May 22, 1951 D. GRIFFITH 2,554,404

CONTROL SYSTEM FOR ANNUNCIATORS

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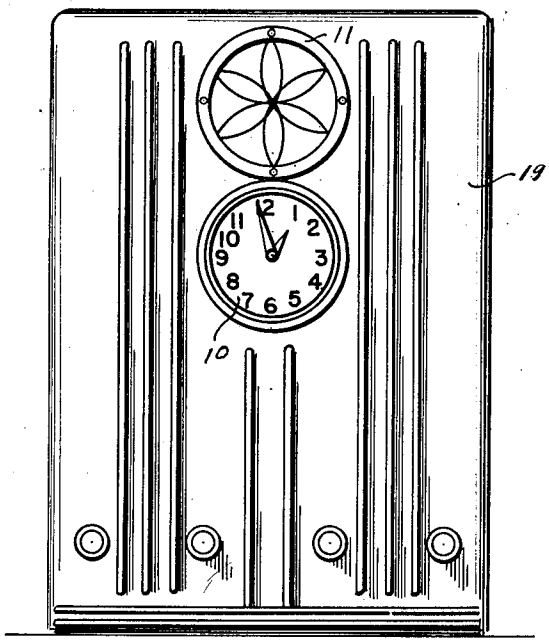


FIG. 1.

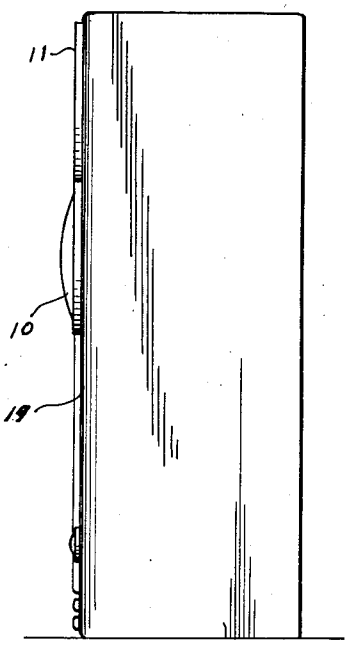


FIG. 2.

FIG. 3.

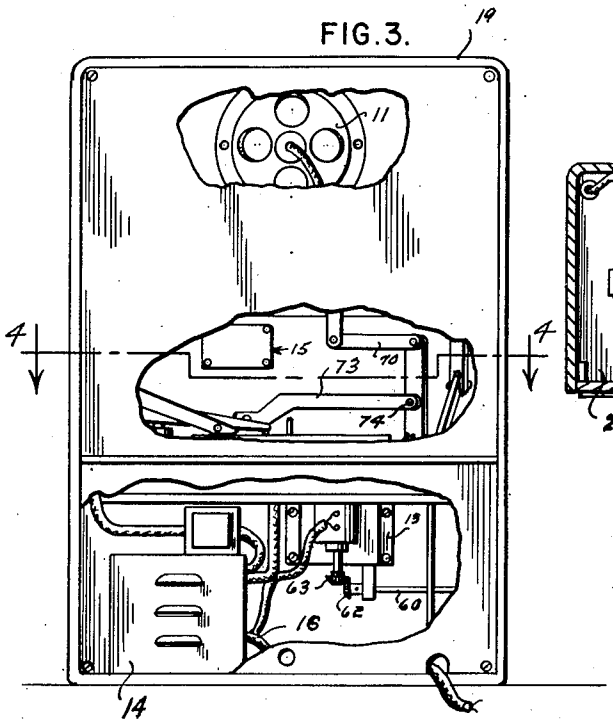
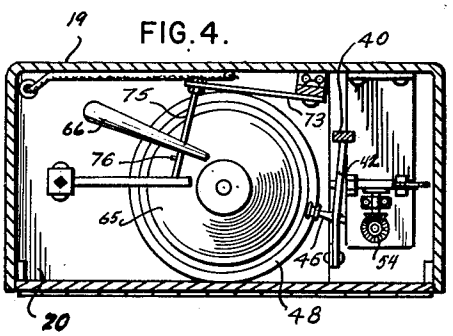


FIG. 4.



