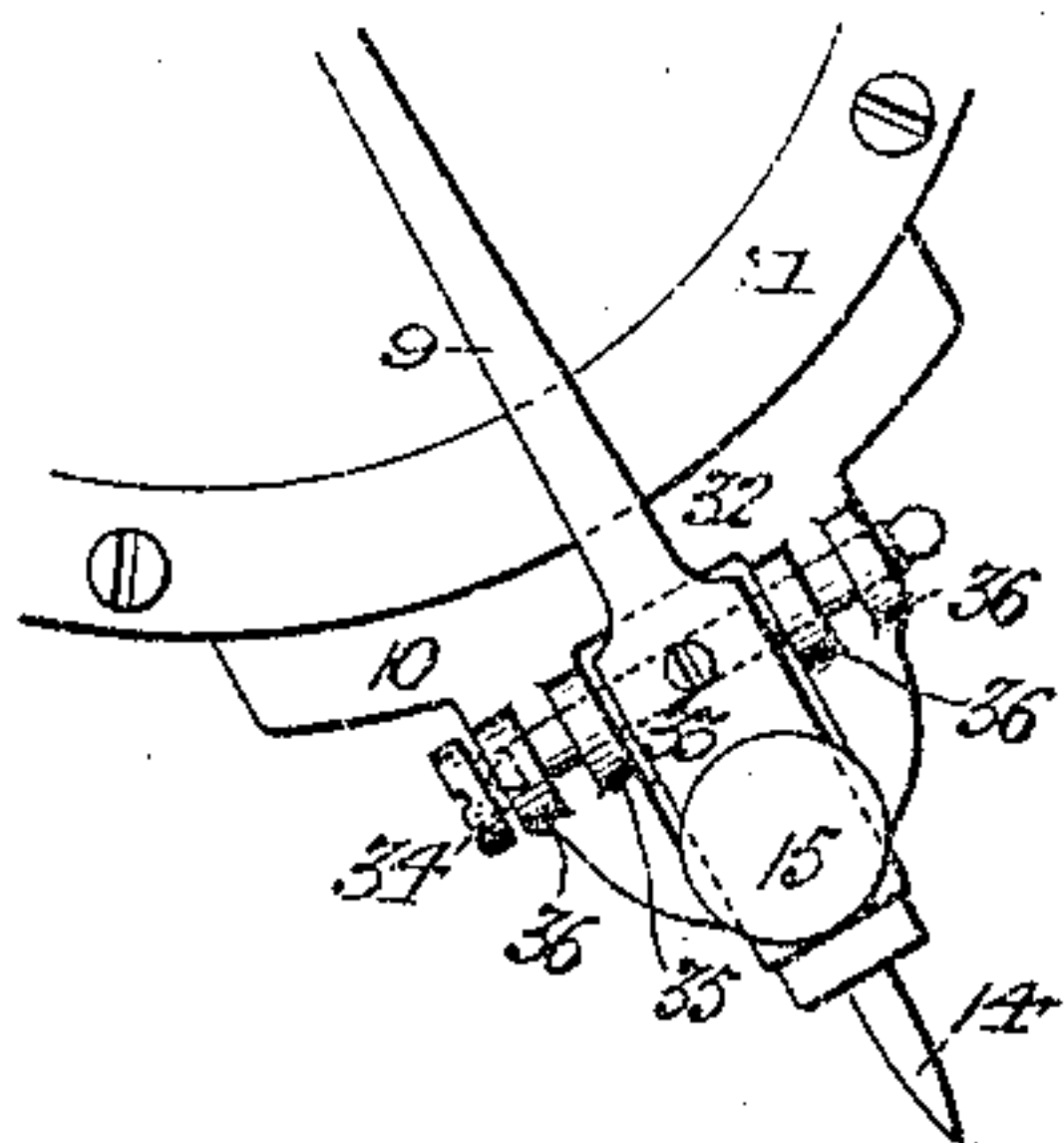
