Aug. 8, 1933. J. L. FRANKLIN 1,921,742

ANNOUNCING APPARATUS

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Fig. 1.

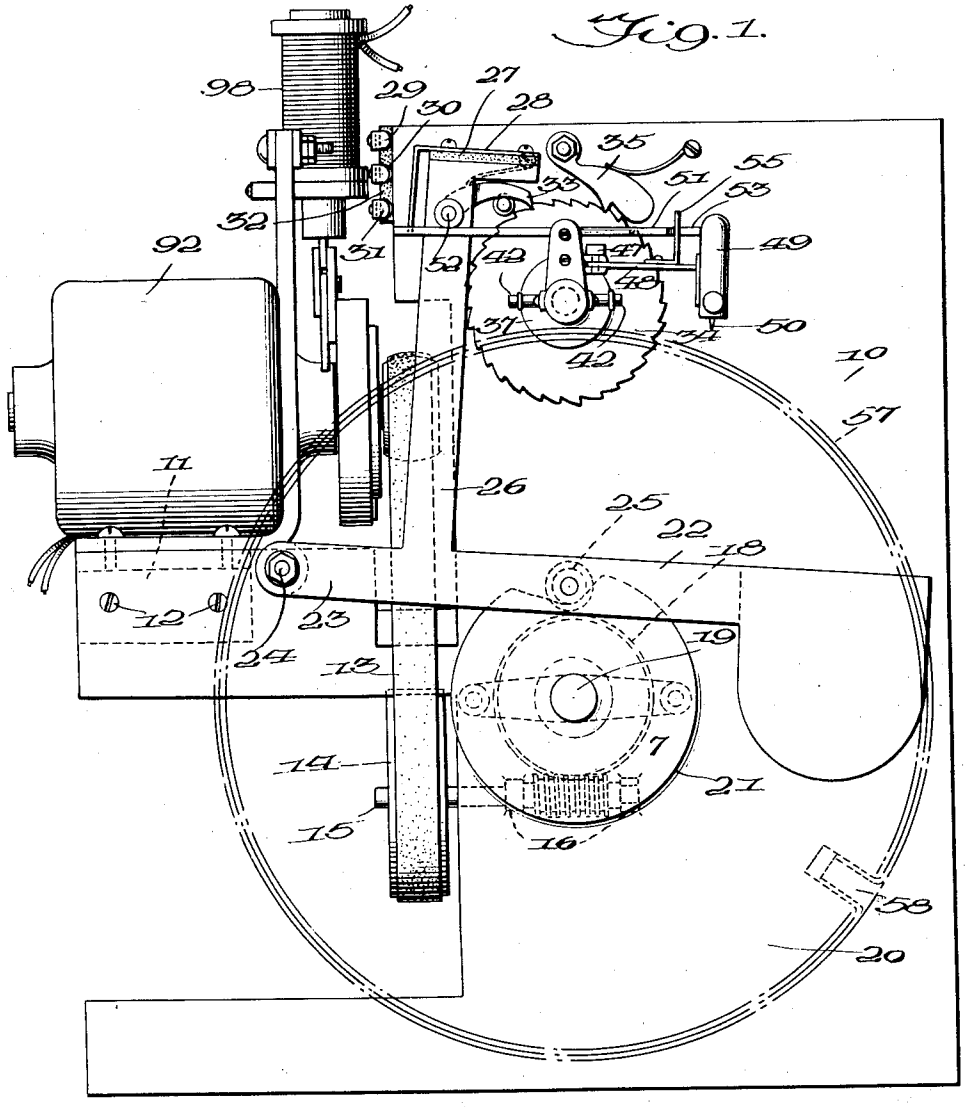
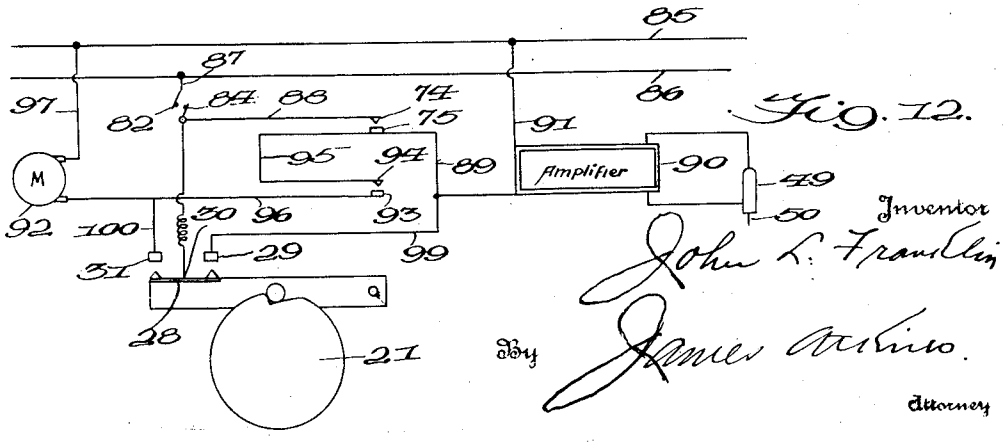


