

No. 641,425.

Patented Jan. 16, 1900.

J. O. ZWARG.  
MICROPHONE.

(Application filed Sept. 21, 1897.)

(No Model.)

Fig. 1.

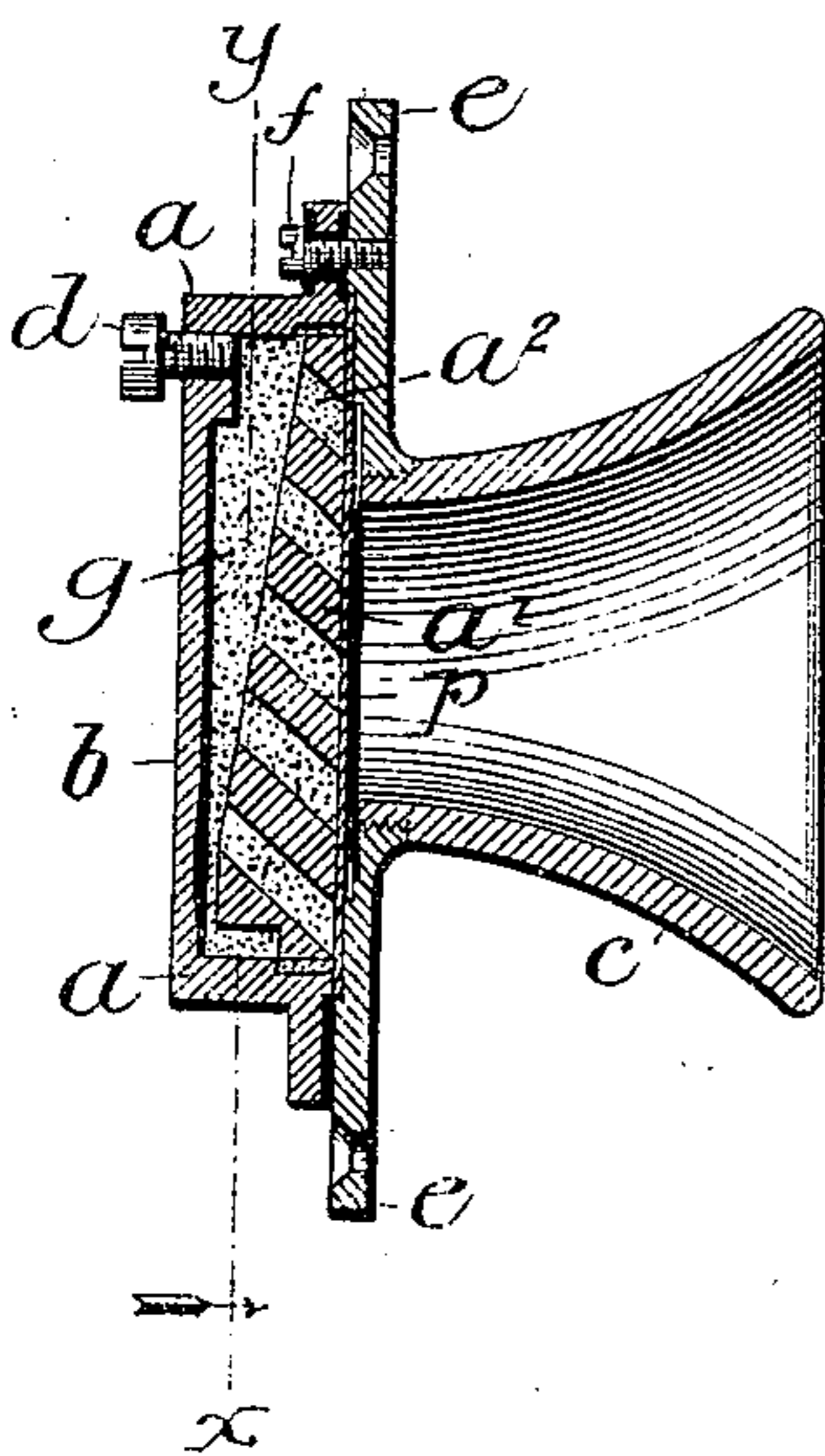
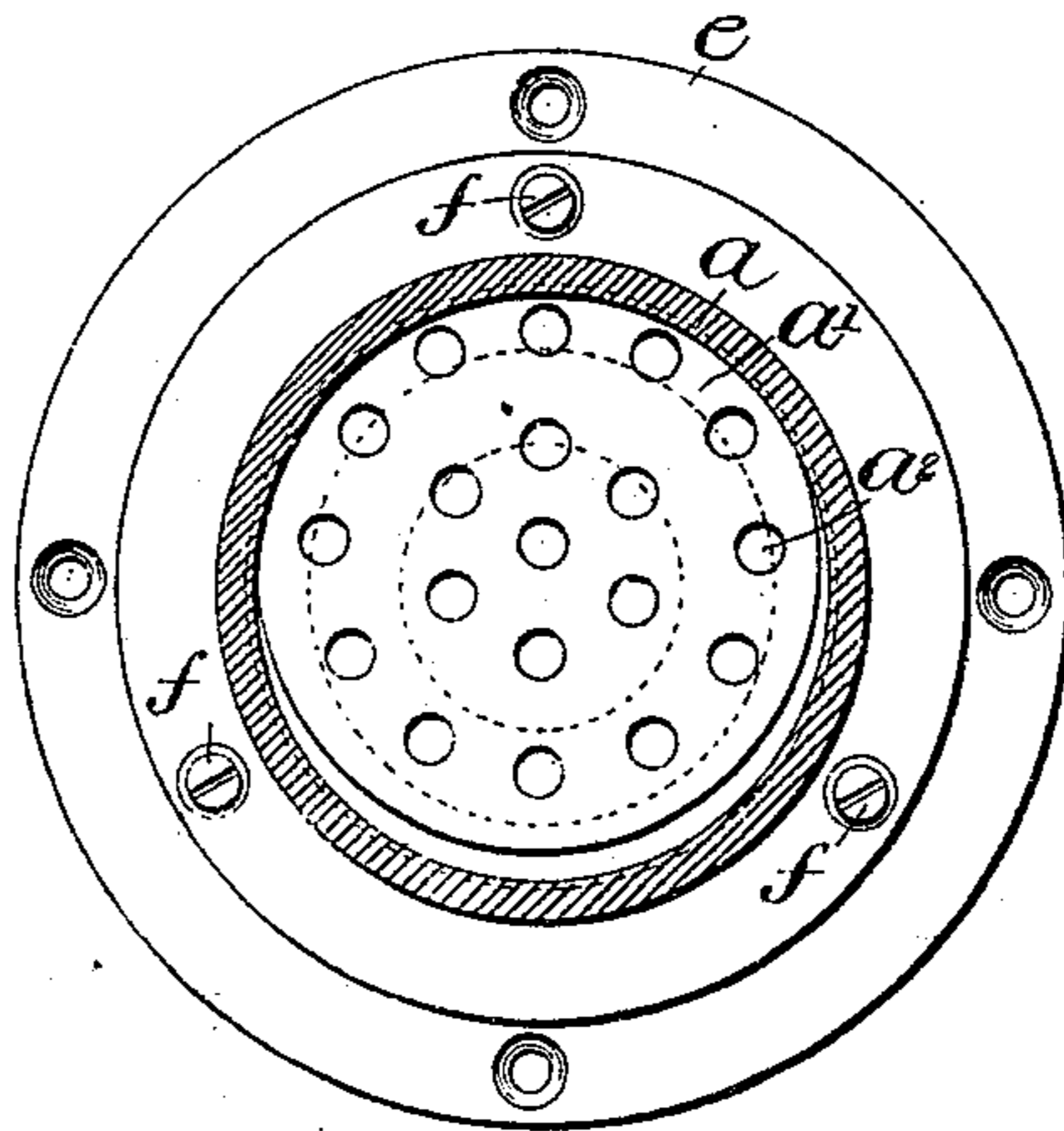


Fig. 2.



