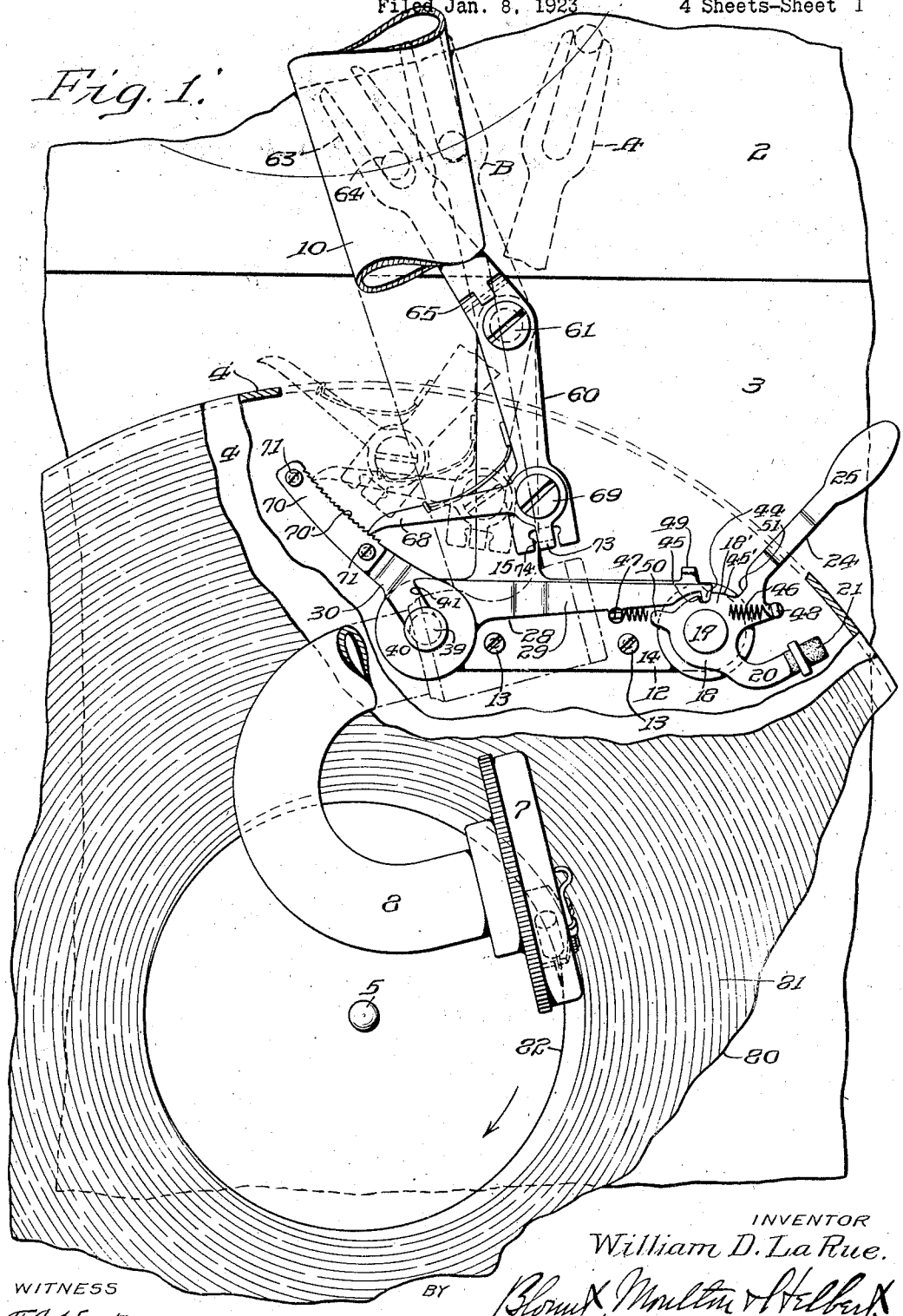
June 2, 1925. 1,540,407

W. D. LA RUE

STOP MECHANISM FOR TALKING MACHINES

Filed Jan. 8, 1923 4 Sheets-Sheet 1

Fig. 1.



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STOP MECHANISM FOR TALKING MACHINES

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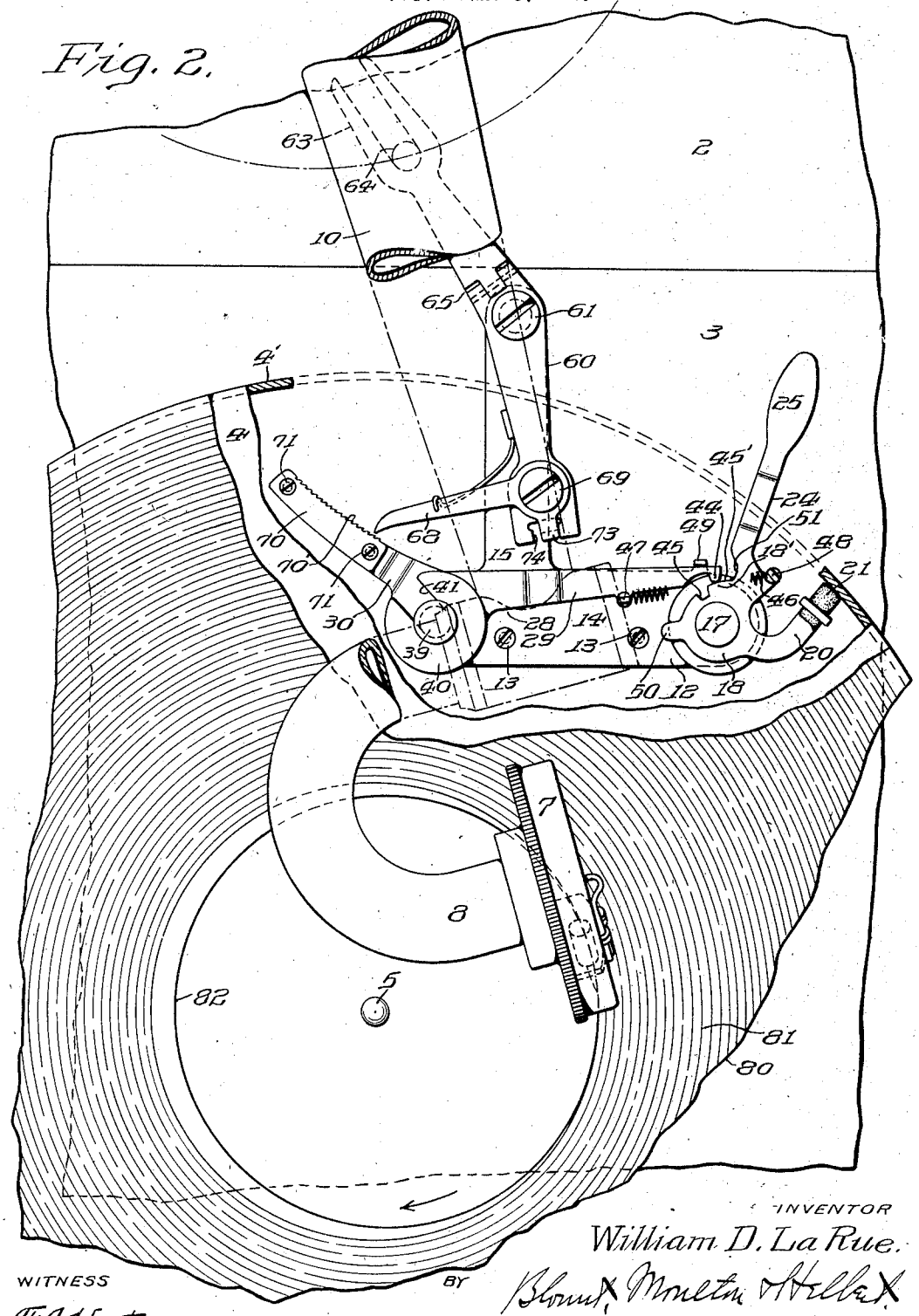
Fig. 2.



