

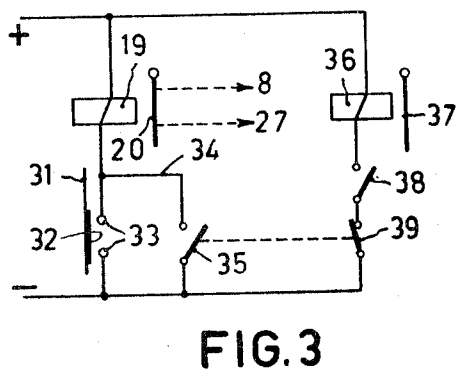
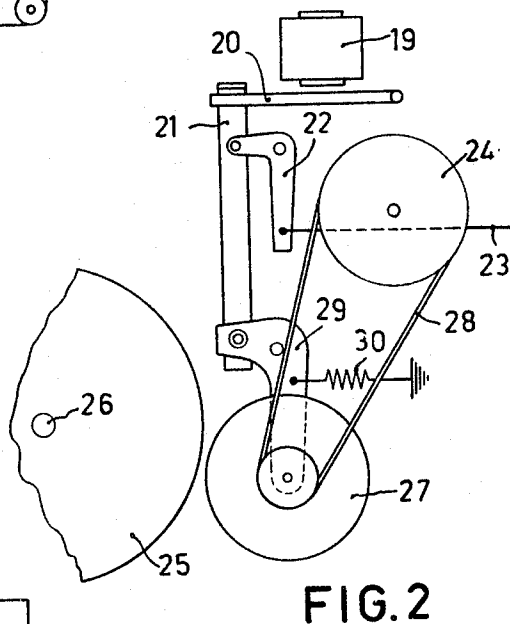
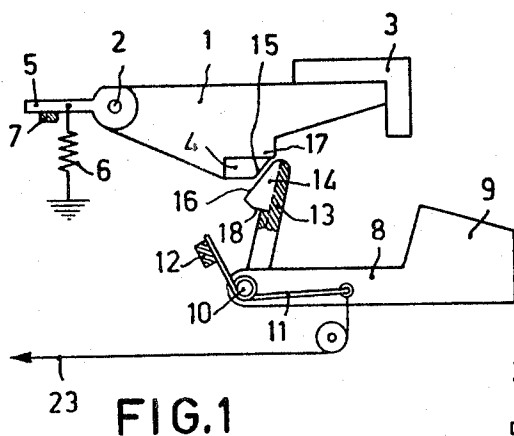
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MAGNETIC TAPE DICTATING MACHINE CONTROL

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MAGNETIC TAPE DICTATING MACHINE CONTROL

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6 Claims. (Cl. 274-11)

The invention relates to a magnetic recorder/reproducer particularly useful as a dictating machine in which at least a part of the movement of the sound carrier or tape can be controlled by means of push buttons or keys which can be locked in a common lock pawl and in which for automatic interruption of the movements of the sound carrier normally controlled by the keys an electromagnet is provided which releases the lock pawl and consequently said control keys when the current circuit of said electromagnet is closed by appropriate markings provided on the sound carrier.

As a rule, the fast forward and return movement of the sound carrier can be controlled by keys in this manner. In apparatus destined for general use, provision is also made of such control keys for the forward movement of the sound carrier at normal speed. In apparatus which is to be used for dictating purposes, a construction is preferred, however, in which for controlling the forward movement at normal speed, a completely independent control, in particular a push button is provided on a remote-control unit, for example a hand microphone or combination handset (combination microphone and loud-speaker), a foot operated paddle, and the like. Another requirement in dictating apparatus consists in that an independently controlled return or rewind of the sound carrier at lower speeds lower than fast rewind should be available for the dictated text to be easily rewound so it may be repeated and corrected respectively. However, such a slow independently controlled return of the sound carrier is also highly appreciated in apparatus for general use, since it facilitates the location of certain positions, for example for cutting a tape-shaped sound carrier. In apparatus for dictating purposes, remote control is desired as a rule for such a control also.

According to the invention, in a magnetic recorder/reproducer, in particular a dictating apparatus, in which movement of the sound carrier can be controlled by means of keys or push buttons each of which can be locked in its operating position by a common lock pawl and in which for the automatic interruption of the movements of the sound carrier controlled by the keys an electromagnet is provided which releases the key by actuating the lock pawl when current flows. The current circuit of the electromagnet can be closed via markings provided on the sound carrier, said electromagnet being also adapted for additionally controlling movement of the sound carrier. An additional current circuit comprising a separate switch is provided in parallel with the current circuit which can be closed by means of the markings on the sound carrier for the purpose herein-after noted.

It will be clear that in the construction of a magnetic recorder/reproducer according to the invention, indeed a means has to be provided by which the sound carrier is set in motion in the desired type of movement, for example a shiftable or swingable intermediate wheel engaging at the position required, but that for controlling this wheel substantially no additional investment is required, namely only one switch. The mounting of such a switch on the apparatus is very simple and does not

present the slightest difficulty to provide it on a remote control unit either.

