

J. UNTERHOLZNER.
CONDENSER TELEPHONE.
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1,082,248.

Patented Dec. 23, 1913.

Fig. 1

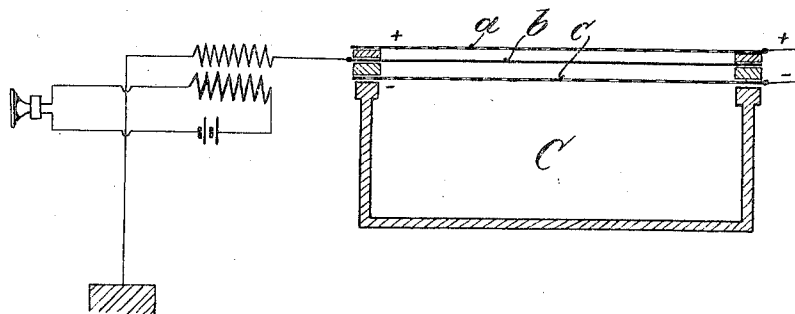
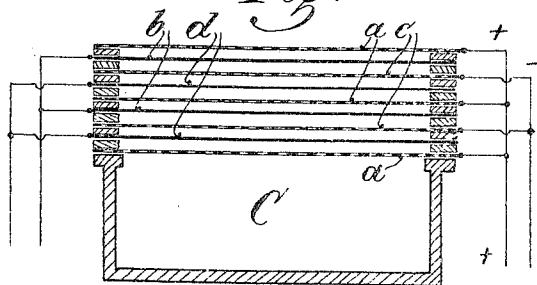


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

JOSEF UNTERHOLZNER, OF ZWEIBRÜCKEN, GERMANY.

CONDENSER-TELEPHONE.

1,082,248.

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REISSUED

To all whom it may concern:

Be it known that I, JOSEF UNTERHOLZNER, citizen of Germany, residing at Zweibrücken, Bavaria, Germany, have invented certain new and useful Improvements in Condenser-Telephones, of which the following is a specification.

The invention relates to improvements in condenser-telephones and the object of the invention is a condenser-telephone permitting a specially clear and loud transmission of sounds. There are known mechanisms producing waves of sound by means of a diaphragm and an electrified condenser plate. In those mechanisms the vibrations of the diaphragm are deadened by the thin stratum of air between the diaphragm and the condenser-plate. In replacing the impermeable condenser-plate by a perforated plate or grid, the invention in question avoids the said disadvantage and allows at the same time to influence the diaphragm from both sides by the use of two grids instead of the only condenser-plate.

The invention is represented in the accompanying drawing.

Figure 1 shows a simple condenser-telephone with the scheme of the electric connection according to the invention, Fig. 2 is a combined condenser-telephone.

Between two differently charged grids, *a* and *c* a diaphragm *b* is arranged, which must not be necessarily elastic, (foil or conducting tissue, for instance) and which is caused to vibrate by means of the microphone-transformer. To increase the vigor of sounds a sufficient space of air *C* may be provided.

The mode of action of this condenser-telephone is as follows: The wave-current produces alternating charges which cause the diaphragm to be attracted by the one grid and repulsed by the other. In this way the diaphragm is caused to vibrate and the vibrations are transmitted through the grids into the air. The efficacy of the telephone remains the same if the diaphragm is charged and the grids are influenced by the transformer. In the same manner dielectric grids with a conducting diaphragm, or a dielectric diaphragm with conducting grids can be used for the production of sounds, if the dielectric is charged for instance by rubbing.

The insulation of grids and diaphragm can be attained in three ways: 1, by insu-

lating spaces; 2, by insulating the grids; 3, by insulating the diaphragm. Another possibility of connecting consists in charging the grid *a* and the diaphragm *b* in one sense and the grid *c* in the other sense, both systems being influenced by the microphone-transformer. In this case it is not necessary to insulate grid *a* against diaphragm *b*.

An increased reproduction of sounds can be attained by combining several condenser-telephones to a multiple condenser-telephone or telephone-battery, as shown in Fig. 2. In this case all the grids *a* are charged in one sense, all the grids *c* in the other sense. The diaphragms *b* are connected with one end of the secondary winding of the transformer, the diaphragms *d* with the other end of it. Again a sufficient space of air *C* may be added.

The increased efficacy of the battery is due to the circumstance, that at any phase of the undulatory current, the diaphragms *b* as well as the diaphragms *d* vibrate in the same direction, thus acting so upon each other that a larger amplitude and therefore a higher effect is attained.

What I claim is:

1. A telephone of the character specified, embodying therein an imperforate diaphragm, and a perforated electrically charged condenser member operatively associated therewith, substantially as described.

2. A telephone of the character specified, embodying therein an imperforate diaphragm, and a perforated electrically charged condenser member at each side thereof, substantially as described.

3. A telephone of the character specified, embodying therein a pair of spaced, oppositely electrically charged, perforated condenser members, and a diaphragm arranged between said members, substantially as described.

4. A telephone of the character specified, embodying therein a plurality of parallel diaphragms, a positively electrically charged perforated condenser member at one side of each diaphragm, and a negatively charged perforated condenser member at the opposite side of each diaphragm, substantially as described.

5. A telephone of the character specified, embodying therein a casing provided with an air space, a diaphragm carried by said casing, a microphone transformer connected with said diaphragm, and a perforated con-

denser member operatively associated with said diaphragm, substantially as described.

6. A telephone of the character specified, embodying therein a casing provided with
5 an air space, a diaphragm carried by said casing, a microphone transformer connected with said diaphragm, and a perforated condenser member at each side of said dia-

phragm, said condenser members being oppositely charged electrically. 10

In testimony whereof I affix my signature in presence of two witnesses.

JOSEF UNTERHOLZNER.

Witnesses:

MAX MITTNER,
RAUL TROGER.
