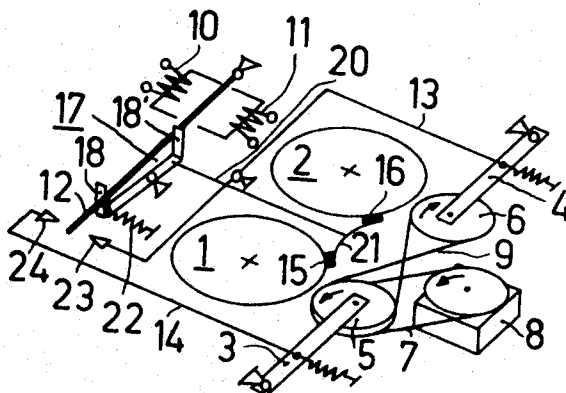


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 [33] **Austria**
 [31] **A3346/68**

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Primary Examiner—Leonard D. Christian
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[54] **RECORDING AND/OR PLAYBACK APPARATUS**
2 Claims, 4 Drawing Figs.
 [52] U.S. Cl..... **242/204**
 [51] Int. Cl..... **B11b 15/32,**
G03b 1/04
 [50] Field of Search..... **242/204,**
208

ABSTRACT: A device for controlling the forward and reverse travel of a record carrier in a recording and/or playback device having an operational control lever displaceable in opposite directions from a rest position for activating either the forward or reverse travel and a mechanical linkage between the control lever and a brake release mechanism for the rotatable record carrier discs. Upon activation of the control lever in either direction, the brake will simultaneously be released from the discs.



