Nov. 27, 1923. 1,475,277

F. CHENEY

TONE ARM SUPPORT

Filed Feb. 15, 1918

Fig. 1.

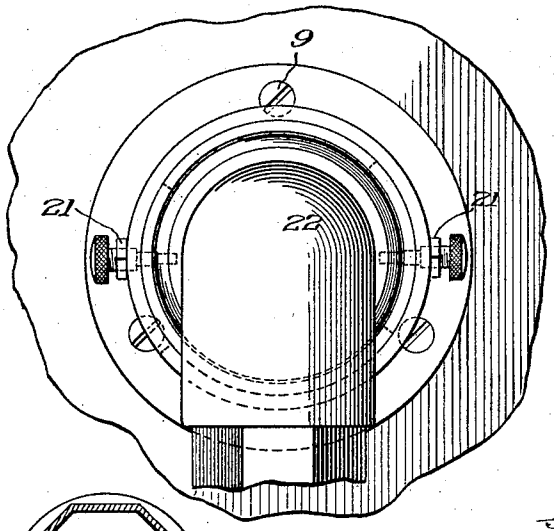


Fig. 2.

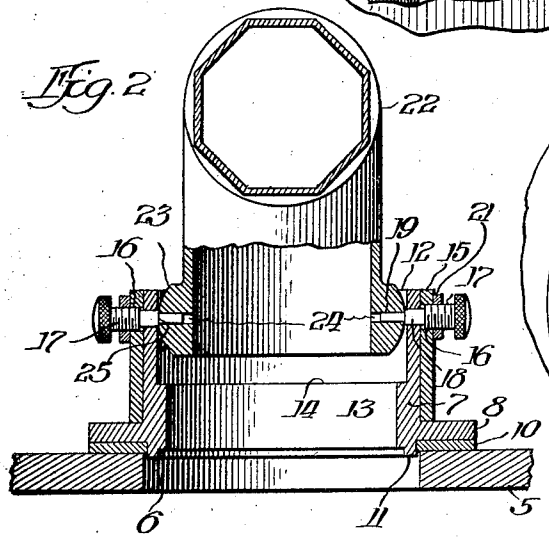


Fig. 3.

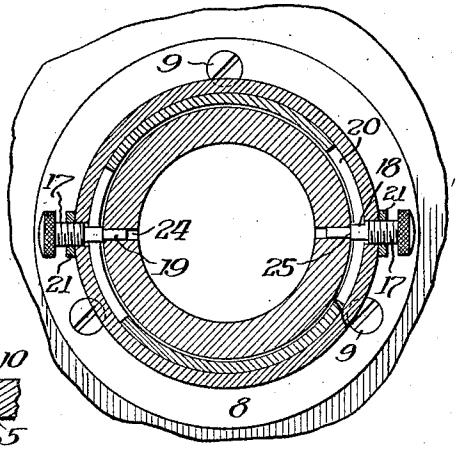
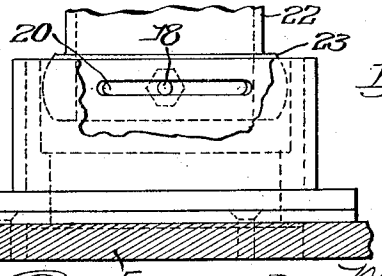


Fig. 4.



Witnesses:
Edw. C. Davison
Edward Ewart

Inventor
Forest Cheney
By Wilkinson & Huxley
Attys

Patented Nov. 27, 1923. 1,475,277

UNITED STATES PATENT OFFICE.

FOREST CHENEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHENEY TALKING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TONE-ARM SUPPORT.

Application filed February 15, 1918. Serial No. 217,316.

To all whom it may concern:

Be it known that I, FOREST CHENEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tone-Arm Supports, of which the following is a specification.

My invention refers to talking machines and particularly to a novel tone arm support wherein the tone arm is securely supported on the cabinet while being permitted to be movable horizontally and vertically with respect to the surface of the record. In the present style of disc talking machines, it is desirable to mount the tone arm so that it may be moved horizontally and vertically, the horizontal movement being to accommodate it to the records as the same are being played, also to adjust the arm to records of various sizes. The vertical movement is desirable to move the sound box away from the record when the record is being put on or removed from the table, also to adapt the tone arm to various machines wherein the height of the record table varies and to permit vertical movement due to the unevenness of the record groove and the like. Furthermore, such movement of the tone arm is desirable when changing needles or for any other purpose. In arrangements wherein the tone arm is mounted to move vertically, it has been found that after a short time the tone arm becomes displaced with respect to its connection to the horn. Such displacement even though slight affects the tones and prevents full and efficient reproduction of musical sounds.

By my invention I overcome these objections by pivotally mounting the tone arm in a support which support may be rotated about a vertical axis.

One of the objects of my invention is to provide means to permit swinging of the tone arm horizontally and vertically.

Another object is to provide a firm base for the tone arm which base is arranged to permit vertical and horizontal movement of the arm without affecting the connection between the arm and the base.

A further object is to provide a novel base for a tone arm arranged to permit horizontal and vertical movement of the tone arm and means to connect the arm to the base.

A still further object is to provide a base for centering the tone arm in the base member.

A yet further object is to improve tone arm supports for talking machines.

These and other objects will be apparent from the drawings, in which—

Figure 1 is a top plan view of a tone arm support embodying my invention, only a portion of the arm being shown.

Figure 2 is a vertical sectional view through the axis of the support showing the various connections and arrangements of the preferred embodiment.

Figure 3 is a horizontal section through the line of pivot supporting the tone arm, and

Figure 4 is a side elevation partially in section a portion of the parts being broken away to show cooperation between the various members comprising the bracket.

