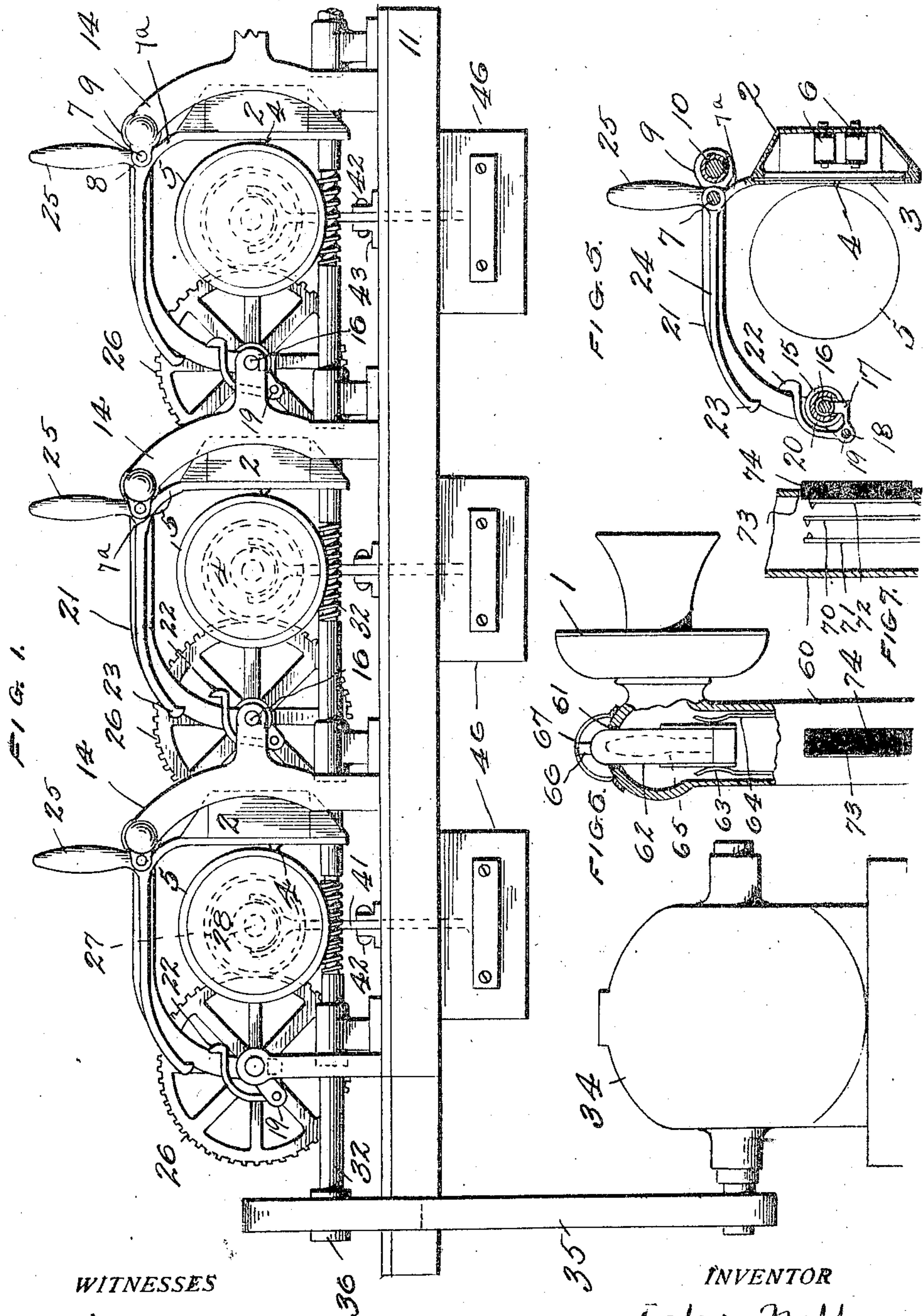


J. NOLL.
SOUND RECORDING APPARATUS.
APPLICATION FILED JAN. 31, 1910.

993,542.

Patented May 30, 1911.

