

PATENT SPECIFICATION (11)

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(54) CASSETTE-TYPE MAGNETIC TAPE RECORDER

(71) We, AUTOVOX SPA, an Italian Joint Stock Company, of 981 Via Salaria, 00199 Roma, Italy, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention refers to a cassette-type magnetic tape recording apparatus and particularly, but not exclusively, to such apparatus which is suitable for installation in the restricted space of the instrument panel of a motor vehicle.

The main object of the invention is to provide a cassette recorder wherein the control operations are reduced to a minimum.

An object of an embodiment of the invention is to supply a cassette recorder wherein the mere inserting of a cassette automatically shifts the cassette recorder into the reproduce mode, while by the actuation of only a single manually engageable control it is thereafter possible to shift the recorder into the recording, fast forward, fast rewind, stop and cassette ejection modes.

According to the invention, there is provided a cassette-type magnetic tape recorder having only a single, manually engageable operating-mode-selecting control, said control being a push-button, a reciprocable slide member supporting the control for movement therewith and so that the control may perform relative movement with respect thereto; a spring urging the slide member to a first position, protruded with respect to the cassette recorder; an anchor for releasably retaining the slide member in a pushed-in, second position against the action of the spring; a tape cassette inserting and ejecting means, operable in response to partial insertion of a cassette to effect cassette insertion and thereafter automatically operating to release the anchor from the slide member and furthermore operating to eject the cassette when the control and thus the slide member are manually pushed into the inter-

ior of the cassette recorder; lowering and lifting means, capable of lowering a fully inserted cassette into its operating position under the action of the slide member during its outward movement from said second position and capable of lifting the cassette from its operating position when the lowering and lifting means are released from the control of the slide member during its inward movement from said first position; means supporting a magnetic tape recording head an an erasing head and a tape pressure roller, said supporting means being moved as to carry the heads and the pressure roller towards and away from operative positions thereof in response to the outward and inward motions respectively of the slide member; and means for retracting the recording and erasing heads and the pressure roller from their operative positions and for controlling a drive mechanism for the tape, the last mentioned means being operated by the control by movements of the control relative to the slide member when the latter is in its first position.

In the following description, the directions "right", "left", "clockwise" and "counterclockwise", "top", "bottom" etc. are intended as they appear in the Figures being discussed.

In the accompanying drawings:

Figure 1 is a plan view of an embodiment of a cassette-type magnetic tape recorder according to the invention;

Figure 2 is a partially sectional front view thereof;

Figure 3 is a lateral elevational view thereof;

Figure 4 is an exploded view thereof;

Figure 5 is an exploded view of control members thereof;

Figure 6 is a bottom view of a push button thereof;

Figure 7 is a perspective view of a cassette positioning means;

Figure 8 is a front view showing details of Figure 7;

Figure 9a and 9b show in lateral view two positions of details of Figure 7;

Figure 10 is a perspective view of an arm which carries a recording head and an erasing head;

Figure 11 is a perspective view of a lever for withdrawing said heads and a tape pressure roller;

Figure 12 is a plan view of the tape transport mechanism of the embodiment of Figure 1 in the reproducing or recording position;

Figure 13 is a plan view of the tape transport mechanism in the fast forward mode;

Figure 14 is a plan view of the tape transport mechanism in the fast rewind mode;

Figure 15 is a perspective view with exploded parts of the means for selecting the fast forward and fast rewind modes of the tape;

Figure 16 shows a variant of the cassette positioning means.

With reference to the drawings, in which the same parts are indicated with the same reference numerals, the cassette recorder comprises a frame 1 having a front flange 2 and a rear flange 3 as well as a left side flange 4. A bridge 5 is fastened between flanges 2 and 3. A slide 8 having a cross-sectional shape of an inverted U (see Figure 5) has two slots 9 and 10 therein, within which pins 6 and 7 are respectively engaged. The pins 6 and 7 allow the slide 8 to reciprocate between a pushed-in and protruding position and guide it in its movement, and the slide 8 is biased towards its protruding position by a tension spring 11, having a first end fastened to the pin 6 and a second end hooked to a shaped tongue 12 of slide 8.

The slide 8 is shifted towards its pushed-in position by a push-button or handle 13. An electric motor 14 is fastened to frame 1 and one end of a lever 16 is fulcrumed at 15 to its casing. To the other end of the lever 16 there is fulcrumed at 17 a cassette gripper 18. This gripper 18 (Figure 4) has a hook-shaped front part 19, a rounded rear part 20 (Figure 1) and a lateral arm 21.