Fig. 12.



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Fig. 2.

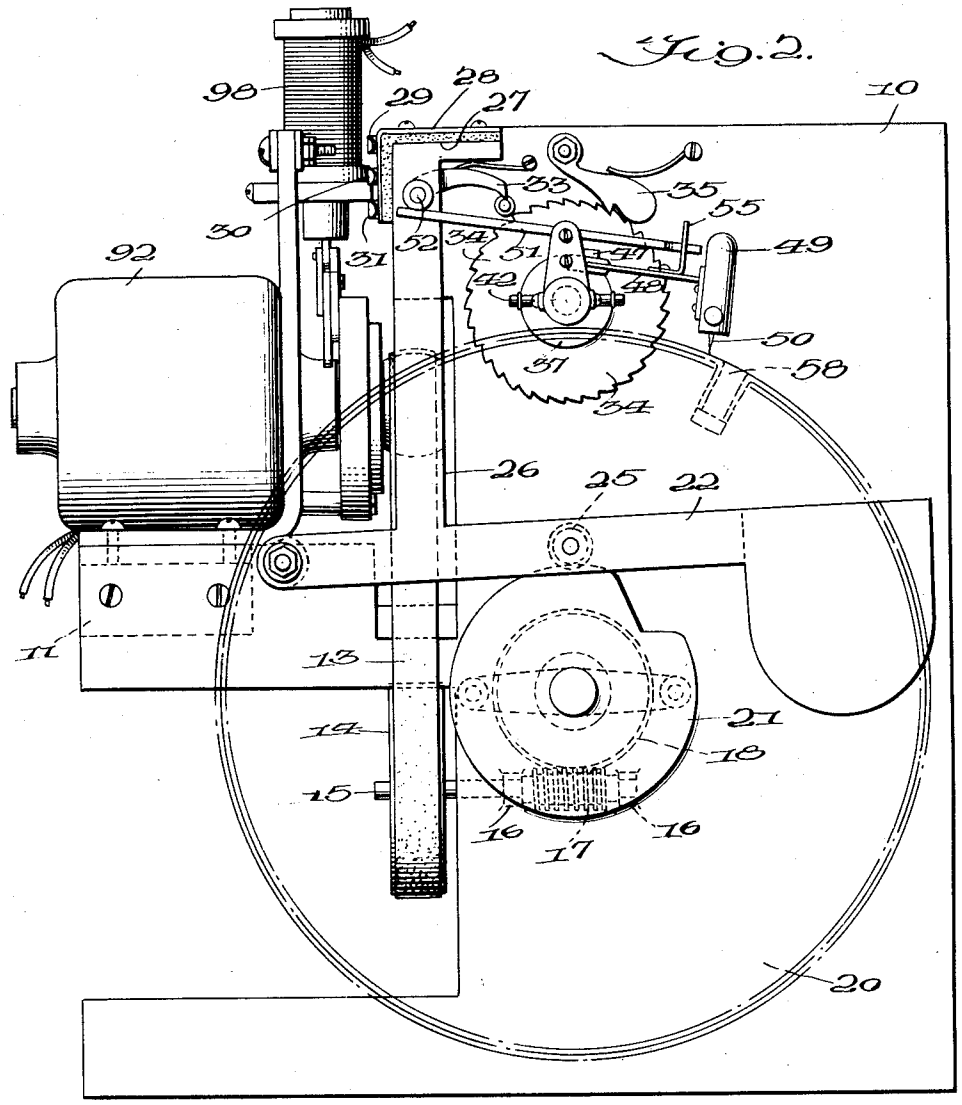


Fig. 5.

