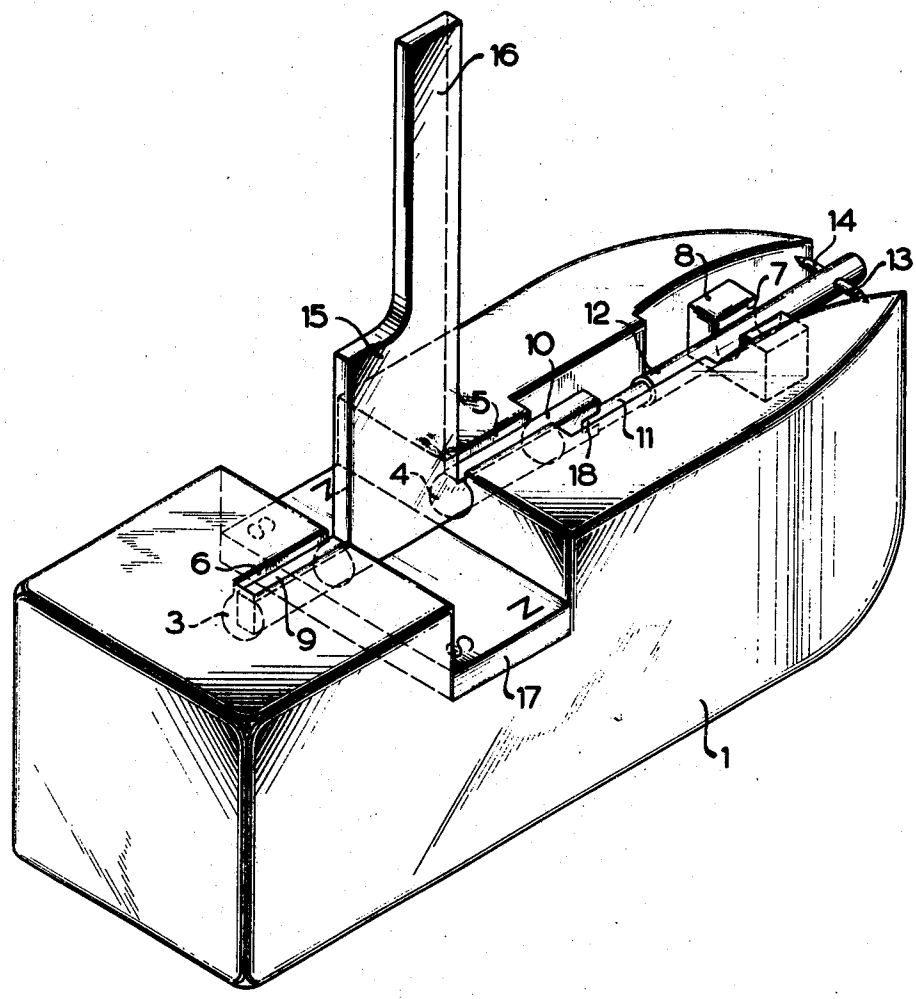
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PHONOGRAPH PICKUP WITH RESETTABLE SCANNING NEEDLE

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PHONOGRAPH PICKUP WITH RESETTABLE SCANNING NEEDLE

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ABSTRACT OF THE DISCLOSURE

A phonograph pick-up comprising a housing and a rod-like needle carrier having at its forward end two scanning points set angularly relative to each other and rotatably mounted about its longitudinal axis at its rear end longitudinally on the under-side of the housing, the latter defining a first bearing recess open toward the bottom receiving the rear end of the needle carrier, and a coupling member connected with the housing defining a second bearing recess open toward the bottom and axially aligned with the first bearing recess for receiving the forward end of the needle carrier. A magnetic anchor with handle extending therefrom is disposed radially to the rear end of the needle carrier connected therewith, and a magnet is secured to the housing such that the anchor is in operational face engagement position with the magnet.