3 SHEETS-SHEET 1.



WITNESSES
C. T. Davis
B. P. Fishburne

INVENTOR
John Noll

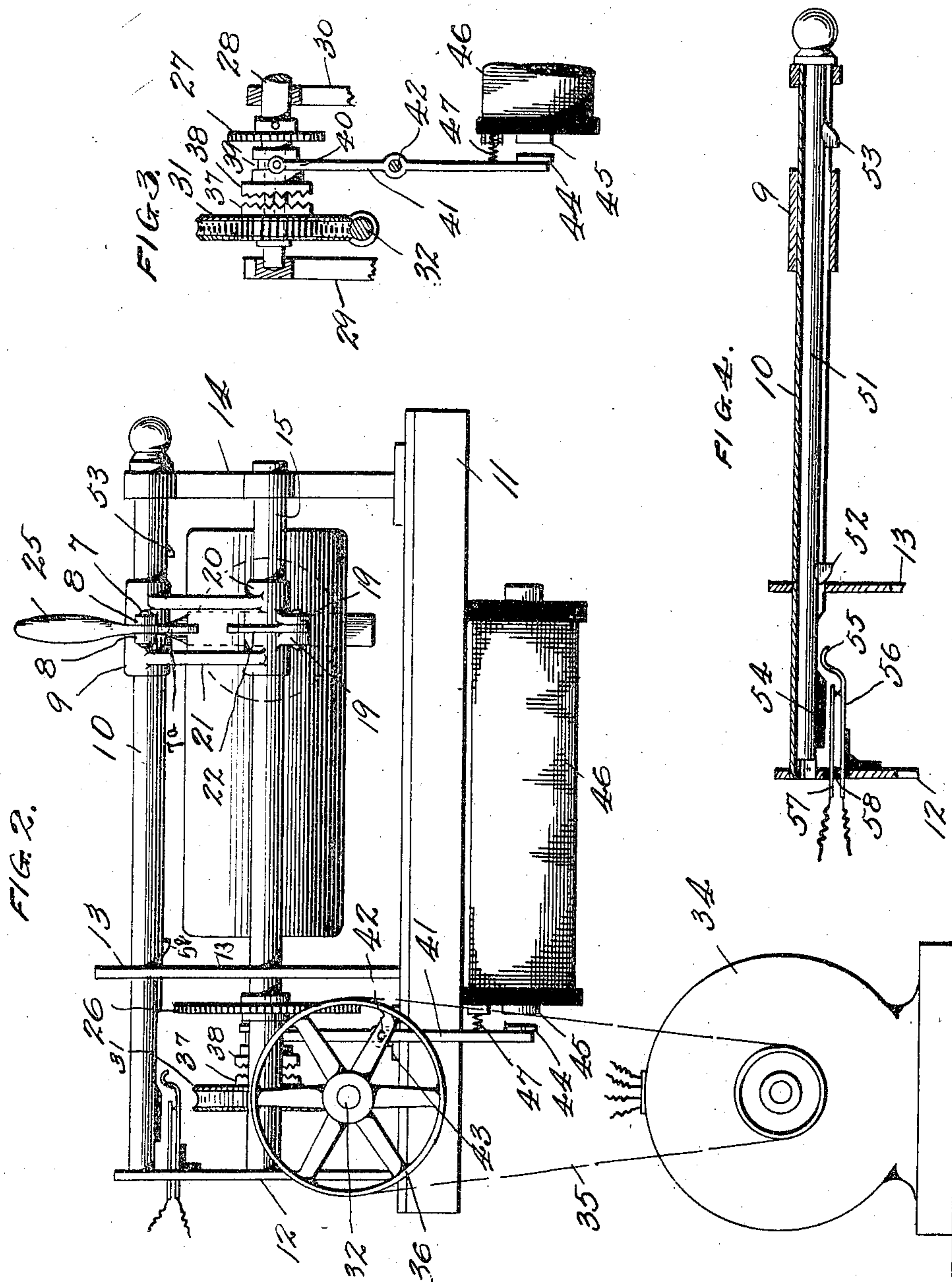
By C. L. Parker
Attorney

J. NOLL.
SOUND RECORDING APPARATUS.
APPLICATION FILED JAN. 31, 1910.

993,542.

Patented May 30, 1911.

