

March 8, 1932.

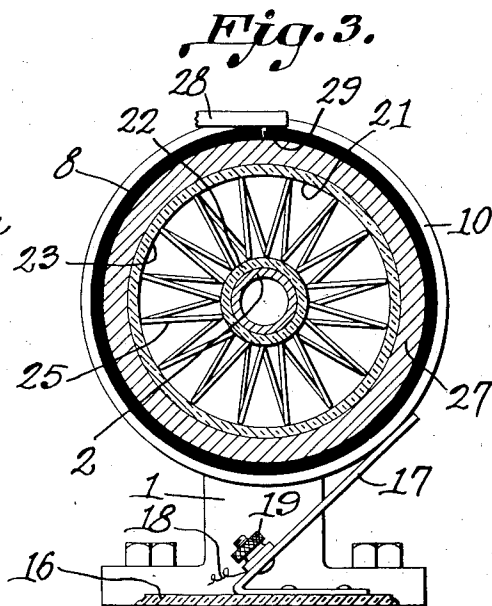
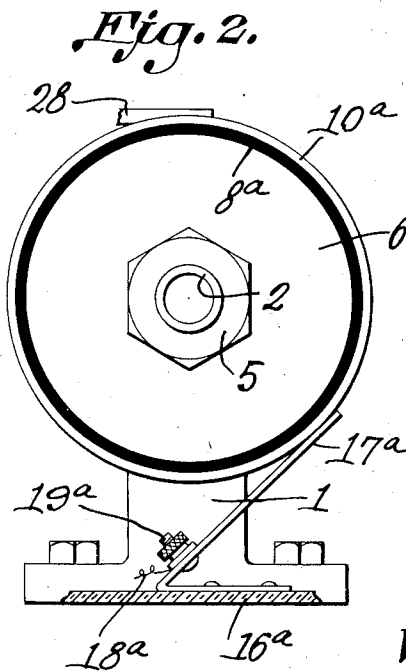
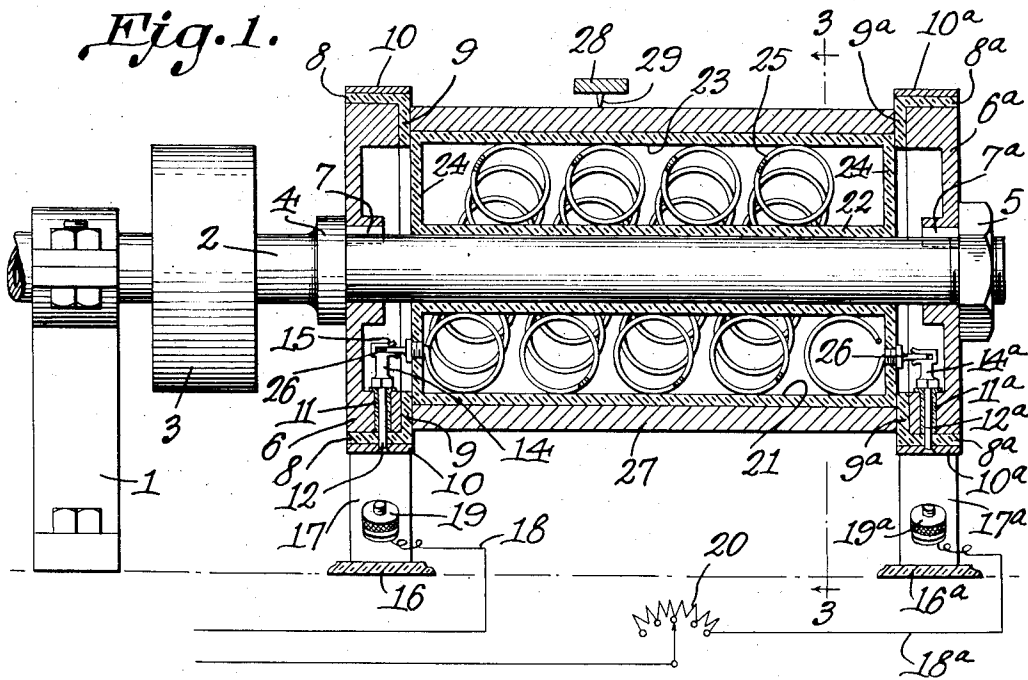
W. W. McLAREN

