March 18, 1930. M. DE WRANGELL 1,751,310

TALKING MACHINE

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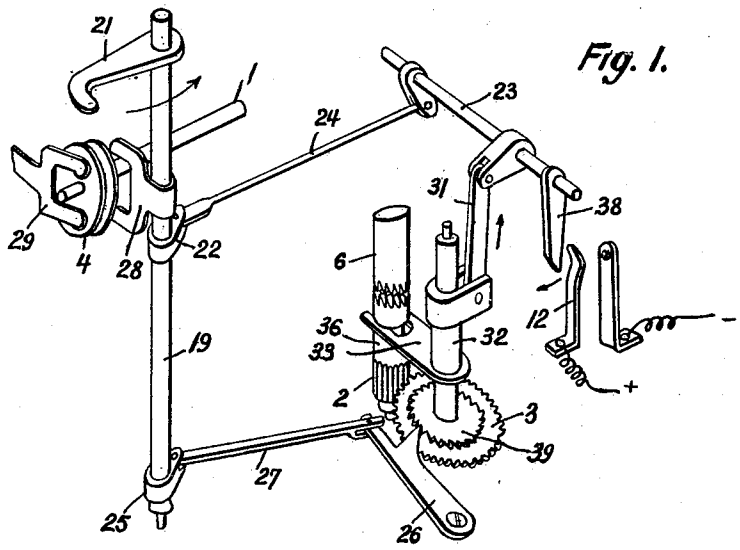


Fig. 1.

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Fig. 2.

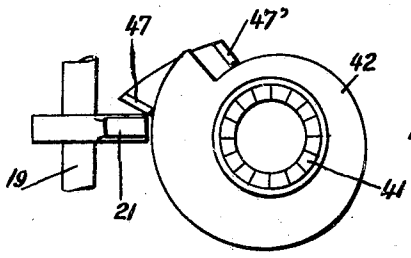


Fig. 4.

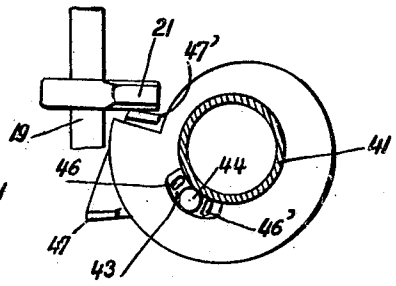


Fig. 3.

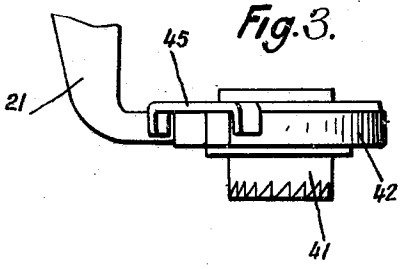


Fig. 5.

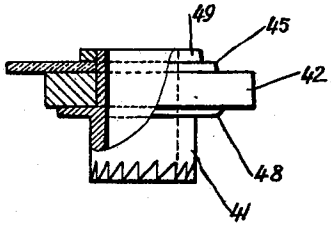


Fig. 6.

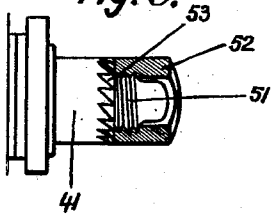
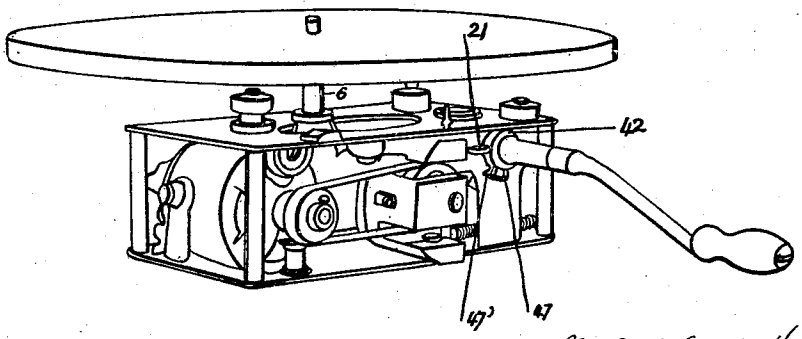


Fig. 7.



