July 12, 1949. C. F. JENSEN 2,475,785

TONE ARM AND PICKUP ASSEMBLY

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Fig. 1

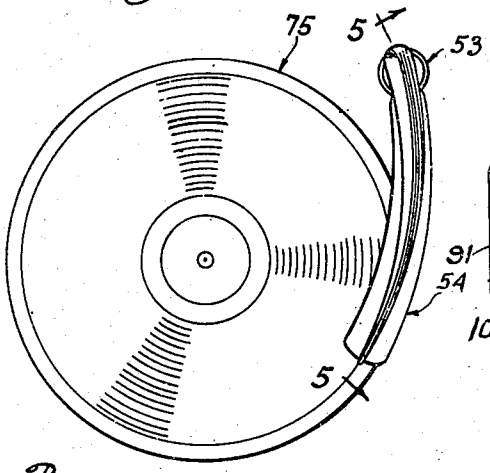


Fig. 11

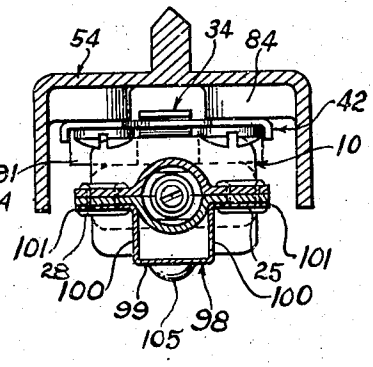


Fig. 2

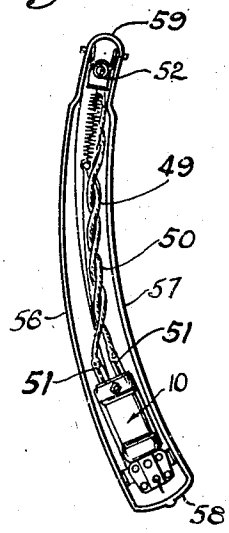


Fig. 3

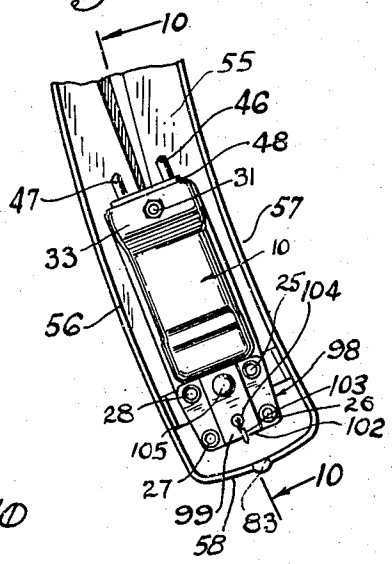


Fig. 4

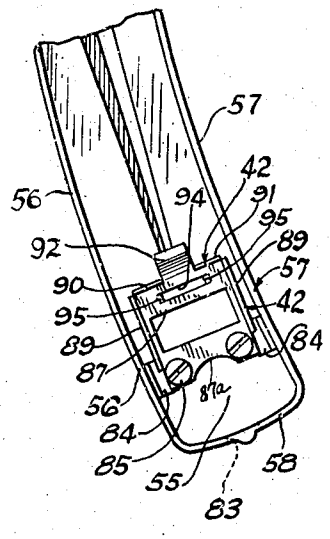
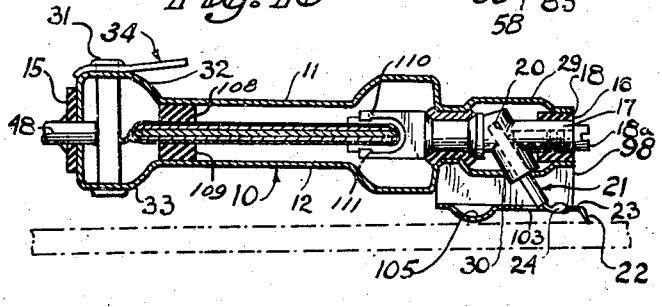


