

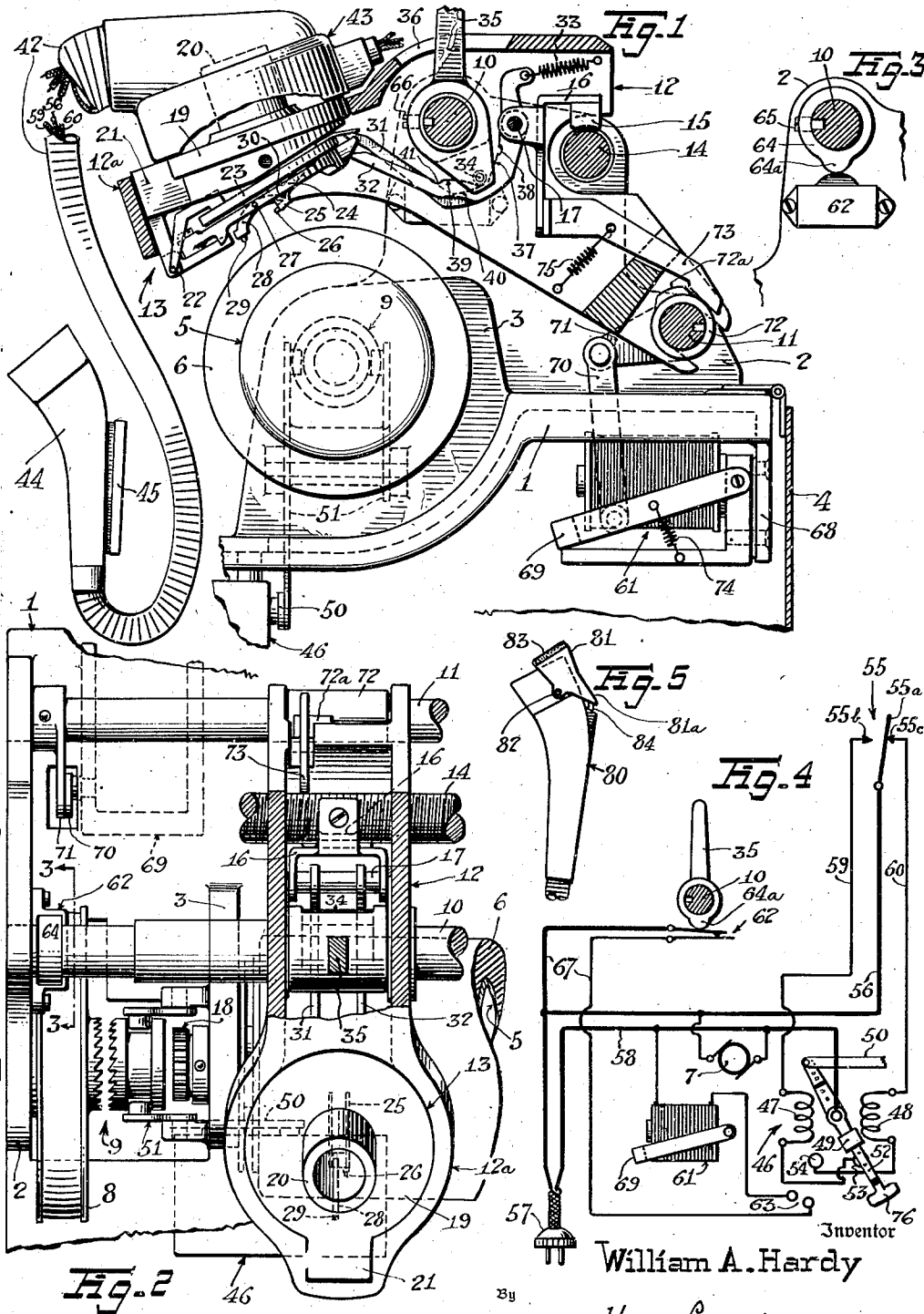
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PHONOGRAPH

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PHONOGRAPH

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This invention relates to phonographs and more particularly to improved means and arrangements for controlling commercial phonographs of the dictating machine variety.

