

(No Model.)

H. L. SANBORN.
PHONOGRAPH.

No. 517,072.

Patented Mar. 27, 1894.

Fig. 1

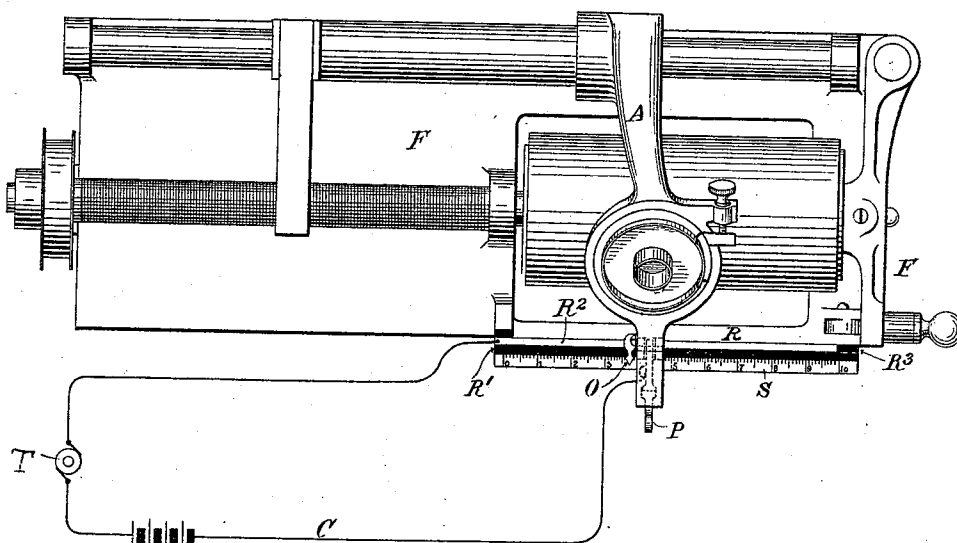


Fig. 2

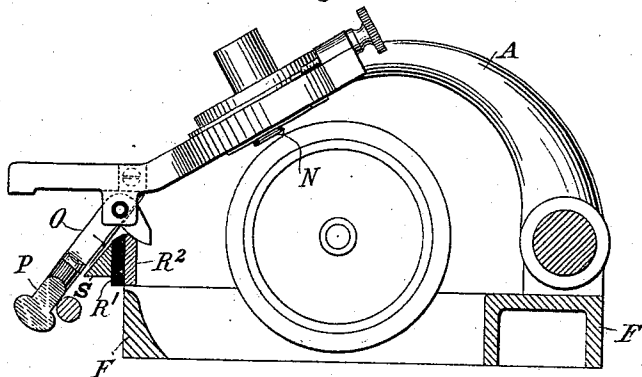


Fig. 3

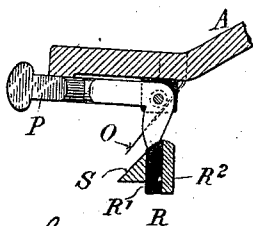
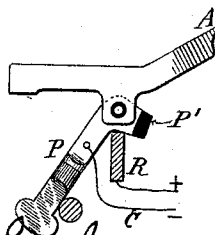


Fig. 4



Witnesses
Raphael Vetter
Edward S. Berrall

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UNITED STATES PATENT OFFICE.

HERMANN LORD SANBORN, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AUGUSTA L. SANBORN, OF SAME PLACE.

PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 517,072, dated March 27, 1894.

Application filed August 19, 1893. Serial No. 483,561. (No model.)

To all whom it may concern:

Be it known that I, HERMANN LORD SANBORN, residing in the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Phonographs, (for which I have obtained no foreign Letters Patent whatever,) of which the following is a specification.

My invention relates to improvements in phonographs in which the diaphragm and needle are held in a movable arm forming part of a carriage and traversing the length of the cylinder.

The objects of my improvements are, to provide means, first, for automatically and at once setting the machine in motion by closing the motor circuit when the arm, diaphragm and needle are lowered and the contact of the latter with the cylinder is effected; second, for automatically and at once stopping the entire machine by opening the motor circuit in raising the arm carrying the diaphragm and needle, and, third, for automatically opening the motor circuit by the action of the machine itself or its own parts and thereby stopping the entire machine at or near the end of the cylinder and the limit of the motion of the arm, diaphragm and needle. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top view. Fig. 2 is an end and part sectional view; and Figs. 3 and 4 are detail views, in part in section.

Similar letters relate to similar parts throughout the several views.

F is the frame of the machine shown in section in Fig. 2.

A is the usual arm carrying the diaphragm and needle.

P is the ordinary drop lever or finger piece, or its equivalent, through which the arm is supported on or by the sliding rest R, with the needle in or out of contact, as the case may be.

R is the slide rest, which has heretofore been made of metal. I make the slide rest R in two pieces, R' and R², the first composed of non-conducting material, the other of conducting material. With this slide rest the inner end of the bent lever finger piece makes contact in either one of two positions, one cir-

cuit making, the other circuit breaking. The part R² of the slide rest R made of metal is connected with or in an electrical circuit C, which operates the phonograph.