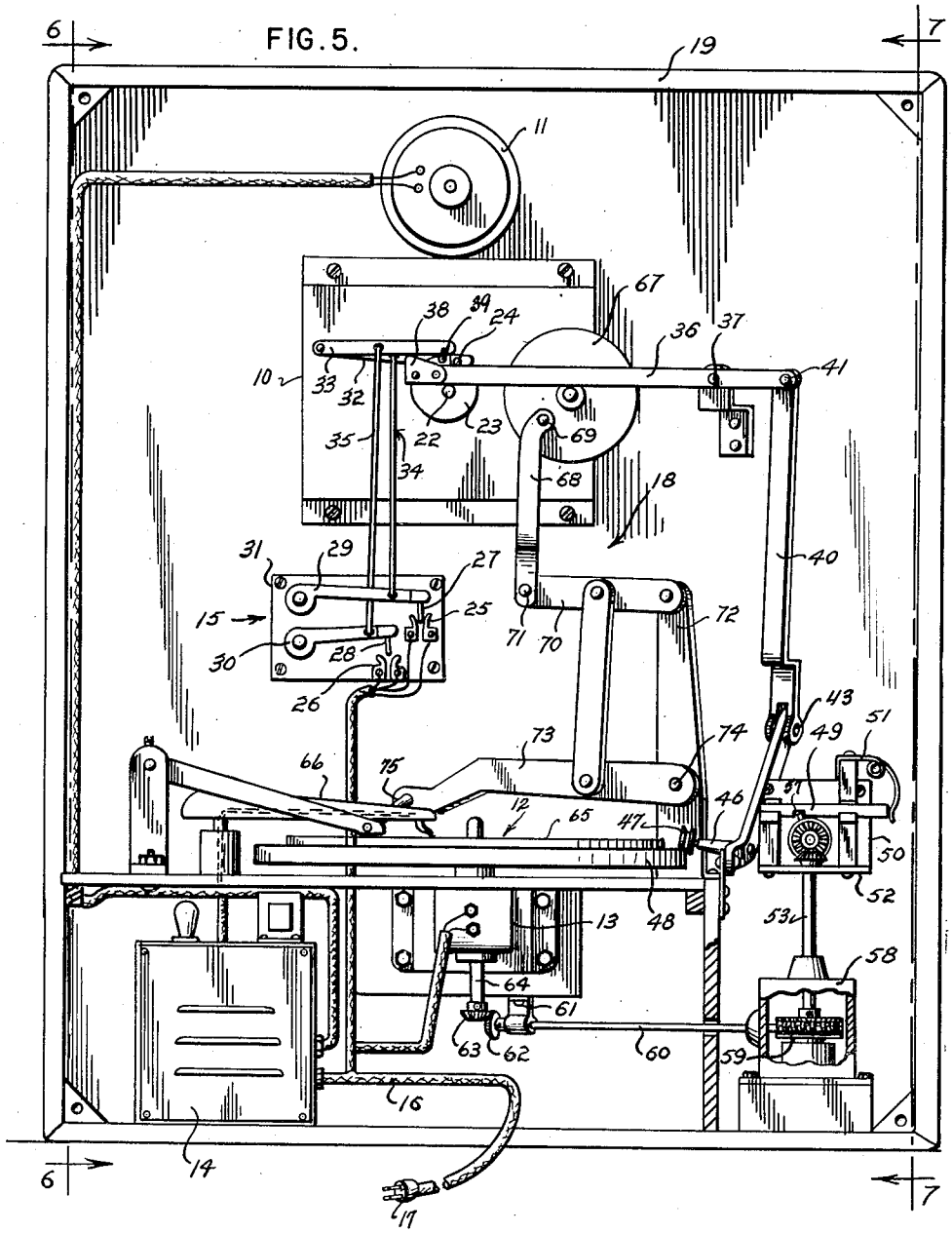
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FIG. 5.