Fig. 10



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Fig. 5

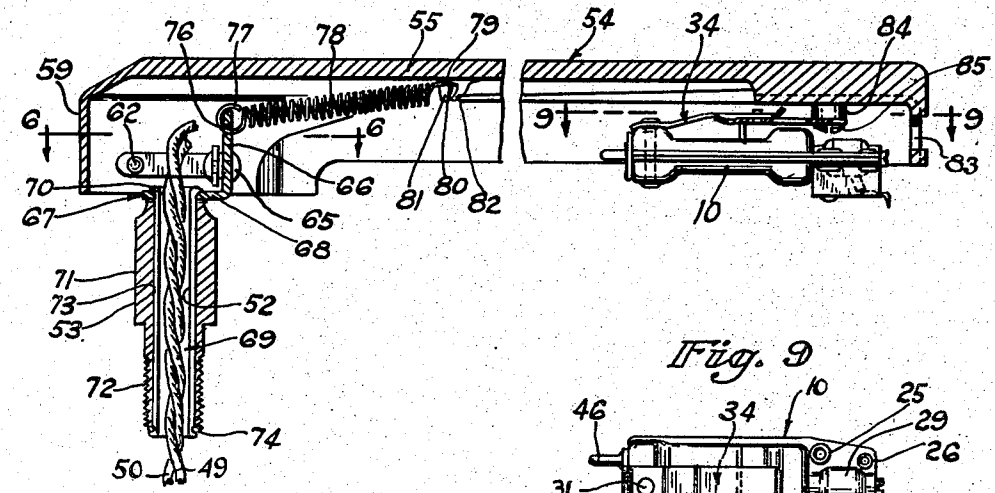


Fig. 9

Fig. 6

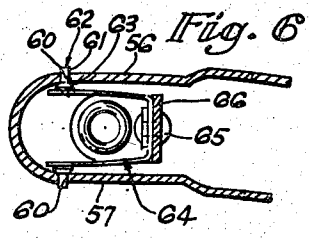


Fig. 7

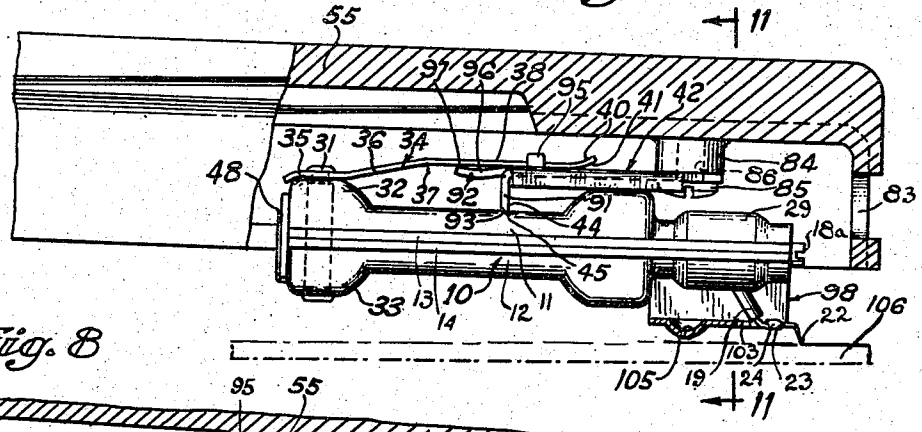
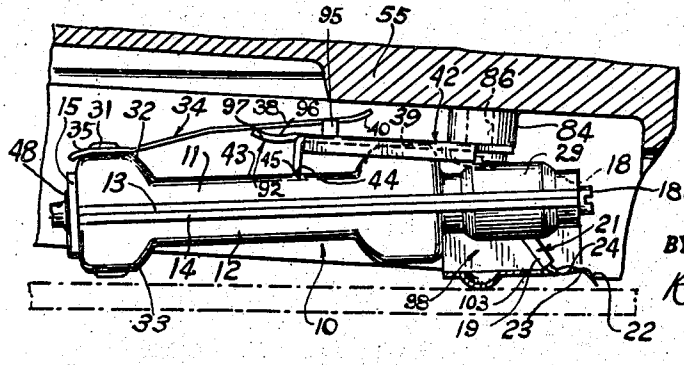


Fig. 8



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2,475,785

TONE ARM AND PICKUP ASSEMBLY

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Application March 18, 1947, Serial No. 735,480

6 Claims. (Cl. 274—24)

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The present invention relates to tone arm and pick-up assemblies, and is particularly concerned with the provision of an improved tone arm and pick-up assembly which is adapted to protect both the record and the stylus from damage which might result from the dropping of the tone arm or the movement of the tone arm laterally across the record grooves under pressure.