3 SHEETS—SHEET 2.



WITNESSES
C. A. Davies
D. P. Fishburne

INVENTOR
John Noll

Attorney

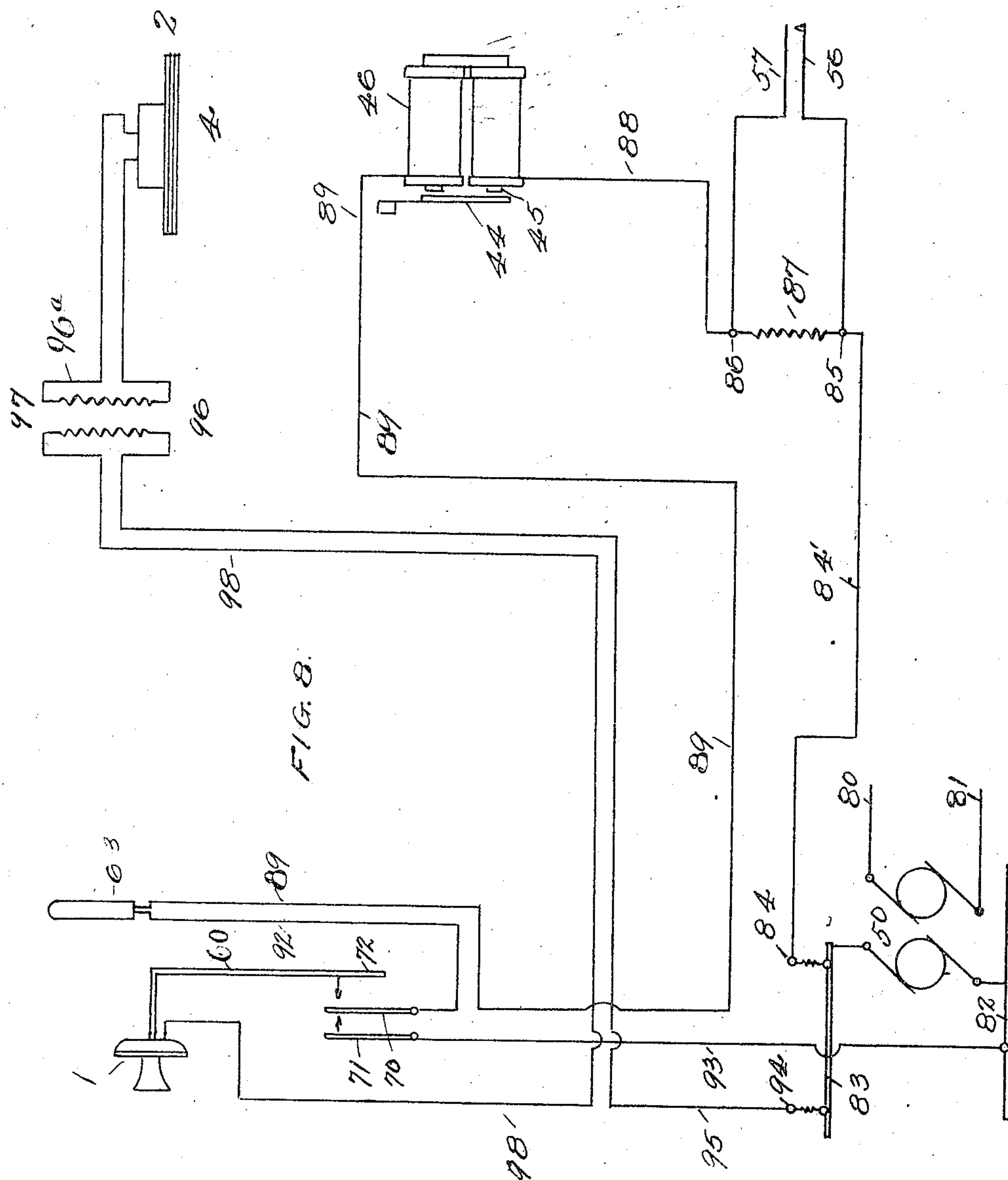
By C. R. Parker.

J. NOLL.
SOUND RECORDING APPARATUS.
APPLICATION FILED JAN. 31, 1910.

993,542.

Patented May 30, 1911.

3 SHEETS—SHEET 3.



WITNESSES

C. K. Davis
B. P. Fishburne

INVENTOR

John Noll

Attorney

By C. L. Pinkham

UNITED STATES PATENT OFFICE.

