

Nov. 15, 1960

R. F. PRAY III, ET AL

2,960,577

TAPE AD MECHANISM FOR JUKE BOX

Filed March 30, 1959

3 Sheets-Sheet 1

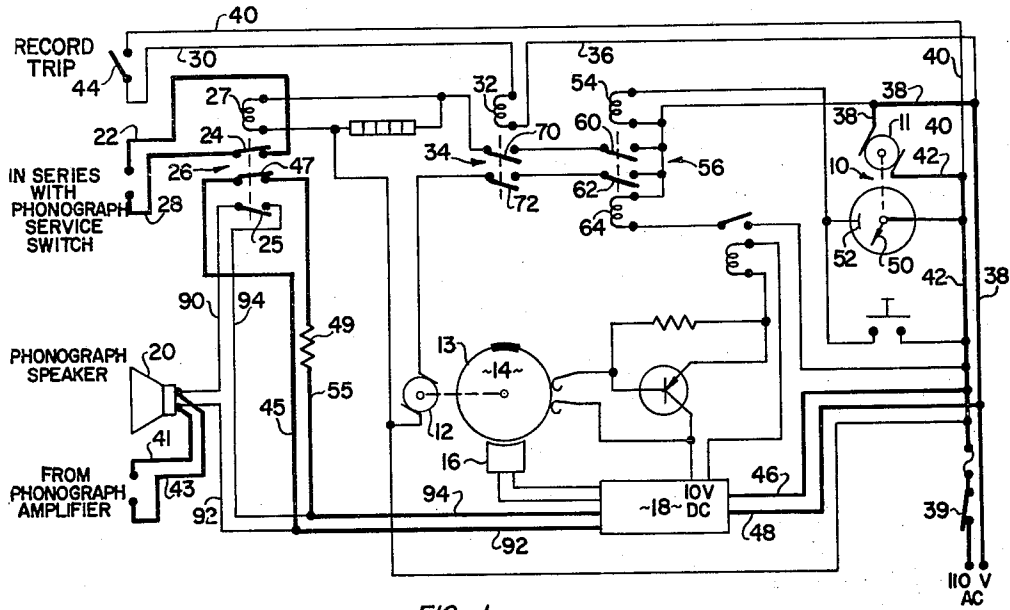


FIG. 1.

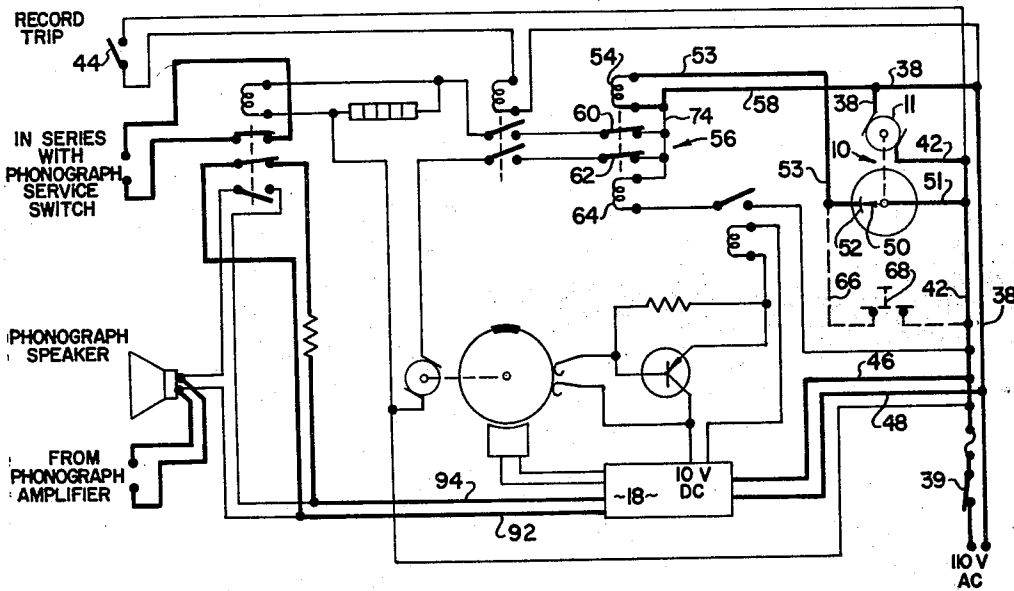


FIG. 2.

