W. W. ZACKEY.

SOUND RECORDING AND REPRODUCING MACHINE.

APPLICATION FILED JAN. 4, 1912.

1,067,569. Patented July 15, 1913.

Fig. 1.

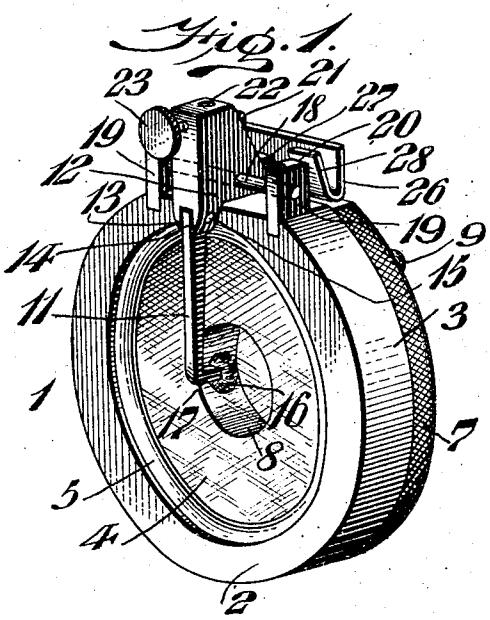


Fig. 2.

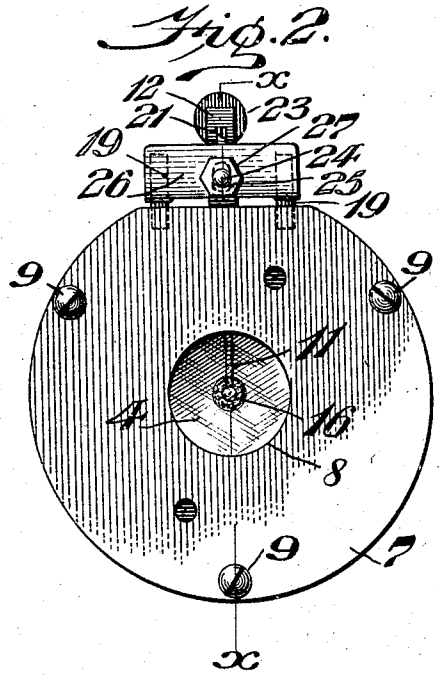


Fig. 3.

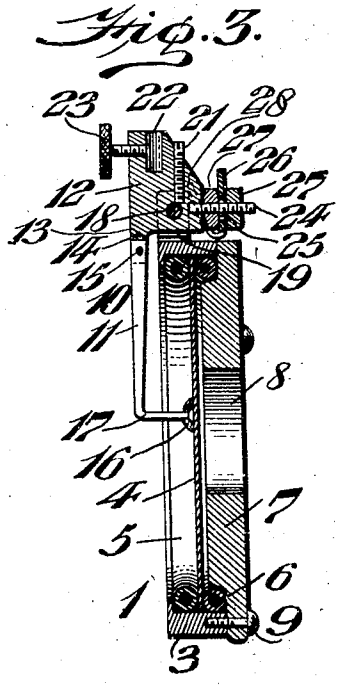


Fig. 4.

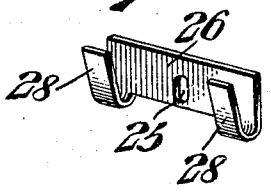
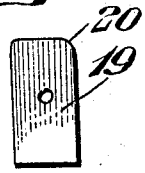


Fig. 5.



WITNESSES

H. E. Dieterich

L. Conville.

INVENTOR

William W. Zackey.

BY Wedderburn & Laibauch

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM W. ZACKEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS TO CHARLES B. HEWITT, OF BURLINGTON, NEW JERSEY.

SOUND RECORDING AND REPRODUCING MACHINE.

1,067,569. Specification of Letters Patent. Patented July 15, 1913.

Application filed January 4, 1912. Serial No. 669,500.

To all whom it may concern:

Be it known that I, WILLIAM W. ZACKEY, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Sound Recording and Reproducing Machine, of which the following is a specification.

This invention relates to sound recording and reproducing machines, and more particularly to an improvement in sound boxes such as shown in my former Patent No. 930,715, patented August 10, 1909.

The object of my invention is to provide a sound box which reduces metallic or scratching noises common to instruments of this type, and which noises mar and destroy the reproduction of the sound and cause the quality of the tone to be impaired.

