

Aug. 3, 1943.

F. E. RUNGE

2,325,708

PHONOGRAPH

Filed Feb. 14, 1941

2 Sheets-Sheet 1

FIG. 1.

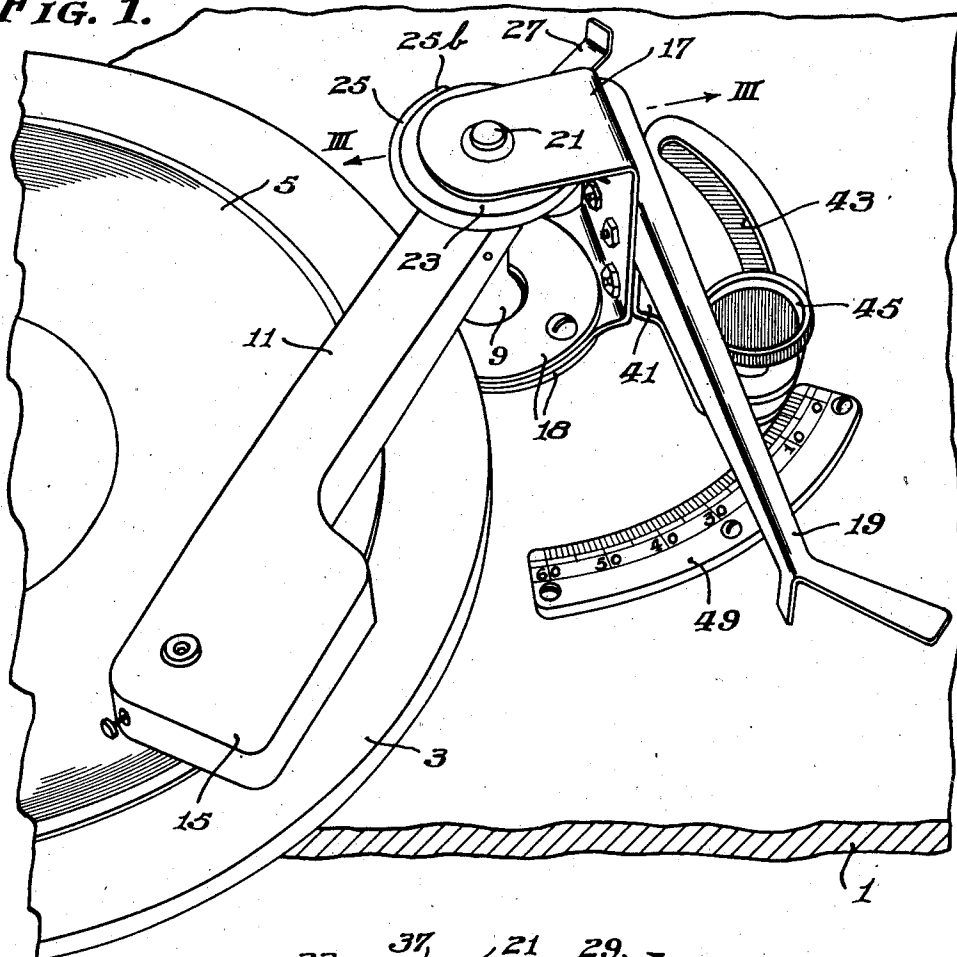
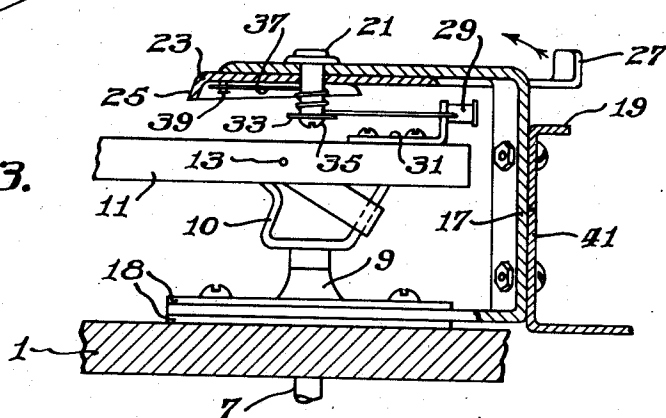


FIG. 3.



