

TAPE RECORDER

BACKGROUND OF THE INVENTION

1) Field of the Invention

This invention relates to a tape recorder, and more particularly to improvements in or relating to a mounting structure for a magnetic head in a tape recorder wherein a spacer is interposed between a mounting bracket secured to the magnetic head and a head mounting plate.

2) Description of the Prior Art

In a conventional tape recorder, a magnetic head is mounted typically in such a manner that a mounting bracket is secured to the magnetic head and mounted at one end portion thereof fixedly on a head mounting plate by means of a screw or bolt with a spacer interposed between the one end thereof and the head mounting plate and fitted around the screw or bolt. A compression coil spring is interposed between the other end portion of the mounting bracket and the head mounting plate and fitted around another screw or bolt adjustably screwed into the head mounting plate and extending through the other end portion of the mounting bracket so that azimuth adjustment of the magnetic head (fine adjustment

in inclination of the magnetic head with respect to a direction of travel of a magnetic tape) may be effected by turning the adjustable screw or bolt to adjust the other end of the mounting bracket toward or away from the head mounting bracket with respect to the one end of the mounting bracket.

Thus, a plurality of spacers having different axial lengths must be prepared because different designs of tape recorders require mounting of magnetic heads at different vertical positions corresponding to designed azimuth adjustment positions. Accordingly, a conventional head mounting structure as described above is disadvantageous in that management and production of spacers are complicated, and the operability in assembly and hence the mass-productivity are low because a spacer must be temporarily held in position when a mounting bracket is to be assembled.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a tape recorder wherein a spacer can be produced and managed readily and the operability in assembly and the mass-productivity are improved.

In order to attain the object, according to the present invention, there is provided a tape recorder

wherein a mounting bracket secured to a magnetic head has one end fixedly mounted on a head mounting plate with a spacer interposed therebetween and the other end mounted for adjustment in a direction toward and away
5 from the head mounting plate so as to allow azimuth adjustment of the magnetic head, characterized in that the spacer is constituted from a bent lug formed by bending part of the head mounting plate and extending substantially in a parallel relationship to the main
10 portion of the head mounting plate.

Thus, the one end portion of the mounting bracket to which the magnetic head is secured is mounted on the bent lug serving as a spacer and formed by bending part of the head mounting plate.

15 Accordingly, there is no need of preparing a plurality of types of spacers having different axial lengths. Further, since the bent lug serving as a spacer is formed by bending part of the head mounting plate, it can be produced readily, for example, by
20 stamping or press work. Besides, since there is no need of temporarily holding a spacer for assembly as in a prior art tape recorder, a further effect can be anticipated that the operability is improved, which enables improvement in mass productivity and smooth
25 reduction in cost.

Specific embodiments of the present invention will now be described in detail by way of example with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

5 FIG. 1 is a top plan view of a mechanism of a tape recorder according to the present invention;

 FIG. 2 is a bottom plan view of the tape recorder mechanism of FIG. 1;

 FIG. 3 is a perspective view of a head mounting
10 plate of the tape recorder mechanism of FIG. 1;

 FIG. 4 is a fragmentary perspective view showing a detailed structure for mounting a magnet head on the head mounting plate of FIG. 3;

 FIG. 5 is a sectional view of the magnetic head
15 and the head mounting plate of FIG. 4 in an assembled condition;

 FIG. 6 is a view similar to FIG. 4 but showing another embodiment of the present invention; and

 FIG. 7 is a similar view but showing a
20 conventional tape recorder.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Referring first to FIG. 7, an exemplary one of conventional head mounting structures is shown. The head mounting structure shown includes a mounting

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bracket 1a secured to a magnetic head 1 and having one end portion mounted fixedly on a head mounting plate 3 by means of a headed fastening screw 4. A spacer 2 in the form of a short tube made of a metal or a synthetic resin is fitted around the fastening screw 4 and interposed between the one end of the mounting bracket 1a and the head mounting plate 3 and thus defines the vertical position of the mounting bracket 1a fixedly relative to the head mounting plate 3. Another headed screw 7 is adjustably screwed into a threaded hole of the head mounting plate 3 and is received at a portion just below the head thereof in a recess formed at the other end of the mounting bracket 1a. A compression coil spring 5 is fitted around the screw 7 and thus biases, via a washer 6, the mounting bracket 1a to press against the head of the screw 7. Accordingly, by turning the screw 7, the other end of the mounting bracket 1a is adjusted in a vertical direction away from or toward the head mounting plate 3 with respect to the one end of the mounting bracket 1a.

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Referring now to FIGS. 1 and 2, there is shown a mechanism of a tape recorder according to the present invention. The cassette tape recorder mechanism shown includes a head mounting plate 11 mounted for movement within a predetermined range on a lower face of a

chassis 10. Referring to FIG. 3, the head mounting plate 11 has a main plate portion 11a having a substantially triangular or trapezoidal shape in plan with a wide side located at one longitudinal end and a narrow side located at other other longitudinal end thereof, and a side wall 11b extending perpendicularly upwardly from the wide side of the main plate portion 11a.

A reproducing magnetic head 12 and a pinch roller 13 are mounted on an upper face adjacent the wide side of the head mounting plate 11.