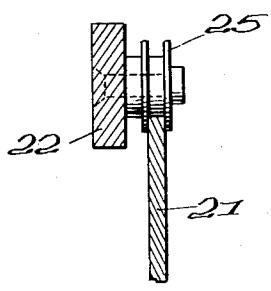
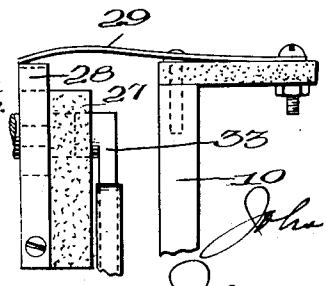


Fig. 6.



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ANNOUNCING APPARATUS

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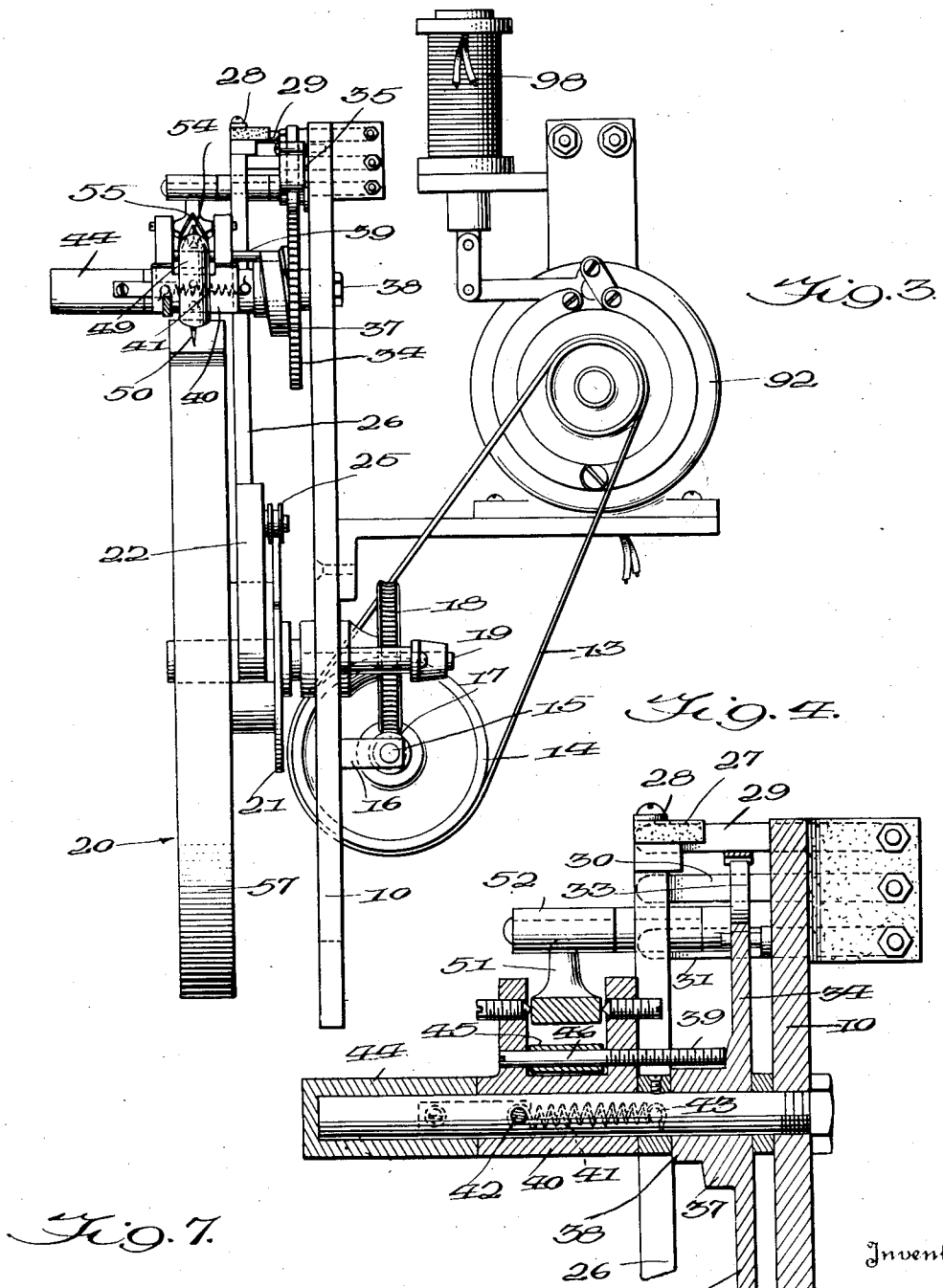
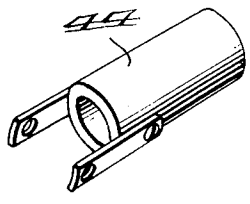


