R, as well as for housing the radio receiving set.

The records, as they are discharged from the playing platform, are moved to the left and are whirled off from the playing platform onto any suitable support to receive the records. As here shown, the support takes the form of a pair of sloping strips 260 which are slidably carried on rods 261 and 262. When these strips are moved to the position indicated in Figure 14, they are spaced so as to receive and hold 10 inch or 12 inch records as they are discarded from the rotating playing platform. A radio receiving set, designated generally by the letter "S", is mounted so that the control dials of the set are underneath the record receptacle R. One can readily obtain access to the radio dials of the radio receiving set when no records are in the recording receiving receptacle, by reaching down between the members 260 or by sliding these members away from one another toward the side walls of the record receptacle. The upper rear left portion of the table of the instrument is available for mounting the tubes of the radio receiving set.

The present automatic phonograph permits mounting the radio receiving set in the position indicated and ample room is provided for this set without interference with the amplifying horn of the phonograph or the automatic mechanism for playing the records.

A further important feature in the present design of an automatic phonograph resides in the ability to incorporate the automatic phonograph in a cabinet having a hinged cover, for it is only necessary to sufficiently elevate the cover to permit raising the tone arm to bring the reproducer away from the record during the operation of the automatic mechanism. The top or table of the phonograph is entirely free of mechanism which obstructs the placing of records on the platform or their removal from the receptacle.

The playing platform and motor are preferably tilted at a slight angle, as indicated, which is approximately at right angles to the line connecting the center of the playing platform with the pivot of the swinging tone arm. This facilitates the removal of the records from the rotating playing platform and also causes the needle of the reproducer to swing over a substantially horizontal playing surface on the record.

The modified construction shown in Figures 16 to 21

In the form of instrument shown in Figures 16 to 21, inclusive, the phonograph operates in general in the same manner as the one shown in Figures 1 to 15, and heretofore described in detail. In the description of the apparatus shown in Figures 16 to 21, the same reference characters will be applied

to parts which are, as illustrated herein, alike in the two forms. Where the parts are substantially the same, the former reference character with the addition of a prime (') will be used.

The motor C operates through the shaft 91, the gears 93 and 94 and clutch member 97 in the same manner as has been formerly described in detail. The automatic trip G' for actuating the clutch 97 is substantially the same as the automatic trip G shown and described in detail heretofore. It is placed between the playing platform B and the top or table 35' of the phonograph, a portion of the platform being broken away as indicated in Figure 19. The arms 69' and 75' embrace a pin 300 extending downwardly from the tone arm E' so that the automatic trip mechanism moves with the tone arm as the record is being played. The operating lever 60' of the automatic trip G' is connected by a link 301 with a lever 302 pivoted at 303. The lever 302 is connected by a pin and slot 304 with a lever 305 corresponding with the bell crank 81, so as to actuate the clutch member 97 on the one-revolution control shaft 95'. When the automatic trip is actuated by the tone arm in the completion of the playing of a record, the clutch 97 will be engaged with the gear 94 as formerly described, and the one-revolution shaft will be turned through a complete revolution and will actuate the mechanisms for raising the reproducer off the record, returning the tone arm to initial position, elevating the playing platform, and resetting the automatic trip.

The raising of the reproducer F' is accomplished by an arm 306 (shown more clearly in Figure 18) carried on the end of the one-revolution shaft 95'. This arm engages a reciprocating plunger 307 carried in a chamber 308 and connected by means of a flexible cord 309 with the reproducer. The arm 306 acts on the plunger to force it downwardly in the chamber and through the cord 309 lifts the reproducer off the record. The arm 306 then passes by and the reproducer is held in elevated position on account of the dash pot effect of the plunger in the chamber 308.

The return of the tone arm E' is next brought about by mechanism M', which is operated by a roller 310 on the arm 306 coming into contact with a member 311 operably connected with the tone arm. This member is slidably carried in a slotted guide 312 mounted on the top 35' of the phonograph, and is connected through a bifurcated arm 313 with the pin 300 carried by the tone arm E'. The lower end 314 of the member 311 has a cross section such as indicated in Figure 18, and this member is mounted so that it can be manually shifted on its axis to present the surface marked 314a or the surface marked 314b for engagement with the roller

310. In this manner the extent of return movement of the tone arm can be controlled so that the tone arm is returned to the proper position for playing either 10 inch or 12 inch records.

The platform elevating mechanism utilized in the present construction, is identical with the platform elevating mechanism I heretofore described in detail, and is interconnected with a clutch J, presetting mechanism O, automatic switch P and lock Q as formerly described in detail. It will therefore be apparent that the platform may be elevated the thickness of a record after the playing of each record.

The record removal is accomplished, according to the present construction, by a finger 320 pivoted at 321 and normally held out of engagement with the playing surface of the record by a spring 322. This finger is long enough to engage with either a 10 inch or 12 inch record when it is pulled down against the tension of the spring. The mechanism for actuating this finger is, as here shown, in the form of a rod 323 connected with a bell crank 324 so placed as to be engaged by the end of the arm 306 after the platform elevating mechanism has elevated the platform to free the upper record from the centering means D, which in the present case may be a solid pin.

The operation of this record removal mechanism is diagrammatically illustrated in Figure 20. When the finger 320 is brought down onto the surface of the record, it momentarily arrests the record causing it to find a new center of rotation about the finger 320 thereby shifting the center of the record to the left as indicated in Figure 20 causing the record to shift away from the center of the playing platform. The bell crank 324 and arm 306 are so shaped that the arm passes by very quickly thereby permitting the spring 322 to raise the finger 320 off from the record. The whirling record is then rapidly discharged laterally from the surface of the playing platform and is carried into a record receptacle R' such as indicated in Figures 20 and 21.

