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H. P. DONLE

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MAGNETIC PICK-UP

Filed April 7, 1927

Fig. 1.

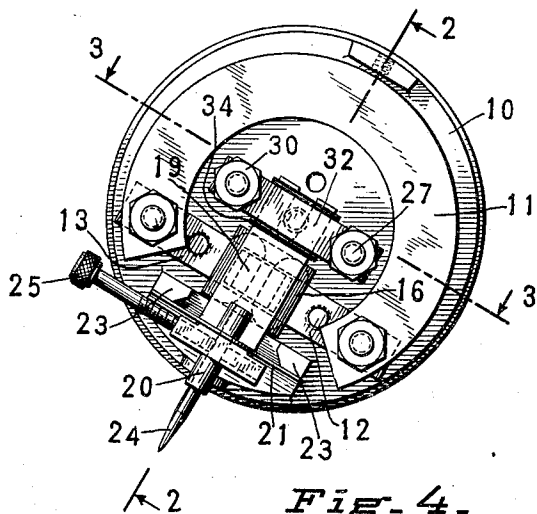


Fig. 2.

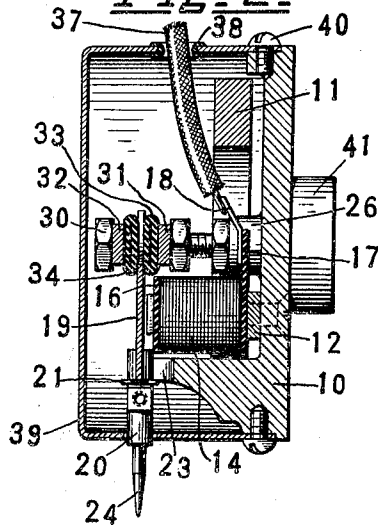


Fig. 4.

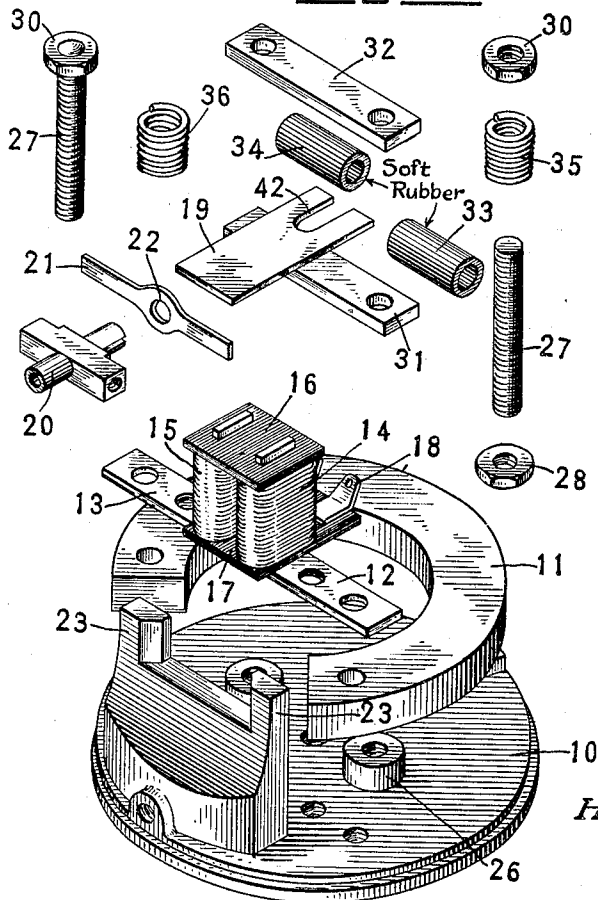


Fig. 5.

