

[54] **OPERATING MODE SWITCH FOR
DIFFERENT TYPE OF TAPES**[75] Inventor: **Werner Broghammer,**
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Georgen, Black Forest, Germany[22] Filed: **Feb. 11, 1974**[21] Appl. No.: **441,001**[30] **Foreign Application Priority Data**

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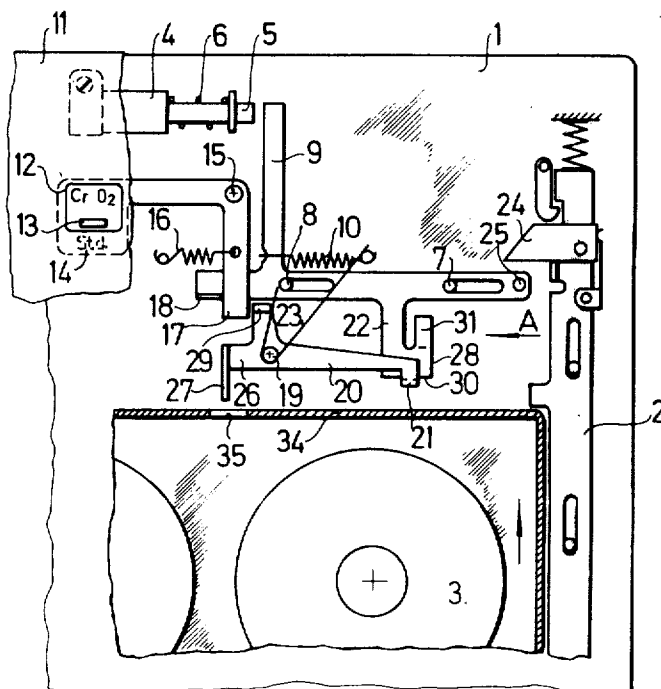
[56] **References Cited****UNITED STATES PATENTS**

3,601,558 8/1971 Sugaya..... 360/25

Primary Examiner—James W. Moffitt*Attorney, Agent, or Firm*—Ernest G. Montague; Karl
F. Ross; Herbert Dubno[57] **ABSTRACT**

A tape machine for the playback of different types of magnetic tapes which are arranged in cassettes and the operation of which requires a switching of the tape

machine corresponding to their nature, which switching is effected by means of an opening which is, or is not, present in a given wall of the cassette, which comprises an operating-mode switch, a setting member for actuating the operating-mode switch, a spring for moving the setting member in one direction of displacement, and an actuating device for actuating the setting member in opposition to the spring, and actuated by the movement involved in a placing of a tape cassette on the machine. A lock holds the setting member fast when it is displaced in opposition to the spring, and a spring-loaded feeler member senses an opening in a cassette wall which determines the mode of operation and which is so coupled with the lock that it eliminates the action of the latter upon penetration into the opening in the cassette wall. An operating member can be brought manually into two positions associated with the modes of operation and is coupled with the lock and the setting member in such a manner that in one position it eliminates the action of the lock, and upon being brought into the other position displaces the setting member in opposition to the spring acting on it. The operating member is interlocked in an end position of displacement by the lock when there is no opening in the cassette wall, the operating member being returned by the setting member when the interlocking thereof is eliminated by removal of the cassette.

3 Claims, 3 Drawing Figures

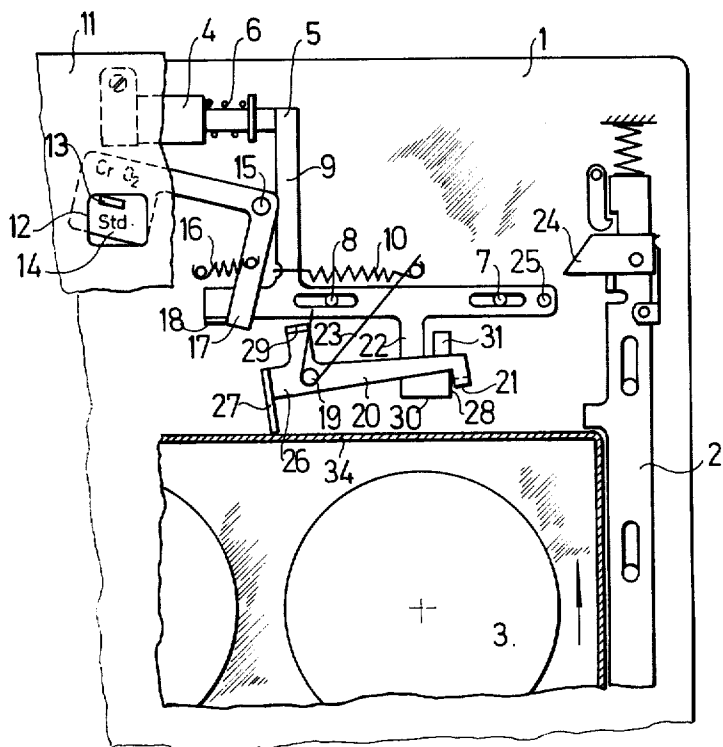


Fig. 2

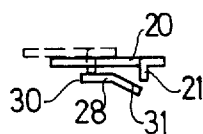


Fig. 3

OPERATING MODE SWITCH FOR DIFFERENT TYPE OF TAPES

The present invention relates to a device for a cassette tape machine for switching an operating-mode switch by a setting member which is displaceable against the action of a spring by the movement of insertion of the cassette and can be locked in its displaced position by a locking device. The effect of the locking device is dependent on the position of a feeler member which is pressed by spring force against a wall of the cassette and assumes a first position or a second position depending on the presence or absence of an opening in the cassette wall.

