June 11, 1940. C. C. PLUMB 2,203,877

TELEPHONE MESSAGE RECORDING AND REPRODUCING APPARATUS

Filed April 29, 1939

Fig. 1.

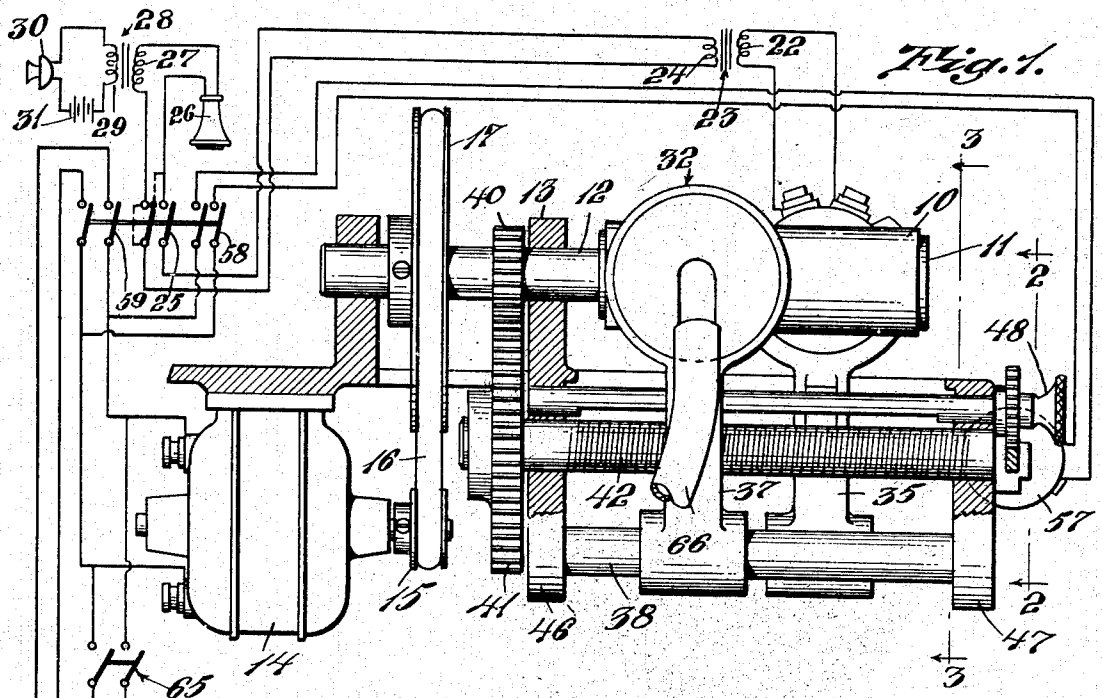


Fig. 2.

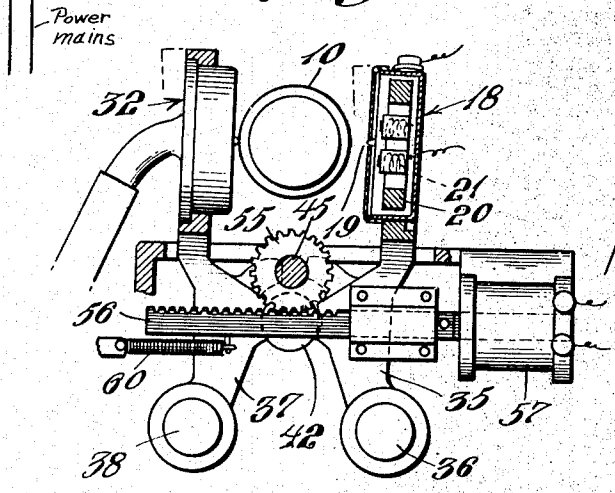
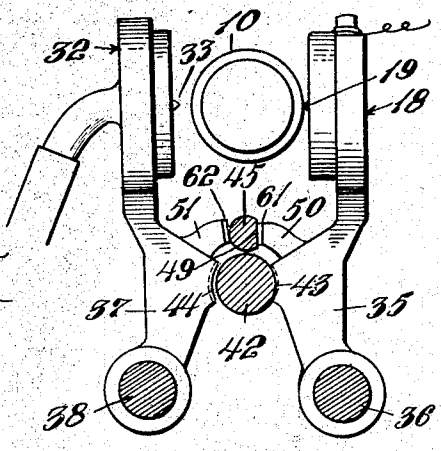


Fig. 3.