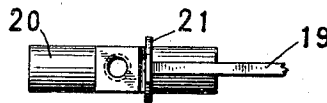
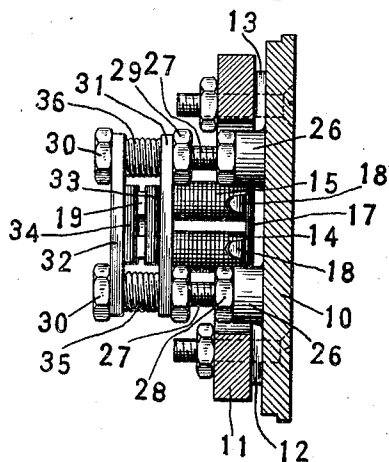
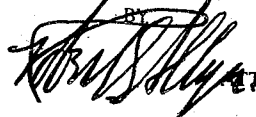


Fig. 3.



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MAGNETIC PICK UP

Application filed April 7, 1927. Serial No. 181,760.

The main object of my invention is to produce a simple device which will faithfully transform the impressions or undulations of a phonograph record into alternating current pulsations of equivalent frequencies and proportionate amplitudes.

Another object is to produce a device of the type described above which may be of such weight as to give proper pressure of the stylus upon the record.

Another object is to construct a device of this type which may be readily attached to an existing phonograph.

Another object is to permit the recorded music or other sound to be amplified by a high quality electronic amplifier and converted into sound waves by the modern faithful loud speaker.

In my invention these objects are accomplished by means of a magnetic type needle actuated pick-up having the armature torsionally supported at one end and dampingly supported at its other end, thus producing a device which is sensitive, but at the same time does not over-emphasize through mechanical harmonics any particular frequency or frequencies.

Referring to the drawings Fig. 1 is a front view of one form of the device with its cover removed.

Fig. 2 is a sectional view along the line 2—2 of Fig. 1 with the cover in place.

Fig. 3 is a sectional view along the line 3—3 of Fig. 1.

Fig. 4 is an exploded view showing a number of the component parts.

Fig. 5 is a side view of the stylus holder.

The base 10, which may preferably be a die-casting supports the stationary parts of the magnetic system which comprise the permanent magnet 11 and its two L-shaped pole pieces 12 and 13. These pole pieces carry the windings 14 and 15 and the heads 16 and 17. The head 17 carries the winding terminals 18 and 18'.

The armature 19 has one end soldered or otherwise secured to the stylus holder 20. The latter has a sort of torsional pivot formed by the spring 21. This spring may have an opening 22 for the rear end of the stylus holder and may be soldered to the holder. The outer ends of the spring are secured to the pillars or supports 23 which project from the base 10. The stylus 24 is held in place by a screw 25. The spring 21 not only permits the armature to vibrate according to the sound record but serves to support the armature yieldingly and thus to minimize the effect of irregularities.

The base 10 also carries the bosses 26 which may be cast integral with it. These bosses form seats for the threaded parts 27 which are locked by nuts 28 and which carry the adjusting nuts 29 and 30. The threaded rods 27 guide the bars 31 and 32. Between these bars resiliently but dampingly held by the two pieces of flexible rubber compressed tubing 33 and 34 is the forked end of the armature 19.

The springs 35 and 36 are provided to press the bars 31 and 32 apart and so that the nuts 30 and 31 have at all times frictional engagement with the threads of the posts 27, thus preventing these nuts from revolving through vibration.

The 2 conductor flexible cords 37 may have a pair of its terminals connected to the lugs 18 and 18' and may be let out through a suitable bushing 38 through the case 39 which may be formed of punched or deep drawn sheet metal and provided with the screws 40 for securing it to the body or base 10.

Upon the rear of the base 10 is carried the socket 41 which may be so formed as to readily attach the device to an existing phonograph in place of the regular mechanical reproducer. The cover 39 is provided with suitable clearance apertures for the stylus locking screw 25 and the stylus 24.

It will be seen that the stylus holder 20

and therefore the outer end of the armature 19 will be supported yieldingly in all directions by the spring 21 but that the action of this spring when a record is being played is largely torsional in its nature, thus producing a support in some ways equivalent to the usual pivotal type but without the possibility of wear or rattling and without the necessity of readjustment and sometimes replacement of parts.