One of the objects of the invention is the provision of an improved tone arm assembly which is provided with a pick-up resiliently and movably mounted thereon in such manner that excessive pressure upon the tone arm toward the record results in such movement of the pick-up with respect to the tone arm that the stylus is lifted from the record.

Another object of the invention is the provision of an improved device of the class described which is provided with means for engaging the record grooves under the preceding conditions which permits the motion of the pick-up or tone arm transversely to the record grooves under pressure without substantial damage to the record.

Another object of the invention is the provision of an improved device of the class described which is sturdy, simple, adapted to be manufactured at a low cost, which will not interfere with the normal operation of the tone arm and pick-up at predetermined needle pressures, and which is adapted to be used for a long period of time without necessity for repair or replacement of its parts.

Another object of the invention is the provision of an improved pick-up mounting on tone arms, by means of which the pick-up may be removed conveniently and may easily be replaced so that the assembly of these parts and the repair and replacement are simplified.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the drawings, of which there are two sheets:

Fig. 1 is a top plan view of a turntable equipped with a tone arm embodying my invention;

Fig. 2 is a bottom plan view of the tone arm unit of Fig. 5;

Fig. 3 is a full size fragmentary bottom plan view of the pick-up end of the tone arm, with the conductors disconnected;

Fig. 4 is a similar view of the tone arm, with the pick-up removed;

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Fig. 5 is a vertical longitudinal sectional view through the tone arm and pick-up assembly, taken on the plane of the line 5—5 of Fig. 1, looking in the direction of the arrows, with the pick-up shown in elevation;

Fig. 6 is a fragmentary horizontal sectional view, taken on the plane of the line 6—6 of Fig. 5, showing the mode of mounting the tone arm;

Fig. 7 is an enlarged fragmentary sectional view, similar to Fig. 5, of the pick-up end of the tone arm, shown with the pick-up in the playing position;

Fig. 8 is a similar view, with the pick-up in the position which it assumes when pressure is applied to the tone arm;

Fig. 9 is a full size bottom plan view of the pick-up unit;

Fig. 10 is a vertical sectional view, taken on the plane of the line 10—10 of Fig. 3, through the pick-up unit;

Fig. 11 is a vertical sectional view, taken on the plane of the line 11—11 of Fig. 7, through the pick-up unit.

The features of the present pick-up and tone arm assembly may be used upon various types and shapes of tone arms and with various types of pick-ups, such as crystal pick-ups 10 and magnetic pick-ups.

Referring to Figs. 7, 9, and 10, for example, the pick-up 10 may be provided with a housing comprising a pair of stamped sheet metal housing halves 11, 12.

Such sheet metal housing halves are preferably provided with the laterally projecting border flanges 13, 14, which extend all around the boundary of the pick-up, except at the rear, where a block of insulation 15 is used to close the pick-up, and at the front end, where a resilient rubber bearing 16 and a trunnion 17 close a cylindrical bore 18.

The trunnion 17 has a threaded bore for receiving the clamping screw bolt 18a, which engages the shank 19 of the stylus and secures it in the stylus bore 20. The stylus 21 may be of any type, such as the ordinary straight and pointed cylindrical metal stylus; but to illustrate the invention, a stylus of the resilient type has been employed.

Such a stylus has a shank 19, a point 22, and an intermediate flat resilient portion 23, which may be a vertical compliance; and, if desired, may also have a vertically extending flat portion 24 to provide for a horizontal compliance.

Such a resilient stylus operates at a relatively

low needle pressure; and since it has a vertical compliance, the range of pivotal movement of the pick-up on the tone arm should be sufficient to remove the stylus from the record, as shown in Fig. 8, taking into consideration the vertical compliance of the stylus.

The crystal which extends longitudinally of the housing halves 11 and 12, Figure 10, is clamped at its left end by the rubber blocks 108, 109, shown, which in turn are clamped by the housing halves 11, 12. At its right end the crystal is clamped by the clamping flanges of the chuck 30, which flanges are numbered 110, 111.

