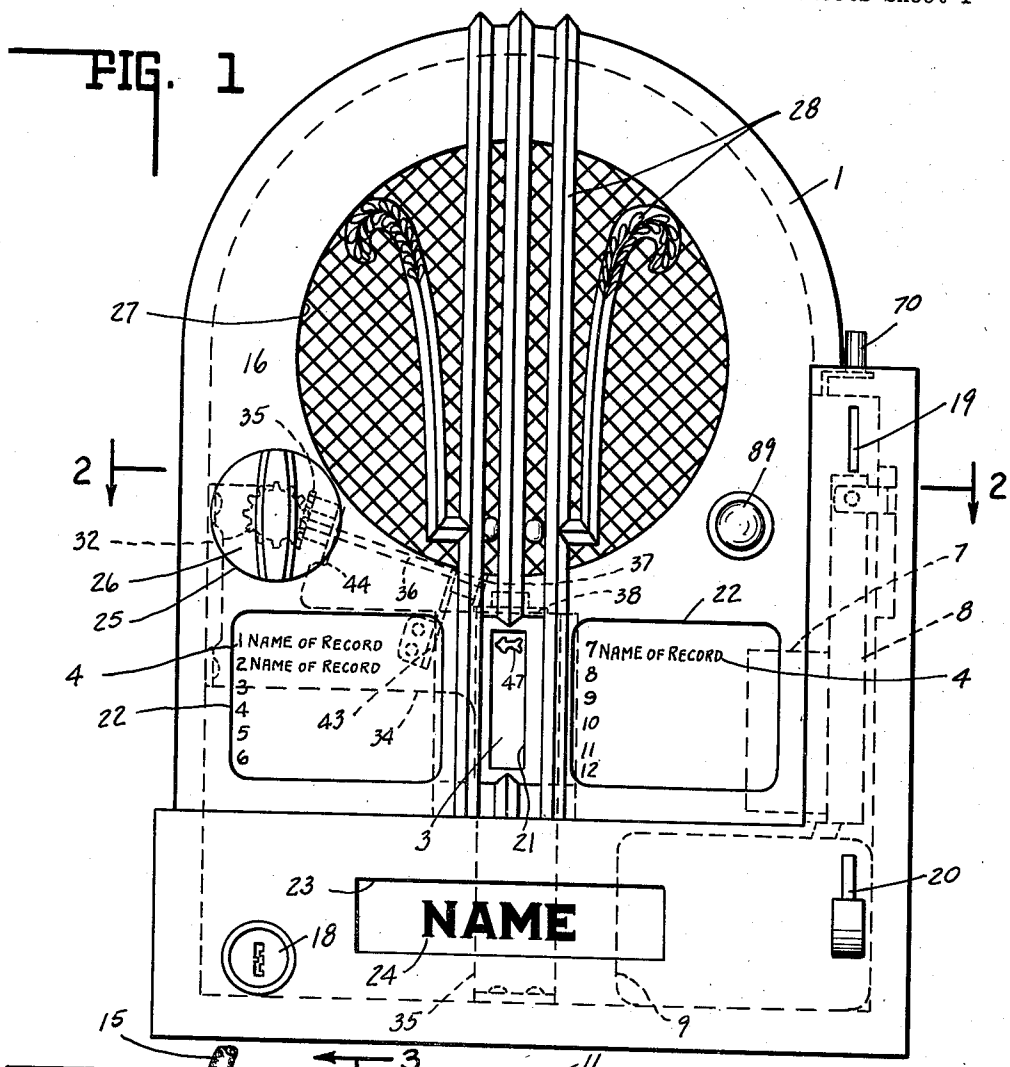
Nov. 5, 1940. T. M. WRIGHT 2,220,434

REMOTE CONTROL DEVICE FOR SOUND RECORDS

Filed March 31, 1939 3 Sheets-Sheet 1

FIG. 1



INVENTOR.
THEODORE M. WRIGHT.

BY Lockwood, Goldsmith & Galt,
ATTORNEYS.

