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2,571,973

ANNUNCIATOR

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Fig. 1.

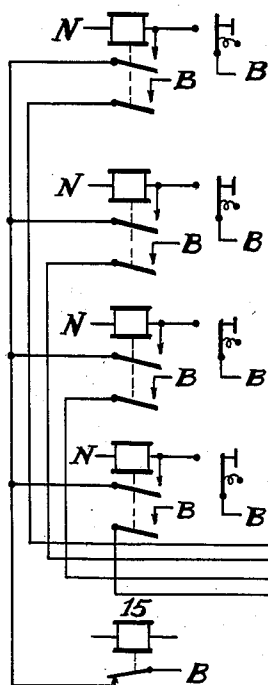
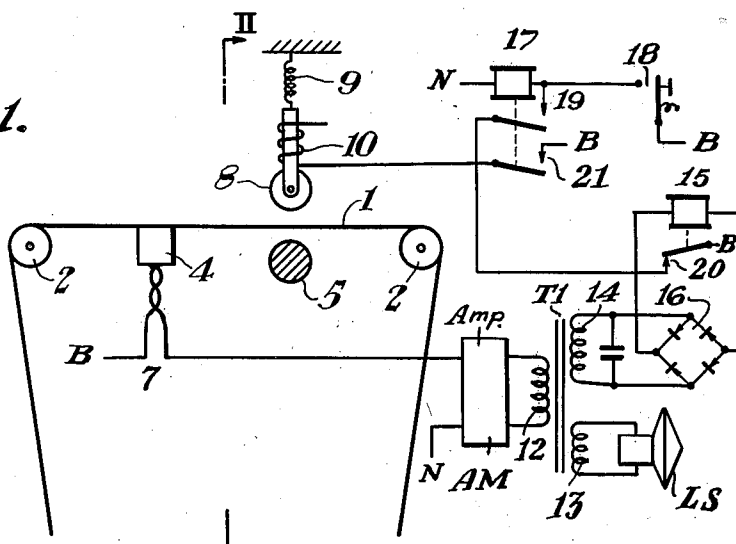


Fig. 2.

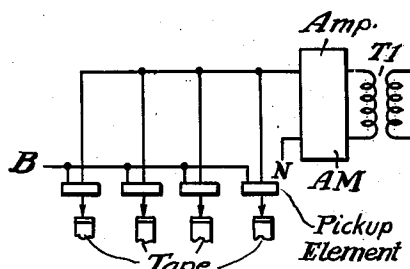


Fig. 3.

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UNITED STATES PATENT OFFICE

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ANNUNCIATOR

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This invention relates to annunciators of the kind used for making verbal announcements such as may be used for the conveyance of information or instructions to a congregation of people, for advertising and for like purposes, the announcements having been pre-recorded and being selected as and when required by manual or automatic means.

The annunciator may be advantageously employed, for example, at a railway station for the announcement of train departures, stopping stations and similar information and may be controlled by, or in conjunction with, the usual visual train describer system.

According to the invention, the required announcements are recorded on some form of magnetic wire or tape, such as impregnated plastic tape, by any suitable means and when it is desired to make any particular announcement the corresponding wire or tape is fed past an associated reproducing or pickup head. A number of tapes, each containing an announcement or announcements may be provided, a single motor driven shaft being employed to feed any selected tape through its associated pickup head and the feed being automatically interrupted at the end of the announcement.

The invention is illustrated, by way of example, by the accompanying drawing, Figure 1 of which is a diagrammatic view of one form of apparatus embodying the invention, Figure 2 being a view, also mainly diagrammatic, along the lines II—II of Figure 1. Figure 3 is a diagrammatic view showing the reproducing means which is common to the several individual pickup heads.

Referring now to the drawing, in one form of annunciator constructed in accordance with the invention, a number of magnetic tapes 1, in the form of continuous loops, upon each of which is recorded one or more announcements, are hung side by side each over a pair of longitudinally displaced pulleys 2 and kept in moderate tension by means of a loaded roller or pulley 3 which engages the lower or hanging part of the loop. Between the two longitudinally displaced pulleys the tape passes through a pickup head 4 of any suitable kind and over a shaft 5 which may be continuously rotated by means, for example, of a suitable electric motor 6.

The pickup head 4 is connected by means of leads 7 to a suitable form of amplifier and announcing apparatus. As shown in Figure 3 the individual pickup heads are connected in multiple across the input of an amplifier AM the output of which is connected to a primary winding

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12 of a transformer T1. The amplifier AM may be of standard form which is effective to amplify voice frequency energy. As shown in Figure 1, one secondary winding 13 of the transformer T1 is connected to an announcing device such as a loudspeaker LS. A second secondary winding 14 of the transformer T1 is connected to an automatic interrupting circuit to be described shortly.