The two housing halves 11 and 12 are preferably secured together by a plurality of tubular rivets 25—28 passing through registering apertures into two border flanges 13, 14 at the forward end of the pick-up on either side of the cylindrical portion 29 of the housing, which surrounds the needle chuck 30.

At its rear end the two housing halves 11 and 12 may be secured together by a transverse bolt or rivet 31 passing through aligned apertures in the housing halves at the rounded pressed formations 32, 33 of the housing.

In order to secure the pick-up unit 10 to the tone arm and to provide for its resilient support in a predetermined position, this bolt or rivet 31 may also support a forwardly extending leaf spring 34, seen in Figs. 7, 8, and 9.

This leaf spring may have an attaching portion 35 provided with an aperture for receiving the rivet 31, which is longitudinally curved in a manner complementary to the curved protuberance 32 on the housing half 11. Thus a single rivet 31 will serve to pull these complementary parts together and to hold the leaf spring 34 against rotation on its rivet.

From the attaching flange 35, the leaf spring 34 may be bent upward at an obtuse angle, having a diagonally and upwardly extending portion 36. It may be bent again at an obtuse angle at 37 and provided with a straight portion 38, which extends substantially parallel to the major axis of the pick-up unit.

Ordinarily when the pick-up unit is detached, this portion 38 extends close to the pressed protuberance 39 on the housing half 11, so that the leaf spring 34 is initially biased toward the housing, but is sprung away from the housing when it is assembled, as shown in Fig. 7.

At its extreme right end the leaf spring 34 preferably has an upwardly turned end portion 40, the lower camming surface 41 of which serves to guide the supporting bracket 42 of the tone arm into proper position under the leaf spring 34, as shown in Fig. 7.

The upper housing half 11 has its central plane portion 43 provided with a transversely extending V-shaped groove 44 (Fig. 8) adapted to receive the V-shaped knife edge 45 which is carried by the pick-up supporting bracket 42. The angularity of the V-shaped groove 44 is greater than that of the beveled knife edge 45 in order that there may be a range of angular movement between the pick-up and the tone arm without the bevel or side wall of the knife edge engaging the sides of the groove 44.

The insulating block 15 supports a pair of cylindrical connector prongs 46, 47, which are upset on the inside and outside of the block 15 for rigid support, and one of which is provided with a sheet metal grounding clip 48 (Fig. 3) comprising a thin strip of sheet metal of U shape that engages the housing and is secured on the connector post 46 against the block 15. The conductors which connect the pick-up in circuit are the twisted insulated wires 49, 50 which have cylindrical sheet metal connectors 51 (Fig. 2) engaging the connectors 46, 47; and the conductors extend backwardly inside the tone arm and downwardly through the bore 52 in the tone arm supporting column.

The present pick-up supporting arrangements may be employed in various types of tone arms, but the present tone arm selected to illustrate the invention is a cast metal member 54 which is of substantially U shape in transverse section, being provided with a top wall 55 and a pair of side walls 56, 57 (Fig. 3). This provides a channelled member having an open bottom, the channel being closed by an integral forward end wall 58 and an integral cylindrically curved rear end wall 59.

The tone arm is laterally curved so that the pick-up may extend longitudinally of the tone arm at the free end of the tone arm and may at the same time extend tangentially of the record groove for good tracking.

At its rear end the two side walls 56, 57 (Fig. 6) are substantially parallel; and they are preferably provided with aligned cylindrical bores 60 adapted to receive the cylindrical portions 61 of the trunnions 62. These trunnions are also each preferably provided with a frusto-conical portion 63, the trunnions being riveted in apertures located in the ends of a U-shaped spring member 64.

This U-shaped spring member may be riveted at 65 to the upwardly extending flange 66 of an angle bracket 67 so that the legs of the spring 64 extend horizontally, and they are initially spread sufficiently so that they press their trunnions 61 into the bores 60, with the frusto-conical portions 63 of the trunnions engaging the inside of the walls 56, 57 in such manner as to take up wear and prevent rattling.

The horizontal flange 68 of the angle bracket 67 has an aperture for receiving a tubular shaft 69, the upper end of which is spun outwardly at 70 in the angle bracket to secure the tubular shaft 69 to the angle bracket.