1,849,014

MEANS AND METHOD OF MAKING PHONOGRAPH RECORDS

Filed Oct. 30, 1928

2 Sheets-Sheet 1



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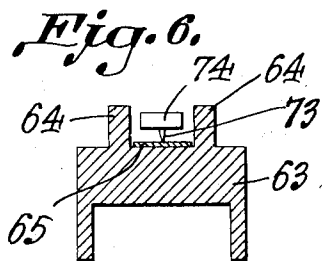
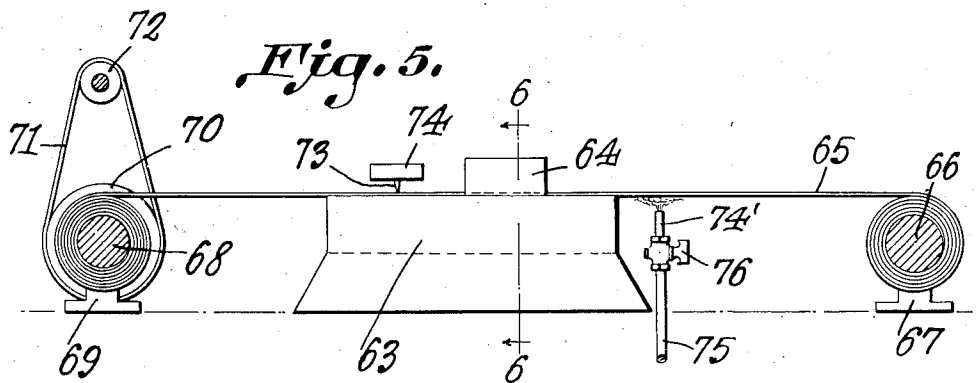
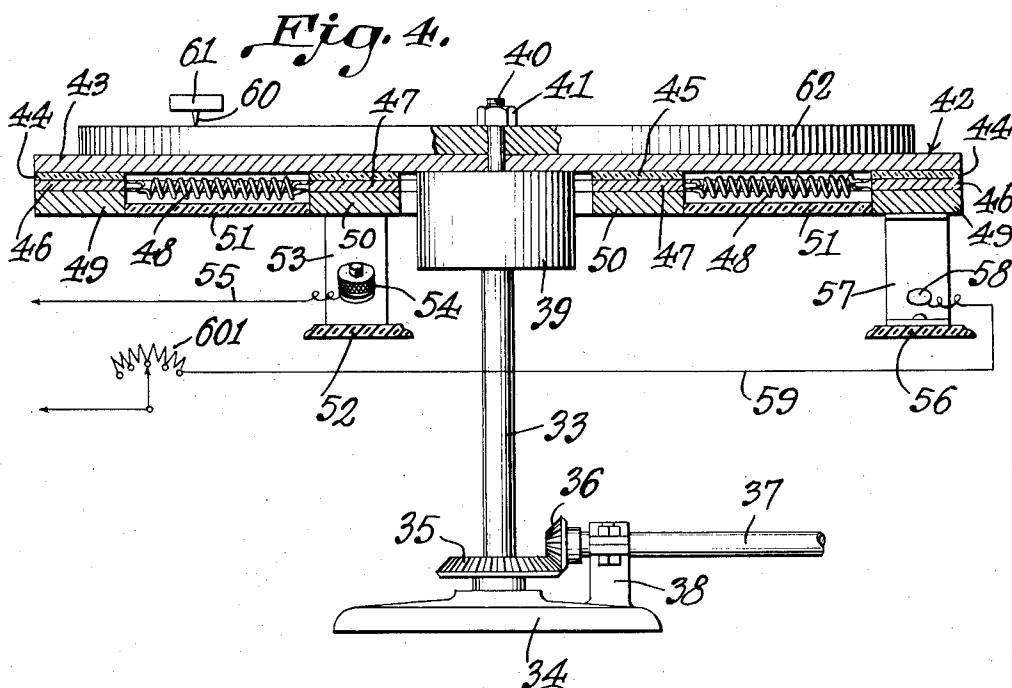
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MEANS AND METHOD OF MAKING PHONOGRAPH RECORDS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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MEANS AND METHOD OF MAKING PHONOGRAPH RECORDS

Application filed October 30, 1928. Serial No. 316,096.

