

[54] **RETAINING MEANS FOR ADJUSTABLY
SECURING THE HEAD OF A MAGNETIC
RECORDING-REPRODUCING MEANS TO A
SUPPORTING COVER PLATE**

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274/4 A, 11 A, 4 R

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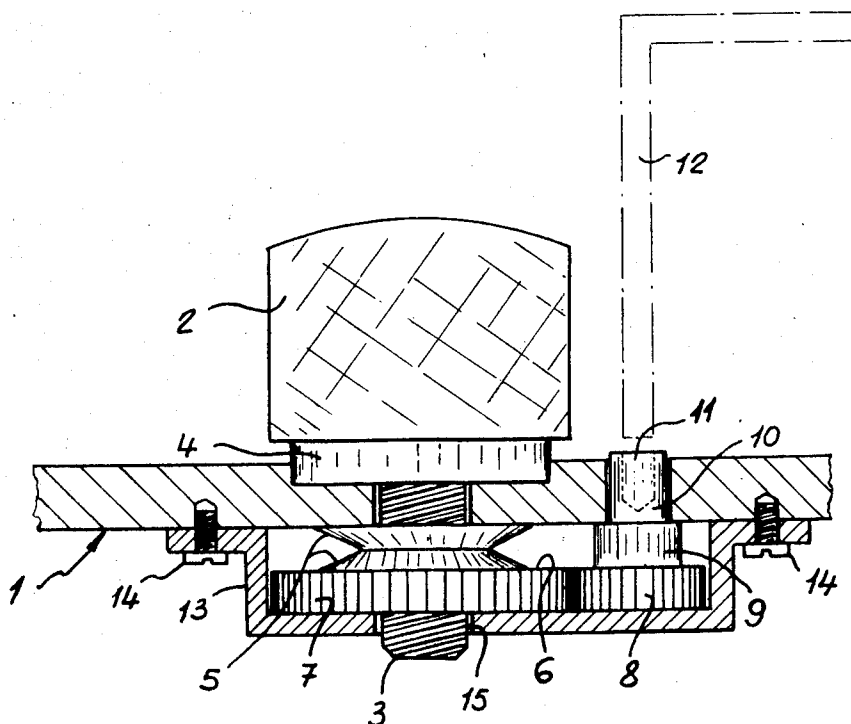
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[57] **ABSTRACT**

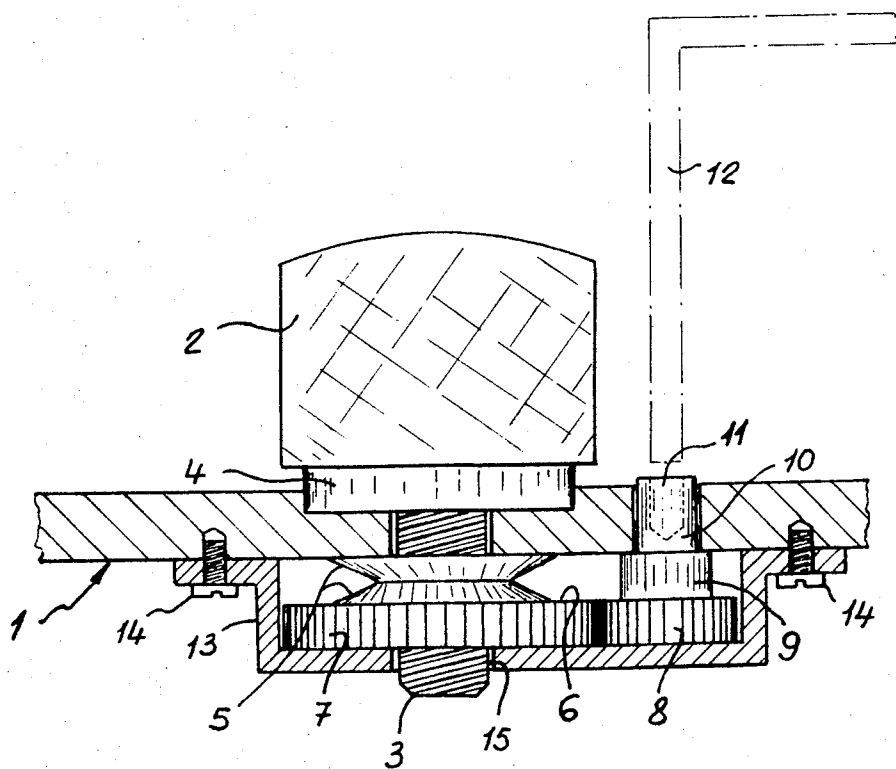
A supporting means for mechanically securing a recording-reproducing head to one side of a cover plate while providing a release means for the head, accessible from the same side of the plate. The recording-reproducing head is integrally formed with a threaded rod extending below the cover plate and resiliently secured by a locking nut having a geared periphery. An adjusting pinion is coupled to the locking nut and has a cylindrical portion extending through the cover plate where it may be turned by a wrench.

