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RECORDER HEAD

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FIG. 1.

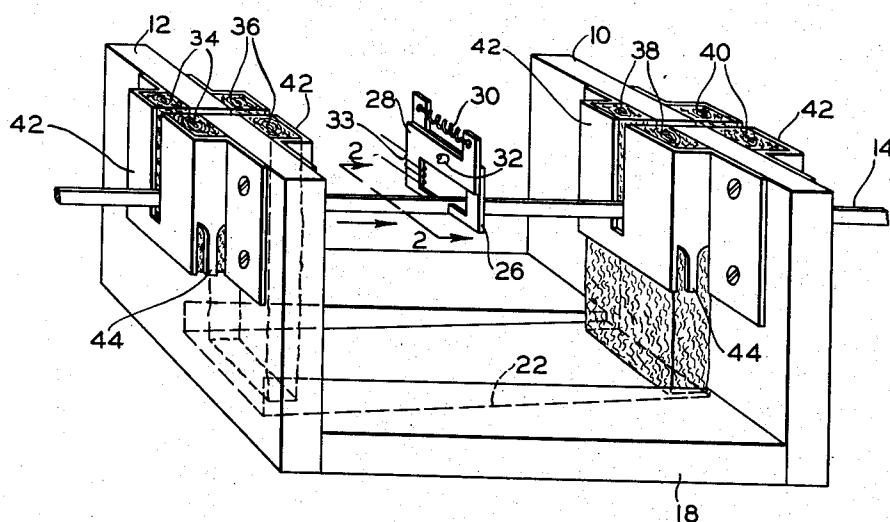
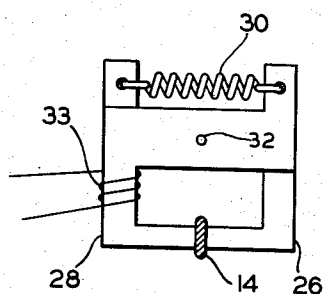


FIG. 2.



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RECORDER HEAD

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This invention relates to improvements in a magnetic recorder head, and more particularly to an improved arrangement for lubricating the steel recording tape.

In a special application, very high audio frequencies are required to be recorded on a steel tape which in turn requires good contact between the recording jaws and the tape. Dry friction and dirt would, in a short time, prevent proper engagement of the recording jaws with the tape. Lubricants on the tape stripped by the jaws would collect dirt, and in draining down the jaws would cause jamming of the movable parts.

It is the object of this invention to provide an improved, economical cleaning and lubricating system for magnetic tape recorders.

In the prior art, steel tapes have been used in magnetic recorders with recording jaws spring-urged against the tape, one or both of the jaws being pivoted below the tape-engaging point. A lubricant was applied to the tape to reduce friction and the formation of burrs on the jaws. The lubricant and dirt on the tape would be partly stripped by the jaws, drain downward, and cause sticking of the pivoted elements. The oil remaining on the tape tended to spatter and to cause the tape to collect dirt. All the oil was wasted.

According to this invention, the pivot of the jaws is arranged above the tape so that the lubricant in draining does not reach the pivots. The tape passes between cleaning and lubricating wicks before and after reaching the jaws, so that dirt is kept away from the recording jaws and the tape is kept oiled. The fluid which is applied to the tape by the wicks is partly scraped off by the jaws and drips into a tray below. This contains portions of the wicks, which carry the oil back to the lubricating point. Most of the oil not scraped off the tape by the jaws is collected by additional wicks and drains into the tray.

In the drawings:

Fig. 1 shows a perspective view of the recording head with its top omitted; and

Fig. 2 shows a fragmentary enlarged view, partly in section, of the record tape and the recording jaws taken on line 2—2 of Fig. 1.

Plates 10 and 12 in Fig. 1 are slotted to permit threading of tape 14 through the head. A plate 18 is rigidly joined to the plates 10 and 12, this assembly being removable from the recorder as a unit. Plate 18 is recessed to provide an oil tray 22, the bottom of which slopes toward the plate 12 through which the tape enters the recorder head.

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A plurality of jaws 26 and 28 are usually included in the head for recording, erasing and biasing the tape. (Only one pair is shown.) At least one jaw of each pair is movably supported by the removable top plate (not shown), being pivoted at 32. Both jaws are shown pivoted, and are urged against the tape by a spring 30. Coil 33 energizes or is energized by the tape.