The tone arm supporting post 53 comprises a tubular metal member having a cylindrical body 71 and a reduced cylindrical threaded portion 72. This post has an internal cylindrical bore 73, which rotatably receives the tubular shaft 69. The shaft 69 projects from the lower threaded end of the column 53, and is provided with a groove for receiving a resilient split ring 74, which engages the end of the column 53 and serves as a thrust bearing for supporting the shaft 69 in the column and preventing axial movement of the shaft 69 in the column.

The threaded end 72 of the column is, of course, used to pass through a table or top of a phonograph housing and to receive the nut by means of which the supporting column 53 is fixedly secured adjacent the turntable 75 (Fig. 1).

Thus the tone arm is supported for pivotal movement on a vertical axis, which is the axis of shaft 69 and column 53 and for pivotal movement on a horizontal axis, which is the axis of the trunnions 62.

It will be noted that the rear wall 59 of the tone arm is spaced from the column 53 to prevent it from engaging the tone arm when the tone arm is pivoted upward for inspection of the stylus. Also, the bearing bores 60 for trunnion 62 are

located rearwardly of the supporting column 53 for the same purpose.

The angle bracket 67 may have its vertical flange 66 provided with an aperture 76 for receiving the hooked end 77 of a helical coil spring 78. The other looped end 79 of this coil spring may be received in the narrow groove 80 between a pair of integral cast fingers 81, 82, which project downwardly on the inside of the upper wall 55 of the tone arm in such position that the spring 78 is normally under a small amount of tension. Finger 81 serves to support the end of the spring 78 and to resist its tension, and is therefore heavier, while finger 82 serves as a retaining member for the spring, which is intended to be bent over toward the finger 81; and therefore finger 82 is relatively slender to permit bending without breaking.

The spring 78 tends to support a part of the weight of the tone arm, and is tensioned by the movement of the tone arm downward into record-engaging position.

It will be noted that the point of attachment of the spring at the loop 79 and the loop 77 and the axes of trunnions 62 are not in alignment in Fig. 5, indicating that the spring has been slightly extended and tensioned when the tone arm is horizontal. When the tone arm is lifted and these points of pivot 62, 77, and 79 come into alignment, the spring 78 is at its minimum length; but it is also tensioned and extended when the tone arm is lifted beyond this position.

The tone arm is preferably provided in its forward wall 58 with an aperture 83, permitting access to the stylus—securing screw 18a by means of its screwdriver or the like. The tone arm is also preferably provided with inwardly projecting lugs 84 on the lower side of its upper wall 55 adjacent each side wall 56, 57 and close to the end wall 58, but spaced therefrom. These lugs 84 merely represent a thickening of the upper wall at this point for the reception of screw bolts 85, which are threaded into threaded bores 86 (Fig. 8) in the lugs 84 for supporting the bracket 42, seen in side elevation in Fig. 7 and bottom plan in Fig. 4.

Referring to Fig. 4, the bracket 42 is provided with a rectangular cut-out or aperture 87 to clear the hump 39 on the pick-up when tilted as shown in Fig. 8. It is provided with a pair of downwardly turned reinforcing side flanges 89 to increase its rigidity. The circular groove 87a (Fig. 4) is to clear the bearing enlargement 29 when the pick-up tilts as in Fig. 8. At its forward end it is provided with a pair of apertures for receiving the screw bolts 85, which pass through these apertures into threaded bores in the lugs 84 to secure the bracket to the tone arm.

Thus the bracket projects rearwardly in spaced relation to the inside of the upper wall 55, as shown in Fig. 7. At its rear edge the bracket 42 is provided with a pair of downwardly extending knife edge flanges 90, 91 spaced from each other by a rearwardly extending tongue 92. The knife edge flanges 90, 91 are provided with a beveled surface 93 on the rear lower edge, thus forming the two knife edges 45 on the lower edges of the depending flanges 90, 91.

Knife edges 45 are adapted to be received in the groove 44 for pivotal mounting of the pick-up unit 10 on the tone arm 54.

Forwardly of the knife edge flanges 90, 91 the body of the bracket 42 (Fig. 4) is provided with a slot or aperture 94. The material from slot 94 is used to form a pair of upwardly extending

guide prongs 95, which are spaced sufficiently to receive the leaf spring 34 carried by crystal unit 10 between them.