6 Claims, 1 Drawing Figure



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RETAINING MEANS FOR ADJUSTABLY SECURING THE HEAD OF A MAGNETIC RECORDING-REPRODUCING MEANS TO A SUPPORTING COVER PLATE

In a high-performance magnetophone (or recording-reproducing magnetic means) it is necessary to provide for firm fixing of the heads while at the same time allowing for this fixation to be eased so that the heads may be rotatably adjusted and moreover be easily removable for cleaning, periodic inspection or replacement.

Whereas angular adjustment, which may be advantageously effected by means of a support disc, does not pose any problems, the same cannot be said of the usual supports. In effect, the heads are either fixed upon a bridge fitted on the cover plate or else they are fixed directly onto that plate, a practice which demands a strong elastic pressure. When a bridge is used, loosening and dismantling are comparatively easy since it suffices to release the bridge, but access to the magnetic tape adjoining the heads is poor. On the other hand, when the heads are fixed directly on the cover plate it is possible either to bear on the head via the intermediary of a spring or else to exert a central pull through the support disc. Fixing by bearing on the heads gives poor results since, first it generates stresses in the cover plate and second, the friction on the head produces a considerable control hysteresis. Fixing by central pull is effected by means of a screw integral with the head and passing through the support disc and cover plate, this screw being secured by a nut under the cover plate and bearing upon it via a spring. This latter method certainly provides a pressure without stress or control hysteresis but is extremely inconvenient for removing or slewing the heads since this demands access underneath the cover plate. Such access requires a long, complicated, and delicate operation due to the fact that the mechanism of the apparatus, housed under the cover plate, is positioned directly beneath the heads.

Devised with the aim of obviating these drawbacks and providing a head securing means without stresses or other troublesome phenomena, while at the same time allowing the heads to be adjusted or removed without having to act on the cover plate, the present invention relates to a device for securing the heads of a magnetophone whereby each head is secured directly on the cover plate by the pull of a rod, integral with the head. The rod passes through the cover plate and engages a retaining device placed thereunder, bearing thereon via the intermediary of an elastic element. The retaining device is coupled to a control member, one part of which passes through the cover plate so as to be accessible from outside the latter, while the retaining device, elastic element and control member are retained permanently in place underneath the said cover plate.

The drawing hereto attached represents by way of example an embodiment of the invention.

The single FIGURE comprised by this drawing is a schematical sectional view.

In this FIGURE, 1 is the cover plate of a magnetophone while 2 denotes one of the heads of the apparatus whose other parts are not described since they do not form part of the invention.

The head 2 comprises, in conventional fashion, a fixing screw 3 passing through a support disc 4 upon

which the head 2 is seated, the said disc being rotatably mounted in a housing recessed for the purpose in the cover plate 1 and furnished with suitable means, not shown in the drawing, whereby it can be pivoted.

5 The screw 3 passes through the cover plate 1 and engages in a nut 6 having a peripheral gear rim. Arranged between the nut 6 and the cover plate 1 are dish-shaped springs 5 secured to the screw 3.

10 The gear rim 7 of the screw 6 meshes with a pinion 8 having an underturned intermediate cylinder 9 bearing on the cover plate 1 and a second cylinder 10 rotatably journaled in the said plate and rising above the plate surface. The cylinder 10 has a hex socket for taking a corresponding hex-head key 12.