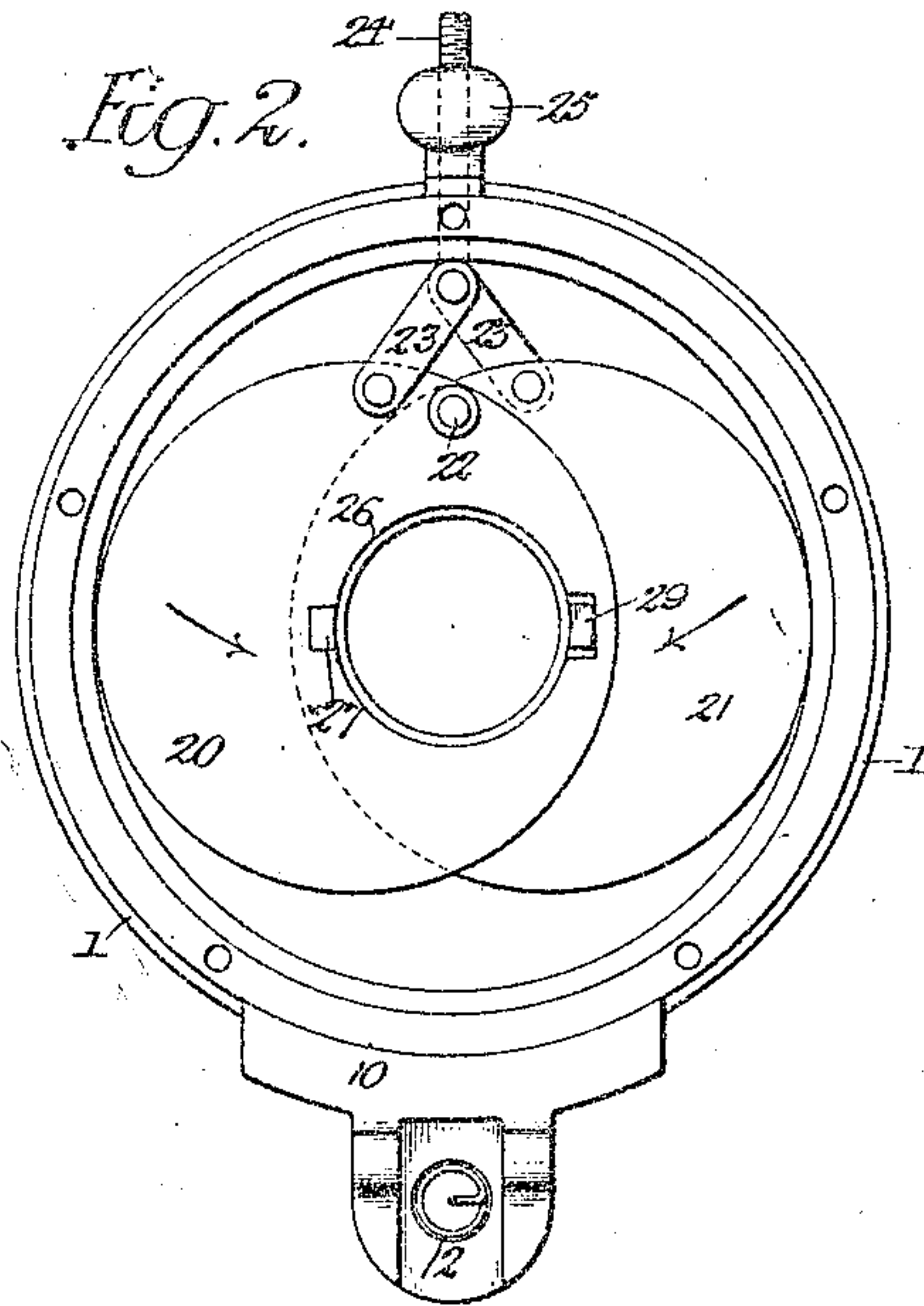