It has for a further object to provide a sound box which produces a tone rich in quality, clearness and purity, and furthermore a tone which may be varied or adjusted so that the voice timbre may be accurately simulated and reproduced.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

Referring to the drawings:—Figure 1 represents a perspective of a sound box embodying my invention. Fig. 2 represents a rear elevation of the same. Fig. 3 represents a vertical section on line *x*—*x* Fig. 2. Fig. 4 represents a perspective detail of the controlling member. Fig. 5 represents a detail of one of the ears for supporting the stylus.

Similar numerals of reference indicate corresponding parts in the figures.

1 designates the sound box of a sound recording and reproducing machine, preferably of ordinary shape and size, and, in the present instance, consisting of a ring 2 having an annular flange 3, preferably integral therewith, the two members forming a casing or retaining chamber in which is located a diaphragm 4, the latter being of suitable material for receiving and transmitting sound waves. This diaphragm 4, as here shown, is secured within the flange 3 by means of tubular members 5 and 6 which are preferably of rubber or like sound deadening material, between which the diaphragm 4 is located, and thus insulated from the walls of the box proper.

7 designates a cap having a central opening 8 therein, and suitably secured by screws 9, or like fastening means, to the ring 2 whereby the diaphragm member 4 is protected on one side and the vibrations thereof concentrated so as to pass through the opening 8 to the amplifying devices.

10 designates the stylus bar composed, in the present instance, of an arm 11 and body portion 12 which are preferably secured together by providing a groove 13 in the member 12 and within which the arm 11 is seated and securely fastened by solder 14, or the like means, and as here shown, I have preferred to use also a pin 15 as an additional fastening for this arm, since any looseness of the stylus bar causes imperfections to at once be noted in the tone of the box, and it is therefore essential that the same should be firmly fixed to its supporting member. The arm 11 is preferably secured at one end to the diaphragm 4 by wax or like means and, as here shown, the end of the said arm is suitably bent as shown at 17, to bring the same into position at the center of the diaphragm 4.

The body portion 12 of the stylus bar 10 is suitably pivoted upon a pin or arbor 18, the latter being mounted as here shown, in ears 19 attached to the flange 3 of the ring 2, and it will be noted that these ears are preferably provided with a rounded corner 20, for a purpose presently to be described. These ears form bearings in which the arbor 18 is mounted and the body member 12 is fixedly secured to the arbor 18 by means of a set screw 21 or the like.

22 designates an opening formed in the body portion 12 for the purpose of receiving the playing needle and the latter is held in position by means of the thumb screw 23 as is customary.

24 designates a stud secured in any suitable manner to the body portion 12 of the stylus bar 10, and in the present instance, passes through a slot 25 formed in a spring plate 26, the latter being held in adjustable position on the said pin 24 by means of nuts 27 as will be apparent. This plate 26 is preferably provided with spring fingers 28 outwardly disposed on the same side of the plate 26 and located so as to engage respectively the rounded corners 20 of the ears 19 heretofore referred to. The function of this spring plate will be readily apparent as it

BEST AVAILABLE COPY

serves to return the stylus bar to normal position after the sound wave has been received on the diaphragm 4, and by which the latter is deflected from its usual position and the adjustment of the nuts 27 permits regulation of the spring plate so as to determine the degree of flexibility of the diaphragm. Of course it will be understood that the slot 25 in the spring plate 26 allows for variation in the position of the spring fingers 28, thereby varying the effective pressure of these two members.

It will now be apparent that I have provided a sound box, having a stylus bar mounted on a single support and operated by a spring member in such a manner as to permit correct oscillating movement of the stylus bar and diaphragm, and furthermore the parts are so arranged as to obtain control of the quantity of the sound as well as the quality.

It will now be apparent that I have devised a novel and useful construction of a sound recording and reproducing machine which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

In a sound recording and reproducing machine, a sound box, a diaphragm operatively mounted therein, an arbor suitably mounted for oscillating movement, a stylus bar fixedly carried by said arbor, a spring plate carried by said stylus bar and projecting on either side thereof, a spring finger integral with each end of said plate, an ear fixed to said box at each side of said bar forming an abutment for each spring finger, and means to vary the tension of said spring fingers whereby the vibratory action of said diaphragm is regulated.

WILLIAM W. ZACKEY.

Witnesses:
ROBERT M. BARR,
C. D. MCVAY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."