The present invention relates to a phonograph pick-up with resettable scanning needle in general, and to such phonograph pick-up in which its needle carrier is disposed substantially parallel to the scanning plane, for the purpose of resetting the needle and which is disposed for the purpose of needle resetting rotatably about its longitudinal axis and furthermore, also exchangeable on the phonograph pick-up housing.

The problem of mounting such needle carrier resides in the fact that on the one hand, as much as possible small structural parts should project downwardly beyond the needle carrier, so that it may be disposed as low as possible and parallel to the surface of the phonograph disc and that on the other hand, it is exchangeable easily as much as possible and properly by a layman.

The first of the mentioned requirements is brought about by one of the known solutions such, that the needle carrier is retained by means of a blade spring in the bearing recess on the phonograph pick-up housing. During exchange of the needle and of the needle carrier, respectively, it is necessary to remove this blade spring, which takes place by removal rearwardly or sidewardly.

In another known arrangement, the removal of this blade spring is avoided such, that the needle carrier is withdrawable laterally, parallel to its longitudinal axis, however, it is cumbersome thereby to insert the needle carrier into the open recess on the coupling part to the transducer, because the recess cannot be open laterally in view of the forces to be transmitted during scanning with the phonograph record and would not permit a lateral pretension, respectively. Furthermore, the construction permits for such needle holders only comparatively short and thereby stiff springs, which render more difficult an exchange of the delicate needle.

In accordance with another known solution, the bearings disposed on the housing side of the needle carrier are of elastic material and slightly narrowed down on the one-sided opening, so that the needle carrier can be impressed in the direction perpendicularly to the housing by yielding of the elastic material. Since the bearing parts

are only small and compact, either relatively high elastic material is required, which, however, does not permit safe lockable end positions during reversing of the needle carrier, or it is sufficiently stiff for the latter, which, however, then renders more difficult the impression of the needle carrier, because the excess measure can be very small only and must be maintained in very narrow finishing tolerances, so as not to damage the already fine needle due to large required pressing-in forces.

In accordance with another known arrangement, the needle carrier is insertable with a reduced section, thus without resistance, into an inter-cut bearing recess and is then displaced in longitudinal direction, so that a thickened section filling completely the bearing recess comes to lie in the recess. A drawback of this arrangement is, however, that by the longitudinal displacement of the needle carrier, the coupling member to the transducer, against which it must engage with a certain tension, is put under tension. The use of a soft elastic coupling member is thereby hardly possible. Furthermore the drawback exists, that a layman cannot readily recognize the movements required for the needle change.

It is, therefore, one object of the present invention to provide a phonograph pick-up with a resettable scanning needle, which includes a particular suitable needle carrier holder for mass production due to its simplicity, which holder comprises an actual toggle switch principle and which is particularly simple and suitable in the operation of the needle exchange.

It is another object of the present invention to provide a phonograph pick-up which resides in the fact that the needle carrier is insertable in known manner into an open bearing recess, on the one hand, on the coupling part to the transducer and, on the other hand, on the phonograph pick-up housing, consists of magnetically conducting material and can be pulled in by means of a magnet secured to the phonograph pick-up housing into the open bearing recesses.

It is another object of the present invention to provide a phonograph pick-up with resettable scanning needle, wherein the open bearing recess of the housing is narrowed down at its entrance and the corresponding section of the needle carrier is flattened up to the width of the narrowed portion as to its thickness.

In accordance with this arrangement it is brought about that the needle carrier is removable only in a comparatively narrowly limited swinging position range from the phonograph pick-up.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawing, in which the only figure discloses a phonograph pick-up shown lying on its back.

