

MAGNETIC TAPE DRIVING DEVICEBACKGROUND OF THE INVENTIONField of the Invention

This invention relates to a magnetic tape driving device, e.g. for a tape recorder or like machine.

5 Description of the Prior Art

Magnetic tape driving devices for tape recorders or like machines conventionally employ a base plate formed from a metal plate. However, it has also been attempted to form such a base plate partially from
10 a synthetic resin material. This allows a reduction in the quantity of parts and the production cost of tape recorders because part mounting portions or pieces for mounting a number of parts, guide portions and the like can be integrally formed on such a synthetic
15 resin base plate portion.

However, where a base plate of a magnetic tape driving device is made partially of a synthetic resin material, the base plate has a reduced mechanical strength and the synthetic resin portion is subject
20 to greater thermal deformation. Accordingly, if a bearing metal member for supporting a capstan thereon is mounted only on the synthetic resin portion, this will cause a problem in that the capstan may be slanted

(11)

due to deformation of the synthetic resin portion
or vibrations of the rotating capstan may increase
and cause a phenomenon of resonance, which will
adversely affect the wow and flutter characteristic
5 of the tape recorder.

Further, where the bearing metal member is held
only by the synthetic resin portion, there is a drawback
that because the bearing metal member is electrically
insulated from the metal plate portion of the base plate,
10 when the capstan is rotated at a high speed, a magnetic
tape may cause it to coil around the capstan or
electrostatic noises may be produced under the influence
of static electricity generated by mutual contact between
the capstan and the bearing metal member.

15 Therefore, in a magnetic tape driving device
in which part of a tape recorder base plate is formed
from a synthetic resin material, it is necessary to
interconnect a bearing metal member for a capstan and
a metal plate portion of the base plate by an earthing
20 conductor. Accordingly, it is a problem that a production
step is added and the production cost is increased
accordingly.

SUMMARY OF THE INVENTION

It is an object of the present invention to
25 provide a magnetic tape driving device which allows a

base plate to be partially formed from a synthetic resin material while eliminating possible mechanical and thermal shortcomings which may result.

5 It is another object of the invention to provide a magnetic tape driving device wherein a bearing metal member for supporting a capstan thereon is prevented from being electrically insulated from a base plate which is partially formed from a synthetic resin material without special earthing arrangements being adopted.

10 It is a further object of the invention to provide a magnetic tape driving device which can be produced at a reduced cost.

According to the present invention, there is provided a magnetic tape driving device including a
15 reel receiving member and a capstan mounted for rotation on a base plate and a head supporting member and a pinch roller supporting member mounted for movement on said base plate, wherein said base plate is composed of a metal plate on which said reel receiving member is
20 mounted, and a synthetic resin plate overlying said metal plate and having securely mounted thereon a bearing metal member for said capstan, said metal plate having an opening formed therein, said bearing metal member extending through said opening in said metal plate,
25 said metal plate having a resilient contacting piece

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formed adjacent said opening thereof and resiliently pressing against an outer periphery of said bearing metal member, said metal plate further having a receiving portion formed adjacent said opening thereof and reacting the pressing force of said contacting piece acting on the opposite side of said bearing metal member, whereby said synthetic resin plate is positioned relative to said metal plate by engagement of said resilient contacting piece and said receiving portion of said metal plate with said bearing metal member.

With the construction of the invention, the bearing metal member for the capstan is held by both the synthetic resin plate and the metal plate and the defects resulting from the bearing metal member being held only by a synthetic resin plate, that is, that the holding power of the synthetic resin plate for the bearing metal member is low and that the bearing metal member is electrically insulated from the metal plate, are eliminated.

Further, since the bearing metal member is positioned by the resilient contacting piece and the receiving portion, both provided on the metal plate, the synthetic resin plate is also positioned with high accuracy relative to the metal plate with respect to the position of the capstan.

A specific embodiment of the present invention will now be described by way of example, with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

5 FIG. 1 is a plan view of a magnetic tape driving device for a tape recorder according to the present invention;

FIG. 2 is an enlarged sectional view taken along line II-II of Fig. 1; and

10 FIG. 3 is a plan view illustrating relations between a metal plate and a bearing metal member of the magnetic tape driving device of Fig. 1.

DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Referring first to Figure 1, the magnetic tape
15 driving device shown includes a base plate generally denoted at 1.

The base plate 1 is composed of a metal plate 2 and an integral synthetic resin plate 3 overlying the metal plate 2, and a pair of reel receiving members
20 4a, 4b are supported for rotation on the metal plate 2.

Meanwhile, the synthetic resin plate 3 has integrally formed thereon guide portions 7a, 7b, 7c for mounting a head supporting member 6 for back and
26 forth movement thereon, a support shaft 10 for mounting

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a pinch roller supporting member 9 for pivotal movement thereon, and other mounting portions for mounting other parts thereon and other guide portions. A magnetic head 5 is supported on the head supporting member 6, and a pinch roller 8 is supported on the pinch roller supporting member 9.

