

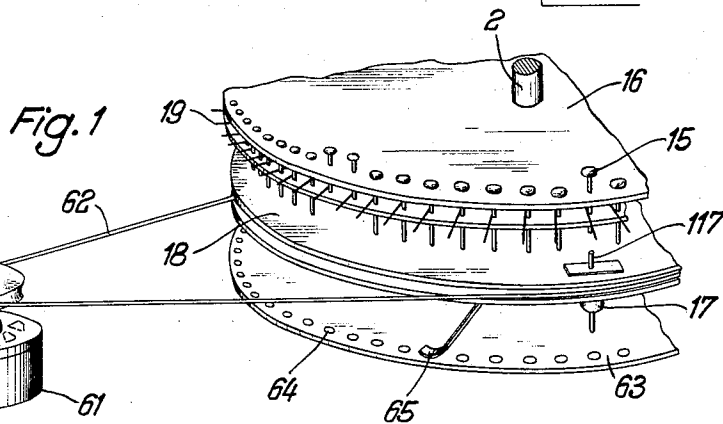
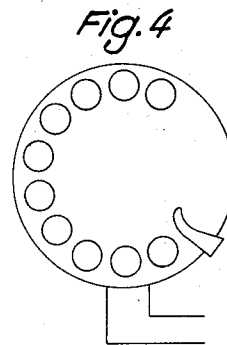
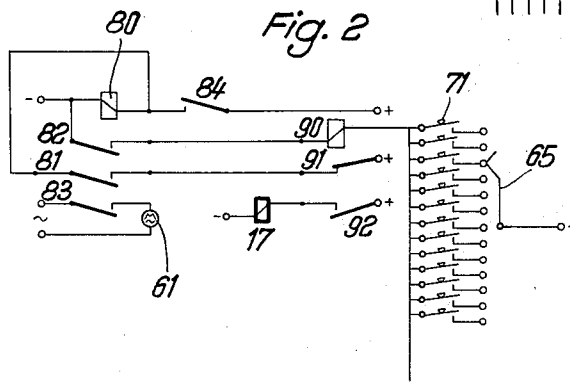
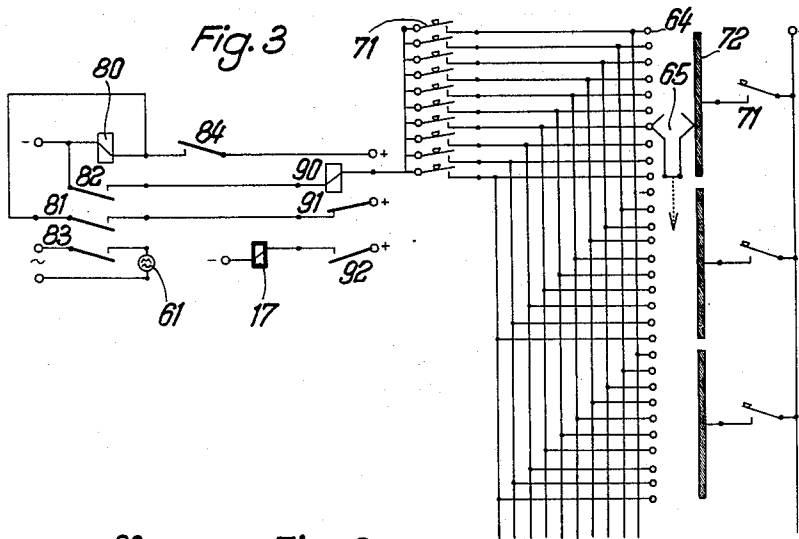
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PHONOGRAPH RECORD PLAYER

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PHONOGRAPH RECORD PLAYER

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This invention relates to a phonograph record player and is described and illustrated hereinafter as embodied in a device of the type disclosed in my application for Letters Patent of the United States Ser. No. 407,663 under date of February 2, 1954.

In connection with phonograph record players various systems are known which permit of selecting any desired number of records in advance. The principle of these preselecting systems, as a rule, rests in the connection of any desired number of selector pins, or levers, directly or indirectly into a circuit by manually-mechanical or electrically operated means. In the following specification the employment of the conventional preselecting systems in phonograph record players of large capacity are assumed to be known.

The switching into the circuit of the selector pins, or levers, by direct or indirect manual-mechanical actuation is possessed of certain disadvantages. Apart from an increased mechanical expenditure, these systems are not proof against fraudulent uses and neither is there any possibility of selecting records by a remote control.