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TELEPHONE MESSAGE RECORDING AND REPRODUCING APPARATUS

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7 Claims. (Cl. 179—6)

This invention relates to phonographic apparatus, and has for one of its objects to provide phonographic apparatus adapted for use as a combined recording and transscribing machine located at a distance remote from a dictator's position to record a message or dictation in the dictator's own voice given over the telephone during the absence of the person to whom the message is intended in and/or after business hours for transcription later.

Another object of the invention is to provide apparatus of the class indicated which is so constructed and arranged that it is operated electrically and under the complete control of an operator at a central telephone call station for receiving telephone messages and remote from the phonograph apparatus, in which shifting of the apparatus into a recording position from a reproducing position may be carried out electrically and controlled from a remote point when electrical connection is established and completed between the control station and the dictator's station.

Another object of the invention is to provide apparatus of the class described in which the reproducing mechanism may be operated electrically at the recording station if desired and independently of the remote control means at the central call receiving station.

Another object of the invention is to provide apparatus of the class described in which the reproducing mechanism will be automatically shifted from a recording into a reproducing position when the apparatus is disconnected electrically from the source of dictation.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a circuit diagram of a telephonic message recorder system embodying my invention;

Fig. 2 is a detailed end elevational view taken substantially on the line 2—2 of Fig. 1 showing one form of the apparatus in a message reproducing position; and

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1 showing the apparatus in a recording position.

It has been found desirable to provide an apparatus for use particularly in connection with existing telephone systems for recording and reproducing various messages when dictated over the telephone, such as detailed descriptions of orders, verifications and confirmations of orders, follow-up instructions, delayed messages of an urgent nature transmitted to business houses either after business hours or which require the prompt attention of a particular person but can be taken during his temporary absence for transcription later upon his return; and in order to obtain these desirable results I have provided a telephone message recording and transcribing system comprising a phonograph adapted to record and reproduce selectively, a dictator's station remotely located with respect to the phonograph and comprising telephone apparatus, and a telephone call-receiving station remote from the dictator's station and the phonograph station, such as a telephone switchboard or even an ordinary telephone call station, and comprising means actuatable by a person at such call-receiving station for controlling the operation of said phonograph and to connect the recording device thereof electrically with the dictator's station for recording of the telephone message dictated. As further features of the invention I provide means for automatically restoring the phonograph to a recording position when operation of the phonograph is stopped by the remote control at the call station after dictation has been completed, and in addition there is provided independent manually actuable control means located at the phonograph station to effect shifting of the phonograph apparatus to neutral, recording or reproducing positions, and also a manually operable control means for controlling the operation of said phonograph independently of the remote control means therefor located at the call-receiving station; and the following is a more detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be accomplished.

With reference to the drawing, 10 designates a wax record cylinder mounted upon a mandrel 11 for rotation by a shaft 12 suitably journaled in a frame upright 13 and driven at constant speed of rotation by any suitable source of power, such as an electric motor 14 having its pulley 15 connected by means of a power transmission belt 16 with a pulley 17 suitably fixed to the shaft 12. The mandrel 11 for supporting the sound record cylinder 10 may be of any desired record releasing type of construction, one form of such device being that shown in the expired patent to Holland, Patent No. 1,213,197 dated Jan. 23, 1917.

The recorder unit is generally indicated at 18 and consists of the usual form of sound box and diaphragm construction having a recording sty-

lus 19, and is of the common construction employed in electrically operated dictating machines of the type employed in business offices such as the "Ediphone" or other standard makes and for the reason that it is well known in the art and that it forms "per se" no part of the present invention, no further detailed description of this mechanism is deemed to be necessary.

As illustrated in Fig. 1, the recorder unit 18 is electrically connected to be actuated by and in response to the variation in intensity and amplitude of the electric current fed to electric telephone receiver 20 carried by the recorder unit. In the embodiment selected for illustration the winding of the electro-magnet 21 of the telephone receiver 20 receives its current for actuating the stylus 19 from one winding 22 of a suitable transformer generally designated 23 (see Fig. 1), which winding is connected in series with the winding of the electro-magnet 21. The other winding 24 of the transformer 23 is electrically connected in series through a switch generally designated 25 with a telephone receiver 26 and the secondary winding 27 of a second transformer generally indicated at 28. The primary winding 29 of the transformer 28 includes in its electrical circuit a suitable microphone or telephone transmitter 30 and a source of electric current 31. Suitable electric amplifying circuits and devices may be interposed in the telephone circuit, if desired. The specific electric circuit and microphone and telephone apparatus utilized therein for supplying variant electric currents to the telephone receiver 20 of the recording unit, however, have merely been indicated diagrammatically and they form "per se" no part of the present invention and therefore are not shown and described in greater detail. The reproducer device which is separate from the recorder device, is indicated generally as 32 and is of well known construction employed in dictating phonographs having the usual sound box and diaphragm construction, and carries a reproducing stylus 33.

