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Patented Jan. 7, 1902.

A. G. HOUSE.

TRANSMITTING AND RECEIVING TUBE FOR AURICULAR INSTRUMENTS.

(Application filed Sept. 9, 1901.)

(No Model.)

2 Sheets—Sheet 1.

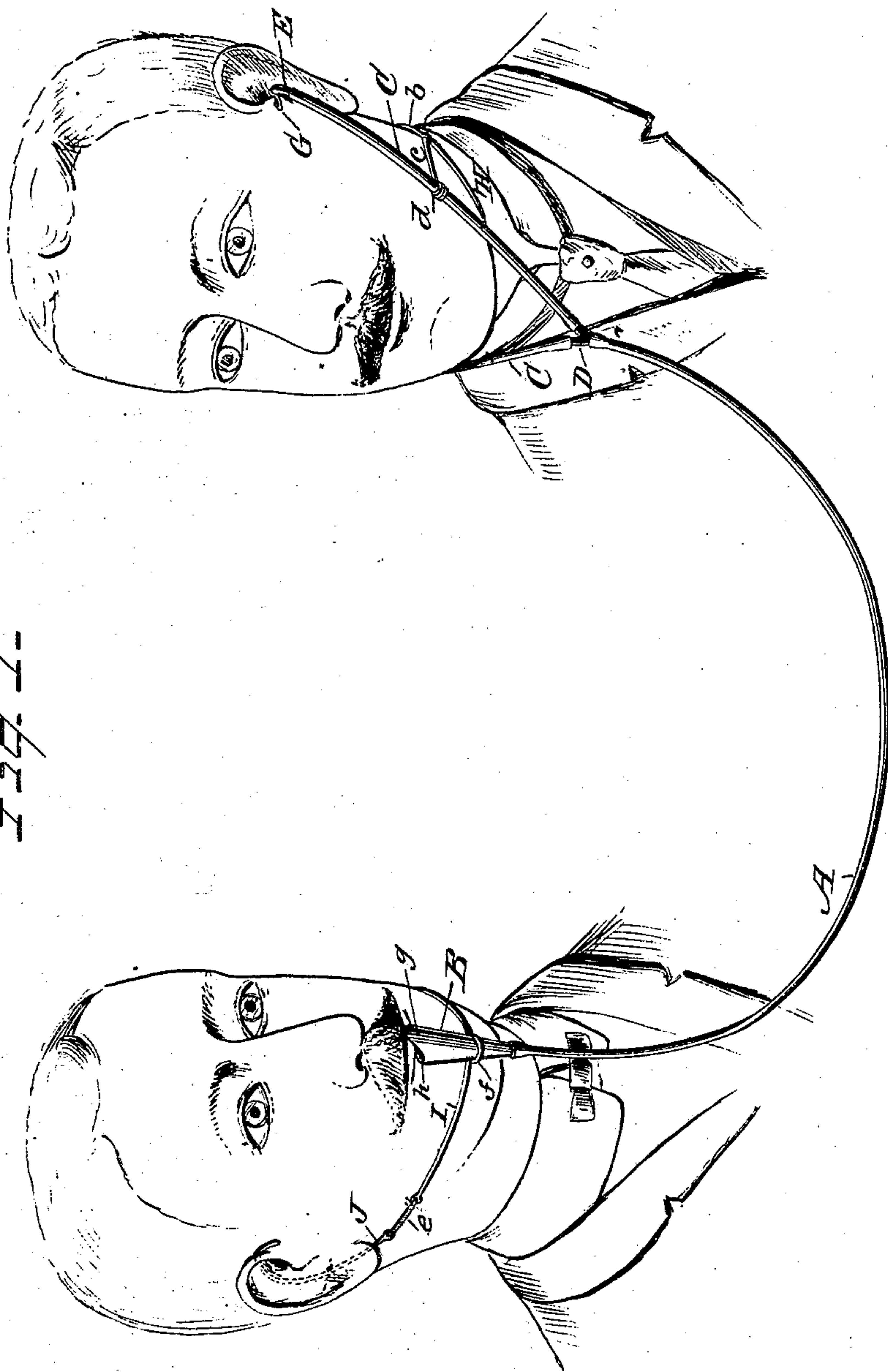


Fig. 1.