The resetting of the automatic trip is brought about at any convenient time after the reproducer has been elevated and the tone arm returned to the initial position. As here shown, this mechanism L' includes an arm 306 which engages a bell crank 330 pivoted at 331 and connected by means of a cord 332 with a bell crank 333 pivoted underneath the table of the phonograph. When the arm 306 swings the bell crank 333 counter clockwise, it causes a pin 334 to move slightly in a slot 335 in the table of the phonograph bringing this pin into the path of a projection 336 carried on the playing platform. The playing platform is continuously revolving and within a short time the

pin or projection 336 will engage the upwardly directed pin or member 334 and will swing the bell crank 333 counter clockwise against the tension of a spring 337. During this movement, the pin 334 will be brought against the end of the operating lever 60' and will move it from the dotted position of Figure 19 to the full line position, thereby resetting the automatic trip G'. When the pin 336 passes by the pin 334, the spring 337 connected with the bell crank 333 will return the parts connected to it and before the pin 336 on the platform could be again brought in engagement with the pin 334, the arm 306 on the one-revolution shaft will have passed by the bell crank 330 and the pin 334 will be moved out of the path of the pin 336.

During this resetting of the automatic trip G', the lever 302 will be shifted without affecting the tension of the spring 83' so that this spring may separate the clutch 97 from the gear 94 after the completion of the revolution of the shaft 95'.

The time control mechanism N' for delaying the return of the reproducer to the record comprises the dash pot 308 which is under the control of an adjustable inlet 340.

The form of phonograph which is shown in Figures 16 to 21, inclusive, is one on which either a series of records may be played a desired number of times (up to the capacity of the machine), or a single record may be played indefinitely. The parts operate in general in the same manner as has been heretofore described in detail. While this embodiment of the invention contains modified forms of mechanism for raising the reproducer off from the record, for controlling the return of the reproducer to the record, for effecting the lateral removal of the record from the playing platform, for returning the tone arm to initial position and for resetting the automatic trip, I desire it to be understood that these various subordinate mechanisms are broadly equivalents and may be substituted for one another in the construction of a phonograph. One may select from either set of mechanisms, a mechanism more suitable for the particular purpose in hand and substitute it for the corresponding mechanism.

An important feature of each of the forms of automatic phonograph herein shown resides in the ability to incorporate all of the mechanism (for carrying out the successive playing of a series of records or the repeat playing of a record) in a cabinet which need be no larger than the ordinary phonograph cabinet now in use. All, or practically all, of the mechanism may be placed underneath the table of the phonograph eliminating encumbrances to the placing of records on the platform, and making it unnecessary to provide any substantial space above the playing

platform for the handling of the records. As the records are removed laterally, and brought to playing position from underneath, the cover of the phonograph may be brought down very close to the playing surface. It is only necessary to provide sufficient clearance for raising the reproducer, or the reproducer and the tone arm, away from the record and swinging it back to the initial position for playing the next record. This permits the construction of console type phonographs in which the cover is brought down very close to the records and makes the playing platform easily accessible for placing records. As the present construction provides for the lateral removal of the phonograph record from the playing platform into a record receptacle R or R', it is unnecessary to provide a cabinet to house the mechanism for swinging the tone arm clear of the record or for lifting the record off the platform or swinging it out of the playing plane.

When, however, it is desired to build a small size cabinet phonograph having the automatic features of the above construction, one may provide the side of the cabinet with a hole 350 as indicated in Figures 22 and 23, and a receptacle or tray 351 is slidably carried by the cabinet. This receptacle may be carried in any manner, for example, by telescoping guides 352 suitably mounted in the cabinet. When the records are discarded from the playing platform, they will pass out through the hole in the cabinet into the receptacle 351.

In order to reduce the friction between the records as they are discharged from the playing platform and to prevent wearing of the playing surface, the records may be, if desired, made slightly thicker inside the playing surface, as indicated at 30a in Figure 3.

It is obvious that the invention may be embodied in many forms and constructions, and I wish it to be understood that the particular forms shown are but a few of the many forms. Various modifications and changes being possible, I do not limit myself in any way with respect thereto.

What is claimed is:

1. The method of removing a phonograph record from a rotating platform having a centering means while the platform is rotating, which consists in disengaging the record from the centering means while the record is lying flat on the platform and rotating therewith, momentarily engaging the upper surface of the record at a point remote from the center to cause the rotating record to change its center of rotation and place the record eccentric of the platform, and permitting the freed record to whirl laterally from the rotating platform.

2. The method of playing a series of sound records placed in a stack and held centrally on a rotating platform, which consists in

raising the reproducer off the record, disengaging the upper record from the centering means while lying flat on the next lower record, momentarily engaging the upper surface of the record at a point remote from the center to cause the rotating record to change its center of rotation and place the record eccentric of the platform, whereby it may whirl laterally from the stack, and restoring the reproducer to starting position on the next record.

3. A phonograph having a continuously rotating playing platform, a plurality of phonograph records, platform carried record centering means, means for playing the records successively beginning with the top record, means for disengaging the top record from the centering means, and means for engaging the upper surface of the disengaged record to initiate rotation thereof about an eccentric center while it is completely supported on the next lower record and causing it to whirl to pass laterally beyond the playing platform.