The invention will now be described with reference to an embodiment. For purpose of description an apparatus is chosen, in which the fast forward movement and fast return movement of the sound carrier, as well as the control from reproduction to recording can be effected by means of lockable keys. Push buttons for actuating the forward movement at normal speed for recording and for actuating the return movement with low speed for correction are provided on a remote-control unit. However, the invention is not intended to be restricted to the example and the details described in the embodiment.

For further explanation, FIG. 1 shows a side view (partly diagrammatically) of the key arrangement provided on the apparatus.

FIG. 2 diagrammatically shows a device for obtaining the return of the sound carrier at low speed.

FIG. 3 shows the circuit arrangement used.

The juxtaposed operating keys or buttons 3 of the key arrangement or push button array of the recorder consist of plates 1 which are journaled in a swingable manner about a common shaft 2 which supports the keys on the recorder. Each plate has a projection 4 on each side; the front of each projection is bevelled. In addition, each plate 1 comprises a plate-shaped projection 5 from which the devices (idler pulleys) associated with each key for fast forward movement and fast return movement, or switching on to recording (not shown) are controlled. By springs 6 and stop members 7, the rest position of the operating key is determined. A lock pawl is also included in the push button array and consists of a plate 8 which extends along the row of keys and which is provided with a key or button 9. It is also supported on the recorder and journaled in a swingable manner about a shaft 10. A spring 11, together with a stop member 12, gives it an initial stress against the operating keys. In order that the plate 8 may operate as a lock pawl for the operating buttons 3, catches 13 are rigidly provided on it below each plate 1. As may be seen from the partial cross-section in the drawing, the catches 13 are provided with a recess 14 in order that the plates 1, when pressed down into operating position by buttons 3, are not hampered in their movement. The catches 13 are constructed so that the inclined faces 15 of the projections 4 provided on a plate 1 slide on the inclined face 16 of the associated catch 13 when an operating key is pressed down, thereby pressing down the catch and consequently also swinging the plate 8 against the action of the spring 11 until the projections 4 can slide below the face 18 of the catch 13 with their faces 17, as a result of which the operating button is locked in its operating position. By pressing down on the button 9, the whole lock-pawl arrangement can be released, locked operating keys being also released and returned to the rest condition. In accordance with the functions chosen by keys 3 in the example, the fast forward and/or fast return movement respectively of the sound carrier is discontinued, or the apparatus is switched back from recording to reproducing. The faces of the projections 4 as well as the catches 13 are constructed so that, when pressing down on an operating key, the lock pawl is released before the key is locked, in its operating position, thus movement of an operating key effects only a release of the lock pawl.

For the automatic release of the lock pawl by means of the sound carrier, an electromagnet 19 (FIG. 2) is provided which, on attraction of its armature 20, actuates a cable line 23 via a draw bar 21 and a rocking lever 22. The line 23 is attached to the plate 8 and releases the lock pawl arrangement. FIG. 2 also diagrammatically shows the device with which a slow return movement of the

sound carrier can be effected. For this purpose, the winding table 24 is driven by the fly wheel 25, the shaft 26 of which is constructed as a capstan, via a reducing intermediate wheel 27 and the belt 28. The intermediate wheel 27 is journaled on a rocking lever 29 which is movably connected to the draw bar 21. By this connection between flywheel 25 and wheel 27, the electromagnet 19 not only disengages buttons 3 and tape movement controlled thereby but also effects a slow return movement of the sound carrier. The spring 30 determines the rest position of the slow rewind idler 27 and cable line 23 is unloaded upon deenergizing electromagnet 19 as well as by actuating one of the keys of the key arrangement 3, 9.

There are numerous possibilities of closing the current circuit of the electromagnet 19 via markings provided on the tape. The circuit arrangement of the embodiment shown in FIG. 3 is based on an arrangement frequently used for releasing a lock pawl. In this arrangement on a non-conductive sound carrier 31 a conductive coating 32 is provided on a short section as a marking and in the circuit of the electromagnet 19, two contacts 33 are provided via which the sound carrier is conductive as it shunts the contacts 33 and thus energy is provided for the electromagnet 19. Parallel to this section of the current circuit of the electromagnet 19, which can be closed through the marking on the sound carrier, an additional current circuit 34 is provided which includes a switch 35. This switch 35 is provided on a remote-control unit (not shown), for example a combination handset, a foot-operated switch, or the like.

The conductive coating 32 closes contacts 33 only momentarily and serves only to energize solenoid 19 momentarily for releasing the locking pawl 8 and thus releasing the operating key 3. When the rod 21 is moved momentarily by the solenoid 19, activated by closure of contacts 33, the rewind idler 27 can engage the flywheel 25 momentarily, however, movement for releasing the lock pawl may be made shorter than movement for engaging the idler 27 with the flywheel 25 so that even an unobjectional engagement of elements 25, 27 is prevented. As a result, only the lock pawl is released by closure of the contacts 33. When switch 35 is closed, the solenoid 19 remains energized whereby the locking pawl is released so that a previously depressed control key 3 is released and the idler 27 is brought against the flywheel 25 so that the slow rewind operation is effected. Thus, one solenoid 19 is advantageously utilized to shut off the machine when contacts 33 are bridged by conductor 32 on tape 31 and for the slow rewind operation of the tape controlled by the switch 35 which is in parallel with the contacts 33.