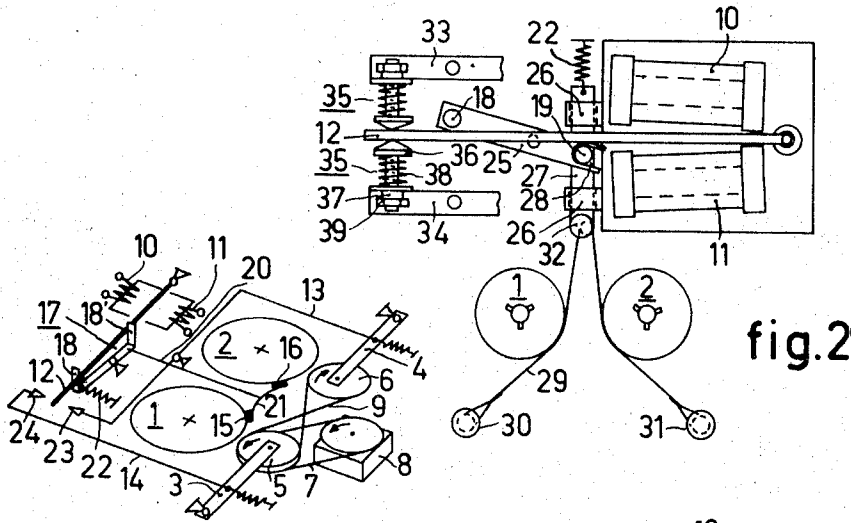


fig.1

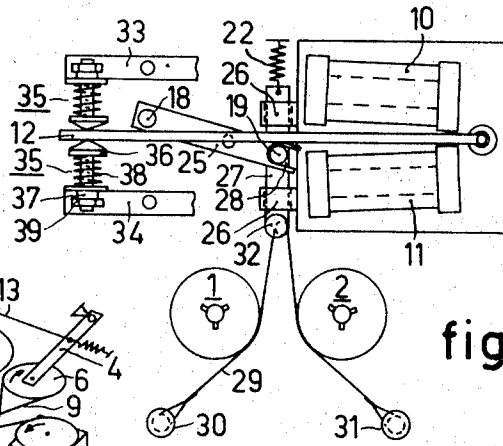


fig.2

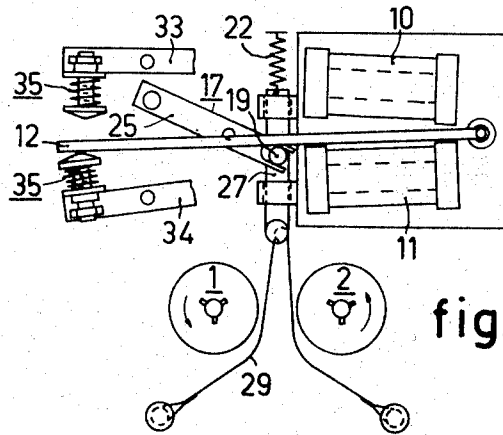


fig.3

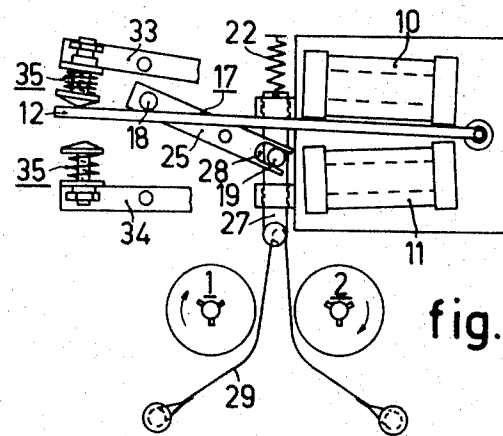


fig.4

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RECORDING AND/OR PLAYBACK APPARATUS

The invention relates to a recording and/or playback apparatus comprising a device for actuating a forward or backward travel of a record carrier, said device having a control-lever adapted to be displaced in opposite directions from a rest position into two operational positions, in one of which it actuates the forward travel and in the other the backward travel, whilst by means of an intermediate member it also releases the brakes acting upon the spool discs.

In such apparatus the intermediate member ensures that independently of the direction in which the control-lever is moved out of its rest position for actuating the forward or backward travel of the record carrier the brakes acting upon the spool discs are invariably released. This means that although the control-lever is movable in two opposite directions a brake-releasing member actuated by said lever is invariably moved in the same direction. In a known device of the kind set forth the intermediate member is formed by a sliding rod pivoted to the control-lever and provided with a cam acting upon a brake-actuating lever. In the intermediate position of the control-lever the brake-actuating lever bears on the cam, whilst the brakes are operative and in the two operational positions of the control-lever the cam releases the brake-actuating lever so that the brakes are released. This device is comparatively complicated. The invention has for its object to provide a construction of a simpler type and is characterized in that the intermediate member is formed by a two-armed lever, extending substantially parallel to the control-lever, being adapted to be turned against the action of a spring and acting as a brake-actuating lever, which is provided at its ends with stops between which one arm of the control-lever extends so that upon displacement of the latter lever into one of its two operational positions the two-armed lever is invariably turned in the same direction, the brakes thereby releasing the spool discs.

It is thus ensured that the control-lever acts directly, i.e. without the interposition of further members, on the two-armed control-lever so that a simple construction is involved.

The spring acting upon the two-armed lever serves preferably for actuating the brakes in the rest position of the control-lever, the latter being located with clearance between the stops. The spring thus has two functions: in the rest position of the control-lever it supplies the braking force and in either operational position of the control-lever it operates as a resetting spring for this lever. In order to obtain a definite rest position of the control-lever it has been found advantageous to have this lever in its rest position, in which it is located, with clearance between the stops held by parts of the apparatus which are actuated by the control-lever for the forward or backward travel of the record carrier. In this case it is advantageous to cause said apparatus parts to cooperate with the control-lever by means of resilient intermediate members.

It is furthermore particularly advantageous to provide the two-armed lever at one end with a slot into which a pin is inserted which forms one of the stops and which is arranged on a longitudinally displaceable bar for actuating the brakes. In this way the rotary movement of the two-armed lever is converted into a rectilinear movement for displacing the brakes so that the latter are actuated with particularly great accuracy.

The invention will now be described more fully with reference to the drawing, which shows two embodiments to which the invention is, however, not restricted.

FIG. 1 is a view which shows schematically a first embodiment of a device in its rest position, with reference to which the principle of the invention will be explained. FIG. 2 is a schematic view which shows a further device, embodying the invention, in its rest position.

FIGS. 3 and 4 are schematic views which show each the device of FIG. 2 in one of the two operational positions.

Referring to FIG. 1 reference numerals 1 and 2 designate two spool discs of a recording and/or playback apparatus.