The inner end of the armature 19 is held between the walls of the compressed soft rubber tubes 33 and 34 which are compressed by the cross bars 31 and 32, and this compression and hence, the damping of the armature, may be varied by adjusting the distance between these bars by means of their associated nuts 29 and 30, while the clearance between the armature and the pole tips may be varied without change in the damping by rotating the nuts 29 and 30 equally and in the same direction.

The slot 42 is provided in the rear of the armature so that considerable pressure is required to obtain a fair amount of damping, thus holding the rear of the armature firmly in place even though the damping be but moderately heavy. Such adjustments of the damping as are necessary may be made by moving the nuts 29 and 30.

I claim:

1. An electromagnetic pick-up having pole pieces, an armature mounted adjacent said pole pieces, a stylus holder secured to said armature, a resilient support for said armature adjacent said stylus holder, said support permitting vibration of said armature toward and from said pole pieces and permitting said armature to move in a plane parallel to the faces of said pole pieces, and means for damping the movement of said armature.

2. An electromagnetic pick-up comprising an electromagnet, an armature therefor, a resilient torsional strip constituting a support for said armature, a stylus secured to one end of said armature, adjustable means for damping the movement of the other end of said armature beyond the magnet, said stylus extending in a direction substantially normal to the plane of said strip by which said armature and attached parts are yieldingly supported by said strip when said stylus is in action.

3. An electromagnetic pick-up comprising a supporting base having two posts integral therewith near one edge thereof, an electromagnet secured to said base adjacent said posts and having pole pieces substantially in the plane of the ends of said posts, an armature member having a stylus extension and a resilient supporting strip secured to said stylus extension and having its ends secured to said posts, said armature being movable in a plane parallel to the faces of

the pole pieces and also movable toward and from the pole pieces.

4. An electromagnetic pick-up comprising a magnet construction having pole pieces, an armature pivotally supported near said pole pieces, said armature having a forked extension at its upper end and a stylus holder at its lower end, a tubular soft rubber damping member engaging each side of the forked extension of said armature, a yielding support for said armature located between its upper and lower ends and adjustable means for compressing said damping member against said forked extension.

5. An electromagnetic pick-up comprising an electromagnet, an armature for said magnet having pole pieces, a resilient pivotal support for one end of said armature, a damping means for the other end of said armature, a stylus extending from the end of the armature which is remote from said damping means, and common means for varying the effect of said damping means and also permitting adjustment of the air gap between said armature and said pole pieces.

6. An electromagnetic pick-up comprising a magnet having pole pieces, an armature resiliently supported at one end so as to permit vibration with respect to said pole pieces, a pair of screw-threaded posts on opposite edges of said armature, helical springs on said posts, resilient damping members on opposite faces of said armature, presser bars on said posts for pressing said springs and said damping members and adjustable nuts on said posts for adjustably holding said bars in place.

7. An electromagnetic pick-up comprising a magnet having pole pieces, an armature therefor, a supporting spring strip for the armature having a central passage, a stylus holder having a divided end extending thru said passage and embracing one end of said armature.

8. An electromagnetic pick-up comprising a magnet, pole pieces associated therewith, a coil associated with said pole pieces, an armature mounted adjacent to said pole pieces, said armature being of thin magnetic material whereby it may be flexed, a resilient support for said armature, a stylus carrier attached to said armature adjacent to said support, damping means acting on said armature at a point remote from said support, means for adjusting the action of said damping means, and means for adjusting the position of said armature with respect to said pole faces independently of the damping action controlled by said first-mentioned means.

9. In an electromagnetic pick-up, a pivoted vibrating armature, damping means therefor, a spring member coacting with said damping means, and an adjustable clamp

acting upon said damping means, said clamp acting upon the spring member in addition to said damping means, whereby the mechanical resistance to changes in the adjustment of said clamp is greater than if said clamp acted upon said damping means only.

10. In an electromagnetic pick-up, an armature and a magnet having an air gap between said armature and said magnet, damping means bearing upon both sides of said armature, and means for adjusting the action of said damping means on both sides of the armature without varying the air gap.

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