Aug. 31, 1948. A. P. MARCUS ET AL 2,448,380

SELECTOR SWITCH FOR PHONOGRAPH CIRCUIT

Filed March 8, 1947 2 Sheets-Sheet 1

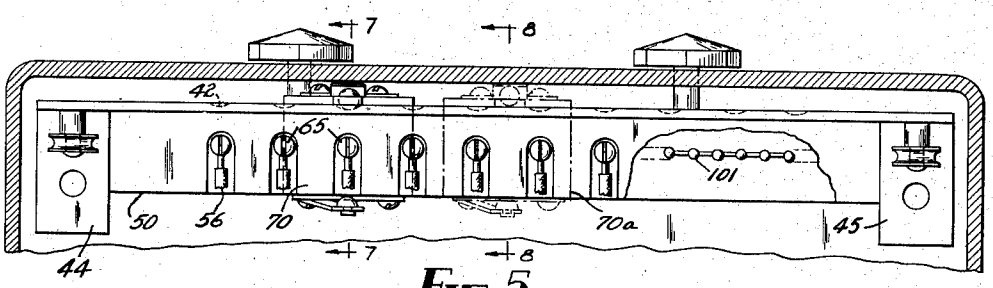


FIG. 5

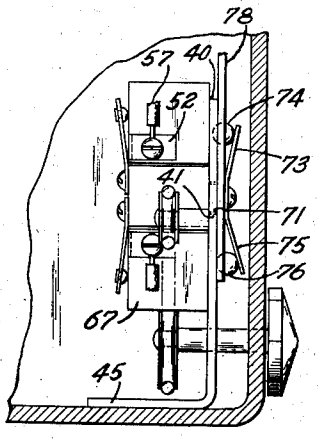


FIG. 6

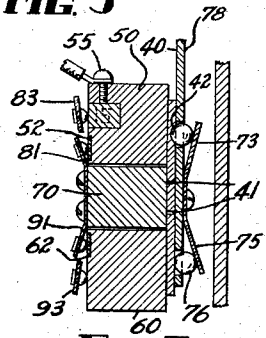


FIG. 7

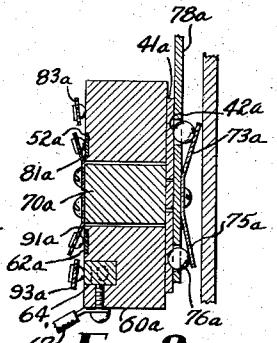


FIG. 8

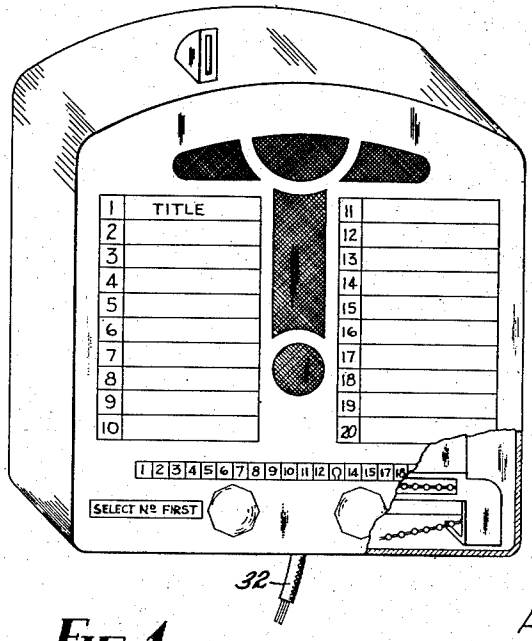


FIG. 1

INVENTOR.
ARTHUR PAUL MARCUS
FRANK C. FILO

BY

Morton Sabin

Aug. 31, 1948. A. P. MARCUS ET AL 2,448,380

SELECTOR SWITCH FOR PHONOGRAPH CIRCUIT