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FIG. 6.

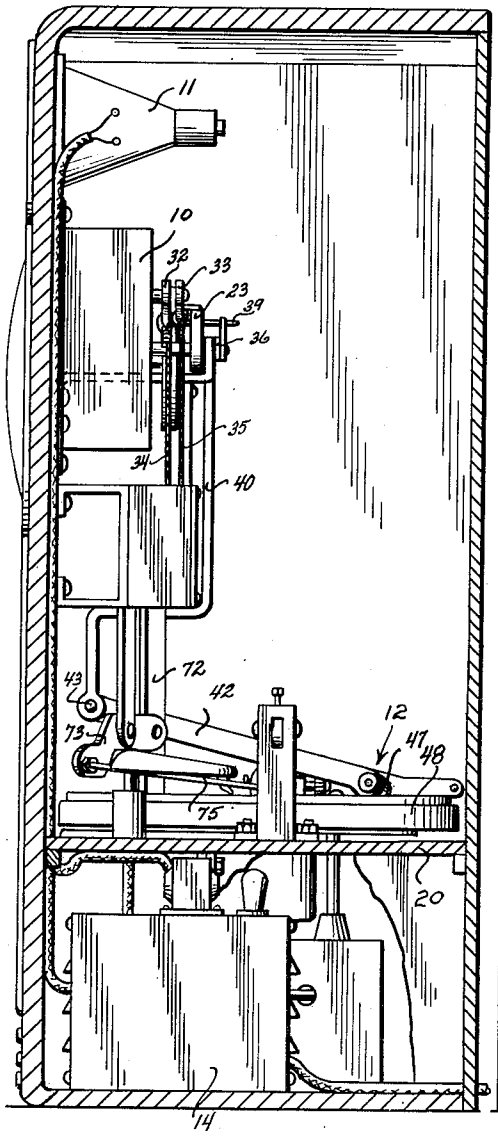
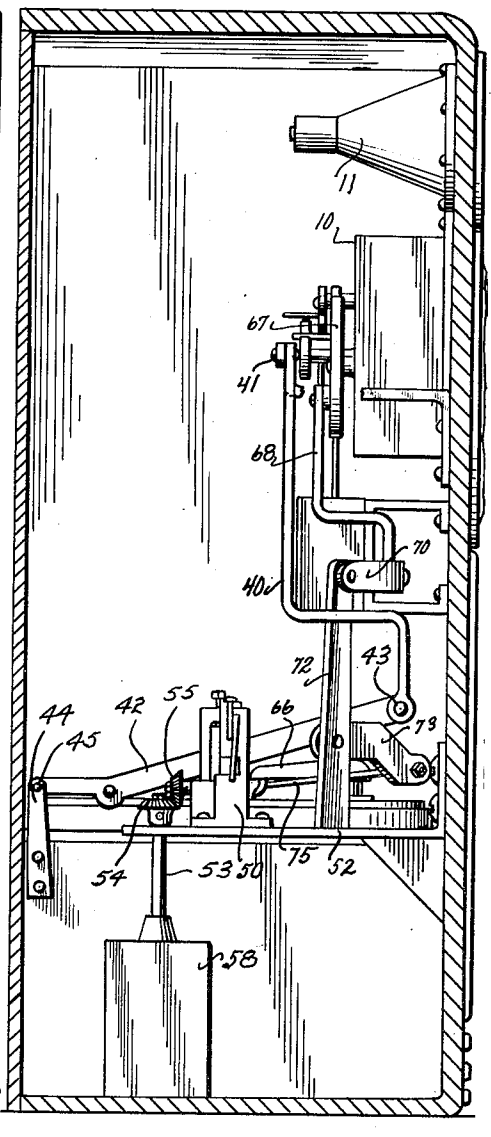


FIG. 7.



