

No. 723,929.

PATENTED MAR. 31, 1903.

R. M. SHAFFER.

AURAL INSTRUMENT.

APPLICATION FILED JUNE 4, 1902.

NO MODEL.

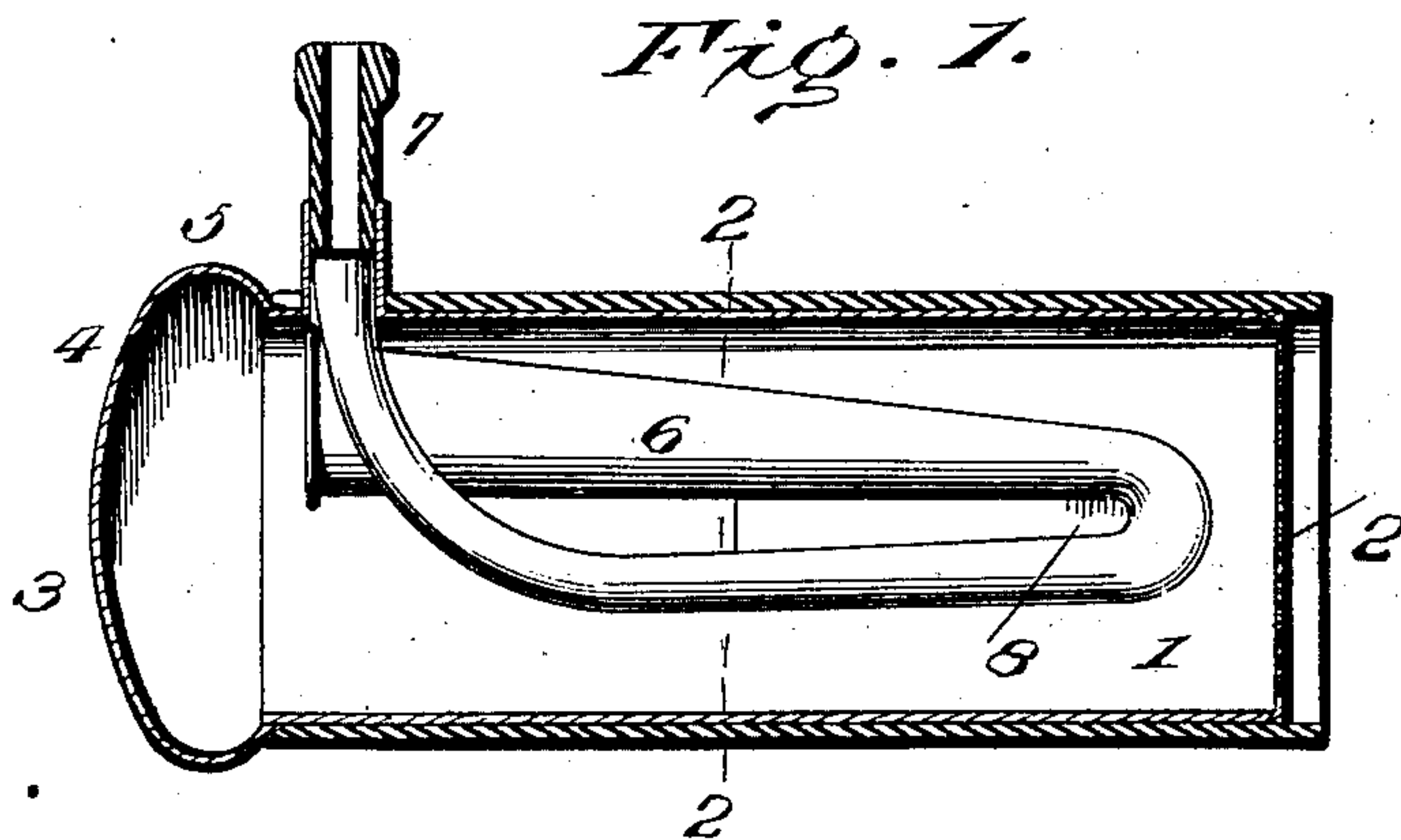


Fig. 2.