JOHN NOLL, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO EUGENE DEL MAR,
OF NEW YORK, N. Y.

SOUND-RECORDING APPARATUS.

993,542.

Specification of Letters Patent. Patented May 30, 1911.

Application filed January 31, 1910. Serial No. 541,145.

To all whom it may concern:

Be it known that I, JOHN NOLL, citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sound-Recording Apparatuses, of which the following is a specification.

This invention relates to sound recording apparatus, and contemplates the provision of novel means embodying a telephone and a phonograph for producing phonographic records of dictated matter in a more accurate, convenient and economical manner than has been heretofore possible.

Phonographs especially constructed for the purpose are extensively and successfully employed in offices and elsewhere for making records of dictated matter, which when reproduced, are written out by an operator. Such use of phonographs is subject to certain marked disadvantages. In the first place, the operator must provide a place usually near his desk for a cumbersome machine and for the cylinder, holders, and the like, and must provide electric current or other means of operating the mechanism of the phonograph. He must attend to the provision of blank cylinders, guard them with painstaking care against the readily occurring surface mutilation, both before and after use on the phonograph, and generally look after them until they are placed on the reproducing machine. Furthermore, the user must attend to the placing of the records in the machine; he must adjust the stylus in position for work, and generally give his personal attention and his time to the mechanical manipulation of the phonograph mechanism from the time he starts to dictate to it until the dictation is complete.

It is one of the important objects of this invention to overcome the above named disadvantages by wholly relieving the user of the burden of personally attending to operating the phonograph mechanism, supplying and removing records, adjusting the stylus, and looking after the wax cylinders from the time they are shaved, until adjusted in position on the reproducer.

Another important object of the invention is to provide convenient and reliable means for starting and stopping the rotation of the phonograph cylinder during dictation.

A further object of the invention is to

provide signal means to apprise the dictator when a cylinder is in position ready for use, and to notify him when the record on the machine to which he is dictating, is completed, and when such record is replaced by a fresh cylinder.

Other objects and advantages will appear in the course of the following description, wherein reference is made to the accompanying drawings, in which,

Figure 1 is a cross-sectional view showing several phonograph units and the driving means therefor. Fig. 2 is a side elevation of a single unit. Fig. 3 is a detail view of a coil operated clutch which I employ. Fig. 4 is a detail view of a slide rod for opening and closing the operative circuit. Fig. 5 is a detail sectional view showing the magnetic recorder and associated parts. Fig. 6 is a detail view partly in section, of the transmitter standard and a signal lamp mounted thereon. Fig. 7 is a detail sectional view of the transmitter standard showing the switch mechanism mounted therein, and Fig. 8 is a diagrammatic view of the electrical features of my invention.

My invention essentially comprises a telephone transmitter 1 and a receiver 2, both being of the usual construction, except that the diaphragm 3 of the receiver carries centrally thereof, a stylus 4 adapted for contact with the surface of a phonograph cylinder 5, as shown. The receiver 2, wherein are supported the magnets 6, is pivotally supported from a pin or bolt 7, by means of an arm 7^a extending between ears 8 mounted upon a sleeve 9, adapted for sliding movement along a supporting guide rod 10.

The receiver being freely pivoted on the pin or bolt 7, presses the stylus 4 against the cylinder 5, as will be evident from Fig. 1.

A table or other suitable support 11 is provided and suitably secured upon this are the standards 12, 13 and 14, these standards being disposed as clearly indicated in Figs. 1 and 2. These standards support the guide rod 10 and a hollow rod or sleeve 15, in which is mounted a shaft 16, which is screw-threaded for the greater portion of its length between the supporting standards 13 and 14.

The sleeve 15 is open at its lower side as indicated in Fig. 5 to permit the arm 17 to engage the shaft 16. The arm 17 is threaded at its free end for operative engagement with the screw threads on the

shaft 16 to effect the movement of the receiver stylus longitudinally of the cylinder, as will be more fully explained. The arm 17 is pivoted to a pin 18 passing through ears 19 supported by a sleeve 20, which is longitudinally movable upon the sleeve 15.

