

R. A. WHITEHEAD.
SOUND PRODUCING APPARATUS.
APPLICATION FILED OCT. 5, 1910.

1,017,834.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.

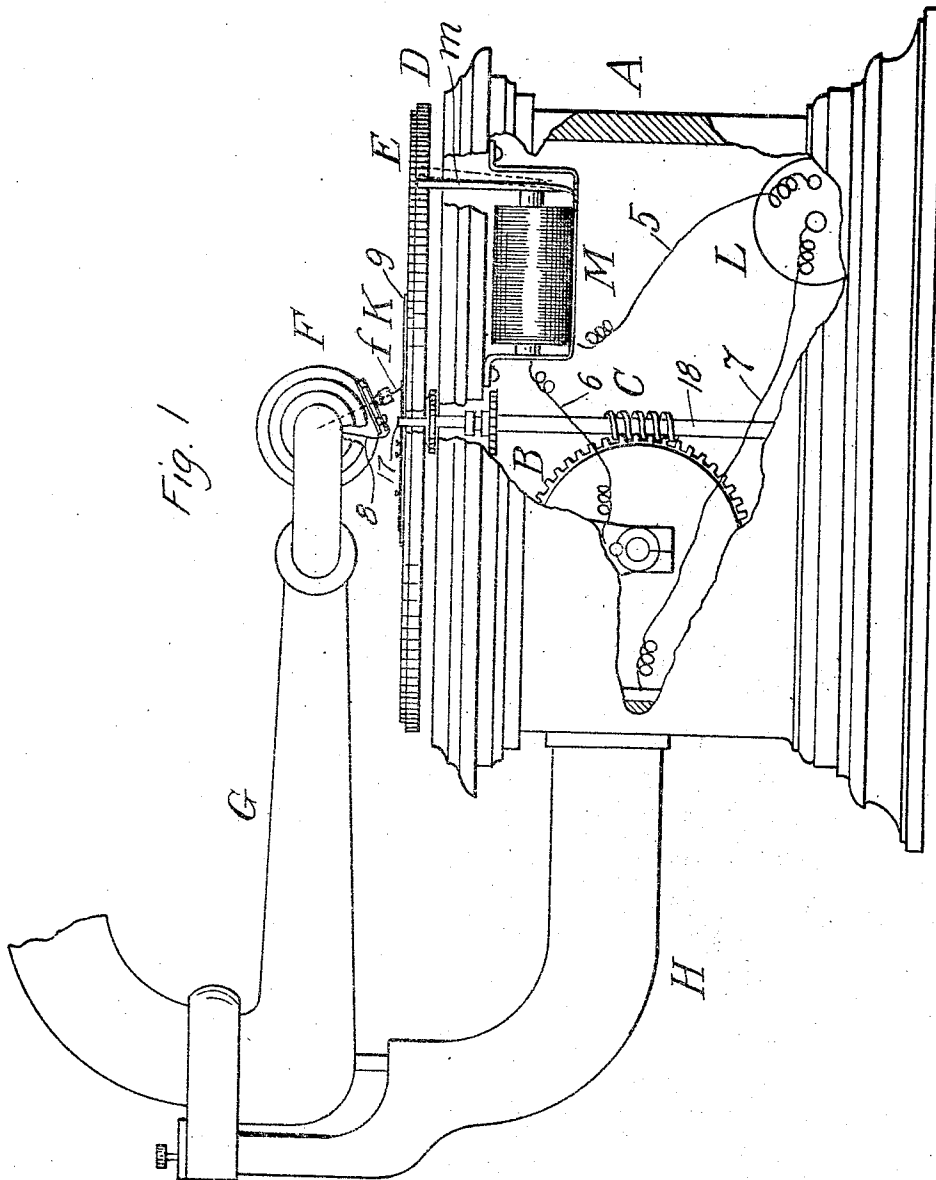


Fig. 1

Witness:
B. W. Pierce
Elizabeth C. Moskau

Inventor:
Richard A. Whitehead,
by Herbert H. Whitehead,
his attorney.

