

F. H. OSBORN.
 SOUND REPRODUCING MACHINE AND RECORD THEREFOR.
 APPLICATION FILED DEC. 4, 1908. RENEWED JAN. 26, 1910.

956,727.

Patented May 3, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

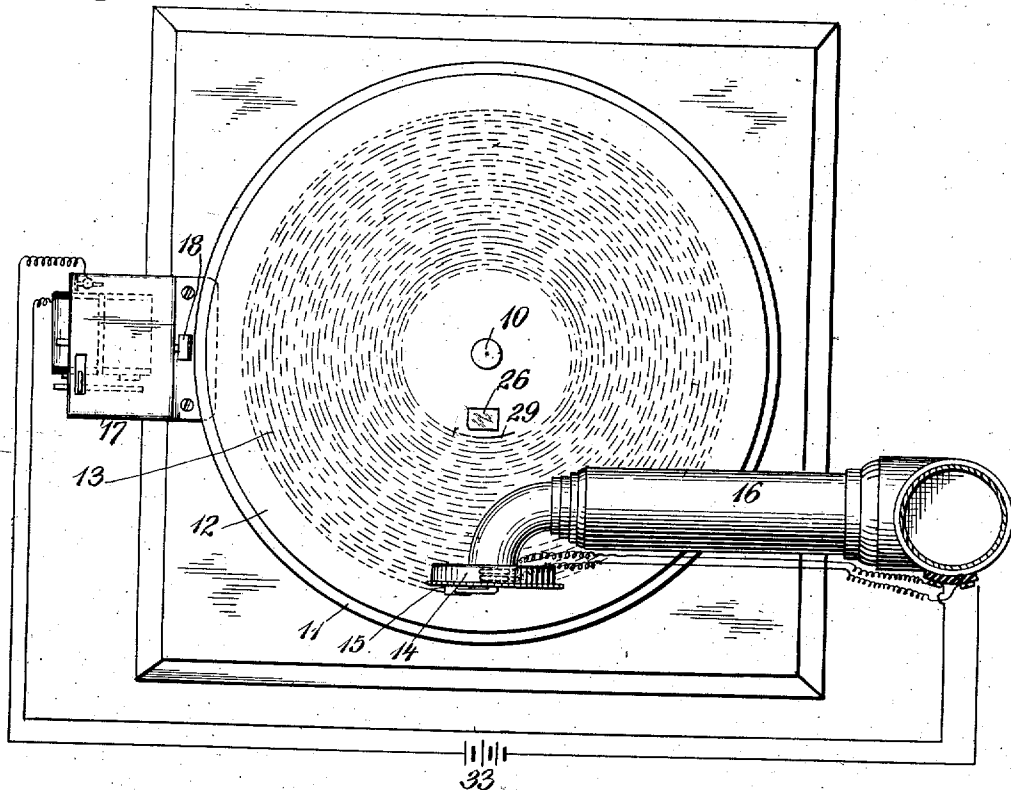


Fig. 2.

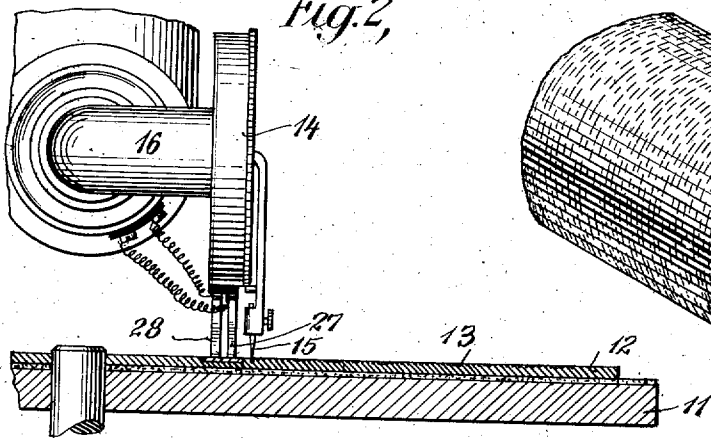


Fig. 4.

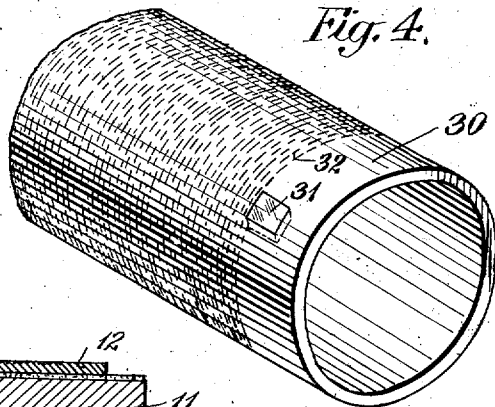
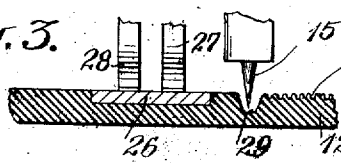


Fig. 3.