Referring now to the drawing, the phonograph pick-up housing comprises in its bottom part two cylindrical recesses 3 and 4, which are open to the outside by means of a narrowed prismatic channel 5 and 6. Axially aligned with the cylindrical recesses 3 and 4 is disposed a further recess 7 which is formed in the coupling part 8 connected with the transducer element. In the cylindrical recesses 3 and 4 are disposed the bearings sections 9 and 10 of the needle carrier, of which the front section 10 is equipped with a slot 18 in which a nylon thread 11 is inserted and squeezed, which is extended by means of a small tube 12, which carries at its forward end two scanning points 13 and 14. The bearing sections 9 and 10 of the needle carrier correspond as to their thickness about to the width of the channels 5 and 6 and as to their height to about the diameter of the cylindrical recesses 3 and 4. Between the bearing sections is arranged an anchor member 15 with a resetting handle 16. Directly below the bearing sections 9 and 10 is arranged a polarized magnet

17 polarized for N and S in the shown manner. Bearing sections 9 and 10, the anchor member 15 and the resetting handle 16 and the socket for the thread 11 of synthetic material are formed of punched-out sheet metal. For the purpose of changing a needle carrier is merely moved into the illustrated position and then it can simply be removed without effort. In this manner the frequent psychological fear that something could be damaged and consequently that a needle change should be left for the expert, is eliminated. In spite of the hardly observable holding force in the removing position, the needle carrier is safely maintained in its operational position during play as well as on the device transport. For resetting the needle in the device due to the position of the phonograph arm only one finger can be used, so that the exercise of a pulling force in the shown position is normally not possible.

The production of the bearing sections 9 and 10 of the needle carrier of the anchor part 15 and of the resetting handle 16 by a sheet metal section is particularly simple, and in particular also by the cut simultaneously as bearing reception for the synthetic thread 11 serving as a bending link can be produced in form of a slot. This bearing reception is otherwise normally provided only by complicated form tools with slides or by additional tubular parts. The synthetic thread 11 can in the simplest manner be squeezed in or also glued in.

While I have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense.

I claim:

1. A phonograph pick-up, comprising:

a phonograph pick-up housing,

a rod-like needle carrier having a forward end and a rear end and carrying at its forward end two scanning points set angularly relative to each other about its longitudinal axis, and rotatably mounted about the longitudinal axis at its rear end and aligned longitudinally on the underside of said phonograph pick-up housing,

said phonograph pick-up housing defining on the underside thereof a first bearing recess open towards the bottom and receiving the rear end of said needle carrier,

a coupling member connected with said phonograph pick-up housing and defining a second bearing recess open towards said phonograph pick-up housing bottom,

said second bearing recess being axially aligned with said first bearing recess in said phonograph pick-up housing and receiving the forward end of said needle carrier,

a magnetic anchor radially extending at the rear end end of said needle carrier and connected therewith,

a handle extending in radial direction of said anchor and connected with the latter, and

a magnet secured to said pick-up housing such, that said anchor is disposed in the operational position of the set scanning point of said needle carrier in face arrangement with said magnet.

2. The phonograph pick-up, as set forth in claim 1, wherein:

said first bearing recess of said housing of said phonograph pick-up includes a narrowed-down opening at the bottom,

said rear end of said needle carrier includes bearing sections removably insertable rotatably in said first bearing recess, and

said needle carrier is flattened at said bearing sections and its thickness corresponding with the width of said narrowed-down opening, and the face of the flattened portion is parallel to the face of said anchor.

3. The phonograph pick-up, as set forth in claim 2, wherein:

said bearing sections of said needle carrier has integrally said anchor and said handle.

4. The phonograph pick-up, as set forth in claim 3, wherein:

the forward end of said rear end of said needle carrier has a slot which is disposed in the longitudinal axis of said needle carrier,

a small tube forming said front end of said needle carrier, and

a thread of synthetic material secured in said slot in said rear end and in the back end of said small tube.

5. The phonograph pick-up, as set forth in claim 2, wherein:

said first bearing recess has a circular cross-section, and

said bearing sections are of a height substantially equal to the diameter of said circular cross-section.

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