

No. 753,274.

PATENTED MAR. 1, 1904.

E. R. JOHNSON.
SOUND BOX FOR TALKING MACHINES.

APPLICATION FILED JAN. 20, 1900.

NO MODEL.

Fig. 1.

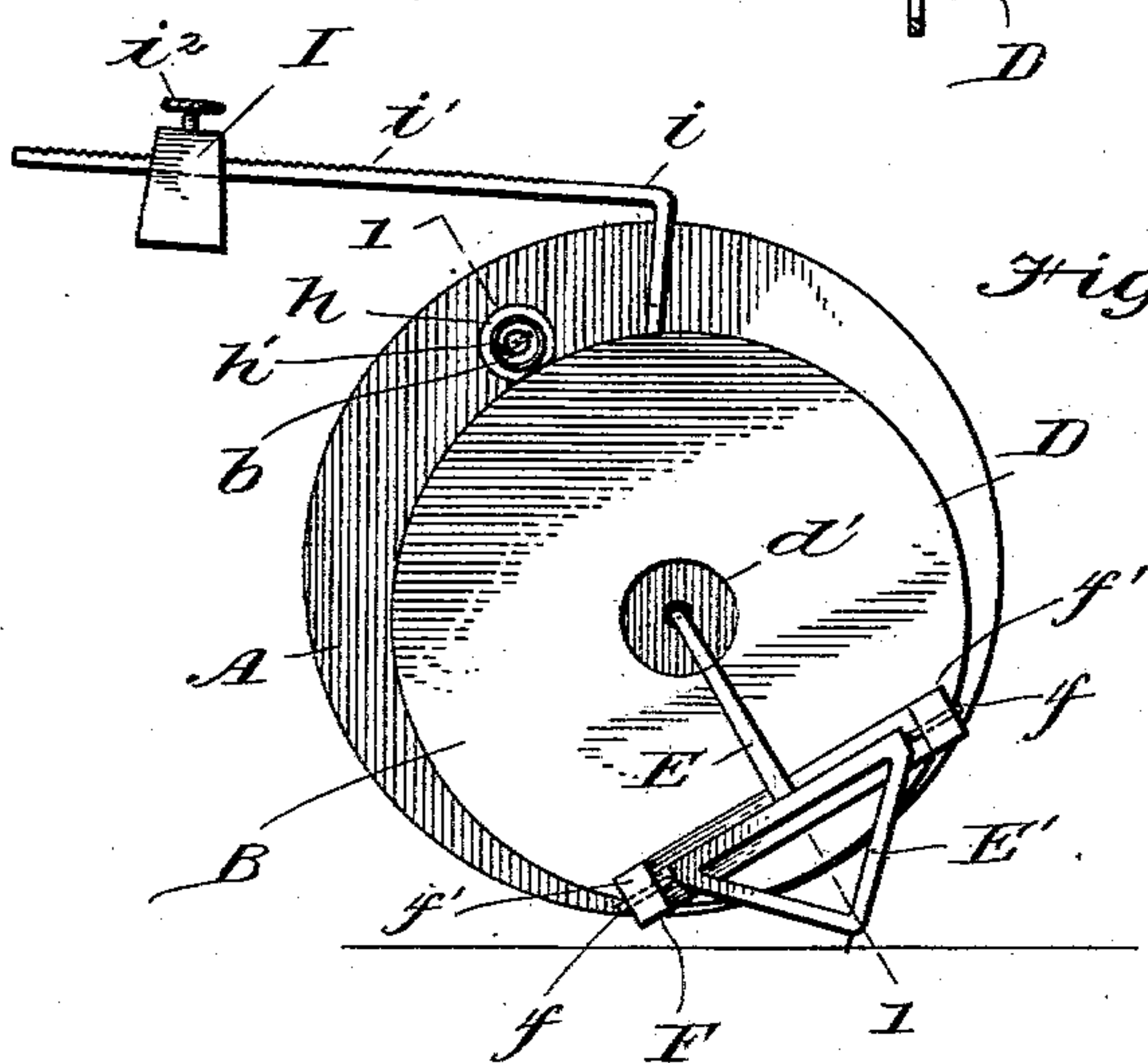
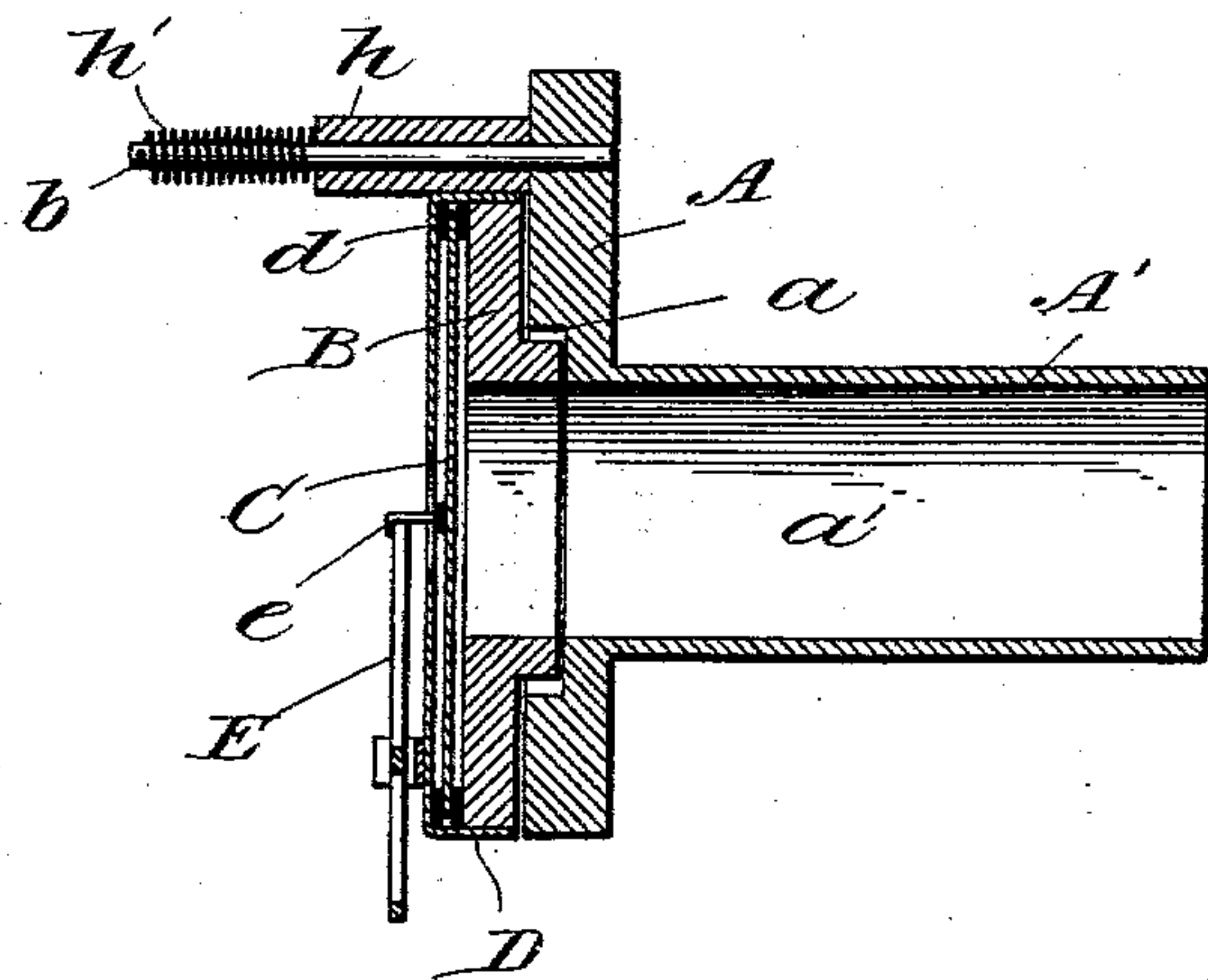


