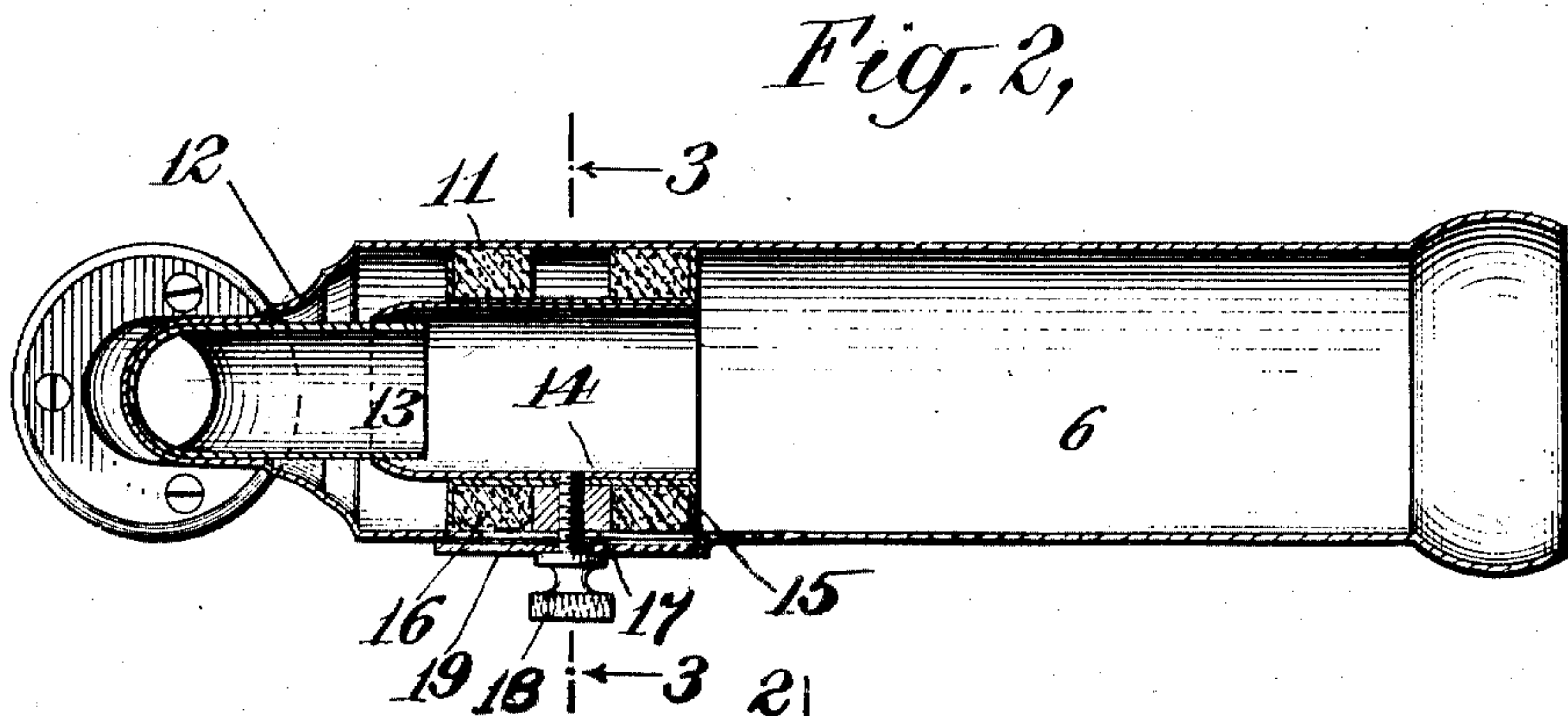