Wicks are provided for cleaning and lubricating tape as it enters and leaves the recorder head. Wick 34 is moderately saturated with oil and its function is to wipe dirt from the tape as it enters. Wick 36 is thoroughly saturated, its lower end extending to the bottom of tray 22 which contains a small amount of oil. Wick 38 is dry when inserted, but as it wipes remaining oil from the tape 14, it gradually becomes saturated and this excess oil drains down the wick which extends into tray 22. Oil from wick 38 drains down the tray 22 to be reabsorbed by wick 36. Wick 40 is dry and its function is to wipe the remaining oil from the tape as the wick 38 becomes moderately saturated. In the course of operation, wick 40 is replaced whenever it becomes appreciably oil soaked.

Each of the wicks is held on the respective end plates 10 and 12 by retainers 42. These are provided with spring tongues 44 which press the wicks firmly against the recording tape 14.

In operation, the tape 14 is wiped clean, oiled and wiped free of oil by the wicks as described above. Additionally, the recording jaws scrape a portion of the oil from the tape. This oil drips directly into tray 22 and drains toward wick 36 for reapplication to the tape. Since the oil scraped from the tape does not pass the pivot of the recording jaws, these are not clogged by residue in the oil. As shown in Fig. 2, the width of the recording jaws 26 and 28 is less than that of the tape so that a portion of the oil remains on the tape after it passes each of the jaws. This insures lubrication for all of the jaws, but it also gives rise to the need for wicks 38 and 40.

It has been seen that the wicks apply oil to the tape and that part of this oil is scraped from the tape by the recording jaws and allowed to drain down tray 22, while the remaining oil is removed by wick 38 and allowed to drain down that tray for reabsorption by oil-applying wick 36. This economy of oil keeps the tape storage assembly dry and, therefore, relatively dust-free. It also has the advantage of reducing the amount of attention required for oiling.

Certain variations in matters of detail have been contemplated in the above-described embodiment. A nonabsorbent, lubricant-resistant

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substance such as neoprene may be substituted for wicks 38. In mobile use of the recorder sloping tray 22 is preferably lined with absorbent material, and this may take the form of a horizontally extended portion of wick 36.

Having thus described my invention, what I desire to secure by Letters Patent and claim is:

1. In a magnetic tape recorder head for use with a movable recorder tape, spaced guiding means for said tape, means associated with one of said guiding means for lubricating said tape, means associated with the other of said guiding means for wiping said tape, and relatively pivoted intelligence transferring jaws operatively associated with said tape, said jaws being between said guiding means, said jaws having pivoting means above said tape.

2. In a magnetic tape recorder head for use with a movable recorder tape, spaced means for lubricating and wiping said tape, and pivoted intelligence transferring jaws between said means operatively associated with said tape, said jaws having pivoting means above said tape.

3. An improved magnetic tape recorder head for use with a movable recorder tape comprising, a pair of end walls each having a slot for the tape, wick means adjacent the slots and adapted to embrace the tape, an open-top tray between said end walls, the wick means having extensions into the tray, a pair of depending recording jaws at least one of which is pivoted above the point at which it is adapted to engage the tape, whereby the tape is cleaned and lubricated as it enters the recorder head through a slot in one wall, is stripped of excess oil as it leaves the recorder head at the other wall, and the fluid stripped from the tape by the recording jaws drains into the tray without passing the pivot.

4. In a magnetic tape recorder head for use with a movable recorder tape, a pair of spaced end walls each having a slot for permitting passage of said tape, an open top tray disposed between said walls and in spaced relation to said slots so as to be under the portion of said tape included between said slots when said tape is passed through said slots, wick means depending into said tray and associated with one of said slots for lubricating said tape, wick means depending over said tray and associated with the other of said slots for wiping said tape, a pair of intelligence transferring jaws for engaging said tape, and means pivotally supporting at least one of said jaws, said supporting means being located so as to be above said tape when said tape is passed through said slots.

5. In a magnetic tape recorder head for use with a movable recorder tape, means for lubricating said tape with a lubricant, recording jaws engaging said tape and removing some of said lubricant, means for wiping said tape to remove more of said lubricant, and means operatively associated with said lubricating means, said recording jaws and said wiping means for transferring a portion of the lubricant removed from the tape by said recording jaws and said wiping means back to said lubricating means.