These discs can receive the record carrier, which may be wound on spools or arranged in a magazine. For the forward or backward travel of the record carrier one of the discs is driven. For this purpose each disc has joined to it a friction wheel 5 or 6 respectively, which is journaled on an arm 3 or 4 respectively, pivotable against the action of a spring. The friction wheel 5 is driven through a rope 7 by a motor 8 and the friction wheel 6 is driven through a crossed rope 9 by the friction wheel 5. By swinging the friction wheel 6 against the disc 2 the forward travel is actuated and by swinging the friction wheel 5 against the disc 1 the backward travel of the record carrier is actuated.

For swinging the friction wheels 5 and 6 a device is provided which comprises two electromagnets 10 and 11 acting upon a common, pivotable armature 12. The rest position of the armature lies approximately midway between the limbs of the electromagnets 10 and 11 so that it is adjusted each time by one of the magnets in opposite directions into two operational positions. In the first operational position obtained by the excitation of the electromagnet 11 the armature 12 actuates a lever 13 which urges the friction wheel 6 on the arm 4 against the disc 2 so that the forward travel of the record carrier is switched on. In the second operational position obtained by excitation of the electromagnet 10 the armature 12 actuates a rod system 14, which urges the friction wheel 5 on the arm 3 against the disc 1 so that the backward travel of the record carrier is obtained. If the armature is in its rest position, neither of these travels is performed.

For the latter case in which neither of the said travels is performed brakes 15, 16 are adapted to cooperate with the discs 1, 2 for holding them. These brakes are actuated by the armature 12. For this purpose the armature 12 cooperates with a pivotable, two-armed lever 17, which is provided at its ends with stops 18, 18', between which extends the armature 12. The lever 17 is connected through a connecting member 20, engaging the lever arm supporting the stop 18', with a leaf spring 21, the ends of which are provided with brake shoes 15, 16. The other lever arm bearing the stop 18 is engaged by a tension spring 22, which tends to turn the lever 17 so that the armature 12 is clamped between the stops 18 and 18'. When the magnets 10, 11 are not energized, the lever 17 thus determines the rest position of the armature 12, since the stops hold the same. In this rest position of the armature and position of the lever 17, the leaf spring 21 is stretched and the brakes hold the spool discs.

When the armature is swung for actuating the forward or backward travel by one of the two electromagnets into one of the two operational positions the lever 17 is turned either through the stop 18 or through the stop 18' independently of the direction of movement of the armature invariably in the same direction, the leaf spring 21 being released through the connecting member 20 and the brake shoes being lifted from the discs. The arrangement is such that the brakes are released before the forward or backward travel starts. This is accomplished by providing that the armature will engage the end 23 of the lever 13 or the end 24 of the rod system 14 respectively, only after the armature has left the rest position over a given distance and has turned the lever 17.

In this manner the armature actuates both the brakes and the forward or backward travel.

In the embodiment shown in FIG. 2 a two-armed lever 25 similar to the two-armed lever 17 of FIG. 1 is provided; one end thereof is also provided with a stop 18 formed by a pin and the other end has a slot 28, into which a pin 19, serving as the second stop, is inserted. The pin 19 is fastened to a part 27, adapted to slide in its longitudinal direction along guides 26 and shown in the form of a slide for actuating the brakes. The lever 25 and the slide 27 are thus pivotally interconnected and this structure permits of converting the pivotal movement of the lever 25 into a purely longitudinal movement of the slide 27 so that the brakes are actuated with particularly great accuracy.

A single brake band 29 is provided as brakes for the two spool discs. The two ends of the band are fixed to two pins 30, 31, rigidly secured to the apparatus. The band passes along part of the peripheries of the two discs towards a supporting member 32 on the slide 27; the band may be clamped tight against said member by spring force.