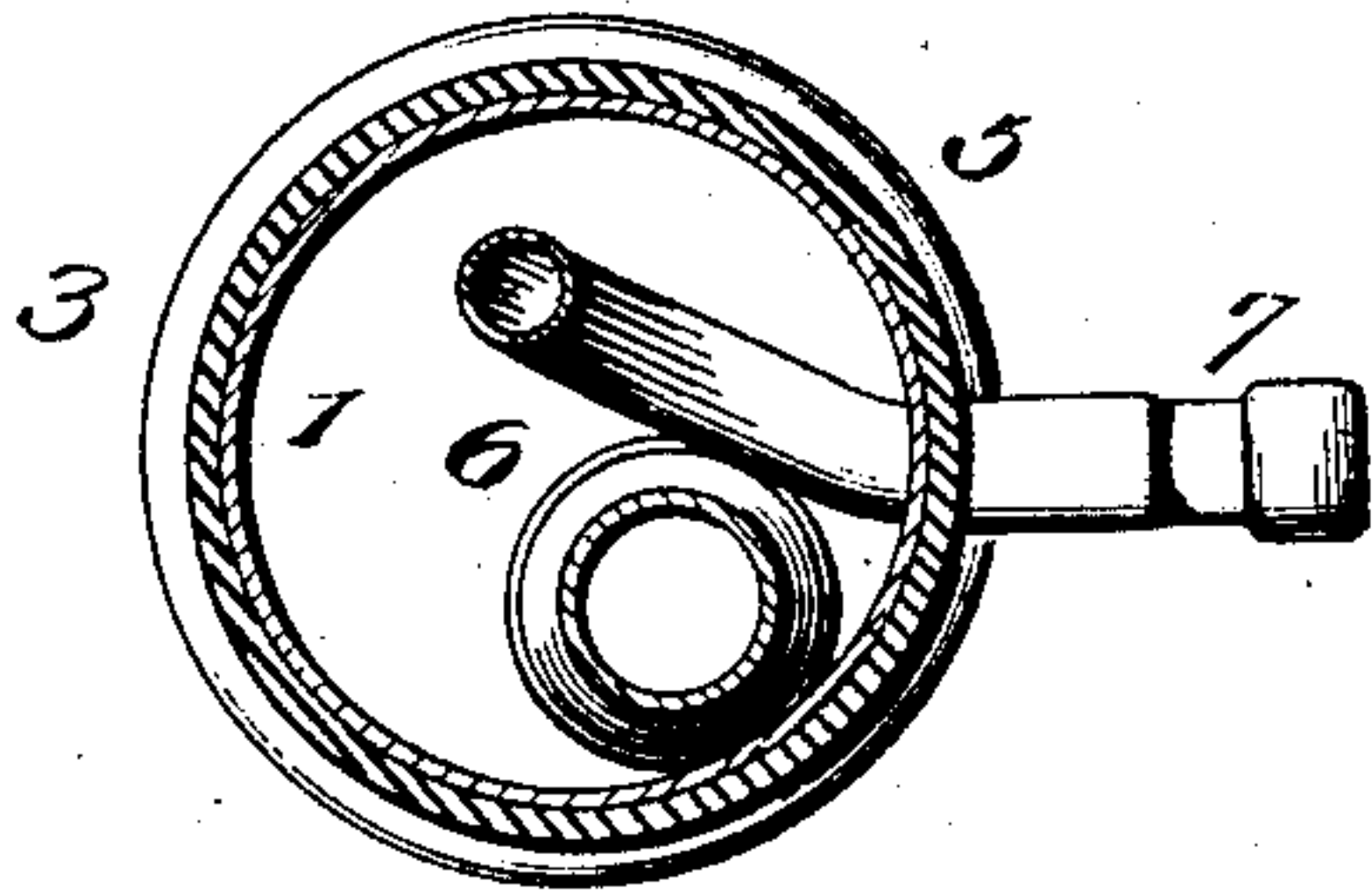


Fig. 3.