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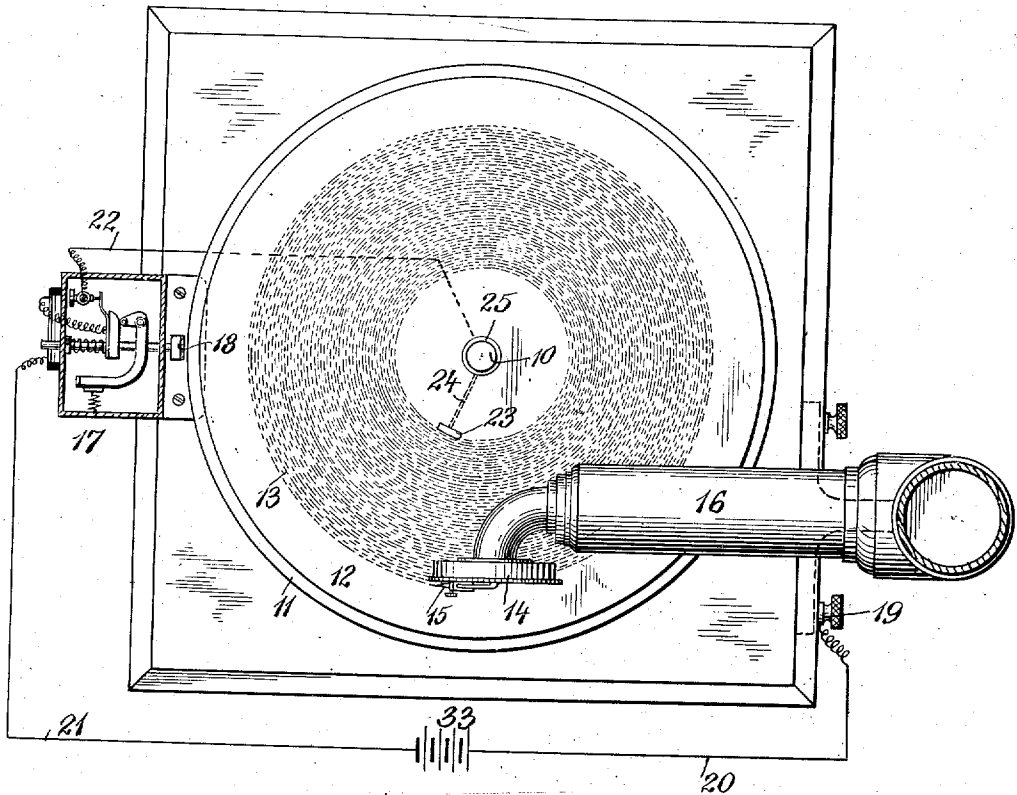
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2 SHEETS—SHEET 2.

Fig. 5,



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SOUND-REPRODUCING MACHINE AND RECORD THEREFOR.

956,727.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed December 4, 1908, Serial No. 465,921. Renewed January 26, 1910. Serial No. 540,272.

To all whom it may concern:

Be it known that I, FREDERICK H. OSBORN, a citizen of the United States of America, and a resident of Garrison, county of Putnam, and State of New York, have invented certain new and useful Improvements in Sound- Reproducing Machines and Records Therefor, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in sound reproducing machines and records therefor, and particularly to means therein for automatically stopping the machine upon the completion of a sound reproducing operation.

My invention consists in providing electrical circuit closing means including a member carried by the reproducer, which is held normally out of contact with the face of the record while the stylus of the reproducer is traveling along the greater portion of the sound groove in the said record, and in deepening the groove, at the inner end thereof, whereby the stylus in entering the deeper portion of the groove will cause the said member to be lowered to engage the face of the record and thereby to close circuit, by means of which an electrical stopping device is put into operation.

The object of my invention is to automatically stop the movement of the record at a predetermined point by an electrical means, circuit for which is closed by the coaction of some portion of the record itself with the sound reproducer or traveling arm while at the same time avoiding the employment of any portion for this purpose which projects above the face of the record, and also without employing the stylus itself as a part of the electrical circuit.

In order that my invention may be fully understood, I will now proceed to describe certain embodiments thereof, having reference to the accompanying drawings illustrating the same, and will then point out the novel features in claims.

In the drawings: Figure 1 is a partial top view and partial horizontal section of a sound reproducing machine having electrical stopping means embodying my invention. Fig. 2 is a detail vertical transverse section therethrough. Fig. 3 is an enlarged transverse section through the record at the circuit closing point therein. Fig. 4 is a detail perspective view, showing a portion of a

cylindrical record having a circuit closing element therein. Fig. 5 is a view similar to Fig. 1, of a modified form of the machine.

The machine illustrated comprises a vertical shaft 10 which is rotated by a suitable motor, not shown; a table 11 secured to rotate therewith; a record 12 mounted upon the table, the said record 12 having the usual sound groove 13 therein; a reproducer 14; a stylus 15, carried by the said reproducer, and a swinging or traveling tone arm 16 which carries the said reproducer. An electrically operated stopping device 17 including a brake member 18 is mounted in proximity to the periphery of the table 11, the brake being adapted to be tripped electrically upon the closing of an electric circuit. This device is fully described and claimed in U. S. Patent No. 904,890 granted to me November 24, 1908. The circuit for the electric closing device may be traced from one side of a generator 33 to the stopping device 17, thence from the stopping device to a circuit terminal 27, thence from another circuit terminal 28 back to the generator 33.