The tapes 1 are not normally in contact with the rotating shaft 5 the latter being mounted slightly below said tapes. Above each tape, at the point where it passes over the rotating shaft, is mounted a roller 8 which is normally held out of engagement with the tape by any suitable means such as a biasing spring 9. The energisation of a solenoid 10 causes the downward movement of the roller which forces the tape down on to the rotating shaft. The tape, being thus gripped between the roller 8 and the shaft 5 is fed past the pickup head 4 which detects the announcement recorded on the tape.

The tape will evidently continue to be fed past the pickup head as long as it is gripped between the roller 8 and the rotating shaft 5. In order to stop the tape automatically, there may be recorded thereon, at the end of the announcement a short period of alternating current preferably of sub-audible frequency. This recorded alternating current is detected by the pickup head and amplified in the usual way. The secondary winding 14 which is coupled to the amplifier is tuned by a capacitor to form a tuned circuit responsive only to the predetermined frequency. The output from this tuned circuit is connected to a relay 15 through a rectifier 16 to operate the relay to de-energise the solenoid 10, in a manner to be described shortly, and thus allowing the biasing spring 9 to withdraw the roller 8 from the tape 1 which, being no longer gripped between the roller and the rotating shaft, will come to rest.

The movement of the tape to give an announcement may evidently be initiated by the energisation of the solenoid 10 upon the closure of a switch or the reception of an electrical impulse from other apparatus or, if desired, the roller may be caused to press the tape against the rotating shaft by manual or mechanical means. As here shown, each solenoid 10 is controlled by a relay 17 and a manually operable selector switch 18. The switch 18 is spring biased to an open position and when closed it completes an obvious pickup circuit to energize the relay 17. The relay 17 when picked up completes a stick circuit which

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retains the relay picked up after the switch 18 is restored, this stick circuit including a front contact 19 of the relay 17 and a back contact 20 of the relay 15. Relay 17 on picking up closing its front contact 21, completes an obvious circuit for the solenoid 10. Thus with the switch 18 closed, the corresponding solenoid 10 becomes energized and the solenoid remains energized until the portion of the tape having the current of predetermined frequency recorded thereon passes the pickup head to energize the relay 15 and open the stick circuit of the relay 17. As shown in Figure 2, each solenoid 10 is provided with a stick relay 17 and a selector switch 18 and the stick circuit of each stick relay 17 includes the back contact 20 of the relay 15. Furthermore, the shaft need not be permanently rotating, it may be caused to rotate only when an announcement is required. In these and other respects the invention is evidently not limited to the specified embodiment described and illustrated herein.

Having thus described my invention, what I claim is:

1. In an annunciator, a plurality of tapes each having a message recorded thereon, each said tape formed as a continuous loop, means to hang said tapes side by side in parallel planes with a given tension, an individual pickup head for each of said tapes, each said pickup head disposed for operative relationship with its tape and operable to detect the recording on the tape when the tape is moved relative to the pickup head, an announcing mechanism electrically connected to said pickup heads in multiple to be common to all of said tapes to announce the message of any one of the tapes when a tape is driven relative to its pickup head, a motor driven shaft mounted at right angles to the planes of said tapes and positioned for the tapes to pass above the shaft with a small clearance, a plurality of electromagnetic drive mechanisms one for each of said tapes and each of which drive mechanisms is provided with an engaging element, each said element spring biased out of engagement with the respective tape and operable to force the respective tape into driving engagement with said shaft when the drive mechanism is energized, and circuit means having connections with said drive mechanisms to selectively energize the drive mechanisms to select any one of said tapes to be driven to announce its message.

2. In an annunciator, a plurality of tapes each having a message recorded thereon and which message recording is followed by a period of alternating current recording of subaudible frequency, each said tape formed as a continuous loop, pulley means to hang the tapes side by side, a weight carried on each tape to provide a given tension thereof, means including an individual pickup head for each of said tapes, each said pickup head disposed adjacent its tape and operable to detect the recording on the tape when the tape is driven relative to the pickup head, an announcing means having electrical connections to each of said pickup heads and including means responsive to the recording of each tape, a motor driven shaft mounted at right angles to said tape loops and disposed for the tapes to pass over the shaft with clearance, a plurality of electromagnetic drive mechanisms one for each tape and each having a roller element which is spring biased out of engagement with the respective tape and operable to force the tape

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into driving engagement with said shaft when the drive mechanism is energized, circuit means to selectively energize said drive mechanisms to select any one of said tapes to be driven for announcing the recording on that tape, and other circuit means including a tuned circuit element and controlled by said announcing means to de-energize the selected drive mechanism in response to said period of alternating current recording of the tape.