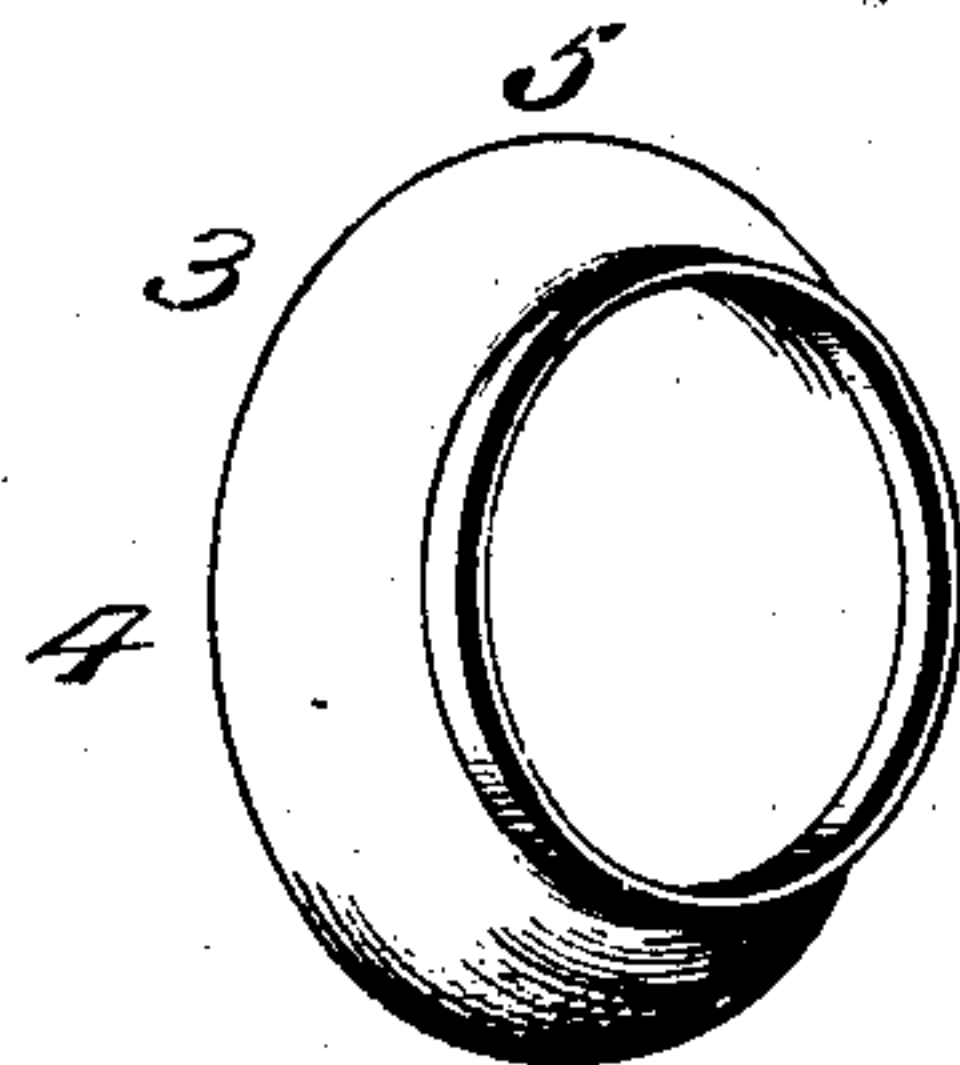