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STOP MECHANISM FOR TALKING MACHINES

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Fig. 3.

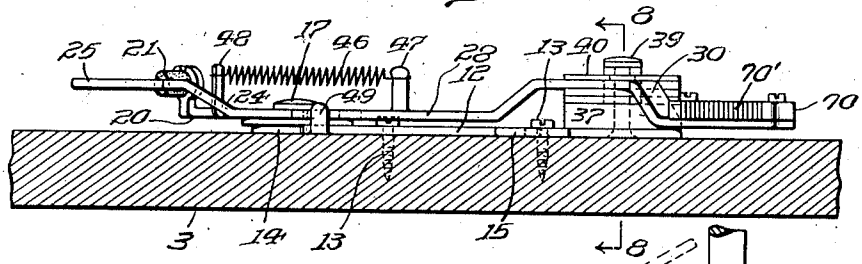


Fig. 4.

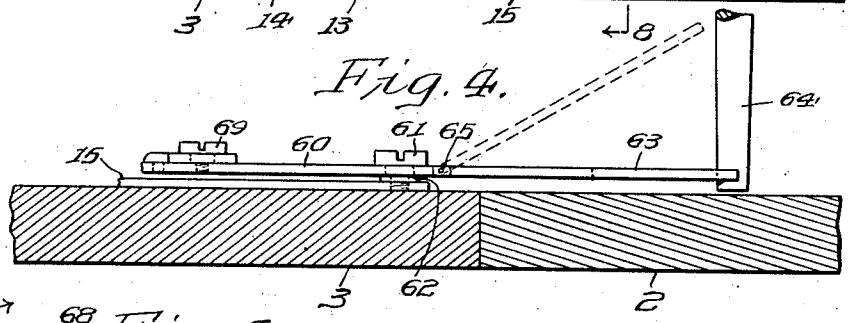


Fig. 5.

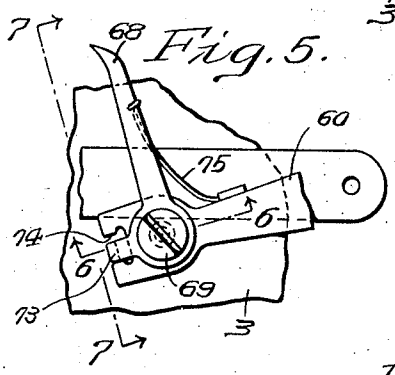


Fig. 6.

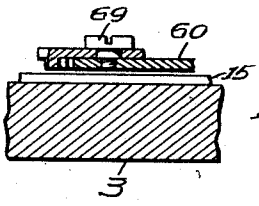


Fig. 7.

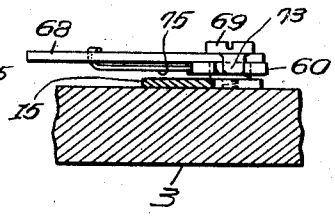


Fig. 9.

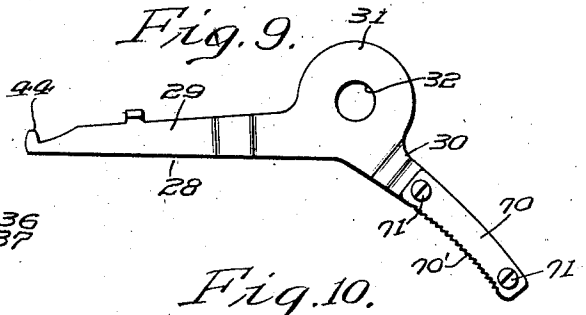


Fig. 8.

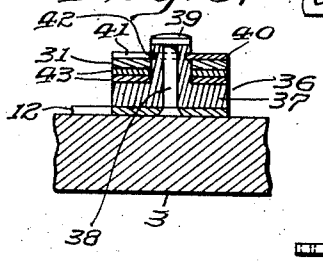
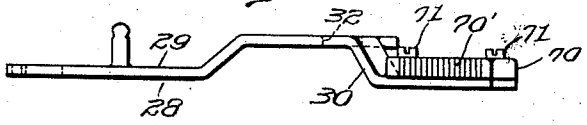


Fig. 10.



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June 2, 1925. 1,540,407

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STOP MECHANISM FOR TALKING MACHINES

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Fig. 11.