4. The combination with a phonograph having a rotatable playing platform, a plurality of sound records, means for holding the records centrally on the platform, and a movable reproducer support having a reproducer cooperative with the upper record, of mechanism set into operation upon the completion of the playing of the record for raising the reproducer away from the record, then changing the relative elevation of the rotating platform and centering means to release the upper record from the centering means, engaging the upper surface of the record at an eccentric point to cause the record to change its center of rotation so that it whirls free of the platform, and then restoring the reproducer to the starting position on the next record.

5. The combination with a phonograph having a continuously rotating playing platform provided with a central pin, a sound record held on the platform by the pin, and a movable reproducer support having a reproducer cooperative with the record, of mechanism to set into operation upon the completion of the playing of the record for raising the reproducer away from the record, then changing the relative elevation of the rotating platform and pin to release the record from the pin without separating the record from its support, then engaging the upper surface of the released record to initiate rotation thereof about an eccentric center and whirling the record across the surface of its support.

6. The combination with a phonograph having a continuously rotating playing platform provided with a central pin, a plurality of sound records held on the platform by the pin, and a movable reproducer support having a reproducer cooperative with the upper

record, of mechanism set into operation upon the completion of the playing of the record for raising the reproducer away from the record, then changing the relative elevation of the pin and record to release the upper record from the pin while it is still supported from the rotating platform, whirling the record away from the platform while it is rotating, and then restoring the reproducer to the starting position on the next record, the mechanism which initiates the whirling of the record including a pressure applying member acting on the upper surface of the record to be removed.

7. The combination with a phonograph having a rotatable playing platform provided with a central pin, a plurality of sound records of various sizes held on the platform by the pin, and a movable reproducer support having a reproducer cooperative with the upper record, of mechanism normally set into operation upon the completion of the playing of the record for raising the reproducer away from the record, then changing the relative elevation of the rotating platform and pin to release the upper record from the pin, discarding the record while the platform is rotating, and then restoring the reproducer to the starting position on the next record determined by the size of such record, and means for disabling the record release and discard mechanism whereby the playing of the same record is repeated.

8. The combination with a phonograph having a rotatable playing platform provided with a central pin, a plurality of sound records held on the platform by the pin, and a movable reproducer support having a reproducer cooperative with the upper record, of mechanism set into operation upon the completion of the playing of the record for raising the reproducer away from the record, then changing the relative elevation of the rotating platform and pin to release the record from the pin, discarding the record while the platform is rotating, restoring the reproducer support to bring the reproducer to a position above the starting position on the next record, and for lowering the reproducer onto the record after a selected interval substantially greater than required for record change and reproducer resetting.

9. In combination, a phonograph having a rotatable playing platform provided with a central pin, a plurality of sound records held on the platform by the pin, a movable reproducer support having a reproducer cooperative with the upper record, the sound records each having an eccentric groove into which the stylus on the reproducer passes upon completion of playing the record whereby the reproducer support is caused to move outwardly from the center pin, a device actuated by the reproducer support during its movement, mechanism set into operation

by the movement of said device for raising the reproducer away from the record, and then changing the relative elevation of the platform and pin to release the upper record from the pin, and adjustable time controlled means for replacing the reproducer on the next record whereby the interval between the playing of records may be changed, said mechanism also including means to reset the record actuated device to repeat said operation on the next record.

10. In combination, a phonograph having a continuously rotatable playing platform, a sound record, means for holding the sound record centrally on the platform, a movable reproducer support having a reproducer cooperative with the record, the sound record having an eccentric groove into which the stylus on the reproducer passes upon completion of playing the record whereby the reproducer support is caused to move outwardly from the center, a shaft, a trip device actuated by the reproducer support during its outward movement for connecting the shaft to a power drive, trip resetting means, devices operated by the shaft for raising the reproducer away from the record, releasing the record from the holding means, and then, with the assistance of the rotating platform shifting the center of the record laterally from the center of the platform to facilitate discarding the record from the platform, and other shaft operated devices for restoring the reproducer support to initial position without lowering the reproducer, and for controlling the resetting of the trip.

11. In combination, a phonograph having a continuously rotatable playing platform, a plurality of sound records, means for holding the sound records centrally on the platform, a movable reproducer support having a reproducer cooperative with the upper record, the sound records each having an eccentric groove into which the stylus on the reproducer passes upon completion of playing the record whereby the reproducer support is caused to move outwardly from the center, a shaft, a trip device actuated by the reproducer support during its outward movement for connecting the shaft to a power drive, trip resetting means, devices operated by the shaft for raising the reproducer away from the upper record, releasing the upper record from the holding means, and then with the assistance of the rotating platform shifting the center of the record laterally away from the center of the platform to facilitate discarding the record and other shaft operated devices for restoring the reproducer support to initial position without replacing the reproducer on the next record, and for controlling the resetting of the trip, and adjustable time control means for replacing the reproducer on the next record whereby the

interval between playing records may be changed.

12. In combination, a phonograph having a continuously rotatable playing platform provided with a central pin, a plurality of sound records held on the platform by the pin, a movable reproducer support having a reproducer cooperative with the upper record, the sound records each having an eccentric groove into which the stylus on the reproducer passes upon completion of playing the record whereby the reproducer support is caused to move outwardly from the center pin, a shaft, a trip device actuated by the reproducer support during its outward movement for connecting the shaft to a power drive, trip resetting means, devices operated by the shaft for raising the reproducer away from the upper record, raising the platform relative to the center pin to release the upper record from the pin, and then with the assistance of the rotating platform shifting the center of the record laterally from the pin to facilitate discarding the record from the platform, and other shaft operated devices for restoring the reproducer support to initial position without replacing the reproducer on the next record, and for controlling the resetting of the trip, and means for replacing the reproducer on the next record.