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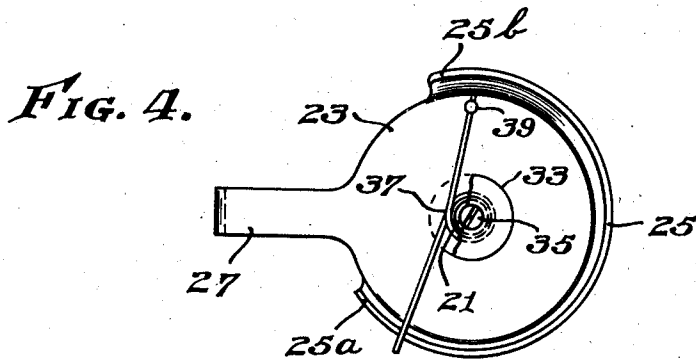
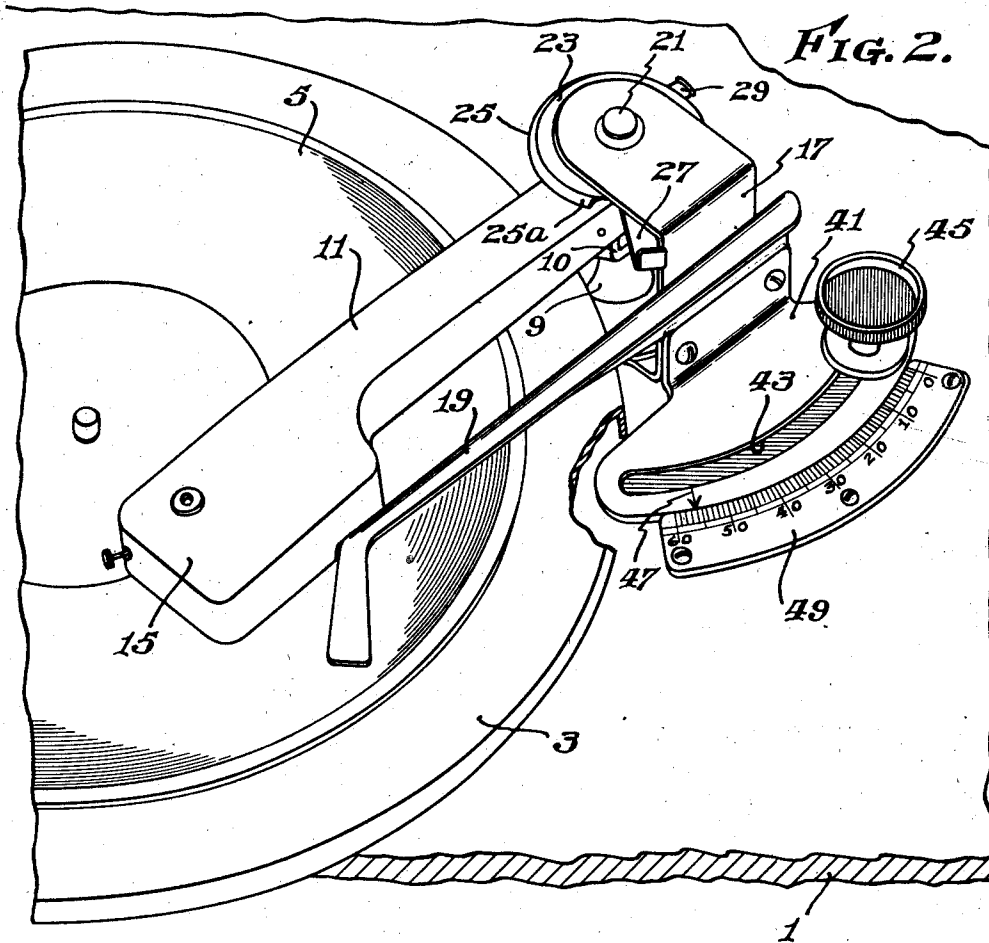
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PHONOGRAPH

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,325,708

PHONOGRAPH

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Application February 14, 1941, Serial No. 378,853

8 Claims. (Cl. 274-14)

This invention relates to phonographs, and more particularly to means for insuring the location of the record scanning element upon the record at the precise point or points from which it is desired to have reproduction started for the purpose of enabling the user to have a preselected portion of the record repeated at will.