As illustrated in Fig. 2, the mounting arrangement of the recording unit 18 and the reproducer unit 32 of the apparatus is a novel feature of this invention, in which the recording unit 18 and the reproducing unit 32 are shown as being positioned at diametrically opposed positions with respect to the record cylinder 10. The recording unit 18 is mounted on one end of a lever arm 35 which is pivoted at its other end on the longitudinally extended guide rod 36 for movement toward and away from the record cylinder 10 and also for longitudinal sliding movement along the rod axially of the cylinder. Similarly, the reproducing unit 32 is mounted on the upper end of the lever arm 37 which is slidably mounted at its other end on a longitudinally extended guide rod 38 for movement both longitudinally of the record cylinder and for pivotal movement transversely toward and away from the same. The shaft 12 of the mandrel 11 carries a gear 40 in meshing engagement with another gear 41 mounted on the feed screw 42 which is disposed above and intermediately between the guide rods 36 and 38, for operating the screw whenever the mandrel 11 is operated, to carry either the recording unit 18 or the reproducing unit 32 along the record as the latter rotates for recording or transcribing the dictation. The guide rods 36 and 38 are spaced apart a sufficient distance to allow the weight of either the recording unit 18 or the reproducing unit 30 to cause them to drop and mesh the threaded portions 43 and 44 of the levers with the feed screw 42 whenever the shifting of such units is desired by mechanism which will be presently described.

In order to provide for controlling the apparatus so as to shift from recording position to a reproducing position and vice versa, and also to provide a control therefor, either locally and/or at a distance remote from the phonograph, I have provided a control mechanism which is susceptible to independent manual movement for local control of the shifting, and also actuatable electrically from a remote point. To this end, there is provided a cam shaft 45, suitably journaled for free rocking movement in the depending standards 46 and 47 of the apparatus framework and capable of being manually actuated by means of a knurled head of a thumb knob 48 projecting from the forwardly extended end of the cam shaft 45. The cam shaft 45 is provided with a flatted side camming portion 49 which alternately engages the end faces of the abutment members 50 and 51 carried by the lever arms 35 and 37 respectively to alternately lift them and rock them sidewise toward and from the record upon turning of the cam shaft 180 degrees by a manual twisting of the thumb knob 48 for bringing either the stylus 19 of the recording unit 18 or the stylus 33 of the reproducing unit 32 into impinging engagement with the cylindrical surface of the wax record cylinder 10.

In order to obtain automatic electrically controlled shifting of the apparatus, I have further provided on the cam shaft 45 a gear 55 which is in meshing engagement with a rack 56 suitably mounted for sliding movement upon the base below and transversely of the record cylinder 10. For the purpose of actuating the rack 56 there is provided an electro-magnet 57, preferably a solenoid having a movable core armature to which the rack 56 is rigidly connected and moved when the armature is drawn within the solenoid by energizing of its field magnet. The winding of the electromagnet 57 is connected through the switch 58 with the motor circuit and is fed therefrom upon closing of the switch 59 connecting the motor circuit with the electric current supply mains. The electromagnet 57, when thus energized, sets up a magnetic field of sufficient strength to draw the rack 57 to the right of Fig. 2 against the normal tension of a spring 60 and rotate the gear 55 and the cam shaft 45 to drop the recorder unit 18 so that its stylus 19 will rest freely upon the record. Upon de-energization of the electromagnet 57 when the apparatus is not in use, the spring 60 being under tension will act to restore the rack 57 to its initial position due to rotation of the gear 55 and the cam shaft 45 in the opposite direction to permit the cam 49 to drop the reproducer 32 and allow the stylus 33 of the same to engage the record.

The abutments 50 and 51 may be provided with rubber facings 61 and 62 respectively so as to absorb the sudden shock due to the impact action of the abutments when they alternately strike against the cam shaft 45 when the apparatus is shifted from its recording to the transcribing position and vice versa.