The gripper 18 is displaceable within a slot 22 in bridge 5, so that the lever 16 may pass from the position shown in a continuous line to the position shown in a dotted line in Figure 1 and *vice versa*, oscillating around its pivot pin 15.

One end of a bistable spring 23 is formed into an eyelet and is rotatable around a pin 24 integral with lever 16, while the other end of the spring 23 is connected to a cam 25, which is freely rotatable around the pin 7. A pin 26 on slide 8 engages the cam 25, as will be better illustrated in the following.

Two C-shaped cross-pieces 27 and 28 which are fulcrumed at 29, 30 and 31, 32 respectively form a known type of lifting de-

vice and are forced by two springs 33, 34 in the sense which tends to spread apart the points at which the springs are fastened and thus to lift the transverse parts of the cross-pieces 27 and 28 upon which a cassette 35 (see Figure 7) rests. The twin-reel magnetic tape cassette 35 may be inserted into a slot 36 in the front of the cassette recorder (see Figure 2). A fork-shaped element 37 (Figures 1 and 7) is fitted with an ear 38 which coacts with a notch 39 of the lateral flange 4 and a pin 40 coacts with a notch 41 in bridge 5 to form a hinge with one degree of freedom against the action of a spring 42. Spring 42 also serves to urge the fork-shaped member 37 towards its horizontal position, as shown in Figure 9b.

The fork-shaped member 37 is also fitted with a lateral cam surface 44, which coacts with a pin 45 rigid with slide 8. As shown in Figures 9a and 9b, when the slide is shifted towards the left (Figure 9a) under the action of spring 11, pin 45 forces cam 44 to assume the position shown in Figure 9a, while simultaneously lowering into its operating position the cassette 35 owing to the rotation of the fork-shaped member 37 and against the action of the springs 33 and 34 and the cassette 35 slides, in its inward movement, while resting upon the cross-pieces 27 and 28.

When the slide is shifted to the right (Figure 9b), cam 44 is released from pin 45 and the fork-shaped member 37 positions itself horizontally under the action of the spring 42, while the lifting device 27, 28 causes the lifting of the cassette to its inoperative position.

As shown in Figure 10, an arm carrying the recording/playback head and the erasing head moves between frame 1 and bridge 5 and is fulcrumed around a pivot passing through the holes 46 and 47 of the arm 48. The recording and reproducing head is indicated at 49 and the erasing head at 50 (see also Figure 12).

A pressure roller 52, which serves to press the tape against the capstan of the cassette recorder, is freely rotatable in a support 51, which is oscillatable around a hollow pivot 54 on arm 48 and urged against the capstan 53 (Figures 1 and 2), in the direction of arrow A (see Figure 10), by a spring 43.

When the pressure roller 52 engages the capstan 53 via the tape, spring 43 urges arm 48 in the direction of arrow B to carry heads 49 and 50 into contact with the tape contained in cassette 35.

Arm 48 has a pin 55, which passes through a slot 56 in bridge 5 and is inserted into a slot 57 in slide 8, so that when the slide 8 is in its completely protruded position, as shown in Figure 1, arm 48 is free to move in the direction of arrow B (Figure 10) under the action of spring 43. When the slide is

pushed in by the handle 13, pin 55 is forced to enter the narrowest part of slot 57, whereby the heads 49 and 50 are withdrawn from the tape.

5 As best shown in Figure 5, the front end 58 of the slide 8 has two curved surfaces 59 and 60 and a rounded extension 61. Handle 13 has a groove 62, into which is inserted the end 58 of slide 8, while two pin 63 and 64, which are inserted into two bores of the handle after the latter has been coupled to the slide 8, prevent handle 13 from being detached from the slide when the distance between them is smaller than the rounded extension 61. The rounded extension 58 is therefore profiled so as to allow handle 13 a relative movement with respect to slide 8.

15 Handle 13 is biased towards its rest position with respect to slide 8, as shown in Figure 1, by a traction spring 65, one end of which is connected at 66 with the handle 13, between the pins 63 and 64, and the other end of which is hooked on to a tongue 67 integral with slide 8.