Under certain circumstances, as in teaching languages, music, or the like, it is desirable to be able to repeat certain portions of a record. In all such cases, the necessity of locating the pickup device at the precise point on the record where the word, phrase, or other sound first to be reproduced is located is apparent, and it is the primary object of my present invention to provide a selecting device which will accomplish this result.

More particularly, it is an object of my present invention to provide, in a phonograph, improved means for accurately locating the record scanning element at some particular point on the record which has been determined previously.

Another object of my present invention is to provide a novel locating device for the record scanning element which may be applied to conventional phonographs for readily converting the same into repeating phonographs of the type indicated above.

It is also an object of my present invention to provide an improved record repeating phonograph of the type heretofore set forth which is simple in construction, inexpensive of manufacture, and highly efficient in use.

In accordance with this invention, I provide, on the motor board, a pivoted bracket which carries a forwardly extending arm movable in a plane parallel to the record and adjustable to various positions with respect to the record, the bracket being releasably locked to the motor board in any desired position of adjustment by means of a thumb screw or the like. Also carried by the bracket member is a manually operable cam so arranged that, upon manipulation thereof in one direction, it operates the arm which carries the scanning element to raise the latter from the record, and upon manipulation in the opposite direction, permits lowering of the scanning element back onto the record. The cam member has associated therewith a coil spring, one end of which is fixed to the cam and the other end of which is free to engage an extension on the scanning element supporting arm when the cam is rotated to raise the scanning element from the record, the spring serving to

return the scanning element arm into engagement with the aforementioned forwardly extending arm or stop member on the bracket whereby to locate the scanning element over the starting point on the record. Upon subsequent manipulation of the cam to return it to rest position, the free end of the spring is removed from engagement with the scanning element arm and the cam permits lowering of the scanning element back onto the record.

The novel features that I consider characteristic of my invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, as well as additional objects and advantages thereof, will best be understood from the following description of one embodiment thereof, when read in connection with the accompanying drawings, in which

Figure 1 is a perspective view of a phonograph showing my improved pickup locating device applied thereto and adjusted to inoperative position,

Figure 2 is a similar view showing the pickup arm locating device set to locate the pickup at a preselected point on the record,

Figure 3 is a fragmentary sectional view taken on the line III-III of Fig. 1, and

Figure 4 is a bottom plan view of the actuating cam and associated spring.

Referring more particularly to the drawings, wherein similar reference numerals indicate corresponding parts throughout, there is shown a motor board 1 above which is rotatably mounted a turntable 2 which supports a record 5 for rotation in conventional manner. Secured to a vertical post 7 which extends through a bushing 9 on the motor board 1, is a member 10 which pivotally carries a supporting arm 11 on a pair of oppositely disposed horizontal pivot bearings 13 in the manner disclosed in Guedon Patent No. 2,176,669, for example, the arm 11 carrying a suitable record scanning element 15, such as an electromechanical pickup device, and being movable over the record 5 in a horizontal direction by reason of the pivot post 7 and in a vertical direction relative to the record by reason of the horizontal bearings 13.

Pivotally mounted on the bushing 9 for rotation about the post 7 as a center is a U-shaped bracket 17 the lower horizontal arm of which is confined between a pair of plates 18 and the upper horizontal arm of which extends over the pickup arm 11. To the vertical portion of the bracket 17 is connected a forwardly extending

gauge arm or stop member 19 which is adapted to coact with the arm 11 for locating the scanning element 15 with respect to a predetermined point on the record 5 in a manner shortly to be set forth.