Fig. 3.

Fig. 4.

Fig. 7.



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ANNOUNCING APPARATUS

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Fig. 8.

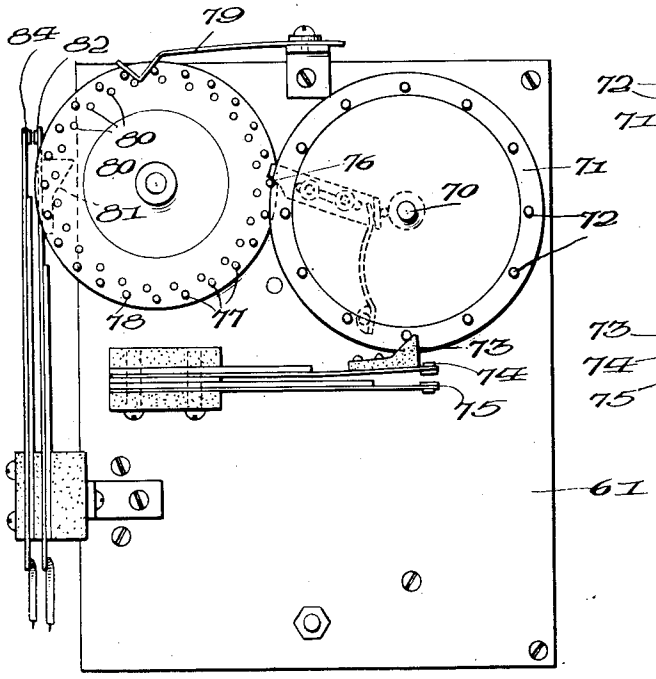
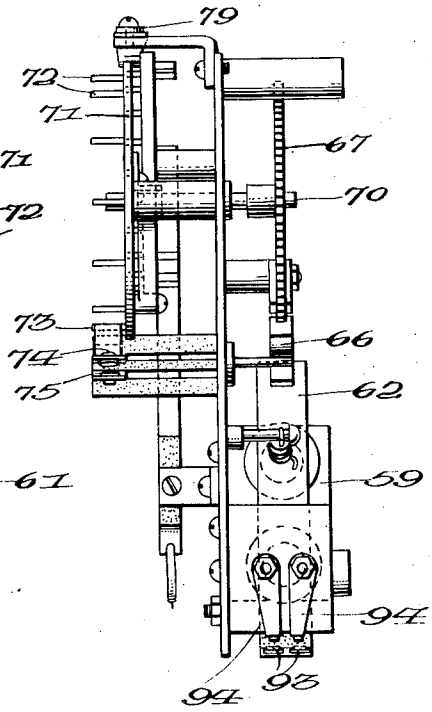


Fig. 9.