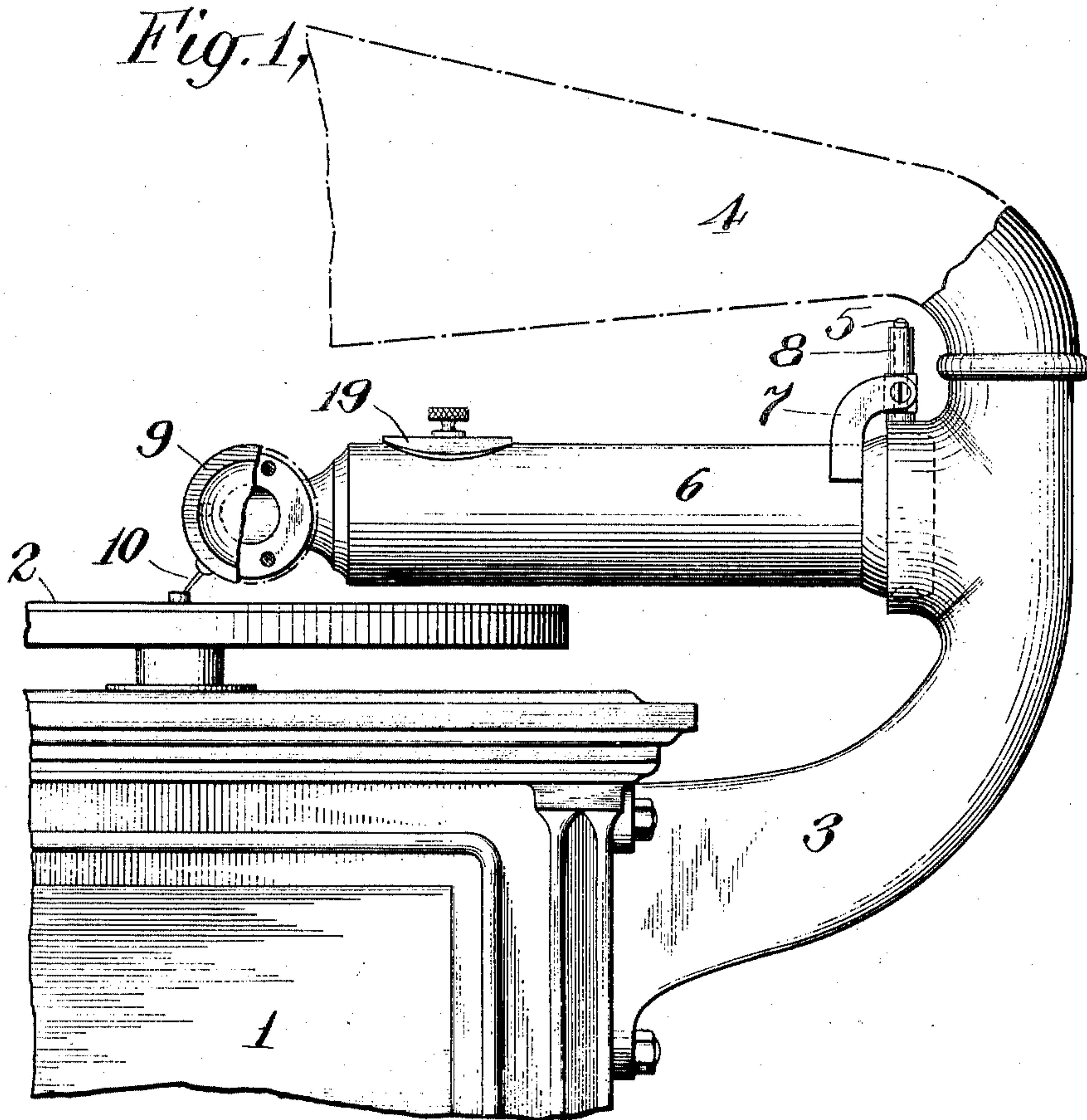


