

From patent specification US-A 3,692,255 a cassette for data recording is known, in which the drive of the magnetic tape is implemented with the aid of a resilient drive belt arranged within the cassette. The drive belt is wrapped partially around the coils of magnetic tape. The drive belt is guided with the aid of deflection rollers and a drive roller which is connected in contact with a driving spindle e.g. a capstan motor. The advantage of such a cassette lies in its simple mechanics since all that is required for the tape drive is a drive shaft. Means outside the cassette such as brakes free-wheel release mechanisms etc. are not necessary. The magnetic tape may be very rapidly accelerated within the cassette in both directions and the tape tension remains approximately constant. However, because of the contact between the coil of magnetic tape and the drive belt it is not possible to draw the magnetic tape out of such a cassette, for example for use in video recorders, which operate according to the helical scanning method owing to the high scanning speed when there is a small forward movement of the tape and in which the magnetic tape is guided around a rotating head drum.

It is the object of the invention to create a cassette with the advantages of a magnetic tape driven by a drive belt, wherein the magnetic belt may be drawn out of the said cassette and drawn back in again.

This object is achieved according to the invention by the

listed features of claim 1. Modifications of the invention are characterised in the dependent claims.

In principle, the object is achieved by the fact that in a cassette for unwinding and winding the magnetic tape, which is driven with the aid of a drive belt, a means disengaging or reversing the tape drive is preferably inserted in the region of only one of the two reels between the coil of magnetic tape and the drive belt in the region of the contact surfaces of the tape and belt. This means may comprise for example a longitudinally flexible roller chain preferably made from plastics and having rotary rollers or may comprise a plastics strip with good sliding characteristics. The roller chain is connected mechanically to the winding mechanism of the recorder through a recess in the cassette casing for example by means of a lever. If the roller chain is to be drawn in between the coil of tape and the drive band for the winding process, then the drive direction for the magnetic tape must be selected so that the roller chain is drawn in automatically between the drive belt and the coil of magnet tape due to its direction of rotation. When the drive belt and the reel of magnetic tape are separated by the chain which is between them, then the chain must be held in this position. When a roller chain is used, the direction of rotation of the reel of tape, which the roller chain abuts, is changed by means of the said rollers of this roller chain which each rotate in a now fixed position, so that the tape is released for the winding process of both coils of tape. When a plastics strip is used reversal of the direction

of rotation of the reel of tape does not occur, however since the second reel still driven by the drive belt is rotating in this case the tape may still be drawn out of the cassette. After the winding process is over the direction in which the tape is transported is reversed. At the same time the roller chain or the plastics strip ceases to be held, so that they are drawn back into their starting position from the region between the band and the reel of tape. The device is now ready to be played.

In order to wind the tape back into the cassette, the roller chain or the plastics strip must be brought back again as described at the outset between the drive band and the reel of tape, so that the rewind process may take place. As soon as the tape is drawn back into the cassette then as previously described the roller chain or the plastics strip are guided back out of the region between the drive band and the reel of tape into their starting position.

Since the roller chain or the plastics strip are movable or at least resilient, they may be adapted in their curvature to the respective coil radius of the reel of tape, so that an unwinding or winding process may take place at any reel diameter.

The invention will be described in greater detail together with the drawings:

Fig. 1 shows a cassette placed in a recorder

Fig. 2 shows a view of a cassette during the winding or unwinding process

Fig. 3 shows a cassette in the play mode

Fig. 1 shows a cassette 1 with belt drive placed in a recorder, from which the magnetic tape 6 may be drawn out. The drive belt 2 lies at the outer periphery of the reels 7 and 8 of magnetic tape. If the belt 2 at the roller 3 is driven by the capstan shaft 4, then the reels 7 and 8 rotate for example in the direction shown and the magnetic tape 6 is transported from the reel 8 to the reel 7. In this arrangement the magnetic tape is driven whenever the mode of operation: fast forward, or with a change of direction of rotation, fast rewind is selected. During this, the roller chain 9 is arranged in its position of rest between the guide elements 12 and 13. The magnetic tape 6 is guided within the cassette 1 with the aid of the deflection rollers 11 so that the loading slides 10 of the winding mechanism of the recorder, which are necessary for the winding process, and are also in their position of rest, lie between the magnetic tape 6 and the cassette casing in this mode of operation.

