

April 30, 1929.

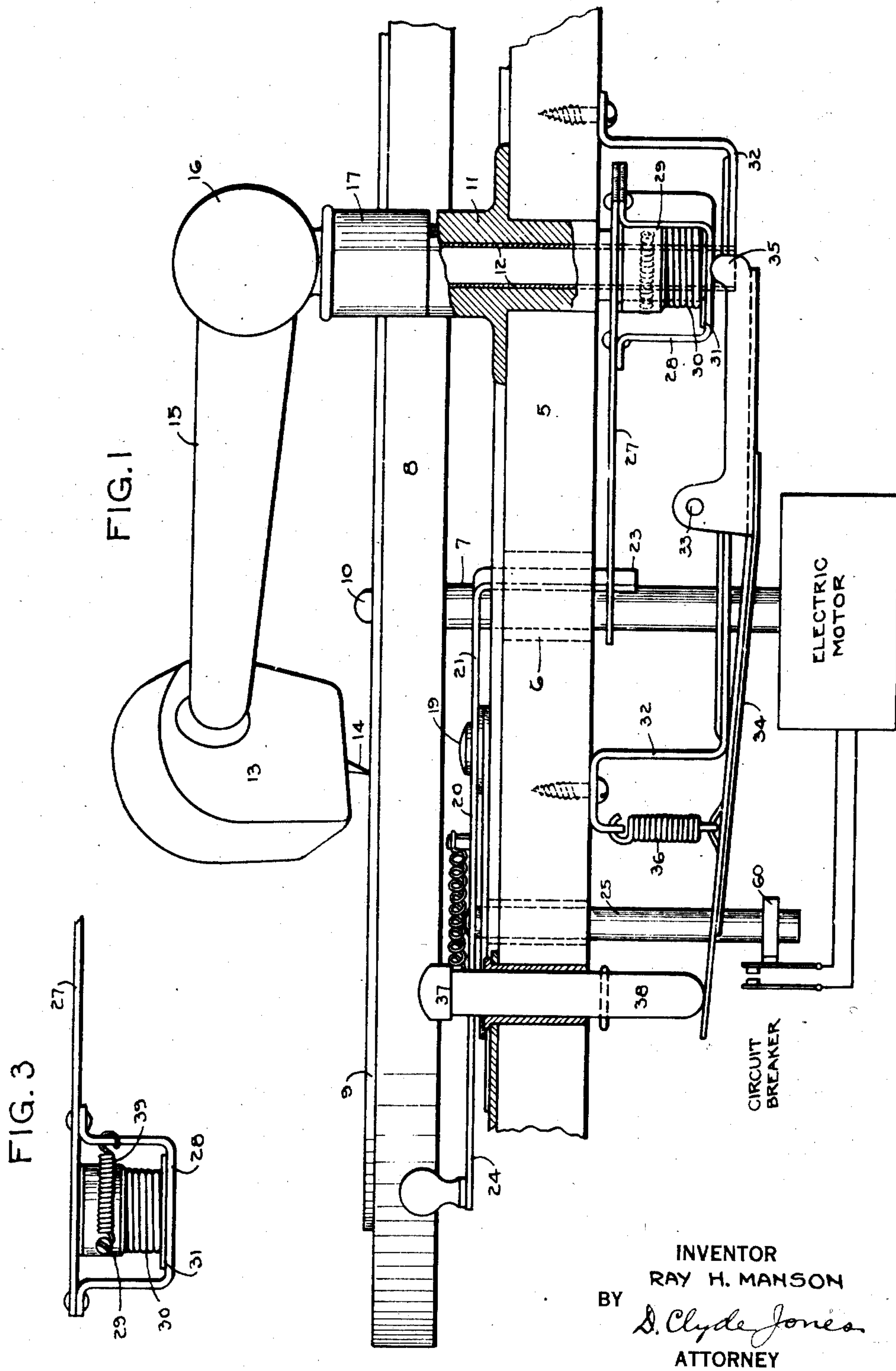
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1,710,800