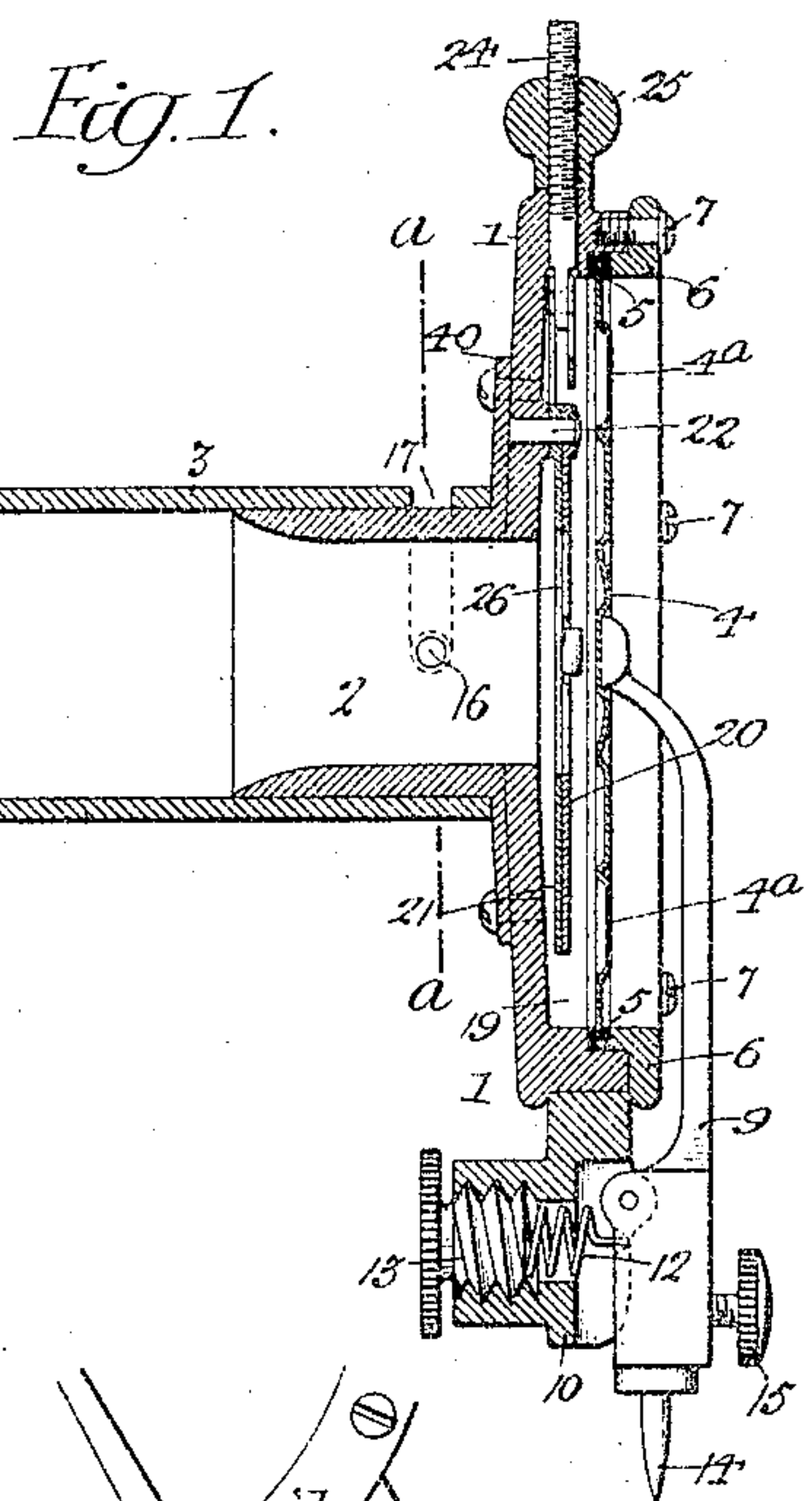


