

(No Model.)

C. A. E. RUEBEL.
TELEPHONE.

No. 566,022.

Patented Aug. 18, 1896.

Fig. 1.

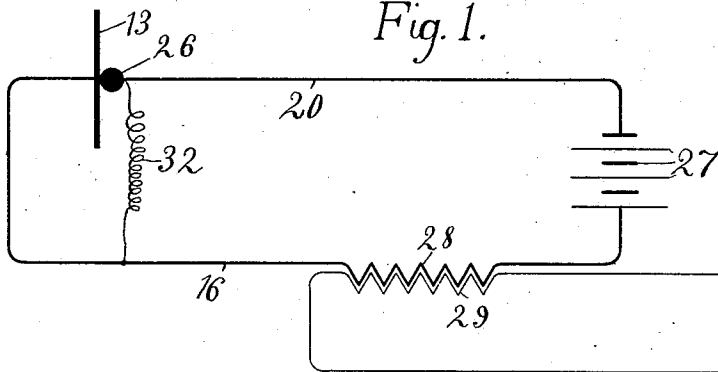


Fig. 2.

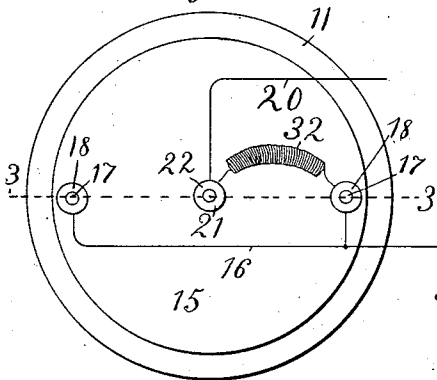


Fig. 3.

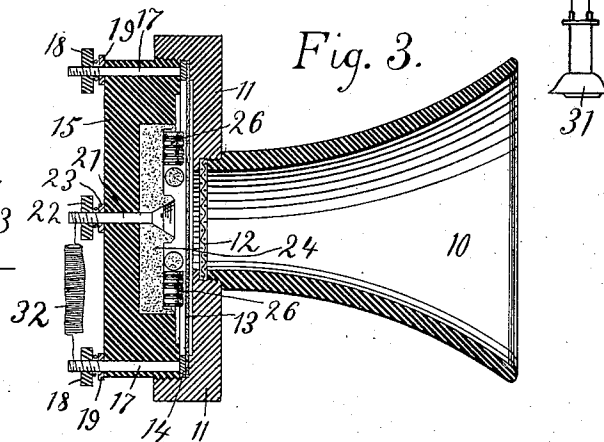


Fig. 4.

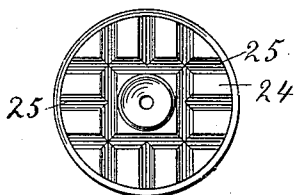
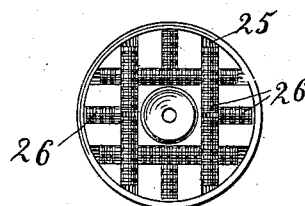


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

C. A. ERNST RUEBEL, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE ST. LOUIS ELECTRICAL SUPPLY COMPANY, OF SAME PLACE.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 566,022, dated August 18, 1896.

Application filed July 25, 1895. Serial No. 557,100. (No model.)

To all whom it may concern:

Be it known that I, C. A. ERNST RUEBEL, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have
5 invented certain new and useful Improvements in Telephones, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object of my invention is to make more audible speech transmitted telephonically.

The invention will be best understood by
15 reference to the accompanying drawings, in which—

Figure 1 is a diagrammatic view of the circuits and the electrical connections in an apparatus made according to my invention.

20 Fig. 2 is a rear view of a telephone made in accordance with my invention and showing the electrical connections. Fig. 3 is a sectional view of the same on the line 3 3 of Fig. 2. Figs. 4 and 5 are views of details.

