

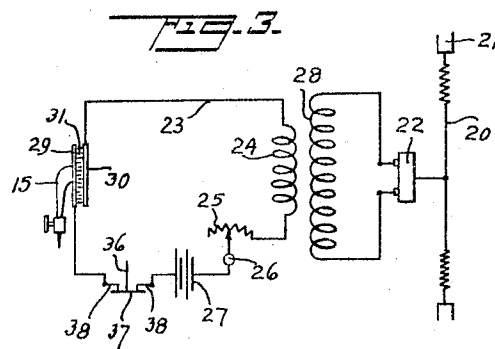
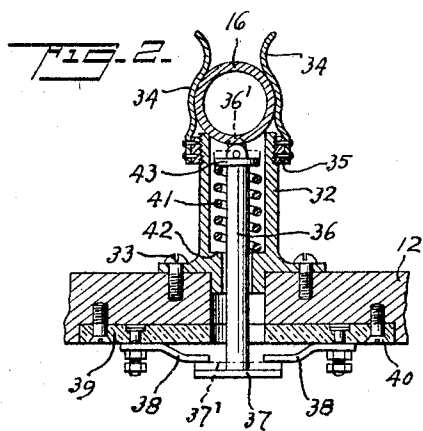
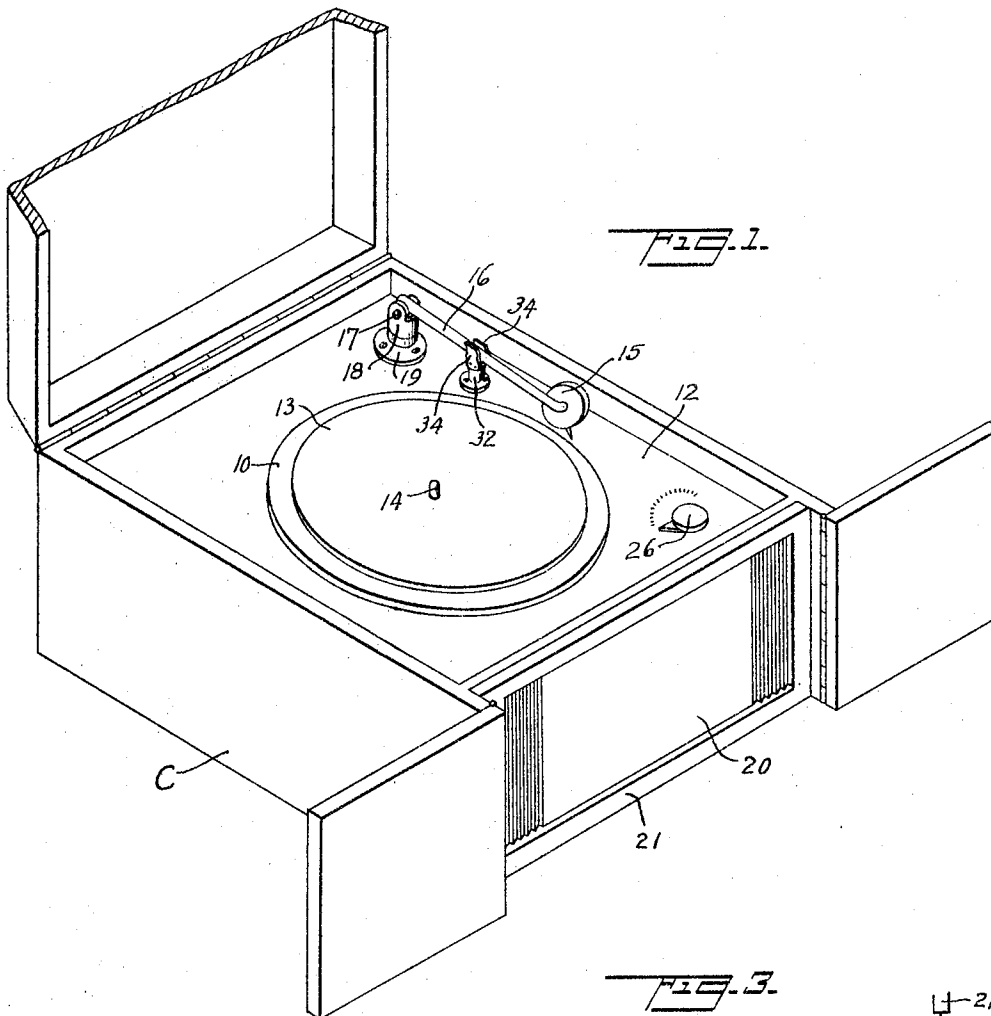
June 27, 1933.

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1,915,906

ELECTRIC PHONOGRAPH

Original Filed Dec. 16, 1926



INVENTOR

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ELECTRIC PHONOGRAPH

Original application filed December 16, 1926, Serial No. 155,116. Divided and this application filed May 16, 1931. Serial No. 537,858.