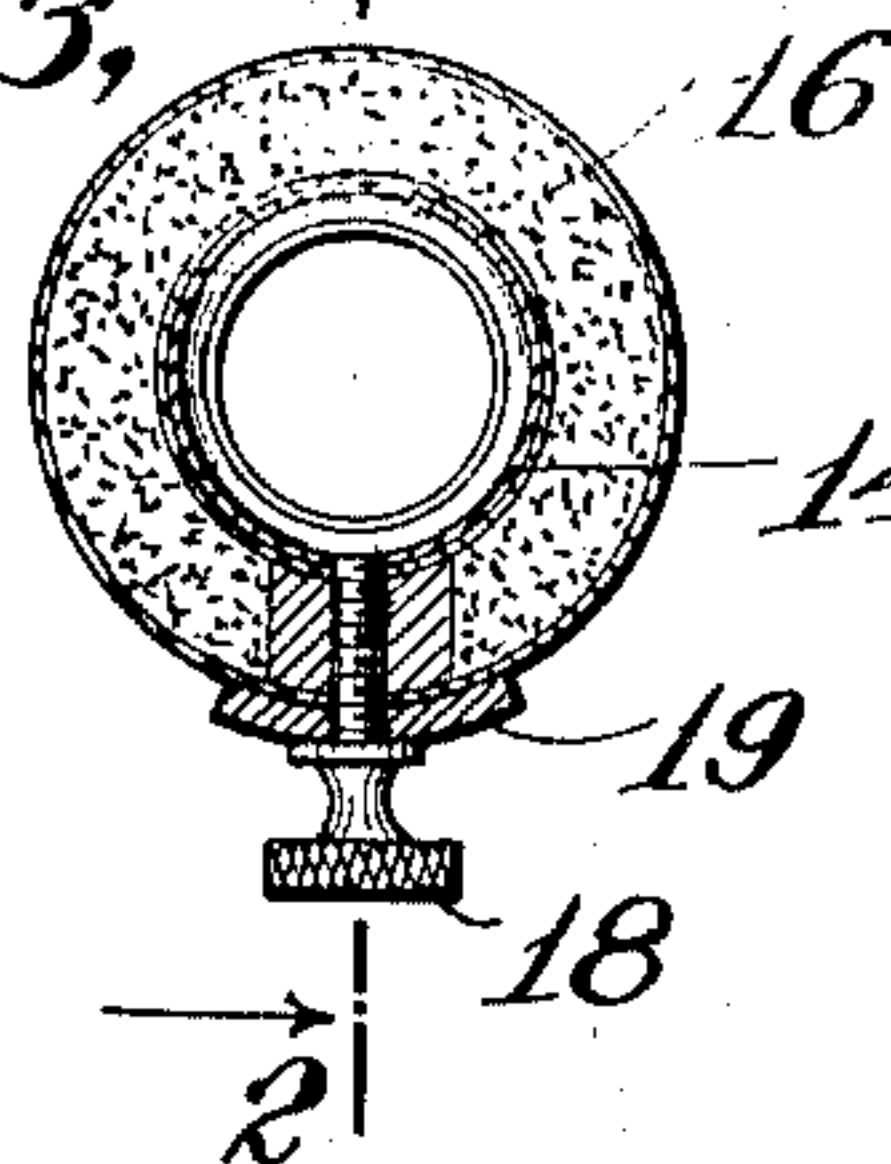
No. 868,612.