Nov. 5, 1940. T. M. WRIGHT 2,220,434

REMOTE CONTROL DEVICE FOR SOUND RECORDS

Filed March 31, 1939 3 Sheets-Sheet 2

FIG. 3

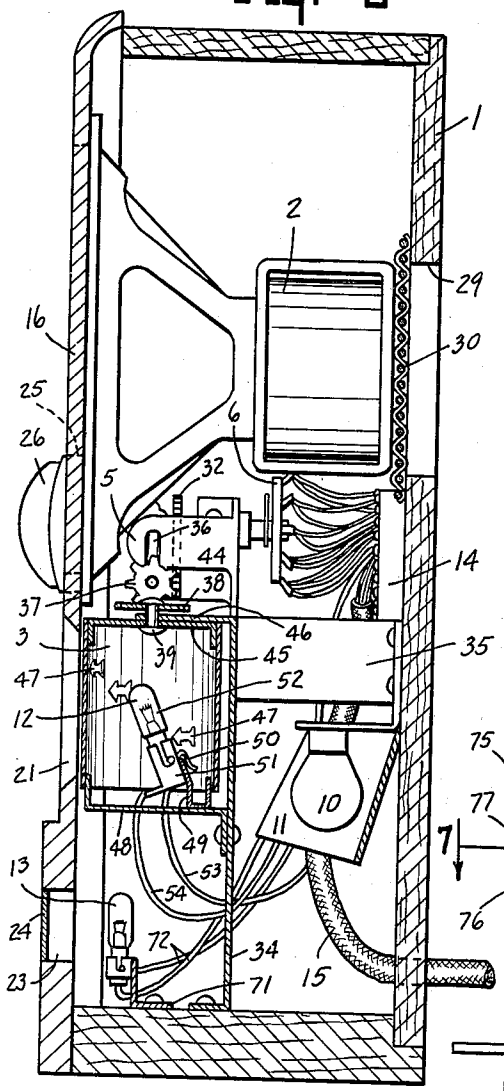


FIG. 5

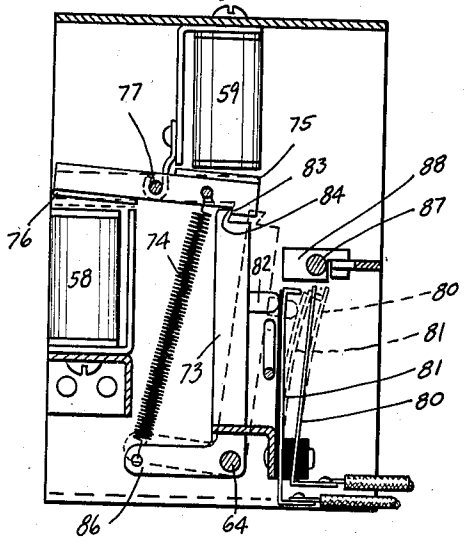


FIG. 6

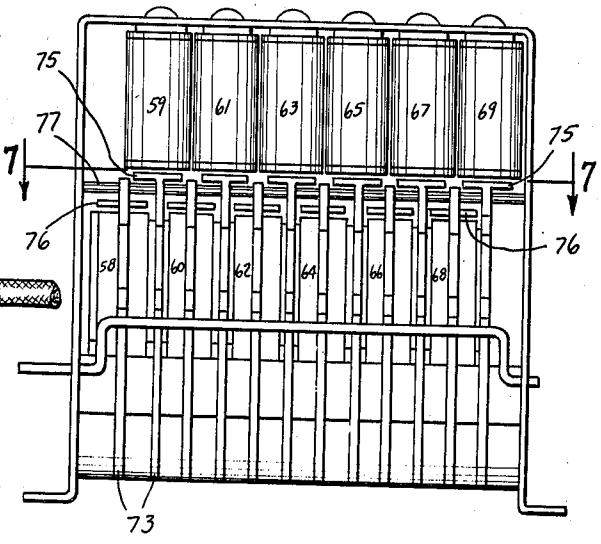
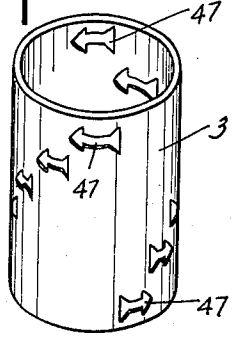


FIG. 4



INVENTOR.
THEODORE M. WRIGHT.

BY Lockwood, Goldsmith & Galt.
ATTORNEYS.