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## MICROPHONE.

SPECIFICATION forming part of Letters Patent No. 641,425, dated January 16, 1900.

Application filed September 21, 1897. Serial No. 652,504. (No model.)

*To all whom it may concern:*

Be it known that I, JULIUS OTTO ZWARG, a subject of the King of Saxony, residing in Freiberg, Saxony, Germany, have invented  
5 certain new and useful Improvements in Microphones, of which the following is a specification.

This invention relates to a microphone with granulated - carbon - carrying contact - holes  
10 which are inclined toward the diaphragm of the front face of the chamber holding the granulated carbon, an opening being provided for the filling of said chamber.

The accompanying drawings show this microphone.  
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Figure 1 is a transverse vertical section of the invention, and Fig. 2 is a section on the line  $xy$  of Fig. 1.

The granulated carbon  $g$  is laid into a removable metallic box  $a$ , the rear face  $b$  of which is provided with an opening for the filling, the other face  $a'$ , which is composed of a disk thicker at the bottom than at the top, having numerous perforations  $a^2$ , no matter what may be their section, forming a large  
25 surface of contact between the granulated carbon, the wall  $a'$ , and the diaphragm  $p$ , which is fastened between the box  $a$  and the plate  $e$ , serving to fix the apparatus. The  
30 plate  $e$  is provided at its center with a screw-threaded opening receiving the mouthpiece  $c$ . All the perforations  $a^2$  are inclined downward toward the diaphragm. The effect of this inclination is to render slower by this simple  
35 device the motion toward the back opposite the diaphragm of the granulated carbon that may go into them, since this carbon settles at the lower part of the perforated side. As is well known, the great number of holes  
40 increases the contact-surface and decreases consequently the resistance to the electric current between the carbon and the diaphragm, so that the electric current for the call-bell may go through it easily. The plate  
45  $e$ , with the mouthpiece  $c$ , is electrically insulated from the envelop by means of a non-conducting diaphragm  $e'$  and of insulated set-screws  $f$ . Its duty is to connect one of the ends of the electric circuit, whereas the other

end is in connection with the upper part of the box  $a$  through the screw  $d$ . This screw  $d$  also serves to shut the filling-opening of the box  $a$ . 50

What characterizes this microphone is its great simplicity, for it is composed of but a few pieces of metal. Besides this, the apparatus is self-regulating on account of the inclined perforations  $a^2$ , intended to facilitate the falling of the granulated carbon against the diaphragm. Finally, as the filling of carbon can be very easily regulated by means of the filling-hole any workman or other person may be trusted to take care of the apparatus and regulate it. 55

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is— 60

1. In a microphone the combination of a box open at the front containing granular carbon, a plate closing the front of said box and provided with a central hole for the mouthpiece, a back plate  $b$  provided with a feed-opening for granulated carbon opposite the thickest part of the carbon mass, a diaphragm clamped between said front plate and box and a disk against said diaphragm provided with numerous holes or passages from back to front, the mass of carbon contained within the said box being arranged to communicate with the said holes and supply the same and being also of downwardly-tapering form as to thickness, substantially as set forth. 65 70 75 80

2. In a microphone the combination of a box open at the front containing granular carbon, a plate closing the front of said box and provided with a central hole for the mouthpiece, a diaphragm clamped between said plate and box and a disk against said diaphragm provided with tubular holes from back to front inclined downward, said diaphragm increasing in thickness from top to bottom, substantially as set forth. 85 90

3. In a microphone the combination of a box containing granular carbon provided with a feed-opening near its periphery at the point normally held uppermost, and a screw adapted to close said opening and to act as an electric conductor, substantially as set forth. 95

4. In a microphone, the combination of a diaphragm and mouthpiece with a perforated disk in contact with the said diaphragm and having its rear face inclined downward and rearward and a box containing the carbon and the said perforated disk, the said box being provided with a feed-opening which supplies the upper part of the downwardly-tapering space left by said disk and with means for closing the same, substantially as set forth.

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Witnesses:

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