20 In this rest position of handle 13, the pins 63 and 64 rest against the edges 68 and 69 of slide 8, while the central axes of the pins 63 and 64 coincide with the centers of curvature of the curved surfaces 60, 59 respectively. Therefore, when the handle 13 is moved in the direction of the arrow C (Figure 5), it will rotate by a given angle around the pin 63, while pin 64 will move around the surface 59 until it strikes against the rounded extension 61. When the handle 13 is moved in the direction of arrow D (Figure 15), handle 13 will rotate by the same angle but in the opposite sense around pin 64, while pin 63 will move around surface 60 until it strikes the rounded extension 61; moreover, when the handle 13 is pulled in the direction of the arrow E, both pins 63 and 64 will move forward until they strike the rounded extension 61.

45 Handle 63 has an extension 70 with a longitudinal groove 71 therein (see Figure 6).

When the handle is coupled to slide 8, this extension 70 is positioned below slide 8 (Figure 3) and above bridge 5.

50 A lever 72 (Figures 4, 11, 15) has an upper arm 73 placed below bridge 5 and hinged to it by a pivot 74, and a lower arm 75 placed below frame 1 and hinged to it by a pivot 76 coaxial with pivot 74. The upper arm 73 is fitted with an upwardly turned actuating pin 77 which traverses the bridge 5 through aperture 78. Pin 77 engages the slot 71 of handle 13, and therefore a rotation of the latter will force the lever 72 to rotate around the pivots 74 and 76. The upper arm 73 terminates, at its end adjacent to the pin 77, in a tongue 79 (Figure 11), co-operating with an ear 80 of arm 48. The upper arm 73 terminates in a hooked portion 81 co-operating with the pin 55 on arm 48.

The free end of the lower arm 75 carries a downwardly projecting pin 82 which is intended to engage parts of the tape transport mechanism. The tape transport mechanism is described and claimed in co-pending application No. 13916/75 (Serial No. 1505539) and comprises, in addition to the motor 14, whose drive shaft carries a pulley 83 (Figures 12 to 14), a flywheel 84 and an idler wheel 85, which are driven by an elastic cord 86 from the pulley 83. The capstan 53 is formed by a portion of the flywheel shaft.

A first disc 87, co-operating with the tape receiving reel of cassette 35, serves to wind the tape during the recording and reproducing operations. As better shown in Figure 12, for this purpose the disc 87 is friction coupled with a gear 88 meshing with a gear 89 rigid with the idler wheel 85.

85 The friction clutch so formed is controlled by a lever 90, which is suitably fulcrumed so that when one of its ends is lowered by an adjusting screw 91 threaded within the hollow pin 54 (Figure 10) of the support 51, when the arm 48 is rotated towards the cassette, the friction clutch is engaged and the tape receiving reel starts winding the tape which is fed between the capstan 53 and the pressure roller 52, which pressure roller is also carried into its operating position when the arm 48 is rotated towards the cassette.

90 For the fast forward and fast rewind operations, during which the arm 48 must be withdrawn from the cassette, the clutch is automatically released. Drive is transmitted from flywheel 84 to disc 87 or from wheel 85 to a second disc 92, which co-operates with the tape feed reel of cassette 35, by means of two coaxial gears 93 and 94, which are rigidly mounted on the same shaft and carried by a flip-over arm 95 (see Figure 15). The rotation of the lower arm 75 of lever 72 controls therefore the movement of the flip-over arm 95.

110 The operation of the cassette recorder according to the present invention will now be described starting from the stop position, with no cassette inserted. In this situation, the lever 16 and the spring 23 are in the positions indicated by dashed lines in Figure 1 and slide 8 is prevented from being slid outwards by a spring 11 because an anchor 96, fulcrumed at 97 on bridge 5, engages a tongue 98 of the slide 8, thereby retaining it. Anchor 96 is resiliently biased towards said latter position.

115 When a cassette is inserted into the slot 36, it passes over the two cross-pieces 27 and 28 and under the fork-shaped member 37 until its rim strikes the lateral arm 21 of the cassette gripper 18. As the cassette enters further into the recorder, it causes firstly said gripper to rotate around pin 17 until the front part 19 engages an edge 99 (Figure 7) of an opening in the cassette suc-

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cessively the gripper 18 will cause the lever 16 to rotate anticlockwise (in the sense of Figure 1) up to the point where the bistable spring 23 reaches its dead point, whereafter the operation becomes automatic.