Nov. 5, 1940. T. M. WRIGHT 2,220,434

REMOTE CONTROL DEVICE FOR SOUND RECORDS

Filed March 31, 1939 3 Sheets-Sheet 3

FIG. 7

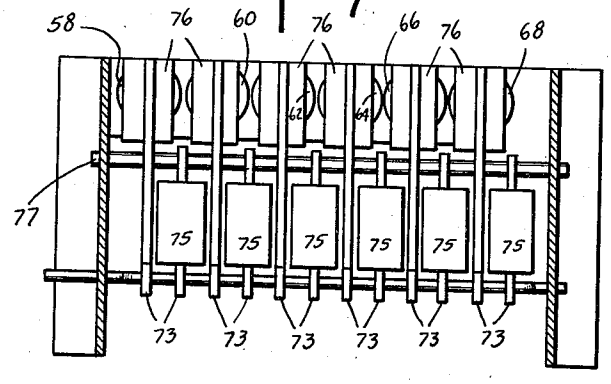
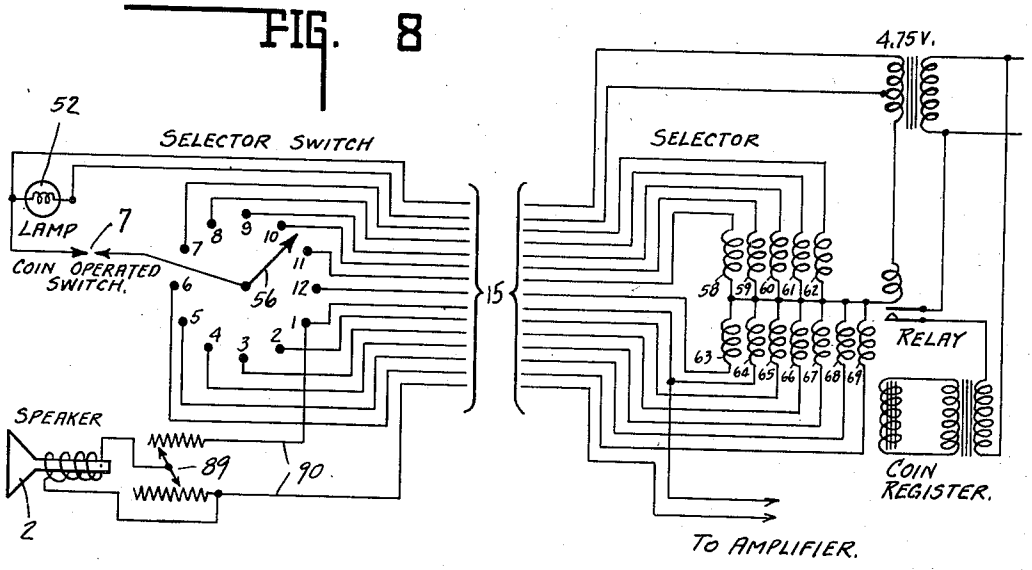


FIG. 8



INVENTOR.
THEODORE M. WRIGHT.

BY Lockwood, Goldsmith & Galt.
ATTORNEYS.

Patented Nov. 5, 1940 2,220,434

UNITED STATES PATENT OFFICE

2,220,434

REMOTE CONTROL DEVICE FOR SOUND RECORDS

Theodore M. Wright, North Tonawanda, N. Y., assignor to The Rudolph Wurlitzer Company, Cincinnati, Ohio

Application March 31, 1939, Serial No. 265,232

11 Claims. (Cl. 179—100.4)

This invention relates to a remote control and record indicating device adapted to be positioned at a distance from an automatic record selecting phonograph or like instrument, and capable of full control thereover in the selection of a record to be reproduced, including coin operation and the indication of the record being reproduced. The invention may also include sound reproduction in and associated with the device wherein it is positioned beyond the sound range of the phonograph.

It is the object of this invention to provide a unitary structure housing in a suitable cabinet for convenient placement at a remote distance from the record changing and sound reproducing instrument which may be conveniently installed and connected with the instrument, complete in its functioning, economical in construction and attractive in appearance.

This is accomplished by housing in a single miniature cabinet a master switch controlled by the usual coin mechanism and a record selector operably connected with a record indicating device, all electrically connected through a single cable with a distantly located instrument.