The upper horizontal arm of the bracket 17 has a stud 21 thereon which rotatably carries a cam plate 23 formed with a peripheral cam flange 25 and having a radially extending handle 27 thereon. The cam flange 25 is arranged to cooperate with a roller 29 on a bracket 31 which is secured to and extends upwardly from the pickup arm 11 on the side of the axis of the bearings 13 opposite to that on which the pickup 15 lies. Loose around the stud 21 and held thereon against removal by a washer 33 and a screw 35 threaded into the stud 21 is a coil spring 37 having one end thereof secured to a pin 39 on the cam plate 23 and its other end free.

Also secured to the bracket 17 is a lockplate 41 the horizontal portion of which lies close to the motor board 1 and has an arcuate slot 43 therein through which extends the threaded end of a thumb screw 45, the latter being threaded into the motor board 1. The lockplate 41 is provided with a pointer or index mark 47 adapted to cooperate with a scale 49 on the motor board to correlate the stop member 19 with the record 5.

In the normal operating condition of the phonograph, the bracket 17 and its arm 19 may be swung to the position shown in Fig. 1 and locked therein by means of the thumb screw 45, the handle 27 occupying the position shown in this figure. The pickup arm 11 is then free to swing over the record and to one side of the turntable 3 to a rest position in customary fashion, the roller 29 being free to swing between the separated ends 25a and 25b of the cam flange 25.

Suppose, now, that it is desired to repeat, for study or any other purpose, a certain phrase or musical passage correlated to the mark "56" on the scale 49, this having been previously determined by noting when the needle of the pickup device 15 is in the appropriate groove and bringing the stop arm 19 up against the arm 11 after first loosening the thumb screw 45. Thereafter, to insure repetition from this point on the record, the thumb screw 45 is again loosened and the stop arm and bracket assembly swung clockwise on the post 7 until the index marked 47 is opposite the mark "56" on the scale 49, after which the thumb nut 45 is tightened down. To bring the pickup or scanning element 15 back to the desired position after it has advanced therefrom, the handle 27, which is now in its extreme clockwise position, is moved rather rapidly in a counter-clockwise direction until it has reached the position shown in Fig. 2. During this movement, the play between the roller 29 and the lowest end 25a of the cam flange 25 is first taken up, after which the cam flange engages the roller and begins to turn the pickup arm 11 on the bearings 13 in a clockwise direction, as viewed in Fig. 3, to raise the pickup 15 from the record. Since one end of the coil spring 37 is fixed to the cam 23, it is obvious that the spring 37 will also rotate counter-clockwise on the stud 21 until its free end has engaged the vertical portion of the bracket 31. This momentarily arrests further movement of the free end of the spring 37, and since the cam 23 continues to rotate in a counter-clockwise direction, energy is stored up in the spring 37 until its free end, acting upon the vertical extension of the bracket 31, causes the pickup arm 11 to ro-

tate in the bushing 9 in a counter-clockwise direction until the pickup arm 11 engages the stop arm 19, the cam flange 25 having meanwhile further raised the pickup 15 from the record.

After the pickup arm 11 has engaged the stop member 19, the handle 17 is manipulated in a clockwise direction and returned to rest position, whereupon the receding cam flange 25 permits the pickup 15 to drop back down onto the record to resume reproduction.

Although I have shown and described but one embodiment of my invention, it will be apparent to those skilled in the art that many variations thereof, as well as changes in the particular modification described, are possible. I therefore desire that my invention shall not be limited except insofar as is made necessary by the prior art and by the spirit of the appended claims.