13. In combination, a phonograph having a continuously rotatable playing platform provided with a central pin, a plurality of sound records held on the platform by the pin, a movable reproducer support having a reproducer cooperative with the upper record, the sound records each having an eccentric groove into which the stylus on the reproducer passes upon completion of playing the record whereby the reproducer support is caused to move outwardly from the center pin, a shaft, a trip device actuated by the reproducer support during its outward movement for connecting the shaft to a power drive, trip resetting means, devices operated by the shaft for raising the reproducer away from the upper record, raising the platform relative to the center pin to release the upper record from the pin, and then with the assistance of the rotating platform shifting the center of the record laterally from the pin to facilitate discarding the record from the platform, and other shaft operated devices for restoring the reproducer support to initial position without replacing the reproducer on the next record, and for controlling the resetting of the trip, and adjustable time control means for thereafter replacing the reproducer on the next record whereby the interval between playing records may be changed.

14. In combination, a phonograph having a continuously rotatable playing platform provided with a central pin, a plurality of sound records held on the platform by the

pin, a movable reproducer support having a reproducer cooperative with the upper record, the sound records each having an eccentric groove into which the stylus on the repro-
 5 ducer passes upon completion of playing the record whereby the reproducer support is caused to move outwardly from the center pin, a shaft, a trip device actuated by the reproducer support during its outward move-
 10 ment for connecting the shaft to a power drive, trip resetting means, a device operated by the shaft for raising the reproducer away from the upper record, a gear train operated by the shaft for raising the platform relative
 15 to the center pin to release the record from the pin, a shaft operated device engaging the upper record to cause the center of this record to shift laterally from the pin to facilitate discarding the record from the platform, and
 20 another shaft operated device for restoring the reproducer support to initial position without replacing the reproducer on the next record, and for controlling the resetting of the trip, and means for thereafter replac-
 25 ing the reproducer on the next record.

15. In combination, a phonograph having a continuously rotatable playing platform, a plurality of sound records, means for hold-
 30 ing the sound records centrally on the plat- form, a movable reproducer support having a reproducer cooperative with the upper record, the sound records each having an eccentric groove into which the stylus on the
 35 reproducer passes upon completion of play- ing the record whereby the reproducer sup- port is caused to move outwardly from the center, a shaft, a trip device actuated by the reproducer support during its outward
 40 movement for connecting the shaft to a pow- er drive, trip resetting means, devices op- erated by the shaft for raising the repro- ducer away from the upper record, releasing
 45 the record from the holding means, and then shifting the center of the record laterally from the center of the platform to facilitate discarding the record from the platform, and
 other shaft operated devices for restoring the reproducer support to initial position
 50 without replacing the reproducer on the next record, and for controlling the resetting of the trip, said trip resetting means being ac- tuated by the rotating platform, means inter-
 55 connected with the trip resetting means for disconnecting the shaft from the power drive, and means for thereafter replacing the reproducer on the next record.

16. In a repeating phonograph, a continu-
 60 ously rotating playing platform having a stack of records thereon, a control shaft, a power drive for the shaft, means to connect the shaft to the power drive after the play-
 65 ing of a record has been completed, said means including means to automatically dis- connect the connecting means after the con- trol shaft has been turned a preset amount,

means operable from the control shaft for raising the reproducer off from the sound record, control-shaft operated means for bringing about the removal of the upper
 70 record while rotating, control-shaft oper- ated means for moving the reproducer to place it above the starting position on the next record, and time control means inde-
 75 pendent of the control shaft for thereafter replacing the reproducer upon the next re- cord.

17. In a repeating phonograph, a continu-
 80 ously rotating playing platform having a stack of records thereon, a control shaft, a power drive for the shaft, a device respon- sive to the completion of the playing of a
 85 record, means controlled by said device for connecting the shaft to the power drive, con- trol shaft operated means for raising the reproducer off from the sound record, con-
 90 trol-shaft operated means for bringing about the removal of the upper record while ro- tating, control-shaft operated means for moving the reproducer to place it above the
 95 starting position on the next record, and means for resetting the record responsive de- vice and biasing the connecting means to dis- connect the shaft from the power drive after
 100 the cycle of operation has been completed.

18. In a repeating phonograph, a continu-
 95 ously rotating playing platform having a stack of records thereon, a control shaft, a power drive for the shaft, means to connect the shaft to the power drive, a spring, a de-
 100 vice responsive to the completion of the play- ing of the record to actuate the connecting means and tensioning the spring, means op- erable from the control shaft for raising the
 105 reproducer off from the sound record, con- trol-shaft operated means for moving the re- producer to place it above the starting posi-
 110 tion on the next record, and a device for resetting the record responsive device, the spring disconnecting the connecting means after the control shaft has been turned a se-
 115 lected amount.

19. A phonograph having a motor driven
 115 playing platform, a shaft driven by the motor, a control shaft, a gear on the control shaft driven from the motor shaft, a clutch-
 120 ing member keyed to the control shaft and having two positions, in one of which it locks the control shaft against revolution, and in the other of which it clutches the gear to the
 125 control shaft, a reproducer carried on a swinging tone arm and cooperative with a record on the platform, record controlled means including a trip device for shifting the
 130 clutch to engage the gear, mechanism oper- ated by the control shaft for raising the re- producer and then swinging it back to initial
 position, mechanism for resetting the trip, and a spring interconnected with the trip device for shifting the clutch to the other
 position after the trip has been reset and the

control shaft revolved to a preset position.