No. 855,326.

PATENTED MAY 28, 1907.

E. H. MOBLEY.  
SOUND BOX FOR TALKING MACHINES.

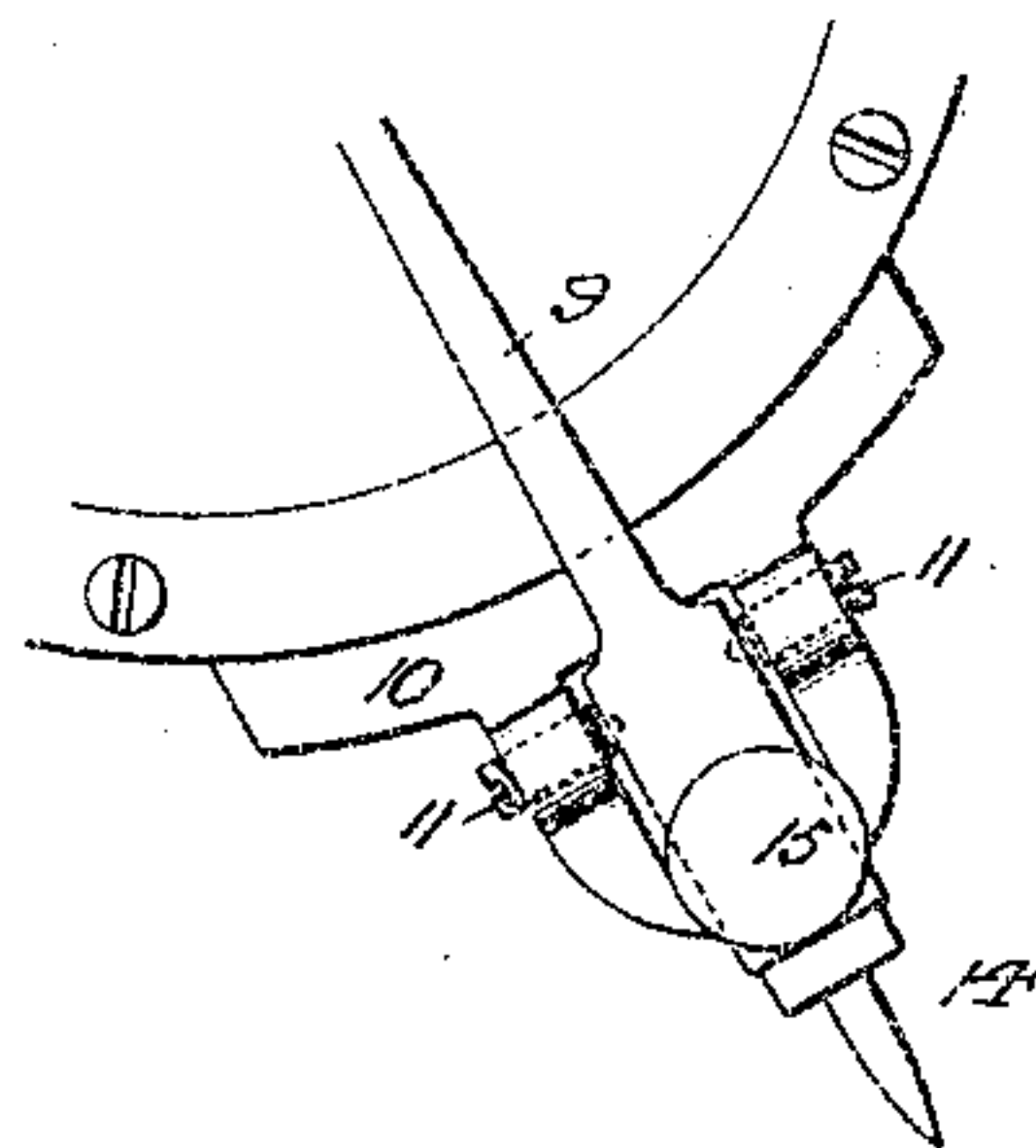