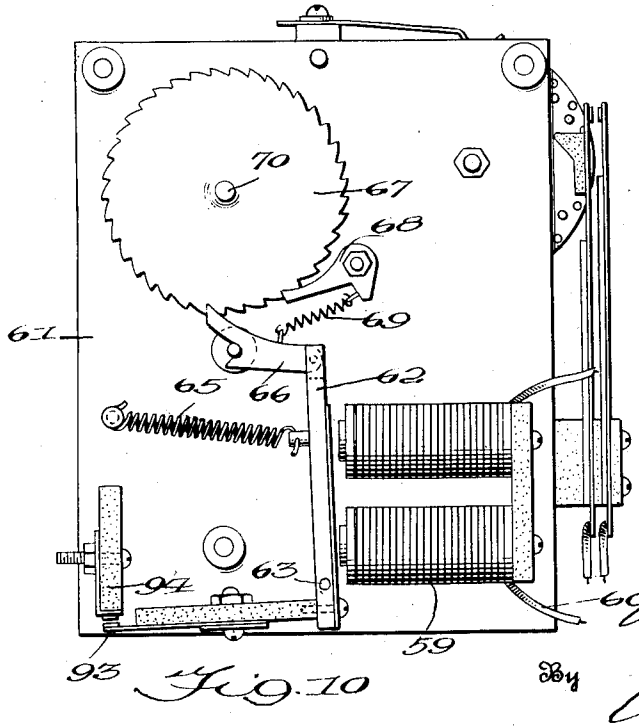
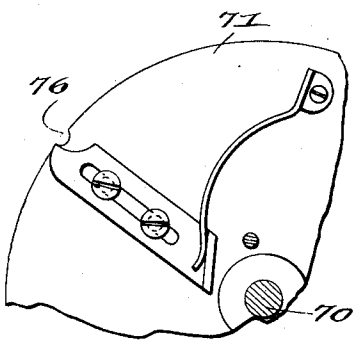


Fig. 10.

Fig. 11.



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UNITED STATES PATENT OFFICE

1,921,742

ANNOUNCING APPARATUS

John L. Franklin, Atlanta, Ga.

Application Novemer 19, 1931
Serial No. 576,192

9 Claims. (Cl. 179—100.4)

This invention relates to improvements in announcing apparatus, and the primary object of the invention is to provide an improved mechanism which will make an announcement periodically, the mechanism being time controlled so that it will start and stop automatically.

Another object is to provide mechanism of this character, including a sound record and an amplifier, the electromagnetic pick-up of the latter being shifted automatically while in elevated position for moving from one line of the record to an adjacent line of the same. Due to the improved means which I employ, for holding the pick-up in elevated position, I can use inexpensive recording means of the kind in which the message or messages to be announced are recorded on strip material which may be placed on the periphery of a wheel or drum; the ends of the strip forming a seam or gap which may pass by the needle of the pick-up while the latter is in elevated position.

A further object is to furnish a machine of this kind in which the pick-up is supported by a novel carriage that permits the needle to have a universal movement while it is in contact with the record, and yet which lifts and lowers the pick-up in such a way that the needle is placed in exactly the right position.

A still further object is to provide improved means for returning the pick-up supporting carriage to initial position after the machine has been announcing over a definite period of time, such means including an air cushion or dash pot for absorbing the shock when the carriage is returned.

A further object is to furnish improved driving means including a pawl and ratchet actuated by a cam controlled lever, whereby as the lever is lifted out of a notch on the cam, the pawl is held out of engagement with the ratchet until the lever drops back into the notch. This operation simultaneously lifts the needle off the record and shifts the carriage so that the pick-up is ready to play a different line the next time it is automatically put into operation.

Another object is to furnish a mechanism of this character, including novel time controlled switches which cooperate with an amplifier and motor in such manner as to cause the amplifier to heat up to a desired degree before the motor is actuated to drive the sound record holder and lower the needle on to the record.

With the foregoing objects outlined and with other objects in view which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings,

Fig. 1 is an elevation of the main portion of the apparatus when the record is not in motion.

Fig. 2 is a similar view while the record is in motion.

Fig. 3 is an end view of the mechanism shown in Figs. 1 and 2.

Fig. 4 is a vertical sectional view of a detail and showing the means for feeding the pick-up step by step in one direction, and for returning it in the opposite direction.

Fig. 5 is a vertical sectional view showing the roller of the main lever resting on the notched disk which forms part of the apparatus.

Fig. 6 is a detail view of one of the switches of the apparatus.