A change in the mode of operation of the machine is necessary, for instance, when the machine is to be operated with tapes of different properties. In order to facilitate such operations and avoid misadjustments, the mode of operation is automatically set by the insertion of the cassette into the machine in the manner indicated above.

Since, however, there are also cassettes which should have an opening identifying their tape characteristics but actually do not have it (so-called "old" cassettes), the apparatus must also be capable of being switched manually. In order to effect this, another switch for optional setting of manual or automatic switching can, for instance, be provided. However, this has the disadvantage that two operations are necessary, and further that the danger of erroneous operations is substantially increased.

In order to avoid these disadvantages, it was possible to provide, for the playback of the older cassettes, a manually operated auxiliary device which carries out the same switch function as the feeler lever when the motion of the latter is stopped prematurely because of the absence of an opening in the wall of the cassette. The disadvantages of such an arrangement are, that an erroneous switching could no longer be counteracted (except by means of an additional operating element) and that it is difficult to make the switching processes understood by the operator.

It is an object of the present invention to facilitate the adjustment of the mode of operation and to exclude as far as possible the possibility of erroneous operation.

According to the present invention there is provided a device for a cassette tape machine with an operating member which can be brought manually into two positions associated with the modes of operation in question arranged in such a manner that upon displacement in one direction it also eliminates the action of the locking device, and that by displacement in opposite direction it brings the setting member into the position in which it is shifted against the action of the spring, and that it is then brought back by the setting member when the latter returns into its initial position as a result of the absence of the interlock.

This arrangement makes it possible, with only a single operating member which can be brought into only two positions associated with the two modes of operation, as is true of any ordinary switch, to make a manual setting, regardless of a continuously acting automatic setting, which connection thereby permitting correction of erroneous settings at any time. As compared with an automatic switching device furthermore, only a single additional part is necessary.

These and other objects will become more readily apparent from the following detailed description of the

present invention, reference being made to the accompanying drawing, in which:

FIG. 1 is a partial elevation of a tape machine with the corresponding switching device, shown diagrammatically;

FIG. 2 is the same view in a different position of the switching elements of the device; and

FIG. 3 shows a detail of the interlock device, seen in the direction A of FIG. 1.

FIG. 1 shows an insertion device 2 (seen only in part) arranged displaceably on a base plate 1 in order to receive the tape cassette 3 and introduce it into the machine. An operating-mode switch 4 is arranged in fixed position on the base plate 1. Its setting element 5 is displaceable against the action of a spring 6. A setting member 9 for the actuating of the operating-mode switch 4 is displaceable on two fixed pins 7, 8 also against the action of a spring 10. The cover plate of the machine 11 has an opening 12 through which the handle 13 of an operating member 14 protrudes. The operating member 14 is swingable around a pin 15 and one of its arms 17 rests, under the action of a spring 16, against an abutment 18 on the setting member 9. The force of application is not sufficient to overcome the action of the spring 10 of the setting member 9. A double-armed lever 20 is supported for rotation around a pin 19. It rests, under the action of a spring 23, via a downward directed pin 21 (locking member), against a projection 22 of the setting member 9. Pin 21 and projection 22 form the locking device.

The manner of operation of the switch device is as follows:

If a tape cassette 3 is inserted by means of the insertion device 2 into the machine in the direction indicated by the upwardly pointed arrow, an oblique surface 24 provided on the insertion device 2 slides along a pin 25 fastened to the setting member 9 and thereby displaces the setting member 9 and with it the setting element 5 of the operating-mode switch 4 to the left in FIG. 1. The arm 17 of the operating member 14, which arm rests against the abutment 18 of the setting member 9 under the force of spring 16, follows along in the movement of the setting member 9. In this connection a marking corresponding to the displaced position of the operating-mode switch 4 becomes visible in the opening 12 in the cover plate 11. With the movement of the setting member 9, the pin 21 (locking member) fastened to the double-armed lever 20 has furthermore left the second abutment edge 30 on the projection 22 of the setting member 9, as a result of which the lever 20 turns in counter-clockwise direction under the action of the spring 23. This movement is limited by the second arm 26 of the lever 20 which bears a feeler member 27 at its end, the amount of limitation differing, depending on whether there is an opening 35 in the wall 34 of the cassette or not. If a cassette without such an opening (standard cassette) has been inserted then the pin 21 will come to lie in front of the edge (first abutment edge) 28 of the projection 22. If the displacement of the setting member 9 now terminates, since the oblique surface 24 of the insertion device 2 has left the pin 25, the setting member 9 cannot move back into its initial position, since the edge 28 of its projection 22 comes to rest against the pin 21 which acts as locking pawl (see FIG. 2). If a cassette with an opening 35 (CrO₂ cassette) has been inserted, then the pin 21 moves completely past the first abutment edge 28, so