This invention aims to provide a novel means and method for making and recording master phonograph records and commercial records. The invention aims, moreover, to provide a means and method of making a record which will have a smooth surface of extreme durability.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that, within the scope of what is claimed, changes in the precise embodiment of the invention shown can be made without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 shows in vertical longitudinal section, a device constructed in accordance with the invention, parts being in section;

Figure 2 is an end elevation;

Figure 3 is a section on the line 3—3 of Figure 1;

Figure 4 is a vertical section showing a modification;

Figure 5 is an elevation showing another modification;

Figure 6 is a section on the line 6—6 of Figure 5.

In carrying out the invention, as disclosed in Figures 1, 2, and 3, there is provided a support 1 in which a hollow shaft 2 is mounted for rotation, the shaft being turned by means of a pulley 3, or in any other desirable way. The shaft 2 has a shoulder 4. A nut 5 is threaded on the outer end of the shaft 2.

A hollow head 6 is held removably on the shaft 2 by means of a key 7. For the sake of strength, the head 6 is preferably made of metal. The head 6 abuts against the shoulder 4. Around the head 6 extends a band 8 of insulating material. The band 8 has a flange 9 that overlaps the inner surface of the head 6. A ring or track 10 is secured around the band 8. The track 10 is made of

conducting material. An insulating thimble 11 is mounted in the track 10. A conducting element 12 is in electrical contact, at its outer end, with the track 10. The conducting element 12 extends through the band 8 and through the thimble 11, and terminates in a post 14 located within the head 6. The post 14 has spring jaws 15.

The numeral 16 marks an insulating base plate which is fixed. A spring brush 17, of conducting material is secured to the base plate 16. The brush 17 engages the track 10. A conductor 18 is held on the brush 17 by a binding post 19.

The head 6 may be called the inner head. The machine includes an outer head constructed like the inner head. The parts of the outer head have been designated by numerals previously used with the suffix "a". The conductors 18 and 18a constitute part of an electrical circuit in which is interposed a rheostat 20. The head 6a is held in place by the nut 5.

A hollow mandrel 21 is provided. The mandrel 21 includes a tubular core 22, an outer shell 23 of cylindrical form, and end walls 24 that connect the ends of the core 22 with the ends of the shell 23. Within the mandrel 21 is a heating element 25, in the form of an electrical resistance, of any desired form. The heating element may be a piece of resistance wire wound into a coil, the coil being disposed spirally around the core 22 inside of the shell 23. The ends of the heating element 25 are joined to terminals 26 mounted in the end walls 24 and extended outwardly through the end walls.

In setting up the machine, the mandrel 21 may be placed inside of the tubular blank 27 on which the record is to be inscribed. The mandrel, carrying the blank 27, is slid to the left into the position shown in Figure 1, the shaft 2 passing through the core 22, the inner end of the mandrel 21 and the inner end of the blank 27 coming into abutment with the flange 9 of the insulating band 8, and the inner terminal 26 entering between the jaws 15 of the post 14. The head 6a is then slid into place on the shaft 2, the flange 9a abutting against the outer end of the blank 27

and against the outer end of the mandrel 21, the right hand terminal 26 in Figure 1, being received between the jaws 15a of the posts 14a.

Finally, the nut 5 is threaded up against the head 6a, so that the mandrel 21 and the blank 27 are clamped in place to rotate with the shaft 2.

The numeral 28 designates any suitable carrier for a stylus 29. The stylus 29 is made out of platinum or any other material which will resist heat. The carrier 28 and the stylus 29 are part of a recording mechanism (not shown) of any standard or desirable construction. The blank 27 may be made of glass, porcelain, brass, silver, or an alloy of any suitable kind, and may or may not be a conductor of electricity. In Figure 1 it has been presupposed that the blank is made of some metal that is a conductor of electricity, and, therefore, insulating means have been provided to insure the electric current passing in the proper way through the machine.