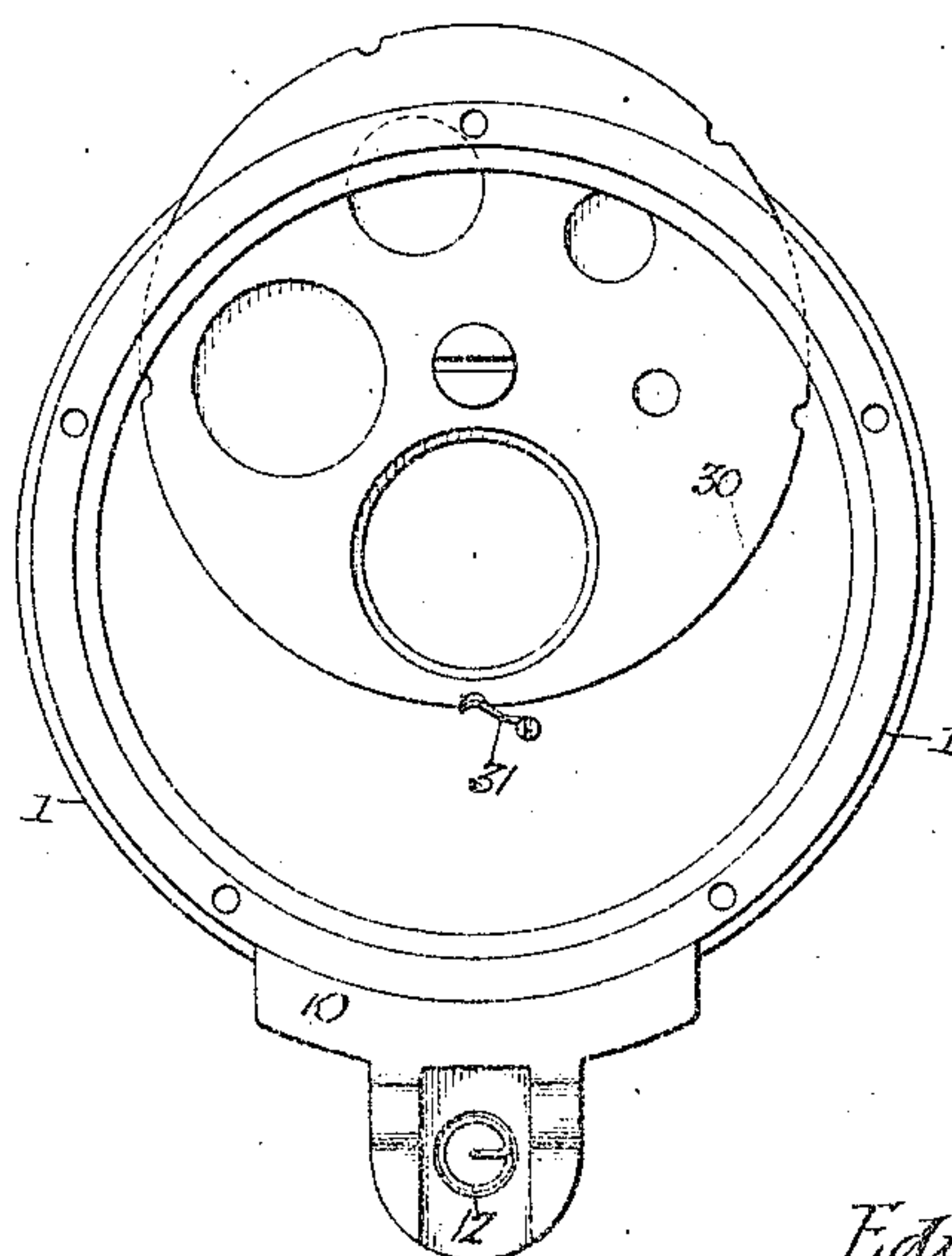
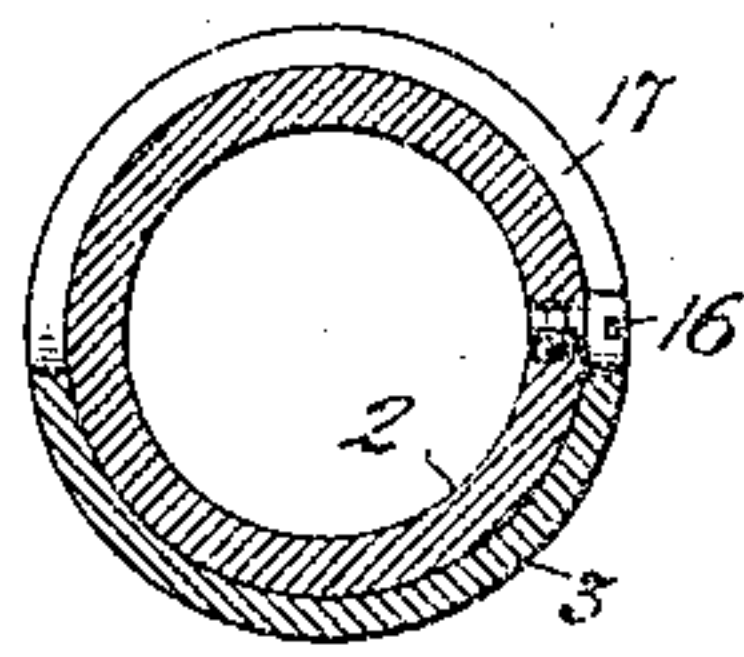
APPLICATION FILED JUNE 9, 1905.