Dictation recording machines generally have provision for reproducing to permit an operator, while in the course of recording dictation, to listen as desired to portions of dictation previously recorded. In these machines, for instance, there is a translating device of the recording-reproducing type which is mounted on a carriage for traveling movement relative to a record on the machine, and on this carriage there is a control member which is movable into recording and reproducing positions to adjust the device into its recording and reproducing conditions. Ordinarily, in practice, an operator will want to reproduce only the last few words or sentence of his dictation—to enable him to pick up the run of his thoughts as after some interruption such as a telephone call—and in order that this may be done with a minimum of distraction merely by shifting the control member above mentioned, without having to backspace the carriage, the reproducer stylus is set back from the recorder stylus in respect of the direction of advance of the carriage.

In these machines, however, the control member for the translating device is provided with an intermediate or neutral position through which it passes when the translating device is shifted between recording and reproducing conditions, and in this neutral position the control member is effective both to place the translating device into a neutral condition and to disconnect the carriage from its feed mechanism, this disconnecting being for the purpose of freeing the carriage for manual movement along the record. Since the carriage is very freely mounted, a slight pressure which the operator may accidentally apply to the carriage in the direction of its travel, as the control member is shifted between recording and reproducing conditions, will result in displacing the carriage and in putting the translating device into coaction with the record at an unintended point. This ordinarily will require relocation of the carriage relative to the record and will in the least tend to distract the operator's attention from his dictation. Accordingly, such accidental displacements of the carriage are very desirably to be avoided.

According to the present invention, an accidental displacing of the carriage as an incident to listening to the last portion of one's previously recorded dictation is effectively prevented by the

provision of a control arrangement which is adapted normally to hold the carriage locked against manual movement as the control member is shifted through neutral position to condition the machine for recording and reproducing. This is accomplished by requiring, in order to disconnect the carriage from its feed mechanism, that some auxiliary operation be performed on the machine when the control member is in, or is placed into, neutral position. This auxiliary operation is selected to be one which is not ordinarily effected while one shifts the control member between recording and reproducing positions incidental to listening back to one's previously recorded dictation, but is an operation that may be easily performed to free the carriage from its feed mechanism and allow it to be manipulated along the record when such a manipulation is needed, as when it is desired to return the carriage to initial position for conditioning the machine for subsequent operation on a newly mounted record.

It is an object of my invention to provide improved control arrangements, and modes of control, for dictating machines which are designed in practice to give a more positive control over the machine with an increased dependability in its operation.

It is another object to provide novel and improved control systems for dictating machines which will facilitate their use and operation.

It is another object to provide improvements for dictating machines which are designed to serve as safeguards to prevent accidental misoperations of the machine as an incident to the act of listening back to previously recorded dictation while in the course of carrying out a recording operation.

It is a further object to provide effective means to prevent an accidental displacing of the carriage incidental to shifting the translating device between recording and reproducing conditions.

Still other and allied objects of my invention will more fully appear from the following description and the appended claims.

In the description of my invention reference is had to the accompanying drawing of which:

Figure 1 is a fractional side elevational view of a conventional dictating machine, with parts broken away and parts appearing in section, to which a preferred form of my invention has been applied;

Figure 2 is a partial top view, partly in plan and partly in section, of the mechanism of Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a diagrammatic view of circuits and mechanism according to my invention; and

Figure 5 is a view illustrating a modified form of speaking tube which may be conveniently used in connection with my invention.

The phonograph fractionally shown in the accompanying drawing has a frame comprising a base 1 provided with standards at the sides, of which only a leftward standard 2 is shown, and with an intermediate standard 3, this frame being mounted within a cabinet 4 partially shown in Figure 1. The intermediate standard serves as a bearing support for a mandrel 5 which is adapted for carrying a cylindrical record 6. This mandrel is rotated by a motor 7 shown diagrammatically in Figure 4. The motor is coupled by a belt (not shown) to a drive pulley 8. This drive pulley is journaled to the leftward standard 2 and coupled by a clutch 9 to the mandrel.