The shaft 2 is rotated by means of the pulley 3, or its equivalent, and a current of electricity is caused to flow through the conductors 18 and 18a, the current being regulated by means of the rheostat 20. The circuit includes the conductor 18, the binding post 19, the brush 17, the ring or track 10, the conducting element 12, the jaws 15, one of the terminals 26, the heating element 25, the other of the terminals 26, the jaws 15a, the conducting element 12a, the ring or track 10a, the brush 17a, the binding post 19a, and the conductor 18a.

The heating element 25 heats the blank 27, and after the heating has reduced the surface to a proper state capable of receiving the impressions from the stylus 29, the selection is recorded on the blank 27. When the recording has been finished, the current is turned off and the record is allowed to cool. In this way a permanent record is secured which is capable of withstanding long service.

The invention may be put into practice in a variety of ways, and it is not at all necessary that a cylindrical blank, like the part 27, be used. A disk record may be made, if the operator wishes, and in this connection let reference be had to Figure 4.

A shaft 33 is journaled for rotation in a base 34, rotation being imparted to the shaft 33 by any suitable means, such as a bevelled gear 35 on the shaft 33, the gear meshing with a bevelled pinion 36 on a drive shaft 37, supported for rotation in a bearing 38 on the base 34. The shaft 33 has an enlarged supporting head 39 provided with a reduced stem 40 on which a nut 41 is threaded.

The numeral 42 designates a turntable which is a composite structure. The turntable 42 may include a disk-like body 43 supported by the head 39, the stem 40 passing upwardly through the body. An outer in-

ulating ring 44 is secured to the under surface of the body 43 of the turntable 42. An inner insulating ring 45 is secured to the under surface of the body 43 of the turntable 42 within the ring 44.

A conducting ring 46 is secured against the ring 44. A conducting ring 47 is secured against the ring 45. The rings 47 and 46 are connected by radial resistance elements 48. An annular track 49 is secured against the bottom of the ring 46. An annular track 50 is secured against the under surface of the ring 47. The resistance elements 48 are housed in by an annular insulating plate 51 extended between the tracks 49 and 50. On an insulating base plate 52, like the part 16, is mounted a spring brush 53, like the members 17 of Figure 3. The brush 53 bears against the track 50. A binding post 54 is mounted on the brush 53 and is connected to a conductor 55. The numeral 56 designates a base plate, like the base plate 52, and on it is secured a spring brush 57 of the kind described. A binding post 58 is mounted on the brush 57, and connects the brush to a conductor 59. In the conductor 59, a rheostat 601 is interposed. The brush 57 bears yieldably against the track 49. The stylus is shown at 60, and is carried by any suitable part 61 of the recording mechanism. The parts 60 and 61 correspond, respectively, to the parts 29 and 28 of Figure 1.

The circuit includes the conductor 55, the binding post 54, the brush 53, the track 50, the ring 47, the resistance elements 48, the ring 46, the track 49, the brush 57, the binding post 58, the conductor 59, and the rheostat 601. The resistance elements 48 heat up the metal body 43 of the turntable 42, and the blank 62 is heated as and for the purpose described in connection with the cylindrical blank 27 of Figure 1.

The stem 40 passes through the blank 62, and the blank is held on the body 43 of the turntable 42 by the nut 41, or by any other appropriate means. Rotation is imparted to the turntable 42 and to the blank 62 by the shaft 37, the gears 35 and 36, and the shaft 33.

