Dec. 20, 1927. 1,653,410

J. N. PEPIN

TONE ARM

Filed May 11, 1923

Fig. 1.

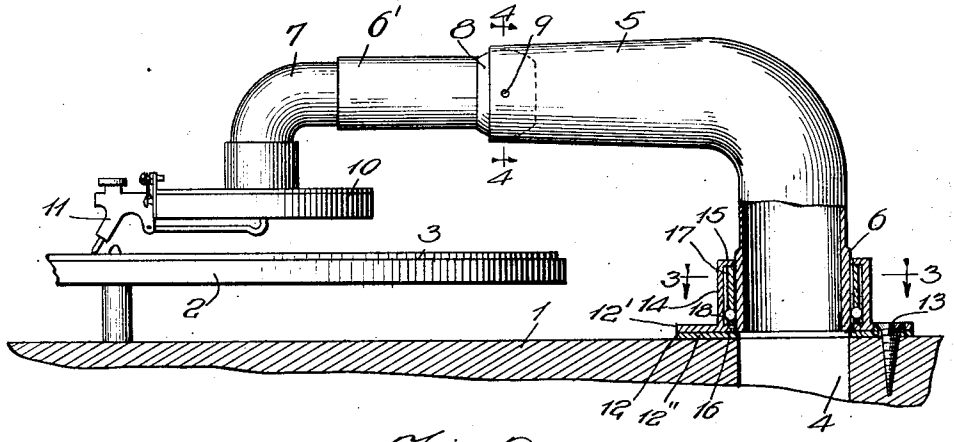


Fig. 2.

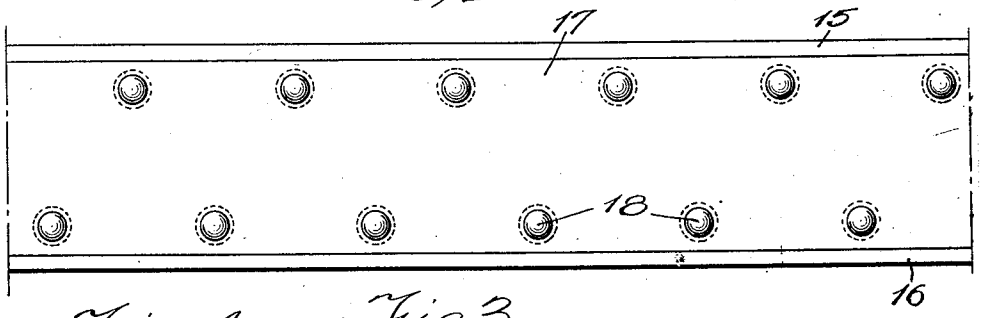


Fig. 4.

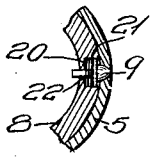
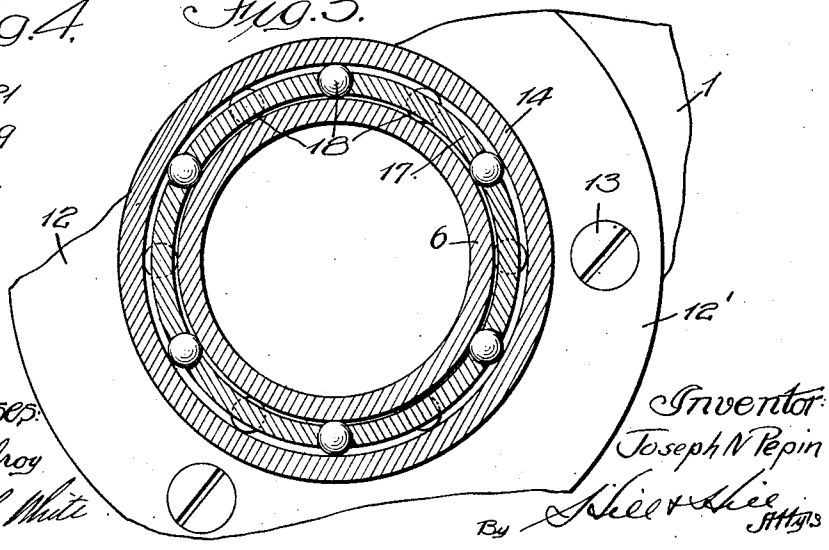


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH N. PEPIN, OF CHICAGO, ILLINOIS.

TONE ARM.

Application filed May 11, 1923. Serial No. 638,193.

My invention relates to improvements in tone arms particularly intended for phonographs, or the like, and has among its objects the production of a device of the kind described, which will be neat and attractive in appearance, simple, convenient, compact, durable, reliable, efficient and satisfactory for use wherever found applicable.

One of the objects of my invention is to provide a tone arm, which will be readily detachable from its mounted position and which will be freely rotatable in operative position with the minimum amount of friction.

