March 4, 1941. E. C. CONRAD 2,233,915

PHONOGRAPHIC APPARATUS

Filed Feb. 28, 1939

Fig. 1.

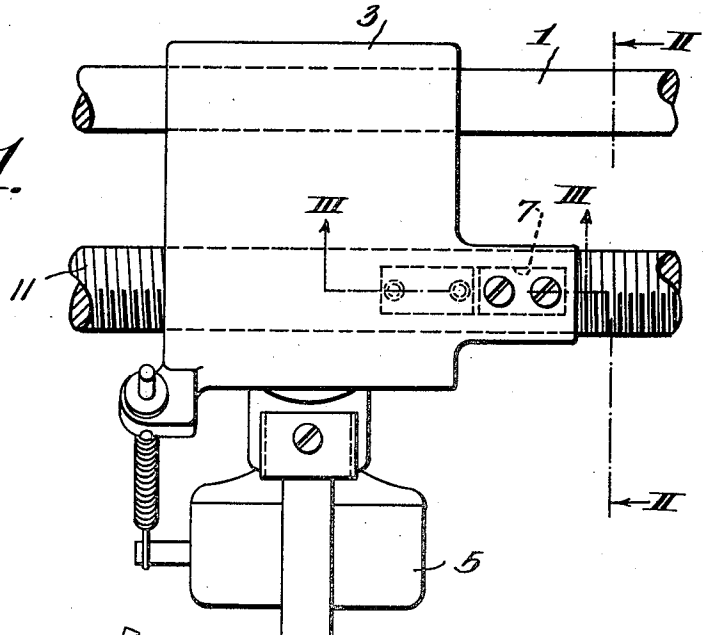


Fig. 2.

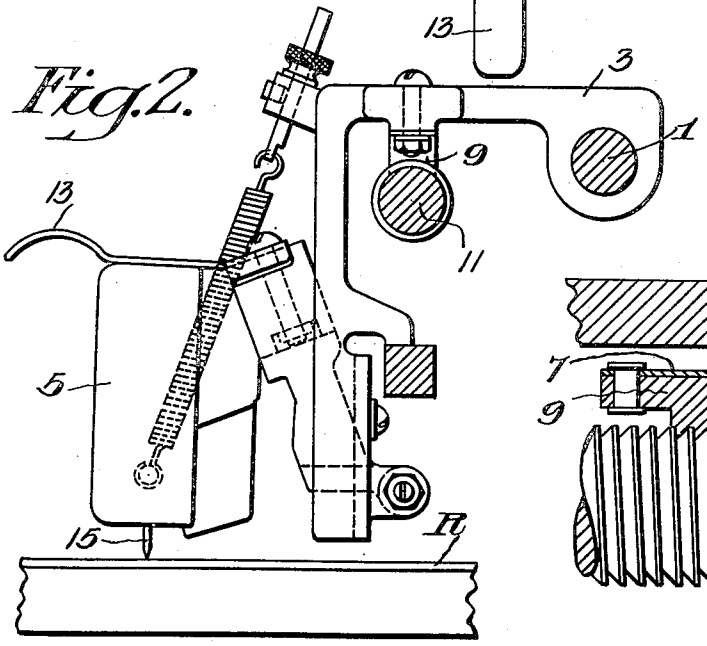
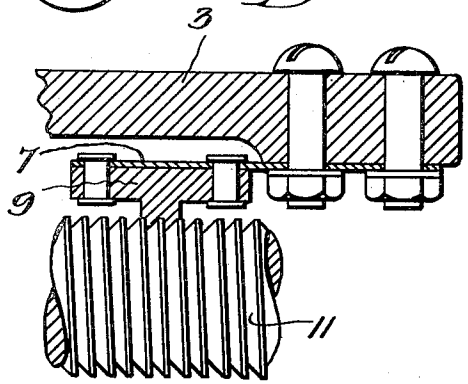


Fig. 3.



Inventor

Edward C. Conrad

By

Attorney

Patented Mar. 4, 1941 2,233,915

UNITED STATES PATENT OFFICE

2,233,915

PHONOGRAPHIC APPARATUS

Edward C. Conrad, Philadelphia, Pa., assignor to Radio Corporation of America, a corporation of Delaware

Application February 28, 1939, Serial No. 259,021

1 Claim. (Cl. 274—13)

This invention relates to phonographic apparatus, and more particularly to apparatus for feeding a recording device across a record disc.