Supported by the side standards of the frame of the machine is a pair of rods 10 and 11 on which a carriage 12 is slidably mounted for traveling movement along the record. This carriage has a hollow rearward part housing certain control mechanisms hereinafter described, and has a forward arm 12a which overhangs the record and carries a translating device 13. Traveling movement of the carriage along the record is effected by a feed screw 14 journaled to the side standards of the frame and by a cooperating feed nut 15 which is carried by a bracket 16 that is pivoted on a cross rod 17 of the carriage. Rotation of the feed screw is taken from the mandrel through a train of gears of which only the gear 18 on the mandrel shaft is shown.

The translating device 13 is herein illustrated as being a conventional one of the acoustical type, and may for the present purposes be briefly described as follows: This device has a circular member 19 for its frame which is provided with an upstanding tubular neck 20 and with a front depending lug 21. Separately pivoted to this lug on a horizontal axis 22 is a circular casing 23 known commonly as a sound box and a biasing weight 24 which is held directly below the sound box. Mounted on the under side of the sound box (onto a diaphragm not shown) and extending through the biasing weight is a stirrup 25 which carries a recorder stylus 26. Pivoted at 27 to the weight is a lever 28 which carries a reproducer stylus 29 at one end thereof, the other end of the lever being in engagement with the stirrup 25. As is shown in Figure 2, the reproducer stylus is set back from the recorder stylus in respect of the direction of advance of the carriage, as has been aforementioned.

When both the sound box and the biasing weight are held raised in the positions which they occupy in Figure 1, the styli are held out of engagement with the record and the device is in a neutral condition. When only the sound box is held raised, the weight moves down to press the reproducer stylus against the record and concurrently to hold the stylus lever 28 against the stirrup 25 whereby to condition the translating device for reproducing. When however both the sound box and biasing weight are released, the biasing weight moves down and comes to rest on the record through the medium of an advance ball 30, the reproducer stylus being now out of contact with the record, and also the sound box moves down and comes to rest on the record through the medium of the recorder stylus 26. This coaction of the sound box with the record

through the medium of the recorder stylus places the translating device into condition for recording.

For so controlling the sound box and biasing weight to place the translating device into its respective conditions, there are provided lifting fingers 31 and 32 for the sound box and biasing weight respectively, which fingers are pivoted to the carriage on the cross rod 17 aforementioned. The fingers are biased upwardly in a clockwise direction by tension springs generally referred to as 33. By the action of these springs the fingers bear upwardly against a cross pin 34 provided on the hub of a control lever 35 that is pivoted on the support rod 10 between the side walls of the carriage, there being an opening 36 in the top of the carriage through which the control lever extends. When the control lever is in a neutral position—which is the central position it occupies in Figure 1—both lifting fingers occupy their uppermost positions and hold the sound box and biasing weight to place the translating device into neutral condition. When the control lever is moved into a forward position—which is hereinafter termed its recording position—the pin 34 is slid along cam surfaces 37 on the lifting fingers to cam both fingers downwardly into their lowermost positions, the pin coming to rest in notches 38 in these fingers to detent the control lever in recording position. This lowering of the fingers has the effect of placing the translating device into recording condition as is above explained. When the control lever is however moved from neutral position into a rearward position—which is hereinafter termed its reproducing position—the pin 34 engages a cam 39 on the lifting finger 32 and cams this finger into its lowermost position; however, the pin passes along a dwell 40 on the finger 31 and holds this finger stationary, the pin coming to rest into a notch 41 to detent the lever in reproducing position. This has the effect of retaining the sound box in raised position but releasing the biasing weight to condition the translating device for reproducing. Of course, when the control lever is returned from recording or reproducing position to neutral position, the reverse operations from those above described take place and the translating device is returned to neutral condition.

