Oct. 31, 1950 R. D. THAYER 2,528,190

RECORDING STYLUS FEED MEANS

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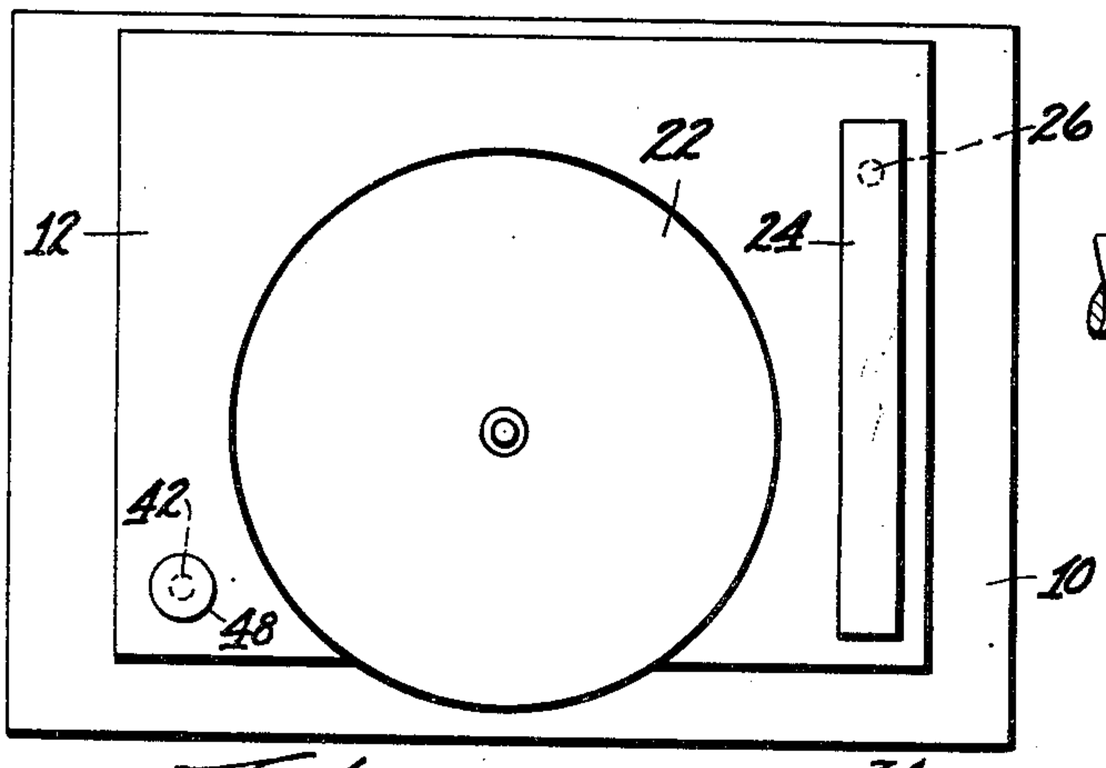

Fig. 1.

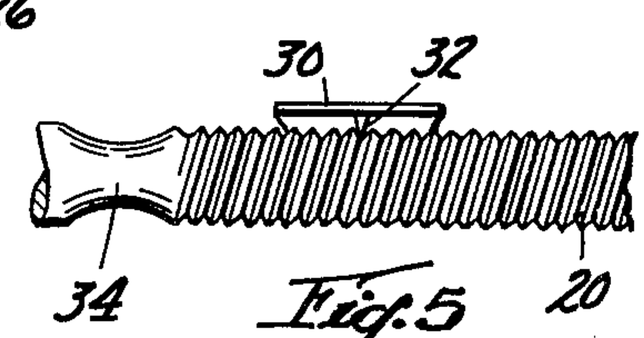

Fig. 5

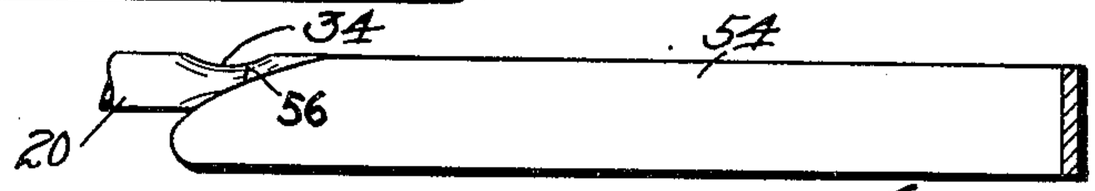

Fig. 6.