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Filed Nov. 10, 1927

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

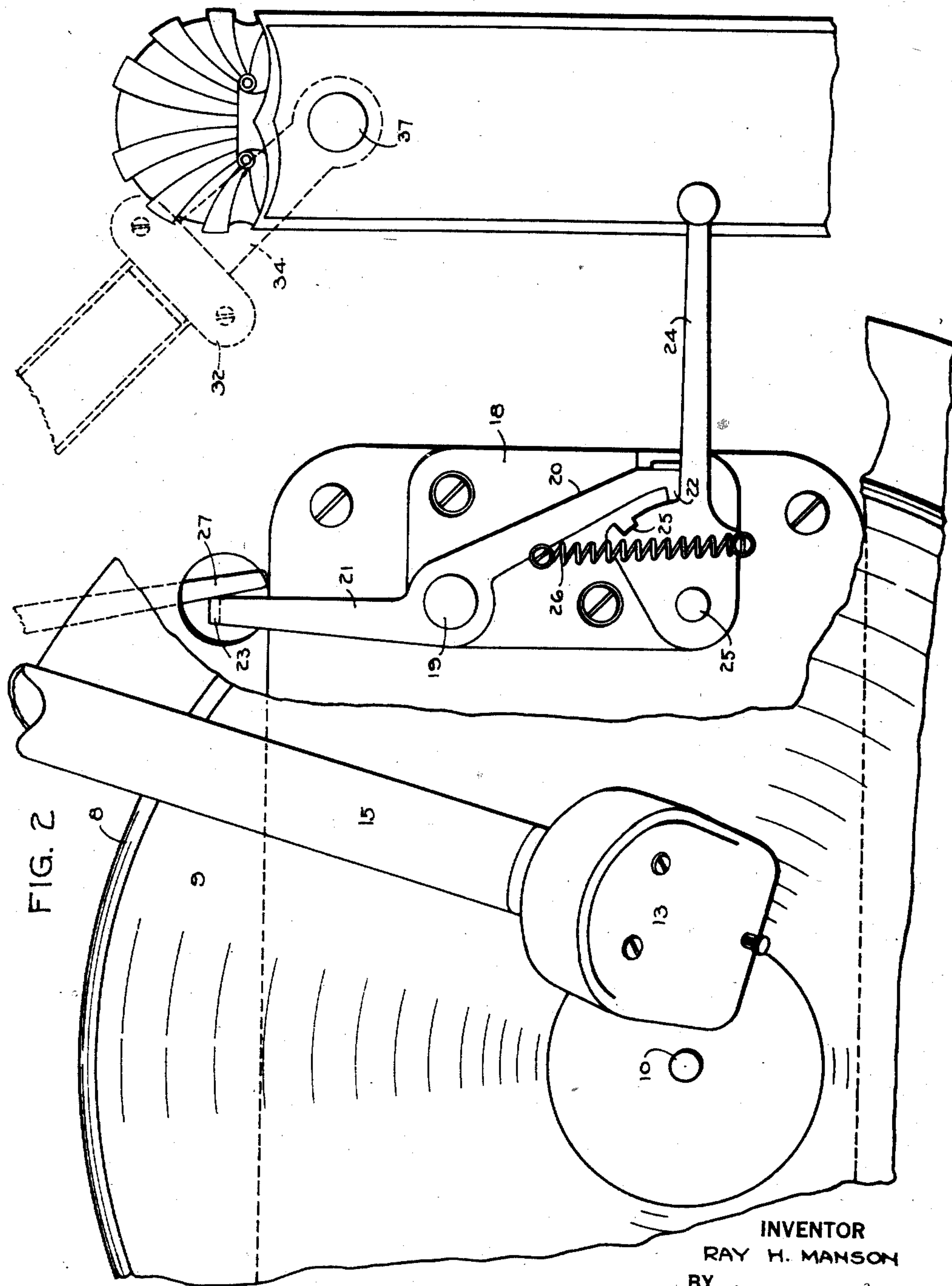


FIG. 2

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AUTOMATIC STOP FOR PHONOGRAPHS.

Application filed November 10, 1927. Serial No. 232,364.

This invention relates to automatic stops for phonographs and particularly that type of automatic stop in which the operator pre-selects the point on the record where the stop begins to function.

Various kinds of automatic stops have been proposed including those in which a special form of needle groove is provided which determines the point at which the automatic stop begins to function to stop the rotation of the turn table. However, such stops function only with one form of needle groove, but, in accordance with the present invention, an automatic stop is provided which permits the operator to pre-select the point on the record where reproduction is to cease. Various detailed features of the invention will appear from the description and appended claims.

Referring to the drawings Fig. 1 is a side elevation of a portion of a phonograph incorporating the invention with certain other parts broken away. Fig. 2 is a plan view of a portion of a phonograph with certain parts broken away, while Fig. 3 is a detail view of the adjusting lever also shown in Figs. 1 and 2.