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CONTROL SYSTEM FOR ANNUNCIATORS

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6 Claims. (Cl. 179—2)

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The present invention relates to annunciator systems, and more particularly has reference to a reproduction device which is adapted to give audible signals at predetermined time intervals, the reproduction device being actuated by a control mechanism operatively associated with a clock. More specifically, the arrangement is such that the time of the day is announced at any given interval, it being, of course, understood that other types of audible announcements may be made.

I am, of course, well aware that numerous annunciator systems have heretofore been devised for making announcements at pre-selected periods and that such systems include a record player, an amplifing means therefor, the operation of the record player being controlled by the medium of a clock. However, these prior systems have been quite complicated in structural details which not only presents a serious problem from the maintenance and repair point of view but also increases the cost of the system to make widespread use of such equipment prohibitive. Accordingly, one of the important objects of this invention is to provide a system of the character described which does not possess the above and other disadvantageous features.

A further object of the present invention is to provide a novel control mechanism for use with a clock either electric or spring driven for operating the turntable of a conventional reproducing machine.

Another object of the invention is to provide a clock controlled mechanism wherein at a predetermined time cycle the mechanism becomes effective to initiate rotation of the turntable whereby an audible announcement such as the time is given, and upon cessation of the time cycle, the movement of the turntable is arrested.

Still another object of my invention is to provide a control mechanism for annunciator systems of the character described which may be readily incorporated with all types of clocks and which may be easily and inexpensively manufactured.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein

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like characters denote corresponding parts in the several views, and in which:

Figure 1 is a front view of a cabinet equipped with the control assembly of the present invention.

Figure 2 is a side elevation of the device shown in Figure 1.

Figure 3 is a rear view, partly broken away, showing the means whereby the turntable is driven, together with the electrical connections between the amplifier, the speaker and the motor.

Figure 4 is a sectional view taken along the line 4—4 of Figure 3, looking in the direction of the arrows.

Figure 5 is a rear view of the cabinet shown in Figure 1, being on an enlarged scale, illustrating the component parts of the control, certain of the elements being in cross section.

Figure 6 is a sectional view taken along the line 6—6 of Figure 5, looking in the direction of the arrows.

Figure 7 is a sectional view taken along the line 7—7 of Figure 5, looking in the direction of the arrows.

Broadly, the invention comprises a clock of conventional design, either electric or spring driven, 10, a loud speaker 11, a record player 12, an electric motor 13 therefor, an amplifier 14 and a control mechanism 15 actuated by the clock 10 for controlling the operation of the record player 12. The conducting wires for the loud speaker 10, motor 13, amplifier 14 and the control mechanism 15 are encased in a suitable cable 16 having a socket 17 for insertion into a convenience outlet. As will later be discussed, the control mechanism 15 will complete the circuit to the amplifier when the clock 10 reaches a predetermined time a short time before the circuit to the motor 13 for the record player 12 is completed, thus insuring that the amplifier will be heated sufficiently for proper operation. Upon the expiration of the time interval desired for operation of the record player, the control mechanism 15 will break the circuits to the amplifier and the record player, and upon the predetermined time interval being again reached, the foregoing cycle will be completed. It has been found that the control 15 is set to close the circuit to the amplifier approximately four minutes before the hour and to close the circuit to the record player on the hour provides ideal operation. Obviously, the amount of time which the record player motor operates is dependent upon the length

of the announcement to be made and can be varied to suit any particular situation.

A second control 18 is also associated with the clock mechanism 10 for effecting movement of the tone arm of the record player to its starting position when the tone arm has traversed the record. As will hereinafter be more fully set forth, the control 18 becomes operative upon the operation of a predetermined time cycle, preferably twelve hours.

In Figures 5 and 6, it can be seen that the above described elements are located within a cabinet 19 of any suitable dimensions and that the loud speaker 11 is located above the clock 10 and that the clock and speaker are both suitably secured to the front wall of the cabinet. The record player 12 is supported by wall 20 at a point below the clock 10 and the amplifier 14 is mounted on the base of the cabinet.