PATENTED OCT. 15, 1907.

E. H. MOBLEY.  
SOUND CONVEYING DEVICE.  
APPLICATION FILED JAN. 8, 1907.



*Fig. 3,*



WITNESSES:

*H. Edwards.*  
*L. Smorack.*

INVENTOR

*Edwin H. Mobley*

BY

*H. Edwards*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

EDWIN H. MOBLEY, OF ARDSLEY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HAWTHORNE & SHEBLE MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## SOUND-CONVEYING DEVICE.

No. 868,612.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed January 8, 1907. Serial No. 351,344.

*To all whom it may concern:*

Be it known that I, EDWIN H. MOBLEY, a citizen of the United States, residing at Ardsley, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Sound-Conveying Devices, of which the following is a specification.

This invention relates to sound-conveying devices and has reference, more particularly, to means whereby the sound conveyed by the device can be modified as desired as to tone, magnitude, etc.

The invention is of particular utility in connection with talking machines both in recording sounds and in reproducing the sounds recorded although the same may be used in other connections, with highly beneficial results.

It is well known that the best reproductions from records of sounds of different character can be obtained only by using mechanism specially adapted for the reproduction of the particular sound, that is, a reproducer which will give the most faithful reproduction of a record of a vocal selection would give an inferior reproduction of an orchestral or instrumental solo selection. For this reason, in order to obtain the best results it is necessary to have a number of reproducers and to use one or another according to the character of the record to be reproduced. Moreover, it has been found practically impossible to make amplifying horns and sound-boxes so near alike as to every part as to give reproductions which are the same in tone, pitch, resonance, etc. Also, in recording sounds, it frequently happens that certain tones cause what is known as "blasting" and a faithful reproduction of such a tone cannot be obtained.

The object of my invention is to provide a sound-conveying device having adjustable means therein by which the sounds conveyed by the device can be modified and their volume, tone or pitch regulated at will. In this way when the device is used to convey sounds to be recorded to a recording diaphragm and stylus, the objectionable blasting can be avoided by an adjustment of the movable parts; also, when the device is used to convey sounds reproduced, it is unnecessary to substitute one reproducer for another when changing from a record of one character to one of another, and the slight differences in sound-boxes and horns may be readily compensated for so that the most faithful reproduction of the original sounds can be obtained.

In the preferred embodiment of my invention adapted for use in connection with sound-reproducing means, I provide a body located within the sound-conveying tube leading from the reproducer and movable within

the tube so that its position determines the shape of the interior of the tube, adjusting devices being provided whereby this body can be moved to and locked in the desired position from outside the tube. By means of such an adjustable modifier not only can the pitch of the reproduced sound be regulated but also its character can be changed from one which is rather hollow and resonant to one which is much more sharp.

The preferred embodiment of my invention as used for reproducing sound from a disk-record is illustrated in the accompanying drawings in which

Figure 1 is an elevation of a portion of a talking machine, Fig. 2 is a longitudinal section of the tone-arm thereof, inverted to better illustrate its shape, the section being on line 2—2 of Fig. 3, and Fig. 3 is a transverse section on line 3—3 of Fig. 2.

Referring to the drawings, 1 indicates the motor-box of a talking machine having a motor therein driving a vertical shaft on which the disk-shaped record 2 is mounted. Secured to the side of the box is a coupling member 3 having an opening through the upper portion thereof. A tapering amplifying horn 4 is adapted to be mounted on the upper end of the member 3, its opening communicating with the opening in the coupling member. Secured on the coupling near the other end of the opening therethrough is a pin 5 on which is supported the tone-arm 6. For this purpose the tone-arm has a yoke 7 secured thereto on the arms of which is horizontally pivoted a cross-head carrying a sleeve 8 adapted to fit over the pin 5. The end of the tone-arm is arranged to telescope slightly with the coupling member 3 as shown in Fig. 1. To the other end of the tone-arm is secured the sound-box 9 having a needle 10 bearing in the groove in the record disk.

The construction of the tone-arm may be varied somewhat depending on the construction of the machine with which it is used. It is here shown as a cylindrical sheet metal tube 11 having one end contracted at 12 to a considerably less diameter, and this small end bent to a ninety degree curve and having the sound-box secured to its end. Fitting tightly within the small end of the tube is a curved tube 13, one end thereof alining with the end of the tube 11 and the other end extending a considerable distance within the larger cylindrical portion 11. The tubes 11 and 13 constituting the tone-arm thus form two overlapping sections, preferably of circular cross-section and one of larger diameter than the other.

Within the section 11 is located the sound-modifying device consisting of an annular member movable axially of the section. This device may be formed of a tube 14, a sleeve 15 thereon having integral outwardly-turned flanges at its ends and gaskets 16 on this sleeve.



To provide for movement of the device, I provide a slot 17 in the tone-arm and a set-screw 18 extending through this slot and into a threaded opening in sleeve 15 and tube 14. Preferably a slide 19 is provided between the head of the screw 18 and tube 11 to close and conceal slot 17.