INVENTORS

R. Ford Pray, III
Eugene E. Drucker

BY

D. Emmett Thompson

ATTORNEY

Nov. 15, 1960

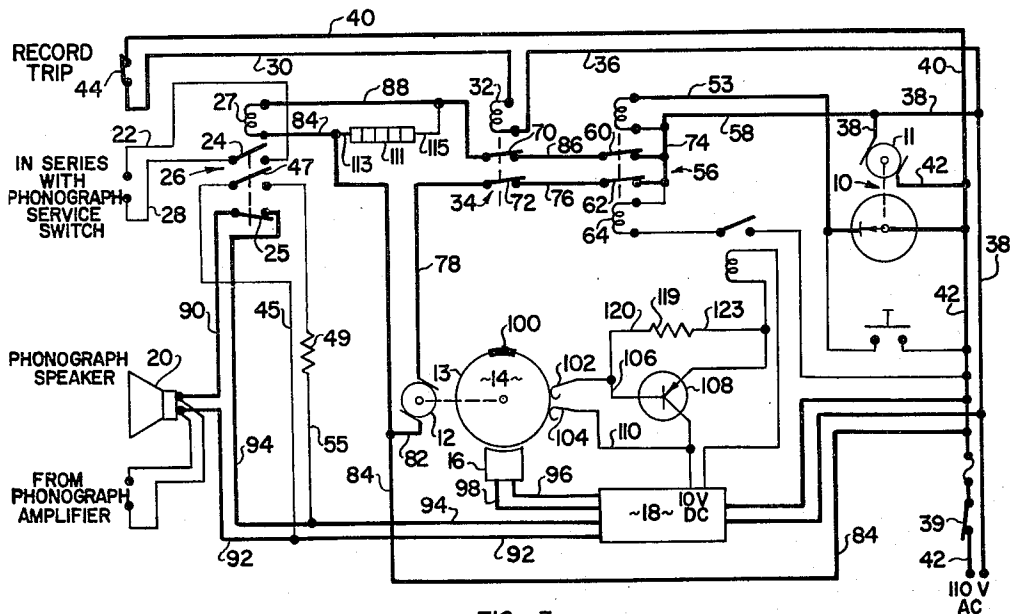
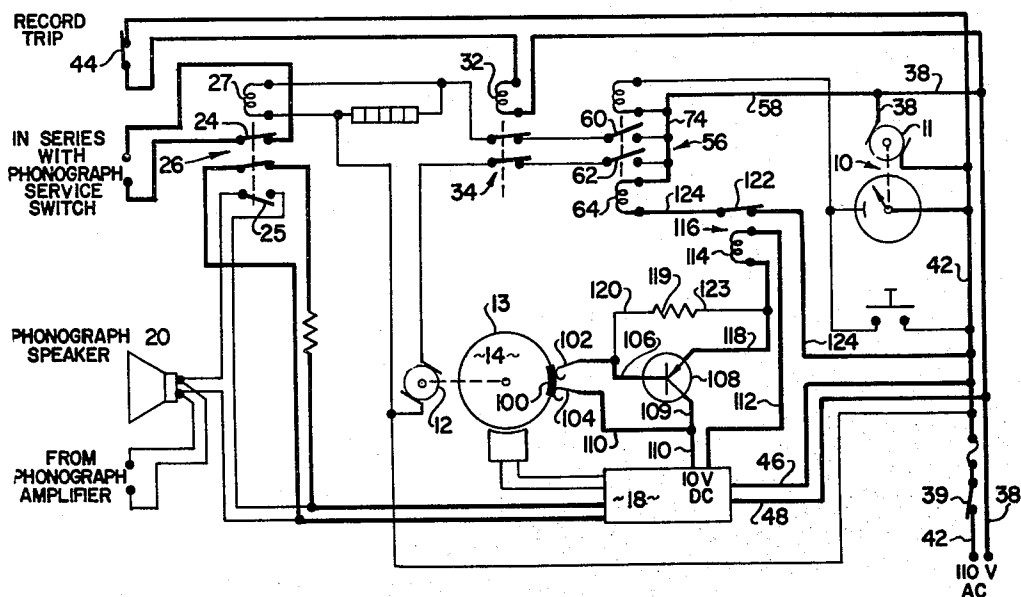
R. F. PRAY III, ET AL