Fig. 7 is a perspective view of a portion of the dash pot of the pick-up carriage.

Fig. 8 is an elevation of one side of the timing switch.

Fig. 9 is an edge view of the same.

Fig. 10 is an elevation of the timing switch from the opposite side.

Fig. 11 is an elevation of a portion of the mechanism for transferring movement from the minute wheel of the switch to the twenty-four hour wheel of the switch.

Fig. 12 is a wiring diagram of the apparatus.

The mechanism comprises a main plate 10 which is preferably formed of metal and vertically arranged. An electric motor base 11 is secured to the supporting plate by any suitable means, such as screws 12, and the shaft of the motor 92, by means of a belt 13, transmits movement to a pulley 14 while the motor is running. Pulley 14 is fixed to a shaft 15 journaled in brackets 16 supported by the plate, and the shaft has a worm 17 that drives a worm gear 18 fixed on a shaft 19 which extends through the plate.

At the side of the plate opposite to that where the worm gear is arranged, a drum or wheel type record support 20 is fixed on the shaft, and between this drum and the plate, a notched disk or cam 21 is fixed to the shaft. The notched disk functions to raise and lower a lever 22 having one of its ends 23 pivotally connected to the plate by a screw or bolt 24. The lever carries a grooved roller 25 which rolls on the periphery of the notched disk, and it will be understood that when the disk is revolved, the lever will be elevated, and then lowered.

An arm 26 projects upwardly from, and is carried by the lever, and this arm is provided at its upper end with a block of insulation 27 to which an angular electric contact member 28 is connected. This member cooperates with electric contacts 29, 30 and 31, supported on an insulated block 32 that is mounted on the plate 10. The purpose of these contacts will be referred to later.

A pawl 33 is pivotally mounted on the arm and acts when the lever is lowered, to advance a ratchet wheel 34 one step in one direction; and another spring pressed pawl 35, which is pivotally mounted on the plate, prevents the ratchet from rotating in the opposite direction.

The movement of the ratchet wheel 34 is used for feeding an electromagnetic pick-up 49 axially of the record holder, and for this purpose, a spiral cam 37 is fixed to rotate with the ratchet wheel 34 on the supporting axle 38, which is carried by the plate 10. The cam cooperates with a pin 39 that is fixed to a carriage 40 that is slidably mounted on the axle 38 and is prevented from turning on said axle by any suitable spline.

For the purpose of yieldingly urging the carriage toward the cam so that the pin will be maintained in contact with the cam track, any suitable means may be used. For example, coil springs 41 may be employed, and each spring will have one of its ends connected to a finger 42 on the carriage, and a finger 43 that is fixed on the axle adjacent to the cam.

At the outer end of the carriage, I arrange a cylinder 44 which will cooperate with the outer end of the axle to form a dash pot, whereby when the carriage is returned to initial position by the coil springs, the dash pot will absorb the shock.

The electromagnetic pick-up is supported by the carriage in the following way. A clip 45 is pivotally mounted on a shaft 46 carried by the carriage and arranged parallel to the axle. A substantially vertically disposed pivot pin 47 connects the clip to a supporting member 48 that carries the electromagnetic pick-up 49 which has a needle 50. In order to move the electromagnetic pick-up toward and away from the record holder, a lever 51 is also pivotally mounted on the carriage, and one end of this lever is slidably engaged by a pin 52 which is fixed to the arm of the main lever. The other arm of the lever 51 is triangular in cross section, as shown at 53 to provide a knife edge that engages a similar shaped notch 54 in a bracket 55 which is secured to the radio pick-up arm. This arrangement permits the electromagnetic pick-up to shift, due to the travel of the needle in the grooves of the record 57, and also permits the electromagnetic pick-up to be raised and lowered and shifted for engagement with adjacent lines of the record.

Due to the arrangement above described, the sound record may be of relatively inexpensive material. It may be manufactured of any thin sheet of any record material, such as aluminum or celluloid, because it is unnecessary to have a continuous record. In other words, the record 57 may be made of strip material with its ends anchored as shown at 58 in a notch in the periphery of the record drum, and of course the mechanism is so timed that when the gap is beneath the needle of the electromagnetic pick-up, the latter will be in raised position.