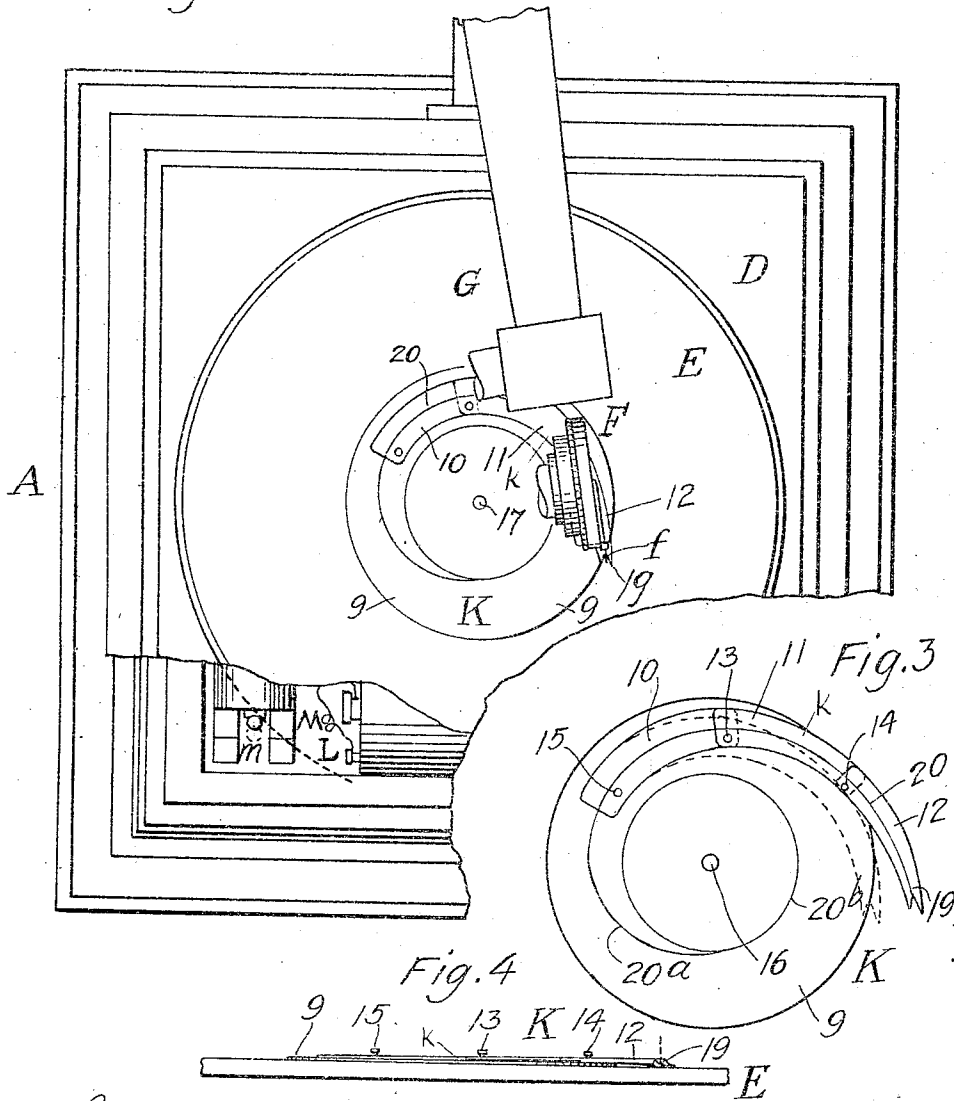
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

RICHARD A. WHITEHEAD, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
GLENN R. WATERMAN, OF LOS ANGELES, CALIFORNIA.

SOUND-PRODUCING APPARATUS.

1,017,834.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed October 5, 1910. Serial No. 585,481.

To all whom it may concern:

Be it known that I, RICHARD A. WHITEHEAD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Sound-Producing Apparatus, of which the following is a specification.

This invention relates to sound producing apparatus, and more particularly to means for throwing the same out of operation at the termination of the rendition of a song or instrumental or vocal selection, or such sequence of sounds as may be produced in the operation of the apparatus; whereby operation of the apparatus is automatically terminated at the termination of such rendition; and the invention has for its object to provide improved apparatus of the character described, of electro-magnetic character, which will be superior in point of positiveness of operation, relative simplicity and inexpensiveness of construction and organization, and sightliness in appearance, which may be applied to sound producing apparatus of standard and conventional forms and types with but slight alteration of the same, which may be readily kept in repair, and which will be generally superior in efficiency and serviceability.

The invention consists in the provision, construction, combination, association and relative arrangement of parts, members and features hereinafter described and shown in the drawings, and finally pointed out in claims.