I claim as my invention:

1. In a phonograph, the combination of a pivoted supporting arm, a record scanning element carried thereby, a stop member adjustably associated with said supporting arm, means associated with said arm for raising said scanning element from the record, manually operable means associated with said first named means for actuating said first named means to raise said scanning element from the record, and means adapted to have energy stored therein associated with said manually operable means and arranged to effect movement of said arm into engagement with said stop member when said first named means has raised said scanning element from the record, said third named means being so related to said manually operable means that movement of said manually operable means to actuate said first named means for raising said scanning element from the record will cause energy to be stored in said third named means for effecting movement of said arm into engagement with said stop member.

2. In a phonograph, the combination of a pivoted supporting arm, a record scanning element carried thereby, a stop member adjustably associated with said supporting arm, a cam associated with said arm and arranged to raise said scanning element from the record, manually operable means associated with said cam for actuating said cam to raise said scanning element from the record, and means adapted to have energy stored therein associated with said manually operable means and arranged to effect movement of said arm into engagement with said stop member when said cam has raised said scanning element from the record, said last named means being so related to said manually operable means that movement of said manually operable means to actuate said cam for raising said scanning element from the record will cause energy to be stored in said last named means for effecting movement of said arm into engagement with said stop member.

3. In a phonograph, the combination of a pivoted supporting arm, a record scanning element carried thereby, a stop member adjustably associated with said supporting arm, a cam associated with said arm and arranged to raise said scanning element from the record, manually operable means associated with said cam for actuating said cam to raise said scanning element from the record, and a resilient member associated with said manually operable means and arranged to effect movement of said arm into engagement with said stop member when said

cam has raised said scanning element from the record, said resilient member being so related to said manually operable means that movement of said manually operable means to actuate said cam for raising said scanning element from the record will cause energy to be stored in said resilient member for effecting movement of said arm into engagement with said stop member.

4. In a phonograph, the combination of a supporting arm pivotally mounted on one axis for movement across a record and on another axis for movement normal to said record, a record scanning element carried thereby, a stop member adjustably associated with said supporting arm and also mounted on an axis for movement across said record, means for releasably locking said stop member in any predetermined position related to some predetermined point on said record, a cam associated with said arm and arranged to move said arm on said second named axis for either raising said scanning element from or lowering said scanning element onto said record, manually operable means associated with said cam for actuating said cam to raise said scanning element from said record, and means associated with said arm for moving said arm on said first named axis when said scanning element has been raised from said record to bring said arm into engagement with said stop member whereby to set said scanning element for subsequent engagement with said record at said predetermined record point.

5. In a phonograph, the combination of a motor board, a turntable rotatably mounted above said motor board, a supporting arm pivotally mounted on said motor board on one axis for movement across a record on said turntable and on another axis for movement normal to said record, a record scanning element carried by said arm, a bracket, a stop member fixed to said bracket, said bracket being also pivotally mounted on an axis such that said stop member is movable across said record, means on said motor board for releasably locking said bracket

in any desired position such that said stop member will have a predetermined relation to some predetermined point on said record, a cam rotatably carried by said bracket and arranged to move said arm on said second named axis for either raising said scanning element from or lowering said scanning element onto said record, a manually operable handle extending from said cam and operable to rotate said cam to effect raising of said scanning element from said record, and means associated with said cam arranged to engage said supporting arm to move said arm on said first named axis when said scanning element has been raised from said record to bring said arm into engagement with said stop member whereby to set said scanning element for subsequent engagement with said record at said predetermined record point.

6. The invention set forth in claim 5 characterized in that said arm is provided with a roller, and characterized further in that said cam is arranged to cooperate with said roller.

7. The invention set forth in claim 5 characterized in that said arm is provided with an extension, and characterized further in that said last named means comprises a coil spring having one end fixed to said cam and its other end free, said other end being normally out of engagement with said extension and being brought into engagement with said extension upon turning said cam to raise said scanning element from said record, the tension in said spring causing said free end thereof to act upon said extension to rotate said arm on said first named axis into engagement with said stop member.

8. The invention set forth in claim 5 characterized by the addition of a scale on said motor board which is correlated to said record, and characterized further in that said bracket is provided with an index mark which cooperates with said scale to properly locate said stop member with reference to said predetermined record point.

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