The sleeves 9 and 20 are bridged by the arms 21 and form therewith a suitable support for the receiver 2.

10 The arm 17 is continued beyond the point of its pivotal connection with the rod or pin 18 to form a latch 22, adapted for engagement with the free hooked end 23 of the arm 24 which is integral with the depending arm 7^a for supporting the receiver 2. 15 The handle 25 is likewise integral with the depending arm 7^a for supporting the receiver 2 and with the arm 24, and serves to move the receiver stylus into and out of engagement with the cylinder 5.

20 By reference to Fig. 5 of the drawing, it will be noted that when the handle 25 is manipulated to move the stylus 4 away from the cylinder 5 the hooked end 23 of the arm 24 will engage the latch 22 pressing the threaded end of the arm 17 out of engagement with the screw-threaded shaft 16 and also locking the receiver out of engagement with the cylinder 5.

30 The threaded shaft 16 is actuated by means of a spur gear 26 which engages a pinion 27 carried by the shaft 28 upon which is mounted the cylinder or form for receiving the phonograph cylinder. The shaft 28 35 is supported by a suitable bearing in the standards 29 and 30 (see Fig. 3). The shaft 28 receives its motion through the medium of a worm gear 31 in engagement with threaded portions of the worm shaft 32, 40 which shaft is continuously driven by a motor 34, connected by belt 35 with a pulley 36, mounted upon the shaft 28. The worm gear 31 is loosely mounted upon the shaft 28 and causes its rotation through the medium of a magnetic clutch comprising clutch 45 elements 37 and 38, the former being secured to the worm gear 31, and the latter splined on the shaft 28. A slot 39 in the clutch element 38 is engaged by a yoke 40 carried 50 at the free end of an arm 41 pivotally mounted upon a pin or bolt 42 secured within bracket 43, mounted upon the support 1. The free end of the pivoted arm 41 terminates in an armature 44, disposed adjacent 55 to the core 45 of an electro-magnet 46 of sufficient strength to press the clutch element 38 against the tension of spring 47 into operative engagement with the clutch element 37. It will thus be seen that when the electro-magnet 46 is energized, shaft 28 will be 60 rotated by reason of its engagement with the worm shaft 32 and shaft 16 will be rotated by reason of the engagement of gear 26 with pinion 27.

65 It may be here stated that the motor 34

constitutes a portion of the motor generator designated by the reference numeral 50, in Fig. 8 of the drawing. The motor which is supplied with any available current serves to operate the mechanism as hereinbefore 70 described, and also to operate the generator to produce a low tension current, preferably of about twenty-four volts, to be used in the telephone circuit and for operating the signal mechanism to be hereinafter de- 75 scribed, and for energizing the electro-magnet 46.

By reference to Fig. 4, it will be noted that the guide rod 10 is hollow and contains a slide rod 51, having outstanding lugs 52 80 and 53 in position to be engaged by the sleeve 9 at the ends of its path of travel, and to slide the rod a short distance in the direction of movement of the sleeve 9. The slide rod 51 carries a block of insulating 85 material 54 in position to engage the curved end 55 of the contact spring 56 and press the same out of contact with contact spring 57, as will be evident in Fig. 4 of the drawing. The contact springs 56 and 57 are supported 90 by the upright 12 and insulated therefrom and from each other by the insulation 58.

It will be evident from Fig. 4 of the drawing, that when the sleeve 9 carrying the receiver 2 is moved to the right a distance suffi- 95 cient to bring the stylus 4 nearly to the end of the cylinder 5, the lug 53 will be engaged by said sleeve and the slide rod 51 moved to the right a distance sufficient to bring the block 54 against the spring 56 to press the 100 same out of engagement with the spring 57, thereby opening the circuit between the springs 56 and 57. The result accomplished by opening the circuit at this point will be hereinafter more fully explained. 105

By reference to Fig. 6, it will be seen that the standard 60 which carries the transmitter 1 is provided with an opening 61 at the top thereof through which extends a small incandescent signal lamp 62, sup- 110 ported in a socket comprising oppositely disposed springs 63 and 64, through which a filament 65 of the lamp receives its current. The lamp is protected from injury 115 by a skeleton guard comprising two metallic strips 66 and 67 secured at their ends to the top of a transmitter standard.