In fact, spring 23 thrusts the lever 16 towards the position shown by a continuous outline in Figure 1, and lever 16 entrains the gripper 18 which engages cassette 35, to the point wherein the rear part of the gripper 18 strikes a wing 100 of anchor 96, thereby releasing the slide 8. Under the action of spring 11 the slide 8 then moves outward and causes firstly, through its pin 45, the rotation of the fork-shaped member 37 and thereby forces the cassette 35 to move downward into its operating position. With the slide 8 continuing its motion, the pivot 55 of arm 48 penetrates the widened portion of the slot 57 and therefrom the arm 48 approaches the cassette to the point in which the pivot 55 engages the hooked portion 81 of lever 72 and simultaneously the ear 80 of arm 48 engages the tongue 79 of lever 72. While approaching the cassette, arm 48 engages the clutch of the tape transport mechanism by means of the screw 91 and lever 90 and carries the pressure roller 52 in its operative position.

At the end of its path, slide 8 actuates a microswitch (not shown), thereby closing the feed circuit of motor 14, and thus the tape feed and playing operation begins.

When it is desired to pass to a recording operation, it is sufficient to pull out the handle 13 in direction E, Figure 5, which, in its movement relative to slide 8, will close a contact which will supply the recording signal to the electronic circuit of the recorder. When the handle 13 is released, spring 65 will restore it into its rest position, without interrupting the recording operation.

When it is desired to switch into the fast forward or fast rewind modes, the handle 13 will be pushed to the right or to the left respectively, relative to slide 8 as seen in Figure 1.

When the handle 13 is moved to the right, its groove 71 will force lever 72 to rotate clockwise: the hooked portion 81 of the upper arm 73 of lever 72 will act upon pin 55 so as to withdraw arm 48 from the cassette, which causes the release of the clutch, while the pin 82 of the lower arm 75 forces the flip-over arm 95 to rotate around a pivot 101 (Figure 13), thereby engaging gears 93 and 94 with the disc 87 and the fly-wheel 84, respectively. Therefore, the tape will be quickly wound upon the receiving reel of the cassette. In order to free the pressure roller 52 without an excessively long excursion of the arm 48, the support 51 of the pressure roller has an ear 102 which strikes a pin 103 of the bridge 5. Therefore, when lever 72 withdraws arm 48, the ear

102 of the support 51 strikes the pin 103 thereby forcing the support 51 to rotate around its hollow pin 54 in the sense which withdraws the pressure roller from the tape; in this manner, the retractive motion of the pressure roller is increased.

When the handle 13 is pushed inward, the slide 8 forces arm 48 to move anticlockwise owing to the action of the slot 57 on pin 55; in this case, the movement of arm 48 is greater than the travel obtained by lever 72, and therefore the movement of the pressure roller must be smaller. The suitable shaping of the head of ear 102 satisfies this requirement.

When the handle 13 is shifted to the left, the groove 71 forces lever 72 to rotate anticlockwise; the tongue 79 of the upper arm of lever 72 acts upon the ear 80 of arm 48, retracting it from the cassette; simultaneously the pin 82 of the lower arm 75 forces the flip-over arm to shift, against the action of spring 106 (Figure 15) until the gears 93 and 94 mesh with the disc 92 and the idler wheel 85 respectively (Figure 14). Therefore the tape of the cassette will be quickly re-wound upon the feed reel.

When it is desired to interrupt the playback or the recording operation and to eject the cassette, the handle 13 is pushed completely in. In this manner slide 8 completes a whole stroke towards the interior of the recorder, whereby the spring 11 is loaded. During a first portion of this stroke (first phase) the current feed to the motor 14 is switched off and the slot 57 coacts with the pin 55 to retract the arm 48 from the cassette. During a second portion of the stroke (second phase) the pin 45 of the slide 8 releases the lateral cam surface 44 of the fork-shaped member 37, so that the spring 42 causes the fork-shaped member 37 to rotate into a horizontal position, whereby the cassette 35 is lifted by the cross-pieces 27 and 28, which act as a lifting device under the action of the springs 33 and 34.

In the last portion of the stroke (third phase) of the slide 8, the pin 26 rotates cam 25 anticlockwise (as shown in Figure 1). This rotation loads the bistable spring 23 and moves the lever 16, which entrains the cassette gripper 18 thereby causing the ejection of the cassette by lateral arm 21. The movement of the gripper has also the effect that its rear part 20, when moving forward, releases the anchor 96, which assumes, under the action of its spring, the position in which it engages the tongue 98 of the slide 8, so as to prevent the slide from performing, once it has been released, an outward move of a stretch longer than that required by the pin 26 to withdraw from the area of interference with the cam 25. Simultaneously the spring 23 will automatically cause the displacement of lever 16 to the

position indicated by a dotted line in Figure 1, in which the position a tooth 104 of the cassette gripper 18 strikes a projection 105 of bridge 5 wherefore its front part 19 is disengaged from the cassette. If the handle 13 is now released, the slide assumes the stop position as described above and the cassette may easily be extracted by the operator, because it projects sufficiently from the mouth 36.