Filed March 8, 1947 2 Sheets-Sheet 2

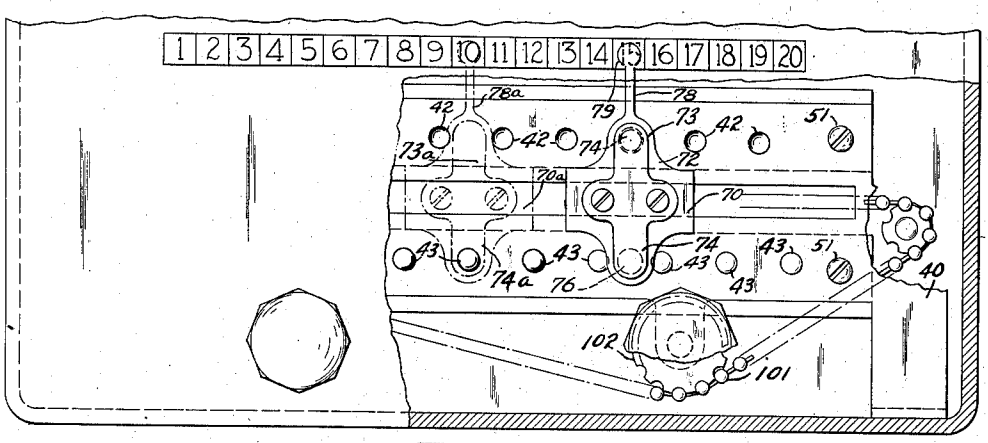


FIG. 2

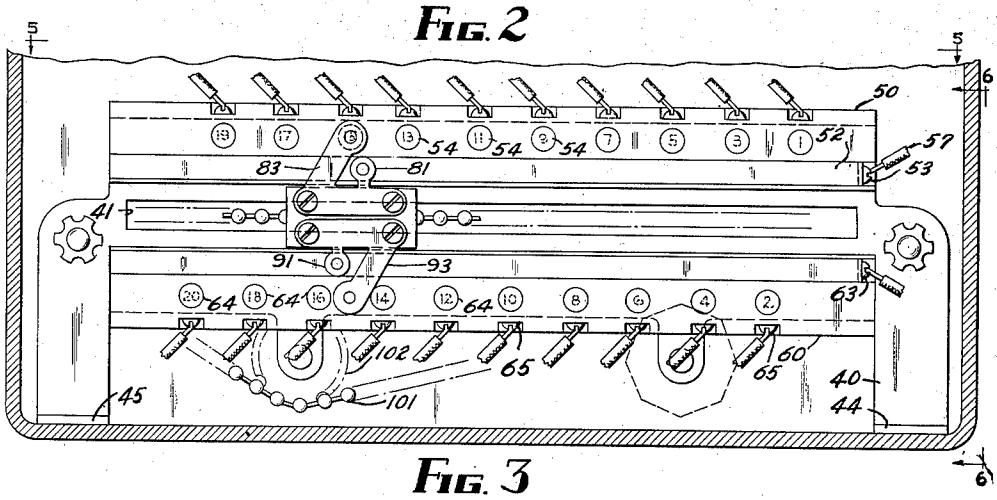


FIG. 3

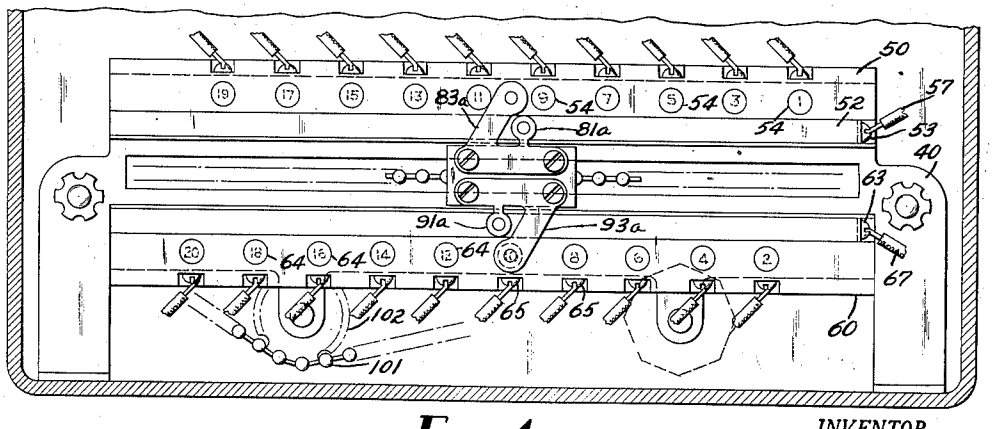


FIG. 4

INVENTOR.
ARTHUR PAUL MARCUS
FRANK C. FILO

BY

Morton A. Balcran

Patented Aug. 31, 1948

2,448,380

UNITED STATES PATENT OFFICE

2,448,380

SELECTOR SWITCH FOR PHONOGRAPH CIRCUIT

Arthur Paul Marcus, Cleveland Heights, and Frank C. Filo, Cleveland, Ohio, assignors to The Markepp Co., Inc., Cleveland, Ohio