In the drawings:—Figure 1 is a side elevation, partly broken away and partly in section for clearness of illustration of sound producing apparatus, or a so-called talking machine, organized, equipped and constructed in accordance with the invention; Fig. 2 is a top plan view of the same, parts being likewise broken away for clearness of illustration; Fig. 3 is an enlarged detail plan view of an essential feature of the invention; and Fig. 4 is a fragmentary side elevation of the feature shown in Fig. 3, and a feature of the general construction of the apparatus.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring with particularity to the drawings, the sound producing apparatus or talking machine therein shown, as of conven-

tional or standard form, although the invention is not limited to any specific type or form of such sound producing apparatus, comprises a casing A within which is located a motor B the power of which is applied through transmission means C to a disk table or support D above the casing, and upon which the sound record E is disposed.

F designates the sound box within which the sounds are produced through the co-action of the point or needle *f* and the sound record E, G designating the tubular arm or means of direction or conduction of the sounds to the orifice from which they exit to the auditor. The tubular arm G is shown as adjustably supported by the bracket H connected with the casing A, such casing A being of wood or other electricity insulating material.

K designates a circuit maker which is disposed upon the sound record E in physical connection with the transmission means C.

Within the casing A is disposed, in accordance with the invention, a battery L, or source of electrical supply, and within said casing is likewise disposed electro-magnetic means M the armature *m* whereof projects through a suitable opening in the top of the casing in position for engagement with the periphery of the table or support D to act as a brake therefor, or means for throwing the table, the transmission means and the motor out of operation when an electrical circuit is closed through the electro-magnetic means and the circuit maker K and the point or needle *f*.

The source of electrical supply L is electrically connected with the electro-magnetic means M by a circuit wire 5, the electro-magnet M is connected with the motor B by a circuit wire 6, and the bracket H is connected with the source of electrical supply L by a circuit wire 7. The sound box F is provided with a circuit wire 8 electrically connecting the needle or point *f* with the tubular arm G and the connections thereof, which are found in standard practice. This circuit wire bridges the non-conducting parts of the sound box. The arm G and its connections are electrically conducting, as is the bracket H, and as are the motor B and the transmission means C, while the table D and the sound record E are jointly non-conducting, or at least the record E is non-conducting. When the

needle *f* is in contact with the circuit maker K the electrical path is through the needle *f*, the circuit wire 8, the arm G and its connections, the bracket H, the circuit wire 7, the source of electrical supply L, the circuit wire 5, the electro-magnetic means M, the circuit wire 6, the transmission means C, and the circuit maker K again to the needle *f*. The bracket H is insulated from the motor B by the structure of the casing A.

The circuit maker K comprises a metallic body 9, preferably circular in form, adjacent to the periphery of which is adjustably connected an articulated guide *k*, which comprises a plurality of members 10, 11 and 12, which are pivotally serially connected, as at 13 and 14 by pins or the like, the innermost member 10 being pivotally connected with the body member or plate 9, as at 15. The outer member 12 overlaps the intermediate member 11 at the point of pivotal connection 14, and the intermediate member 11 overlaps the inner member 10 at the point of pivotal connection 13. The body or plate 9 and the articulated guide *k* are formed of metal or suitably conducting material. The members 10, 11 and 12 are adapted to be adjusted with relation to the center of the body 9, wherein is formed an opening 16 which fits the upper projecting end portion 17 of the transmission means and shaft 18, so that the plate or body 9 will be in close electrical contact with said shaft 18. The outer end portion 19 of the member 12 may be adjusted from the opening 16 and the upper end 17 of the shaft 18, over the surface of the record E, to the desired degree, with relation to the phase of the traverse of the record by the needle *f* at which it is desired that the needle contact with the circuit maker K to stop the rotation of the table D and the record thereon, and terminate the operation of the sound producing apparatus. The outer end 19 of the member 12 is preferably bifurcated or forked as shown, and a groove or crease 20 is formed in the upper surface of all of the members 10, 11 and 12, in continuous extension, from the forked end portion 19 to the inner end of the member 10, and thence the groove or crease 20 is extended in a groove or crease 20^a, which approaches the opening 16 spirally, and dies out into a groove or crease 20^b circular in form and concentric with the opening 16.