Figure 16 shows a variant of the lifting device, wherein a frame 107 supporting the cassette 35 is biased upward by spring 108 placed around guide pins 109.

WHAT WE CLAIM IS:—

1. A cassette-type magnetic tape recorder having only a single, manually engageable operating-mode-selecting control, said control being a push-button, a reciprocable slide member supporting the control for movement therewith and so that the control may perform relative movement with respect thereto; a spring urging the slide member to a first position, protruded with respect to the cassette recorder; an anchor for releasably retaining the slide member in a pushed-in, second position against the action of the spring; a tape cassette inserting and ejecting means, operable in response to partial insertion of a cassette to effect cassette insertion and thereafter automatically operating to release the anchor from the slide member and furthermore operating to eject the cassette when the control and thus the slide member are manually pushed into the interior of the cassette recorder; lowering and lifting means, capable of lowering a fully inserted cassette into its operating position under the action of the slide member during its outward movement from said second position and capable of lifting the cassette from its operating position when the lowering and lifting means are released from the control of the slide member during its inward movement from said first position; means supporting a magnetic recording head and an erasing head and a tape pressure roller, said supporting means being moved so as to carry the heads and pressure roller towards and away from operative positions thereof in response to the outward and inward motions respectively of the slide member; and means for retracting the recording and erasing heads and the pressure roller from their operative positions and for controlling a drive mechanism for the tape, the last mentioned means being operated by the control by movements of the control relative to the slide member when the latter is in its first position.

2. A cassette recorder as claimed in Claim 1, wherein the cassette inserting and ejecting means comprise a lever hinged by

a first end frame; a cassette gripper hinged to the second end of the lever and capable of sliding within a slot of the frame, the cassette gripper having an arm capable of gripping a cassette; and a bistable spring one end of which is hinged to the second end of the lever, the other end of the spring being fastened to a cam which is rotatable around a pin which is fixed relative to the frame.

3. A cassette recorder as claimed in Claim 2, wherein the slide member is provided with a pin capable of engaging the rotatable cam and rotating it to load the bistable spring and thereby eject a cassette.

4. A cassette recorder as claimed in any preceding claim, wherein the cassette lowering means comprises a fork-shaped member having a lateral cam and the slide has a pin capable of engaging the lateral cam to rotate the fork-shaped member.

5. A cassette recorder as claimed in Claim 4, wherein the cassette lifting means comprises a frame capable of supporting a cassette and biased upward by springs positioned around guide pins.

6. A cassette recorder as claimed in any preceding claim, wherein the means supporting the recording and erasing heads and the pressure roller comprises an arm hinged at one end, and resiliently biased in the sense which moves it towards an operatively positioned cassette, which arm supports the recording and erasing heads and oscillatably supports a support of the pressure roller, the resilient bias serving to urge the pressure roller against a tape drive capstan of the cassette recorder, the arm having a pin engaging a slot in the slide member.

7. A cassette recorder as claimed in Claim 6, wherein the arm carrying the recording and erasing heads and the pressure roller support is resiliently biased by only a single spring.

8. A cassette recorder as claimed in Claim 6 or 7, wherein the pressure roller support has an ear capable of co-operating with a pin which is fixed relative to a frame of the recorder in order to increase the travel of the pressure roller with respect to the capstan.

9. A cassette recorder as claimed in any preceding claim, wherein the means for retracting the recording and erasing heads and the pressure roller comprises a lever which is hinged to a frame of the recorder, the lever having an upper arm and a lower arm, the upper arm having an actuating element and control elements which act on the means which support the heads and the pressure roller, the lower arm having a control element for selecting the fast forward and fast rewind motions and the actuating element being capable of being controlled by the push button by relative movements thereof with respect to the slide member.