*Fig. 5.*

*Fig. 6.*

*Fig. 4.*



Witnesses:  
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Inventor:  
Edwin H. Mobley  
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# UNITED STATES PATENT OFFICE.

EDWIN H. MOBLEY, OF RUTLEDGE, PENNSYLVANIA.

## SOUND-BOX FOR TALKING-MACHINES.

No. 855,326.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed June 9, 1905. Serial No. 264,465.

*To all whom it may concern:*

Be it known that I, EDWIN H. MOBLEY, a citizen of the United States, residing in Rutledge, Pennsylvania, have invented certain  
5 Improvements in Sound-Boxes for Talking-Machines, of which the following is a specification.

The object of my invention is to so construct a sound box for talking machines as to  
10 insure a good reproduction of the record, to vary the area of outlet from the chamber beneath the diaphragm to accord with the character of the record which is being reproduced, and to permit ready access to the  
15 stylus lever for the purpose of removing and replacing the stylus. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, in which

20 Figure 1, is a transverse section of a sound box for talking machines constructed in accordance with my invention; Fig. 2, is a front view of the same with the diaphragm and stylus lever removed; Fig. 3, is a front view  
25 of the stylus lever mounting; Fig. 4, is a transverse section on the line *a—a*, Fig. 1; Fig. 5, is a view illustrating a special form of stylus lever mounting; and Fig. 6, is a view  
30 illustrating a modification of one of the features of the invention.

1 represents the cup-shaped sound box casing having at the back a tubular neck 2, which is rotatably mounted in the tubular sleeve 3, the latter being intended to carry  
35 the horn, or other sound conveying or amplifying device, and being supported in any available manner, so as to maintain the sound box in its proper relation to the rotating plate or table which carries the disk record.

40 The neck 2 has a flange 40 to which the sound box casing is secured by screws or otherwise, so that said sound box can be readily applied to or removed from the support provided by the neck 2 and the sleeve 3  
45 in which it is mounted, whereby different styles of sound boxes can be used in connection with the same machine, the change from one sound box to another, simply requiring the manipulation of a few screws and  
50 being therefore, readily effected.

The mouth of the sound box casing is closed by a diaphragm 4, the edge of which is confined between rings 5 of rubber or other elastic or semi-elastic material, the inner-

most of these rings resting upon an annular  
5 shoulder in the sound box casing, and the outer ring being confined by an annular follower 6, which is secured to the sound box casing in any acceptable way, confining  
screws 7 being used for this purpose in the  
60 present instance.

Bearing centrally upon the outer face of the diaphragm 4 is the inner end of the stylus lever 9, which is pivotally mounted upon a  
65 projecting bracket 10 on the sound box casing 1, the method of pivoting shown in Figs. 1 and 3 being by means of pointed pivot pins 11, which are adapted to threaded openings in ears on the bracket 10 and engage with  
70 conical recesses in the opposite sides of the stylus lever, as shown in Fig. 3.

In the underside of the stylus lever, at a point outwardly beyond the pivotal axis of the same, is a recess which receives the axially projecting upper end of a wire forming a  
75 coiled spring 12, whose base rests upon the inner end of a screw plug 13, which is adapted to a threaded opening in a boss on the bracket 10, so that, by the adjustment of this screw 13, the tension of the coiled spring  
80 12 may be increased or diminished, and the degree of pressure exerted thereby upon the stylus lever may be correspondingly regulated.