Wherein the instrument may be located beyond the sound range of the phonograph, a sound reproducing device may be embodied therein in the form of a loud-speaker connected with the phonograph and having an independent volume control therefor.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a front elevation of the remotely positioned cabinet showing parts of the interior thereof in dotted lines. Fig. 2 is a horizontal section through said cabinet taken on the line 2—2 of Fig. 1. Fig. 3 is a vertical section through the cabinet taken on the line 3—3 of Fig. 2, showing the speaker in elevation. Fig. 4 is a perspective view of the record indicating drum. Fig. 5 is an end elevation with a portion of the bracket removed showing the record selector actuators remotely positioned from the cabinet and mounted in the record changing instrument. Fig. 6 is a front elevation of the actuators. Fig. 7 is a plan view thereof with the top of the frame and upper row of electromagnets omitted to show the arrangement of the armatures. Fig. 8 is a diagrammatical illustration of the electrically-actuated element and the wiring diagram therefor.

This invention may be applied to any record selecting automatic phonograph or similar instrument wherein the record selecting mechanism is capable of being electrically manipulated and controlled to select a predetermined record. For purpose of illustration of its applicability to such a machine embodying a selection of twelve records, reference is made to the disclosures of Letters Patent No. 2,096,718, issued October 26, 1937, on an application of Otto A. Hokanson, entitled "Automatic phonograph," as well as an application filed by the said Hokanson on the 16th day of October, 1937, Serial No. 169,442. The series of actuators for controlling the mechanism to place a selected record for reproduction, as shown in said disclosures, are herein illustrated in Figs. 5, 6 and 7, and indicated on the right-hand side of Fig. 8.

In the remotely positioned cabinet generally denoted by 1, are enclosed the usual loud-speaker device 2, a record indicating drum 3, a pair of program lists 4, a drum and switch revolving mechanism 5, a multi-contact rotary record selecting switch 6 operatively connected with the drum 3 through the mechanism 5, a coin-operated master control switch 7; a coin-device 8, a coin-receiving drawer 9, a program lamp 10, its reflector 11, an indicator lamp 12, a name-plate lamp 13, a connector block 14, and a multi-conductor cable 15, all to be more specifically referred to hereafter.

The entire front of the cabinet comprises a door panel 16, hinged at 17 and secured by a lock 18. In the door 16 there is provided the usual coin-receiving slot 19; slug-rejecting slot 20; indicator slot 21; a pair of glazed windows 22 for enclosing the program lists 4; an opening 23 for the translucent name plate 24; an opening 25 for the record indicating knob or selector 26 and a circular aperture 27 covered by the customary dust-proofing fabric indicated and protected by an ornamental grill-work 28. The back of the cabinet is provided opposite the rear of the speaker with an opening 29 covered by a coarse wire screen 30, which opening serves to permit passage of pressure waves.

The record indicating knob 26 is rigidly fixed to the shaft 40 by any suitable means so that shaft 40 revolves therewith. Fixed to shaft 40 there is a spur gear 32 having twelve teeth. Gear 32 meshes with gear 35 which is rigidly attached to one end of shaft 36, said shaft being rigidly attached at its opposite end to the spur gear 37. Shaft 36 revolves in two bearings 43, 44 respectively, struck up from and attached to a main bracket 34. The gear 38 has twelve teeth and meshes with gear 37. Said gear is rigidly

attached to one end of the pivot 39 which is rigidly affixed at its opposite end to the bridge 45. The bridge spans the upper end of the record indicating drum 3 which is welded or soldered to its downstruck ends extending into the interior surface of said drum. The pivot 39 revolves in a bearing near the end of the support 46 which is bent forwardly from the main bracket 34, its center line intersecting that of slot 21. The gear 38 is checked at each one-twelfth of a revolution by the spring 42 which is substantially tangential to gear 38 and has an arcuate end section pressed against the face of said gear engaging between the teeth thereof.

The bridge 45, when revolved by the gear 38 and pivot 39, rotates the drum 3, the axis of which is vertical and the periphery of which just clears the vertical edges of slot 21 in door 15. The drum 3 is preferably stamped and formed of sheet steel and is pierced by aperture 47 in the form of conventionalized indicating arrows. Said apertures may be of any unilateral indicating form, such as "printer's fists," triangles, etc. The arrows 47 are arranged in opposed spirals around drum 3, spaced axially to coincide with the titles appearing in the program lists 4 which flank slot 21, and radially in such manner that when gear 38 is checked by spring 42, the transverse center line of an arrow coincides with the vertical center line of slot 21. The arrows are of such length as to individually appear completely in and substantially occupy the full width of slot 21.