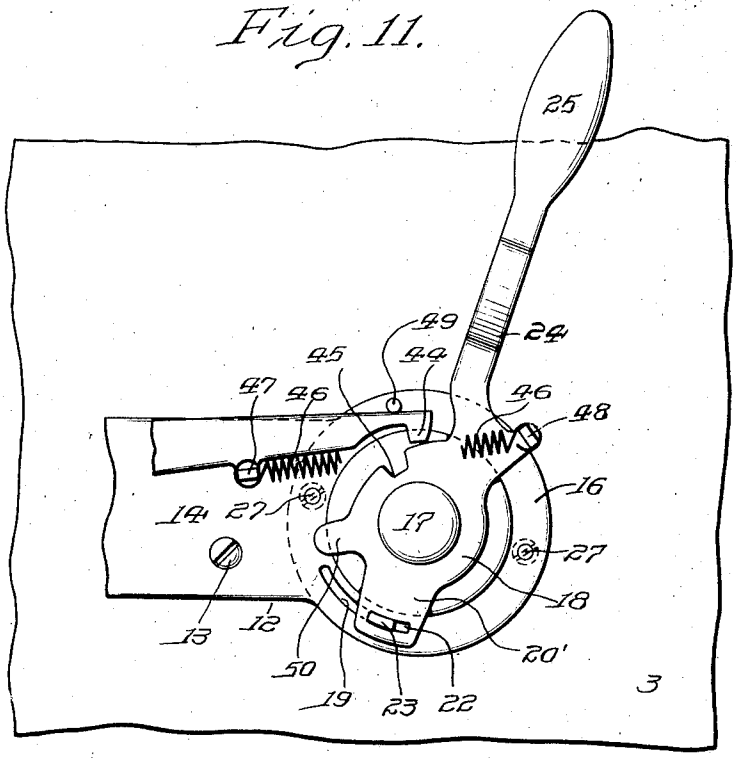
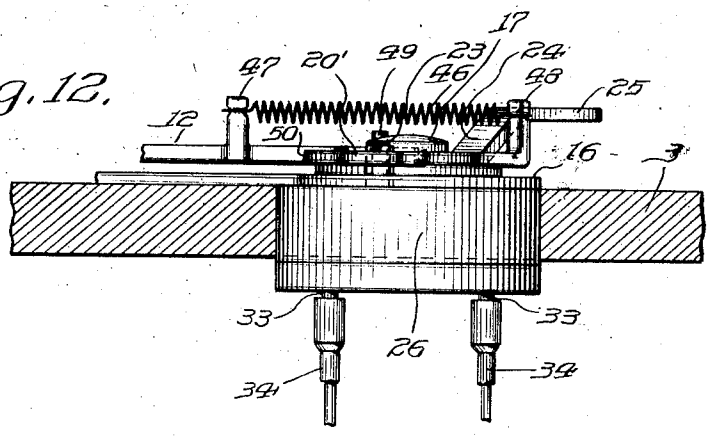


Fig. 12.



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Patented June 2, 1925. 1,540,407

UNITED STATES PATENT OFFICE.

WILLIAM D. LA RUE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO VICTOR TALKING MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

STOP MECHANISM FOR TALKING MACHINES.

Application filed January 8, 1923. Serial No. 611,248.

To all whom it may concern:

Be it known that I, WILLIAM D. LA RUE, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Stop Mechanisms for Talking Machines, of which the following is a specification, reference being had to the accompanying drawings.

Among the principal objects of my invention are to provide a stop mechanism suitable for employment in combination with a talking machine and operative to automatically stop the revolution of the sound record support after the completion of the reproduction of a selection from the sound record; to provide stop mechanism which may be manually actuated when desired to stop the revolution of the sound record support; to provide stop mechanism adapted for automatic actuation through the instrumentality of the sound record itself to stop the revolution of the sound record support, and to provide stop mechanism of this character which is simple in construction, comprises but a relatively small number of parts and is positive in operation.

The foregoing objects, as well as various other objects and novel features of construction and arrangement will hereafter more fully appear from the following description taken in connection with the accompanying drawings forming a part thereof.

In the said drawings I have illustrated a preferred embodiment of the invention in operative association and combination with a talking machine of well known form, only so much of the latter, however, being shown as is requisite for an adequate comprehension of the invention. More particularly, Fig. 1 is a fragmentary top plan view of a talking machine provided with stop mechanism constructed in accordance with the said preferred form of the invention and showing in full lines the relation of the several parts when in non-stopping position; other positions of certain of the parts as hereinafter more fully described are indicated in dotted lines. Fig. 2 is a view substantially similar to Fig. 1, but showing the relation of the several parts when in stopping position. Fig. 3 is a side elevation of the said mechanism with the trip lever and its pivot stud removed; Fig. 4 is a fragmentary side elevation of the trip lever illustrating a convenient arrangement for effecting disengagement of the trip lever from the actuating stud; Fig. 5 is a fragmentary top plan detail view showing one end of the trip lever and associated parts, and Figs. 6 and 7 are respectively vertical sections on the lines 6—6 and 7—7 in Fig. 5 looking in the direction of the arrows. Fig. 8 is a fragmentary vertical section on line 8—8 of Fig. 3 looking in the direction of the arrows; Fig. 9 is a top plan view of the trigger; Fig. 10 is a side elevation thereof; Fig. 11 illustrates the manner in which my invention may be utilized to operate an electric switch of a talking machine motor instead of a braking mechanism, the parts being shown in "stopped" position; and Fig. 12 is a side elevational view, the motor board being in section of the modification shown in Fig. 11. Like numerals are used to indicate the same parts in the several figures.

The embodiment of the invention illustrated in the drawings is shown in operative association with a talking machine comprising a cabinet having a top conveniently formed with a stationary portion 2 and a movable portion or motor board 3 beneath which is supported the motor or other actuating mechanism (not shown) and above which is horizontally disposed the usual rotary disk record support or turntable 4 provided with a depending peripheral flange 4′ and carried upon and rotated by a spindle 5 extending through the top of the cabinet and driven from the actuating mechanism. Arranged above the record support is the usual sound box 7 connected to one end of a tubular member or goose-neck 8, the other end of which is pivotally supported at one end of the hollow tone arm 10 mounted to swing about a fixed vertical axis in the usual manner and arranged to communicate with a suitable sound amplifier (not shown), the sound box being thus adapted for movement about a horizontal axis toward or away from the record support and to swing with the tone arm across the record support about the vertical axis of the former.