2,960,577

TAPE AD MECHANISM FOR JUKE BOX

Filed March 30, 1959

3 Sheets-Sheet 2



INVENTORS

R. Ford Pray, III
Eugene E. Drucker

BY

D. Emmett Thompson

ATTORNEY

Nov. 15, 1960

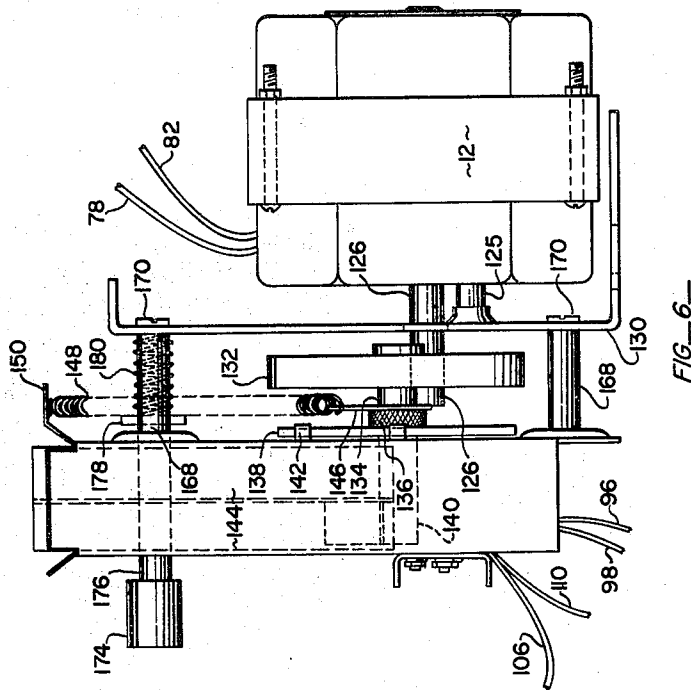
R. F. PRAY III, ET AL

2,960,577

TAPE AD MECHANISM FOR JUKE BOX

Filed March 30, 1959

3 Sheets-Sheet 3



1

2,960,577

TAPE AD MECHANISM FOR JUKE BOX

Reuel Ford Pray III and Eugene E. Drucker, Syracuse, N.Y., assignors to Jesse Kauffman, Syracuse, N.Y.

Filed Mar. 30, 1959, Ser. No. 802,779

6 Claims. (Cl. 179—100.1)

This invention relates to and has as an object a new and improved method and apparatus for playing advertising or other information on automatic record playing machines such as juke boxes or the like.

More specifically, this invention has as an object a new and improved method and apparatus for playing an advertising message on an automatic record playing machine alternately with the playing of entertainment records.

Prior to this time several methods have been used to utilize the automatic record playing machine to play advertising messages thereon, when the records are not being played by the machine. Previous methods, however, have suffered from one or more difficulties. For example, in some machines, an additional record having the advertising material thereon was selected for playing between each of the entertainment records in the machine. This necessitated playing the entire advertising record and, accordingly, limited the number of other records which could be played in a given amount of time.