Supported on the main bracket 34, there is a lamp bracket 48 to which is securely fastened a support 49 gripped by clip 50 on the socket 51 into which the lamp 52 fits by a bayonet connection. Current is supplied to the lamp 52 by conductors 53, 54. By releasing the clip 50 from the support 49, socket 51 may be removed for convenience in exchanging spent lamps 52 for new. The light from lamp 52 shining through aperture 47, together with the unidirectional indicating form thereof indicates the title in the program list 4 by the coincidence of the illuminated arrow with the level of said title. It will be noted in Fig. 4 that the arrows in each spiral point in opposite directions and are oppositely paired in axial distribution so that for every level of title there are two arrows, one indicating the title to the left and one to the right. It has been found that the insertion of a cylinder of frosted translucent sheet plastic such as "Croglass" within drum 3 as indicated at 55 in Fig. 2 tends to make all the arrows appear more nearly of equal illumination by diffusing the light of lamp 52 and reflecting part of it from the rearward segment of the cylinder's inner surface.

Gears 32 and 38, having twelve teeth each, revolve in unison when the selector knob 26 is turned. Hence, the angular movement of drum 3 is equal to that of the shaft 40. Shaft 40 bears upon its distal end a radial contact arm 56 (Fig. 8), which sequentially makes contact with the contact points numbered circularly 1 to 12 in Fig. 8, said contact points being arranged about the periphery of the insulating disk which forms the body of switch 6 (Fig. 2). Said disk is held against angular movement on the end of sleeve 41 by collar 57 and a lock nut frictionally engaging the main bracket 34.

The contacts of switch 6 are electrically connected with a series of electromagnets or actuators which selectively control the playing of recordings whose titles appear in the program list on the side and at the levels indicated by those arrows which correspond to the contacts of switch 6 whose respective magnets select the corresponding recordings. Thus, when, for instance, the second arrow from the top, pointing to the right appears in slot 21 as the operator faces the cabinet, radial contact arm 56 engages the contact numbered 7 in Fig. 8, permissively connecting magnet 62 with coin operated switch 7. Magnet 62 is thereby energized to set in motion the selecting mechanism that brings into play the recording numbered 7.

The name plate 24 may be preferably formed of translucent material, such as sheet plastic having a frosted surface to diffuse the light passing through opening 23 from lamp 13 supported in a "bayonet" socket of well known form by support 71 and supplied with current by conductors 72 which also supply lamp 10.

The coin operated master control switch 7 and coin device 8 are of well-known standard form, and comprise no part of this invention, their presence herein serving merely to complete the operating circuit. The button 70 is a part of coin device 8, i. e., the "scavenger" which serves to release spurious coins arrested by the device 8, allowing them to fall into the cup under slot 20, while legal tender accepted by the device 8 falls into coin drawer 9. Connecting block 14 is of well known form, serving as anchorage for all wiring.

Figs. 5, 6, 7 illustrate the arrangement of the series of actuators or electromagnets controlled through switch 6 and their related mechanism. The electromagnet coils are aligned in two banks, and staggered laterally and longitudinally. Each has an armature, said armatures hinging upon the common pivot rod 77. The armatures 76 of the lower bank of electromagnets form levers of the first class, while the armature 75 of the upper bank of electromagnets are of the third class. The armatures alternate and are equally spaced along rod 77. On its interior edge each armature has a notch 83 to engage with a similarly formed notch in the upper end of a bell crank 73 pivotally mounted on the rod 64. The relative positions of an armature 75 or 76 and its associated bell crank 73 are shown in solid lines in Fig. 5, while their actuated positions are illustrated by dotted lines. The bell cranks 73 and their respective armatures 75, 76 are drawn together by the initial tension of springs 74, connecting the foot 86 of the bell crank therewith.

When an electromagnet is energized by the closing of switch 7 as already described, it exerts a pull on its armature which, in all cases, elevates the end of the armature to the right as seen in Fig. 5. This releases notch 84 from notch 83 and the foot 86 of bell crank 73 being urged upwardly by spring 74, abutment 82 is moved against its corresponding spring leaf switch contact 81 so as to press it against its mating leaf 80, as shown by broken outlines. This action establishes a circuit which initiates the record changing action of the remotely positioned phonograph to transfer the selected record for reproduction.