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Fig. 9

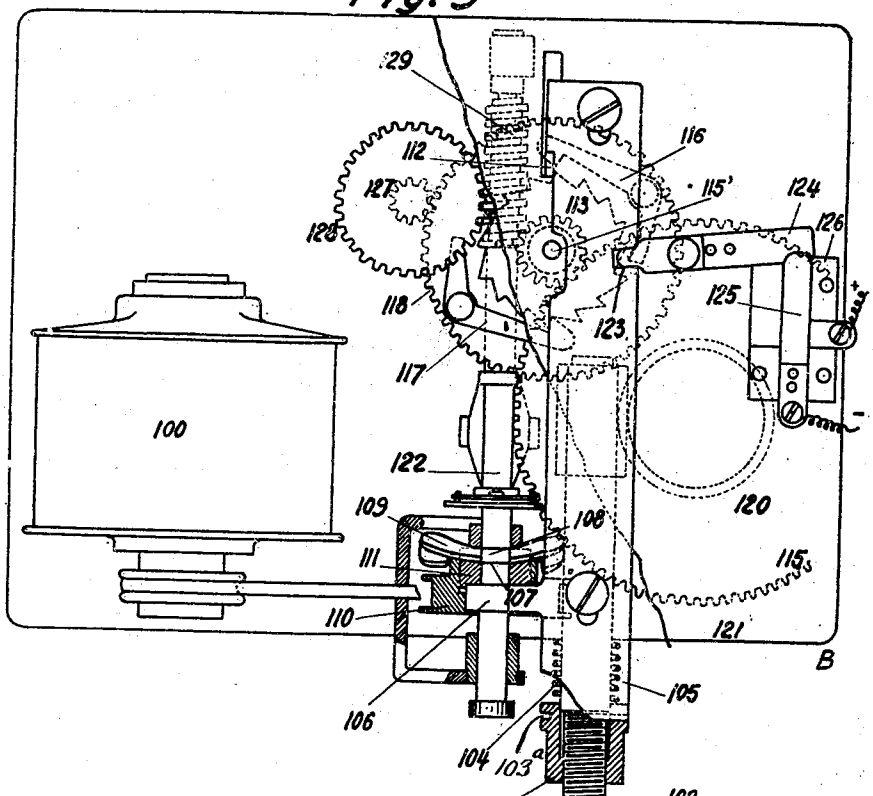
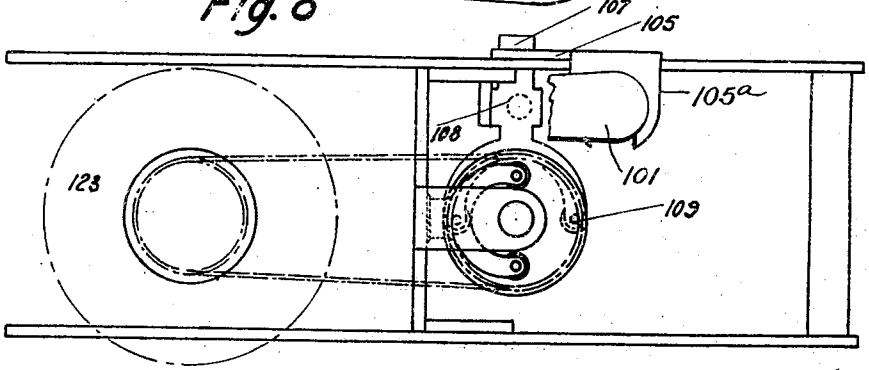


Fig. 8



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UNITED STATES PATENT OFFICE

MATHIEU DE WRANGELL, OF PARIS, FRANCE

TALKING MACHINE

Application filed September 22, 1927, Serial No. 221,355, and in France October 1, 1926.

My invention relates to a driving arrangement for talking machines of the type adapted to be driven alternatively by an electric motor or by clockwork according to the position of a common control part, this part ensuring in one position the connection of the motor with and the disconnection of the clockwork from their transmission shafts together with the locking of the clockwork against undesired rotation and in another position the reverse connections together with the breaking of the motor feeding circuit which is thus ensured when the motor is disconnected.

According to my invention this common control part is actuated by the crank or key used for winding up the clockwork whereby a great simplification is brought to the driving arrangement and to its operation. In a preferred form of execution the control part actuated by the crank or key is a rocking shaft in contradistinction with the known control parts of the kind described which are constituted by sliding parts or by pivoting levers.

Several driving arrangements adapted to be driven by the winding up key or crank are shown on appended drawings.

Fig. 1 is a perspective view of a first form of execution of the control part.

Figs. 2 and 3 show a device interposed between the key or crank and the control part respectively in rear and plan views.

Fig. 4 shows the rear of the cam thereof; Fig. 5 is a partly sectional view from above of the device shown on Fig. 3.

Fig. 6 is a front view of a detail thereof.

Fig. 7 is a general view of the talking machine provided with the key controlled driving arrangement according to my invention.

Figs. 8 and 9 show a preferred form of execution.