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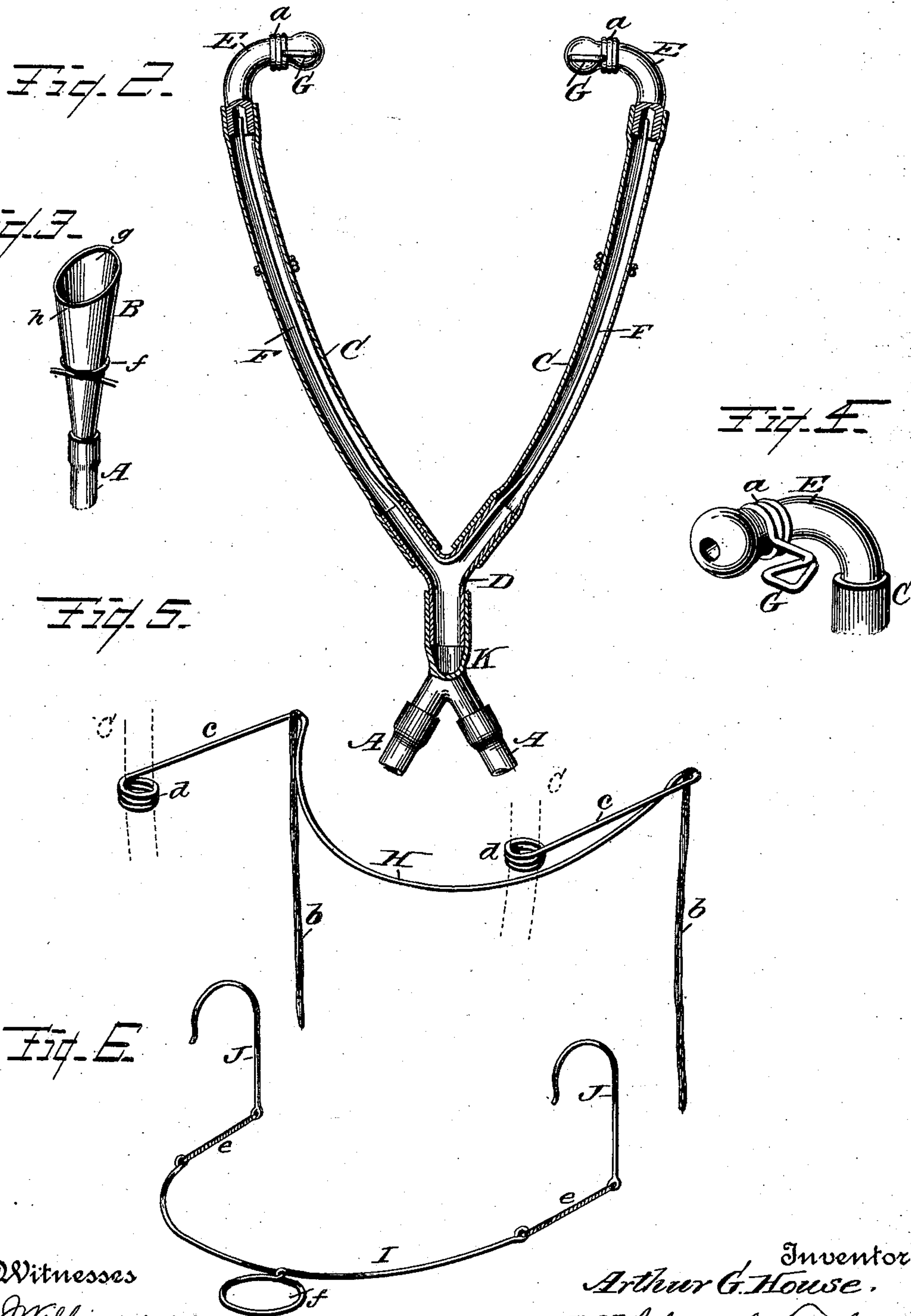
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(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

ARTHUR G. HOUSE, OF BELTON, MISSOURI.

TRANSMITTING AND RECEIVING TUBE FOR AURICULAR INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 690,430, dated January 7, 1902.

Application filed September 9, 1901. Serial No. 74,766. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR G. HOUSE, a citizen of the United States, residing at Belton, in the county of Cass and State of Missouri, have invented certain new and useful Improvements in Transmitter and Receiving Tubes for Auricular Instruments; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention has reference to auricular instruments or devices for transmitting and receiving sounds, and especially to that class which are provided with receivers, such as earpieces, adapted for engaging the ears of the person receiving the sound from a second person or from a phonograph or like sound-producing instrument; and the invention consists in the several details of construction, substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings is a perspective view illustrating the manner of using the instrument when adapted as a speaking and hearing tube for deaf mutes or persons hard of hearing; Fig. 2, a sectional view of the branch hearing-tubes, showing the earpieces with guards in elevation and a double Y-shaped coupling for double transmitter-tubes; Fig. 3, a detail perspective view of the mouthpiece; Fig. 4, a similar view of one of the earpieces with the ear-guard connected thereto, the guard being in the position it will assume when in use; Fig. 5, a detail perspective view of the support for the hearing-tubes; Fig. 6, a similar view of the support for the transmitter or mouthpiece.

In the accompanying drawings, A represents the transmitter tube or tubes of rubber or other suitable material, and when employed in a speaking and hearing device or instrument the tube is provided with a mouthpiece B. The receiving or hearing tubes C are composed of a flexible material, such as rubber, and connect with the transmitter-tube A through the medium of a tubular Y-shaped coupling D or by any other means found best adapted to the purpose.

In order to give the necessary rigidity to the tubes C and at the same time admit of their having a spring action in holding the ear-

pieces E to the ears, a spring-wire F is employed, which extends centrally through the tubes and rigidly connected to the coupling D by soldering thereto or by any other means found desirable. I have shown the stay spring-wires F, which enter the two tubes C, as integral or formed from the one and the same length of wire; but it is evident that two separate lengths of wire may be used without in any manner affecting the essential features of the invention.

The earpieces E, which may be of any suitable form and construction, are provided with ear-guards G, which are preferably of wire, and connected to the earpieces by a spring-coil *a*, which coil encircles the earpiece and enables the guard to be adjusted in two different directions—that is, on the arc of a circle and lengthwise of the earpiece—giving to the ear-guard a compound adjustment necessary to bring the guard to rest on the side of the face of the person using the earpieces and directly in front of the tragus of the ear, as shown in Fig. 1 of the drawings. The earpieces in general use are open to a serious objection, in that the earpieces, after being inserted in the ears, are liable to turn sidewise with the points toward the back of the ear, not only making it very unpleasant to the hearer, as well as letting a portion of the sound escape and causing an indistinctness. This objection to the earpieces is entirely overcome by the employment of the ear-guards G, which prevent the earpieces from turning when in use and hold them in the required position to secure their full benefit as a sound-receiving medium.

The guards G may be of any suitable form and construction and of any preferred material so long as the guards will serve the purpose in holding the earpieces against turning when engaged with the ears of the person using them.

I provide a simple device for holding the receiving-tubes C to the person of the user, the tubes being supported from the neck of the user by means of the wire yoke H, which yoke fits against the throat of the wearer under the chin and is held thereto by suitable flexible fastenings *b*, such as cords or tapes, which fastenings extend around the back of the neck, and their ends are suitably tied. The yoke H has outwardly-extending arms

c, which terminate in coils to form loops d, through which the receiving-tubes C extend, as shown in dotted lines of Fig. 5 of the drawings. This means of connecting the support to the tubes will allow the adjustment of the support to adapt it to the neck of the person using the instrument, the loops being slidable upon the tubes to bring the yoke in the desired position.

As the receiving-tubes C are supported from the neck of the person instead of from the clothing, the positions of the tubes are not disturbed by the shifting of the body, which motion usually disarranges the clothing, and when the tubes are supported thereby every motion of the body tends to continually pull the tubes, with their earpieces, out of place.

When a mouthpiece is employed, as would be the case where the instrument is adapted for the use of deaf mutes or other persons hard of hearing, I provide a holder for the mouthpiece, which holder comprises a yoke I, preferably of wire. This yoke I is adapted to rest against the chin and is held in position by hooked hangers J, said hangers connecting with the ends of the yoke through the medium of extensible and contractible connections, such as coiled springs. I have shown the simplest form of extensible and contractible connections in the employment of elastic bands e, and the yoke is provided with a loop f, with which engages the mouthpiece B. When in position, the hangers J will hook over the ears of the person using the mouthpiece, the extensible and contractible connections, which in the present instance are the elastic bands, will keep the yoke against the chin and hold the mouthpiece in the desired position for use, as shown in Fig. 1 of the drawings.

In Fig. 1 of the drawings is shown a single speaking-tube; but where a double speaking-tube is required for the use of two persons a second Y-shaped coupling is used, as shown at K in Fig. 2 of the drawings, said coupling being connected to the Y-shaped coupling D, the two couplings being substantially alike, and the tubes connected thereto in like manner, each speaking-tube of course being provided with a mouthpiece.

The mouthpiece B, as more clearly shown in Fig. 3 of the drawings, is provided with a deflector-plate g, which forms an extension to the mouthpiece. The mouthpiece is brought to the position shown in Fig. 1 of the drawings, with the deflector-plate farthest from the mouth and with the lower lip in contact with that portion of the mouthpiece indicated at h in Fig. 3 of the drawings. The voice is thrown against the deflector-plate and deflects the sound into the tube, and as the mouthpiece is not inserted in the mouth or between the lips, as in the ordinary mouthpieces, the mouthpiece with the deflector-plate is more desirable, as it removes the danger of the mouthpiece being coated with septic matter, as in the ordinary mouthpieces, in which case

such mouthpieces would be undesirable and unfit for use.

My invention as herein described is applicable to all classes of auricular instruments—such as speaking-tubes, stethoscopes, or hearing-tubes used in connection with the phonograph or other like sound-producing instrument—and any such changes as would be required to adapt my invention to the various uses suggested may be made without in any manner departing from the essential features of the invention.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A receiver for auricular instruments or machines, comprising two branch tubes with earpieces, and a holder therefor, said holder comprising a suitable yoke to extend against the throat of the user, suitable fastenings for securing the yoke in place, said yoke having outwardly-extending arms with loops at their extremities to receive the tubes, substantially as and for the purpose set forth.

2. An earpiece for receiving or hearing tubes provided with an ear-guard adjustably connected thereto and adapted to rest against the side of the face and in front of the tragus of the ear, substantially as and for the purpose described.

3. An ear-guard for earpieces of receiving or hearing tubes, said guard having a spring-coil for encircling the earpiece to adjustably connect it thereto, substantially as and for the purpose specified.

4. Branch receiving or hearing tubes for auricular instruments or machines, said tubes having spring-wires extending centrally or axially through the same, earpieces upon the ends of the tubes, and ear-guards adjustably connected to the earpieces, substantially as and for the purpose set forth.

5. In an auricular instrument, a transmitter-tube provided with a suitable mouthpiece, and a holder therefor, comprising a yoke adapted to be held against the chin, suitable hangers for engaging with the ears of the user, extensible and contractible connections between the hangers and the yoke, and suitable means for connecting the speaking-tube to the yoke, substantially as and for the purpose specified.

6. Transmitter and receiving tubes for auricular instruments, earpieces upon the receiving-tubes, ear-guards adjustably connected to the earpieces a suitable holder for the receiving-tubes, and a holder for the transmitter-tubes, substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ARTHUR G. HOUSE.

Witnesses:

W. A. GILHAM,
EARL B. FERREL.