Fig. 2.

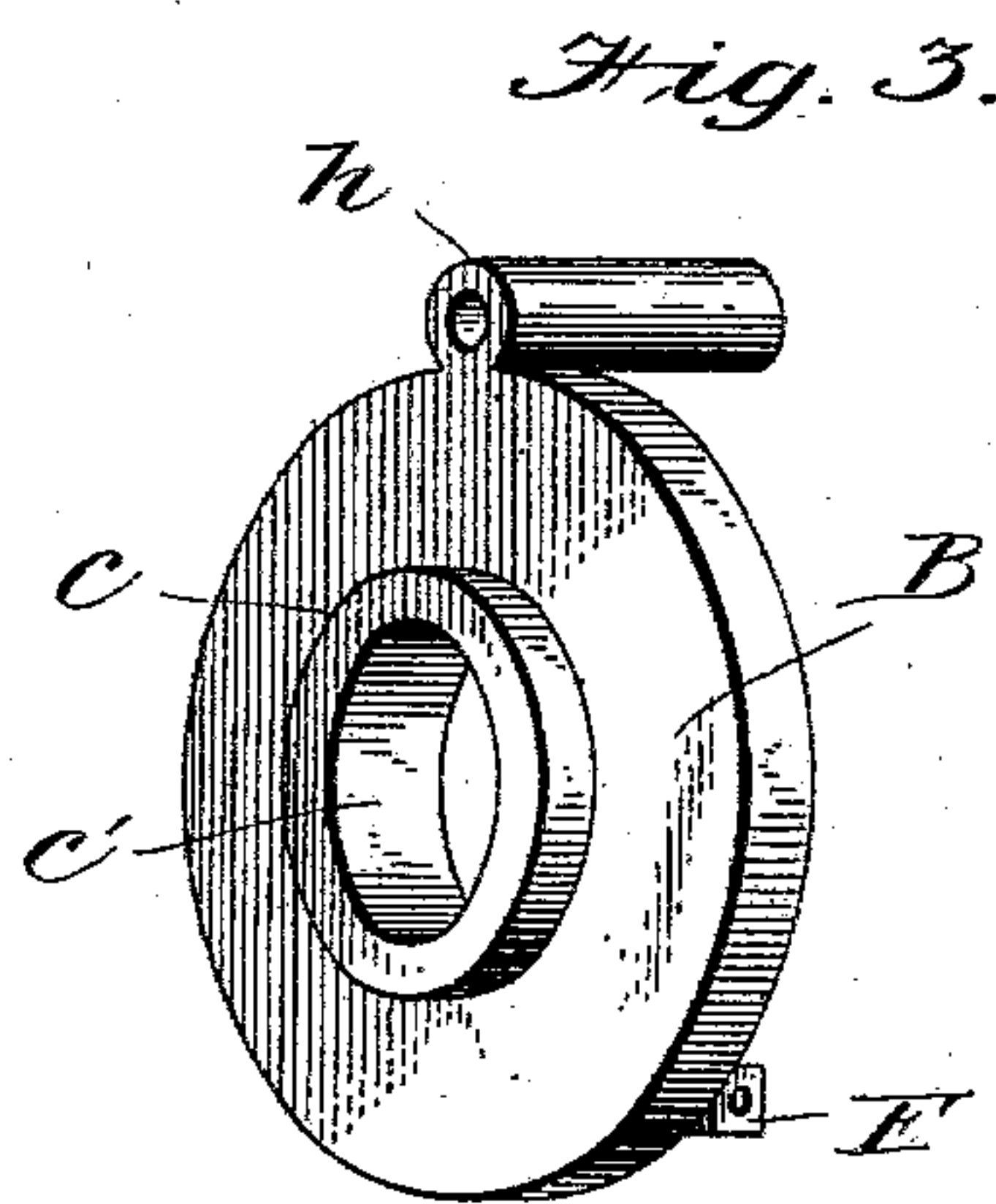


Fig. 3.