The sound box is sound coupled to the tubular neck 20, by suitable means not shown, and sound communication to and from the sound box is had through a flexible speaking tube 42 which has a coupling member 43 that seats on the translating device and pivots on the neck 20. On the outer end of this speaking tube there is the usual handpiece 44. This handpiece is provided with a start-stop control 45 which is adapted to be operated by the hand, this control being provided for controlling the clutch 9 as will be now explained.

The clutch 9 is operated by an actuating mechanism 46 preferably of the form disclosed in Langley Patent No. 1,380,486 issued June 7, 1921. This mechanism is well known in the art and is accordingly sufficiently illustrated for the present purposes by its schematic showing in Figure 4. The mechanism comprises start and stop coils 47 and 48 which are selectively energizable to attract a pivoted armature 49 which is coupled by a link 50 and lever 51 to the clutch as is shown in Figures 1 and 2. When the start coil is energized the armature is swung in the direction of that coil to engage the clutch. At the same time the

circuit of the start coil is broken and that of the stop coil is prepared for operation; this is done by a switch comprising a pole member 52 on the armature 49 and contact members 53 and 54 which are respectively connected to the start and stop coils. When the stop coil is next energized, the reverse operation takes place: the clutch 9 being disengaged, the circuit through the stop coil being broken, and the circuit of the start coil being now prepared for operation.

This mechanism 46 is controlled by a single-pole double-throw switch 55. The pole member 55a of this switch is connected by a lead conductor 56 to one side of a power supply, as to a line conductor block 57, and the other side of the power supply is connected by a lead conductor 58 to the armature pole member 49. The contact members 55b and 55c of this switch 55 are connected by lead conductors 59 and 60 to the start and stop coils respectively. The switch 55 is mounted within the handpiece 44 and placed in coupled relation with the hand control 45, and the lead conductors 56, 59 and 60 extend from the switch through a speaking tube as is shown. When the switch 55 is thrown to the left as it appears in Figure 4, which is accomplished by depressing the hand control 45, the circuit through the start coil is closed with the power supply, by way of the pole member 52 and contact 53, and that coil is energized to engage the clutch. Conversely, when the switch 55 is next thrown to the right into the position it occupies in Figure 4, which is done by releasing the hand control 45, the stop coil 43 is energized, by way of the pole member 52 and contact 54, to disengage the clutch.

The apparatus so far described is common to dictating machines heretofore manufactured and used, and forms a part of the present invention only insofar as it is related to or combined with other mechanism hereinafter described.

The normal operation of the apparatus so far described will be understood to be as follows; Having mounted a record onto the mandrel the operator will shift the control lever 35 into recording position and depress the start-stop control 45 to put the machine into operation. If in the course of recording dictation the operator should want to reproduce the last portion of his dictation, he will first release the start-stop control to stop the machine, then shift the control lever 35 to reproducing position, and again depress the start-stop control to restart the machine for reproducing. Having finished the reproducing operation, the operator will again stop the machine, shift the control lever 35 back to recording position and again restart the machine to continue the recording operation.

Usually, these machines are arranged so that the control lever 35, by itself, is effective to disengage the feed nut from the feed screw when this lever is placed in neutral position. This is for the purpose of freeing the carriage for manual movement, simultaneously as the styli are moved out of contact with the record, so that the carriage may be moved by the hand along the record to return it, for example, to initial position at the completion of a recording operation on a record. Accordingly, in these machines the carriage is freed momentarily as the control lever is shifted between recording and reproducing positions, and unless care is taken by the operator to avoid applying any pressure against the carriage in the direction of its travel as the lever is so shifted—which is frequently difficult to do since

operators often sit to one side of the machine as they dictate—the carriage will be displaced and the intended course of operation for the machine is interrupted.