In practice, of course, the record may be continuous, or of the intermittent variety, and the record may be revolved one or more revolutions every one or more minutes. For example, in the mechanism disclosed, an announcement is made every five minutes, and this may be an announcement of the time, an advertisement or the like. With regard to the time control, it will be observed that an electro-magnet 59 is connected by wiring 60 to any suitable clock-work switch, which will, by means of a battery 61 or the like, interposed in the circuit thus formed, energize the electro-magnet every minute. Consequently, each time the magnet is energized, it will pull down an armature 62 which is pivotally mounted at 63 on an auxiliary supporting plate 64 which may be carried by the main supporting plate 10. When the current is released, the armature will be raised by a coil spring 65 which has one of its ends connected to the armature and its other end anchored to the auxiliary supporting plate. Each time the armature is rocked, a pawl 66 at end engages a second ratchet wheel 67 and advances the same one step in one direction. Another pawl 68 prevents reverse rotation of this ratchet wheel, and these pawls are preferably connected by a coil spring 69. The shaft 70 on which the secondary ratchet wheel is fixed, extends through the auxiliary supporting plate and is fixed at its outer end to a pin wheel 71 which may have any number of equally spaced projecting pins 72. In the present instance, there are twelve of these pins, spaced for actuating at five minute intervals, the insulated abutment 73 of the movable contact 74 of a switch which is supported in insulated manner from the auxiliary plate and has a stationary contact 75. The purpose of this switch will be hereinafter described.

A notch 76 in the pin wheel 71 cooperates with pins 77 on a twenty-four hour wheel 78 for advancing the latter one step every hour. In other words, each time the pin wheel 71 makes a complete revolution, it will turn the twenty-four hour pin wheel one step. The latter is prevented from accidentally shifting by a spring detent 79 which is supported by the auxiliary plate and has a nose to extend between any two adjacent teeth of the twenty-four hour wheel. The latter is employed to control the hours during which the machine will operate. For example, it it is placed in a store, it may be desirable to have the machine make announcements between eight in the morning and six in the evening, and then to remain silent from then until the next morning at eight o'clock. Therefore, the twenty-four hour wheel is provided on the side opposite its pins, with other projecting pins 80 that cooperate with the insulated abutment 81 of the movable contact 82 of a main control switch which is suitably insulated and mounted on the auxiliary plate, and cooperates with the stationary contact 84 of that switch. As long as any one of the pins 80 is in engagement with this main switch, the machine will be in condition to make announcements, but when such pins disengage the main switch, the latter will automatically open the control circuit.

Referring to the wiring diagram in Fig. 12, it will be noted that 85 and 86 are the line wires, and that the wire 86 is connected by a conductor 87 to the movable contact 82 of the master switch which engages the stationary contact 84 of that switch whenever the twenty-four hour wheel 78 is in position to close that switch. Another wire 88 connects the wire 87 to the movable contact 74 of the pin switch which cooperates with the stationary contact 75 of that switch. The contact 75 is joined by a wire 89 to an amplifier 90 that is operatively connected to the pick-up 49 and is also joined by a wire 91 to the line 85. It will therefore be understood that when the switch

82—84 is closed, and one of the pins 72 operates the switch 74—75, the current will flow through 86, 87, 88, 74, 75, 89, 90, 91 and 85 through the amplifier, and this will be done about one minute prior to the time that the motor 92 is set in operation. As a result, the amplifier will be warmed up before the motor starts.

While the circuit is completed through the amplifier, and one minute after the completion of such circuit, the electro-magnet 59 will again attract the armature 62, and this will cause a movable contact 93 on that armature to engage a stationary contact 94, (see Fig. 10). It will be observed from the wiring diagram that this stationary contact 94 is connected by a wire 95 to the contact 75, and consequently, when the contact 93 engages the contact 94, current will also flow by means of wires 96 and 97 through the motor 92. This motor, if desired, may have a brake controlled by a solenoid 98 that may be interposed in the wire 97, whereby when the current flows through 96 and 97, the brake will be released and the motor can start.