The tongue 92 is preferably provided with a downward curvature where it leaves the body of the bracket 42 and an upward curvature at 96 intermediate its length so that its upper rear corner 97 engages underneath the leaf spring 34 at the straight portion 38 in such manner as to give a firm engagement between spring 34 and bracket 42.

In other words, the straight portion 38 of spring 34 engages flatly against the body of bracket 42 and the corner 97 of that bracket, all of these upper parts of the bracket being in the same plane.

Referring again to the crystal unit, this unit is provided with a guard, indicated in its entirety at 98. The guard 98 is substantially U-shaped in cross section, as shown in Fig. 11; and it is preferably made of relatively rigid sheet metal, such as stainless steel.

The guard 98 has a horizontal body flange 99, a pair of vertical flanges 100, and a pair of horizontal attaching flanges 101. The attaching flanges 101 have apertures for receiving the rivets 25—28, by means of which the guard is rigidly secured against the lower housing half 12 at its forward end, below the needle chuck assembly.

The vertical flanges 100 project downwardly to a point adjacent, but spaced upwardly from the point 22 of the stylus. This locates the body flange 99 above the record and above the point of the stylus, as shown in Fig. 7. The body flange 99 (Fig. 3) has a slot extending into it from the forward end 102 of the guard. This slot is preferably made with parallel sides 103 and with a circular end portion 104.

The size of the slot is sufficient to provide a suitable clearance around all of the parts of the stylus 21, including the flat portions 23, 24 and the point 22. The round portion 104 of the slot is provided so that the stylus and its shank may move downward or upward out of, or into, the chuck through this rounded part of the slot when a stylus is to be removed or replaced.

Adjacent its rear edge the body flange 99 of the guard 98 is provided with a downwardly extending partially spherical pressed protuberance 105. This pressed protuberance may be hollow in its upper side, which performs no particular function; but it is convex on its lower side, and provides a substantially ball shaped formation which is slightly spaced from the record 106, when the stylus is in the record-engaging position. When pressure is applied to the top of the tone arm, or when the tone arm is dropped, the ball 105 engages the record 106, and the pick-up 10 pivots in a counterclockwise direction with respect to the tone arm, from the position of Fig. 7 to that of Fig. 8.

As this pivotal action takes place, the corner 97 of the tongue 92 on bracket 42 presses the leaf spring 34 upward, away from the crystal unit 10, tensioning the spring, which tends to return the pick-up to the position of Fig. 7.

The weight of the pick-up and tone arm and the additional pressure are thus taken by the ball shaped formation 105 of the guard 98; and the stylus 21 has its point 22 lifted from the record so that both the stylus and the record are protected. The ball formation 105 may slide laterally across the grooves and ridges of a record without substantially damaging the record, thus preventing cross scratches under pressure.

It is still possible to move the stylus transversely from groove to groove across the grooves, but only at a very light pressure, corresponding to the needle pressure which is being employed, which minimizes the damage to the grooves of the record under these conditions.

The mode of insertion of the pick-up unit is as follows: The pick-up unit is laid in the channel of the tone arm, with the leaf spring 34 facing the end of tongue 92. The camming end 41 of the leaf spring tends to move the leaf spring in between bracket 42 and the top of the tone arms. A longitudinal pressure exerted to slide the pick-up toward the free end of the tone arm will cause the leaf spring 34 to slide over the tongue 92; and the leaf spring 34 may then be guided between the guide flanges 95.

During this motion the knife edge 45 is engaging the flat side 43 of the pick-up; but when the pick-up reaches its final position, the knife edge 45 moves into the grooves 44, where the pick-up is firmly held by means of the spring 34. The spring 34 engages the bracket 42 flatly, with a straight portion 38, and tends to hold the pick-up 10 in a position parallel to the top surface of the tone arm, with the knife edge 45 in the knife edge groove 44.

However, any pressure which is exerted upon the tone arm with the pick-up engaging a record or any other member, such as a table or a turntable, will cause the pick-up to pivot from the position of Fig. 7 to that of Fig. 8, thereby protecting the stylus by taking the pressure on the ball 105. If the tone arm is dropped, the same action takes place.