Fig. 1 shows a first form of execution wherein the key actuated controlling part is a rocking shaft. This shaft 19 may be actuated through the tappet 21 in the desired direction. To this shaft are keyed a first crank 22 controlling a secondary shaft 23 through a rod 24, a second crank 25 actuating a pawl 26 through a rod 27 and a fork 28 adapted to disconnect the loose pulley 4 driven by the motor shown on Fig. 7 through a shaft 1 which may carry the usual centrifugal regulator. This disconnection is provided by the pressure of the fork against the side of the pulley; the clutch arrangement not shown disposed inside the pulley may be of any desired known type which need not be described as it forms no part of my invention. The clutching of the pulley to the shaft 1 is ensured when the fork 28 is in the position where it does not oppose the action of the double spring blade 29 in a direction opposed to the action of the fork which action provides for the operativeness of the clutch arrangement.

The secondary shaft 23 when it rotates causes the sliding tube 32 to move vertically along the spindle of the wheel 3 of the clockwork through the intermediary of the rod 31. A fork 33 secured to the said sliding tube controls the connecting sleeve 36 meshing with the wheel 3 through its toothed end 2 and adapted to be clutched to the turntable spindle 6, when it is raised by the rod 31.

The shaft 23 also bears an insulating cam 38 adapted to push the spring contact 12 of the switch inserted in the motor circuit; the pawl 26 is adapted to lock a ratchet wheel 39 secured to the same spindle as the wheel 3.

The working of the arrangement is as follows.

If the tappet 21 is rotated towards the right (in the direction of the arrow shown on Fig. 1) the shaft 19 controlled thereby rocks and causes the fork 28 to disconnect the pulley 4 from shaft 1. The auxiliary shaft 23 is also rocked whereby the fork 33 is raised and causes the sleeve 36 with the pinion shaped part 2 to be clutched to the turntable spindle 6. At the same time, the cam 38 releases the switch spring 12 whereby the feed circuit of the motor is opened; the pawl 26 is at the same time drawn away by the rod 27 so as to release the wheel 3. Thus the turntable and regulator shafts are driven by the clockwork and the disconnected electric motor is stopped.

If the tappet 21 were rotated in the opposite direction the levers, rods and forks would also move in the opposite direction whereby

the electric motor is coupled again with the turntable shaft, the clockwork being disconnected and stopped.

The tappet 21 on rock shaft 19 may be actuated according to my invention by means of the winding up key as shown on Figs. 2 to 7.

The crank or key used for winding up is used for actuating the toothed sleeve or socket 41 coaxial with the winding up spindle; round this socket is loosely mounted a cam 42 adapted to control the tappet 21 (Figs. 4 and 7) which is constantly urged back towards the cam by means of a spring not shown. The eccentricity of the cam is obviously such as is required by the amplitude of the movement desired for the tappet.

The cam 42 has an inner aperture 43 of greater radial depth in its middle than at its ends. A roller, ball or double frustocone 44 is disposed in the said aperture through the greatest width of which it passes freely.

A releasing disc 45 is also mounted loosely round the socket 41 just above the cam 42. This disc is provided with four projections.

The two inner projections 46, 46′ engage the aperture 43 on either side of the ball 44. The outer projections 47, 47′ are disposed on either side of the outer end of the cam (Fig. 4).

The releasing disc 45 and the cam 42 are held (Fig. 5) between a flange 48 of the socket and a ring 49 secured to the said socket.

The working is as follows. If by means of the key or crank the socket is rotated clockwise (that is towards the left on Figs. 2, and 4 which are views taken from the rear) the ball is frictionally wedged in the side of its aperture whereby the cam and disc are rotated with the socket so that the cam is caused to displace the tappet against the action of its spring. When the cam has rotated by one revolution, the projection 47 comes against the tappet (Fig. 2) and is thereby arrested so that the inner projection 46′ will, before it stops the cam with reference to which it has a certain play, push and release the ball 44. The cam is no longer rotated along by the socket which continues its movement under the action of the key or crank which winds up the clockwork spring, the rotation of the tappet 21 having previously connected the clockwork.

If the key is now rotated anticlockwise, the ball will be frictionally wedged in its aperture as in the precedent case but on the opposite side until (Fig. 4) the projection 47′ coming against the tappet 21 causes the projection 46 to release the ball. The rotation of the cam ceases, the connection with the electric motor being provided through the return of the tappet into its spring urged position.

In the preferred form of execution shown on Figs. 8 and 9, the winding up key is adapted to bear at a certain predetermined point of its path against a sliding rod the movement of which disconnects a pulley actuated permanently by the motor from the device controlling the turn-table shaft, breaks the motor feed circuit and releases the free wheel transmitting the movement of the clockwork to the device controlling the turntable shaft.