The energized electromagnet, with its freed bell crank 73 and closed switches 80, 81, is returned to normal position upon the selected record being placed in sound reproducing position by the mechanism disclosed in said Letters Patent No. 2,096,718 and said application for Letters Patent Serial No. 169,442. Thus, the rod 87, which is the equivalent of rod 134 in said Letters

Patent or 148 in said application, is moved to the left, as shown in Fig. 5, by a connecting arm operated by the record changing mechanism when the record is placed in sound producing position. Such movement of rod 87 causes the slide 83, which is adjusted with respect to the actuated switch or bell crank by the positioning of the record, to engage the actuated bell crank lever and return it to its initial position so that the notches 83, 84 interlock and thus permit the switch members 80, 81 to separate and break the circuit. Said slide 88 functions in the same manner and is actuated by the equivalent mechanism, as illustrated in said Letters Patent with respect to slide 148 and as shown in said application in respect to slide 149.

The volume control 89 is shown mounted upon the front of the cabinet in Figs. 1 and 2, and is indicated in the wiring diagram of Fig. 8. It is connected by the wires 90 to the amplifier circuit through the cable 15 and controls the volume of sound emanating from the speaker in the usual manner.

In operation, the cabinet 1 may be placed in a room or location quite remote from the record changing instrument which may be of the character disclosed in the above-mentioned Letters Patent and application for Letters Patent, and is connected thereto by the cable 15. With the exception of connecting it with the cable it may be conveniently and readily installed or transported to any desired location. When it is desired to cause a selection to be rendered, the knob 26 is turned until the arrow on the indicating drum lies in the plane of and points toward the number or name of the desired selection. Thereupon, the master switch 7 is closed by depositing a coin in the usual manner. Such manipulation of the knob causes the circuit to be closed through the switch 7 and the radial contact arm 56 of switch 6 so as to energize through cable 15 a corresponding electromagnet 58, 59. Thus, the corresponding armature 75, 76 is moved to a position to permit disengagement of notches 83, 84 so that the spring 75 may move the bell crank arm 73 into engagement with the corresponding switch member 81 to close the selected circuit therethrough.

Upon said selected circuit being closed, the record changing mechanism of said patent or application is set into operation to place the selected record in playing position so as to be reproduced through the amplifier of the instrument, cable 15 and volume control 89 to the loud speaker device 2. The volume control 89 being on the remotely positioned cabinet, the volume may be controlled to suit the operator.

Wherein only the record selecting and indicating device is to be used without the inclusion of the loud-speaker or volume control therein, these elements may be removed from the cabinet together with the lead wires 90 shown in Fig. 8. In this form the device will act as above described other than that the sound reproducing elements, comprising the loud-speaker and volume control, of the phonograph will be relied upon.

The invention claimed is:

1. In a remote control device, the combination with an automatic record changing and sound producing mechanism including a series of actuators, and means controlled thereby to place a selected record for reproduction, of a cabinet remotely positioned with respect thereto and containing a series of circularly spaced contacts, each electrically connected in a circuit wth one of said actuators at a remote position, a rotatable selector knob on said cabinet having a rotating contact finger for selective engagement with one of said contact members for closing a selected circuit therethrough, a record indicating means, and a shaft and gear connection between said knob and indicating means operable by the rotation of said knob to record selecting position.

2. In a remote control device, the combination with an automatic record changing and sound producing mechanism including a series of actuators, and means controlled thereby to place a selected record for reproduction, of a cabinet remotely positioned with respect thereto and electrically connected with said sound producing mechanism, a series of switches in said cabinet, each connected in circuit with one of said actuators, a selector knob manually movable to close a selected switch, a master control switch for said circuits, a rotatable record indicating drum, and an operative connection between said selector knob and drum for causing corresponding rotation therebetween to indicate the record selected.

3. In a remote control device, the combination with an automatic record changing and sound producing mechanism including a series of actuators, and means controlled thereby to place a selected record for reproduction, of a cabinet remotely positioned with respect thereto and electrically connected with said sound producing mechanism, a series of switches in said cabinet, each connected in circuit with one of said actuators, a selector knob manually movable to close a selected switch, a master control switch for said circuits, a rotatable record indicating drum, a name plate carrying the numbers corresponding with the records to be selected positioned at one side of said drum, and means interconnecting said selector knob and drum for rotating it to indicate on said name plate the record selected.