Accordingly, it is a further object of this invention to provide a new and improved method and apparatus for playing advertising material on an automatic record playing machine according to a pre-selected schedule and only between the playing of the regular or entertainment records and during periods when such records are not being played by the machine.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed, and in the method set forth.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

In the drawings—

Figure 1 is a circuit diagram of the apparatus to be connected to the automatic record playing machine, the circuit being shown in the normal condition.

Figure 2 is a circuit diagram shown in a second condition from that shown in Figure 1.

Figure 3 is a circuit diagram shown in a third condition from that shown in Figure 1.

Figure 4 is a circuit diagram shown in a fourth condition from that shown in Figure 1, and

Figure 5 is a front elevation of the tape and associated motor sub-assembly diagrammatically shown in Figures 1 to 4 inclusive.

Figure 6 is a side elevation of Figure 5.

While the invention will be described as being used in connection with an automatic record playing machine, it is understood that the apparatus and method of our invention is intended to be used with any sound reproducing system.

In Figures 1 through 4, inclusive of the drawings, a circuit embodying our invention has been shown, and the heavily shaded lines in the respective figures indicate different conditions of energization in the circuit, during different periods, in the operation of the apparatus and method embodying our invention.

In Figure 1, the apparatus embodying the invention

2

comprises a circuit including a timer 10, having a motor 11, and the timer is connected in circuit with a motor 12 which drives a sound tape 13, mounted on a reel 14, past a sound take-off head 16 which is in turn connected through an amplifier 18 to the speaker 20 of the automatic record playing machine.

Line 22 is connected through the upper contact 24 of a relay 26, having a coil 27, and in turn to the line 28, and the lines 22 and 28 are connected in series circuit with the automatic record playing machine service switch (not shown) for a purpose to be hereinafter described. Line 30 is connected to one side of coil 32 of relay 34. The opposite side of the coil 32 is connected to one side 38 of a 110 volt alternating current power source by line 36. Line 40 is connected to the opposite side of the power source through wire 42 and control switch 39. The wires 30, 40 are connected by a switch 44.

Switch 44 may be of the mechanically actuated type, or any other suitable type, and is connected in the automatic record playing machine so as to connect line 30 to line 40 after the completion of the playing of one of the records, or when no records are being played, for a purpose to be hereinafter described.

A pair of taps 46 and 48 are taken off the supply lines 42 and 38, and serve to connect the amplifier 18 in a circuit with the power source. In the condition shown in Figure 1, the lines 22 and 28 are connected in circuit through the relay contact 24 so that the automatic record playing machine service power is not interrupted.

The speaker 20 of the record playing machine is connected to the amplifier thereof (not shown) by the wires 41, 43. The speaker 20 is also connected to the amplifier 18 of the tape playing mechanism by wires 90, 92, 94. The wires 90, 94, are connected through the lower contact 25 of relay 26. In order to provide a load for the amplifier 18 when the speaker 20 is disconnected by the opening of relay contact 25, a load circuit is connected in shunt with the speaker 20 through the contact 47 of relay 26. This circuit consists of wire 45 extending from wire 92, contact 47, resistor 49, wire 55, to wire 94. When contact 25 is closed, contact 47 is open, and vice-versa.

The timer actuating motor 11 is connected directly to the power supply 38, 42, and runs continuously. The cycle of the timer 10 is pre-selected to provide for engagement of the movable contact 50 with the contact 52 at ten minute intervals, for example.

Referring now to Figure 2, the timer 10 is shown in a position wherein the timer contact 50, which is connected to line 42 by line 51, is closed on the contact 52. Wire 53 extends from contact 52 to the latch coil 54 of relay 56, the opposite side of the coil being connected to line 38, thus completing a circuit through the coil 54.

