H. R. STUART & E. O. KIZER.

TELEPHONE RECEIVER.

APPLICATION FILED APR. 19, 1909.

955,921. **Patented Apr. 26, 1910.**

Fig. 1.

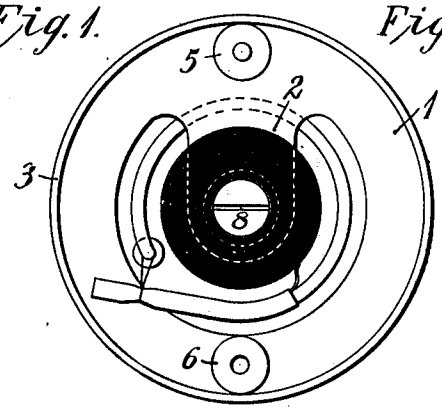


Fig. 2.

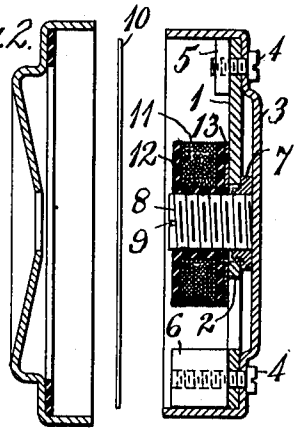
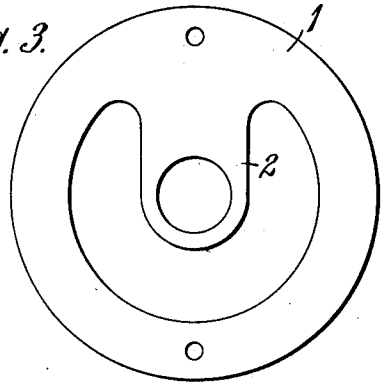


Fig. 3.



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UNITED STATES PATENT OFFICE.

HARVE R. STUART AND EDWIN O. KIZER, OF WHEELING, WEST VIRGINIA.

TELEPHONE-RECEIVER.

955,921. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed April 19, 1909. Serial No. 490,761.

To all whom it may concern:

Be it known that we, HARVE R. STUART and EDWIN O. KIZER, citizens of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented certain new and useful Improvements in Telephone-Receivers, of which the following is a specification.

Our invention relates to telephones, and particularly to the receivers thereof.

The object of the invention is to provide a telephone receiver that shall comprise a small number of parts so constructed and arranged as to permit of ready and accurate assembling and adjustment thereof and in such a manner as to produce an instrument of extreme sensitiveness.

The invention is illustrated in the accompanying drawing, Figure 1 of which is a front view of the receiver, the upper half of the casing and the diaphragm of which are removed. Fig. 2 is a sectional view of the receiver with certain of the parts somewhat separated for the sake of more clearly bringing out their construction. Fig. 3 is a face view of the magnet of the receiver.

The receiver of Figs. 1 and 2 comprises an annular shaped magnet 1 having an inwardly extending polar projection 2 that is provided with an aperture disposed approximately concentrically with the annular portion, the magnet being so magnetized that the projection 2 constitutes one pole thereof and the diametrically opposite portion of the annulus constitutes the other pole.

The magnet 1 is mounted in the back member 3 of the receiver casing, and is secured in position by means of screws 4 that project through the casing and are threaded at their inner ends into nuts 5 and 6, the latter of which is longer than the former and serves as one of the pole pieces of the magnet, and is accordingly mounted upon the annular portion thereof diametrically opposite the polar projection 2. Suitably secured, as by sweating or soldering, to the back of the casing member 3 is an internally-threaded magnetizable member or nut 7, into which is screwed one end of a pole piece 8 that is threaded from end to end, and is provided in its outer end face with a slot 9 that permits of the use of a screw-driver for adjusting its position, and thereby also the distance between its end face and the diaphragm 10. Threaded upon the pole piece 9 and supporting a coil 11, is a bobbin 12, cemented or otherwise secured to one end face of which is a washer 13 that is electrically connected to one terminal of the coil 12. The washer 13 engages the polar projection 2 of the magnet 1, and thus connects one terminal of the coil 12 to one terminal of the transmission line, thereby eliminating the necessity of making one connection to the coil during assembling of the device and providing a more substantial connection.

The polar projection 2 of the magnet 1 is clamped between the washer 13 and the nut 7, a magnetic path of low reluctance being thus established between the polar projection 2 and the pole piece 8 through the nut 7. The magnet 1 may accordingly be made from a punching, and it is unnecessary to machine or otherwise finish it either before or after tempering. The distance between the end of the pole piece 8 and the diaphragm 10 may be readily and conveniently adjusted when assembling, or at any other time, so as to secure the most sensitive conditions of operation, and the bobbin 12 and the washer 13 will serve as a lock nut to maintain the pole piece in any position to which it may be adjusted. It will be observed that the advantageous features just described are secured with but a very small number of parts.

We claim as our invention:

1. A telephone receiver comprising a magnet, a pole piece therefor, a supporting member into which the pole piece is threaded, a coil surrounding the pole piece, a bobbin therefor threaded upon the pole piece, and a conducting plate upon an outer end of the bobbin that is connected to the coil, the magnet being clamped between the conducting plate and the said member.

2. A telephone receiver comprising a magnet having an apertured pole, a pole piece of smaller diameter than the aperture in the magnet and that projects therethrough, a member into which one end of the pole piece is threaded, a bobbin threaded upon the other end of the pole piece and between which and the said member the apertured pole of the magnet is clamped.

3. A telephone receiver comprising a casing, a magnet within the same, a pole piece for the magnet, a member secured to the casing into which the pole piece is threaded, and a bobbin threaded upon the pole piece and adapted to clamp the magnet between

the same and the said member and to lock the pole piece in position.

4. A magnet consisting of a complete annulus and an inwardly extending projection therefrom, the poles being located, respectively, in the said projection and in the annulus diametrically opposite the projection.

5. A telephone receiver comprising an annular magnet provided with an inwardly extending polar projection, and pole pieces secured respectively to the polar projection and to the annulus of the magnet at a point substantially diametrically opposite the polar projection.

6. A telephone receiver comprising an annular magnet provided with an inwardly extending polar projection, a pole piece, a member into which the pole piece is threaded, a bobbin threaded upon the pole piece between which and the said member the polar projection of the magnet is clamped.

In testimony whereof we affix our signatures in presence of two witnesses.

HARVE R. STUART.
EDWIN O. KIZER.

Witnesses:
U. S. SANDS,
H. E. HOHMANN.