In the drawings, 5 represents the top portion of a talking machine cabinet, which portion is provided with the usual aperture 6, for connection with the horn or amplifying means. Mounted on the upper portion of the top member 5 is a member comprising a fixed or upstanding collar 7 with a flange 8 therearound, the flange being provided with proper apertures for securing the flange to the member 5 by screws 9 or the like. To make a tight joint between the flange 8 and the member 5, I prefer to interpose an elastic or resilient washer 10. For extending into the aperture 6, the lower portion of the collar 7 is provided with a projection 11 adapted to fit within the aperture 6. The portion 7 is provided with an opening therethrough having diameters of different sizes. In the upper portion of the fixed collar 7 is a circular aperture 12, below which is also a circular aperture 13 but smaller in diameter, the interior portions being defined by the shoulder 14. Surrounding the fixed collar 7 I provide a movable collar 15 adapted to surround the fixed collar 7 snugly and to have a bearing on the flange 8. At diametrically opposite points in the collar 15 I provide apertures 16 preferably threaded within which are mounted

pivot pins having in the form shown, three diameters, the largest diameter 17 being threaded to engage the threaded aperture 16 in the collar 15. The intermediate portion 18 and an end portion 19 still further reduced in diameter are provided. Within the upper portion of the walls of the fixed collar 7 are provided elongated horizontally disposed apertures 20, through which the intermediate portions 18 of the pins extend. The fit between the portion 18 and the apertures 20 is such as to permit movement of the pins through the aperture without causing binding therebetween. With such an arrangement it will be observed that the end portions 19 of the pins extend within the interior of the larger aperture 12 within the fixed collar 7. Also with the construction as above described, it is possible to rotate the collar 15 about the fixed collar 7 to a limited extent which extent is governed by the length of the horizontally disposed apertures 20 in the collar 7. For securing the pins longitudinally in adjusted position, I employ lock nuts 21 engaging the threaded portions 17 of the pins and adapted to be tightened against the outer portion of the collar 15 when the pins have been adjusted longitudinally as will more fully be explained.

Adapted to extend within the larger aperture 21 of the fixed collar 7 is the enlarged end of the tone arm 22. The end of the tone arm terminates in a circular enlargement or flange 23, which is preferably curved in cross section. The outer diameter of the flange 23 is slightly less than the interior diameter of the aperture 12 within the collar 7. Flange 23 is provided with apertures 24 shaped to receive the reduced ends 19 of the pins. By reason of the shoulder 25 formed between the reduced portions 18 and 19 of the pins, the pins may be moved so that these shoulders 25 will abut the flanges 23 of the tone arm and thus by proper manipulation of the pins the tone arm may be brought to a position concentric with the opening 13 through the support and consequently, will be concentrically arranged with respect to the aperture 6 leading to the horn. By reason of the fact that the diameter of the flange 23 is only slightly less than the diameter of the aperture 12 by reason of the curved surface thereof a certain amount of movement of the tone arm is permitted. As before explained the intermediate reduced portions 18 of the pins do not bind in the apertures 20 of the fixed collar 7, therefore, by manipulation of the pins and the lock nuts 21 the tone arm having been arranged in proper position and the lock nuts tightened, it will be observed that the collars 15 may be moved to swing the tone arm without binding against the fixed collar 7.

It will be thus observed that I have provided a base support for tone arms which permits horizontal and vertical movement of the arm, at the same time securing the arm rigidly in the bracket permitting of no lateral play whatsoever.

I am aware that modifications in such an arrangement may be made and such modifications as come within the scope of the appended claims I consider as coming within the spirit of my invention.

I claim:—

1. In a sound reproducing machine, means for supporting a tone arm therein, said means including a fixed collar secured to a cabinet and having a flange therearound, a movable collar surrounding said fixed collar and having a bearing on the flange, said collar having horizontally disposed apertures therein, means carried by the movable collar and passing through said apertures for supporting the tone arm, said means including screws having a plurality of shoulders formed in the length thereof and with a plurality of portions of varying diameters, the largest diameter adapted to engage the collar and the smallest diameter adapted to engage the tone arm, and an intermediate portion adapted to support the weight of the arm on the fixed support, the shoulders defining the smallest diameter abutting said tone arm to move the same bodily with respect to the support as said screws are manipulated.

2. In combination, a fixed collar having a flange therearound, a movable collar surrounding said fixed collar and having a bearing on the flange, and means carried by the movable collar for supporting a tone arm within the fixed collar.

3. In combination, a fixed collar having a flange therearound, a movable collar surrounding said fixed collar and having a bearing on the flange, said fixed collar having apertures therein, and means carried by the movable collar extending through the apertures in the fixed collar for connection to a tone arm.

4. In combination, a fixed collar having a flange therearound, a movable collar surrounding said fixed collar and having a bearing on the flange, said fixed collar having horizontally disposed apertures therein, and means carried by the movable collar extending through the apertures in the fixed collar for removable connection to a tone arm.

5. In combination, a receiver, a horizontally movable bearing therearound, an arm extending into the receiver, and means carried by the bearing for pivotally supporting the arm whereby the arm may be moved horizontally and vertically relatively to said receiver.

6. In a talking machine, in combination with the cabinet, a tone arm support including a flanged member adapted to be mount-

ed on the cabinet, and a collar surrounding and movable relatively to said member for conection to the tone arm.

7. In a talking machine, in combination with a cabinet, a tone arm, a tone arm support including a fixed member adapted to be mounted on the cabinet, and a movable member supported on and outside of said fixed member adapted for connection to the tone arm.

Signed at Chicago, State of Illinois, this 2nd day of February, A. D., 1918.

FOREST CHENEY.