The slide 27 is furthermore engaged by a tension spring 22. The spring furnishes a force for resetting the armature from one of its operational positions, and into its rest position also directly provides the braking force. This is achieved by arranging the armature 12 in its rest position with clearance between the stops 18, 19 of the lever 25, which is in a given end position, when the brakes are actuated. This end position of the lever 25 is determined by the action of the spring 22 and the contact of the brake band with the spool discs. In order to enable adjustment of the lever 25 with respect to the armature in the rest position the supporting member 32 of the brake band on the slide 27 is constructed in addition as a setting member so that the clearance of the armature between the stops is adjustable, particularly to a minimum, independently of braking of the discs. For this purpose the supporting member 32 is constructed in the form of an eccentric pin adapted to turn on the slide 27 and to be fixed, the brake band being passed around the eccentric part thereof. When the eccentric pin is turned, the spring, 22 holds the brake band in the stretched state, whilst the slide 27 is displaced, the lever 25 following the slide so that the stops can be displaced relatively to the armature.

In order to ensure that in its rest position the armature 12 occupies a given position in the clearance space between the stops 18 and 19, it is held in position by parts of the apparatus, which it actuates for starting the forward and backward movements. These parts are not shown separately in FIGS. 2 to 4; only two levers 33, 34 are shown, which transfer like the lever 13 and the rod system 14 of the embodiment shown in FIG. 1, the armature movement to the parts of the apparatus to be actuated. Each lever 33 or 34 cooperates with the armature 12 through a resilient intermediate member 35, which is formed by a pin 36, which is displaceable in a sleeve 37 of each lever against the action of a spring 38 in the longitudinal direction, whilst a nut 39 screwed on part of the pin limits the adjusting range. By means of the nuts 39 the rest position of the armature can be adjusted. These intermediate members furthermore permit during the manufacture of the parts of the apparatus of providing an additional lift for the armature in order to actuate the forward or backward travel, whilst they ensure in addition that the actuation is performed with time lag, i.e. after the springs 38 are stretched so that it is ensured that the brakes are previously lifted.

The operation of this arrangement is identical with that of the embodiment of FIG. 1. When (see FIG. 3) the electromagnet 11 is energized, the armature 12 displaces through the pin

19 the slide 27 against the action of the spring 22 in its longitudinal direction so that the brake band 29 releases the discs 1, 2 and actuates the lever 34. FIG. 4 shows the opposite working position of the armature 12, in which the electromagnet 10 is energized. The armature 12 then engages the pin 18 so that the lever 25 is pivoted and the slide is displaced in its longitudinal direction against the action of the spring 22 owing to the pivotal connection between the lever 25 and the slide 27 and the brake band 29 is lifted from the discs. Finally the armature 12 actuates the lever 33. The resetting of the armature to the rest position, when the electromagnets are not energized, is performed under the action of the springs 22 and 38 and the reactive forces of the displaced parts of the apparatus.

From FIGS. 2 to 4 it will be apparent that the lever 25 has arms of different lengths, the ratio between said lengths being equal to the ratio between the distances of the points of application of the stops concerned from the point of rotation of the armature 12. When the rest position of the armature is approximately midway between the two electromagnets, it is ensured in this manner that the lever 25 is turned approximately through equal angles in the two working positions of the armature.

I claim:

1. A device for controlling the forward and reverse travel in a recording and/or playback apparatus comprising two rotationally mounted spool discs, each adapted for forward or reverse rotation for the winding or unwinding of a record tape carrier, drive means for rotating the discs, biased brake means frictionally engaging the discs to prevent rotation of the discs, control lever means pivotally mounted and adapted for displacement from a rest position to opposite operational positions one of which activates the forward rotation drive means and the other activates the reverse rotation drive means, and an intermediate member mechanically linked to the control lever means for simultaneous releasing the brake means when the control lever means has been displaced to either of its operational positions, said intermediate member comprising a pivotally mounted two arm lever extending substantially parallel to the control lever means and adapted to be moved by the control lever, a spring connected to said two arm lever to bias said two arm lever against movement by the control lever, said spring also acting to provide the biasing force on the brake means to hold same in frictional engagement with the discs, and a stop provided adjacent the end of each arm of the two arm lever, for limiting the movement of the lever.

2. The device as claimed in claim 1 further including a slot defined in one end of one of the arms of the two arm lever, a spring urged slide member having the brake means at one end, a pin affixed to said slide member and engaged within the slot such that movement of the two arm lever to either operational position will cause the slide member to move against the spring force and will release the brake means.

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