The record disk 12 is provided with a circuit closing element 26 which is located in proximity to the end of the sound groove 13, the said circuit closing element being preferably a metallic strip which is molded right into the record, with the face thereof flush with the face of the said record. In the specific construction shown in Figs. 1 to 4 inclusive this element 26 has no normal electrical connection with any other part, but it is adapted to act as a bridge piece to close circuit between the two terminals 27 and 28 when the tone arm and sound box carried thereby have swung inward in the operation of the machine, to a point wherein the stylus has reached the termination of the sound groove 13. When the bridge piece thus closes circuit through the terminals 27 and 28 the circuit through the electrically controlled stopping device 17 will be completed and the brake member 18 will be caused to engage the periphery of the table 11, thereby stopping the machine. It will thus follow that by properly positioning the element 26 with respect to the end of the sound groove, the machine will always be automatically stopped regardless of the length of the record or the position of the traveling arm with respect to any fixed point in the machine. Because it is undesirable that the terminals 27 and 28 which are preferably in the form

of flexible brushes, should be normally in contact with the face of the record, and it is also undesirable that the element 26 should project beyond the face of the record, I have
 5 so mounted the brushes 27 and 28 with respect to the stylus that they will be normally held out of contact with the face of the record while the stylus is traveling along the groove in the reproduction of sound, but I
 10 have deepened the terminal portion 29 of the groove (see particularly Fig. 3) whereby the sound box will be permitted to drop when the stylus reaches this portion of the groove, to an extent sufficient to permit the brushes
 15 to drop into contact with the bridge piece 26. By this means the brushes 27 and 28 may be normally held well away from the face of the record and prevented from trailing there-
 20 over, while they will be brought surely and positively into engagement with the element 26 when the end of the groove is reached.

It will, of course, be understood that instead of employing the element 26 as a bridge piece to close circuit through two
 25 brushes upon the tone arm, it may itself be employed as a circuit terminal, such a modification being one which would be obvious to anyone familiar with electrical appliances, and in Fig. 5 I have shown a modification
 30 in which such a terminal 23 is employed, the same being connected by a wire 24 with a metallic sleeve 25 which is in electrical connection with the shaft 10, the said shaft being connected by a wire 22 with the tripping
 35 device 17. A wire 21 connects the generator 33 with the tripping device, and a wire 20 connects the opposite side of the generator 33 with a binding post in electric connection with the tone arm.

40 In Fig. 4 I have shown a cylindrical form of record 30 which is provided with a contact terminal 31 at the termination of the sound groove 32 thereof. It is obvious that my invention is equally applicable to either
 45 the disk or cylindrical form of sound reproducing means.

What I claim is:

1. In a sound reproducing machine, the combination with a record carrier and a
 50 record carried thereby, the said record being provided with a sound groove having a deeper portion at the termination thereof, of a reproducer provided with a stylus and a traveling arm therefor, circuit closing
 55 means including a member carried by the said reproducer and traveling arm and held normally out of contact with the face of the record while the stylus is traveling along the greater portion of the said sound groove

but being allowed to engage the face of the
 60 said record when the stylus reaches the deeper portion of the said sound groove, and an electric stopping means, the circuit for which is arranged to be controlled by the engagement of the said contact member
 35 with the face of the said record.

2. In a sound reproducing machine, the combination with a rotatable record carrier and a record carried thereby, the said record being provided with a sound groove having
 70 a deeper portion at the termination thereof and provided with a circuit closing element in proximity thereto, the face of the said circuit closing element being substantially flush with the face of the said record, of a
 75 reproducer provided with a stylus and a traveling arm therefor, a circuit closing element carried by the said reproducer and traveling arm, the said circuit closing element being normally out of contact with the
 80 face of the said record but arranged to be lowered to engage the circuit closing element carried by the record when the stylus reaches the deeper portion of the groove, and an electric stopping device the circuit
 85 for which is arranged to be closed by the co-engagement of the two said circuit closing elements.

3. In a sound reproducing machine, the combination with a rotatable record carrier
 90 and a record carried thereby, the said record being provided with a sound groove having a deeper portion at the termination thereof and having a metallic plate located in proximity thereto, the face thereof being sub-
 95 stantially flush with the face of the said record, of a reproducer provided with a stylus and a traveling arm therefor, two contact elements carried by the said reproducer and traveling arm, the said ele-
 100 ments being normally insulated from each other and held out of contact with the face of the said record during the time the stylus is traveling through the greater portion of the said sound groove, the said elements
 105 being arranged to be lowered to the level of the face of the record and to be engaged by the metallic plate carried by the said record when the said stylus reaches the deeper portion of the sound groove, and an electric
 110 stopping device, the circuit for which is arranged to be closed by the engagement of the two said contact elements with the said metallic plate.

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Witnesses:

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