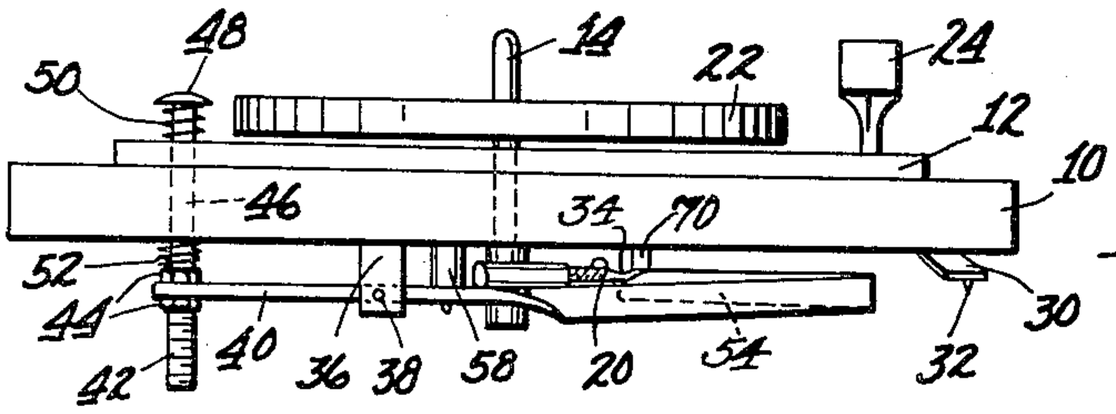

Fig. 2.

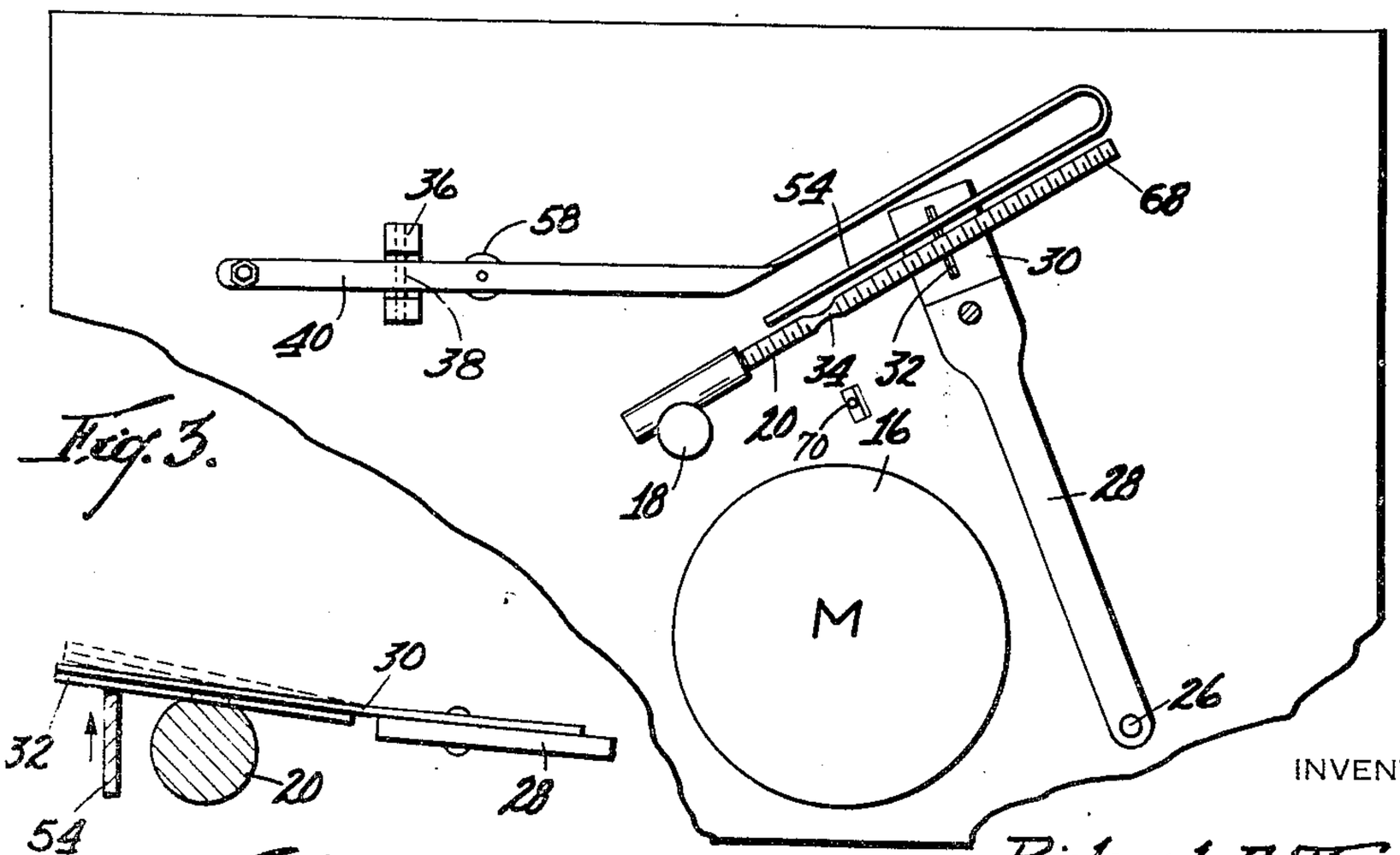

Fig. 3.