This invention is for an electric phonograph in which the reproducer arm normally rests on a support adapted to operate suitable switch mechanism when the arm is removed and replaced. In the broad aspect of my invention, this switch mechanism may control any circuit of the electric phonograph apparatus, such as a current supply for the reproducer. In one form of my invention, when the reproducer arm rests in idle position on its support, a movable member of the support holds a current supply switch open so that no electricity is wasted. When the reproducer is moved to playing position, suitable spring means actuates the controlling member of the support to close the switch, so that the machine is in operative condition.

The novel features and practical advantages of my invention will be understood from a description of the accompanying drawing, in which—

Fig. 1 is a perspective view of an electric phonograph provided with my automatic switch control;

Fig. 2 is an enlarged cross-section of the support for the reproducer arm and the associated switch device; and

Fig. 3 is a simplified circuit diagram of suitable operative connections between the pickup and the loudspeaker.

A cabinet C contains suitable phonographic mechanism which need not be shown or described in detail, since it forms no part of the present invention. It is enough to say that a turntable 10 is mounted over the top board 12 for supporting a sound record 13. The turntable shaft 14 is supposed to be driven by a motor (mechanical or electric) mounted beneath the top board 12. There will, of course, be a brake for starting and stopping the turntable, and a motor switch if an electric motor is used, but I need not illustrate these parts because they are obvious. An electric pickup or reproducer 15 is mounted on a movable arm 16, which is preferably a light tube in which the circuit wires for the reproducer may be concealed. There are various types of phonograph pickups in the market,—electromagnetic, microphonic and electrostatic,—and since these

are well known, I need not set forth any structural details thereof. It will therefore be understood that the part 15 represents any practical form of phonograph pickup. The reproducer arm 16 is mounted for vertical and horizontal movement in any practical way. In Fig. 1, the rear end of arm 16 is pivoted on a horizontal pin or bearing 17 carried by a swivel post 18, which is rotatably mounted on a suitable base member 19 fixed on the top board 12. The horizontal pivot bearing 17 allows vertical movements of arm 16, and the swivel post 18 permits the arm to swing horizontally over the turntable. Any other practical form of mounting for the reproducer arm 16 may be adopted.

The electric impulses produced by the operation of pickup 15 are suitably amplified to actuate a loudspeaker diaphragm 20, which in the present instance is mounted in a rectangular frame 21 at the front of the cabinet. The diaphragm 20 is represented as a tensioned vibratory sheet connected to a suitable driving unit 22, which may be of any approved type or design. The circuit 23 of pickup 15 includes a primary coil 24 and a rheostat 25, which is operated by a rotary hand knob 26 on top of the motor board 12 to control the volume of reproduction. The reproducer circuit 23 is fed by a suitable source of current, indicated diagrammatically by a battery 27. The primary coil 24 is in transformer relation to an amplifying secondary coil 28, which is connected to the electric driving unit 22. In Fig. 3 the electric pickup 15 is represented diagrammatically as being of the microphone type, comprising a vibratory member 29 connected to the stylus arm, a fixed member 30 (the microphone casing or rear wall), and a mass of carbon granules 31. When the member 29 vibrates in the playing of a record, the variations in the electrical resistance of the microphone cause current impulses in primary coil 24, and these impulses are amplified in the secondary coil 28 to energize the driving unit 22. Any other practical transmission connections between pickup 15 and diaphragm 20 may be employed.

A hollow post 32 is secured to the top board 100

12 by screws 33 or otherwise. The top of post 32 carries a pair of spring fingers 34, which are shaped to receive the reproducer arm 16 and firmly hold the same clamped
 5 down against the top of the post. A simple way to mount the fingers 34 on post 32 is to secure them to a ring or collar 35, which is screwed to the post. This mounting of the spring fingers 34 allows them to be rotatably
 10 adjusted on the supporting post 32 at the correct angle with respect to the pivotal mounting of reproducer arm 16. In other words, the support 32-34 is so positioned on the top board 12 that the reproducer arm 16 is
 15 held clear of the turntable 10, usually to the right side thereof. In the hollow supporting post 32 is mounted a reciprocable rod or plunger 36, which may conveniently be made of hard insulating material, such as bakelite,
 20 vulcanized rubber and the like. To the lower end of rod 36 is secured a metal piece 37 adapted to span a pair of switch contacts 38 mounted on an insulating plate 39, which is secured to the underside of the motor board
 25 12 by screws 40 or otherwise. Any other practical way of mounting and insulating the switch contacts 38 may be used. A coil spring 41 surrounds the rod or plunger 36 and normally tends to push it upward to hold the
 30 connecting piece 37 in firm engagement with contacts 38 for closing the reproducer circuit 23. The normal closing position of contact piece 37 is indicated by the dotted outline 37' in Fig. 2. The lower end of coil spring 41
 35 bears against a shoulder 42 in the hollow post 32 and the upper end of the spring presses against a collar 43 fixed on plunger 36.