Another object of my invention is to provide an articulated tone arm which shall be removable as a unit from its mounting and in which the various parts are detachably interconnected.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosures herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is an elevation of my tone arm mounted in position and showing the mounting in cross section;

Fig. 2 is an elevation of the non-friction sleeve mounted in place on the collar and shown as projecting onto a flat surface;

Fig. 3 is a section taken substantially on line 3—3 of Fig. 1; and

Fig. 4 is a sectional detail taken on the line 4—4 of Fig. 1.

In the drawings, wherein I have illustrated the preferred embodiment of my invention, 1 indicates the upper plate or top part of a talking-machine cabinet, upon which is rotatably mounted a turn-table 2 adapted to receive a record 3 thereon. An opening 4 is provided through the top of the cabinet 1 and leads to the tone chamber within the cabinet (not shown).

Adapted to communicate with the opening 4 is a tone arm section 5, preferably bent to form an L-shaped member, as shown. A tubular part 6 having a spherical head 8 is received within one end of the member 5 and is held in place thereat by spring-pressed pins 9 arranged diametrically of the axis of the tubular parts, so that the section 6 may move in a vertical plane relative to the section 5 and yet maintain the parts in close contact to prevent what is known as "blast" or the leakage of sound therepast. To detach the part 6 from the part 5 the pins 9 are pressed inwardly against the pressure of the springs 20 and the parts are then pulled apart. Small sockets 21 are provided in the spherical portion 8 and the pins 9 are slidable through said sockets, it being noted that the pins are provided with enlargements 22 intermediate their ends to abut against the base of the sockets and form stops.

A tone arm part 7 is connected to the part 6 and carries a reproducer 10 at its end, said reproducer carrying a needle-holder 11 at one end thereof adapted to receive a needle or stylus to ride in the grooves of the record 3.

A collar 12 is mounted on the cabinet 1 at the opening 4 and is secured in place by means of screws 13 or the like, said collar having a pair of substantially parallel annular flanges 15 and 16 thereon extending radially inwardly and connected by an annular wall member 14 so that there is an opening provided between the inner surface of the annular wall 14 and the opposed surfaces of the flanges 15 and 16.

A sleeve 17 is positioned in place between the opposed flanges 15 and 16 and is prevented against vertical movement by said flanges, said sleeve having a series of ball members 18 rotatably arranged in pockets therein so that when the sleeve is rotated relative to the collar, the ball members will ride upon and engage the inner surface of the wall 14 and act as non-friction rollers. The balls 18 are of a diameter greater than the radial thickness of the sleeve 17 so that they project beyond the walls of said sleeve on both sides.

The lower end 6 of the L-shaped tone arm is slidably insertable into the opening of the collar 12 and is supported at its lower end on the inner edge of a separate flange 12 which projects inwardly beyond the lower flange 16 of said collar. The fit of the portion 6 within the sleeve 17 is such that the portion 6 frictionally engages the balls 18 so that said sleeve and balls act as a ball-bearing between the tone arm and the collar, permitting a free rotational movement of the tone arm, and at the same time permitting instant removal of the tone arm without any

removal of screws or other fastening means.

The sleeve 17 may be placed in position within the flanges 15 and 16 in any desired manner, as for instance by forming the collar initially with the separate flange 12'' and then riveting this flange to the flange 12' shown, after the sleeve is in place.

The balls 18 may also be kept within the sleeve 17 in any preferred manner for assembly, as for instance by forming the ball openings of larger diameter at one of the walls than at the other, as indicated, thence inserting the balls in place and holding them temporarily with a heavy oil or grease while the sleeve 5 is being inserted into the collar, after which the grease may be washed away with kerosene or the like.

It is obvious that the methods described for holding the balls in place and for inserting the sleeve are but one of any number of methods which may be employed.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. An apparatus for talking machines or the like, comprising a tone arm, a collar secured to said machine and having a pair of spaced flanges thereon, a sleeve arranged in said collar between said flanges and freely rotatable within said collar, and ball members carried by said sleeve and engageable with said collar and said tone arm, said tone arm being quickly removable from said sleeve.

2. In a talking machine, a collar secured to said machine at the sound chamber thereof and having a pair of spaced annular flanges, the lower one of said flanges extending inwardly beyond the upper flange, an anti-friction sleeve rotatably arranged between said flanges and engageable with said collar, and a tone arm in said sleeve and quickly removable therefrom, said tone arm having its lower end engaging said lower flange.

3. In a talking machine, a collar secured to said machine at the sound chamber thereof and having a pair of spaced annular flanges, one of said flanges extending inwardly beyond the other flange, an anti-friction sleeve rotatably arranged between said flanges and engageable with said collar, and a tone arm slidably and rotatably mounted in and quickly removable from said sleeve, and its lower end engaging said lower flange.

4. In a talking machine, the combination with a collar, a pair of spaced annular flanges on said collar, one of said flanges extending inwardly beyond the other flange, and an anti-friction sleeve between said flanges engageable with said collar, of a tone arm slidably and rotatably mounted in and quickly removable from said sleeve with its lower end engaging the lowermost flange.

In testimony whereof, I have hereunto signed my name.

JOSEPH N. PEPIN.