The diaphragm 4 is annularly ribbed and  
85 has a relatively thin outer section 4<sup>a</sup> so as to impart to it a degree of resiliency not possessed by a flat diaphragm of uniform thickness and it has a normal tendency to press  
90 outward against the inner end of the stylus lever 9, which tendency is resisted by the pressure of the spring 12, upon the outer arm of said stylus lever, hence both the lever  
95 and the diaphragm are constantly maintained in a condition of tension and better results are produced in the reproduction of sound, than if either of these parts was inert.

The provision of the coiled spring 12 with an axially projecting portion insures the  
100 least possible amount of interference with the vibrations of the stylus lever, since the contact of the spring with said lever is limited to the bearing thereupon of the fine wire constituting the axial projection of the  
105 spring, which may, if desired, be sharpened to a point, hence the character of the reproduction caused by the vibrations in the diaphragm under the action of the stylus lever



is not affected as it would be by the contact of a metallic body of large area with the underside of the lever.

The stylus 14 is adapted to a socket in the outer end of the stylus lever and is secured therein by a set screw 15, as usual, and in order to permit of ready access to said outer end of the stylus lever for the purpose of removing and replacing said stylus, the entire sound box can be rotated by turning the neck 2 of the same in the tubular support 3, so as to raise that portion of the sound box to which the stylus lever is pivoted, and carry the same away from the rotatable record holding disk, the pin 16, on the neck 2 being adapted to a segmental slot 17 in the tubular support 3, so as to limit both the upward and downward swinging movement of the sound box and insure the stoppage of the downward movement when the stylus lever bears its proper relation to the rotating record-carrying disk.

In instruments of the better class it is important to provide some means of regulating the area of outlet from the chamber 19 behind the diaphragm 4 to accord with the character of the record which is being reproduced, some records requiring larger apertures than others for the attainment of the best results in reproduction.

In order to accomplish such regulation I locate in the chamber 19 a pair of swinging diaphragms 20 and 21 pivoted to the back of the sound box at 22 and connected by links 23 to a screw stem 24, which passes through an opening in the annular wall of the sound box and has, on the outside of the latter, a nut 25.

Each of the diaphragms 20 and 21 has therein an aperture 26, and, when the diaphragms have been swung outward to their full extent, as shown in Fig. 2, these apertures coincide with each other and are concentric with the bore of the tubular neck 2 of the sound box, as there shown, but if the nut 25 is slackened and the screw stem 24 pushed inwardly the diaphragms 20 and 21 will be caused to swing upon their pivot in the directions of the arrows shown in Fig. 2, so as to carry their apertures out of line with each other and gradually decrease the area of opening provided thereby, the opening being fully closed before each diaphragm reaches the limit of its movement in the direction of its arrow.

When the aperture is fully closed I provide for the application of a damper to the diaphragm 4 so as to arrest or retard the vibrations of the same, such result being effected by mounting upon the diaphragm 20 a damper block 27 which, when the apertures 26 in the diaphragm are fully closed, is beneath the central portion of the diaphragm 4 and can be caused to bear against the same by the action of a wedge block 29 carried by

the diaphragm 21, this wedge block acting upon the underside of the diaphragm 20 at the edge of the aperture 26 therein, and imparting a slight lift to said diaphragm sufficient to cause its damper block 27 to press against the inner side of the diaphragm 4.

Instead of swinging diaphragms of the character described, a diaphragm of the "Iris" type, or a rotating diaphragm having a series of apertures of different diameters, such as frequently employed in connection with photographic lenses may be used. Such a rotating diaphragm is shown at 30, in Fig. 6, a portion of the diaphragm projecting through a slot in the annular wall of the sound box so as to permit it to be readily manipulated to bring any one of its apertures into line axially with the bore of the neck 2, a spring 31, or other suitable catch or retainer, being employed to prevent accidental movement of the diaphragm out of its adjusted position. In both forms, however, the means for varying the area of the outlet leading from the sound box are permanently located relatively to said outlet and are adapted to vary the area of said outlet coaxially therewith.