Switching the selector pins, or levers, in the conventional devices by electric control means requires a large number of electro-mechanical elements, since for every one of the many selector pins, or levers, a separate electro-magnet has to be provided. Because of their crowded arrangement these electro-magnets can only be small in size, so that for switching the selector pins, or levers, only a comparatively small power is for disposal. This, again, requires a lighter and yet more precise construction of the pertaining mechanical switch elements which, apart from the great expenditure, has the drawback of not being sufficiently reliable. There is a possibility in the systems last referred to, of providing a distance control, but an additional arrangement of relays and step-selectors will be required if the number of the electrical conduits is to be kept low.

The invention in its major aspect consists in the provision of means by the employment of which the aforesaid drawbacks of the known devices will be eliminated while their advantages will not only be maintained but even intensified so as to provide a device which will be easy to handle and reliable in its operation.

The invention largely consists in that the solenoid, the arrangement and the function of which have been described in my aforesaid patent application Ser. No. 407,663 and which moves along the selector pins or levers is driven by an electric motor, by means of which it is moved along the said selector pins, or levers, until a row of contacts, which are provided along the line or circle of the selector pins, transmit an electric impulse to the solenoid over a leaf spring either directly or indirectly and thereby connects the pin of the selected record into the circuit. In this way the same simplicity of attendance and the same reliability is obtained as in the known electric systems, but with very considerable savings of cost and labour. Beyond this,

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the new arrangement also offers the possibility of a remote or distance control.

In accordance with the invention the aforesaid object is attained, for example, by the coordination to the selecting members of an electric driving means, and of an electric switching or controlling means to its solenoid in cooperation with manually actuated electrical means for selecting the pin or pins corresponding to the record or records to be played.

The electric switching and controlling means may be actuated by means of keys or by a revoluble dial of the kind used in automatic telephones. It is also possible to operate the electric switching and controlling device by means of other selectors.

In an arrangement in accordance with the invention several modifications are possible according to the kind of manual actuation of the electric means employed, of which modifications some will be described in greater detail hereafter. It is to be understood that all these examples are based on the assumption that the selection of records is initiated by pins which are arranged in a circle, although any other shape or arrangement of the storing members may be resorted to if desired. Another assumption is that the tappet through which the pins are actuated is operated by means of a solenoid and is preferably moved together with the same in relation to the pins. It is to be understood, however, that also in this case any other design of the actuating or switching element for the selecting members may be chosen, such for instance as the separate arrangement of the mechanical releasing means (tappet) and its electric or magnetic control.

The accompanying drawings diagrammatically illustrate the invention by way of example.

In these drawings:

Fig. 1 is the perspective view of a part of the selecting and controlling device of a record player in accordance with the invention.

Fig. 2 is a wiring diagram for one way of carrying out the invention.

Fig. 3 is a similar wiring diagram of a modified arrangement.

Fig. 4 illustrates the application of a revoluble dial to a device in accordance with the invention.

Referring first to the embodiment of the invention which is represented in Figs. 1 and 2. Rotatably arranged below the selector disc 16 with its selector pins 15 is the selector wheel 18 with its selector magnet or solenoid 17, the actuating member of which, shown as a tappet 117, is provided to connect the individual selector pins 15 into the circuit substantially as described in my aforesaid patent application.

The selector wheel 18 is driven by means of an electric motor 61 over the belt 62. Arranged underneath the selector wheel 18 is a contact disc 63 having a plurality of contacts 64 arranged in circular fashion. A leaf spring 65 serving as a sliding contact member is fastened to the selector wheel 18 and adapted to slide over the contacts 64. Current is supplied to the movable switch elements preferably over slip rings (not shown) and to the motor 61 over a contact 83 (Fig. 2) so as to rotate the selector wheel 18. By the insertion of a coin into a slot of the machine a contact 84 is closed in known manner, whereby the relay 80 becomes attracted and electrically locked over the contacts 81 and 91. If now the key 71 pertaining to the selected record is depressed, the relay 90 receives current over the contact 82 at the moment when the contact spring 65 touches the respective contact 64. Contact 92 closes at the same moment, the solenoid 17 responds and connects the selector pin 15 of the respective contact 64 into the circuit. At the

same time, however, contact 91 had been opened and relay 80 released, which drops and thereby disconnects through the open contact 82 the relay 90 and solenoid 17 and, through contact 83, also the motor. The keys may be ordinary contact keys which would have to be kept depressed until the storing of the record is accomplished which may be made visible as by the lighting up of a lamp. In a similar manner mechanically locked key boards may be used, the locking of which may be released from a central position by means of a magnet at the termination of the storing action.