In conventional recording machines most commonly in use, the recorder head is arranged to be fed across the record blank by means of a power driven lead screw with which a device, such as a half nut, is in driving engagement, the half nut being connected to the recorder head. It is well known that even when great care is used in cutting the teeth of the lead screw, these teeth are not all of exactly the same pitch or diameter, and it happens occasionally that these variations give rise to variations in the recorded groove which result in undesirable pitch variations when the records are eventually reproduced.

The primary object of my invention is to provide an improved feed mechanism for phonograph recorders which will not be subject to the foregoing disadvantages.

More particularly, it is an object of my invention to provide an improved feed mechanism for phonograph recorders which will feed the recorder head uniformly across the record blank.

Another object of my invention is to provide, in a phonograph recorder having a lead screw formed with teeth of slightly varying dimensions, a feed nut so arranged as to compensate for such variations.

Still another object of my invention is to provide an improved feed mechanism as aforesaid which is simple in construction, highly efficient in use, and inexpensive of manufacture.

In accordance with my invention, I mount the feed nut which engages the lead screw on a spring carried by the recorder head carriage, the nut having two threaded segments engaging the threads of the lead screw. The spring mounting for the feed nut compensates for slight variations in the diameter of the lead screw, while the two-thread engagement between the feed nut and the lead screw insures more uniform lateral feeding of the recorder head, the slight variations in the pitch of the lead screw being thus compensated for by the two-thread nut, and the spring mounting for the feed nut insuring that a groove of uniform depth will be cut by the cutting stylus.

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, together with additional objects and advantages thereof, will be best understood from the following description of one embodiment thereof, when read in connection with the accompanying drawing, in which

Figure 1 is a fragmentary plan view of a recorder embodying my invention,

Figure 2 is a sectional view taken along the line II—II of Fig. 1, and

Figure 3 is an enlarged, fragmentary sectional view taken on the line III—III of Fig. 1.

Referring more particularly to the drawing, I have shown a guide rod 1 on which is mounted a carriage 3 for longitudinal movement thereon, the carriage 3 having pivotally mounted thereon a sound translating device 5 which may be either a recorder for recording a groove on a record R or a reproducer for reproducing sound therefrom. Also mounted on the carriage 3 is a leaf or blade spring 7 one end of which is fixed to the carriage as clearly shown in Fig. 3, and the other end of which is free, a follower or feed nut, such as a half nut 9, being secured to the free end of the spring 7 and having two threaded segments thereon, also as clearly shown in Fig. 3.

A power-driven lead screw 11 extending parallel to the guide rod 1 and also parallel to the length of the spring 7 (as clearly shown in Figures 1 and 3) cooperates with the feed nut 9 to feed the carriage 3 and the parts carried thereby radially across the record R. The spring blade 7 is so arranged on the carriage 3 that it constantly biases the feed nut 9 toward the lead screw 11 and, when the translating device 5 is lowered into operative position on the record, as shown in Fig. 2, the spring 7 will hold the feed nut 9 in yielding engagement with the lead screw 11. To move the sound translating device 5 freely across the record to any desired position, it is merely necessary to lift the carriage by engaging the finger piece 13 and raising the assembly about the guide rod 1 as a unit. This effects disengagement of the feed nut 9 from the lead screw 11, after which the translating device 5 may be moved freely across the record. Upon lowering the unit again to effect engagement between the cutting stylus 15 of the translating device 5 and the record R, the feed nut 9 engages the lead screw 11 prior to the time that the needle 15 engages the record R, and the spring 7 yields slightly, thereafter pressing the feed nut 9 against the lead screw 11 and holding the two in firm engagement with each other, notwithstanding any slight variations in the pitch of the lead screw.

From the foregoing description, it will be apparent that I have provided improved mechanism for feeding a recording or reproducing device across a record and that, notwithstanding

any slight variations in the pitch or size of the threads of the lead screw 11, a better record may be obtained by the use of my improved feed mechanism than is possible with conventional mechanisms. It should also be apparent to those skilled in the art that, although I have shown and described but a single embodiment of my invention, many variations thereof are possible. I therefore do not wish to be limited except insofar as is made necessary by the prior art and by the spirit of the appended claim.

I claim as my invention:

In phonographic apparatus, the combination of a threaded lead screw constituting a driving member, a carriage, a sound translating device mounted on said carriage for cooperation with a record, a leaf spring, means securing said leaf spring to said carriage, the length of said spring extending parallel to said lead screw, and a half nut adapted to cooperate with said lead screw mounted on said leaf spring adjacent said securing means, whereby said spring holds said half nut in firm yielding engagement with said driving member in a direction normal to the axis of said driving member and substantially rigidly in a direction parallel to the axis of said driving member when said sound translating device is disposed in cooperative relation to the record.

EDWARD C. CONRAD.