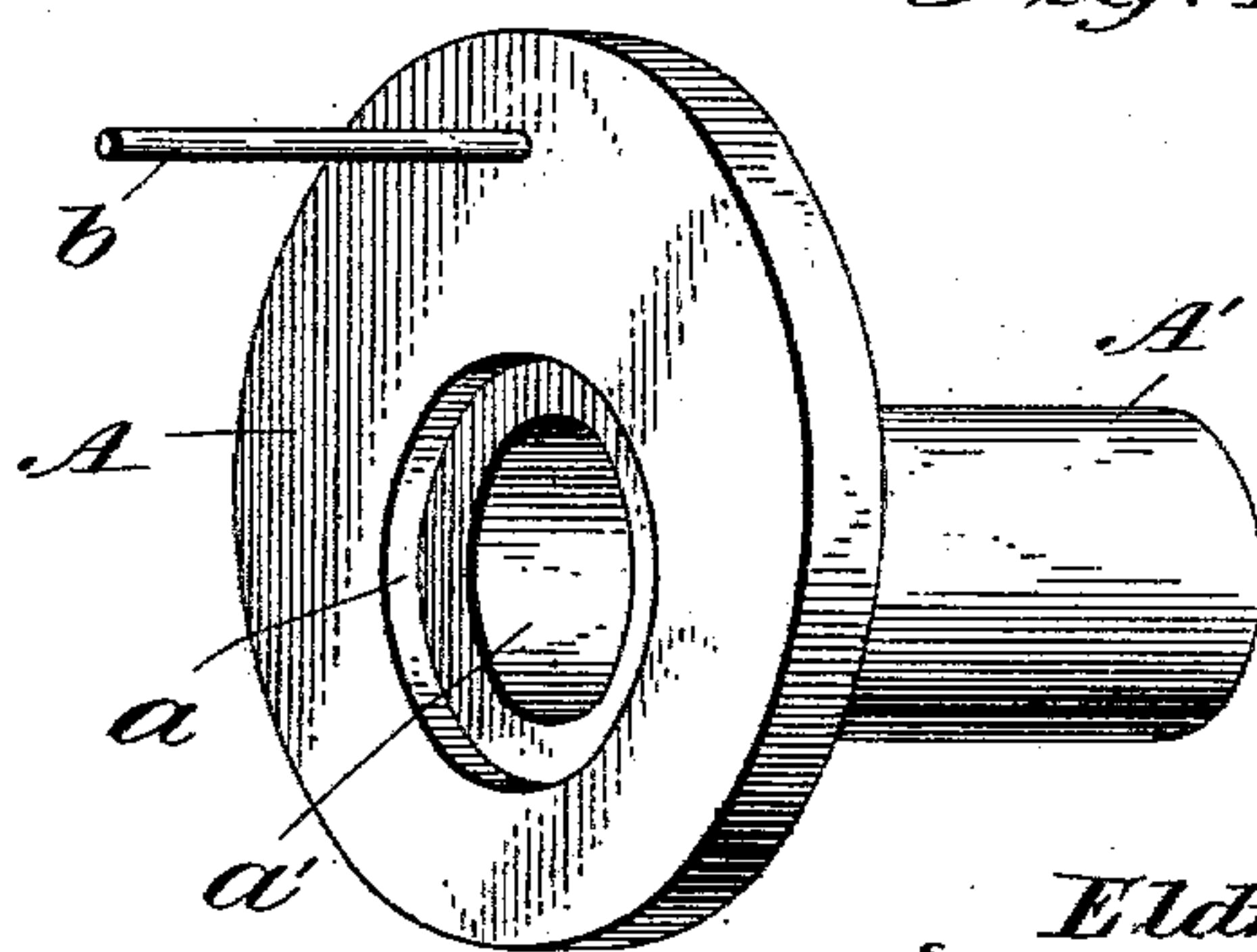


Fig. 4.

Witnesses.
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UNITED STATES PATENT OFFICE.

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SOUND-BOX FOR TALKING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 753,274, dated March 1, 1904.

Application filed January 20, 1900. Serial No. 2,174. (No model.)

To all whom it may concern:

Be it known that I, ELDRIDGE R. JOHNSON, a citizen of the United States, and a resident of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Sound Recording and Reproducing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in sound recording and reproducing machines, and particularly to that part known as the "sound-box."

The principal object of my invention is to generally improve and simplify the construction of sound-boxes used in recording-machines, so that the very best results may be obtained.

A further object of my invention is to provide a sound-box so constructed as to readily yield to the impulses of the sound-waves in any and all directions; and a still further object of my invention is to provide a sound-box so constructed that the depth of the cut in recording can be regulated to suit the character of the record.

With these and other objects in view my invention consists in the construction and arrangement of the mechanism substantially as hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, in which similar letters of reference are used to indicate similar parts, Figure 1 is a sectional elevation taken about on the line 1 1 of Fig. 2. Fig. 2 is a front elevation of my improved sound-box, showing the parts in operative position. Fig. 3 is a detail perspective view illustrating the rear end of the diaphragm-holder, and Fig. 4 is a detail perspective illustrating the front face of the main supporting-frame of the sound-box.

In carrying out my invention I provide a circular supporting-disk A, which has formed thereon the usual tubular section A', which is connected directly or indirectly to a mouth-piece or other sound-conveying device. On the front face of the disk A, I provide a cir-

cular recess a , which is described on a diametrical line of the disk A, but slightly eccentric thereto. This recess a communicates, by means of the passages a' , with the mouthpiece or other receiver. Extending from the face of the disk A, at a point near the periphery thereof and on a line to the center of the disk A and the opening a , is a thin rod b , said rod being riveted or otherwise secured in the disk A.