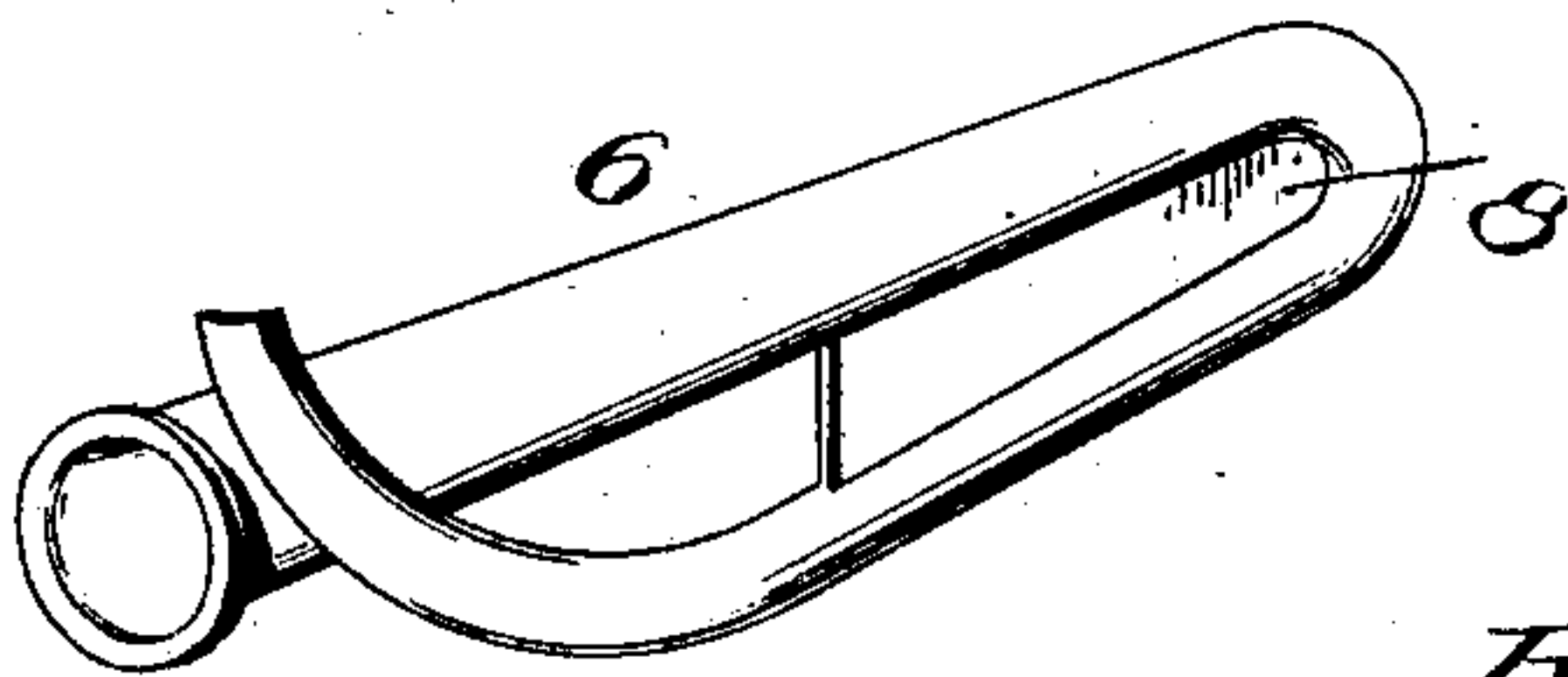