20. A phonograph having a motor driven playing platform, a shaft driven by the motor, a control shaft, a gear on the control shaft driven from the motor shaft, a clutching member keyed to the control shaft and having two positions, in one of which it locks the control shaft against revolution, and in the other of which it clutches the gear to the control shaft, a reproducer carried on a swinging tone arm and cooperative with a record on the platform, record controlled means including a trip device for shifting the clutch to engage the gear, mechanism operated by the control shaft for raising the reproducer and then swinging it back to initial position, trip resetting mechanism including a member moved by the control shaft to a position to be engaged by a motor driven part to reset the trip, and a spring interconnected with the trip device for shifting the clutch to the other position after the trip has been reset and the control shaft revolved to a preset position.

21. A phonograph having means to play a predetermined number of records one after another from a stack on a rotating playing platform, said means including means to elevate the records and platform after the playing of a record the thickness of a record and then remove the upper record whereby the records of the series are played at the same elevation, said phonograph being further provided with means to render the record removal means non-functioning whereby the playing of the upper record of a lesser number of records is repeated a selected number of times until the platform and records are elevated sufficiently to allow the removal of the upper record.

22. A phonograph having means to play a predetermined number of records one after another from a stack on a rotating playing platform, said means including means to elevate the records and platform after the playing of a record the thickness of a record and then remove the upper record whereby the records of the series are played at the same elevation, said phonograph being further provided with means to render the record removal means non-functioning whereby the playing of the upper record of a lesser number of records is repeated a selected number of times until the platform and records are elevated sufficiently to allow the removal of the upper record, and means to disable the elevating mechanism whereby the record may be repeated indefinitely.

23. A phonograph having a swinging tone arm and a rotatable playing platform tilted about an axis at substantially right angles to a line connecting the center of the platform and the pivot of the swinging tone arm.

24. A phonograph having a swinging tone arm and a rotatable playing platform tilted

about an axis at substantially right angles to a line connecting the center of the platform and the pivot of the swinging tone arm, the platform tilting downwardly away from the tone arm.

25. A phonograph having a swinging tone arm and a rotatable playing platform tilted about an axis at substantially right angles to a line connecting the center of the platform and the pivot of the swinging tone arm, the platform tilting downwardly away from the tone arm, and a record receptacle to one side of the platform.

26. A phonograph having a swinging tone arm carrying a reproducer, a rotatable playing platform tilted at a slight angle in such a direction that the path of the reproducer swinging over the record is substantially horizontal, a pin for centering the record on the platform, means for raising the reproducer off from the record and releasing the record from the pin, and means for effecting lateral removal of the record from the platform while the platform is rotating.

27. A phonograph having a rotatable playing platform, a center pin adapted to extend through a plurality of records, automatic means responsive to the playing of a record for changing the relative elevation of the pin and the platform a distance equal to the thickness of a record after the playing of the record, whereby the records may be released from the pin one at a time, and manual means for presetting the parts so that the pin projects through the upper record a distance equal to a plurality of records, whereby the record is held in the pin until it has been played a preset number of times.

28. A phonograph having a driving motor, a drive shaft, a playing platform slidably keyed to the shaft, a ball bearing for rotatably supporting the playing platform, a support for the ball bearing, and motor driven means for raising the ball bearing support and platform relative to the drive shaft step by step the thickness of a record.

29. A phonograph having a driving motor, a drive shaft, a playing platform slidably keyed to the shaft, a ball bearing for rotatably supporting the playing platform, a support for the ball bearing, and means for raising and lowering the ball bearing support and platform relative to the drive shaft, said means including means to confine said movement to distances equal to the thickness of one or more phonograph records.

30. A phonograph having a driving motor, a drive shaft, a playing platform slidably keyed to the shaft, a ball bearing for rotatably supporting the playing platform, a support for the ball bearing, a rack extending downwardly from the ball bearing support, and a gear in mesh with the rack

for changing the elevation of the playing platform.

31. A phonograph having a driving motor, a drive shaft, a playing platform slidably keyed to the shaft, and carrying a plurality of records through which the shaft projects, a ball bearing for rotatably supporting the playing platform, a support for the ball bearing, a rack extending downwardly from the ball bearing support, a gear in mesh with the rack for changing the elevation of the playing platform, and motor driven means for normally actuating the gear after the playing of the top record to raise the platform the thickness of a record and release the upper record from the shaft.

32. A phonograph having a driving motor, a drive shaft tilted at a slight angle, a tilted playing platform slidably keyed to the shaft, a ball bearing for supporting the playing platform, a support for the ball bearing, racks extending downwardly from the ball bearing support, guides for the racks to support the tilted platform, and gears in mesh with the racks for raising and lowering the platform.

33. A phonograph having a continuously rotating driving motor, a substantially vertical motor driven shaft, a playing platform slidably keyed to the shaft, a bearing for rotatably supporting the platform, a support for the bearing including a rack guided to move parallel with the shaft, a gear in mesh with the rack for raising and lowering the platform, driving connections between the motor and said gear, said driving connections including two sets of reduction gearing between which is interposed a normally disengaged clutch, means to engage the clutch to couple the gear trains together, and means to disengage the clutch and cause it to lock the second gear train after a predetermined movement.

34. A phonograph having a continuously rotating driving motor, a substantially vertical motor driven shaft, a playing platform slidably keyed to the shaft, a bearing for rotatably supporting the platform, a support for the bearing including a rack guided to move parallel with the shaft, a gear in mesh with the rack for raising and lowering the platform, driving connections between the motor and said gear, said driving connections including two sets of reduction gearing between which is interposed a normally disengaged clutch, means to engage the clutch to couple the gear trains together, means to disengage the clutch and cause it to lock the second gear train after a predetermined movement, a third gear train connected to the second gear, and a manually operable device for actuating the third gear train and through it the second gear train to set the playing platform.