As above mentioned, the clock 10 is of conventional design and hour shaft 22 supports an annular disk 23 at its outer end, and the periphery of the disk is notched, as shown at 24, and, of course, the disk will be rotated at a uniform rate. The control 15 is provided with contacts 25 and 26 which cooperate with contacts 27 and 28 on pivoted arms 29 and 30, respectively. The above described elements may be mounted on a panel 31, in any convenient location. The contacts 25 and 27 control the circuit to the amplifier 14 while contacts 26 and 28 control the circuit to the motor 13, and the arrangement is such that the contacts 27 and 28 close the circuit to the amplifier approximately four minutes before the circuit to the motor is completed to permit the amplifier to warm up. The arms 29 and 30 are connected to the pivoted arms 32 and 33 associated with the clock 10 by rods 34 and 35, respectively. The arms 32 and 33 may be provided with a pin at the free end for riding on the periphery of the disk 23 and when the disk has rotated to four minutes before the hour, the arm 32 will drop in the notch, thus dropping the arm 29 so that the contact 27 will make contact with the contact 25 and complete the circuit to the amplifier. When the hour has been reached, the arm 33 will likewise drop into the notch 24 and close the contacts 28 and 26, thus starting the motor 13 to drive the record player.

Also, operatively associated with the disk 23 is a link 36 which is pivoted to the wall of the cabinet, as shown at 37. The inner end of the link carries a cam 38 which is adapted to be engaged by a pin 39 on the disk 23 when the clock reaches the hour which will move the link 36 downwardly about its pivot 37. An arm 40 is pivoted to the free end of the link 36, as shown at 41, and a second arm 42 is pivoted to the arm 40, as indicated at 43. The free end of the arm 42 is hinged to a bracket 44 carried by the cabinet wall, as shown at 45. A shaft 46 is conveniently attached to the arm 42 and is provided with a brake element 47 at the outer end thereof which is adapted to engage the outer periphery of turntable 48 of the record player 12 to arrest rotation of the turntable. Hence, when the link 36 is moved downwardly about the pivot 37, the arms 40 and 42 will be moved upwardly and, as a consequence, elevate the brake element 47 from the turntable 48 to permit rotation thereof. To insure that the brake element 47 will be retained in the elevated position, the arm 42 is provided with a slot into which a slide 49 carried by a housing 50 is projected by means of a spring 51, as perhaps best shown in Figure 5. The housing 50 is supported by a bracket 52 secured to the wall of the cabinet, and a vertical shaft 53 projects through an aperture in the bracket. The upper end of the shaft 53 supports a bevel gear 54 which meshes with a bevel gear 55 journalled in the housing 50, and a pin 56 associated with the shaft of the gear 55 extends into a slot 57 in the slide 49. The lower end of the shaft 53 projects into a casing 58 and supports a worm wheel which meshes with a worm gear 59 carried by a horizontal shaft 60. The horizontal shaft 60 is journalled at its free end in a bracket 61 carried by the motor housing 13 and supports a bevel gear 62 which meshes with bevel gear 63 on vertical shaft 64 of the motor 13.

When the disk 23 has moved the necessary distance, the arm 32 will be elevated, thus elevating the arm 29 and breaking the contact between the elements 25 and 27 and opening the circuit to the amplifier 14. Likewise, when the arm 33 is moved upwardly about its pivot, the contacts 26 and 28 will be broken and the circuit opened to the electric motor and, of course, the link 36 will likewise move upwardly about its pivot 37, thus permitting the brake element 47 to engage the turntable 48 to stop rotation of the turntable.

Manifestly, when the desired time is again reached, the above cycle will be completed.