The winding up key 101 actuates the winding up spindle 102 controlling the clockwork 120. On this spindle is mounted freely a sleeve 103 urged rearwards by the spring 104 the front of which bears against the machine casing 121. The sleeve 103 is fixedly grooved at 103^a and engaged by the depending portion 105^a of a horizontal rod 105 slidably borne by the top of the casing and provided with a horizontally projecting lug 106 to which is pivotally secured the top of a lever 107 adapted to pivot round a horizontal spindle 108. To the lower end of this lever are secured shoes 109 disposed preferably on either side of the hollow longitudinally slidable pulley 110 (for sake of clearness only one set of shoes disposed to one side of the pulley has been illustrated); for the position shown the pulley is frictionally wedged over the cone 111 keyed to the shaft 122; and when brought rearward by the shoes embracing it, it is disconnected therefrom. Moreover, this pulley is permanently in driving connection preferably through a belt with the electric motor 100.

The forward end of the sliding rod 105 is provided with a notch 123 wherein is engaged one end of a horizontal pivoting lever 124 the other insulating end of which is normally inserted between the contacts 125, 126 connected respectively with the terminals of the feed current circuit. Lastly the front end of the rod 105 is provided on its lower side with a pawl 112 adapted to engage the ratchet wheel 113 and to prevent it from rotating. This ratchet wheel acts as a free wheel between the driving wheels 115, 115′ controlled by the clockwork 120 on one hand and the driven wheel 118 controlling the turntable shaft 127 on the other hand. The wheels 115′ and 113 are keyed to the same shaft whereas the wheel 118 which is freely mounted on the same shaft is controlled through the double catches 116 and 117 pivotally secured to wheel 118 which allow the said wheel 118 to be driven by wheel 113 with which they cooperate in one direction only without the reverse control being possible when the electric motor causes the turntable shaft and thereby the wheel 118 to rotate.

The turntable shaft is controlled on the other hand by the electric motor 100 and its associated shaft 122 through the worm gear 128, 129. Now if the handle or key is screwed on to the spindle 102, it bears after it is completely screwed down against the sleeve 103 and the rod 105 will be moved. This will disconnect the pulley 110, break the feed circuit and disengage the stud 112 from the

wheel 113; the latter is thus free to rotate under the action of the clockwork when the latter is wound up. The wheel 113 causes thereby the wheel 118 and consequently the turntable shaft to rotate together with the shaft 122 disconnected from the motor. When the key is unscrewed, the rod 105 returns to its rear position under the action of its spring whereby the pulley 110 is reconnected with the shaft 122. At the same time the contact spring 125 which is no longer raised by the lever 124 bears on the co-operating contact 126. The motor begins rotating and drives the turntable shaft 127 without acting on the wheel 113 which is moreover held stationary by the stud 112.

What I claim is:

1. In a talking machine a spring motor, an electric motor, a turntable spindle, means for connecting the spring motor with the turntable spindle, means for connecting the electric motor with the turntable spindle, means for winding up the spring motor and means whereby the winding up means controls simultaneously both abovementioned connecting means.

2. In a talking machine, a spring motor, an electric motor, a stop for the spring motor, a circuit feeding the electric motor, a turntable spindle, means for connecting the spring motor with the turntable spindle, means for connecting the electric motor with the turntable spindle, means for winding up the spring motor and means whereby the winding up means controls simultaneously both above-mentioned connecting means, the electric motor circuit and the spring motor stop.

3. In a talking machine a spring motor, an electric motor, a turntable spindle, a pinion controlled by the spring motor, a stop for said pinion, a free wheel gearwork connecting the clockwork pinion with the turntable spindle and allowing the latter to be controlled by the former without the reverse being possible, a circuit feeding the electric motor, a contact in said circuit, a belt controlled by the electric motor, means whereby the belt is adapted to control the turntable spindle, means for winding up the clockwork and a part controlled by said winding up means and adapted to open the contact and to release the pinion stop for a given position of said winding means.

4. In a talking machine as claimed in claim 3 a spring urging the part controlling the electric contact and the pinion stop into its inoperative position.

5. In a talking machine as claimed in claim 3 means actuated by the part controlling the electric contact and the pinion stop when said part is in its operative position and adapted to render inoperative the means connecting the belt with the turntable spindle.

6. In a talking machine a spring motor, an electric motor, a turntable spindle, a pinion controlled by the spring motor, a stop for said pinion, a free wheel gearwork connecting the clockwork pinion with the turntable spindle and allowing the latter to be controlled by the former without the reverse being possible, a circuit feeding the electric motor, a contact in said circuit, a belt controlled by the electric motor, means whereby the belt is adapted to control the turntable spindle, means for winding up the clockwork, a slide the longitudinal movements of which are controlled by said winding up means and controlling the electric contact and the pinion stop and adapted to open the contact and to release the pinion stop for a given position of said winding means.

In testimony whereof I have affixed my signature.

MATHIEU DE WRANGELL.