Application March 8, 1947, Serial No. 733,312

7 Claims. (Cl. 200—16)

1

This invention relates to electric switches and particularly to selector switches for remote control selective phonographs.

The primary object of this invention is to provide a selector switch for use with remote control selective phonograph systems, employing dual circuits such as disclosed in our co-pending patent applications Serial Number 694,978 filed September 5, 1946, entitled Phonograph apparatus, and Serial Number 733,313 filed March 8, 1947, entitled Automatic phonograph system.

Another object is to provide a selector switch that is compact in structure so that a large number of selections may be made within the small space available in the standard phonograph wall box, thus enabling the public to enjoy a wider choice of recordings.

A further object is to provide a selector switch that has a positive selective action whereby it is impossible to close more than one contact at a time.

Still another object is to provide a device of the type stated that will clearly and positively identify the selection being made at any particular setting of the selector knob.

These and other objects of the invention will become apparent from a reading of the following specification and claims, together with the accompanying drawing in which like parts are referred to and indicated by like reference characters and wherein:

Figure 1 is a comprehensive view of a wall box containing a phonograph loud speaker and a remote control selective switch embodying this invention;

Figure 2 is an enlarged front view of the lower half of the wall box with a portion broken away to disclose the arrangement of certain elements therein and showing the selector switch indicator disk covering the number "15" of the indicia and also in an alternate position covering the number "10" of the indicia;

Figure 3 is a rear view of the device illustrated in the Figure 2 showing the upper selector switch arm engaged with the number "15" switch point;

Figure 4 is a view similar to that of the Figure 3 but showing the lower selector switch arm engaged with the number "10" switch point;

Figure 5 is a top view of the selector switch taken along the line and in the direction of the arrows 5—5 of the Figure 3 showing the rider as it appears when the upper switch arm is engaged with the number "15" switch point and also in an alternate position in which the lower switch arm is engaged with the number "10" switch point;

Figure 6 is a right end view of the selector taken along the lines and in the direction of the arrows 6—6 of the Figure 3;

Figure 7 is a cross-sectional view taken substantially along the line and in the direction of the arrows 7—7 of the Figure 5; and

2

Figure 8 is a cross-sectional view taken substantially along the line and in the direction of the arrows 8—8 of the Figure 5.

Referring to the drawings there is shown a circuit selector made in accordance with this invention.

Figure 1 is a perspective view of a wall box 30 having a speaker grill 31 which conceals a conventional loud speaker for reproducing selected recordings played by a remote phonograph, connected to the box by means of the electric cable 32. Reference characters 33, 34, and 35 indicate a volume control knob, a selector switch knob and a coin slot respectively. Indicia 36 indicate the selections offered, the titles being on removable sheets of paper that can be changed at will to correspond with the recordings available in the phonograph.

The wall box is made of any suitable sheet material appropriately decorated and finished in accordance with well known practice in the art of cabinet making. A sheet metal frame 40 is secured in the lower section of the box as shown in the Figures 2, 3, 4 and 5. The frame extends the width of the box or case 30 and has two end supports or legs 44 and 45 and a central longitudinal rider slot 41.

Reference character 42 indicates a first or upper series of spaced concave sockets which are punched or drilled into the frame itself. Reference character 43 indicates a similar second or lower series of spaced sockets in which the individual sockets are aligned intermediate those of the upper or first series of sockets as shown in the Figure 2.