35. A phonograph having a continuously

rotating driving motor, a substantially vertical motor driven shaft, a playing platform slidably keyed to the shaft, a bearing for rotatably supporting the platform, a support for the bearing including a rack guided to move parallel with the shaft, a gear in mesh with the rack for raising and lowering the platform, driving connections between the motor and said gear, said driving connections including two sets of reduction gearing between which is interposed a normally disengaged clutch and a normally engaged clutch, means to engage the first mentioned clutch to couple the gear trains together, means to disengage said first clutch and cause it to lock the second gear train after a predetermined movement, a third gear train connected to the second gear, a manually operable device for actuating the third gear train and through it the second gear train to set the playing platform and manually operable means for holding the normally engaged clutch in disengaged position.

36. In a repeating phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after completion of the playing of a record, a reproducer support pivoted about a horizontal axis about which it may be bodily raised and lowered, shaft operated means for raising the reproducer support, and motor actuated means independent of the control shaft for controlling the lowering of the reproducer support.

37. In a repeating phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after completion of the playing of a record, a reproducer support pivoted about a horizontal axis about which it may be bodily raised and lowered, a link connected to the reproducer support, and a cam on the control shaft toggle to engage the link, raise the reproducer support, and overset the toggle.

38. In a repeating phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after completion of the playing of a record, a reproducer support pivoted about a horizontal axis about which it may be bodily raised and lowered, a link connected to the reproducer support, a cam on the control shaft to engage the link and raise the reproducer support, and a device for holding the reproducer support elevated independent of the cam.

39. In a repeating phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after completion of the playing of a record, a reproducer support pivoted about a horizontal axis about which it may be bodily raised and lowered, a link connected to the reproducer support, a cam on the control shaft to engage the link and raise the reproducer support, a device for

holding the reproducer support elevated independent of the cam, and motor actuated means independent of the control shaft for controlling the lowering of the reproducer support.

40. In a phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after the completion of the playing of a record, a tone arm pivoted about a horizontal axis, means operable from the control shaft to raise the tone arm, and means for thereafter disconnecting the control shaft from the motor.

41. In a phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after the completion of the playing of a record, a reproducer support pivoted about a horizontal axis, means operable from the control shaft to raise the reproducer support, means for thereafter disconnecting the control shaft from the motor, and a device independent of either of said means for lowering the reproducer support.

42. In a phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after the completion of the playing of a record, a reproducer support pivoted about a horizontal axis, means operable from the control shaft to raise the reproducer support, a slow moving motor driven rotating member, a shiftable member, connections between the shiftable member and reproducer support lifting means for coupling the shiftable member to the rotating member, a latch carried by the shiftable member and simultaneously set for holding the reproducer support in raised position, and means for releasing the latch after a predetermined movement of the rotating member.

43. In a phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after the completion of the playing of a record, a reproducer support pivoted about a horizontal axis, means operable from the control shaft to raise the reproducer support, a slow moving motor driven rotating member, a shiftable member, connections between the shiftable member and reproducer support lifting means for coupling the shiftable member to the rotating member, a latch carried by the shiftable member and simultaneously set for holding the reproducer support in raised position, means for releasing the latch after a predetermined movement of the rotating member, and a device to slowly lower the reproducer support after the latch is released.

44. In a phonograph, a motor, a control shaft, means for connecting the control shaft to the motor after the completion of the playing of a record, a reproducer support pivoted about a horizontal axis, means operable from the control shaft to raise the reproducer support, a slow moving motor driven rotating member, a shiftable member, connections be-

tween the shiftable member and reproducer support lifting means for coupling the shiftable member to the rotating member, a latch carried by the shiftable member and simultaneously set for holding the reproducer support in raised position, means for releasing the latch after a predetermined movement of the rotating member, means to vary the amount of said movement required, and a motor driven device to effect a slow lowering movement of the reproducer after the latch is released.

45. A phonograph having a rotating playing platform, record centering means for supporting records on the platform, a movable reproducer support carrying a reproducer cooperative with the top record, means for raising the reproducer away from the record after the record has been played, means to change the relative elevation of the platform and centering means the thickness of a record after each rendition of a record, means for presetting the platform relative to the centering means to a position such that the upper record is played a predetermined number of times before the record is released from the centering means, means for discarding the upper record from the rotating platform after it is released from the centering means, and means for restoring the reproducer to starting position upon the uppermost record, whereby a single record may be played a predetermined number of times or a series of records may be played one after another.

46. In a phonograph, a driving motor, a record, a movable reproducer cooperative with the record, mechanism connected with the reproducer for raising the reproducer away from the record and for lowering it onto the record, motor driven means for actuating the mechanism to raise the reproducer, motor driven means for actuating the mechanism to lower the reproducer, and adjustable time control mechanism which may be set to delay the operation of the reproducer lowering means, said mechanism including a manually adjustable member, and a second member interconnected with the reproducer to be moved to a position to interlock it with the first member when the reproducer is raised.

47. In a phonograph, a driving motor, a record, a movable reproducer cooperative with the record, mechanism connected with the reproducer for raising the reproducer away from the record and for lowering it onto the record, motor driven means for actuating the mechanism to raise the reproducer, motor driven means for actuating the mechanism to lower the reproducer, and adjustable time control mechanism which may be set to delay the operation of the reproducer lowering means, said mechanism including a manually adjustable member, a second member interconnected with the re-

producer to be moved to a position to interlock it with the first member when the reproducer is raised, and motor driving connections for the second member which are established while the reproducer is raised whereby the second member may be moved relative to the manually adjustable member, the members having cooperative parts which in a predetermined position disable this interlock and permit the reproducer to lower and make a connection with the reproducer lowering means.