Relay 56 is provided with a pair of contacts 60 and 62 and an unlatch coil 64, and in the position shown in Figure 2 the contacts 60 and 62 have moved to, and are latched in, the closed position by virtue of the energization of coil 54. The circuit now remains static until the completion of the record being played by the record playing machine, and the switch 44 is tripped to closed position. The dash line 66, connected through manual switch 68, in parallel with the timer 10, serves to permit manual starting of the circuit for test, or other purposes if so desired, as will be apparent.

When the record being played by the automatic record playing machine finishes playing, and switch 44 is closed, the circuit will be in the condition shown in Figure 3. In that figure, closing of the switch 44 serves to connect the coil 32 of relay 34 in circuit with the power source through line 36, coil 32, line 30, switch 44, wire 40 to the opposite side of the power source 42. The circuit just described thus energizes the coil 32 of relay 34, serving to close contacts 70 and 72 of the relay 34, there-

by connecting the tape motor to the power source through the circuit comprising line 38, line 58, line 74, contact 62, line 76, contact 72, line 78 to one side of the motor 12, and from the opposite side of the motor 12 through line 82, line 84, to the opposite side of the power source 42.

Simultaneous closing of the contact 70 serves to interrupt the record playing machine service circuit through line 22, contact 24 and line 28 in the following manner. Upon closing of the contact 70 a circuit is connected from line 38, line 58, line 74, contact 60, line 86, contact 70, line 88, through the coil 27 of relay 26, to line 84 and from there to the common side 42 of the power source. This circuit energizes the coil of relay 26 which opens the upper contact 24 of the relay, and at the same time closes the lower contact 25. This break in the service circuit through contact 24 precludes any playing of records previously selected, or selected during the operation of the tape advertising mechanism. Also the closing of the lower contact 25 connects the juke box speaker 20 to the output circuit of the amplifier 18 through lines 90, 92, and 94.

While the invention has been shown as utilizing the speaker of the record playing machine, it is to be understood that a separate speaker for the tape advertising mechanism could be used, in which event the circuitry hereinbefore described for disconnecting the record playing machine speaker from the amplifier 18 would be unnecessary.

The opening of the record playing machine service circuit by contact 24 merely acts to prevent operation of the motor circuit of the record playing machine, and will not in any manner interfere with the memory circuit of the machine.

The energization of the tape motor 12 through the circuit previously described causes the tape reel 14 to revolve thus moving the previously recorded tape 13 over the conventional sound take-off tape head 16 which is connected to the amplifier through lines 96 and 98. This causes the message transcribed on the tape to be played through the speaker 20. At certain points along the tape between advertising messages, a silver conducting strip is provided, indicated by numeral 100. The silver stripes are provided on the tape to halt the rotation of the reel 14, at the conclusion of each advertising message, in a manner to be next described.

A pair of wipers 102 and 104 are positioned in the path of movement of the tape so that the silver stripe 100 serves to connect the wipers 102 and 104, as shown in Figure 4. Wiper 104 is connected through line 106 to the negative side of a transistor 108, while the wiper 102 is connected through the line 110 to the common side of a low voltage source taken off the amplifier 18.

The relay coil 114 is connected to the positive side of the low voltage source by the wire 112. The opposite side of the coil is connected by wire 118 to the transistor 108. When the shunt circuit 106, 110 is closed by the conducting stripe 100, the transistor functions in the conventional manner to complete the circuit through the coil 114 to energize the same so as to close contact 122 which is connected in line 124 from line 42 to one side of the unlatch coil 64 of relay 56. The opposite side of the unlatch coil 64 is connected through line 74 and line 58 to line 38, thereby completing a circuit through the coil 64 and serving to open the contacts 60 and 62 of the relay 56 thereby interrupting the circuit to the tape motor 12, described in connection with Figure 3, and the circuit through the coil 27 of the relay 26, thus stopping the motor 12 and restoring the record playing machine service circuit through lines 22 and 28 and contact 24, thus permitting a record to be played by the record playing machine in the event a record has been selected previous to or during the operation of the tape 13. De-energization of relay 26 also opens contact 25 thus disconnecting the speaker 20 from the amplifier 18, thereby

preventing any interference between amplifier 18 and the amplifier of the record playing machine.