From Fig. 1 it will be observed that as soon as the motor starts, it rotates the disk 21 in the direction of the arrow, and this causes the disk to lift the lever 22, with the result that the movable contact 28 at the top of the arm 26 bridges the contacts 29, 30 and 31 which are also shown in the wiring diagram. The contact 29 is connected by a wire 99 to the amplifier, and the contact 31 is connected by a wire 100 to the wire 96. Therefore, as soon as the switch 28, 29, 30, 31 is closed, the circuit will be completed through the amplifier, and through the motor, even though the contacts 74, 75 and 93, 94 are separated, due to movement of the switch mechanism illustrated in Figs. 8 to 11 inclusive. Obviously, the running of the motor causes the disk 21, as well as the record drum 20 to complete a revolution while the needle of the pick-up is resting on the record. As soon, however, as the wheel 25 of the main lever again reaches the notch of the disk 21, it will drop into the notch, and consequently, the circuit will be again broken through the motor as well as through the amplifier.

After an announcement has been made by the contact of the record with the pick-up needle, and the parts come to rest in the position shown in Fig. 1, of course, the electro-magnet 58 of Figs. 8 to 11 will continue to operate each minute, but the motor and amplifier will only be brought into operation every five minutes, or as the succeeding pins 72 of the minute wheel 71 come into engagement with the block of the switch 74, 75.

While I have disclosed what I now consider to be a preferred embodiment of the invention in such manner that it may be readily understood by those skilled in the art, it is manifest that changes may be made in the details disclosed, without departing from the spirit of the invention, as expressed in the claims.

What I claim and desire to secure by Letters Patent is:

1. An announcing apparatus including a movable sound record, an electromagnetic pick-up having a needle adapted to intermittently engage said sound record, an amplifier operatively connected with the pick-up, an electric motor for moving said record and for controlling the engagement of the pick-up needle with the record, and time controlled electrical means for intermittently energizing the amplifier and motor successively, whereby the amplifier is warmed up before the motor is actuated.

2. An announcing mechanism as claimed in claim 1, including a carriage for the pick-up movable along the record, and universally movable means connecting the pick-up to said carriage.

3. An announcing mechanism as claimed in claim 1, comprising a carriage movable along the record, an arm pivotally mounted on the carriage and carrying the pick-up, and a support for said arm, said arm being rockably supported by the support.

4. An announcing mechanism as claimed in claim 1, comprising a cam operatively connected to the motor and intermittently driven by the latter, a carriage movable along the record and actuated step by step by said cam, and a support for the pick-up carried by said carriage.

5. An announcing mechanism as claimed in claim 1, comprising a cam operatively connected with the motor and intermittently driven by the latter, a carriage moved step by step by said cam, a support for the pick-up mounted on the carriage, means for moving the carriage toward the cam after the carriage has been moved a predetermined distance along the record, and a dash pot for absorbing the shock of the movement of the carriage toward the cam.

6. Announcing mechanism as claimed in claim 1, including a carriage for the pick-up, means including a ratchet wheel for feeding the carriage step by step, a notched disk operatively connected to and driven by the motor, a lever reciprocated by the notched disk, and a pawl actuated by the lever and engageable with said ratchet wheel.

7. Announcing mechanism of the kind claimed in claim 1, including a time controlled electromagnet, an armature actuated by the magnet, a minute wheel operatively connected to and actuated step by step by the armature, a minute switch actuated by the minute wheel and operatively connected electrically to the amplifier, a second switch actuated by the armature and electrically connected to the motor, an electric circuit in which the switches, motor and amplifier are interposed, a lever operatively connected to and actuated by the motor, and other switches actuated by the lever and operatively connected to the motor and amplifier for completing the circuit through the motor and amplifier after the minute wheel switch and second switch have been opened.

8. Announcing mechanism as claimed in claim 1, including a minute wheel, means for rotating said wheel step by step, spaced pins on the minute wheel, a switch actuated by said pins, and an electric circuit, said pin operated switch and the amplifier being interposed in said circuit.

9. Announcing mechanism as claimed in claim 1, including a time controlled electro-magnet, an armature actuated by the magnet, a switch controlled by the armature, and an electric circuit in which the switch and motor are interposed.

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