Supported within the transmitter standard and suitably insulated therefrom and from each other, as shown in Fig. 7, are 120 spring contacts 70 and 71, normally out of contact with each other. Disposed adjacent the contact spring 70 is a third contact spring 72, secured to the wall of the transmitter standard and in electrical contact 125 therewith. Opposite the contact spring 72, is an opening 73 in the side of the transmitter standard, through which projects a block of suitable insulating material 74 secured to the spring 72 and movable there- 130

with. As shown in Fig. 7 of the drawing, the parts are so disposed that pressure against the block 74 will bring the spring 72 into engagement with the spring 70 and will force
 5 this spring into contact with the spring 71. The block 74 protrudes through the opening 73 for a distance such that when the transmitter standard is grasped in the hand of a user, the springs 70, 71 and 72 will be
 10 brought into contact conveniently and without conscious effort upon the part of the user.

The circuits by which the various electrical features of the present invention are
 15 connected will now be explained with reference to the diagrammatic view shown in Fig. 8. The motor generator 50 receives current from a suitable source of supply represented by the line wires 80 and 81 and
 20 the generator produces a low tension current preferably of about 24 volts. Metal strips 82 and 83 are connected to the opposite sides of the generator. From a binding post 84 in electrical communication with
 25 metal strips 83, a line 84' extends to binding post 85 between which and binding post 86 is interposed a suitable visual or other electrical signal 87 having a resistance of preferably about 100 ohms. The binding posts
 30 85 and 86 are connected respectively with contact springs 56 and 57, as shown, so that when said springs are in contact, the current will pass from binding post 85 to 86 through such springs without traversing the signal
 35 87. The binding post 86 is connected by line 88 with the electro-magnet 46, which magnet is energized only when the resistance of signal 87 is cut out of circuit by contact of springs 56 and 57. From electro-magnet
 40 46 the line 89 leads to the lamp 63 in the head of the transmitter standard, the other side of the lamp being connected by line 92 with the contact spring 70 within the telephone standard. When the springs 70 and
 45 71 are brought in contact by pressure upon the block 74, the circuit is completed through the springs 70, 71, the common return wire 93, to the metal strip 82.

From binding post 94, in communication
 50 with the metal strip 83, a line 95 leads to the primary circuit 96 of an induction coil 97 and from there by way of line 98 through the transmitter 1 and to the metal standard 60 with which the other side of the transmitter is connected. When the springs 70,
 55 71 and 72 are in contact, the circuit is completed from the standard 60 through contacts 72, 70 and 71 back to metal strip 82 by the common return wire 93.

30 The secondary circuit 96^a of induction coil 97 is connected as shown with the receiver 2, which actuates the stylus 4 as will be readily understood.

In the preferred form of my invention,
 35 the signal device 87 comprises a small visual

signal located near operator's desk. This signal shows only when the contact between springs 56 and 57 is broken, which by reduction of current, darkens signal lamp 63, and it will be understood from the foregoing
 70 description that the springs 56 and 57 are in contact, until the sleeve 9 comes into contact with lug 53 and moves the slide rod 51 sufficiently to bring the block 54 into engagement with the spring 56. This occurs
 75 only when the phonograph cylinder has been entirely utilized, and a new cylinder is required. It will thus be seen that when the glow disappears from lamp 63, it indicates to the dictator that he must suspend dicta-
 80 tion until the operator at the phonograph end of the line removes the record and supplies a new cylinder. When this is done, the sleeve 9 is moved into contact with lug 52 and the slide rod 51 moved to the left so
 85 that spring 56 again contacts with spring 57, whereupon the glow appears in signal lamp 63, and the dictator knows that a new cylinder is ready for his use. When the visual signal 87 appears, the operator
 90 knows that a new cylinder is required.

In the description of my apparatus, I have referred to only a single unit, but it is obvious that any desired number of units may be provided in proximity to each other
 95 and operated from a common source of power, as clearly indicated in Fig. 1.