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position indicated by a dotted line in Figure 1, in which the position a tooth 104 of the cassette gripper 18 strikes a projection 105 of bridge 5 wherefore its front part 19 is disengaged from the cassette. If the handle 13 is now released, the slide assumes the stop position as described above and the cassette may easily be extracted by the operator, because it projects sufficiently from the mouth

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Figure 16 shows a variant of the lifting device, wherein a frame 107 supporting the cassette 35 is biased upward by spring 108 placed around guide pins 109.

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WHAT WE CLAIM IS:—

1. A cassette-type magnetic tape recorder having only a single, manually engageable operating-mode-selecting control, said control being a push-button, a reciprocable slide member supporting the control for movement therewith and so that the control may perform relative movement with respect thereto; a spring urging the slide member to a first position, protruded with respect to the cassette recorder; an anchor for releasably retaining the slide member in a pushed-in, second position against the action of the spring; a tape cassette inserting and ejecting means, operable in response to partial insertion of a cassette to effect cassette insertion and thereafter automatically operating to release the anchor from the slide member and furthermore operating to eject the cassette when the control and thus the slide member are manually pushed into the interior of the cassette recorder; lowering and lifting means, capable of lowering a fully inserted cassette into its operating position under the action of the slide member during its outward movement from said second position and capable of lifting the cassette from its operating position when the lowering and lifting means are released from the control of the slide member during its inward movement from said first position; means supporting a magnetic recording head and an erasing head and a tape pressure roller, said supporting means being moved so as to carry the heads and pressure roller towards and away from operative positions thereof in response to the outward and inward motions respectively of the slide member; and means for retracting the recording and erasing heads and the pressure roller from their operative positions and for controlling a drive mechanism for the tape, the last mentioned means being operated by the control by movements of the control relative to the slide member when the latter is in its first position.

2. A cassette recorder as claimed in Claim 1, wherein the cassette inserting and ejecting means comprise a lever hinged by

a first end frame; a cassette gripper hinged to the second end of the lever and capable of sliding within a slot of the frame; the cassette gripper having an arm capable of gripping a cassette; and a bistable spring one end of which is hinged to the second end of the lever, the other end of the spring being fastened to a cam which is rotatable around a pin which is fixed relative to the frame.

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3. A cassette recorder as claimed in Claim 2, wherein the slide member is provided with a pin capable of engaging the rotatable cam and rotating it to load the bistable spring and thereby eject a cassette.

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4. A cassette recorder as claimed in any preceding claim, wherein the cassette lowering means comprises a fork-shaped member having a lateral cam and the slide has a pin capable of engaging the lateral cam to rotate the fork-shaped member.

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5. A cassette recorder as claimed in Claim 4, wherein the cassette lifting means comprises a frame capable of supporting a cassette and biased upward by springs positioned around guide pins.

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6. A cassette recorder as claimed in any preceding claim, wherein the means supporting the recording and erasing heads and the pressure roller comprises an arm hinged at one end, and resiliently biased in the sense which moves it towards an operatively positioned cassette, which arm supports the recording and erasing heads and oscillatably supports a support of the pressure roller, the resilient bias serving to urge the pressure roller against a tape drive capstan of the cassette recorder, the arm having a pin engaging a slot in the slide member.

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7. A cassette recorder as claimed in Claim 6, wherein the arm carrying the recording and erasing heads and the pressure roller support is resiliently biased by only a single spring.

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8. A cassette recorder as claimed in Claim 6 or 7, wherein the pressure roller support has an ear capable of co-operating with a pin which is fixed relative to a frame of the recorder in order to increase the travel of the pressure roller with respect to the capstan.

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9. A cassette recorder as claimed in any preceding claim, wherein the means for retracting the recording and erasing heads and the pressure roller comprises a lever which is hinged to a frame of the recorder, the lever having an upper arm and a lower arm, the upper arm having an actuating element and control elements which act on the means which support the heads and the pressure roller, the lower arm having a control element for selecting the fast forward and fast rewind motions and the actuating element being capable of being controlled by the push button by relative movements thereof with respect to the slide member.

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10. A cassette recorder as claimed in Claim 9, wherein the actuating element is a pin and the push button is fitted with a groove receiving the pin, whereby a rotation of the push button with respect to the slide member rotates the two-armed lever with respect to the frame.
11. A cassette recorder as claimed in any preceding claim, wherein means are provided which energise an electronic recording circuit, which means are sensitive to a manual outward movement of the push button relative to the slide member.
12. A cassette-type magnetic tape recorder, substantially as hereinbefore described with reference to the accompanying drawings.

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