In that form of mounting for the stylus lever shown in Fig. 5, a pin 32 passes through the stylus lever and is secured thereto by a set screw 33, one end of this pin being pointed and adapted to bear upon the inner face of the head of a set screw 34 carried by the outermost of a pair of ears 35 at one side of the bracket 10, and the other end portion of the pin fitting snugly but so as to rotate freely in a pair of ears 36 at the opposite side of said pin, the weight of the stylus lever and its appurtenances being, in this case, borne mainly by the head of the set screw 34, and the bearings of the pin 32 in the inner ear 35 and in the ears 36 being mainly to steady the same.

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

1. The combination of the sound box casing having a resilient diaphragm normally tending to press outwardly toward the stylus lever, a pivoted stylus lever against which said diaphragm exerts an outward pressure, and a spring acting upon the stylus lever, so as to exert thereupon a pressure in opposition to that of the diaphragm, substantially as specified.

2. The combination of the sound box casing and its diaphragm, a stylus lever pivoted to said sound box casing, and a spring having an axial extension bearing upon the stylus lever, substantially as specified.

3. The combination of the sound box casing and its diaphragm, the stylus lever pivoted to said casing and having a recess in one side of the same, and a spring having an axial extension adapted to said recess, substantially as specified.



4. In a sound box for talking machines, a diaphragm made in one piece having annular stiffening ribs, and formed with a relatively thinner portion between the two outer ribs.

5. The combination, in a sound box for talking machines, of the diaphragm, a casing supporting said diaphragm and having a projecting sound-carrying tube whose axial line is in the same direction as that of the diaphragm, and externally accessible and adjustable means for varying the area of the inner end of said tube, co-incidentally with the axis of said tube.

6. The combination, in a sound box for talking machines, of the diaphragm, a casing supporting said diaphragm and having a projecting sound-carrying tube whose axial line is in the same direction as that of the diaphragm, and an externally accessible and adjustable supplementary diaphragm structure located in the rear of the main diaphragm and serving to vary, co-incidentally with the axis of said tube, the area of the passage through the latter.

7. The combination of the sound box casing and its main diaphragm, with a pair of swinging diaphragms located in the chamber behind said main diaphragm, and each having an aperture therein and means for swinging each diaphragm upon its pivot so that it will gradually overlap and close the aperture in the other diaphragm.

8. The combination of the sound box casing and its main diaphragm, with a pair of diaphragms pivotally mounted in the chamber behind said main diaphragm and having apertures which, when said diaphragms are in one extreme position, are in line with each other and with the bore of the outlet neck of the sound box casing, and means for swinging said diaphragms upon their pivot so as to cause each to gradually overlap the aperture in the other, substantially as specified.

9. The combination of the sound box casing and its diaphragm, a damper for the latter,

and means, operating in the chamber behind said diaphragm, for varying the area of the outlet from said chamber and for forcing the damper into contact with the diaphragm, substantially as specified.

10. The combination, of the sound box casing and its diaphragm, a damper for the latter, and means operating in the chamber behind said diaphragm for gradually lessening the area of outlet from said chamber and for forcing the damper into contact with the diaphragm when such outlet is closed, substantially as specified.

11. The combination of the sound box casing and its main diaphragm, with a pair of apertured diaphragms pivoted in the chamber behind said main diaphragm, one of said pivoted diaphragms being provided with a damper block, and the other serving, when the diaphragms are moved so as to close their apertures, to cause said damper block to be pressed against the said main diaphragm, substantially as specified.

12. The combination of the sound box and its diaphragm, the stylus lever bearing upon said diaphragm and a pivot pin carried by said stylus lever, and having a bearing in the sound box casing on one side of said lever, and a conical end resting upon a supporting bearing on the other side of said lever, substantially as specified.

13. The combination of the sound box casing and its diaphragm with the stylus lever bearing upon said diaphragm and carrying a pivot pin which has on one side of the lever a bearing in which it can turn, and on the other side of the lever a conical end resting upon a supporting bearing, substantially as specified.

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

EDWIN H. MOBLEY.

Witnesses:

WALTER CHISM,  
JOS. H. KLEIN.