4. In a remote control device, the combination with an automatic record changing and sound producing mechanism including a series of actuators, and means controlled thereby to place a selected record for reproduction, of a cabinet remotely positioned with respect thereto and electrically connected with said sound producing mechanism, an annular switch member in said cabinet carrying a plurality of contacts, each contact being electrically connected remotely with one of said actuators, a rotating shaft, a contact member carried by said shaft rotatable to selectively engage one of said contact members, a master switch for closing a circuit through the selected contact and actuator, an exteriorly positioned manually operable selector knob for rotating said shaft, a rotatable record indicating drum, and driving mechanism between said shaft and drum for causing corresponding rotation whereby the record selected by rotation of said shaft will be indicated by the corresponding rotation of said drum.

5. A remote control device, comprising a cabinet remotely and operably connected with an automatic record changing and sound producing mechanism, a record selecting switch mounted within said cabinet comprising an annular disc with spaced contacts arranged annularly thereabout, each contact having an individual connection with said record changing mechanism, a rotating contact member selectively movable into engagement with one of said contacts, a master switch associated therewith for closing a circuit through said selected contact, a corresponding record selecting mechanism to place a selected

record in reproducing position, a shaft having a manually operated knob mounted on the face of said cabinet for moving said member into selective contact engagement, a drum mounted in the face of said cabinet rotatable about a vertical axis by said knob and having visible indicia thereon corresponding with said selective contacts, and a program list carried by the face of the cabinet to one side of said drum bearing the names of the records to be reproduced, the indicia on said drum being so arranged as to indicate said selection through the rotation thereof by the selector knob.

6. An electrically actuated selective device for an automatic record changing and sound producing mechanism for phonographs comprising a series of contact switches electrically connected in circuit with a source of energy and the record changing mechanism of the phonograph, each switch effecting the selection of an associated record, a series of electromagnets, an armature actuated by each of said magnets, means operated by each armature for closing one of said switches, means for returning the operated means to initial position for opening said switch upon the selection of the associated record being effected, and a manually operated selector switch for closing a circuit to energize a selected electromagnet.

7. An electrically actuated selective device for an automatic phonograph record changing and sound producing mechanism, comprising a series of contact switches electrically connected in circuit with a source of energy and the record changing mechanism, each switch effecting the selection of an associated record, an upper series and a lower series of electromagnets, one series being offset from the other, a series of corresponding armatures pivotally mounted between each series of electromagnets, a spring switch associated with each armature, a spring actuated lever releasably connected with each armature for moving its corresponding spring switch into circuit closing position, a member slidable transversely of said levers adapted to be positioned and operated to return the operated lever to initial position by movement of the record changing mechanism whereby the closed switch will move to open position upon effecting the record selection, and a manually operated selector switch for closing a circuit to energize the selected electromagnet.

8. In an automatic selective phonograph, a device for indicating the record selected, comprising a rotating drum, manually operable means movable to select a predetermined record, said means being operably connected with said drum for rotating it to a predetermined position, a program panel mounted to one side of said drum containing a vertically disposed list of records to be selected, and a spirally-disposed series of indicia formed about the peripheral surface of said drum for indicating the selected record when rotated to a predetermined position.

9. A record indicating member for selective record changing phonographs, comprising a cylindrical drum mounted to rotate about a vertically-disposed axis, a record program panel mounted on opposite sides of and adjacent said drum carrying a vertical list of records to be selected, a series of indicia upon the periphery of the drum, each indicia arranged to point to one of said record listings being correspondingly vertically and radially spaced from each other so as to extend spirally from the top to the bottom of said drum about one side thereof and pointing in one direction, and a second series of corresponding indicia similarly arranged on the other side of the drum pointing in the opposite direction, whereby rotation of said drum will bring one of said indicia into position to indicate one of said record listings.

10. A record indicating member for selective record changing phonographs, comprising a cylindrical drum, a series of indicia upon the periphery thereof extending spirally from the top to the bottom of one side of said drum pointing in one direction, and another series of corresponding indicia similarly arranged on the other side of the drum pointing in the opposite direction.

11. In a remote control and sound reproducing device, the combination with an automatic record changing and sound producing mechanism including a series of actuators, and means controlled thereby to place a selected record for reproduction, of a cabinet containing a loud speaker remotely positioned with respect thereto and electrically connected with said sound producing mechanism, a series of circularly spaced contacts, each electrically connected in a circuit with one of said actuators at a remote position, a rotatable selector knob on said cabinet having a rotating contact finger for selective engagement with one of said contact members for closing a selected circuit therethrough, a record indicating means, and a shaft and gear connection between said knob and indicating means operable by the rotation of said knob to record selecting position.

THEODORE M. WRIGHT.