48. In a phonograph, a driving motor, a record, a movable reproducer support carrying a reproducer cooperative with the record, mechanism connected with the reproducer support for raising the reproducer away from the record and for lowering it onto the record, motor driven means for actuating the mechanism to raise the reproducer support, motor driven means including a worm cooperating with a dog carried by said mechanism for actuating the mechanism to lower the reproducer support, and adjustable time control mechanism which may be set to delay the operation of the reproducer support lowering means, said mechanism including members which become interlocked when the tone arm is raised and hold the dog out of contact with the worm until the time control mechanism has functioned to release the dog.

49. In a phonograph, a driving motor, a record, a movable reproducer support carrying a reproducer cooperative with the record, mechanism connected with the reproducer support for raising the reproducer away from the record and for lowering it onto the record, motor driven means for actuating the mechanism to raise the reproducer support, motor driven means for actuating the mechanism to lower the reproducer support, and adjustable time control mechanism which may be set to delay the operation of the reproducer support lowering means, said mechanism including a stationary shaft, a manually adjustable member carried on the shaft, a second member loosely mounted on the shaft and interconnected with the reproducer support to be moved to a position to interlock it with the first member when the reproducer support is raised, and motor driving connections for the second member which are established while the reproducer support is raised whereby the second member may be turned relative to the manually adjustable member, the members having cooperative parts which in a preset angular position disable this interlock and permit the reproducer support to lower and make a connection with the reproducer support lowering means.

50. In a phonograph, a driving motor, a record, a movable reproducer support carrying a reproducer cooperative with the record, mechanism connected with the reproducer support for raising the reproducer away from

the record and for lowering it onto the record, motor driven means for actuating the mechanism to raise the reproducer support, motor driven means for actuating the mechanism to lower the reproducer support, and adjustable time control mechanism which may be set to delay the operation of the reproducer support lowering means, said mechanism including a stationary shaft, a manually adjustable member carried on the shaft, a second member loosely mounted on the shaft and interconnected with the reproducer support to be moved to a position to interlock it with the first member when the reproducer support is raised, motor driving connections for the second member which are established while the reproducer support is raised whereby the second member may be turned relative to the manually adjustable member, the members having cooperative parts which in a preset angular position disable this interlock and permit the reproducer support to lower and make a connection with the reproducer support lowering means, and a spring acting on the second member to move it to a predetermined angular position relative to the first member.

51. In a phonograph, a driving motor, a record, a movable reproducer support carrying a reproducer cooperative with the record, mechanism connected with the reproducer support for raising the reproducer away from the record and for lowering it onto the record, motor driven means for actuating the mechanism to raise the reproducer support, motor driven means including a motor driven worm adapted to cooperate with a dog carried by said mechanism for actuating the mechanism to lower the reproducer support, and adjustable time control mechanism which may be set to delay the operation of the reproducer support lowering means, said mechanism including a manually adjustable member, a second member interconnected with the reproducer support to be moved to a position to interlock it with the first member when the reproducer support is raised and move the dog away from the worm, and motor driving connections for the second member which are established while the reproducer support is raised whereby the second member may be moved relative to the manually adjustable member, the members having cooperative parts which in a selected position disable this interlock and permit the reproducer support to lower and move the dog into cooperating position with the worm.

52. In a phonograph, a driving motor, a record, a movable reproducer support carrying a reproducer cooperative with the record, mechanism connected with the reproducer support for raising the reproducer away from the record and for lowering it onto the record, motor driven means for actuating the mechanism to raise the reproducer support,

motor driven means including a motor driven worm adapted to cooperate with a dog carried by said mechanism for actuating the mechanism to lower the reproducer support, and adjustable time control mechanism which may be set to delay the operation of the reproducer support lowering means, said mechanism including a stationary shaft, a manually adjustable member carried on the shaft, a second member loosely mounted on the shaft and interconnected with the reproducer support to be moved to a position to interlock it with the first member when the reproducer support is raised and move the dog away from the worm, motor driving connections for the second member which are established while the reproducer support is raised whereby the second member may be turned relative to the manually adjustable member, the members having cooperative parts which in a selected angular position disable this interlock and permit the reproducer support to lower and move the dog into cooperating position with the worm, and a spring acting on the second member to move it to a selected angular position relative to the first member.

53. In a phonograph, a rotatable playing platform, a hollow centering pin adapted to hold records on the platform, means to change the relative elevation of the platform and the pin whereby the upper record may be released from the pin, and a member normally confined by the pin and movable to a position to shift the center of the record laterally from the axis of the rotating platform.

54. In a phonograph, a rotatable playing platform, a hollow centering pin adapted to hold records on the platform, means to change the relative elevation of the platform and pin whereby the upper record may be released from the pin, a tube in the centering pin, a member normally confined by the tube and movable to a position to shift the center of the record laterally from the axis of the rotating platform, and means for raising the tube after the record has been shifted laterally to engage the record near the center and raise the record off from the next lower record.

55. The combination with a phonograph having a rotatable playing platform provided with a central pin, a plurality of sound records held on the platform by the pin, and a movable reproducer support having a reproducer cooperative with the upper record, of mechanism set into operation upon the completion of the playing of the record for raising the reproducer away from the record, then changing the relative elevation of the rotating platform and pin to release the record from the pin, discarding the record while the platform is rotating, restoring the reproducer support to bring the reproducer to a position above the starting position on

the next record, and for lowering the reproducer onto the record after a predetermined interval, said reproducer support restoring mechanism being adjustable to predetermine the position to which the reproducer support is returned.