In Fig. 1 the circuit C is shown with its battery or source of electricity and in its proper relation to the slide-rest R² and phonograph arm A, and also to a motor shaft T which may be considered as representing the motor shaft of the machine although not shown as co-ordinated therewith.

R' is made of hard rubber, or of any other non-conducting material. The drop lever or finger piece P is also in circuit, as shown in Fig. 4, and becomes a key for opening or closing the motor circuit C.

If desired, instead of making a portion of the slide rest R of insulating material, the insulating material may be secured to the end of the finger piece P as shown at P' in Fig. 4, the contact being in that case made above the rubber end, in which case the slide rest may be made to consist of a bar of metal only, but in circuit. The finger piece P becomes, in fact, a key for opening and closing the circuit automatically as the diaphragm arm A is manipulated, and will support the arm A in either of those positions on the slide rest R.

At the end of the conducting part R² of the sliding rest I place a non-conducting piece or bar R³ as a part of the slide rest. When the finger piece P traverses the slide and reaches and rests upon R³, the motor circuit is automatically broken and the machine is automatically stopped. On its front side the slide rest R is beveled, as shown in Figs. 2 and 3 in sectional view, and is provided with a scale S as shown in Fig. 1. The beveled shape of the scale S is not essential, as it may have any other suitable form. The phonograph arm carries a pointer O so placed as to traverse the scale and indicate the position of the needle N.

The operation of the machine is as follows: When the finger piece is in the position shown in Fig. 2 the circuit C is closed, through the slide rest R, and the parts are in position for use, under the control of the circuit C. When the finger piece P, and the arm A with it, is lifted for any purpose so as to break the contact between the metallic finger piece P and

the slide rest R^2 , the circuit is broken and the machine instantly stops, so that when lowered again and contact made, the phonograph will start at the point where it left off on raising of the finger piece P, without omitting any of the writing on the cylinder or the necessity of carrying the needle back and repeating. By raising the finger piece P and dropping it with the arm A to the position shown in Fig. 3, the metallic part or end of the finger piece P rests upon the insulating material R' and the machine will remain at rest, but in juxtaposition, the circuit being open. The circuit will also be kept open when the finger piece P is constructed as shown in Fig. 4 and is raised so that the part P' rests upon the slide rest R. When the finger piece P reaches or is made to rest upon the non-conducting part R^3 of the slide rest R, the motor circuit is open and the machine is brought to or remains in a state of non-action. The finger-piece P is practically, in one respect only the switch for opening and closing the motor circuit at will, and the motor circuit does not necessarily have the usual or any other switch for that purpose. As such it is attached or connected to the phonograph or diaphragm arm in such a way as to be insulated therefrom and so related to the slide rest that either by lifting the phonograph arm, or by moving the finger piece so that its contact is made only with the non-conducting part of the slide rest, the motor circuit will be opened, and so related that the circuit may be closed by reversing these motions of the arm or of the finger-piece at will. The finger-piece is so shaped and related to the arm and rest that the movement of it automatically raises or lowers the arm without the intervention of any other mechanism and the relations are also such that the lifting of the arm itself by itself and alone operates the finger-piece considered as a switch, or the arm and finger-piece together considered as a switch. In fact, the arm itself becomes at will a switch for opening and closing the motor circuit. Consequently several functions and operations heretofore performed separately by separate devices are here performed by one new device and by one movement.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A phonograph arm A supporting a diaphragm, and a drop lever or finger piece P in

an electrical circuit, in combination with a slide-rest R provided with a non-conducting portion R' and conducting part R^2 .

2. A phonograph arm A supporting a diaphragm, and a drop lever or finger piece P in an electrical circuit, in combination with a slide-rest R provided with non-conducting portions R' R^3 and a conducting part R^2 also in the electrical circuit.

3. In phonographs, a finger piece P in motor circuit C, in combination with a slide-rest R consisting of non-conducting parts and a conducting part in circuit, substantially as shown and described.

4. A phonograph arm, a drop lever or finger piece secured thereto and located in the motor circuit of the phonograph as a circuit maker or breaker at will, and the electric motor circuit, in combination, substantially as shown and described.

5. A phonograph arm, a drop lever or finger piece secured thereto and located in an electric circuit, a diaphragm and needle supported by the arm, a slide-rest, a scale, a pointer and an electric phonograph motor circuit, in combination, substantially as shown and described.

6. A phonograph arm provided with a bearing that makes contact with the slide-rest for the arm, which bearing is in the electric motor circuit of the phonograph, and a slide-rest also in the same electric motor circuit, in combination.

7. A phonograph arm supporting a diaphragm, the slide-rest contact of which is in the motor electric circuit of the phonograph, in combination with a slide-rest provided with a conducting bar or part also in the electrical motor circuit except at or near one end where it is not in the electrical motor circuit, and with a non-conducting part or insulated portion all of which is out of the electrical motor circuit.

8. A phonograph arm supporting a diaphragm, the slide-rest contact of which is in the motor electrical circuit of the phonograph, in combination with a slide-rest provided with a conducting bar or part also in the electrical motor circuit, and with a non-conducting part or insulated portion.

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Witnesses:

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