that the setting member 9 moves back into its initial position as soon as the oblique surface 24 has left the pin 25. On the last portion of the return path, the abutment 18 of the setting member 9, via the arm 17, carries the operating member 14 and the double-armed lever 20 at its projection 29 back into the starting position which holds the feeler member 27 away from the cassette wall 34 (position Cr0₂). In order to make possible this return, the double-armed lever 20 can swing around its plane of swing or the pin 21 can be lifted and thus moved away by means of an oblique slide surface 31 on the projection 22 beyond the abutment edges 28 and 30 respectively (FIG. 3).

If a cassette which, like the standard cassette, has no opening, is inserted, but operation is to be effected in Cr0₂ position, it is merely necessary to switch, by means of the handle 13, the operating member 14 which is automatically set to standard position. With this switching movement, the arm 17 of the operating member 14 swings the double-armed lever 20 at its abutment 29 in clockwise direction until the pin 21 which holds the setting member 9 against the abutment edge 28 in standard position leases the abutment edge 28, whereby the setting member 9 slides back into the initial position, the Cr0₂ position, under the action of the spring 10.

If this setting was effected by mistake, this mistake can be corrected by simply switching the operating member 14, since the arm 17 of the operating member 14, upon being shifted into the "standard" position, carries the setting member 9 along with it beyond its abutment 18 until the pin 21 slides down from the first abutment edge 30 of the projection 22 and the feeler member 27 comes to rest against the wall 4 of the cassette and thus brings the pin 21 into its interlocked position in front of the second abutment edge 28, so that when the operating member 14 is released, the setting member 9 is prevented from sliding back and in this way also the operating-mode switch 4 is again locked in its previous position. The operating member therefore permits any desired manual setting which, however, is corrected again by automatic setting upon each new insertion of a cassette, so that an erroneous setting cannot have any effect on a subsequent cassette.

While I have disclosed one embodiment of the present invention, it is to be understood that this embodiment is given by example only and not in a limiting sense.

I claim:

1. A tape machine for the playback of different types of magnetic tapes in cassettes and the operation of which requires a switching of the tape machine corresponding to their nature, which switching is effected by means of an opening which is, or is not, present in a given wall of the cassette, comprising
 an operating-mode switch,
 a setting member for actuating said operating-mode switch,
 spring means for moving said setting member in one direction of displacement,
 an actuating device for actuating said setting member in opposition to said spring means, and actuated in each case with the movement involved in a placing of a tape cassette on said machine,
 locking means for holding said setting member fast

when it is displaced in opposition to said spring means,

a spring-loaded feeler member for sensing an opening in a cassette wall which determines the mode of operation and which is so coupled with said locking means that it eliminates the action of the latter upon penetration into said opening in said cassette wall, and

an operating member which can be brought manually into two positions associated with the modes of operation and which is coupled with said locking means and said setting member in such a manner that in one position it eliminates the action of said locking means, and upon being brought into the other position displaces said setting member in opposition to the spring means acting on it, said operating member being interlocked in an end position of displacement by said locking means when there is no opening in said cassette wall, and said operating member being returned by said setting member when the interlocking thereof is eliminated by removal of the cassette.

2. The tape machine defined in claim 1, further comprising

a double-armed lever having a first arm constituting said feeler member

a pin serving as an interlocking member and lying on a second arm of said double-armed lever and disposed substantially perpendicular to a plane of movement of said double-armed lever and a direction of movement of said setting member,

another spring means for pressing said double-armed lever with said feeler member in a direction towards said cassette wall,

said double-armed lever with said feeler member being capable of being brought by said operating member into a position withdrawn from said cassette wall,

a projection arranged on said setting member having an abutment edge which is limited on both sides and which is arranged lying transverse to the direction of movement of said setting member in such manner that when said setting member is displaced against the action of the spring, said pin is located in front of said abutment edge in a position which locks said setting member when said feeler member is in a first position resting against said cassette wall, said pin leaving said abutment edge towards a first side when said feeler member is in a second position in which it extends into an opening in said cassette wall, and said pin leaving said abutment edge towards said second side when said feeler member is in a third position which is withdrawn from said cassette wall.

3. The tape machine defined in claim 2, wherein said pin is supported resiliently in a direction perpendicular to the plane of its swing motion, and an oblique slide surface is located near said first side of said abutment edge and so arranged that said pin, upon return of said feeler member from said first position into said third position, can be brought, by means of its support with resilience perpendicular to its swinging motion, past said projection to said second side of said abutment edge.

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