

No. 776,941.

PATENTED DEC. 6, 1904.

J. K. REYNARD.
CONVERTIBLE SOUND BOX.
APPLICATION FILED AUG. 19, 1903.

NO MODEL.

Fig.1

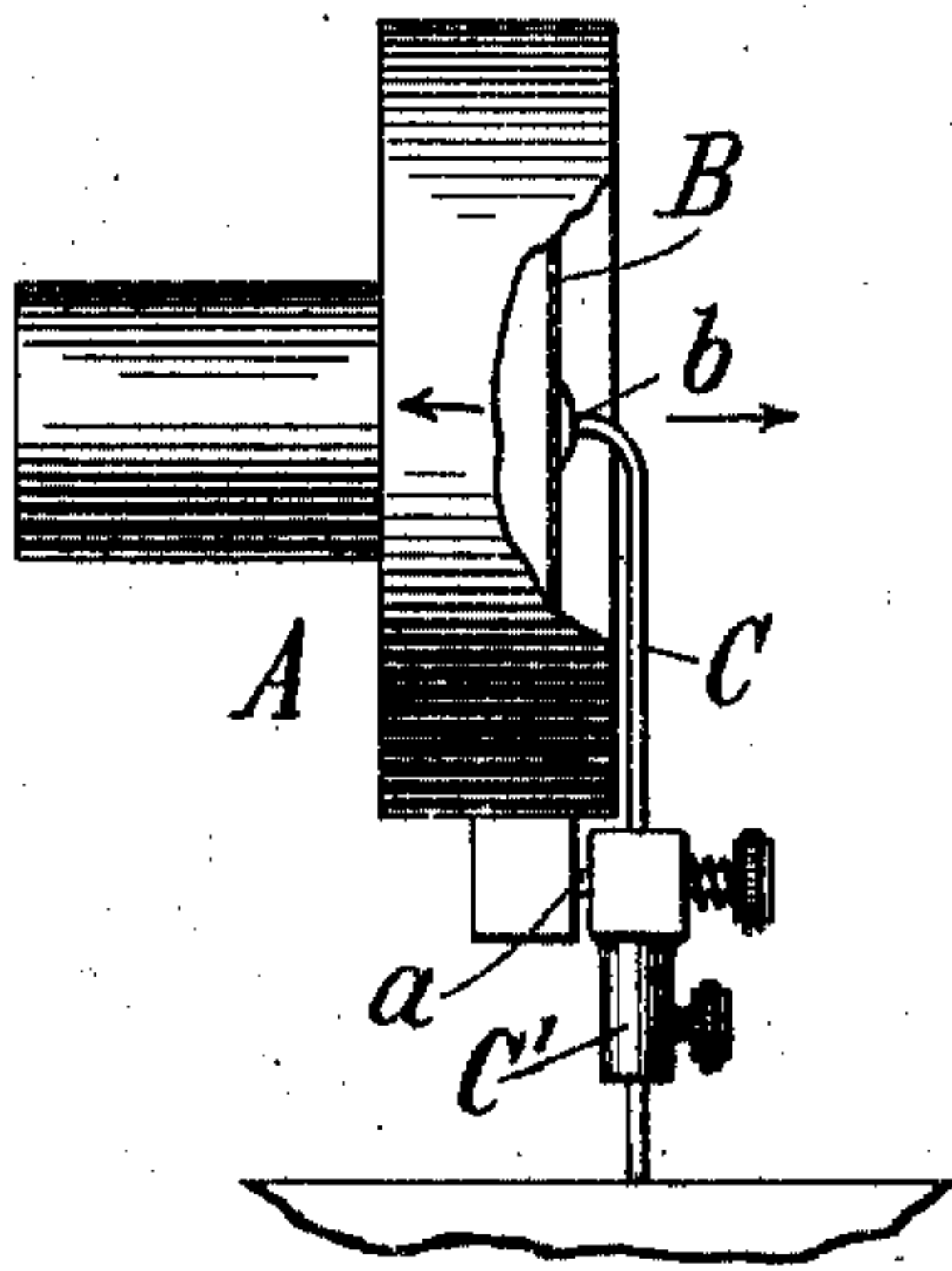


Fig.2