The stop mechanism is arranged above the cabinet top and preferably mainly beneath the sound record support, and, in its preferred embodiment, comprises a base

plate 12 secured to the motor board 3 by screws 13 or in any other suitable way. This base plate is provided with a main portion 14 and with an arm 15 conveniently integral with the main portion and extending laterally substantially normal thereto from a point adjacent one of its ends, a function of this arm being to support near its outer extremity the trip lever pivot stud as hereinafter more particularly described. Pivoted on a suitable pivot stud 17 disposed adjacent that end of the main portion of the base farthest removed from the arm 15 is the stop member 18 which may comprise a substantially circular body 18′ through which the pivot extends and an outwardly extending curved brake shoe arm 20, the end of which may be turned up vertically and arranged to support the brake shoe 21 of leather or other suitable friction material adapted to engage the inner face of the downwardly turned peripheral flange 4′ of the sound record support when the stop member is moved to stopping postion. The stop member is also provided with a preferably substantially radially extending arm forming a releasing and resetting lever 24 which projects outwardly from the body 18′ under and free of the record support and is then bent upwardly and thence horizontally to terminate in a convenient handle 25 by means of which the stop member can be oscillated when desired about the pivot 17.

Pivotally supported for horizontal oscillation adjacent the opposite end of the main portion 14 of the base plate is a trigger generally designated as 28 and best shown in Figs. 9 and 10. This trigger comprises a detent arm 29 and a ratchet arm 30 conveniently disposed in somewhat angular relation to each other preferably substantially in the same horizontal plane and a boss 31 provided with a circular aperture 32, said boss being disposed adjacent the point of juncture of the arms and preferably in a plane somewhat above the plane or planes of the latter, as clearly shown in Fig. 10.

The trigger may be supported on the base plate in any suitable way, conveniently through the medium of a sleeve 36 having a flange 37 at its lower end adapted to rest on the base plate, and with its upper part of suitable diameter to fit within the aperture 32 in the trigger. This sleeve may be rotatably supported on a pivot pin 38 having a head 39 at its upper end and secured at its lower end in the base plate, and for holding the trigger in relatively rigid relation with the sleeve a spring washer 40 having a radial slot 41 whose edges are adapted for engagement in a groove 42 formed in the sleeve adjacent its upper end may be employed, one or more suitable washers 43 being interposed between the under face of the trigger and the flange of the sleeve if required to fill up the space between these parts. Thus in assembling, after the pivot pin is passed through the sleeve, its lower end may be inserted in an aperture in the base plate and then headed over so as to secure the pin in position in such manner that the sleeve is freely rotatable thereon; the washers 43 and trigger may then be slipped onto the upper end of the sleeve over the head of the pivot and the spring washer slid into position above the trigger so as to engage the groove in the sleeve and press the several parts together so that the trigger and sleeve may be freely oscillated as a unit about the pin. If desired, however, other means for supporting the trigger on the pivot in a manner to permit its free oscillation thereabout may be employed if desired.

The outer end of the detent arm 29 of the trigger is provided with a detent 44 adapted for engagement in a notch 45 formed in the periphery of the body 18′ of the stop member in such manner that when the detent is in the notch the lever is normally prevented from rotation about its pivot and maintained in a position, as in Fig. 1, in which the brake shoe 21 is out of contact with the flange 4′ of the sound record support, and means are provided, preferably comprising a coil spring 46 having its ends respectively hooked over a lug 47 on the detent arm and a lug 48 on the stop member, for rotating the stop member when released from the detent and continuously drawing the detent arm toward the stop member so as to cause the detent to enter the notch whenever the latter is brought into registry therewith, the spring 46 being preferably so arranged that its axis will always lie upon that side of the pivot of the stop member which is most nearly adjacent the detent.

To facilitate manual actuation of the stop member at any time, I preferably so form the coacting faces of the detent 44 and the notch 45 that when the detent is held in the notch by the tension of spring 46 the releasing and resetting lever 24 may be manually rotated in a counter-clockwise direction so as to disengage the detent from the notch and permit the stop member to move to stopping position, the end of the detent meanwhile riding on the cam surface 45′ which may be provided on the stop member adjacent the notch, while, on the other hand, when the detent is in the notch it cannot be disengaged therefrom by movement of the lever 24 in a clockwise direction. Thus when the stop mechanism is being reset from stopping to non-stopping position as hereinafter more fully described, the releasing and resetting lever cannot be moved in a clockwise direction through an arc greater than that required to bring the notch into registration with the detent, for as soon as such registration is effected the

detent enters the notch and thereafter prevents further revolution of the lever.

For the purpose of preventing the stop member from being rotated sufficiently to cause the axis of the spring 46 to cross the pivot in case the detent is accidentally or otherwise prevented from engaging in the notch during clockwise rotation of the lever, an upturned stop lug 49 is preferably formed on the edge of the base plate in a position to engage the end of the detent arm so as to limit the possible rotation thereof in an anti-clockwise direction, while the stop member itself is provided with a radial projection 50 of sufficient length to engage the detent arms when the latter is against the lug 49 and thus arrest further rotation of the stop member. Thus, at all times the tendency of the spring 46 to effect rotation of the stop member in a counter-clockwise direction so as to pull the brake shoe into engagement with the flange of the sound record support is insured, the detent being, however, operative to hold the stop member, against the tension of the spring 46, in a position in which the shoe is out of engagement with the sound record support whenever the detent is engaged within the notch.

It will, of course, be evident that ordinarily when the sound record support is in operative position on the talking machine, the limit of movement of the stop member in a counter-clockwise direction is determined by contact of the brake pad with the flange of the record support, but for preventing excessive rotation of the lever in such direction, if for any reason the record support be entirely removed or lifted sufficiently to bring the flange 4′ out of alignment with the brake pad, I may provide a notch 51 adjacent the point of juncture of the lever 24 and the portion 18′ of the stop member adapted to engage the end of the detent arm and thus limit the extent of counter-clockwise movement of the stop member under such conditions.