Although the stylus point 22 may first engage the record or other support, the major portion of the blow is absorbed by the ball 105 and spring 34, which cushions the shock, and the pivoting of the pick-up removes the stylus from contact with the surface that is being engaged by the ball 105.

It will thus be observed that I have invented an improved pick-up and tone arm assembly which is adapted to provide protection for the stylus against shocks and application of undue pressure and protection for the record against lateral scratches under pressure, since the ball formation tends to spread the area and reduce the unit pressure on the area of the record which is engaged by the ball formation.

My pick-up unit is easily assembled with the tone arm, and pick-ups may be readily changed or replaced, or the pick-up may be removed for inspection at any time.

The present guard construction is simple, yet effective; and it may be manufactured at a very low cost so that it does not add materially to the cost of the assembly.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A detachable mounting for a pick-up on a free end of a tone arm, comprising a bracket carried by the lower side of said tone arm and projecting in one direction longitudinally of the tone arm, a leaf spring carried by the pick-up and projecting in the opposite direction, a guide flange carried by the bracket on each side of the spring

to guide the spring in engagement with the bracket, a knife edge flange carried by the bracket, said pick-up having a knife edge groove for receiving said latter flange, whereby the leaf spring and bracket and pick-up may be brought into sliding engagement with each other, the bracket being interposed between the leaf spring and pick-up and slid relative to each other until the knife edge flange engages in the knife edge groove, said bracket and leaf spring having complementary engaging portions which remain in engagement forwardly and rearwardly of the knife edge and groove, the leaf spring holding the knife edge in the groove and resisting pivotal movement of the pick-up on the bracket in either direction clockwise or counterclockwise.

2. In a tone arm and pick-up assembly, the combination of a tone arm comprising an elongated channeled member open at the bottom, a rigid supporting bracket mounted on said tone arm and extending rearwardly of said tone arm and parallel thereto in said channel, said bracket having a downwardly turned end provided with a knife edge and having a pair of upwardly extending guides on its upper side for engaging and guiding a leaf spring, a pick-up comprising a housing, a chuck movably mounted in said housing and having engagement with one end of a crystal, said crystal having its other end supported by said housing, a stylus in said chuck, said housing having a transverse V-groove in its top wall for engaging said knife edge, a leaf spring carried by the housing and extending forwardly of the housing past said V-groove, the said leaf spring being insertable between the guides on said rigid bracket and thereafter the said pick-up being slidable forwardly of the tone arm until the groove in said housing receives said knife edge, the said leaf spring engaging the top of said rigid bracket and holding said knife edge in said V-groove, the pick-up housing being pivotally mounted on said knife edge and said leaf spring resiliently resisting pivotal movement in either a clockwise or counterclockwise direction.

3. In a tone arm and pick-up assembly, the combination of a tone arm comprising an elongated channeled member open at the bottom, a rigid supporting bracket mounted on said tone arm and extending rearwardly of said tone arm and parallel thereto in said channel, said bracket having a downwardly turned end provided with a knife edge and having a pair of upwardly extending guides on its upper side for engaging and guiding a leaf spring, a pick-up comprising a housing, a chuck movably mounted in said housing and having engagement with one end of a crystal, said crystal having its other end supported by said housing, a stylus in said chuck, said housing having a transverse V-groove in its top wall for engaging said knife edge, a leaf spring carried by the housing and extending forwardly of the housing past said V-groove, the said leaf spring being insertable between the guides on said rigid bracket and thereafter the said pick-up being slidable forwardly of the tone arm until the groove in said housing receives said knife edge, the said leaf spring engaging the top of said rigid bracket and holding said knife edge in said V-groove, the pick-up housing being pivotally mounted on said knife edge and said leaf spring resiliently resisting pivotal movement in either a clockwise or counterclockwise direction, the said stylus depending from said pick-up unit, and said pick-up unit housing carrying around said stylus a substantially U-shaped stirrup having its legs

fixedly secured to said pick-up, the stylus projecting through an aperture in the yoke of said stirrup.