While I have specifically described the preferred form of my invention, it is to be understood that numerous changes may be
 100 made in the form, proportions, and minor details of the parts, and that my invention is not limited to the specific embodiment of my invention illustrated, except as defined in the appended claims. 105

Having described my invention, I claim:

1. In apparatus of the character described, a transmitter, a phonograph comprising a stylus, electro-magnetic means actuated by the transmitter current for operating said stylus, a rotatable support for a wax cylinder to be incised by said stylus, means adapted to be connected with said rotatable support, to effect the rotation thereof, a magnetic clutch adapted to connect said means with said rotatable support to effect the rotation thereof, a switch, a resistance, an electric signal in circuit with the magnet of said clutch, means to bridge said resistance to cut the same out of circuit, said electric signal being adapted to indicate when said resistance is cut out of circuit, and means to close the said switch, substantially as described. 120

2. In apparatus of the character described, a transmitter, a signal lamp associated therewith, a phonograph comprising an electrically operated stylus connected with said transmitter, a phonograph cylinder supported in proximity to said stylus, 125 130

a support for said stylus longitudinally movable with reference to said cylinder support, a slide rod actuated by the longitudinal movement of said stylus support, springs adapted to be thrown into and out of contact by the movement of said slide rod, said springs being in circuit with said signal lamp, a visual signal, affording substantial resistance having its terminals electrically connected with said contact springs to carry the current from one side of the circuit connected with said springs, to the other when said springs are out of contact, and means arranged near the signal lamp for closing the said circuit, substantially as described.

3. In apparatus of the character described, a transmitter having a diaphragm, a receiver having a diaphragm, adapted to vibrate in correspondence with the transmitter diaphragm, a stylus actuated by the said receiver, a phonograph cylinder support in proximity to said stylus, a continuously rotating shaft, a coil actuated clutch to connect the rotatable cylinder support with said continuously rotating shaft to effect the rotation of the former means to effect the movement of the receiver longitudinally of the cylinder support, a circuit having contacts adapted to be opened by the said longitudinal movement of the receiver, a visual signal offering substantial resistance bridging said contacts and adapted to carry the current when said contacts are open, a signal lamp and the clutch-operating coil being included in said circuit, said signal lamp being adapted to glow when the said contacts are in engagement, and to remain dark when the said contacts are open, and means in proximity to said transmitter to control an electric current in said circuit, substantially as described.

4. In apparatus of the character described, a transmitter mounted upon a suitable standard, a signal lamp carried by the upper portion of said standard, an electrically actuated phonograph connected with said transmitter, and means to supply current to cause the said signal lamp to glow when the said phonograph is in operative position, substantially as described.

5. In apparatus of the character described, a transmitter, an electrically operated phonograph connected therewith, including a phonograph cylinder support adapted to be rotated, a continuously rotating shaft, a coil operated clutch adapted to connect the said cylinder support with the said continuously rotating shaft to effect

the rotation of the former, a hollow standard for supporting said transmitter, and a switch contained in said hollow standard having a portion extending outwardly therethrough, and adapted to be closed by pressure upon said outwardly extending portion to supply current to said clutch operating coil, substantially as described.

6. In apparatus of the character described, an electrically operated phonograph, comprising a receiver, a stylus operated thereby to incise a wax cylinder, said receiver being pivotally supported and provided with an arm having a hook at its free end, a rotatable screw-threaded shaft adapted to move the receiver longitudinally of the wax cylinder, a pivoted arm having a threaded end for engagement with said screw-threaded shaft, and a latch connected with said arm and adapted for engagement with said hooked end to move the threaded arm out of engagement with the screw-threaded shaft and to hold the said stylus out of engagement with the said cylinder, substantially as described.

7. In apparatus of the character described, a transmitter, a phonograph arranged at a distance from said transmitter and comprising a receiver adapted to actuate a stylus, a circuit between said transmitter and receiver comprising a suitable source of current, a clutch for stopping said phonograph when said receiver has moved a certain distance, an electro-magnet adapted when energized to hold said clutch in a position to cause the phonograph to operate, a circuit including said source of current connected to said electro-magnet, means for closing said circuits, an electric light arranged near said transmitter and in series with the circuit connected to said electro-magnet, a second light of greater resistance than said first named light connected in series with the last named circuit and near said receiver, normally closed contacts connected to said last named circuit in such a manner as to short circuit said second light, and means actuated by said receiver to open said contacts whereby the circuit is completed through said second light.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN NOLL.

Witnesses:

MARIE REIML,
EUGENE DELMAR.