Pivoted for horizontal oscillation adjacent the outer end of the arm 15 of the base plate is a trip lever generally designated as 60, said lever being preferably supported on a headed pivot stud 61 extending through the lever and screwed or otherwise secured in the arm, a washer 62 being preferably interposed between the lever and the arm so as to space the lever slightly thereaboye. The outer end of this lever, that is, that end most nearly adjacent the pivot of the tone arm, may be provided with a fork 63 adapted to receive the lower end of an actuating stud 64 carried by and downwardly depending from the tone arm in such manner that as the tone arm rotates about its pivot the stud travels in the fork to swing the trip lever about the pivot 61 in correspondence with the movements of the tone arm. In order to facilitate disengagement of the fork from the actuating stud when desired, that portion of the trip lever embodying the fork is preferably hinged to the other portion of the lever adjacent and in the rear of the pivot stud, as at 65, in such manner that the forked portion may be turned up from its normally horizontal position in the manner indicated in dotted lines in Fig. 4 so as to clear the end of the fork from the actuating stud when the tone arm is swung outwardly, that is, toward the right hand edge of the sheet when viewed as in Fig. 1, substantially to the limit of its possible movement in that direction, while, on the other hand, the hinge is of such construction as to prevent the forked portion of the arm from being inclined downwardly from the plane of the other part of the arm, thereby retaining the forked portion in substantially horizontal position under normal conditions.

Means interposed between the trip lever and the trigger are provided for positively effecting movement of the trigger when the trip lever is suitably actuated, said means conveniently comprising a pawl 68 pivoted at one end through the medium of a suitable pivot stud 69, or the like, adjacent the opposite end of the trip lever and cooperative at its other or free end with a rack 70 having teeth 70′ and fixedly secured, as by screws 71, to the ratchet arm 30 of the trigger, the toothed face of the ratchet being preferably formed to coincide, when the detent 44 is in notch 45, with an arc struck from the axis of pivot 61 as a center. While in certain constructions the rack may be formed integral with the part on which it is disposed, it is preferred to construct the same separately therefrom and secure it thereto as hitherto described, thus enabling the rack to be suitably hardened to minimize wear.

The pawl 68 is arranged to extend toward the rack and in a direction generally normal to the trip lever and means, conveniently comprising a small downwardly turned dog 73 engaging in a slot 74 formed in the end of the trip lever, are provided for limiting the amount of relative oscillation between the pawl and the lever, a suitably positioned spring 75 having one end soldered or otherwise secured to the lever and the other hooked over the pawl being arranged to constantly urge the pawl in a counter-clockwise direction with respect to the lever as best shown in Fig. 5.

The teeth 70′ with which the rack is provided are preferably of relatively small size and so arranged that when the detent 44 is in notch 45 and the stop member in non-stopping position, the pawl can slide freely thereover when the trip lever is moved in a

counter-clockwise direction but will interlock therewith so that the trigger will be positively moved by the trip lever upon movement of the trip lever in the opposite direction. It is to be understood that the width of the slot 74 is sufficient to accord the dog the play requisite, under these conditions, to permit the pawl to ride over the teeth when the trip lever is moved counter-clockwise.

It will thus be apparent that when the releasing and resetting lever 24 is moved from stopping position as shown in Fig. 2 to non-stopping position as shown in Fig. 1, the spring 46 operates to draw the detent 44 into the notch 45, thereby giving to the trigger a slight movement of oscillation in a clockwise direction and bringing the rack 70 to a position suitable for cooperation with the pawl 68, after which movement of the trip lever in an anti-clockwise direction is effective to ride the pawl freely over the teeth 70′ so long as said movement is continued but upon a reverse movement being imparted to the trip lever the nose of the pawl is caused to immediately engage beneath the then adjacent tooth and, if said movement be continued through a relatively short arc, the trigger is thereby positively forced in a counter-clockwise direction to disengage the detent 44 from the notch 45 and permit the stop member, under the action of spring 46, to move to stopping position and if equipped with a brake shoe, to press the latter against the flange 4′ to bring the rotating sound record support to rest.

During the revolution of the stop member as it moves to stopping position, the detent 44 is initially drawn by the spring 46 with relatively considerable force against that part of the cam surface 45′ adjacent the notch, but as the revolution of the stop member continues, the pull exerted by the spring on the trigger in a direction to move it against the cam surface ordinarily decreases and, if the revolution of the stop member be continued through a sufficient arc, at last reaches zero and is thereafter slightly exerted in an opposite direction, thereby tending to pull the trigger away from the cam surface and against the lug 49, the particular influence exerted by the spring on the trigger in any given construction being determined by the relative disposition of the several parts and the extent of the arc through which the stop member revolves before coming to rest. Thus, in final or stopping position, the detent in certain constructions may be in contact with and supported upon the cam surface 45′, while in others it may be slightly raised therefrom by the pull of the spring 46, but in either case the trigger is maintained in such position, as shown in Fig. 2, that the rack 70 is entirely clear of the tripping mechanism and more particularly the pawl 68, thus enabling the tone arm or other portion of the sound reproducing means therewith operatively associated to be freely swung in either direction above the record support in the operation of setting the machine for the production of sound from a sound record.

It will further be understood that in the operation of the talking machine a suitable sound record 80 is positioned upon the sound record support to rotate therewith, said record being provided with the usual spiral, laterally undulating sound groove 81 by and in accordance with which the reproducing stylus carried by the sound reproducer 7 is propelled across the record from a point near the outer margin thereof to a point more nearly adjacent the center, thus effecting a clockwise rotation of the tone arm about its vertical axis which, through the medium of the actuating stud 64, is operative to impart to the trip lever a corresponding movement in an anti-clockwise direction so as to move the pawl along the rack 70 if the stop member is set in non-stopping position as hereinbefore described.

For the purposes of this invention and for automatically imparting to the trip lever the clockwise movement requisite for actuation of the trigger to withdraw the detent 44 from the slot 45 and permit the stop member to move from non-stopping to stopping position, the sound record 80 may be provided, in addition to the usual spiral sound grooves 81, with a supplementary groove 82 which may, as illustrated in Fig. 1, lead from the inner end of the spiral groove 81 in the form of a circle arranged eccentrically with respect to the record, the construction being such that when the stylus reaches the inner end of the spiral groove it passes into the supplementary groove 82, following which a single revolution of the record causes a reversal of the movement of the tone arm through a distance corresponding to the amount of eccentricity of the circular groove 82, thus moving the trip lever clockwise and the trigger anti-clockwise sufficiently to withdraw the detent from the notch and permit the stop member to swing to stopping position, after which, by reason of the maintenance of the trigger out of the path of the pawl as heretofore described, the tone arm may be readily swung outwardly to bring the sound reproducer adjacent the edge of the record support in the operation of resetting the machine.