Fig. 2 shows a view of the cassette 1 during the winding process in the recorder. Here the drive belt 2 is driven by the capstan shaft 4 via roller 3 in the direction shown. The longitudinally flexible roller chain 9 is pushed between the drive belt 2 and the reel 8 by the winding mechanism via a movable element not

shown which is connected to the roller chain 9 through an opening in the casing of the cassette. Thus the direction of rotation of the tape drive assists the roller chain to be automatically drawn into its correct position. The roller chain is held in this position. If the drive continues to run the direction of rotation of the reel 8 is reversed via the rotating rollers of the roller chain 9, so that the magnetic tape 6 runs off both reel 7 and reel 8. With the aid of the two loading sliders 10 the tape may now be drawn out of the cassette. In order to avoid looping of the magnetic tape 6 during the winding process, the roller chain 9 has to be moved at the same speed as the magnetic tape 6.

Instead of the roller chain 9 with movable rollers, which are guided in a plastics cage for example, the frictional connection between the drive belt 2 and the reel 8 of magnetic tape may be halted by inserting a sliding plastics strip. With this it is advisable to provide the side of the plastics strip which is facing the reel of tape 8 with a non-sliding material, rubber for example, whereby this reel of tape is prevented from rotating during the winding process, so that winding the magnetic tape on and off is implemented by the driven second reel 7.

Once the winding process is over the roller chain 9 or the plastics strip is no longer held and the roller chain 9 or the plastics strip is transported back into its position of rest with the aid of the winding mechanism, as indicated in Fig. 1 and Fig. 3. Reversal

of the drive direction of the drive belt 2 may also assist this.

In order to guide the magnetic tape back into the cassette, the previously described process is repeated, wherein the direction of rotation of the drive belt is reversed when winding back into the cassette.

Fig. 3 shows the cassette with the magnetic tape 6 guided out in a recorder during play back or recording mode. The magnetic tape 6 is placed around a head drum 16 with the aid of the loading sliders 10. Fixed magnetic heads 14 and 15 for recording or playing back longitudinal tracks abut the magnetic tape 6. The roller chain 9 is in its position of rest between the guides 12 and 13.

In a further refinement of the cassette it is also possible, to arrange the roller chain 9 in mirror image on the reel of tape 7 or in a further refinement to separate both reel of tape 7, 8 from the engagement of the drive band 2 with the roller chain and/or plastics strip.

Claims

1. Cassette for data recording having a tape (6), more particularly a magnetic tape, which may be moved between two reels (7,8) which are mounted approximately in a plane in the cassette, and having a drive belt (2) arranged in the cassette, which is in partially enveloping contact with the periphery of the reels (7,8), characterised in that means (9) are provided for disengaging the enveloping contact between the drive belt (2) and at least one reel (7,8).
2. A cassette according to claim 1, characterised in that the means (9) for disengaging the partial enveloping contact consist of one or more roller chains arranged inside the cassette and flexible in a longitudinal direction, and being capable of insertion between the drive belt (2) and the reel (7,8).
3. A cassette according to claim 1, characterised in that the means (9) for stopping the partial enveloping contact consist of one or more sliding plastics strips which are arranged inside the cassette, and are capable of insertion between the drive belt (2) and reel (7,8).
4. A cassette according to any one of claims 1-3, characterised in that the means (9) for disengaging the partial enveloping contact between the drive belt (2) and the reel (7,8) are movable from outside through an opening in the cassette.



5. A cassette according to any one of claims 1 to 4 for insertion in a magnetic tape recorder, in which the magnetic tape (6) for the play mode is drawn out of a narrow face of the cassette (1) by loading sliders (10) and is placed around a rotating head drum (16) and after guiding the loading sliders (10) back into their rest position, is drawn into the cassette.