As best seen in Figure 3, energization of the coil 27 of relay 26 also serves to open the contact 47 in circuit 45 thus disconnecting the load resistor 49 from the amplifier 18, while the amplifier 18 is connected to the speaker 20 through contact 25.

Upon interruption of the circuit through the motor 12 the reel 14 will coast to a position where the silver stripe 100 is past the wipers 102 and 104, thus de-energizing the transistor circuit described in connection with Figure 4.

It will be observed from the circuitry disclosed in Figures 1 to 4, that the motor 11 and the timer 10 operate continuously. Accordingly if, upon the conclusion of the operation of the tape mechanism, no record on the record playing machine has been selected, or called for, the tape mechanism will again be actuated when the contacts 50, 52, of the timer again close, and the next recording on the tape will be reproduced through the speaker 20. If, however, a record has been selected or called for previous or during the operation of the tape mechanism, during the playing of that record, the switch 44 will be opened interrupting the circuit to the relay coil 32, and the opening of contacts 70, 72. This is to make certain that if the timer contacts 50, 52, reach closed position during the playing of a record, the tape mechanism will not be actuated. Thus, the arrangement is such that the tape mechanism in no way interferes with the playing of records by the record playing machine. However, by means of the latch relay 56, a memory feature is provided, so that the tape mechanism will be operated after each closing of the timer contacts 50, 52 during the first available interval between the playing of records by the record playing machine.

As best seen in Figure 3, any suitable counter such as an electric non-reset counter 111 may be connected in parallel with the coil 27 of relay 26 by lines 113 and 115 whereby each energization of relay 27 will be indicated by the counter 111 to in turn indicate the total number of advertising messages played by the apparatus.

Also a leakage circuit comprising a resistor 119 has been connected by lines 120 and 123 across the transistor 108 to prevent operation of the transistor due to variations in surrounding ambient temperature. This leakage, or by-pass circuit, functions in a conventional manner whereby to prevent faulty operation of the transistor 108.

A form of the motor driven tape advertising unit diagrammatically indicated in Figures 1 to 4 inclusive, will now be described with reference to Figures 5 and 6.

The motor 12 is mounted by a pair of posts 125 on an L-shaped frame member 130 and has an output shaft 126 which passes through a clearance hole in the up-standing leg of the L-shaped frame member 130 and terminates in proximity to a rubber friction wheel 132. The rubber friction wheel 132 is mounted on the outer end of a shaft 134 journaled in a bearing 136 carried by a plate 138, and the inner end of the shaft 134 is formed with a rubber friction wheel 140. The plate 138 is supported for vertical reciprocation by a plurality of guide ears 142 formed on the rear of a channel-shaped frame 144. The bearing 136 has a plate 146 affixed thereto and a tension spring 148 is connected between the outer end of the plate 146 and a flange 150 formed on the upper end of the rear wall of the frame 144 and serves to urge the plate 138 and the wheel 132 toward an upward position out of frictional engagement with the end of the output shaft 126 of the motor 12.

The pre-recorded advertising tape unit comprises an enclosed box member 152 in which a pair of reels 14 and 15 are suitably mounted for rotation about a shaft 154. As best seen in Figure 5, the tape 13 passes off of the inner reel 14 and out of the box 152 through an aperture 156 past a pair of guide rollers 158 and 160

carried by the box 152 and then re-enters the box 152 to be wound upon the outer reel 15. As the tape 13 passes under the guide roller 158, it is urged into engagement with the tape wiper arms 102 and 104 mounted in an insulating block 161 whereby to halt rotation of the reel 14 when the silver conducting stripe 100 connects the wipers 102 and 104 in circuit, as is described in connection with Figure 4.