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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AURAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 723,929, dated March 31, 1903.

Application filed June 4, 1902. Serial No. 110,225. (No model.)

To all whom it may concern:

Be it known that I, RICHARD M. SHAFFER, of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Aural Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an aural instrument or ear-trumpet so constructed as to receive and transmit a maximum volume of sound and at the same time one which will occupy but little space and may be conveniently carried in the hand or pocket of the user.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view. Fig. 2 is a cross-sectional view on line 2 2, Fig. 1. Fig. 3 is a view of the sounding-head detached. Fig. 4 is a similar view of the sound-conveyer.

Referring to the drawings, 1 designates the sound-receiver, which is of cylindrical formation throughout its length, its receiving end being covered by a perforated plate or diaphragm 2 to prevent the entrance of foreign matter or objects and also to somewhat break or expand the sound-waves. The other end of the receiver is closed by a sounding-head 3, which head is made of thin metal and slightly arched, as at 4, in that portion in line with the bore of the cylinder and expanded or bulged outwardly, as at 5, a short distance beyond the wall of the receiver. By thus forming the sounding-head the greatest possible vibratory effect is obtained, the sound-waves passing through the receiver striking against the head and being immediately disseminated with increased resonance.

6 is the sound-wave conveyer for receiving the sound from the sounding-head and conveying it to the ear of a person. This conveyer is in the form of a horn-like tube gradually tapered throughout its length, with its widened or enlarged end facing the sounding-head. It is positioned longitudinally within the receiver and is bent back upon itself,

forming two approximately parallel members, one of which is carried to near the receiving end of the other and again bent or carried nearly obliquely across the latter and passed out through an opening in the receiver below the sounding-head 3. Its projecting end has secured thereon a non-metallic earpiece 7. By thus bending the tube back upon itself and thence crosswise the tube occupies but little space in the receiver, leaving an uninterrupted passage-way for the sound-waves in being transmitted to the sounding-head, while the conveyer, being carried out of the cylinder below the sounding-head, leaves an uninterrupted space between the latter and the enlarged end of the conveyer, thus insuring the sound-waves being transmitted direct from the sounding-head into the conveyer. To this arrangement is very largely due the high resonance obtained by my instrument.

To prevent trembling or too great vibration, the two members of the tube are throughout a portion of their parallelism braced by a connecting-web 8. Without this web, the tube being of very thin metal, the resonance produced by the sounding-head would cause a trembling of the tube by the vibration of the sound-waves, whereas this is lessened by bracing the two parallel portions.

The advantages of my invention are apparent. By locating the conveyer-tube to one side of the cylinder, leaving uninterrupted space for the passage of the sound, and by forming the sounding-head in the manner stated and in the described relation to the conveyer, an improved and highly-efficient aural instrument is produced. Further advantage resides in the fact that the sound-waves enter the cylinder in the direction of its longitudinal axis, thus insuring their full contact with the sounding-head.

I claim as my invention—

1. An aural instrument or ear-trumpet, comprising a receiver of cylindrical formation having at one end a sounding-head slightly arched and bulged outwardly beyond the wall of the receiver, and a sound-conveying tube located within the receiver, at one side thereof, and having its receiving end facing the

arched portion of the sounding-head, and its other end extended outwardly through the receiver below the sounding-head, as set forth.

2. An aural instrument or ear-trumpet, comprising a receiver of cylindrical formation having at one end a sounding-head slightly arched and bulged outwardly beyond the wall of the receiver, and a sound-conveying tube located within the receiver at one side thereof, and consisting of a tube bent back upon itself and thence carried crosswise and extended out of the receiver below the sounding-head, the receiving end of the tube facing the arched portion of the sounding-head, as set forth.

3. An aural instrument comprising a receiver of cylindrical formation throughout its length, a sounding-head over one end of the receiver of thin metal arched throughout that portion in line with the bore of the cylinder and bulged outwardly beyond the wall of the latter, and a sound-conveyer facing the sounding-head at its receiving end and extending, at its other end, through the wall of the receiver below the sounding-head, as set forth.

4. An aural instrument comprising a receiver of cylindrical formation throughout its length, a sounding-head over one end of the

receiver of thin metal arched throughout that portion in line with the bore of the cylinder and rounded or bulged outwardly beyond the wall thereof, and a sound-conveying tube of thin metal tapered throughout its length and bent back upon itself and thence carried crosswise terminating outside of the receiver, and a bracing-web connecting the two members of the tube, substantially as set forth.

5. An aural instrument comprising a receiver of cylindrical formation open at its receiving end, a sounding-head over the opposite end of the receiver arched throughout that portion in line with the bore of the cylinder and rounded or bulged outwardly beyond the wall thereof, and a sound-conveying tube located within the receiver and having its receiving end facing the arched portion of the sounding-head and its other end extended outwardly through the receiver below the sounding-head, substantially as set forth.

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

RICHARD M. SHAFFER.

Witnesses:

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WM. M. WHITE.