The operation, method of use and advantages of the improvements in sound producing apparatus, and means for throwing the same out of operation, constituting the invention, will be readily understood from the foregoing description taken in connection with the accompanying drawings and the following statement:—When the operation of the sound producing apparatus is commenced, or before the same is com-

menced, the member 12 of the guide *k* is moved outwardly with relation to the center of the body 9, which is at the center of the record E, such body 9 and record E and table D being centered upon the upper end 17 of the shaft 18, so that the forked end 19 of the member 12 will be engaged by the needle *f* when the same has spirally traversed the record, in the customary manner, approximately to a pre-determined point, at which the termination of the operation of the sound producing apparatus is desired to be caused. The needle *f* is placed upon the record to initiate the production of the sequence of sounds constituting the rendition for which the record is organized, and the motor B is put into operation to rotate the table D, the record E and the circuit maker K. When the needle *f* contacts with the guide *k*, at the forked end 19, a closed electrical circuit is established through the needle, the arm G, the bracket H, the source of electrical supply L, the electro-magnetic means M, the motor B, the transmission means C, and the circuit maker K, an open electrical circuit having theretofore been present in and through such parts and features and the circuit wires joining the same electrically. The closed electrical circuit through the electro-magnetic means M causes the actuation of the armature *m* thereof toward the periphery of the table D, and when brought into engagement therewith rotation of the table and of the record E is retarded and finally checked, the motor being thus stopped through the transmission means C. Previous to final stoppage of motion of the parts of the apparatus as last described, the needle *f* moves somewhat, such movement being accommodated by the grooves or creases 20, 20^a and 20^b, one or all of which the needle traverses until it finally comes to rest upon complete stoppage of the motor. The armature *m* thus constitutes a brake for the motor B, the table D and the other parts actuated and moved by the motor, preventing, in its action upon the table D, further rotation of the table and the record thereon and the circuit maker K upon the record, and therefore preventing further relative movement of the needle *f* and the record, thereby terminating sound production by the apparatus. Where means are not employed to throw the apparatus out of operation at the termination of a rendition thereby, the operation is continued until the motor has expended its energy, and such operation is customarily accompanied by raucous sounds devoid of tonal inter-relation or effect. Such expenditure of motive energy and creation of sounds after the rendition has been completed, are prevented and obviated by the use of the improved means described for throwing out of operation the sound producing apparatus

and the actuating means therefor; and it may be noted that the guide *h*, because of its adjustability, may be so disposed with relation to the center of the record *E* as to cause termination of operation of the apparatus at any pre-determined phase thereof, or substantially at any pre-determined point in the rendition of the selection for which the record is organized.

10 In equipping or providing sound producing apparatus of standard or conventional types with the improvements constituting the invention, very slight alterations are necessary, comprising in the main the installation of the electro-magnetic means *M*, 15 the source of electrical supply *L*, the circuit maker *K*, and the several circuit wires for electrically connecting the parts.

It will be understood that the brake ordinarily provided for stopping the operation of the apparatus, and manually controlled, may be retained for use in connection with the improvements constituting the invention, so that the apparatus may be maintained inoperative during the changing of 25 records, and previous to commencing the sound production. Such retention of the brake customarily employed is optional, as will be manifest. The apparatus provided 30 with the improvements is neat in appearance, no additional features being visible which are of any substantial bulk or which to any extent are cumbersome or mar the symmetry and general appearance of the 35 apparatus.

I do not desire to be understood as limiting myself to the specific provision, construction, formation, combination, and association of parts, members and features 40 shown and described; but reserve the right to vary the same, in adapting the improve-

ments to varying conditions of use, without departing from the spirit of the invention and the terms of the following claims.

Having thus described my invention I 45 claim and desire to secure by Letters Patent:—

1. In apparatus of the character described, a movable sound record support, the sound record thereon, a needle co-acting 50 with the sound record in the production of sound, an adjustable support for the needle, a circuit maker co-acting with the needle, a brake adapted to be applied to terminate movement of the movable sound record support, and electro-magnetic means controlling 55 the brake and electrically connected with the circuit maker; said circuit maker comprising a body adapted to be mounted upon the sound record, and a plurality of 60 adjustably connected members adjustably connected with the body; one of said adjustably connected members being provided with a bifurcated end portion, there being a groove extending therefrom continuously 65 throughout all of said members and a groove upon said body merging into said first named groove.

2. In apparatus of the character described, a circuit maker comprising a plurality of adjustably connected members, one 70 of said members being provided with a bifurcated end portion, there being a groove extending therefrom continuously throughout all of said members. 75

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD A. WHITEHEAD.

Witnesses:

ELIZABETH C. MOESKES,
CHARLES D. WARDEN.