After the tape passes over the wipers 102 and 104, it passes over the surface of the sound take-off head 16 where the advertising message is taken off of the tape 13 in the conventional manner. Thereafter, the tape passes under the roll 160 and is wound up on reel 15. When the box 152 is inserted in the channel-shaped frame 144, the roller 160, carried by the box 152 engages the rubber roll 140 and urges the plate 138, carrying the rolls 132 and 140 on the shaft 134 downwardly to a position where the roll 132 frictionally engages the drive shaft 126 of the motor 12. When the motor 12 is energized, the roll 140 will be rotated in a clock-wise direction, as viewed in Figure 5, and engages the tape 13 and roll 160 in a manner to unreel the tape 13 from the reel 14 and wind it upon the reel 15 thereby playing the advertising message as the tape passes over the sound head 16.

The wiper arms 102 and 104 insulation block 161 and sound take-off head 16 are mounted on a channel-shaped member 164 which passes across the open side of the frame member 144 and is mounted on the opposite side flanges formed on the frame member 144 by means of the nuts 166.

The upper rearward side of the frame member 144 is connected to the upper end of the frame member 130 by means of a pair of rods 168 affixed to the frame member 144, the rods 168 being threadedly connected to the frame member 130 by screws 170. 174 indicates the handle of a release arm 176 which functions to releasably lock the box 152 with the channel-shaped frame 144, the inner end of the arm 176 being affixed to a transversely extending plate 178 which carries a latch member (not shown) entering the rear wall of the frame member 144 to latch the box 152 in the frame member 144. Depression or movement of the arm 176 to the right, as viewed in Figure 6, will move the transverse member 178 rearwardly away from the rear wall of the frame member 144 so as to release the box 152 to permit removal thereof. Upon removal of the box 152, the spring 148 serves to return the plate 138 and in turn the rolls 132 and 140 mounted on the shaft 134 to their upward-most position wherein the roll 132 is out of engagement with the motor shaft 126. Upward movement of the shaft 134 and plate 138 is halted by engagement of the shaft 134 with the upper end of the oblong notch (not shown) formed in the rear wall of the frame 144 through which the shaft 134 passes, the notch serving to permit the vertical reciprocatory movement of the plate 138 and shaft 134. The spring indicated at 180 in Figure 6 is a compression spring mounted about the inner member 168 and serves to maintain the arm 178 in its outer position whereby the latch carried by the arm 178 (not shown) is in latching position in the rear wall of the frame 144.

It will therefore be seen that by our invention we have provided a method and apparatus to be used in conjunction with coin controlled and operated automatic record playing machines, or the like, whereby an advertising message or messages will be played according to a pre-selected timing arrangement, controlled by the timer 10, but only at the end of a record being played by the machine or when no records are being played by the machine so as not to interfere with the operation of the machine. Further, the automatic record playing machine is rendered inoperative during the playing of the advertising message whereby to permit completion of the ad-

vertising message, regardless of the actuation of the machine.

What we claim is:

1. In combination, an automatic record playing machine having a service circuit for supplying the record playing mechanism of said machine with power, a message playing mechanism including an endless tape having a plurality of messages thereon, a first circuit having a switch arranged to be closed by the record playing mechanism upon completion of, and during the absence of play of a record, a power circuit for supplying the message play mechanism including timer means periodically operable to partially complete and hold partially completed the power circuit, said power circuit being completed by the closure of said switch by said record playing mechanism, means operable upon completion of the power circuit to open the service circuit of the record playing machine and energize said power circuit to said message playing mechanism, said message playing mechanism including means operable upon completion of play of a message on said endless tape to open said power circuit, means upon opening of said power circuit being operable to de-energize the message playing mechanism and to close the service circuit of the record playing machine.