In Fig. 1 there is represented a support 5 provided with a bearing 6 in which there is mounted the turn table shaft 7. To the upper end of this shaft there is secured the turn table 8 to support a phonograph record 9 positioned by a boss 10 in the center of the turn table which boss may be an extension of the shaft 7. This shaft and the turn table 8 may be rotated in any well-known manner such as by a spring motor (not shown) or by an electrical motor (indicated but not shown). At the right hand side of the frame 5 there is secured a hollow bearing 11 in which there is mounted a hollow shaft 12 carrying the adjustable tone arm 15 mounted for limited rotation and for limited vertical movement. This tone arm is provided in the present disclosure with an electrical pick-up device 13 in which the record needle 14 may be mounted although it will be understood that instead of the electrical pick-up device a mechanical sound box may be substituted. The electrical pick-up device 13 is mounted on tone arm 15 which arm is connected by a hinge 16 designed for a vertical movement on the upper portion of the hollow shaft 12. This shaft, it will

be noted, is provided at its upper portion with a collar 17 adapted to rotate on the upper surface of the hollow bearing 11. It will be understood that the collar 17 and the bearing 11 may be provided with suitable stops so that the tone arm may rotate through a limited arc of sufficient length to permit the needle to travel from the outer periphery of the largest record to the inner end of the sound groove provided in the record. On the upper surface of the support 5 there is mounted a plate 18 provided with a portion of the stop mechanism. In the present design this plate is substantially concealed by the turn table although this arrangement is merely a matter of convenience. On the plate 18 there is mounted for horizontal rotation about the axis 19 a trigger provided with two arms 20 and 21 the former of which has a vertical extension 23 projecting through an opening in support 5. This plate is also provided with a starting lever 24 mounted for rotation about the pin 25, a notch 25' in a cam surface on this starting lever receives a catch 22 on the arm 20 to hold the starting lever in its operative position to permit the motor to rotate. The lower extension of the axis 25 is provided with a cam 60 which in one position opens and in another position maintains closed contacts in the operating circuit of the electrical driving motor (indicated but not shown). It will be understood, however that instead of providing a cam for rendering the electrical motor inoperative the starting lever may be provided with a brake in the form of a friction pad to engage the outer edge of the turn table 8 as shown at 26 in the patent to Malocsay 1,383,651. A spring 26 having one of its ends connected to the starting lever 24 and its other end connected to the arm 20 of the trigger is arranged so that when the catch 22 is in the notch 25 the spring tends to hold the members in this relation but when the catch is removed from this notch the spring tends to pull the starting lever into the position shown in Fig. 2.

The structure previously described is sufficient to control the starting and stopping of the phonograph manually without the intervention of the automatic stopping device. In order to permit automatic stopping of the phonograph when a predetermined

point on the needle groove of the record is reached, the automatic stop mechanism of this invention is provided. On the lower end of the hollow shaft 12 there is frictionally mounted an automatic stopping lever 27 of sufficient length to engage the extension of 23 on the arm 21. The automatic stopping lever includes an apertured bracket 28 spaced a sufficient distance from the main portion of the lever 27 so that there may be two points of engagement between the hollow shaft 12 and the automatic stopping lever. Between the member 27 and the bracket 28 and surrounding the hollow shaft 12, there is mounted a washer 31, a spiral spring 30, and a collar 29 secured to the shaft. These last-named members function after the manner of a clutch so that the automatic stopping lever 27 normally frictionally engages the hollow shaft 12 so that these parts rotate together whenever the tone arm 15 is moved. On the under side of the support 5 there is secured by means of suitable screws a U-shaped bracket 32. On this bracket and pivoted at 33 there is mounted a lever 34 having a cam surface 35 at one end engaging the washer 31 which may compress the spring 30 and thereby disengage the automatic stopping lever 27 from the hollow shaft 12. The other end of the lever is provided with a spring 36 engaging an extension of the bracket 32 so that the cam portion 35 of the lever 34 is normally out of engagement with the washer 31. On the upper surface of the support 5 there is provided a button 37 having an extension 38 passing through an opening in the support to engage the end of the lever 34. By reference to Fig. 3 it will be noted that a spiral spring 39 having its ends respectively connected to the collar 29 and the bracket 28 tends to rotate the automatic stopping lever 27, when disengaged from the shaft 12, into engagement with the extension 23.