25 The same marks of reference indicate the same parts in the different views.

10 is a mouthpiece of any suitable material, preferably of hard rubber, the small end of which is secured into a hard-rubber flanged disk 11, a piece of wire-gauze 12 or other reticulated material being placed between the mouthpiece 10 and the flanged disk 11. In the bottom of the flanged disk 11 rests a diaphragm 13, made of any suitable material, but
30 preferably of carbon. This diaphragm is held in place by a metallic ring 14, carried by a recessed disk 15, of insulating material, preferably of hard rubber, which is screwed into the flanged disk 11.

40 One of the branches 16 of the primary circuit of the telephone is in electrical communication with the metallic ring 14 and the diaphragm 13 through binding-posts 17, the inner ends of which bear upon the ring 14 and the outer ends of which are screw-threaded and provided with nuts 18 and 19, between which nuts the wire of the electric circuit is held. The other branch 20 of the primary circuit of the telephone is in electrical communication with a binding-post 21, the outer
50 screw-threaded end of which is likewise pro-

vided with two nuts 22 and 23, between which the other terminal of the primary circuit is held.

The head of the binding-post 21 rests in a carbon disk 24, which is provided with suitable channels or grooves 25. The carbon disk 24 is carried by the recessed insulating-disk 15. In the grooves or channels 25 are placed circumferentially-grooved carbon rods 26, which make contact with the carbon diaphragm 13. By speaking into the mouthpiece 10 the diaphragm is caused to vibrate and thereby make variable contact with the grooved carbon rods 26, and they in turn make
60 a varying contact with the carbon disk 24, thereby causing variation of resistance in the primary circuit and sending an undulatory current through such primary circuit.

I am aware that a carbon disk having semi-circular depressions carrying carbon balls therein which make changing contact with a diaphragm has heretofore been employed in telephones, and also that loose powdered material has been placed in depressions in such a disk in telephones to make variable contact with a diaphragm. I have found, however, that grooved rods are better adapted for this purpose than balls and powdered material and give a greater variation of resistance. Where grooved rods or sticks are employed, many more contacts between the diaphragm and the rods are made than where balls are used, and hence an improved result is secured. The loose powdered material is objectionable in that in the course of time it becomes dislodged from the upper depressions and gravitates to the lower ones, leaving the upper depressions empty, or comparatively so.

Referring now to Fig. 1, 27 is a battery placed in the circuit of the two branches 16 and 20 of the primary circuit of the telephone, and in this circuit is also included the primary coil 28 of an induction-coil arranged in inductive proximity to the secondary coil 29 in the line-wires 30, in the circuit of which, at a distant point, is placed a telephonic receiver 31. So far all which has been described with reference to the diagram in Fig. 1 is old. I have found that by placing a shunt 32 of proper resistance around the terminals of the telephone between the terminals of primary
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coil 28, that is, across the carbon disk 24 and the diaphragm 13, hissing and rattling of the diaphragm, caused by heavy currents and loud talking, are prevented and the audibility of the speech transmitted not interfered with.

Having fully set forth my invention, what I desire to claim and secure by Letters Patent of the United States is—

10 1. In a microphone-transmitter, a suitable diaphragm connected to one terminal of a primary circuit, and a series of circumferentially-grooved rods of suitably conductive material with which said diaphragm makes variable
15 contact, connected with the other terminal thereof.

2. In a microphone-transmitter, a suitable diaphragm connected to one terminal of a primary circuit, a grooved disk of conductive material connected with the other terminal 20 thereof, and circumferentially-grooved rods or sticks of suitably conductive material resting in said grooves and making variable contact with said diaphragm.

In testimony whereof I have hereunto set 25 my hand and affixed my seal in the presence of the two subscribing witnesses.

C. A. ERNST RUEBEL. [L. S.]

Witnesses:

JOHN F. GREEN.

A. C. FOWLER.