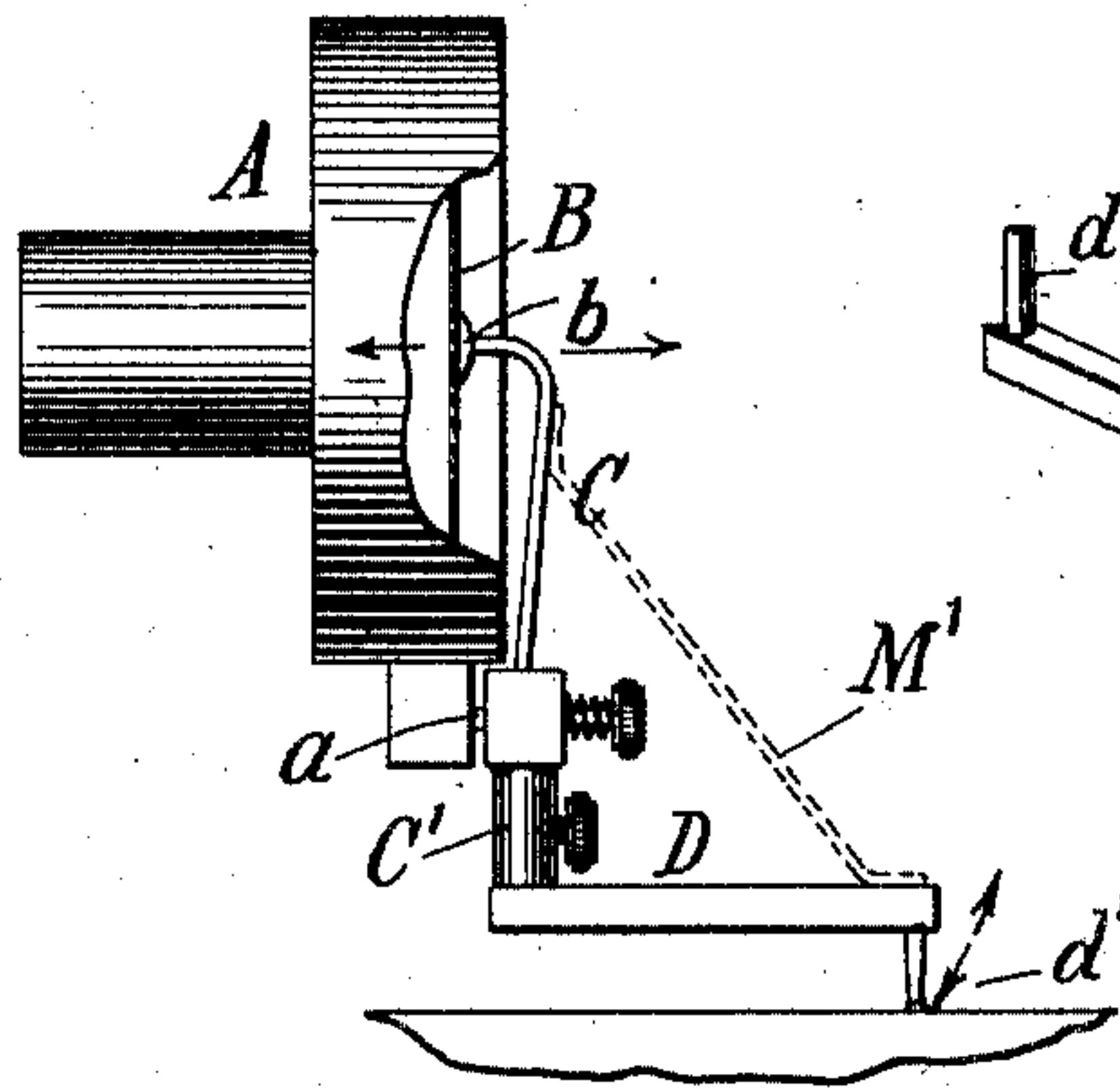
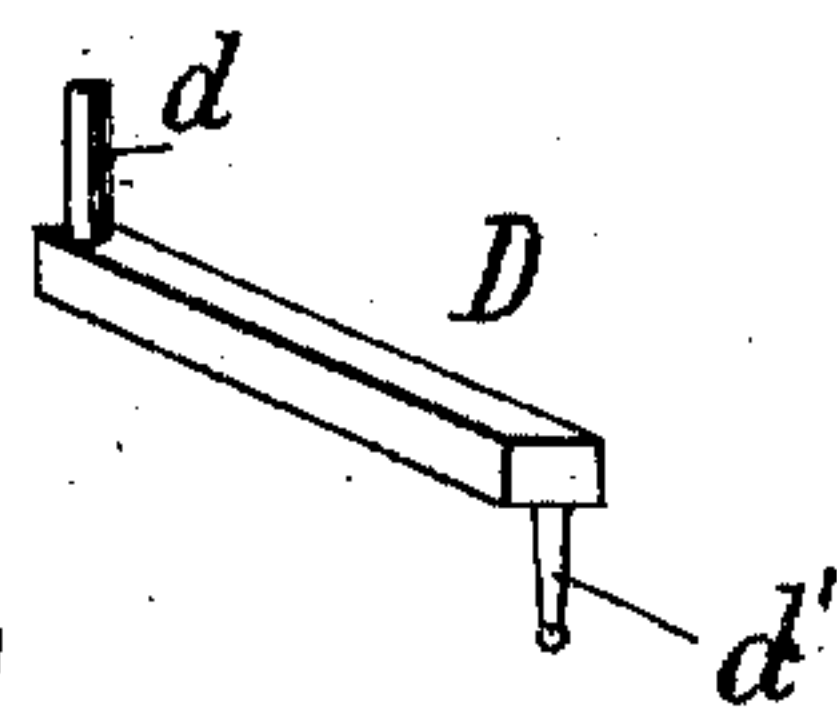


Fig.3



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES K. REYNARD, OF NEW YORK, N. Y.