The diaphragm-holder B comprises a circular disk somewhat smaller in diameter than the diameter of the disk A and has provided on its rear face a circular flange c , surrounding an opening c' . This opening and flange are concentric to the axis of the disk B, and the diameter of the circular flange c is slightly smaller than the diameter of the circular recess a , formed in the disk A. The diaphragm C, which is of a diameter slightly less than that of the disk B, is interposed between two elastic washers or gaskets $d d$, one of which bears against the front face of the disk B and which are held in position by means of the cap D, which may be screwed or otherwise secured to the periphery of the disk B. The center of the cap D is provided in its center with an opening d'' , through which passes the nipple e , which is secured at one end to the center of the diaphragm C and has its forward end secured to the stylus-bar E.

The stylus-bar E when the device is in operative position sets at an angle in about the position illustrated in Fig. 2 of the drawings. The lower portion of the stylus-bar E is formed in the shape of a triangle, as E', and is pivotally mounted in a supporting-frame F, which is secured to the front face of the cap D. The pivot-screws f pass through threaded openings formed in the lugs f' at each end of the supporting-frame E and bear at their inner ends in slightly countersunk openings formed in the ends of the stylus-bar, thus permitting the said stylus-bar to swing in and out as the diaphragm is vibrated by the sound-waves. The stylus-point G is located slightly to one side of the vertex of the angle formed by the sides of the triangular portion of the stylus-bar and should enter the

recording material during operation at about right angles to the plane of the record.

Secured on the periphery of the disk B is a tubular sleeve *h*, the center of which is in a diametrical line with the center of the stylus-bar E. When the two parts A B of the sound-box are put together, the pin *b* enters the tubular sleeve *h*, and the flange *c*, formed on disk B, enters the annular recess *a*, formed in the disk A, and rests loosely therein, so as to be capable of a slight swinging movement from its pivotal point on the rod *b*. A coiled spring *h'* is provided on the projecting end of the rod *b* and has its outer end secured in an opening formed in said rod, while its inner end bears against the end of the sleeve *h*. This spring serves to keep the section B of the sound-box against the section A and at the same time allows it to yield slightly as the diaphragm vibrates.

It will be seen by referring particularly to Fig. 2 of the drawings that the diaphragm-holder B by reason of its being pivotally secured to the disk A will be capable of a slight swinging movement, and the circular flange *c*, which fits in the recess *a*, of a slightly-larger diameter than flange *c*, will serve to limit the movement of the said section B, and the stylus-point will rest by gravity on the recording-surface of the record-tablet.

In the periphery of the section B, I secure a rod *i*, located at a point to the right of the pivot *b*, the said rod *i* being bent at substantially right angles and extending outwardly above and beyond the pivotal point of the two sections A and B. On the upper surface of the horizontal portion of the rod *i* I form a series of notches or serrations, as *i'*. A weight I, having an opening through the same for reception of the rod *i*, is provided, and a set-screw *i''* passes through the upper end of the weight I and serves to hold the weight in an adjusted position on the rod. By means of this arrangement I am enabled to regulate the depth of the cut of the stylus-point in the recording material, as it will be readily seen that by adjusting the weight toward the end of the rod *i* the pivoted section B of the sound-box will be swung in such a direction as to move the stylus-point G in an upward direction, and thereby lessen the depth of the cut, and as the weight is shifted in the opposite direction the pivoted section B will fall slightly and cause the stylus-point to make a slightly deeper cut. This can be regulated by the operator so as to suit the character of the record being made.

I do not wish to limit myself to the exact form described, as various changes might be made without departing from the spirit and scope of my invention.

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

1. In a sound recorder and reproducer, a sound-box comprising a relatively stationary section adapted to carry the horn or trumpet, a diaphragm-holding section pivotally suspended on the stationary section and adapted to swing in a plane parallel to the face of the said stationary section, substantially as described.

2. In a sound recorder and reproducer, a sound-box comprising a stationary section adapted to carry the trumpet, a diaphragm-section pivotally suspended on the stationary section adapted to swing in a plane parallel to the face of the stationary section and means for limiting the swinging movement of the pivoted section substantially as described.