4. In a tone arm and pick-up assembly, the combination of a tone arm comprising an elongated channeled member open at the bottom, a rigid supporting bracket mounted on said tone arm and extending rearwardly of said tone arm and parallel thereto in said channel, said bracket having a downwardly turned end provided with a knife edge and having a pair of upwardly extending guides on its upper side for engaging and guiding a leaf spring, a pick-up comprising a housing, a chuck movably mounted in said housing and having engagement with one end of a crystal, said crystal having its other end supported by said housing, a stylus in said chuck, said housing having a transverse V-groove in its top wall for engaging said knife edge, a leaf spring carried by the housing and extending forwardly of the housing past said V-groove, the said leaf spring being insertable between the guides on said rigid bracket and thereafter the said pick-up being slidable forwardly of the tone arm until the groove in said housing receives said knife edge, the said leaf spring engaging the top of said rigid bracket and holding said knife edge in said V-groove, the pick-up housing being pivotally mounted on said knife edge and said leaf spring resiliently resisting pivotal movement in either a clockwise or counterclockwise direction, the said stylus depending from said pick-up unit, and said pick-up unit housing carrying around said stylus a substantially U-shaped stirrup having its legs fixedly secured to said pick-up, the stylus projecting through an aperture in the yoke of said stirrup, the said stirrup being provided in its yoke with a downwardly convex pressed protuberance of partially spherical shape, located to engage the record when pressure is placed upon the tone arm toward the record and the stylus is in initial engagement with the record to protect the record from excessive pressure on the tone arm and pick-up.

5. In a tone arm and pick-up assembly, the combination of a tone arm comprising an elongated channeled member open at the bottom, a rigid supporting bracket mounted on said tone arm and extending rearwardly of said tone arm and parallel thereto in said channel, said bracket having a downwardly turned end provided with a knife edge and having a pair of upwardly extending guides on its upper side for engaging and guiding a leaf spring, a pick-up comprising a housing, a chuck movably mounted in said housing and having engagement with one end of a crystal, said crystal having its other end supported by said housing, a stylus in said chuck, said housing having a transverse V-groove in its top wall for engaging said knife edge, a leaf spring carried by the housing and extending forwardly of the housing past said V-groove, the said leaf spring being insertable between the guides on said rigid bracket and thereafter the said pick-up being slidable forwardly of the tone arm until the groove in said housing receives said knife edge, the said leaf spring engaging the top of said rigid bracket and holding said knife edge in said

V-groove, the pick-up housing being pivotally mounted on said knife edge and said leaf spring resiliently resisting pivotal movement in either a clockwise or counterclockwise direction, the said stylus depending from said pick-up unit, and said pick-up unit housing carrying around said stylus a substantially U-shaped stirrup having its legs fixedly secured to said pick-up, the stylus projecting through an aperture in the yoke of said stirrup, the said stirrup being provided in its yoke with a downwardly convex pressed protuberance of partially spherical shape, located to engage the record when pressure is placed upon the tone arm toward the record and the stylus is in initial engagement with the record to protect the record from excessive pressure on the tone arm and pick-up, the said protuberance engaging the record being located outwardly of the said V-groove on said pick-up unit but inwardly with respect to the stylus, and continued pressure on the tone arm toward the record causing the pick-up to pivot on said knife edge until the said protuberance comes into engagement with the record and the stylus has been lifted from the record.

6. In a pick-up unit, the combination of a sheet metal housing comprising a pair of half-housings secured together, a crystal, a pair of resilient blocks, said crystal being supported in said housing at one end by being engaged by said resilient blocks which are compressed by the housing, a chuck rotatably mounted in the other end of said housing and carrying a stylus, said chuck having engagement with the free end of said crystal, a rigid bracket on a tone arm, a forwardly extending leaf spring carried by the housing to be inserted behind said rigid bracket on said tone arm for attachment of the pick-up to the tone arm, said housing having a knife edge pivot groove on its upper side toward said spring, and a stylus guard comprising a sheet metal member of substantially U-shape having its legs secured to said pick-up housing and having an aperture for passing said stylus, said guard having rearwardly of said stylus and forwardly of said V-groove a substantially ball-shaped downwardly extending pressed projection for engaging a record when sufficient pressure is placed upon the pick-up to cause it to pivot in a counterclockwise direction about said V-groove, the engagement of said projection with the record causing the lifting of the stylus from the record to protect both the record and the stylus.

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