However, it will be understood that instead of providing the sound record with a supplementary groove in the form of an eccentric circle as hereinbefore described, other appropriate forms of supplementary grooves may be utilized if suitable for performing the function of reversing the move-

ment of the trip lever subsequent or substantially simultaneously to the completion of the traverse by the stylus of that portion of the spiral sound record groove formed to effect the reproduction of sound, and thus automatically stop the rotation of the sound record support substantially simultaneously with, or at a predetermined interval after, the completion of the sound reproduction from that particular record.

It is believed that in view of the foregoing description, an extended reference to the method of operation of the present invention is unnecessary, as it will be evident that the stop member may be moved from non-stopping to stopping position or vice versa to stop or start the rotation of the sound record support when desired by manually swinging the handle 25 in the proper direction, and that by effecting a reverse movement of the tone arm through the medium of the record the stop member may be released automatically from non-stopping position so as to stop the rotation of the record support substantially simultaneously with or at a predetermined interval after the completion of the sound reproduction from the record.

When the stop mechanism is to be employed to effect this latter result and assuming the stop member to be in stopping position, the tone arm is preferably first swung outwardly until the sound reproducer and stylus are entirely clear of the record and the handle 25 then moved so as to move the stop member to non-stopping position thereby permitting the detent 44 to enter notch 45, oscillating the trigger and bringing the rack to a position in which it may be engaged by the pawl. This outward movement of the tone arm has brought the trip lever more or less to the position indicated in dotted lines and designated as A in Fig. 1, the exact position of the trip lever being, of course, determined by the extent to which the tone arm has been swung outwardly. The record support, now freed from the restraining influence of the brake pad, having commenced to rotate, the tone arm is swung inwardly and the stylus entered in the outer convolution of the spiral groove in the record in the usual way, thereby bringing the trip lever substantially to the position indicated in dotted lines and designated as B in Fig. 1 and with the nose of the pawl in engagement with or approaching engagement with the outer end of the rack. As the stylus, and in turn the tone arm, is gradually progressively moved inwardly from this position by and in accordance with the spiral groove in the record, the pawl is caused to gradually move down the rack toward the pivotal point of the trigger in correspondence with the movement of the trip lever effected by the tone arm, until the stylus reaches the end of the spiral groove 81 and passes into the eccentrically disposed groove 82 which, in the ensuing revolution of the record, is operative to impart to the tone arm through the stylus a limited movement in the opposite direction, thus moving the trip lever clockwise sufficiently to cause the pawl to engage the then adjacent tooth of the rack and move the trigger anti-clockwise to disengage the detent 44 from notch 45 and release the stop member, thus bringing the sound record support to rest and completing the cycle of operations.

While in the particular embodiment of the invention to which I have referred the stopping and starting of the rotary record support is conveniently effected by direct cooperation therewith of a friction pad carried by the stop member, the same ultimate result may be effected by employing the stop member to actuate an electric or other switch operative to stop or start the record support actuating mechanism in any suitable manner as will be readily comprehended by those familiar with the art, under which conditions the friction pad will ordinarily be omitted. It is thus neither my intention nor desire to limit the use of the invention to stop mechanisms designed to directly control the record support through frictional or other engagement, nor by the convenient use of the terms stop member and the like in the foregoing description to exclude from the scope and comprehension of the invention those constructions in which the stop member or corresponding element is utilized for the actuation of electric or other means operative to control the actuating means by which the rotation of the sound record support is effected.

To this end, therefore, I have illustrated in Figs. 11 and 12 a modified construction, an electric switch, such as is commonly used to make and break an electric circuit for a talking machine motor, replacing the turntable brake. The parts are in a position corresponding to that shown in Fig. 2. The main portion 14 of the base plate 12 may be provided with a circular end 16 having an arc-shaped slot 19, and the brake arm 20 of the previously described construction may be replaced by an extension 20′ having a slot 22 near the outer end thereof.

The switch operating lever 23 of the electric switch 26 extends upwardly through the arc-shaped slot 19 in the base plate and preferably loosely fits into opening 22 in the extension 20′. The said switch 26 is preferably secured to the under side of the end 16 of the base plate 12 by screws 27. The switch is also provided with posts 33 to which the leads 34 of the motor circuit may be attached.

The details of the electric switch may be

of any approved type. I have illustrated one like that shown in the U. S. Patent No. 1,477,295, dated December 11, 1923.

The operation of the mechanism will be substantially unchanged from that described in connection with the form of the device shown in Figs. 1 and 2. When the detent 44 is in the notch 45, a position corresponding to Fig. 1, the electric circuit to the talking machine motor will be closed through the switch 26 and the motor will run and drive the turntable. When the stop member 18 is released from said detent, the member 18 will be snapped by the spring 46 into the position shown in Fig. 11 and the switch operating lever 23 will be swung with it into circuit breaking position whereupon the operation of the motor will cease because a supply of current to the electric motor has been cut off.

While I have herein illustrated and described a preferred embodiment of my invention with considerable particularity, I do not thereby desire or intend to limit myself specifically thereto or to the use of the invention with any particular style or type of talking machine, as various modifications may be made in the design, construction or arrangement of the several parts if desired and the stop mechanism either in its preferred form or modified as aforesaid may be employed in combination with talking machines of types other than that shown, without departing from the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim and desire to protect by Letters Patent of the United States:

1. The combination with a talking machine having a rotatable record support and sound reproducing means adapted for movement across said support, of stop mechanism for the support comprising a stop member, relatively movable members one cooperative with the stop member and the other cooperative with said sound reproducing means, a rack carried by one of the movable members, and a pawl carried by the other movable member and adapted for cooperation with the rack.

2. The combination with a talking machine having a rotatable record support and sound reproducing means adapted for movement across said support, of stop mechanism for the support comprising a stop member, a pivoted member cooperative with the stop member, a pivoted member cooperative with the sound reproducing means, a rack carried by one of said pivoted members, and a pawl carried by the other pivoted member and operative to lock with the teeth of said rack upon relative movement of said members in a given direction.