56. The combination with a phonograph having a rotatable playing platform provided with a central pin, a plurality of sound records held on the platform by the pin, and a movable reproducer support having a reproducer cooperative with the upper record, of mechanism set into operation upon the completion of the playing of the record for raising the reproducer away from the record, then changing the relative elevation of the rotating platform and pin to release the record from the pin, discarding the record while the platform is rotating, restoring the reproducer support to bring the reproducer to a position above the starting position on the next record, and for lowering the reproducer onto the record after a predetermined interval, the setting of said reproducer support return mechanism being automatically determined during the playing of a record by a member having positions dependent upon the size of the record being played.

57. In combination, a phonograph having a rotatable playing platform, a sound record, means for holding the sound record centrally on the platform, a moving reproducer support having a reproducer cooperative with the record, the sound record having an eccentric groove into which the stylus on the reproducer passes upon completion of playing the record whereby the reproducer is caused to move outwardly from the center, a shaft, a trip device actuated by the reproducer support outward movement for connecting the shaft to a power drive, trip resetting means, devices operated by the shaft for raising the reproducer away from the record, releasing the record from the holding means, and then shifting the center of the record laterally from the center of the platform to facilitate discarding the record from the platform, and other shaft operated devices for restoring the reproducer to initial position without lowering the reproducer, and for controlling the resetting of the trip, the setting of said reproducer restoring mechanism being automatically determined during the playing of a record by a member having positions dependent upon the size of the record being played.

58. A phonograph having an operating motor, a playing platform having a fixed center, a movable reproducer support carrying a reproducer for cooperation with a disk record carried on the rotating platform, motor driven means for lifting the reproducer off from the record, motor driven means for swinging the reproducer support

away from the center of the record after the reproducer has been raised, a device operable from the edge of the record on the platform and about to be played for predetermining the extent of swinging movement imparted to the reproducer support, and motor driven means for thereafter lowering the reproducer from said position.

59. A phonograph having a motor, a playing platform, platform elevating mechanism, motor driven operating means for normally actuating the platform elevating means the thickness of a record after the playing of a record, and a switch in the motor circuit and operated with the platform elevating mechanism for opening the motor circuit after the platform is raised to a predetermined elevation.

60. A phonograph having a rotatable playing platform, a center pin adapted to extend through a plurality of records, automatic means responsive to the playing of a record for changing the relative elevation of the pin and the platform a distance equal to the thickness of a record after the playing of the record, whereby the records may be released from the pin one at a time, manual means for presetting the parts so that the pin projects through the upper record a distance equal to a plurality of records, whereby the record is held in the pin until it has been played a predetermined number of times, a driving motor, and a motor control switch carried by the presetting means for opening the motor circuit when the platform is raised to a predetermined elevation.

61. The method of removing a phonograph record from a continuously rotating playing platform in which it is supported and normally held by centering means to revolve about its own center and the axis of the platform, which consists in separating the record and the centering means and applying an external force to the upper surface of the record to cause it to rotate about an eccentric center while supported solely from the platform whereupon the record whirls laterally from the platform.

62. In combination, a phonograph having a continuously rotating motor driven playing platform, a sound record, record centering means, a movable reproducer cooperative with a record on the platform, the sound record having an eccentric groove into which the stylus on the reproducer passes after the completion of the playing thereof, whereby the reproducer support is caused to move outwardly from the center, a one revolution shaft, a clutching device for connecting the shaft to the motor drive to cause the shaft to revolve one revolution and stop, clutch controlling means responsive to the outward movement of the reproducer support for drivingly connecting the shaft to the motor after the completion of the playing of the

record, and shaft operated mechanism for raising the reproducer off the record and moving it to initial playing position.

63. In combination, a phonograph having a continuously rotating motor driven playing platform, a sound record, record centering means, a movable reproducer cooperative with a record on the platform, the sound record having an eccentric groove into which the stylus on the reproducer passes after the completion of the playing thereof, whereby the reproducer support is caused to move outwardly from the center, a one revolution shaft, a clutching device for connecting the shaft to the motor drive to cause the shaft to revolve one revolution and stop, clutch controlling means responsive to the outward movement of the reproducer support for drivingly connecting the shaft to the motor after the completion of the playing of the record, and shaft operated mechanism for changing the relative elevation of the record and centering means to release the record therefrom and for initiating an eccentric whirling motion in the record to cause it to whirl laterally from the platform.

64. In combination, a phonograph having a continuously rotating motor driven playing platform, a sound record, record centering means, a movable reproducer cooperative with a record on the platform, the sound record having an eccentric groove into which the stylus on the reproducer passes after the completion of the playing thereof, whereby the reproducer support is caused to move outwardly from the center, a one revolution shaft, a clutching device for connecting the shaft to the motor drive to cause the shaft to revolve one revolution and stop, clutch controlling means responsive to the outward movement of the reproducer support for drivingly connecting the shaft to the motor after the completion of the playing of the record, and shaft operated mechanism for restoring the clutch controlling means to governing position for actuation by the next outward movement of the reproducer support.

Signed at New York, county of New York and State of New York, this 17th day of March, 1927.

JACK POTTER STOCKTON.

CERTIFICATE OF CORRECTION.

Patent No. 1,873,358.

August 23, 1932.

JACK POTTER STOCKTON.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 103, after "cabinet" insert a semi-colon; page 12, line 58, claim 11, after "record" insert the words and comma "from the platform,"; page 15, line 108, claim 37, strike out the word "toggle" and insert the same before "link" in line 107; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of December, A. D. 1932.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.