My invention has in view holding the carriage locked against such accidental displacement during the normal course of manipulations performed on the machine in shifting it to reproducing condition to listen to a portion of previously recorded matter and in shifting it back to recording condition to resume a recording operation. This locking is preferably carried out by retaining the feed nut engaged with the feed screw throughout this normal course of operations. Preferably, the feed nut is controlled by the joint action of two adjustable elements of the machine, one of which is the control lever 35 and the other of which may be any suitable control which ordinarily has, or may conveniently have, a predetermined setting during the act of shifting the machine between recording and reproducing conditions. One such suitable member for this latter element—which I preferably employ and herein describe—is the start-stop hand control 45 since, as is above noted, it is the customary and usual act for operators of dictating machines to release this control 45 to stop position before shifting the control lever 35.

An arrangement for carrying out the mode of control according to my invention comprises an electromagnet 61 for disengaging the feed nut, and a control circuit for this electromagnet which comprises a switch 62 controlled by the lever 35 and a second switch 63 controlled by the start-stop control 45, these switches being connected serially in a circuit 67 which connects the electromagnet to the power supply block 57 to require a closing of both switches in order to energize the electromagnet. The electromagnet 61 is mounted on a depending lug 68 of the base 1 in a position below the carriage support rod 11, and is provided with a pivoted armature 69 which is coupled by a link 70 to an arm 71 that is secured to the support rod 11, it being understood that this rod 11 is pivoted at its ends to the side standards of the frame of the machine. Splined to the rod 11 between the rearward legs of the carriage 12 is a cam 72 which operates on an arm 73 of the feed nut supporting bracket 16. When the electromagnet is not energized, its armature is held by a spring 74 into a downward position wherein the lobe 72a of the cam 72 is out of contact with the arm 73. Under this condition the feed nut is held in engagement with the feed screw under the influence of a spring 75 acting on the arm 73 of the bracket 16. When the electromagnet is however energized, the rod 11 is turned to engage the cam lobe 72a with the arm 73 and thus raise the feed nut out of engagement with the feed screw.

The switch 62 is mounted on the side standard 2 below the cross rod 10, and is operatively coupled to this rod by a cam 64 that is held by a set screw 65 to the rod. The rod 10 is pivoted in the side standards of the frame of the machine and is splined at 66 (see Figure 1) to the control lever 35. When this lever is in neutral position the lobe 64a of the cam 64 coacts with the switch 62 to hold it in closed position, but when the lever 35 is moved to recording or reproducing position the cam lobe moves to the side to permit the switch 62 to open. The switch 63 comprises a pair of contacts which are closed as the clutch-actuating mechanism 46 is actuated to start position by a shoe 76 that is mounted insulatedly onto

the armature pole member 52 of this mechanism.

From the above description, it will be understood that when the control lever 35 is in neutral position and the start-stop control is in stop position—which is the normal, usual position for the start-stop control when the machine is shifted between recording and reproducing conditions—the feed nut will remain engaged to hold the carriage locked against accidental displacements. When however there is need to manipulate the carriage along the record, the carriage may be freed for manual movement by depressing the hand control 45 while the control lever 35 is in neutral position. Moreover, it will be understood to be a feature of my invention that so long as the control lever 35 is let to remain in neutral position, the hand control 45 is effective by itself as a feed nut control and, concurrently, as a start-stop means for the machine, and may be considered as a control remote from the machine for these purposes.

Alternative to using a start-stop control adapted for hand operation as is above described, there may be used instead a control which is adapted to be operated by pressing the handpiece of the speaking tube against some part of the face, this being a convenient operation to perform for starting and stopping the machine since the handpiece is held directly before the face to receive the voice energy from the mouth during the recording operation. In Figure 5 there is illustrated a handpiece 80 which is usable in this manner. This handpiece has a hood-shaped member 81 overlying the top end portion thereof and pivoted thereto as at 82. The forward rim of the member 81 extends beyond the handpiece and is covered with resilient padding 83. Within the handpiece there is provided the switch 55 in a suitable form operable by a button 84. This button extends through the handpiece into contact with a rearward extension 81a of the member 81. It will be understood that the button 84 is biased forwardly to normally retain the switch 55 in stop position. However, upon applying a pressure to the front of the member 81, as by pressing the handpiece up against one's face, the member 81 will be pivoted backwardly to depress the button and place the start-stop control into start position, the control being returned automatically to stop position when the pressure is taken from the member 81.