3. The combination with a talking machine having a rotatable record support and sound reproducing means adapted for movement across said support, of stop mechanism for the support comprising a stop member, relatively movable pivoted members one cooperative with the stop member and the other cooperative with the sound reproducing means, a rack carried by one of the movable members, and a pawl carried by and relatively movable with respect to the other movable member and operative during movement of one member in a given direction with respect to the other member to ride freely over the rack and upon reversal of said movement to lock said movable members together.

4. The combination with a talking machine having a rotatable record support and sound reproducing means adapted for movement across said record support by and in accordance with the sound groove in a sound record disposed thereon, of stop mechanism for said support comprising a rotatable stop member, a trigger cooperative with the said member to hold the latter in non-stopping position, means for urging said member from non-stopping to stopping position, a trip lever arranged for oscillation in conformity with the movements of said sound reproducing means, means relatively movable with respect to the trip lever and carried thereby operative to engage the trigger during the movement of said reproducing means across the record in one direction and to actuate said trigger to release said stop member upon a reversal of the direction of movement of said reproducing means.

5. The combination with a talking machine having a rotatable record support and sound reproducing means adapted for movement across said record support by and in accordance with the sound groove in a sound record disposed thereon, of stop mechanism for said support comprising a rotatable member, a trigger cooperative with the member to hold the latter in non-stopping position, means for urging the member from non-stopping to stopping position, a rack carried by and movable with the trigger, a trip lever pivoted for oscillation in conformity with the movements of the sound reproducing means, and means carried by the trip lever operative to engage and ride on said rack when the sound reproducing means are moving across the record during reproduction of sound therefrom and to actuate said trigger to release the stop member from non-stopping position upon movement of said sound reproducing means in the opposite direction.

6. The combination with a talking machine having a rotatable record support and sound reproducing means adapted for movement across said support by and in accordance with the sound groove in a sound record disposed thereon, of stop mechanism

for said support comprising a rotatable stop member, a trigger having arms extending in different directions, means carried by one of said arms operative to hold said stop member in non-stopping position and said other arm being provided with a rack, means for urging said stop member from non-stopping to stopping position, a trip lever pivoted for oscillation in conformity with the movement of the sound reproducing means, and a pawl carried by and relatively movable with the trip lever and adapted to engage and ride on said rack when the sound reproducing means are moving across the record during reproduction of sound therefrom and to actuate said trigger to release said stop member from non-stopping position upon movement of the sound reproducing means in the opposite direction.

7. In a stop mechanism for a talking machine, the combination of a movable stop member, a trigger cooperative therewith and having a rack, a movable trip lever, and means carried by the trip lever and arranged to slide over said rack upon movement of said trip lever in one direction and to interlock with said rack and positively move said trigger with said trip lever upon the movement of the trip lever in the opposite direction.

8. In a stop mechanism for a talking machine, the combination of a movable stop member, a trigger cooperative therewith and having a rack, a trip lever, and a pawl carried by and movable with respect to the trip lever adapted on relative movement of the trip lever in one direction with respect to the trigger to ride freely over the rack and to interlock with the rack upon reversal of said movement of the lever to cause both members to move simultaneously.

9. In stop mechanism for a talking machine, the combination of relatively movable members, a rack carried by one member, and a pawl carried by the other member operative to engage and ride over the rack upon relative movement of the members in one direction and to interlock with the rack to positively move the members together upon a reversal of the direction of the relative movement of said members.

10. In automatic stop mechanism for talking machines, the combination of a movable stop member, a trigger, means carried by the trigger for releasably holding the stop member in one position, means tending to urge the stop member to another position, a trip lever adapted for oscillation, and means carried by and relatively movable with respect to the trip lever operative to move said trigger when the trip lever is rotated in a given direction.

11. In automatic stop mechanism for talking machines, the combination of a rotatable stop member, a trigger having arms extending in different directions, means carried by one of said arms for holding the stop member in one position when the trigger is in a given position, an oscillatory trip lever, a member carried by and relatively movable with respect to the trip lever, means carried by the other arm of the trigger operative to permit said member to ride thereon when the trigger is in said position and the trip lever is moved in one direction and to engage and lock with said member when the trip lever is moved in the other direction whereby said trigger is caused to move to another position to release said stop member, and means for rotating the stop member when released by the trigger.

12. In automatic stop mechanism for talking machines, the combination of a rotatable stop member, a trigger having arms extending in different directions, means carried by one of said arms for holding the stop member in a given position, means tending to rotate said trigger and also to rotate the stop member to another position, a rack carried by the other arm of the trigger, a movable trip lever, and means carried by and relatively movable with respect to the trip lever operative to engage and traverse said rack when the trip lever is moved in one direction and to coact with said rack when the trip lever is moved in the opposite direction to move said trigger to another position to release the stop member.

13. In automatic stop mechanism for talking machines, the combination of a rotatable stop member, a pivoted trigger having arms extending in different directions, a detent carried by one of said arms and operative to hold the stop member in non-stopping position, means operative to rotate the stop member and to maintain said detent in contact therewith, a pivoted trip lever, a pawl carried by said trip lever, and a rack carried by the other arm of the trigger and having a curved toothed face adapted to receive and permit the movement of the pawl thereover when the trip lever is moved in one direction and to engage and lock with the pawl when the trip lever is moved in the opposite direction to effect movement of the trigger to release said stop member.

14. In stop mechanism for talking machines, the combination of a stop member, a trigger cooperative with the stop member, a trip lever pivoted for oscillation, and means interposed between the trip lever and the trigger adapted on relative movement of the lever and trigger in a given direction to lock the lever to the trigger so that one may be positively moved by the other.

15. In stop mechanism for talking ma-

chines, the combination of a stop member, a trigger cooperative with the stop member, a trip lever pivoted for movement in a fixed plane, and means interposed between the trip lever and the trigger adapted on relative movement of the lever and trigger in a given direction to lock the lever to the trigger so that the one may be positively moved by the other.

16. In stop mechanism for talking machines, the combination of a stop member, a trigger cooperative with the stop member, a trip lever having a horizontally disposed part pivoted for movement in a horizontal plane and a movable part hingedly secured to the pivoted part and adapted to be turned upwardly from the plane of said pivoted part, and means interposed between the pivoted part of the trip lever and the trigger adapted to lock the trigger and trip lever together upon movement of the trip lever in a given direction with respect to the trigger.