A first dielectric block 50 made of hard rubber, fiber or other suitable insulating material is mounted on the upper section of the frame proximate the rider slot 41, by means of the mounting screws 51 as shown in the Figure 2. The dielectric block has a bus bar 52 set flush with its outer surface. Reference character 53 indicates a terminal screw to which the first selective circuit master cable 57 is attached. A series of ten spaced switch points 54 are set flush with the same surface of the dielectric block as that containing the bus bar. The switch points are aligned with the first series of frame sockets 42 as shown in the Figure 5. Reference character 55 indicates the terminal screw of each switch point to which the first selective circuit selector wires, indicated by reference character 56, are attached. A second dielectric block 60 having a similar bus bar 62 and ten spaced switch points 64 is attached to the lower half of the frame proximate the rider slot 41 by means of the mounting screws 61. The bus bar and switch points have terminal screws 63 and 65 respectively to

which the master cable 67 and the selective circuit cables 66 of the second selective circuit are attached. The individual switch points 64 of the second dielectric block 60 are aligned intermediate the individual switch points 54 of the first dielectric block 50, as shown in the Figures 3 and 4. They are also aligned with the second series of frame sockets 43. The number of switch points in the preferred form of selector here disclosed is twenty, divided equally between the two dielectric blocks. It should be understood, however, that the number of switch points may be varied at will depending upon the space available and the number of selections to be made.

A rider 70 made of the same dielectric material as the stationary blocks 50 and 60 is slidably mounted between the two dielecric blocks by means of the rectangular bearing section 71 which engages the frame slot 41 in a sliding fit as is shown in the Figures 2, 3, 4, 6, 7 and 8.

A locator plate 72, secured to the rider by means of the screws 77, holds the rider in the slot. The locator plate has an indicator arm 78, including an indicator disk 79 at the end thereof. The locator plate also has two holes in which the balls 74 and 76 are free to rotate between the frame 41 and the flexible socket arms 73 and 74 respectively, as shown in the Figures 2, 5, 6, 7 and 8. The ball 74 is free to engage the first series of sockets designated by the reference character 42 and the ball 76 is free to engage the second series of sockets designated by the reference character 43, as the rider slides between the two dielectric blocks. Reference character 80 indicates a first switch plate made of flexible metal such as phosphor-bronze. The plate is mounted on the rider by means of the screws 85, and has flexible contact arms 81 and 83, which slidably engage the bus bar 52 and the switch points 54 through their ball contact points 82 and 84, respectively. A similar second switch plate 90 having no electrical connection with the first switch plate is mounted on the rider by means of the screws 95.

Reference characters 91 and 93 indicate flexible arms which engage the bus bar 62 and the switch point 64 through their ball contact points 92 and 94 respectively. The rider can be moved back and forth along the slot 41 by any of the well-known pulley and cable arrangements, but in the preferred form illustrated a ball chain 101 is used which is held on three sprocket wheels 102, 103 and 104. The chain ends are attached to either side of the rider as shown in the Figures 2, 3, 4, 5 and 6. The rider is caused to move by rotating the sprocket wheel 103, by means of the selector knob 34, in the direction that it is desired to move the rider.

The flexible socket arms 73 and 75 press their respective balls 74 and 76 against the frame and cause them to roll in and out of the successive sockets as the locator plate passes over them when the rider is moved along the slot 41.

The alignment of either of the switch arms 83 or 93 with a switch point 54 or 64 is indicated by a change in the force needed to rotate the knob 34, since the socket balls 74 and 76 fall into their respective sockets 42 and 43 when the switch points are contacted in sequence. The identification of the particular circuit that is completed at any position of the rider is brought about by the indicator disk 79, which covers the particular identifying symbol on the case face as shown in the Figures 1 and 2.

As will be seen from a study of the drawings this selector switch has two completely independant electric circuits which are alternately available for action when the rider is moved along the slot 41. Looking at the Figure 2 the first circuit embodies the master cable 57, which carries the current to the bus bar 52. The first switch plate 80 of the rider 70 picks up the current from the bus bar 52 by means of the bus bar arm 81, which remains in sliding contact with the bus bar 52 in all possible positions of the rider. The switch point arm 83 then completes the first circuit thru any one of the switch points designated by the reference character 54 and thence through the various selector cables 56 of the first circuit.

The second circuit embodies the master cable 67 which carries the current to the bus bar 62. The second switch plate 90 of the rider 70 picks up the current from the bus bar 62 by means of the bus bar arm 91 which remains in sliding contact with the bus bar 62 in all possible positions of the rider. The switch point arm 93 then completes the second circuit thru any one of the switch points designated by the reference character 64 and hence through the various selector cables 66 of the second circuit.