The magnetic head 12 is designed such that a front face thereof is contacted with a tape not shown within a tape cassette not shown loaded in position in the tape recorder mechanism, and a mounting bracket 14 is secured to a lower face of and extends rearwardly from the magnetic head 12 as shown in FIG. 4. The mounting bracket 14 is fastened fixedly at one end thereof to a bent lug 15 of the head mounting plate 11 by means of a screw 17 screwed into a threaded hole 16 formed in the bent lug 15. The bent lug 15 extends perpendicularly horizontally inwardly from a substantially central portion of an upper edge of the side wall 11b of the head mounting plate 11 in an opposing spaced relationship to the main plate portion

11a of the head mounting plate 11 and corresponds to the spacer member 2 of the head mounting structure of the conventional tape recorder described hereinabove with reference to FIG. 7. The bent lug 15 may be formed by stamping or press work together with or independently of the side wall 11b of the head mounting plate 11. The other end of the mounting bracket 14 overlies a washer 18 which is fitted around a headed screw 21 screwed into a threaded hole 20 formed in the main plate portion 11a of the head mounting plate 11 and is normally biased upwardly by a compression coil spring 19 which is also fitted around the screw 21. Accordingly, as the screw 21 is turned, the other end of the mounting bracket 14 is adjusted in a vertical direction away from or toward the main plate portion 11a of the head mounting plate 11 with respect to the one end of the mounting bracket 14 thereby to effect azimuth adjustment of the magnetic head 12, that is, fine adjustment of the inclination of the magnetic head 12 with respect to the feeding direction of a tape. In order to assure the accuracy when the side wall 11b of the head mounting plate 11 is bent at the right angle by press work or stamping, the main plate portion 11a has an opening 22 formed therein as particularly seen in FIGS. 2 and 5. The opening 22 is located in an opposing relationship to the threaded

hole 16 of the bent lug 15 of the head mounting plate 11 so as to enable a screw locking bonding agent having suitable fluidity and a rapid cure property to be applied therethrough to a lower threaded portion of the screw 17. It is to be noted here that although a screw locking effect of such a bonding agent is higher where it is applied to a lower end side threaded portion of a screw than where it is applied to a head side threaded portion of the screw, conventionally it is inevitable to apply a bonding agent to a head side threaded portion of a screw because it is difficult to apply the bonding agent to a lower end side threaded portion of the screw due to the fact that a conventional head mounting plate has no such an opening formed therein that enables the bonding agent to be applied therethrough to the lower end side threaded portion of the screw which extends between the head mounting plate and a chassis.

Referring to FIGS. 1 and 3, the pinch roller 13 is mounted for contact with a capstan shaft 23 supported for rotation on the upper face of the chassis 10 with a tape not shown of a tape cassette not shown interposed therebetween. The pinch roller 13 is located sidewardly of the magnetic head 12 and is supported for rotation on and between a pair of upper and lower mounting walls 25a and 25b of a mounting bracket 25 made of an elastic

synthetic resin material and secured to the upper face of the main plate portion 11a of the head mounting plate 11 by means of a screw 24.

Referring now to FIG. 6, there is shown a second embodiment of the present invention. It is to be noted here that the head mounting structure shown is a modification to the preceding embodiment described above and shown in FIGS. 1 to 5, and like parts or elements are denoted by like reference numerals or symbols to those of FIGS. 1 to 5 with a prefix "1" added thereto. In the modified head mounting structure of FIG. 6, only detailed structure of a head mounting plate 111 is different from that of the head mounting plate 11. In particular, the head mounting plate 111 does not have such a side wall as the side wall 11b of the head mounting plate 11 of the preceding embodiment. The head mounting plate 111 is further different in that a bent lug 115 formed thereon extends in a direction parallel to a tape contacting face of a magnetic head 112. More particularly, the bent lug 115 extends first perpendicularly upwardly from a main plate portion 111a of the head mounting plate 111 and then in a horizontal direction toward the other end of a mounting bracket 114 in a parallel relationship to the main plate portion 111a. The bent lug 115 may also be formed by

stamping.

The bent lug 115 of the head mounting plate 111 formed in such a manner as described above has an increased strength against a bending force which may be
5 caused by a tensile force of a magnetic tape being fed and acts on the bent lug 115 in a direction of back and forth movement of the magnetic head 112. Accordingly, the tape contacting face of the magnetic head 112 is maintained in position.



CLAIMS:

1. A tape recorder wherein a mounting bracket
secured to a magnetic head has one end fixedly mounted
on a head mounting plate with a spacer interposed
5 therebetween and the other end mounted for adjustment in
a direction toward and away from said head mounting
plate so as to allow azimuth adjustment of said magnetic
head, said spacer being constituted from a bent lug
formed by bending part of said head mounting plate and
10 extending substantially in a parallel relationship to the
main portion of said head mounting plate.

2. A tape recorder as set forth in claim 1,
wherein said bent lug has a hole perforated therein by
means of which said mounting bracket is secured to said
15 bent lug, and said head mounting plate has an opening
formed therein in an opposing relationship to said hole
of said bent lug.

3. A tape recorder as set forth in claim 1 or 2,
wherein said bent lug extends in a direction
20 perpendicular to a plane of a tape contacting face of
said magnetic head.

4. A tape recorder as set forth in any one of
the preceding claims, wherein said bent lug extends
perpendicularly from an edge of a side wall formed by



bending on and extending perpendicularly to said main portion of said head mounting plate.

5 5. A tape recorder as set forth in any one of claims 1 to 3, wherein said bent lug extends first perpendicularly from and then substantially in a parallel direction to said main portion of said head mounting plate.

10 6. A tape recorder as claimed in claim 1 and substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.