15 The nut 6 and pinion 8 are retained in place beneath the cover plate 1 by an appropriately shaped bridge plate 13 secured to the cover plate 1 by screws 14. The said bridge plate 13 is provided with a hole 15 for passage of the screw 3.

20 The device here shown is used as follows: The head 2 is normally secured to the cover plate 1 and in order to release it for turning or removal all that is necessary is to insert the key 12 into the hex socket of cylinder 10 and turn the latter anticlockwise. When thus turned, cylinder 10 turns pinion 8 which, acting via the gear rim 7, in turn rotates nut 6 which can thereby be unscrewed to whatever extent desired, thereby easing or completely freeing screw 3 and hence the magnetic head 2 which is integral with it. If the head 2 is removed, nut 6 and pinion 8 will be retained in place by the bridge plate 13 so that when the head 2 is replaced, the screw 3 can be engaged in the nut 6 without any difficulty. A slight tightening-up of the bridge plate 13 will gently press nut 6 against the springs 5 and serve to keep them in place. When the head 2 is loosened it is a simple matter to act on the support disc 4 and accomplish the desired amount of angular adjustment. To relock the head it suffices to turn the cylinder 10 in the opposite direction by means of the key 12 and thereby screw nut 6 onto screw 3 to the degree of tightness desired.

According to this arrangement, it follows that the head is fixed on the support disc 4 because of a centre-line axial pull, so that no stresses are imposed on the cover plate, and that the fixation thus provided permits exertion of a strong elastic pressure while at the same time being releasable at will so as ultimately to release the head for removal, and this without any need to strive for access through the mechanism arranged beneath the cover plate 1. Adjustment or removal of the head can thus be effected from above the cover plate without having to open up the apparatus. Rigidity is more important than easy access to the magnetic tape assured by reason of the head being fixed directly on the cover plate and not partly screened by a bridge. Finally, by fixing the heads on the cover plate 1 and dispensing with the need for access under the cover plate, it is possible to secure substantial simplification in construction of the apparatus as a whole.

60 It goes without saying that the keep plate retaining nut 6, springs 5 and pinion 8 could be replaced by any other adequate contrivance and that it would be equally possible to change the arrangement of pinion 8 and its control, as also that of nut 6 and its gearing facility 7.

Then too, the gear-rimmed nut 6 can be replaced by a suitable coupling, such as a bayonet joint, in which

case the screw 3 will be substituted by a rod provided with the necessary lugs. In this case the pinion 8 is replaced by, for example, a bell-crank lever integral with the coupling device and having one limb passing through the cover plate as a means for operating the system.

Finally, it is clear that the fixing device above described could perfectly well be used even if the magnetophone is devoid of a support disc adjusting facility.

I claim:

1. A device for securing the head of a recording system to a cover plate by turning a shaft extending through the plate comprising: a threaded rod, integral with the head, passing through the cover plate; a threaded nut meshing with the rod for securing the head to the cover plate, said nut including gear teeth on its periphery; a pinion having its axis parallel to the axis of the threaded rod and including gear teeth meshing with the gear teeth on the threaded nut for turning the nut during a securing operation; a shaft secured to the pinion and in axial alignment therewith extending through the cover plate, said shaft formed with coupling means for rotary actuation by an external tool;

and a bridge plate secured to the underside of the cover plate for holding the threaded nut and the pinion in place.

2. A device according to claim 1 wherein resilient means are positioned between the underside of the cover plate and the threaded nut.

3. A device according to claim 1 wherein said shaft extends above the upper surface of the cover plate and is formed with a shaped axial hole for actuation by a tool.

4. A device according to claim 1 wherein said shaft is formed with a transverse slot for actuation by a screwdriver bit.

5. A device according to claim 1 wherein said threaded rod extends through a hole formed in the bridge plate.

6. A device according to claim 1 wherein said bridge plate is formed with a turned-up flange which retains the threaded nut and the pinion in their operating positions even though the threaded rod may be removed from the cover plate.

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