Further, a bearing metal member 12 for the capstan 11 is securely mounted in a portion of the synthetic resin plate 3 by a suitable means such as press fitting (refer to Figure 2). A lower half of the bearing metal member 12 extends through an opening 13 formed in the metal plate 2 and below a lower face of the metal plate 2.

Referring now to Figure 3, the opening 13 in the metal plate 12 is substantially L-shape in plan, and a resilient contacting piece 14 is formed on the metal plate 2 and extends in and along the opening 13 from an edge of the opening 13. The contacting piece 14 has a substantially L-shape similar to that of the opening 13 with an end portion thereof directed substantially at a right angle and is so formed to have a suitable resiliency such that an end face 14a of the end portion thereof may be resiliently contacted with an outer periphery of the bearing metal member 12. The opening 13 is substantially V-shaped at a portion

thereof opposite the end face 14a and thus both of the inclined faces of the opening serve co-operatively as a receiving portion 15 for the bearing metal member 12. Thus, the receiving portion 15 reacts a pressing force of the contacting piece 14 on the opposite side of the bearing metal member 12.

With the construction described above, the bearing metal member 12 is supported at three points thereon by the end face 14a and the two inclined faces of the portion 15 respectively. Since the bearing metal member 12 is held by both of the synthetic resin plate 3 and the metal plate 2 in this manner, defects of a construction in which a bearing metal member is held only by a synthetic resin plate are eliminated. Such defects are that the holding power of a resin plate for holding a bearing metal member thereon is low and the bearing metal member is electrically insulated and static charges cannot leak away.

Further, since the bearing metal member 12 is positioned by the resilient contacting piece 14 and the receiving portion 15, both of which are provided on the metal plate 2, the synthetic resin plate 3 is also positioned with a high degree of accuracy relative to the metal plate 2.

There has been described with respect to the

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accompanying drawings, a magnetic tape driving device wherein part of the base plate is formed from a synthetic resin material with part mounting portions and/or guide portions formed integrally with the synthetic resin
5 portion to reduce the cost, the mechanical and thermal shortcomings of the synthetic resin material being circumvented while allowing the bearing metal member to be in direct electrical contact with a metal plate forming part of the base plate.

10 In a modification, the receiving portion 15 may be of arcuate shape having the same radius of curvature as the outer periphery of the bearing metal member 12.

While the synthetic resin plate 3 may be mounted
15 on the metal plate 2 by any suitable means such as a fastening screw, where the former is mounted on the latter by means of a fastening screw, it is preferred that the diameter of a hole formed in the metal plate 2 for passing the screw therethrough is sufficiently
20 greater than the outer diameter of the screw to allow relative transverse movement of the plates 2, 3. This will further facilitate positioning of the synthetic resin plate 3 with respect to the capstan 11.

CLAIMS:

1. A magnetic tape driving device including a reel receiving member and a capstan mounted for rotation on a base plate and a head supporting member and a pinch roller supporting member mounted for movement on said base plate, wherein said base plate is composed of a metal plate on which said reel receiving member is mounted, and a synthetic resin plate overlying said metal plate and having securely mounted thereon a bearing metal member for said capstan, said metal plate having an opening formed therein, said bearing metal member extending through said opening in said metal plate, said metal plate having a resilient contacting piece formed adjacent said opening thereof and resiliently pressing against an outer periphery of said bearing metal member, said metal plate further having a receiving portion formed adjacent said opening thereof and reacting the pressing force of said contacting piece acting on the opposite side of said bearing metal member, whereby said synthetic resin plate is positioned relative to said metal plate by engagement of said resilient contacting piece and said receiving portion of said metal plate with said bearing metal member.

2. A magnetic tape driving device according to claim 1, wherein said bearing metal member is press



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fitted in said synthetic resin plate.

3. A magnetic tape driving device according to claim 1 or 2, wherein said opening of said metal plate has an elongated substantially L-shape and said resilient contacting piece has a similarly elongated substantially L-shape and extends in and along said opening from an edge of said opening, said resilient contacting piece being in contact, at a free end thereof, with said bearing metal member.

4. A magnetic tape driving device according to any preceding claim, wherein said opening in said metal plate is substantially V-shaped at a portion thereof opposing said resilient contacting piece, and said receiving portion is provided by both of the inclined faces of the V-shape of said opening.

5. A magnetic tape driving device according to any one of claims 1 to 3, wherein said opening in said metal plate has an arcuate portion thereof opposing said resilient contacting piece, the arcuate shape having the same radius of curvature as the outer periphery of said bearing metal member, and said receiving portion is provided by the arcuately shaped face of said opening.

6. A magnetic tape driving device substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