When the reproducer arm 16 is off the support 32, the coil spring 41 holds the rod
 40 36 in such position that the upper rounded end of the rod projects upwardly to a point roughly indicated by the dotted line 36'. When the arm 16 is pushed down between the spring fingers 34 as shown in Fig. 2, the
 45 plunger 36 is depressed and the connecting piece 37 opens the switch contacts 38, thereby breaking the circuit of battery 27, or any other circuit associated with the operating mechanism of the phonograph. The inher-
 50 ent tension of spring fingers 34 is such that they overcome the weaker spring 41 and hold the reproducer arm 16 firmly pressed down, so that the connecting piece 37 remains in open position as long as the pickup arm rests
 55 on support 32. When the pickup is removed from its support to play a record, the compressed coil spring 41 instantly lifts the plunger 36 and closes the associated switch 37-38.

60 Although I have shown and described a specific form of support and switch control for the pickup arm 16, I want it understood that my invention is not limited to the details set forth. Various changes and modi-
 65 fications are possible within the scope of the

appended claims. This application is a division of my copending case filed December 16, 1926, Serial Number 155,116.

I claim as my invention:

1. In an electric phonograph, the combination of a top board having a turntable and a pivot post, an arm connected at one end to said post for horizontal swinging movement and at its other end carrying an electric reproducer adapted to play records on said
 75 turntable, said arm and reproducer being movable into and out of operative relation to a record on the turntable, a support on said top board for holding said arm in rest position, said support having a movable part
 80 adapted to be actuated by said arm in one direction, spring means for automatically actuating said part in the opposite direction when the arm is removed from the support, and a switch automatically controlled by said
 85 movable part for rendering a circuit of said phonograph operative when the arm is moved into playing position.

2. In an electric phonograph, the combination of a top board having a turntable
 90 and a pivot post, an arm connected at one end to said post for horizontal swinging movement and carrying at its other end an electric reproducer for playing records on said turntable, said arm and reproducer being
 95 movable into and out of playing position, a support on said top board adapted to hold said arm in rest position, switch mechanism associated with said support for controlling a circuit of said phonograph, and
 100 means for automatically operating said switch mechanism when the reproducer arm is removed from and replaced on said support, said means including a reciprocable
 105 spring-pressed plunger.

3. In an electric phonograph, the combination of a top board having a turntable and a pivot post, an arm connected at one end to said post for horizontally swinging movement and at its other end carrying an
 110 electric reproducer adapted to play records on said turntable, said arm and reproducer being movable into and out of operative relation to a record on the turntable, a support on said top board for holding said arm in
 115 rest position, a switch for controlling a circuit associated with said reproducer, a movable member associated with said support for automatically opening said switch when said arm is placed on said support, and spring
 120 means for automatically actuating said member to close said switch when the arm is removed from said support.

4. In an electric phonograph, the combination of a top board having a turntable and
 125 a pivot post, an arm connected at one end to said post for horizontal swinging movement and carrying at its other end an electric reproducer for playing records on said turntable, said arm and reproducer being mov-
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able into and out of playing position, a support on said top board adapted to hold said arm in rest position, a movable member adapted to be depressed by the reproducer arm when the latter is placed on said support, spring means for raising said member when the reproducer arm is removed from said support, and switch mechanism controlled by the movements of said member for rendering a circuit of said phonograph operative when the arm is moved into playing position.

5. In an electric phonograph, the combination of a top board having a turntable and a pivot post, an arm connected at one end to said post for horizontal swinging movement and at its other end carrying an electric reproducer for playing records on said turntable, a hollow support on said top board for holding said arm in rest position, a switch for controlling a circuit associated with said reproducer, a vertically movable member carried by said support and adapted to be depressed by the reproducer arm to open said switch when the arm is placed on said support, and a spring for automatically raising said member and thereby closing said switch when the reproducer arm is removed from said support.

6. In an electric phonograph having a top board, the combination of a pivot post on

said top board, a reproducer arm mounted on said pivot post and movable into and out of playing position, a support mounted on said top board and adapted to hold said arm in rest position, said support comprising a fixed hollow post and a member vertically movable in said post, said member being pushed down by the weight of the reproducer arm, spring means for normally raising said member, and switch mechanism arranged below said top board and controlled by the movements of said member for rendering a circuit of said phonograph operative when the arm is moved into playing position.

7. In an electric phonograph, the combination of a horizontally and vertically movable arm carrying an electric reproducer, a hollow support for holding said arm in rest position, a switch for controlling a circuit of said reproducer, a vertically movable member in said support adapted to be depressed by the reproducer arm to open said switch when the arm is placed on said support, a spring for automatically raising said member and thereby closing said switch when the reproducer arm is removed from said support, and means on said support for releasably locking said arm in contact with said member to hold the latter depressed.

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