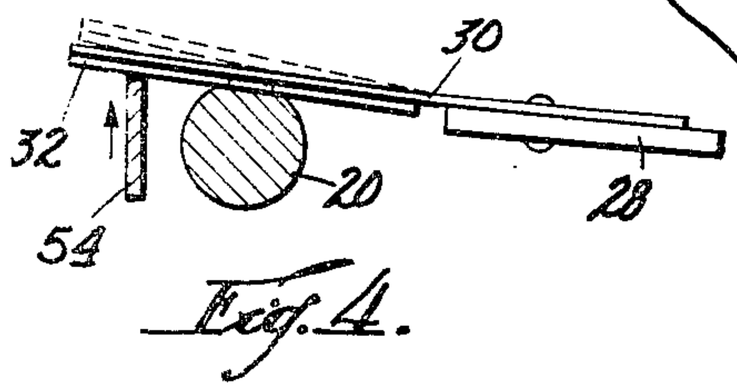

Fig. 4.

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RECORDING STYLUS FEED MEANS

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1 Claim. (Cl. 274—13)

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This invention relates to sound recording apparatus and more particularly to the provision of such apparatus having mechanism for producing a terminal or finishing track combined with means for disengaging the cutter so as to allow the making of a terminal spiral groove such as is necessary for operating the conventional record changer, to the end that records may be made and used in automatic record changers.

The principal object of the invention resides in the provision of an improved sound recording apparatus of the class described comprising a record cutter, means to feed the same, and manually operated means for disengaging the feed means so as to provide for making the spiral groove above described.

A further object of the invention resides in the provision of a sound recording apparatus having a rotating turntable on which is mounted the conventional disk of any usual type, in combination with a swinging cutter arm having means to engage a feed screw so as to swing the cutter arm across the disk as it rotates in order to produce a sound track, in combination with means to disengage the cutter arm from the feed screw so that a spiral groove for automatic record changer operations may be made manually at the end of the recorded sound track.

A still further object of the invention resides in the provision of sound recording apparatus as above described including a power operated feed screw located below the table, the cutting arm being provided with a resilient screw follower which is adapted to rest on the feed screw but due to its inherent resilience may be easily moved away from the feed screw so as to free the cutting arm therefrom, in combination with a lever pivoted at the under side of the table, said lever having a blade extending along the feed screw in position to engage the screw follower so that upon proper manipulation of the lever, the feed screw follower may be easily disengaged from the screw to release the cutter arm from the feeding mechanism whereby the cutter arm may be swung manually to produce the desired spiral terminal groove.

A still further object of the invention resides in the provision of a sound recording apparatus as above described including a blank spot on the feed screw in combination with an angular cutaway portion at the end of the blade so that even though the lever be in position to disengage the cutter arm from the feed screw, still the feed screw follower will descend along the inclined portion of the blade and be directed into

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the blank portion of the feed screw to automatically provide an annular terminal groove.

Further objects of the invention are to provide spiraling mechanism which is very simple and inexpensive and which may be manually operated at any point on the record and which may, therefore, be used not only to provide the spiral run groove but also a spiral starting groove and spiral connecting grooves between a plurality of short recordings on the same disk, such as are used for spot announcements, sound effects, etc.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawing in which

Fig. 1 is a top plan view of a device according to the present invention;

Fig. 2 is a view in front elevation thereof;

Fig. 3 is an enlarged bottom plan view, part being broken away;

Fig. 4 is an enlarged detail view showing the action of the feed screw follower;

Fig. 5 is an enlarged view of the feed screw showing the blank spot; and

Fig. 6 is an enlarged view of the operative end of the lever, showing the angular terminal portion thereof.

It is to be understood that apparatus according to the present invention may be installed wherever necessary or desired such as in radio cabinets, etc., and to this end there is provided a table **10** which may be set into a cabinet or the like and bolted down if desired. On the table **10** there is provided a plate **12** on which is mounted the spindle **14** extending through the top surface of the plate **12**, the usual motor **16**, and a gear box **18** for a feed screw **20**, the latter being driven from the motor by well known means. A turntable **22** is adapted to be rotated by the spindle and a swinging cutter arm **24** mounted on a pin **26** is also provided as clearly shown. As so far described, the apparatus is more or less conventional and represents apparatus which may be purchased on the market at the present time.