The embodiment of my invention herein disclosed will be understood to be illustrative and not limitative of my invention since the same is subject to many changes and modifications without departure from the scope of my invention, which I undertake to express according to the following claims.

I claim:

1. In a phonograph including a record support, a translating device and a carriage for said device mounted for traveling movement in relation to said support: the combination of means for locking said carriage against manual movement; a control member on said carriage and operatively connected to said translating device for adjusting the device into recording and reproducing conditions; and means for controlling said locking means comprising two control devices respectively operable into different conditions, means to control one of said devices by said control member, and means operatively connecting said control devices with said locking means for rendering said one device effective to control said locking means only when said

second device is in a predetermined one of its said conditions.

2. In a phonograph including a drive mechanism, a translating device, and a carriage for said translating device movable by said drive mechanism: the combination of releasable means for holding said carriage constrained against manual movement; a control member on said carriage coupled to said translating device and movable into recording and reproducing positions to adjust the device into recording and reproducing conditions, said control member also having a neutral position; a start-stop control operatively coupled to said drive mechanism and movable into start and stop positions to put the drive mechanism into and out of operation; and means operatively connecting said control member and start-stop control with said holding means and effective to release the holding means upon placing said control member into neutral position while said start-stop control is in start position.

3. In a phonograph including a translating device, a movably mounted carriage for said device, and a drive for said carriage including a feed screw and cooperating feed nut movably connected to the carriage for movement into and out of engagement with the feed screw: the combination of a control member on said carriage operatively coupled to said translating device and movable from a neutral position into recording and reproducing positions to adjust the device into recording and reproducing conditions respectively; a start-stop control for said drive; and means, operatively connecting said control member and start-stop control with said feed nut and effective on manipulating said start-stop control while said control member is in a predetermined one of its said positions, for moving said feed nut into and out of engagement with said feed screw.

4. In a phonograph including a record support and a carriage for a translating device mounted for traveling movement in relation to said support: the combination of controllable means for locking said carriage against manual movement; and means for controlling said locking means comprising two control members each manually movable into different positions independently of the other; and means operatively interconnecting said control members and coupling the same to said locking means for rendering one of the control members effective to control said locking means upon the other control member being in a predetermined one of its different positions.

5. In a phonograph including a rotatable record support and rotating means therefor, a translating device and a carriage for said device mounted for traveling movement in relation to said support: the combination of releasable means for holding said carriage against manual movement; a control member operatively coupled to said translating device and movable between different positions to put the device into different conditions; a start-stop control operatively coupled to said record-rotating means and movable into start and stop positions for putting the rotating means into and out of operation; and means operatively connecting said control member and said start-stop control to said holding means for rendering the control member effective to control the holding means only when said start-stop control is in a predetermined one of its said positions.

6. In a phonograph including a rotatable record support and rotating means therefor, a translating device and a carriage for said device mounted for traveling movement in relation to said support: the combination of releasable means for holding said carriage against manual movement; a control member operatively coupled to said translating device and movable between different positions to put the device into different conditions; a start-stop control operatively coupled to said record-rotating means and movable into start and stop positions for putting the rotating means into and out of operation; and means operatively connecting said control member and said start-stop control to said holding means for rendering the start-stop control effective to control the holding means only when the control member is in a predetermined one of its said positions.

7. In a phonograph including a drive mechanism, a translating device, a carriage for said

device mounted for traveling movement, and releasable means coupling said carriage to said drive mechanism: the combination of a first control member coupled to said translating device and movable from a neutral position into recording and reproducing positions for conditioning said device for recording and reproducing respectively; a second control member coupled to said drive mechanism and movable into start and stop positions for putting the drive mechanism into and out of operation; and means, operatively connecting said control members to said coupling means, for causing said coupling means to be released only when said first control member is in a neutral position and said second control member is in start position and for restoring said coupling means to effective condition upon either of said control members being moved out of its said respective position.

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