6. In a magnetic tape recorder head for use with a movable recorder tape, means for lubricating said tape with a lubricant, recording jaws engaging said tape and removing some of said lubricant, means for wiping said tape to remove more of said lubricant and a reservoir operating associated with said lubricating means, said recording jaws and said wiping means for holding the lubricant, the lubricant for lubri-

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cating the tape being supplied to said lubricating means by said reservoir, the lubricant removed from the tape by said recording jaws and said wiping means being returned to said reservoir.

7. An improved magnetic tape recorder head for use with a movable recorder tape comprising, first and second end walls, said tape entering said head at said first end wall and leaving said head at said second end wall, said first and second end walls being formed with first and second slots, respectively, for holding said tape and for allowing said tape to pass therethrough, first and second wick means disposed adjacent the first and second slots, respectively, and adapted to embrace said tape, a tapered, open tray disposed between said end walls in spaced relation to the slots therein so as to be beneath said tape when said tape is passed through said head, said tray being deeper at said first end wall than at said second end wall, said first and second wick means depending into said tray along the sides of the end walls, and a pair of depending intelligence transferring recording jaws adapted to engage said tape, at least one of said jaws being pivoted above the point at which said jaws are to engage said tape, said tray being adapted to serve as a reservoir for a lubricant whereby, when said tray contains a quantity of lubricant lower than a predetermined quantity only said first wick means depends into said lubricant and whereby, when said tape is passed through said recorder head, said tape is lubricated and cleaned by said first wick means as said tape enters said recorder head, is stripped of a portion of the lubricant by said recording jaws, which stripped lubricant drips into said tray and is stripped of the lubricant not stripped by the recording jaws by said second wick means as it leaves the recorder head, the lubricant absorbed by said second wick means dripping into said tray.

8. Apparatus of claim 7 and third and fourth wick means disposed adjacent said first and second walls, respectively, at the sides thereof opposite said first and second wick means, said third and fourth wick means being also adapted to embrace said tape, said third wick means being adapted to wipe any foreign matter from said tape before said tape enters said first wick means, said fourth wick means being adapted to wipe off excess oil, if any, not removed by said second wick means.

9. In a magnetic tape recorder head for use with a movable recorder tape, a first wick for uniformly lubricating said tape with a lubricant, recording jaws engaging said tape and removing some of said lubricant, a second wick for wiping said tape to remove more of said lubricant and a reservoir operatively associated with said first and second wicks and said recording jaws and holding the lubricant, the lubricant for lubricating the tape being supplied to said first wick by said reservoir, the lubricant removed from the tape by said recording jaws and said second wick being returned to said reservoir.

10. In a magnetic tape recorder head for use with a movable recorder tape, means for lubricating said tape with a lubricant, recording jaws engaging said tape, said recording jaws removing some of said lubricant, and means operatively associated with said lubricating means and said recording jaws for transferring back to said lubricating means a portion of the lu-

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bricant removed from said tape by said recording jaws.

11. An improved magnetic tape recorder for use with a movable recorder tape comprising, a pair of end walls each having a slot for the tape, wick means adjacent the slots and adapted to embrace the tape, an open-top tray between said end walls for holding a lubricant, the wick means having extensions into the tray and recording jaws adapted to engage said tape at a point between said walls and above said tray, said tape being cleaned and lubricated as it enters the recorder head through a slot in one wall, said tape being stripped of some lubricant by said recording jaws, said tape being stripped of excess lubricant as it leaves said recorder head at the other wall.

12. In a magnetic tape recorder head for use with a movable recorder tape, a first wick for lubricating said tape with a lubricant as said tape enters said recorder head, a second wick for wiping said tape to remove any lubricant on said tape as said tape leaves said recorder head, recording jaws disposed between said first and second wicks and engaging said tape, said jaws stripping said tape of some lubricant applied by said first wick, and a reservoir for hold-

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ing the lubricant, said first wick depending into the lubricant, said jaws and said second wick both depending over the reservoir, whereby the lubricant for lubricating said tape is supplied to said first wick by said reservoir and the lubricant removed from said tape by said recording jaws and said second wick is returned to said reservoir.

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