The present invention has been employed in connection with a record player wherein record 65 is grooved to permit the needle of tone arm 66 to move toward the outer periphery of the record and the recording was cut to operate over a twelve hour period. Hence, the control 18 is employed to return the tone arm to its starting position upon the expiration of that time interval. To accomplish this end, a disk 67 is carried by the clock movement so that the disk will make one complete revolution every twelve hours. An arm 68 is pivoted to the disk, as shown at 69, and the lower end thereof is pivoted to a link 70, as shown at 71, which link in turn is hinged at its opposite end to a bracket 72 supported by the panel 20. A second arm 73 which is substantially parallel to the link 70 is also pivoted, as shown at 74, to the bracket 72 and the outer end of the arm 71 carries a slide element 75 extending inwardly over the record 65 beneath the tone arm at a point above the record. A stop 76 is also associated with the slide 75 and the purpose thereof will later be described.

Assuming that the tone arm has moved to the outermost groove of the record and upon the expiration of the twelve hour cycle, the disk 67 will be rotated one complete revolution which, in turn, will elevate the arm 68, link 70 and arm 73. The elevation of the arm 73 will, of course, raise the tone arm above the record, and the tone arm will then move down the slide 75 until it engages the stop 76 which is located at a position to guide the needle of the tone arm into the first groove of the record and the tone arm is now in position for proper operation.

I claim:

1. In a control system for starting and stopping the electric motor of a record playing machine having a turntable, an electric clock, an amplifier, a motor circuit, an amplifier circuit, a single annular disk having a notched area in its periphery connected with said clock for continuous rotation, a normally open switch for the amplifier circuit, a second normally open switch for the motor circuit, a control member for continuously engaging the periphery of the annular disk, a connection between said control member

and the switch for the amplifier circuit, a second control member mounted on said clock and in continuous engagement with the periphery of said annular disk, and a connection between said last named control member and the switch for the motor circuit, the arrangement being such that when the first named control member drops in the notched area of the disk the switch for the amplifier circuit is closed and when the second named control member drops in the notched area the switch to the motor circuit is closed.

2. In a control system for starting and stopping the electric motor of a record playing machine having a turntable, an electric clock, an amplifier, a motor circuit, an amplifier circuit, a single annular disk having a notched area in its periphery connected with said clock for continuous rotation, a normally open switch for the amplifier circuit, a second normally open switch for the motor circuit, a control member for continuously engaging the periphery of the annular disk, a connection between said control member and the switch for the amplifier circuit, a second control member for continuously engaging the periphery of said disk, a connection between said latter control member and the switch for the motor circuit, a pin on said disk adjacent the notched area, a pivotally mounted arm having a cam thereon for engagement with said pin, a brake adapted to engage the turntable, and an arm connected to said brake and to the pivotally mounted arm, the arrangement being such that when the first named control member drops in the notched area of the disk the switch for the amplifier circuit is closed and when the second named control member drops in the notched area the switch to the motor circuit is closed and as the pin engages the cam, said arms are moved to release the brake from the turntable.

3. In a control system for starting and stopping the electric motor of a record playing machine having a turntable, an electric clock, an amplifier, a motor circuit, an amplifier circuit, switch means actuated by the electric clock to close said amplifier circuit at a predetermined time interval, further switch means actuated by the clock to close the motor circuit at a predetermined time interval after the closing of the amplifier circuit, a disk carried by the clock for rotation at predetermined time intervals, an arm pivotally secured to the disk, and a connection between said pivotally secured arm and the record playing tone arm to move said tone arm to its initial position after said tone arm has traversed the record.

4. A control system as claimed in claim 3, wherein said connection includes an element supported for vertical pivotal movement, a rod carried by said support element adapted to be located beneath the tone arm whereby vertical pivotal movement of said support element elevates the tone arm above the record to return it to its initial position.

5. A control system as claimed in claim 2, wherein a spring actuated member cooperates with the brake arm to maintain the brake arm out of engagement with the turntable.

6. A control system as claimed in claim 5, wherein a drive connection between the electric motor and said spring actuated member moves said member out of cooperative relation with the brake arm.

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