3. In an annunciator, a plurality of tapes each having a message recorded thereon, each said tape provided at the end of its message with a strip having a preselected electrical characteristic, each said tape being formed as a continuous loop, pulley means to hang said tapes side by side, a weight hung on each tape to provide a given tension thereof, a pickup head disposed for operative relationship with each of the tapes and responsive to the recording of the tape when the tape is driven relative to the pickup head, an announcing means having electrical connection to all of the pickup heads and operable to announce the messages detected by a pickup head, a motor driven shaft mounted at right angles to said tape loops and positioned for the tapes to normally pass over the shaft with a given clearance, a plurality of electromagnets one for each of said tapes, each said electromagnet mounted adjacent its tape above said shaft, each said electromagnet having an element which is spring biased to a position out of engagement with its tape and is attracted into engagement with its tape to force the tape into driving engagement with said shaft when the electromagnet is energized, whereby to drive a selected tape relative to its pickup head to announce its message, circuit means to selectively energize said electromagnets to select any one of the tapes for driving the tape relative to its pickup head, and other circuit means controlled by said announcing means in response to said preselected electrical characteristic of said strip of the tape being driven to deenergize the selected electromagnet to stop the movement of the tape.

4. In an annunciator, a tape having a message recorded thereon, means to support said tape in a position for a portion of the tape to be horizontal, an announcing mechanism including means effective to announce the recorded message and having a pickup head disposed adjacent the tape, a motor driven shaft mounted at right angles to the horizontal portion of the tape and positioned for the tape to pass above the shaft with a small clearance, a drive mechanism having an electromagnet and an element which is spring biased to a position out of engagement with said tape and which element is attracted into engagement with the tape and forces the tape into driving engagement with said shaft when the electromagnet is energized, and circuit means including a control contact to at times energize said electromagnet.

5. In an annunciator, a tape having a message recorded thereon, said tape having a section following the recording of said message on which section there is recorded an alternating current of a selected frequency, means to mount said tape in a position in which a given portion of the tape is horizontally disposed, an announcing mechanism including means effective to announce said recorded message and responsive to the frequency of said alternating current and having a pickup head disposed adjacent the tape, a motor driven shaft mounted at right angles to said

horizontal portion of the tape and positioned for the tape to pass above the shaft with a small clearance, a drive mechanism having an electromagnet and an element which is spring biased out of engagement with said tape and which element is attracted into engagement with the tape and forces the tape into driving engagement with said shaft when the electromagnet is energized, a control relay, a circuit including a front contact of said relay to energize the electromagnet, means including a control contact to at times energize the relay, a circuit tuned to said selected frequency and coupled to said announcing mechanism, and circuit means including said tuned circuit and having connection to said relay to deenergize the relay in response to the recording of said alternating current passing the pickup head.

6. In an annunciator, a plurality of recording elements each adaptable of having a message recorded thereon, means for mounting said elements with each element normally stationary, said mounting means enabling each recording element to be driven exclusive of the other elements, a pickup head for each recording element, each pickup head mounted adjacent its recording element and operable to detect a message recorded on the recording element when the element is driven relative to the pickup head, an announcing mechanism including a device responsive to a recorded message, said mechanism having electrical connections to said pickup heads in multiple, a drive mechanism including an electromagnetic device for each of said recording elements, said drive mechanism being operable to drive a recording element when the electromagnetic device for that element is energized, an individual energizing circuit for each of said electromagnetic devices but normally ineffective to energize its device, control means having a plurality of positions one for each of said recording elements, and said control means having a contact for each of its positions and each of which contacts is interposed in the circuit for the electromagnetic device for the recording element corresponding to that position of the control

means, whereby any one of the recording elements can be selected for announcing its message with the nonselected elements remaining stationary.

7. In an annunciator, a recording element adaptable of having a message recorded thereon with a section following the message on which there is recorded a periodic current of a selected frequency, means for mounting said recording element with the element stationary, a pickup head mounted in operative relationship with said recording element and operable to detect said message and periodic current recording when the recording element is moved relative to the pickup head, an announcing mechanism including a device responsive to said message and a tunnel circuit which is effectively responsive to said selected frequency, said announcing mechanism having electrical connection to said pickup head, a drive mechanism including an electromagnet and a driving means, said driving means having driving relationship with said recording element and effective to drive the element only when the electromagnet is energized, a control relay, a circuit including a front contact of said relay to energize said electromagnet, control means including a normally open contact to at times energize said relay, and circuit means including said tuned circuit and having connection with said relay to deenergize the relay in response to the detection of said periodic current recording by the pickup head.

ALEC HERVEY BENNETT WALKER.

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