3. In a sound recorder and reproducer, a sound-box comprising a relatively stationary section adapted to carry the trumpet, a diaphragm-holding section pivotally suspended on the stationary section to one side of its vertical center and adapted to swing in a plane parallel to the face of the said stationary section, a stylus carried by the swinging section, and means for limiting the swinging movement of the said pivoted section, substantially as described.

4. In a sound recorder and reproducer, a relatively stationary disk having a connection thereon for the attachment of a trumpet, a circular recess formed in said disk, a diaphragm-holding disk pivotally suspended on the stationary disk out of line with its vertical center adapted to swing in a plane parallel to the face of said stationary disk, a circular flange formed on the rear face of the pivoted disk adapted to loosely fit in the recess of the stationary disk, a diaphragm supported in the pivoted disk, and a stylus-bar connected to said diaphragm, substantially as described.

5. In a sound recorder and reproducer, a relatively stationary disk vertically disposed and adapted to be connected with a trumpet, a diaphragm-holding disk eccentrically pivoted on the stationary disk in a plane parallel to the face of the stationary disk, a tension-spring on the pivot, and means for limiting the swinging movement of the said pivoted disk, substantially as described.

6. In a sound recorder and reproducer, the combination of a rigid disk having a tubular section connected thereto adapted to be connected with a trumpet, or other sound-conveying device, a smaller disk pivotally mounted on the rigid disk, a yielding connection at the pivotal point of the two disks, an annular recess formed on the front face of the rigid disk, a circular flange formed on the rear face of the smaller disk adapted to fit loosely in the circular recess of the said rigid disk, a diaphragm carried by the smaller disk and a stylus-bar connected with said diaphragm pivotally supported on the diaphragm-holding disk, substantially as described.

7. In a sound recorder and reproducer, a sound-box comprising an independent section adapted to be rigidly secured in the sound-box support, a diaphragm-holding section
 5 pivoted eccentrically to the face of the relatively stationary section in a plane parallel to the face of said section, and means for adjusting the positions of the pivoted sections with relation to the record-tablet for regulating
 10 the depth of the cut of the recording-stylus, substantially as described.

8. In a sound recorder and reproducer, the combination of a disk, having a tubular section for connection with the sound-conveying
 15 device, a diaphragm-holding section eccentrically pivoted to the face of the stationary disk so as to be capable of a slight swinging movement in a plane parallel to the face of the said stationary disk, means for limiting
 20 the extent of this movement, and mechanism for adjusting the position of the diaphragm-holding section with relation to the record-disk, substantially as described.

9. In a sound recorder and reproducer, the
 25 combination of the disk A, having a tubular section adapted to be held by the sound-box support, a diaphragm-holding section B eccentrically pivoted to the face of the disk A, to one side of its vertical diameter so as to be
 30 capable of a slight swinging movement in a plane parallel to the face of the relatively stationary disk, means for limiting the extent of this swinging movement, an outwardly-extending arm secured to the periphery of the pivoted disk said arm extending over and
 35 beyond the fulcrum-point, and a weight ad-

justable on said arm, substantially as described.

10. In a sound recorder and reproducer, the combination of the disk, A, having a tubular
 40 section for connection to the trumpet, a disk, B, eccentrically pivoted to the disk, A, a coiled spring *h*, surrounding the pivot for affording a yielding connection, a diaphragm supported in the disk, B, a stylus-bar secured to the
 45 said diaphragm and pivotally supported on the diaphragm-holding section and a recording-stylus secured to the lower end of the stylus-bar, substantially as described.

11. In a sound-box, the combination of a
 50 rigidly-held disk adapted to be connected with a sound-conveying device, a smaller disk pivoted eccentrically on the rigid disk, a circular recess formed on the face of the rigid disk eccentric thereto, a circular flange formed on
 55 the rear face of the smaller disk around a circular opening and concentric with said disk, said flange being of a diameter smaller than the circular recess and adapted to extend loosely therein, a diaphragm carried by the smaller
 60 disk, a stylus-bar secured to said diaphragm and pivotally supported on the diaphragm-holding section, said stylus-bar being arranged at an angle on a diametrical line with the center of the smaller disk and its pivotal point, sub-
 65 stantially as described.

In witness whereof I have hereunto set my hand this 18th day of January, A. D. 1900.

ELDRIDGE R. JOHNSON.

Witnesses:

JNO. T. CROSS,

BENJ. F. PERKINS.