In the setting of the automatic stop the tone arm 15 is rotated until the needle 14 engages the portion of the needle groove on the record 9 at which it is desired to stop the operation of the motor. The button 37 is depressed and its extension 38 moves the left hand end of the lever 34 downward so that the cam surface 35 disengages the clutch mechanism including the spring 30 and the washer 31 so that the automatic stopping lever 27 under the action of spring 39 moves until it engages the extension 23. The tone arm 15 is moved until the needle engages the beginning of the needle groove after which the starting lever 24 is then moved until the catch 22 engages the notch 25. The moving of the starting arm 24 into its starting position starts the driving motor in operation which rotates the turn table 8 thereby progressively advancing the tone arm 15 and its needle 14 until the needle

reaches the point where the operator has decided to stop the playing of the record. This movement of the tone arm 15 also causes a similar movement of the automatic stopping lever 27. This lever after the momentary depression of the button 37, of course, follows the movement of the tone arm so that when the needle 14 reaches the predetermined stopping point the automatic stopping lever 27 engages the extension 23 of the trigger arm which rotates toward the left about its axis 19 disengaging the catch 22 from the notch 25. The spring 26 thereupon moves the starting lever 24 to the position shown in Fig. 2 to open the circuit of the driving motor (not shown).

What I claim, is:

1. In a stopping mechanism for phonographs, with a turn table, a member movable relative to said turn table, stopping mechanism, and means to effect the operation of said stopping mechanism to stop the rotation of said turn table at a predetermined point, said means including an element normally movable in fixed relation to said member, releasing means for releasing said element from fixed relation with said member, and a resilient connection between said element and said member for changing the relation between said element and said member by moving said member to said predetermined position and by operating said releasing member.

2. In a stopping mechanism for phonographs, a turn table, a sound reproducing member mounted on a swinging arm, stopping mechanism for said turn table, and means to render said stopping mechanism effective to stop the rotation of said turn table when said swinging arm reaches a predetermined position, said means including a second swinging arm normally fixed to said first arm, releasing mechanism for disengaging said second arm from said first arm, and a resilient connection between said arms whereby the relation therebetween may be changed by moving said first swinging arm to said predetermined position and by temporarily disengaging one arm from the other.

3. In a phonographic device, a record turn table, a motor for rotating said turn table, a reproducing arm movable in an arc including the periphery and center of said turn table, means for starting and stopping the operation of said motor, a latch for holding said means in position to effect the operation of said motor, a lever for disengaging said latch, said lever being normally movable with said reproducing arm, releasing mechanism to release said lever from said reproducing arm, and resilient means to change the relation between said lever and said reproducing arm.

4. In a phonographic device, a support, a

vertical shaft mounted for rotation in said support, a turn table secured to the upper end of said shaft, motor mechanism below said support for rotating said shaft, a second vertical shaft spaced from the first shaft, rotatably mounted in said support, an arm provided with a reproducing device mounted on the upper end of said second shaft, a stopping lever below said support mounted for rotation on the lower end of said second shaft, clutch mechanism normally connecting said stopping lever to said second shaft whereby said arm and said stopping lever normally rotate in fixed relation, means for releasing said clutch, resilient means for changing the relation between said arm and said stopping lever when said clutch mechanism is released and means actuated by said stopping lever for stopping the operation of said motor.

5. In a phonographic device, a support, a vertical shaft rotatable in said support, a record turn table secured to the upper end of said shaft, means for holding a record on said turn table, motor mechanism mounted below said support for rotating said shaft, a second vertical shaft rotatably mounted in said support adjacent the periphery of said turn table, a reproducing arm hingedly mounted on the upper end of said second shaft for limited vertical movement, a reproducing device mounted on the free end of said arm, a stylus mounted in said reproducing device engaging a spiral groove on a record, beginning near the outer edge of said record and terminating at a point near the center thereof whereby in response to the rotation of said record and said turn table said arm moves in an arc including the beginning of said spiral groove at the outer edge of said record and a predetermined point on said groove near the center of said record, means for effecting the operation of

said motor, a latch for holding said last mentioned means in operated position, a stopping lever for disengaging said latch rotatably mounted on the lower end of said second shaft, locking means for normally holding said stopping lever in fixed relation to said arm, means operable through said support for disengaging said locking means whereby the fixed relation between said stopping lever and said arm may be changed and means effective on the disengagement of said locking means for changing the relation between said stopping lever and said arm when said stylus is in a predetermined position on said record groove.

6. In combination with a phonograph having a rotatable turn table for carrying a record provided with a spiral groove, a motor for rotating said turn table, mechanism for starting the operation of said motor, a latch for holding said mechanism in operated condition, a vertical shaft adjacent said turn table provided with a horizontally swinging arm, a reproducing device mounted on said arm provided with a stylus to travel in said record groove, and means to stop the operation of said motor when said stylus reaches a predetermined position in said record groove, said means including a member for disengaging said latch when said arm with its stylus has reached said predetermined point, mechanism to change the relation between said member and said arm while said arm is in said predetermined position including means for unlocking said member from said second shaft and for moving said member into engagement with said latch.

In witness whereof, I hereunto subscribe my name this 1st day of November, A. D. 1927.

RAY H. MANSON.