17. In a talking machine having a rotatable record support and sound reproducing means arranged for relative movement in a predetermined direction with respect to said support to reproduce sound from a sound record carried by said support, the combination of stop actuating mechanism comprising a member movable from stopping to non-stopping position, means to move said member to stopping position, a trigger for holding said member in non-stopping position, a trip connected to and operated by the reproducing means for releasing said trigger upon reverse movement of said reproducing means relative to said support, said trigger being arranged to be moved out of cooperative engagement with said trip as said member moves to stopping position.

18. A phonograph stop actuating device comprising a member movable from stopping to non-stopping position, a trigger to hold said member in non-stopping position, a trip engageable with said trigger for actuating the same, and means to move said member to stopping position and said trigger out of engagement with said trip.

19. A phonograph stop actuating mechanism comprising a member movable from stopping to non-stopping position, means to move said member to stopping position, a trip device and means intermediate said trip device and said member and in the path of movement of said trip device while said member is in non-stopping position for retaining said member in non-stopping position and out of the path of movement of said trip device when said member moves to stopping position.

20. In phonograph stop actuating mechanism the combination of a member movable from stopping to non-stopping position, a trip, means intermediate said trip and said member, and actuated by said trip, for releasably holding said member in non-stopping position, and means for throwing said intermediate means out of the path of movement of said trip upon movement of said member to stopping position.

21. In phonograph stop actuating mechanism the combination of a member movable from stopping to non-stopping position, a trip, means intermediate said trip and said member, and actuated by said trip, for releasably holding said member in non-stopping position, said means being moved out of the path of movement of said trip when said member moves to stopping position.

22. In a sound reproducing machine, the combination with a trigger, of a brake mechanism, a record, a stylus and a tone arm, of means moving with said tone arm and interlocked with said trigger on the backward swing of said tone arm to positively move said trigger therewith during said backward movement, and means on said record engaged by the stylus when the playing of the record is completed to produce the backward swing of the tone arm.

23. In combination, a traveling member, a rotating member, a brake for the latter, a pivoted detent, and an operating arm having a pawl and ratchet connection with said detent.

24. In a stop mechanism, a rotating element, a traveling element and means whereby the traveling element is given a reverse movement at a predetermined point in its travel, a brake member, a detent adapted to be moved in one direction to release said brake member, and a member operatively connected to said traveling element to slide freely without substantial resistance over said detent during the forward movement of said traveling element and to interlock with and positively move said detent to release said brake member upon movement of said traveling member in the reverse direction.

25. The combination with a talking machine having a rotatable record support and sound reproducing means adapted to move across said support, of stop mechanism for said support including a stop member and a pair of elements pivotally movable about separate, fixed axes and cooperating to actuate said stop member upon movement of said sound reproducing means in a direction opposite from that to reproduce sound.

26. The combination with a talking machine having a rotatable record support and sound reproducing means adapted to move across said support, of stop mechanism for said support including a stop member, and relatively movable elements which are positively interlocked to actuate said stop member upon a movement of said sound repro-

ducing means in a direction opposite from that to reproduce sound.

27. The combination with a talking machine having a rotatable record support and sound reproducing means adapted to move across said support, of stop mechanism for said support including a stop member movable to stopping and non-stopping positions, an element for retaining said stop member in non-stopping position, an element moved by said sound reproducing means and adapted to actuate said last named element to release said stop member upon movement of said sound reproducing means in a direction opposite from that to reproduce sound, said two elements being in inoperative position with respect to each other when said stop member is in stopping position and moved into operative position with respect to each other by the movement of said stop member to non-stopping position.

28. The combination with a talking machine having a rotatable record support, and sound reproducing means adapted to move across said support, of stop mechanism for said support including a stop member, a trigger cooperating with said member to hold the latter in non-stopping position, and a trip element pivotally movable into engagement with said trigger and operated by a movement of said sound reproducing means in a direction opposite from that to reproduce sound to engage and actuate said trigger.

29. The combination with a talking machine having a rotatable record support and sound reproducing means adapted for movement across said support, of stop mechanism for said support including a movable stop member, a trigger adapted to retain said stop member in non-stopping position, and a trip element adapted to be positively interlocked with and to operate said trigger upon a movement of said sound reproducing means in a direction opposite from that to reproduce sound.

30. The combination with a talking machine having a rotatable record support and sound reproducing means adapted to move across said support, of stop mechanism for said support including a stop member, an element for retaining said stop member in non-stopping position, an element movable about a separate axis and cooperating with said sound reproducing means to be moved thereby, and means intermediate said elements whereby said first-named element releases said stop member upon movement of said sound reproducing means in a direction opposite from that to reproduce sound.

31. The combination with a talking machine having a rotatable record support and sound reproducing means adapted to move across said support, of stop mechanism for said support including a stop member, means for retaining said stop member in non-stopping position, and means for releasing said stop member upon movement of said sound reproducing means in a direction opposite from that to reproduce sound, said last-named means including elements which are positively interlocked by said reverse movement.

32. In a stop mechanism for talking machines, the combination of a stop member, a trigger cooperating with the stop member, a trip member, a rack carried by one of said members, and a pawl carried by the other of said members, said rack and pawl being operatively positioned with respect to each other by the engagement of said trigger with said stop member to retain the latter in non-stopping position.

33. The combination with a talking machine having a rotatable record support and sound reproducing means adapted to move across said support, a stop member, a pair of elements movable about separate axes into and out of engagement with each other, one of said elements cooperating with said stop member to retain the same in non-stopping position, and means whereby said elements are actuated to release said stop member upon movement of the sound reproducing means in a direction opposite from that to reproduce sound.

34. The combination with a talking machine having a rotatable record support and sound reproducing means adapted to move across said support, a stop member and a pair of elements, one of which is adapted to cooperate with said stop member to retain the same in non-stopping position, and means intermediate said elements to interlock said elements upon movement of said sound reproducing means in a direction opposite from that to reproduce sound, whereby said elements are moved together to release said stop member.

In witness whereof I have hereunto set my hand this 6th day of January, 1923.

WILLIAM D. LA RUE.