In the embodiment shown in Fig. 3 in conjunction with Fig. 1, the arrangement just described has been modified in that instead of providing a separate key for each music piece of which there is assumed to be one on either side of the records, the contact disc 63 is controlled by a smaller number of keys. In this case the contact disc 63 is provided with additional flat selecting contacts 72 and the contact spring 65 with two arms (Fig. 3), by means of which it slides at the same time over the terminals 64 and over the flat contacts 72 acting, as it were, like a short circuit bridge. For selecting a music piece it will be necessary, as in other known selecting systems, to depress two keys. The electric connections and the procedure are approximately the same as in the first example.

As a third way of operation in accordance with the invention, to which Figs. 1 and 3 also apply, the contacts 64 and 72 can be controlled by the actuation of a preferably ten-stage selector dial such as they are used in connection with automatic telephones for example (Fig. 4).

In this modification the keys 71 are substituted by a known type of selector dials 95 which, on their part, are directly or indirectly controlled preferably by means of a telephone calling dial or the like. The electric connections and procedures are approximately the same as those described in connection with the first and second examples. This arrangement is especially adapted for connecting any desired number of remote selecting stations. The conventional acoustic signs for "free" and "engaged" will preferably be replaced by electric lamps. For the control of the dial selectors by one or more dials as also for the reverse of the dials after selection any of the connecting systems which are employed in tele-transmission may be used.

What I claim is:

1. In a phonograph record player having a plurality of records in a magazine and means for selecting among said records for playing, a stationary circular pin disc having a plurality of vertically movable selector pins in spaced relation around its circumference, a stationary circular contact disc having electrical contacts also in spaced relation around its circumference, a selector wheel movable in relation to said pin disc and said contact disc, a solenoid in fixed position on said selector wheel capable of cooperation with each of the selector pins on said pin disc and with the respective contact on said contact disc, an electric motor for rotating said selector wheel, manually operable electrical means for actuating the pin of each record to be played, and electric connections with each of the said selector pins and said contacts to be closed into independent circuits over the said solenoid

when the said selector wheel, during its rotation, passes a contact-closing position between the selector pin and its respective contact.

2. In a phonograph record player having a plurality of records in a magazine each having a recording on at least one of its sides and means for selecting a number of said recordings for reproduction, a stationary circular pin disc, a plurality of vertically movable selector pins in spaced relation around the circumference of said pin disc, each of said pins corresponding to one of said recordings, a stationary circular contact disc coaxial with said pin disc, a plurality of electric contacts also in spaced relation around the circumference of said contact disc, each of said contacts being coordinated to one of the said selector pins, a revoluble selector wheel intermediate the said pin disc and said contact disc, a solenoid in fixed position on and movable with said selector wheel capable of cooperation with each of said selector pins and with its respective contact on said contact disc, an electric motor for rotating said selector wheel, and manually operable electric means for selecting each pin corresponding to a recording to be reproduced.

3. In a phonograph record player having a plurality of records in a magazine each having a recording on at least one of its sides and means for selecting among said recordings for reproduction, a stationary circular pin disc, a plurality of vertically movable selector pins in spaced relation around the circumference of said pin disc, each of said pins corresponding to one of said recordings, a stationary circular contact disc coaxial with said pin disc, a plurality of electric contacts also in spaced relation around the circumference of said contact disc, each of said contacts being coordinated to one of said selector pins, a revoluble selector wheel intermediate and coaxial with the said pin disc and said contact disc, a solenoid in fixed position on and movable with said selector wheel, a contact member also fixed to said selector wheel in electrical connection with said solenoid and capable, during the revolution of the wheel, of communication with each of the contacts on said contact disc, an electric motor for rotating said selector wheel irrespective of selections, and manually operable electric means for selecting the pins corresponding to each selected recording.

4. A phonograph record player having a plurality of records in a magazine and means for selecting a desired number of said records for playing as set forth in claim 3, in which the said contact member is a leaf spring fixed to the revoluble selector wheel and electrically connected to the said solenoid and having its free end adapted to slide over the contacts on the stationary contact disc to establish electric contacts with the vertically movable selector pins on the stationary pin disc when, during the rotation of said selector wheel, the free end of the contact spring touches the contact associated with the selector pin of the selected recording.

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