The set of switches 25, 58 and 59 may be of suitable form, such as multiple toggle, lever or push button switches, as desired, the electrical arrangement being such that when the switches are closed, the switch 59 serves to energize the motor circuit 14, the switch 25 connects the recorded telephone 20 with the dictator's tele-

phone, and the switch 58 energizes the rack operating solenoid 57 respectively. These switches may be either separate or they may be integrally interconnected as a gang unit so that only one manual movement by the telephone operator at the central control station will be required to energize the phonograph system and initiate the apparatus into a recording position and operate the phonograph. Thus, when a telephone call is received by the telephone operator from a person at a station remote from the phonograph and who desires to record his dictation or message for reproduction later, the telephone operator at the central call-receiving station will close the switches 58 and 59 respectively to shift the recorder to a recording position and also start the phonograph motor 14 rotating to revolve the record cylinder 10 and the feed screw 42. Simultaneously therewith, the telephone operator also closes the switch 25 to close the electric circuit through the winding 24 of the transformer 23 and produce by induction variable currents in the winding 22 connecting the telephone receiver 20 of the recording device 18 to establish electrical connection with the telephone line and the microphone 30. Since the recording device 18 has been turned to a recording position, the modulated telephonic electric currents impressed on the telephone recording receiver 20 cause its diaphragm and stylus 19 thereof to vibrate in response to the variant currents thereby inscribing or cutting a sound track upon the outer cylindrical surface of the record 10 and recording the dictated message.

At the termination of the dictation, when the dictator hangs up the telephone receiver 26 at his station, the telephone operator on noting this condition on her switchboard, then opens the switches 25, 58 and 59 thereby de-energizing the telephone receiver 20 of the recorder, the driving motor 14 of the phonograph and the solenoid 57 for the recorder shifting mechanism so that the resiliency of the spring 60 will automatically throw the reproducer 32 into reproducing position and allow its stylus 23 to impinge upon the recorded sound track of the record cylinder 10. Thus, all the listener has to do to reproduce the recorded message is to close the switch 65 and start the motor 14 rotating and then listen to the reproduced message delivered from the usual sound tube 66 of the reproducer device 32. By means of the thumb nob 48 the listener may rotate the cam shaft 45 to manually effect the simultaneous shifting of the recording device 18 and the reproducing device 32 to neutral position, in which instance the flat cam surface 49 will be in a substantially horizontal position, so that further rotary movement of the cam shaft 45 laterally of the record either to the right or to the left thereof will alternately lift and drop the recorder 18 and the reproducer 32 to bring their respective stylus into operative contact with the record cylinder.

Throughout this specification and the appended claims I intend that the term "telephone" as used herein should be interpreted to include not only the conventional telephone apparatus and its line circuits, but also should be interpreted as including radio-telephone apparatus and circuits having a similar effect.

It will be understood that although I have shown only a single phonograph associated with a telephone circuit, my invention is not limited thereto, and it will be understood that two, three or even more phonographs of this character may be operated in accordance with the teachings of this invention, there being provided electrical contacts on each machine whereby as the first machine reaches the end of its record, the next machine will be started into operation and the first one stopped, and so on until all or several of the machines have operated over a given period of time.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a system of the character indicated, a phonograph adapted to record and reproduce selectively and having a rotatable record support and separate members pivotally mounted at opposite sides of the record axis for independently mounting the recording and reproducing devices, each of said pivoted members being arranged for relative movement with respect to a record on such support, a dictator's station remote from said phonograph and comprising telephone apparatus, a telephone circuit for said telephone apparatus, a telephone call-receiving station connectable with said circuit and remote from said phonograph and said dictator's station and comprising means for electrically controlling the operation of said phonograph, an energizing circuit for said control means, means at such call-receiving station for electrically connecting the telephone circuit with the phonograph for recording telephone dictation, electrically actuatable means at said phonograph station for shifting the phonograph from a reproducing position when the apparatus is inactive to a recording position when the control means at said telephone call-receiving station is moved to cause operation of the phonograph, control means at the call-receiving station for causing shifting electrically of the phonograph to a recording position, and means for automatically shifting the phonograph from a recording to reproducing position upon manipulation of said control means at the call-receiving station to stop the operation of the phonograph apparatus.

2. In a system of the character indicated, a phonograph adapted to record and reproduce selectively and having a rotatable record support and a pair of pivoted arm members for independently mounting the recording and reproducing devices at diametrically opposite positions of a record cylinder with each of said members being arranged for relative movement with respect to a record on such support, a dictator's station remote from said phonograph and comprising telephone apparatus, a telephone circuit for said telephone apparatus, a telephone call-receiving station connectable with said circuit and remote from said phonograph and said dictator's station and comprising means for electrically controlling the operation of said phonograph, an energizing circuit for said control means, means at such call-receiving station for electrically connecting the telephone circuit with the phonograph for recording telephone dictation, electrically actuatable means at said phonograph station for shifting the phonograph to a recording position when the control means at said telephone call-receiving station is moved to cause operation of the phonograph, and control means at the call-receiving station for caus-

ing shifting electrically of the phonograph to a recording position.