CONVERTIBLE SOUND-BOX.

SPECIFICATION forming part of Letters Patent No. 776,941, dated December 6, 1904.

Application filed August 19, 1903. Serial No. 170,095. (No model.)

To all whom it may concern:

Be it known that I, JAMES K. REYNARD, of New York city, State of New York, have invented a new and useful Convertible Sound-Box, which improvement is fully set forth in the following specification.

My invention relates to reproducing devices or "sound-boxes" for disk sound-records in which the irregularities representing sound-waves consist of vertical undulations on the bottom of the record-grooves instead of lateral undulations on the sides. This latter is the form of disk record now on the market. One feature of my device consists of means for adapting the present sound-box (intended for use with the latter type) for use with the first-named type. In the present construction, with latterly-undulated sound-grooves of uniform depth, the sound-box is so mounted that its diaphragm lies in a vertical plane at right angles to the horizontal record-disk and will vibrate to and fro in a horizontal direction, and the lateral (horizontal) vibrations given to the stylus-point by the lateral undulations of the record-groove are transmitted by the simple leverage of the stylus-bar into horizontal vibrations of the diaphragm.

In order to obtain a reproduction from a vertically-undulated record-groove, either the diaphragm must be turned down so as to lie parallel with the record-tablet, so that it may vibrate vertically in correspondence with the vertical vibrations imparted to the stylus-point or (if the diaphragm be retained in its present arrangement) some means must be devised for the purpose of translating the vertical vibrations imparted to the stylus-point into horizontal vibrations when they reach the diaphragm.

There are now in the hands of the public and on the market a great number of disk talking-machines constructed and arranged to hold the sound-box so that its diaphragm shall be at right angles to the tablet, which I shall call the "standard" type of machine.

One object of my present invention is to provide that without alteration or reorganization of the standard type of machine the same sound-box may be used to reproduce from the

new records of varying depth. I accomplish this either by adding a small attachment to the sound-boxes already in use or by making a slight change in the present construction of the sound-box.

The invention will best be understood by reference to the accompanying drawings, that illustrate without limiting it.

Figure 1 represents conventionally the present type of vertically - arranged sound-box. Fig. 2 shows the same with my attachment in place, and Fig. 3 is a perspective of the attachment.

A is the sound-box, and B its diaphragm. The stylus-lever C is connected to the latter at *b*, carries the removable needle *c* in the usual barrel C', and is fulcrumed at *a*. The portion *b* of the diaphragm is free to vibrate to and fro in the horizontal line indicated by the arrows, while the needle-point *c* is caused to vibrate in the (substantially) horizontal line (really a short arc, whose center is fulcrum *a*) also indicated by arrows in Fig. 1.

D is my new attachment, consisting of a bar or block of metal having the stud *d* projecting upward at right angles from near one end and the stylus-point *d'* projecting downward at right angles from the opposite side near the opposite end. Stud *d* is adapted to be secured in the barrel C' in place of stylus *c*. The effect of this offset attachment is to throw the new stylus-point *d'* considerably to one side of the line between portion *b* of the diaphragm and fulcrum-point *a*, so that its vibrations swing in the indicated arc (whose center is point *a*) in approximately a vertical direction, so that vertical impulses given to point *d'* are translated into horizontal vibrations of point *b*, (and of the entire diaphragm.) Thus by means of my device D the very same machine and sound-box can reproduce alternately zigzag records and the new vertical records. The farther to one side stylus-point *d'* is placed within the limits of efficiency the better. Preferably the distance from fulcrum *a* should about equal the distance from *a* to *b*.

The idea is to offset or project the stylus-point as far as convenient away from the line

defined by points *b* and *c*, so as to produce, in effect, a sort of elbow or bell-crank lever. There may be also a brace *M'* in either modification, though this may be omitted.

5 Having thus described my invention and the simplest forms of carrying it out, I claim—

1. The combination with a sound-box, a diaphragm therefor arranged to vibrate horizontally, a stylus-bar attached to said diaphragm,
10 and the usual needle-receiving barrel at the free end of said stylus-bar, of a device secured in said barrel and extending at right angles to said diaphragm and bar, and a stylus extending downwardly at right angles from the
15 free end of said device.

2. An attachment for substitution in place of the needle of an ordinary zigzag-disk-record sound-box, the said attachment consisting of
20 a bar carrying a stylus projecting at right angles from one end thereof and a stud extending in the opposite direction from the other

end thereof, said stud adapted to be inserted and held in the needle-seat of said sound-box.

3. The herein-described convertible sound-box adapted to ready adjustment for repro- 25
duction from either laterally-undulating or vertically - undulating record - grooves, the same comprising a horizontally-vibrating diaphragm, a stylus-bar connected thereto, a detachable device carried by said stylus-bar and
30 extending horizontally therefrom at right angles from the diaphragm, and a stylus depending at right angles from the outer end of said device.

In testimony whereof I have signed this 35
specification in the presence of two subscribing witnesses.

JAMES K. REYNARD.

Witnesses:

C. A. L. MASSIE,
O. R. JUDD.