Fixed to the pin **26** there is an arm **28** located underneath the table and swingable with the cutter arm **24**. The arm **28** terminates in a resilient thin plate **30**, which is secured thereto by any desired means. Plate **30** is provided with a depending tooth **32**, this tooth being adapted to rest on the feed screw so as to swing the arm **28** and cutter arm **24** generally radially of the turntable **22**. Of course, it is well understood that the pitch of the threads on the feed screw

20 will determine the spacing of the sound track cut by the cutting tool.

The feed screw 20 is provided adjacent its inner end with a non-threaded blank spot 34 and, of course, when the tooth 32 reaches the blank spot, the cutter arm will no longer be fed inwardly but will produce a circular finishing groove on the disk being cut. It is to be clearly understood, however, that the blank spot will merely make an annular groove at the termination of the recording at one particular location or radius and this cannot be changed without changing the feed screw. From this it will be seen that all recordings made by the machine must be of equal length as the invention is so far described; and it will also be seen that it is impossible to make the spiral record changer groove, so that records made by this device cannot be played on automatic record changers but must be individually applied and removed from the turntable by hand.

As shown in Figs. 2 and 3, I provide a bracket 36 which depends from the table 10 and, in the absence of the table 10, from the plate 12. This bracket is provided with a pivot pin 38 on which is pivotally mounted a lever 40. The left hand end of lever 40, as seen in these figures, is screw threadedly mounted on a threaded pin 42 by any desired means, such as a pair of nuts 44. The pin 42 is freely movable through a slot in the table as at 46 and the pin is provided with a head 48 extending above the plate 12. A spring 50 tends to maintain the pin 42 in uppermost position and a like spring 52 balances the same and prevents spring 50 from raising the pin 42 to too great a degree. It is obvious, of course, that a light pressure on the head 48 will depress pin 42 and swing the lever and that the point of attachment of lever 40 to pin 42 may be easily adjusted.

The other end of the lever in the particular case shown is twisted 90° and provides a vertical blade 54 which is bent in a manner to be located parallel to the feed screw and underneath the screw follower tooth 32 as clearly shown in Fig. 3. The arm 54 terminates at 56 in an angularly inclined portion which is located adjacent the blank spot of the screw at 34. A bumper 58 serves to eliminate vibration.

The parts are so arranged that when the cutter arm 24 is lifted to place the cutter on the disk on the turntable, the screw follower tooth 32 will be placed on the screw adjacent the free end thereof as at 68, and the screw obviously will then travel the arm 28 in an angular manner, so also traveling cutter arm 24 inwardly toward the spindle at a predetermined rate of feed to cut the sound track. Whenever it is desired to disengage the feed screw from the follower tooth

32, it is merely necessary to depress pin 42 by means of the button 48, whereupon the lever is moved in a counterclockwise direction in Fig. 2, thus raising the blade 54 and disengaging the follower tooth 32 from the screw 20 as is clearly illustrated in Fig. 4. Upon this being done, the cutter arm 24 may be moved inwardly manually so as to produce a blank spot on the record of a certain time duration and also to produce the spiral groove necessary for the operation of automatic record changers. However, when the annular termination 56 is reached, the follower tooth 32 will descend and come into the blank pocket 34 so that the operator may release the cutter arm and automatically form the annular terminal groove above referred to in the objects of the invention. The reference numeral 70 indicates a stop against which the arm 28 will strike when the follower tooth 32 reaches approximately the center of the blank pocket 32 on the feed screw 20. This is for the purpose of forming a terminal perfect circle on the record blank.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed otherwise than as set forth in the claim, but what I claim is:

Recording apparatus comprising a support, a motor-operated turntable thereon, a movable cutter arm on the support, an under arm in fixed relation to the cutter arm, said under arm being located beneath the support, said arms being movable together, a rotating feed screw under the support, a resilient follower for the screw on the under arm so that the follower may rest on the screw to feed the arms, and optionally movable means to raise the follower from the screw to leave the cutting arm free to be moved manually, said means comprising a blade extending along the feed screw, the follower resting on the blade when the blade moves the follower from the screw, said screw having an unthreaded portion and said blade having an inclined portion adjacent thereto whereby the follower moves from the blade to the unthreaded portion of the feed screw.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
887,429	Rosenthal	May 12, 1908
897,053	Boulanger et al.	Aug. 25, 1908
2,350,490	Berliner	June 6, 1944