3. In a message recording machine of the character indicated, in combination, a rotatable record holder, a motor for rotating the holder, a pair of pivoted members disposed at opposite sides of a record when the same is mounted in normal operating position on said holder, and alternately shiftable with respect to a record, one of said pivoted members carrying a phonograph recording device and the other of said pivoted members carrying a phonograph reproducing device, feed mechanism for alternately causing said recording device and said reproducing device to advance across the record upon rotation thereof, a cam operable to effect the selective shifting of said recording device and said reproducing device respectively, alternately to recording or reproducing position, manually actuatable control means for operating said cam to cause such shifting movement of the apparatus, remotely controlled electrically actuatable means for moving said cam and operable independently of the manual control means therefor to effect shifting of said apparatus to either recording or reproducing position, and an energizing circuit for operating said motor and said electrically actuatable shifting means.

4. In a message recording machine of the character indicated, in combination, a rotatable record holder, a motor for rotating the holder, a pair of pivoted members disposed at opposite sides of a record when the same is mounted in normal operating position on said holder, and alternately shiftable with respect to a record, one of said pivoted members carrying a phonograph recording device and the other of said pivoted members carrying a phonograph reproducing device, feed mechanism for alternately causing said recording device and said reproducing device to advance across the record upon rotation thereof, a cam operable to effect the selective shifting of said recording device and said reproducing device respectively, alternately to recording or reproducing position, manually actuatable control means for operating said cam to cause such shifting movement of the apparatus, remotely controlled electrically actuatable means for moving said cam and operable independently of the manual control means therefor to effect shifting of said apparatus to either recording or reproducing position, and an energizing circuit for operating said motor and said electrically actuatable shifting means, and means adapted to cushion the fall of either the recorder or the reproducer as the respective stylus impinges the record to prevent damage to the record and the apparatus when the cam is rotated to permit said apparatus to move into a recording or reproducing position.

5. In a message recording machine of the character indicated, in combination, a rotatable record holder, a motor for rotating the holder, a pair of pivoted members disposed at opposite sides of a record when the same is mounted in normal operating position on said holder, and alternately shiftable with respect to a record, one of said pivoted members carrying a phonograph recording device and the other of said pivoted members carrying a phonograph reproducing device, feed mechanism for alternately causing said recording device and said reproducing device to advance across the record upon rotation thereof, a cam operable to effect the selective shifting of said recording device and said reproducing device respectively, alternately to recording or reproducing position, manually actuatable control means for operating said cam to cause such shifting movement of the apparatus, remotely controlled electrically actuatable means for moving said cam and operable independently of the manual control means therefor to effect shifting of said apparatus to either recording or reproducing position, and an energizing circuit for operating said motor and said electrically actuatable shifting means, and means adapted to cushion the fall of either the recorder or the reproducer as the respective stylus impinges the record to prevent damage to the record and the apparatus when the cam is rotated to permit said apparatus to move into a recording or reproducing position.

6. In a phonograph having electric motive means for driving the same and a rotatable record support, a feed screw and a pair of shiftable members at opposite sides of a record, one of said members carrying a recorder device and the other of said members carrying a reproducer device and all operable by said motive means, a cam for shifting said apparatus to recording or reproducing position, means for manually operating said cam, means independent of said manual operable means and comprising an electro-magnet operatively connected to said cam for operating the cam to positively shift and position the recorder device in recording position when said motive means is operated, and control switches in the electric circuits of said electro-magnet and said motive means to make and break said circuits intermittently.

7. In a phonograph having electric motive means for driving the same and a rotatable record support, a feed screw and a pair of shiftable members at opposite sides of a record, one of said members carrying a recorder device and the other of said members carrying a reproducer device and all operable by said motive means, a cam for shifting said apparatus to recording or reproducing position, means for manually operating said cam, means independent of said manual operable means and comprising an electro-magnet operatively connected to said cam for operating the cam to positively shift and position the recorder device in recording position when said motive means is operated, and control switches in the electric circuits of said electro-magnet and said motive means to make and break said circuits intermittently, and a spring to cause the shifting of said phonograph from recording to reproducing position upon termination of the operation of said motive means.

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