Forward movement at normal speed of the sound carrier is controlled electromagnetically (not fully shown). In the apparatus, a magnet 36 is provided, the armature 37 of which moves a pressure roller (not shown) against the capstan 26. This can be done in a conventional manner and is consequently not shown. Magnet 36 is energized by closing the switch 38 also provided on the remote-control unit. In order to avoid the simultaneous operations controlled by the switches 35 and 38, a switch 39 which is connected in series with the switch 38, is also operated by the switch 35 in a manner such that, when closing the current circuit of the magnet 19, the current circuit of the magnet 36 is opened. This arrangement has the additional advantage that the switch 38 may remain in its operating position (for example by a locking mechanism), if the sound carrier is to return some distance by closing the switch 35. After completion of the return, by opening the switch 35, the forward movement immediately begins again.

If an additional type of movement is to be controlled by the electromagnet 19, for example the forward movement of the sound carrier at normal speed, the recording-reproducing switch is removed from the push button array 3, 9 and a separate switch on a remote control unit

or hand set is provided in order that during the normal forward movement one may switch at will to recording or reproducing. In that case, it is of advantage to connect said separate switch to the switch for the current circuit of the electromagnet, for example in a manner such that said switches release one another mutually and only simultaneous actuation of both switches renders the normal forward movement with recording possible.

What is claimed is:

1. In a magnetic tape recorder/reproducer particularly useful as a dictating machine the combination therewith comprising a slow rewind circuit means, an electromagnet controlled by said circuit, an armature moveable by said electromagnet, a rod connected with said armature and movable therewith, a first pivotal lever having one end connected with said rod and its other end connected with means for controlling termination of movement of said tape, a second pivotal lever having one end connected with said rod, a slow rewind idler wheel, a flywheel means and a winding table means, a belt drive between said rewind idler wheel and said winding table means, said rewind idler wheel being rotatably mounted on the other end of said second pivotal lever and moveable by said lever into driven engagement with said flywheel upon movement of said rod and armature for driving said tape in a rewind direction whereby said motion of said tape may be terminated and said tape rewound at a slow rewind speed.

2. In a magnetic recorder/reproducer particularly useful for dictating and in which defined movement of the sound carrier is controlled by a push button array on the recorder/reproducer and remotely controlled by markings on said sound carrier and/or push buttons on a handset and the like, the improvement comprising a lock pawl means for holding a push button of said push button array in its operative position for defined movement of said sound carrier, electromagnetic means operatively connected with said lock pawl means for releasing the lock pawl means whereby a push button of said push button array is disengaged and a discrete movement is imparted to said sound carrier; said electromagnetic means comprising an electromagnet, circuit means connected with said electromagnet, an armature operatively connected with said electromagnet, means connected with said armature for movement therewith, a first pivotally mounted rocking lever connected with said means connected with said armature at one end of said first lever, the other end of said first lever being connected with said lock pawl means via an intermediate member for imparting movement to said lock pawl to its release position, and a second pivotally mounted rocking lever connected with said means moveable with said armature at one end of said second lever, the other end of said second lever being connected with idler pulley means for engaging the idler pulley with a driven wheel for imparting said discrete movement to said sound carrier.

3. In a magnetic tape recorder/reproducer particularly useful as a dictating machine the combination therewith comprising a push button array on said recorder/reproducer including push buttons controlling defined movement of said tape, moveable lock pawl means for normally locking said push buttons in their operative position and upon movement of said lock pawl means releasing said push buttons and stopping the said defined movement of said tape controlled thereby; separate means including an idler wheel providing a discrete movement of said tape on electromagnet and an associated electric circuit means for energizing said electromagnet, an armature moveable by said electromagnet, and means operatively connected with said armature for movement therewith, said last named means including a first lever operatively connected with both said armature and said lock pawl means for release movement of said lock pawl means upon movement of said armature whereby said defined movement of said tape is interrupted, and a second lever operatively

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connected with both said armature and said separate means whereby said discrete movement of said tape is commenced.

4. A magnetic tape recorder/reproducer according to claim 3 wherein said electric circuit means includes contacts closed by a conductive strip on said tape for substantially instantaneously operating said electromagnet to impart said release movement of said lock pawl means.

5. A magnetic tape recorder/reproducer according to claim 3 wherein said electric circuit means includes a switch provided on a remote control unit for both said release movement of said lock pawl means and movement of said second lever for commencing said discrete movement.

6. A magnetic tape recorder/reproducer according to claim 3 wherein said electric circuit means includes contacts closed by a conductive strip on said tape and a circuit

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parallel thereto including a switch provided on a remote control unit.

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