2. In combination, an automatic record playing machine and a tape playing mechanism for playing messages alternately with the playing of records on said machine, a service circuit for supplying power to said record player, said circuit being connected through the closed contacts of a normally de-energized first relay, the operating coil of said first relay being connected in series through the open contacts of a normally de-energized second relay, and contacts of a third relay having a latch coil for closing its contacts, and an unlatch coil for opening said contacts, a switch arranged to be closed by the record player upon completion of and during the absence of play of a record to energize said second relay, a timer operable to periodically energize the latch coil of said third relay, an operating circuit for said tape mechanism connected in series through the closed contacts of said second relay when energized, and closed contacts of said third relay when the latch coil thereof is energized, said tape playing mechanism including means operable upon completion of play of a message to energize the unlatch coil of said third relay.

3. In combination, an automatic record playing machine and a tape playing mechanism for playing messages alternately with the playing of records on said machine, a service circuit for supplying power to the record player of said machine, an operating circuit for said tape mechanism including a switch closed by the record player upon completion of the play of a record, and a second switch periodically closed by a timer, said operating circuit being connected in series through said switches, a relay having its operating coil connected in said operating circuit and energized thereby, and operable when energized to open said record player service circuit, said tape playing mechanism including interrupting means operable upon the completion of the play of a message by said tape mechanism to open said tape mechanism operating circuit.

4. In combination, an automatic record playing machine having a service circuit for supplying the record playing mechanism of said machine with power, a message playing mechanism including an endless tape having a plurality of messages thereon, a first circuit, a power circuit for supplying the message playing mechanism, a first relay having its operating coil connected in said first circuit, a second relay having a latch coil operable when energized to close the contacts of said second relay and having an unlatch coil for opening the contacts of said second relay, said message playing power circuit being connected in series through the contacts of said first and second relays, means operable upon completion of the play of a record by said record playing machine for

7

energizing said first circuit, a timer operable to periodically energize the latch coil of said second relay to close the contacts thereof, a third relay having its operating coil connected through the contacts of said first and second relays and operable upon energization to open said service circuit, said message playing mechanism including interrupting means operable upon completion of play of a message on said endless tape to energize the unlatch coil of said second relay.

5. The combination as set forth in claim 4, wherein said unlatch coil is connected to a power supply through normally open contacts of a fourth relay, and said interrupting means including a conducting surface formed on said tape at the end of each advertising message and a pair of wiper arms connected in circuit with said fourth relay whereby, upon engagement of said conducting surface with said wiper arms, said fourth relay is energized for the closure of said normally open contact.

6. In combination, an automatic record playing machine having a service circuit for supplying the record playing mechanism of said machine with power, a message playing mechanism including an endless tape having a plurality of messages thereon, a first circuit, a switch arranged to be closed by the record playing mechanism upon completion of and during the absence of playing a

8

record and operable upon closure to energize said first circuit, a power circuit for supplying the message playing mechanism, a first relay having its operating coil connected in said first circuit, a second relay having a latch coil operable when energized to close the contacts of said second relay and having an unlatch coil for opening the contacts of said second relay, said message playing mechanism power circuit being connected in series through the contacts of said first and second relays, a timer operable to periodically energize the latch coil of said second relay to close the contacts thereof, a third relay having its operating coil connected through contacts of said first and second relays and operable upon energization to open said service circuit, said message playing mechanism including interrupting means operable upon completion of play of a message on said endless tape to energize the unlatched coil of said second relay.

References Cited in the file of this patent

UNITED STATES PATENTS

1,852,878	Gardner	Apr. 5, 1932
2,252,327	Lovett	Aug. 12, 1941
2,779,825	Cunningham	Jan. 29, 1957
2,780,679	Vandivere	Feb. 5, 1957

UNITED STATES PATENT OFFICE
CERTIFICATION OF CORRECTION

Patent No. 2,960,577

November 15, 1960

Reuel Ford Pray III et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 41, for "strip" read -- stripe --; column 5, line 38, for "with" read -- within --.

Signed and sealed this 2nd day of May 1961.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents