

J. S. GOLDBERG.  
BATTERY TRANSMITTER.  
APPLICATION FILED NOV. 17, 1902.

NO MODEL.

Fig. 1.

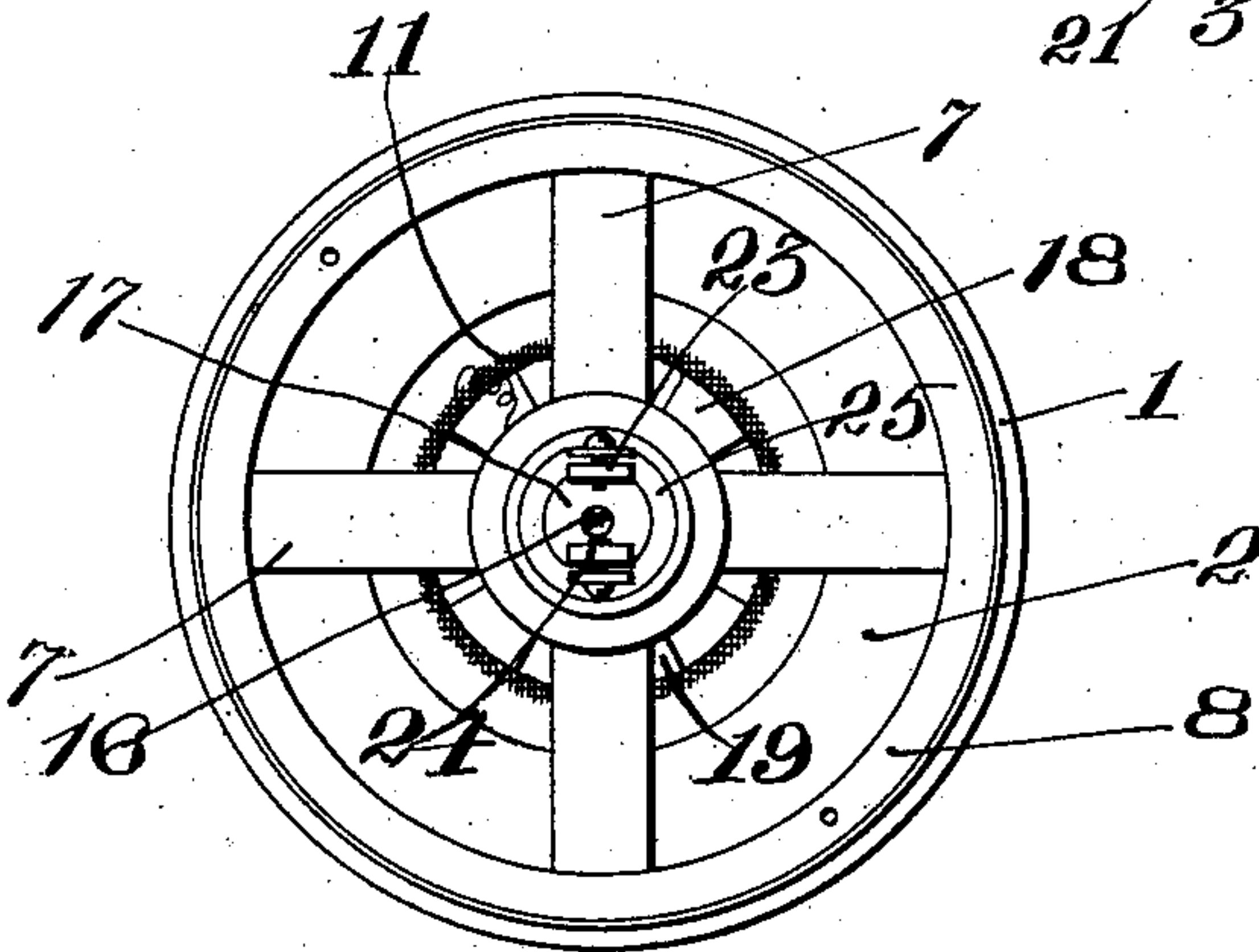
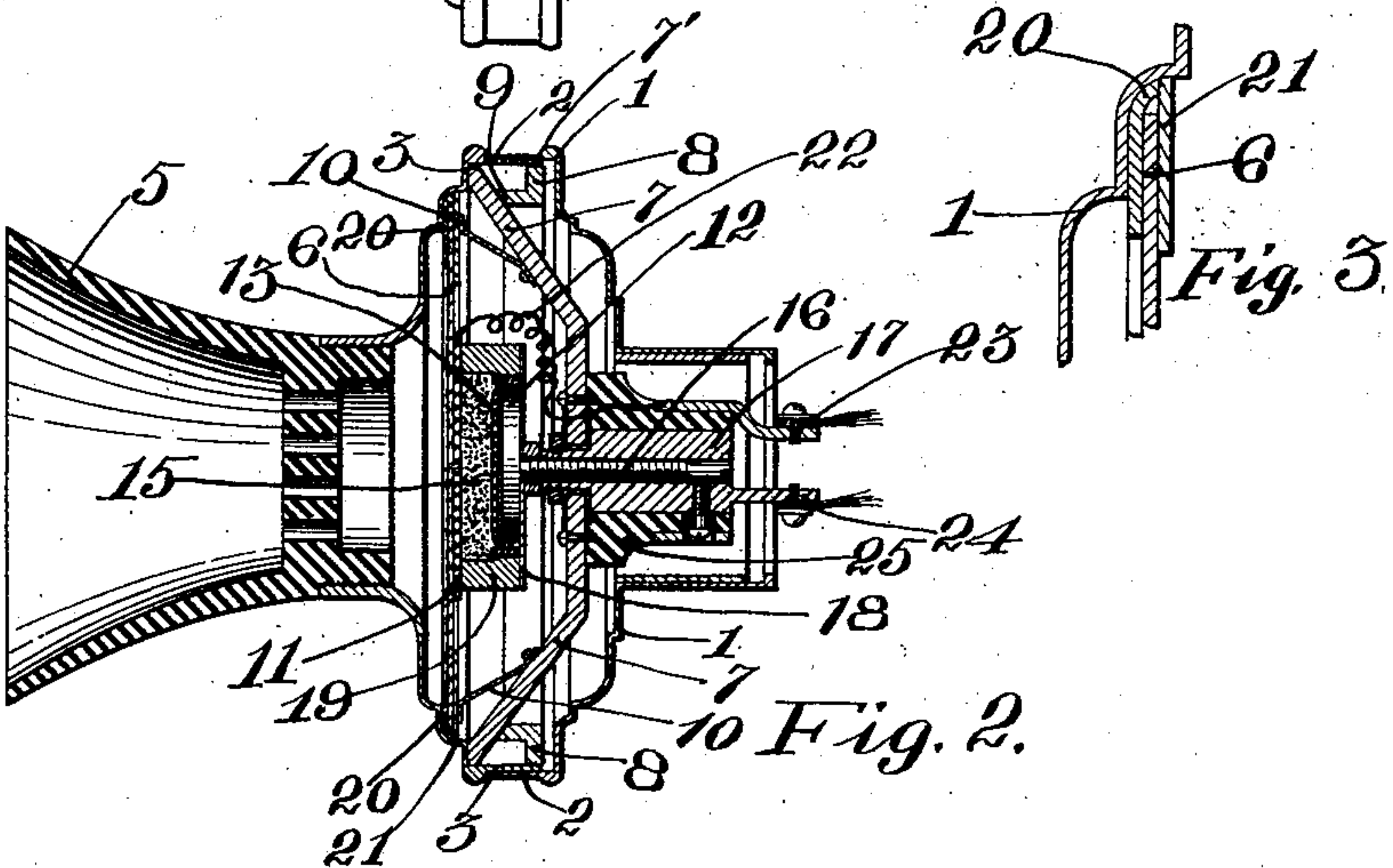
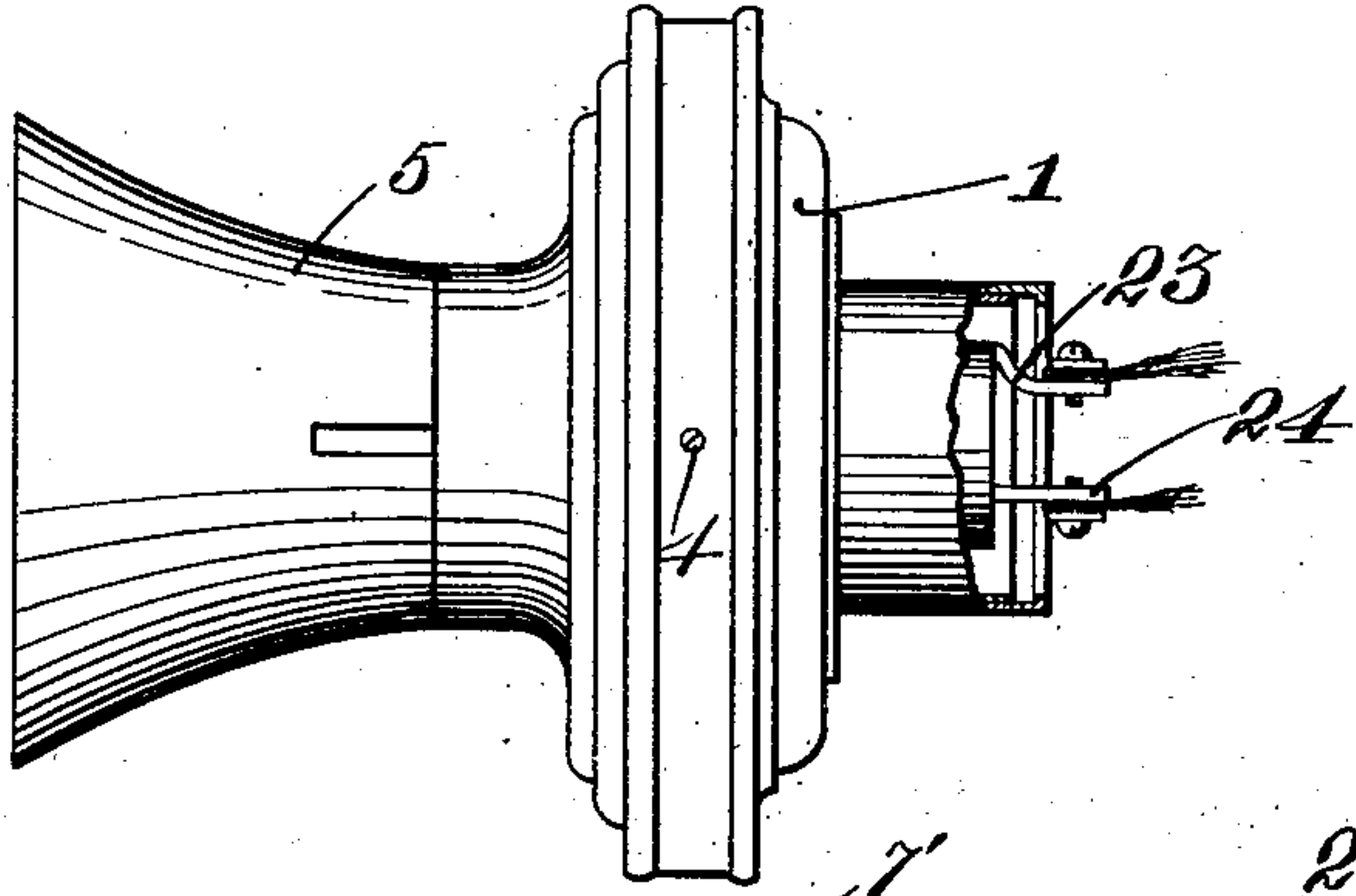


Fig. 4.

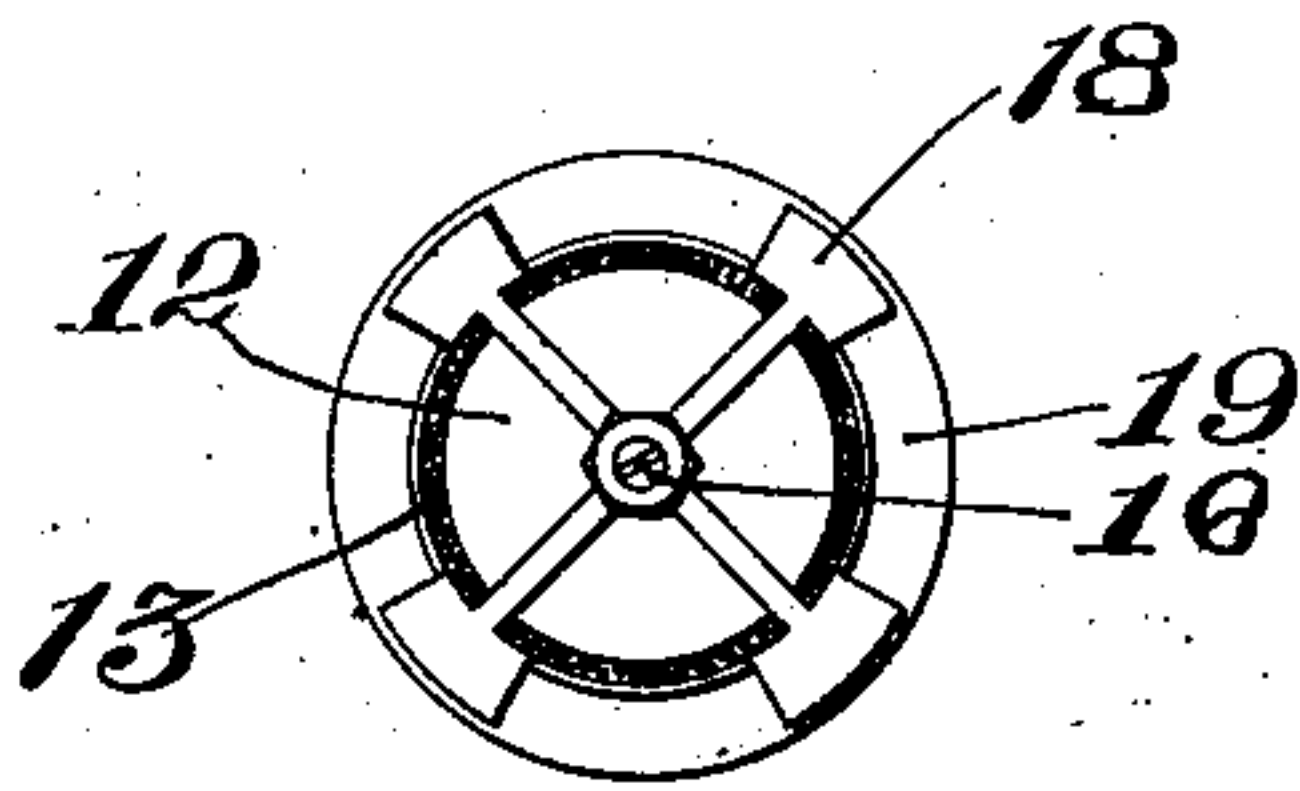


Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## BATTERY-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 747,602, dated December 22, 1903.

Application filed November 17, 1902. Serial No. 131,712. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. GOLDBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Battery-Transmitters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to battery-transmitters, and has for its object the provision of various improvements in such instruments whereby many disadvantages heretofore present may be overcome and the efficiency in construction of such instruments improved.

My invention has for its object, first, the provision of improved means for securing the diaphragm in place within the transmitter-casing, and in carrying out this object of my invention I employ a sloping fastening device engaged by a follower-ring tending to centralize the fastening device with respect to the diaphragm to cause the said fastening device to occupy a central position and removably secure the diaphragm in place. The sloping fastening device is preferably in the form of a spider, with a plurality of sloping legs radiating from a center and supplemented with or provided with spring-claws adapted to directly engage the diaphragm, so that a uniform engagement of the diaphragm with the case is assured.

A second object of my invention is to improve transmitters having carbon granules and cups for containing the same, the granules being interposed between the transmitter-electrodes. Hitherto it has been proposed to form the said cups in part of felt rings interposed between the diaphragm and the rear electrode constituting the annular wall of the granule-chamber; but felt is not adapted to accommodate itself to various adjustments between the electrodes in all cases. I have provided a flexible seat for the annular wall of the granule-casing, which flexible seat is preferably formed of spring-arms radiating from the electrode and which yield to permit

of any reasonable relative adjustment between the electrodes while permitting the annular wall of the granule-chamber to maintain practically its original form, this wall usually compressing a trifle. By distributing these spring-arms uniformly around the base of the annular wall about the granule-chamber even spring-pressure is exerted upon such annular wall, maintaining an even contact between the annular wall and the diaphragm or electrode carried by the diaphragm against which said wall may bear.

The third object of my invention is to provide an improved construction of transmitter. Herein the diaphragm is illustrated disconnected from the metallic inclosing case of the transmitter. To this end there is interposed between the diaphragm and the metallic casing a washer or lining of insulating material, and there is also interposed between the diaphragm and the spring-fingers in the sloping or tapering centering device that is employed to hold the diaphragm in place a lining or washer of insulating material. The electrode carried by the diaphragm is provided with a cord connection electrically distinct from the metal casing of the transmitter, through the agency of which cord connection it may be readily included in the telephonic circuit. The other electrode is likewise provided with a cord connection.

I will explain my invention more fully by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a transmitter embodying my invention, a portion being broken away to reveal details of construction. Fig. 2 is a vertical sectional view of the instrument shown in Fig. 1. Fig. 3 is an enlarged vertical sectional view of a portion of a structure shown in Fig. 2. Fig. 4 is a view from the rear of the structure shown in Fig. 2, the rear portion of the case being removed to reveal indicated construction. Fig. 5 is a rear view showing the rear electrode, the spring-fingers radiating therefrom, and the annular wall of the granule-chamber engaged by the spring-fingers.



Like parts are indicated by similar characters of reference throughout the different figures.

The transmitter-casing 1 may be of any suitable construction, being preferably formed in two parts having overlapping flanges 2 and 3, which may be secured together by means of screws 4. The front portion of the transmitter-casing is adapted for the attachment of a mouthpiece 5 thereto. A diaphragm 6 is held in place by means of a capping device 7, having sloping surfaces or surfaces that are inclined with respect to the axis of the instrument—that is, the line containing the centers of the mouthpiece, diaphragm, and electrode. One section of the transmitter-casing is provided with a threaded portion 7', that has engagement with a correspondingly-threaded follower-ring 8, which follower-ring is provided with an engaging surface 9, inclined similarly to the support 7. The support 7 is preferably subdivided into legs, as indicated most clearly in Fig. 4, these legs being desirably formed with sharp corners at their outer ends which engage the front section of the transmitter-casing, these legs being preferably of composite construction, having also as parts thereof spring extensions or toes 10, serving to mechanically engage the diaphragm to force the same into place, these spring extensions or toes compensating for any irregularity in mechanical construction. I have thus provided a very simplified mechanism for securing the diaphragm in place. The diaphragm is itself preferably an electrode and desirably carries a screen 11, centrally disposed with respect to the diaphragm, to the rear of which screen is provided the second electrode 12, faced with two screens 13 14. Comminuted carbon 15 is interposed between the screens carried by the rear electrode and the diaphragm. The rear electrode is provided with a threaded stem 16 in engagement with a hub extension 17, preferably fixed with respect to the support 7 and carried thereby. The electrode or its stem has fastened thereto a spring-base 18, preferably subdivided into four arms having enlargements at their outer ends, these arms radiating from the stem or electrode and being preferably equidistant. The arms engage the felt or other suitable annular wall or packing-ring 19 and force the same with the desired degree of pressure against the diaphragm or screen carried thereby. The wall 19 surrounds the rear electrode and forms with this electrode and the diaphragm a chamber containing the particles of comminuted carbon. To secure a relative adjustment of the electrodes, the rear electrode is moved with respect to the diaphragm, which may be accomplished by engaging the slotted end of the stem 16 by a screw-driver. This electrode may be moved back and forth, the springs 18 always accommodating themselves to changes in position between the electrodes without injuriously

modifying the annular wall, which is thus permitted to preserve its natural characteristics, whereby the annular operation of the transmitter may be effected and the advantages secured by the use of fiber for the annular wall retained.

In order that the diaphragm may be electrically distinct from the casing of the transmitter, it is preferably insulated from the casing by means of a paper or other ring of insulating material 20, while it is insulated from the support 7 by means of a ring of insulating material 21, as mica, which latter ring of insulating material is mechanically engaged by the springs 10. In order that the diaphragm, having been insulated from the casing, may be included in circuit as an electrode or in order that the electrode carried by the diaphragm may be included in circuit, a conducting-wire 22 is electrically secured to the front electrode and terminates in a cord-terminal 23. The rear electrode is likewise secured to a similar cord-terminal 24, having direct electrical connection therewith. The two cord-terminals are separated by means of an insulating-hub 25. In this way the transmitter may be provided with two cord-terminals, producing a construction whereby shocks that have heretofore been occasioned in the use of transmitters may be avoided.

There are features of my invention that are adapted for use in telephones, both receiving and transmitting.

It is obvious that changes may be made from the precise features of the invention herein shown and particularly described, and I do not, therefore, wish to be limited to the precise details of construction illustrated; but, Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a telephone instrument, the combination with a diaphragm, of a casing therefor, a sloping or inclined fastening device having engagement with the diaphragm, and a follower-ring engaging the casing and pressing the said inclined fastening device into engagement with the diaphragm, the said inclined fastening device being subdivided into radial legs provided with spring-toes pressing upon the diaphragm, substantially as described.

2. In a transmitter, the combination with a diaphragm, of a casing therefor, a spider-frame with radial sloping legs adapted for engagement with the inner side of the casing, a follower-ring for engaging the casing and pressing the said legs against the casing, and springs extending from the legs to engage the edge of the diaphragm whereby said diaphragm is flexibly held in place against said casing as said legs are engaged by said ring, substantially as described.

3. In a telephone-transmitter, the combination with the front and rear electrodes thereof,



of a packing-ring extending from the front electrode and entirely surrounding the rear electrode, and a flexible base secured at its center to the rear electrode, said flexible base  
 5 having radiating spring-legs and enlargements at the ends of said legs for engaging the rear end of the packing-ring, substantially as described.

4. In a telephone-transmitter, the combination with the electrodes thereof, of a ring forming with the electrodes a chamber, comminuted material within the chamber between the electrodes, and a spring-base for the packing-ring subdivided into arms, permitting relative adjustment between the electrodes, substantially as described.

5. In a telephone-transmitter, the combination with the diaphragm thereof constituting one electrode, of a second stationary but adjustable electrode, a flexible spring-base subdivided into radial spring-arms and having a mounting substantially fixed with reference to the second electrode, a packing-ring forming a part of a chamber containing the  
 25 electrodes, and comminuted material contained in the chamber, substantially as described.

6. In a transmitter, the combination with a diaphragm of a casing therefor, a spider-frame with radial sloping legs adapted for engagement with the inner side of the casing, a follower-ring for engaging the casing and pressing the said legs against the casing, springs extending from the legs to engage the  
 35 edge of the diaphragm whereby said diaphragm is flexibly held in place against said casing as said legs are engaged by said ring, electrodes for said transmitter, a packing-ring forming a chamber with said electrodes, and a flexible base for the packing-ring permitting relative adjustment between the electrodes, said ring being disposed between said  
 40

flexible base and the diaphragm, substantially as described.

7. In a transmitter, the combination with a diaphragm, of a casing therefor, a spider-frame with radial sloping legs adapted for engagement with the inner side of the casing, a follower-ring for engaging the casing and pressing the said legs against the casing, springs extending from the legs to engage the edge of the diaphragm whereby said diaphragm is flexibly held in place against said casing as said legs are engaged by said ring, electrodes for said transmitter, a packing-ring forming a chamber with said electrodes, and a spring-base subdivided into radial arms for engaging the packing-ring to permit relative adjustment between the electrodes, said ring being disposed between said spring-base and the diaphragm, substantially as described.

8. In a transmitter, the combination with a diaphragm, of a casing therefor, a spider-frame with radial sloping legs adapted for engagement with the inner side of the casing, a follower-ring for engaging the casing and pressing the said legs against the casing, springs extending from the legs to engage the edge of the diaphragm whereby said diaphragm is flexibly held in place against said casing as said legs are engaged by said ring, means for insulating the diaphragm from the casing, electrodes for said transmitter, and cord-terminals electrically connected with the electrodes independently of the casing, substantially as described.

In witness whereof I hereunto subscribe my name this 13th day of November, A. D. 1902.

JOHN S. GOLDBERG.

Witnesses:

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