For the sake of convenience in explaining the operation of the device the switch points of the first circuit have been given odd numbers from 1 to 19 and the switch points of the second circuit have been given even numbers from 2 to 20, as shown in the Figures 3 and 4.

Figure 2 shows the selector switch set to activate that portion of the first circuit that bears the number "15."

The rider bearing the reference character 70 has its indicator disk 79 over the index bearing the number "15." This means that the switch point arm 83 is in contact with the switch point "15." The rider 70 is held squarely in position over the switch point 15 by reason of the fact that the locator ball 73 is seated in the particular socket 42, that is aligned with the switch point "15" as is shown in the Figures 3, 5 and 7. The number "15" section of the first circuit is now set up and as soon as a coin is dropped in the coin slot 35 to close the accessory switches, which form no part of this invention, the phonograph will select the record corresponding to "15" and the recording thereon will be reproduced by the loud speaker in the wall box 30 by means well known to those skilled in the art of automatic phonograph machines.

Figure 2 also shows the rider in an alternate position designated by the reference character 70*a*, in which the indicator disk 79*a* is over the index bearing the number "10." In this situation the switch point arm 83*a* is intermediate the switch points "9" and "11" which means that the first circuit is open. However, the switch point arm 93*a* of the second circuit is in contact with the switch point "10." This time the rider 70*a* is held squarely in position over the switch point "10" by reason of the fact that the locator ball 76*a* is seated in the particular socket 43 that is aligned with the switch point "10," while the locator ball 73*a* now is out of its socket and is riding on top of the frame 40 as shown in the Figures 4, 5 and 8. The number "10" section of the second circuit is now set up and the deposition of a coin will cause the phonograph connected to the selector switch to select and play the number "10" recording.

While this selector switch is especially intended for use with the remote control phonograph circuit disclosed in the aforestated co-pending pat-

ent applications, it is to be understood that it can be used to control dual circuits of any type, up to the limit of its electrical capacity. By connecting the two bus bars together by means of a jumper the switch just described can be used to select twenty sections of a single circuit. Since the switch points are arranged in two parallel rows the switch is compact and permits a large number of selections to be made in a comparatively small space.

It will now be clear that there is provided a device which accomplishes the objectives heretofore set forth. While the invention has been disclosed in its preferred form it is to be understood that the specific embodiment thereof, as described and illustrated herein, is not to be considered in a limited sense as there may be other forms, modifications or applications of the invention which should also be construed to come within the scope of the appended claims.

We claim:

1. In a remote control selective phonograph circuit, a selector switch, comprising in combination, a support member having a plurality of spaced sockets thereon, a dielectric block mounted on the support member having a bus bar and a plurality of switch points of the aforesaid circuit, the said switch points being aligned with the said sockets, a rider member slidably mounted on the support member having a first switch arm engaged with the bus bar, a second switch arm engageable with any one of the switch points and a locator arm engageable with the socket corresponding to the particular switch point engaged by the second switch arm, and pulley means mounted on the support member and attached to the rider member for moving the latter member relative to the dielectric block.

2. In a remote control selective phonograph circuit, a selector switch, comprising in combination, a case member having indicia on the face thereof, a frame member mounted in the case member having a plurality of sockets thereon, a dielectric block mounted on the frame member having a bus bar and a plurality of switch points, of the aforesaid circuit, the said switch points being aligned with the said sockets, a rider member slidably mounted on the frame member having a first switch arm engaged with the bus bar, a second switch arm engageable with any one of the switch points, a locator arm engageable with the socket corresponding to the particular switch point engaged by the second switch arm, an indicator arm co-operating with the indicia on the case member and pulley means mounted on the support member and attached to the rider member for moving the latter member relative to the dielectric block.