The interior diameter of the modifying device may be substantially the same as the exterior diameter of the tube 13 so that movement of the modifier serves to extend the smaller section of the tone-arm. Or, if desired, the interior of the modifier may be of a diameter greater than the exterior diameter of tube 13 but of less diameter than the tube 11 so that the modifier constitutes a third section of the tone-arm, the three sections being of progressively increasing diameter. In the latter case, the end of tube 14 toward the sound-box is contracted to closely encircle tube 13. Since the end of the tube 13 extends into the tube 11 the modifier can be moved over it a short distance to telescope therewith.

By adjusting the modifier along the tone-arm the character of the sound of the reproduction can be varied as desired, thus making it possible to obtain a reproduction approaching very closely the sound recorded. The movement of the modifier serves to change the relative lengths of the two sections of the tone-arm or to increase or decrease the length of a third section of a size between the other two sections. By increasing the length of the section 13 the movement of the modifier can be made to insert or eliminate the third section of intermediate size. With the construction illustrated, movement of the modifier to the right in Fig. 1 makes the sound more hollow and movement to the left makes it more sharp.

Having described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. A sound-conveying device comprising a tube having two sections therein, one of greater size than the other and a tubular sound-modifier located within said tube with its walls lying close to the walls thereof and movable to increase or decrease the effective length of one of said sections, substantially as described.

2. A sound-conveying device comprising a tube having two cylindrical sections therein, one of greater diameter than the other and an annular sound-modifier located within said tube and movable to increase or decrease the effective length of one of said sections, substantially as described.

3. A sound-conveying device comprising a tube having two sections therein, one of greater size than the other, and a sound-modifier movable within said larger section

adjacent to the end of the smaller, substantially as described.

4. A sound-conveying device comprising a tube having two sections therein, one of greater size than the other, and a sound-modifier located within said larger section and movable therein adjacent to the end of the smaller section to increase or decrease the effective length of the smaller section, substantially as described.

5. A sound-conveying device comprising a tube having two over-lapping sections therein one of greater size than the other and an annular sound-modifier movable within said larger section and adapted to have the end of said smaller section telescope therewith, substantially as described.

6. A sound-conveying device comprising a tube having two sections therein one of greater size than the other, a sound-modifier located within said tube, and means operated from outside the tube for moving said device to increase and decrease the effective length of one of said sections, substantially as described.

7. A sound-conveying device comprising a tube having two cylindrical sections therein one of greater diameter than the other, an annular sound-modifier located within said larger section and a set-screw extending through a slot in the wall of said larger section and into said modifier, substantially as described.

8. A sound-conveying device comprising a tube having two over-lapping sections therein one of larger diameter than the other, an annular sound-modifier movable within said larger section adjacent to the end of the smaller section and adapted to telescope with the end of the smaller section, and a set-screw extending through a slot in the wall of the larger section and into said modifier, substantially as described.

9. A sound-conveying device comprising a tube, a tubular member located wholly within the walls of the tube and having an imperforate wall, said member being of substantially uniform, internal and external, effective diameter, and means for moving said member axially of said tube from outside the tube, substantially as described.

10. A sound-conveying device comprising a tube, a tubular member of substantially uniform, internal and external, effective diameter located wholly within the walls of the tube, its walls lying close to the walls of the tube, and means outside the tube for moving said member axially of the tube, substantially as described.

11. In a talking machine, a tone-arm, a sound-box secured to one end thereof, a tubular member fitting snugly within the tone-arm, and means for moving the member axially thereof from outside the tone-arm, substantially as described.

12. In a talking machine, a tone-arm having two portions, one of greater size than the other, a sound-box secured to the end of the smaller portion, and an annular member movable axially within the larger portion, substantially as described.

This specification signed and witnessed this 2 day of January, 1907.

EDWIN H. MORLEY.

Witnesses:

H. MEIER,  
R. FROST.