Any kind of a blank may be used to receive the record, and Figure 5 emphasizes this fact. In Figure 5 there is shown a support 63 having upstanding guides 64 between which passes a blank 65, which may be in the form of a metal tape that slides over the upper surface of the support 63. The tape 65 is wound off a reel 66, supported for rotation on a bracket 67. A receiving reel 68 takes the tape 65 after it has been recorded, the reel 68 being supported for rotation on a bracket 69. The reel 68 is connected to a pulley 70 engaged by a belt 71 driven by a power pulley 72, it being understood, of course, that any suitable means may be supplied for rotating the reel 68. As the tape 65 is drawn off the reel 66 and received on the reel 68, the selec-

tion is recorded on the tape 65 by means of a stylus 73 carried by any suitable part 74 of a recording mechanism. The parts 73 and 74 correspond, respectively, to the parts 29 and 28 of Figure 1. The tape 65, in this form of the invention, is heated by a flame proceeding from a nozzle 74' on a fuel supply pipe 75 in which is interposed a valve 76, whereby the supply of fuel may be regulated.

10 I claim:

1. In a device for recording on a record blank, a recording means, a hollow carrier capable of having a heating means located therein, means for so mounting the carrier that it will support a record blank in operative relation to the recording means, a heating means located internally of the carrier, and mechanism for producing relative movement between the carrier and the recording means.

2. In a device for recording on a record blank, the combination of a hollow carrier capable of having a heating means located therein, a record blank having a bore which receives the carrier, a recording means co-operating with the blank, means mounted on the carrier, and located in the bore of the blank, for heating the blank, and mechanism for producing relative movement between the carrier and the blank on the one hand, and the recording means on the other hand.

3. In a device for recording on a record blank, a recording means, a hollow carrier capable of having a heating means located therein, means for mounting the carrier for rotation about an axis, in such position that it will support a record blank in operative relation to the recording means, a heating means located internally of the carrier, and mechanism for rotating the carrier about said axis, with respect to the recording means.

4. In a device for recording on a record blank, the combination of a hollow carrier capable of having a heating means located therein, a record blank having a bore which receives the carrier, a recording means co-operating with the blank, means for mounting the carrier for rotation about an axis, a heating means mounted on the carrier and located in the bore of the blank, and mechanism for rotating the carrier about said axis, with respect to the recording means.

5. In a device for recording on a record blank, a recording means, a hollow carrier capable of having a heating means located therein, and of such shape that a record blank, commonly known as a cylindrical blank, may be placed about it, a heating means located internally of the carrier, means for mounting the carrier for rotation about a longitudinal axis, in such position that it will support a blank of the type specified in operative relation to the recording means, and mechanism for rotating the carrier about said axis.

6. In a device for recording on a record blank, a recording means, a hollow disk-like turntable affording a support for a blank commonly known as a disk blank, means for mounting the turntable for rotation about an axis, in such position that it will support a record blank of the type specified in operative relation to the recording means, a heating means located internally of the hollow turntable, and mechanism for rotating the turntable about said axis.

7. In a device for recording on a record blank, a shaft supported for rotation, spaced heads on the shaft, means for holding one of the heads removably on the shaft, a removable hollow mandrel on the shaft, and engaged between the heads, the mandrel and the heads forming a record blank carrier, a heating means located internally of the hollow mandrel, and a blank-engaging recording means disposed externally of the mandrel.

8. In a device for recording on a record blank, a shaft supported for rotation, spaced heads on the shaft, means for holding one of the heads removably on the shaft, a removable mandrel on the shaft, between the heads, the mandrel forming a record blank carrier, an electrical heating means carried by the mandrel, mechanism carried by the mandrel and the heads for completing an electrical circuit through the heating means when the mandrel and the removable head are mounted in place on the shaft, and a blank-engaging recording means disposed externally of the mandrel.

9. In a device for recording on a record blank, a shaft supported for rotation, a removable mandrel so shaped as to fit within a blank and provided with an opening for holding a heater, and to be slid, with the blank, on the shaft, a heater carried by the mandrel, means for holding the mandrel on the shaft, for rotation therewith, and a blank-engaging recording means disposed in operative relation to the mandrel.

10. In a device for recording on a record blank, a recording means, a hollow disk-like turntable forming a record blank carrier, means for mounting the turntable for rotation on an axis, and to hold a blank in operative relation to the recording means, electrical heating means located internally of the hollow turntable, means for rotating the turntable, and means for maintaining a closed circuit through the heating means whilst the turntable is rotating.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

WILLIAM W. McLAREN.

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