3. In a remote control selective phonograph having dual circuits, a selector switch, comprising in combination, a support member, a first dielectric block mounted on the support member having a bus bar and a plurality of switch points of the aforesaid first circuit, a second dielectric block mounted on the support in spaced parallel relation with the said first dielectric block, having a bus bar and a plurality of switch points of the aforesaid second circuit, the said switch points being spaced in intermediate relation with those of the first dielectric block, a rider member slidably mounted on the support member having a first switch plate including a bus bar arm engaged with the bus bar of the first dielectric block, and a switch point arm engageable with any one of the switch points of the first dielectric block, a second switch plate including a bus bar arm engaged with the bus bar of the second dielectric block and a switch point arm engageable with any one of the switch points of the second dielectric block, and pulley means mounted on the support member and attached to the rider member for moving the latter member relative to the two dielectric blocks.

4. In a remote control selective phonograph having dual circuits, a selector switch, comprising in combination, a support member having a first series of spaced sockets and a second series of sockets spaced in intermediate relation with those of the first series, a first dielectric block mounted on the support member having a bus bar and a plurality of switch points of the aforesaid first circuit, the said switch points being aligned with the first series of sockets, a second dielectric block mounted on the support in spaced parallel relation with the said first dielectric block having a bus bar and a plurality of switch points of the aforesaid second circuit, the said switch points being spaced in intermediate relation with those of the first dielectric block and aligned with the second series of sockets, a rider member slidably mounted on the support member having a first switch plate including a bus bar arm engaged with the bus bar of the first dielectric block, and a switch point arm engageable with any one of the switch points of the first dielectric block, a second switch plate including a bus bar arm engaged with the bus bar of the second dielectric block and a switch point arm engageable with any one of the switch points of the second dielectric block, a locator plate having a first socket arm engageable with any one of the first series of sockets and a second socket arm engageable with any one of the second series of sockets, and pulley means mounted on the support member and attached to the rider member for moving the latter member relative to the two dielectric blocks.

5. In a remote control selective phonograph having dual circuits, a selector switch, comprising in combination, a case member having indicia on the face thereof, a support member mounted on the case member, having a first series of spaced sockets and a second series of sockets spaced in intermediate relation with those of the first series, a first dielectric block mounted on the support member having a bus bar and plurality of switch points of the aforesaid first circuit, the said switch points being aligned with the first series of sockets, a second dielectric block mounted on the support in spaced parallel relation with the said first dielectric block having a bus bar and a plurality of switch points of the aforesaid second circuit, the said switch points being spaced in intermediate relation with those of the first dielectric block and aligned with the second series of sockets, a rider member slidably mounted on the support member having a first switch plate including a bus bar arm engaged with the bus bar of the first dielectric block, and a switch point arm engageable with any one of the switch points of the first dielectric block, a second switch plate including a bus bar arm engaged with the bus bar of the second dielectric block and a switch point arm engageable with any one of the switch points of the second dielectric block, a locator plate having a first socket arm engageable with any one of the first series of sockets and a second socket arm engageable with any one of the second series of sockets, an indicator arm co-operating

with the indicia on the case member, and pulley means mounted on the support member and attached to the rider member for moving the latter member relative to the two dielectric blocks.

6. A selector switch of the type defined in claim number 5 and further characterized by the rider member being slidably mounted between the first and second dielectric blocks.

7. In a remote control selective phonograph having dual circuits, a selector switch, comprising in combination, a support member having a series of spaced sockets, a first dielectric block mounted on the support member having a bus bar and a plurality of switch points of the aforesaid circuit, the said switch points being aligned with alternate sockets, a second dielectric block mounted on the support member in spaced parallel relation with the said first dielectric blocks having a bus bar and a plurality of switch points of the aforesaid second circuit, the said switch points being aligned with those of the first dielectric block, a rider member slidably mounted on the support member having a first switch plate including a bus bar arm engaged with the bus bar of the first dielectric block, and a switch point arm engageable with any one of the switch

points of the first dielectric block, a second switch plate including a bus bar arm engaged with the bus bar of the second dielectric block and a switch point arm engageable with any one of the switch points of the second dielectric block, the said first and second switch point arms being angularly positioned with reference to each other whereby they are incapable of engaging their respective switch points simultaneously, a locator plate having a socket arm engageable with any one of the sockets, and pulley means mounted on the support member and attached to the rider member for moving the latter member relative to the two dielectric blocks.

ARTHUR PAUL MARCUS.
FRANK C. FILO.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
450,441	Whipple	Apr. 14, 1891
844,090	Bijur	Feb. 12, 1907