Oct. 20, 1925.

1,557,621

W. SCHEPPMANN

TELEPHONE RECEIVER

Filed Feb. 17, 1923

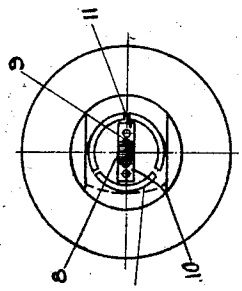


Fig. 5

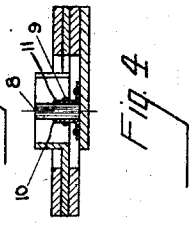


Fig. 4

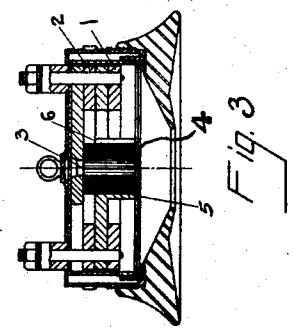


Fig. 3

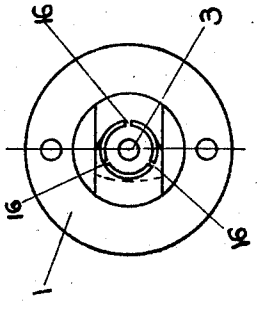


Fig. 2

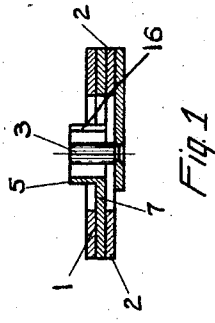


Fig. 1

WILHELM SCHEPPMANN *INVENTOR.*

BY Richey, Slough & Watts

HIS *ATTORNEYS*

Patented Oct. 20, 1925. 1,557,621

UNITED STATES PATENT OFFICE.

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TELEPHONE RECEIVER.

Application filed February 17, 1923. Serial No. 619,573.

To all whom it may concern:

Be it known that I, WILHELM SCHEPPMANN, a subject of the Empire of Germany, residing at Berlin, Germany, have invented certain new and useful Improvements in Telephone Receivers, of which the following is a full, clear, concise, and exact description, as will enable others skilled in the art to which my invention appertains to make and use the same.

My invention relates to telephone receivers and particularly telephone receivers of the so-called watch case type, and which will have a particular use where receivers of high efficiency such as are used in connection with wireless telephone systems are required, and wherein, moreover, the receivers must be of small size and weight.

An object of the present invention, therefore, is to provide a receiver of the so-called watch case type which will be of small size, and be of small weight, and moreover, which will be highly efficient in operation.

Another object of my invention is to provide a telephone receiver employing but a single electro-magnet, the electromagnetic system of the receiver being polarized by means of a relatively small permanent magnet, the said permanent magnet being disposed in a plane at right angles to the plane of the said magnet core, the electromagnet being surrounded by a return magnet pole, annular in shape, the said core and the said return pole piece being disposed substantially within the permanent magnet which is preferably annular in shape.

Other objects of my invention and the invention itself will be made apparent from the description which follows, and in which description reference will be had to the accompanying drawings forming a part of this specification.

Referring now to the figures—

Fig. 1 shows a vertical cross-sectional view of the magnet system employed in connection with a preferred embodiment of my invention.

Fig. 2 shows a top plan view of the parts illustrated in Fig. 1.

Fig. 3 shows a vertical sectional view of the complete receiver assembly.

Fig. 4 shows a view similar to that of Fig. 1 except that a laminated centrally disposed magnet core is herein illustrated.

Fig. 5 is a plan view of Fig. 4.

Referring now to the drawings in each of the figures of which like parts are designated by like reference characters, at 1 I show a permanent magnet, preferably annular in form as herein illustrated, and at 2 I show a second like annular permanent magnet. At 3 I show a center magnet core, upon which is placed a magnet winding 4. At 5 I show a tubular return pole piece which is preferably slotted as shown at 16, the slot being for the purpose of preventing eddy currents from circulating in the tubular return pole piece. The core 3 and the return pole piece 5 are connected to opposite sides of the annular permanent magnets 1 and 2 by connecting bridges 6 and 7 respectively, the bridge 6 comprising a strip of soft iron upon the end of which the core 3 is mounted and which is secured at its opposite end to the lower permanent magnet 2. The bridge 7 which may also be of soft iron leads from the opposite side of the permanent magnets 1 and 2, being located between the said magnets, and supports on its end the tubular return pole piece 5.

The permanent magnets 1 and 2, the bridge and the bridges 6 and 7 are securely clamped together in any suitable way, as by welding, or by bolting them together as illustrated. The winding 4 may be wound upon the pole piece 3 prior to the securing of the bridge 6 to the permanent magnets 1 and 2, or it may, as herein illustrated, comprise a bobbin having a hollow core, the hollow core permitting the bobbin to be fitted over the core 3 so as to fit snugly thereon. This latter construction permits removal and replacement of the magnet windings as for repair or when a winding of greater or fewer turns or higher or lower resistance is desired.

It will be noted that this, the described construction, permits a laminated construction of the permanent magnet between two of the laminæ of which an iron bridge is fixed leading to the tubular return pole piece, whereas the bottom lamination carries the bridge connecting the center centrally disposed magnet core. Such a construction has the added advantage that the magnetism of the permanent magnet is more efficiently distributed, the magnetism of the separate laminæ being better retained by spacing them apart.

Although I have shown the centrally dis-

posed core 3 as being constructed in a single piece, I may sometimes construct the same of laminations in which case a number of pieces of iron wire or magnetic sheet steel will be carried on the bridge 6 instead of the solid core shown. Such a modified form of pole piece is illustrated in Fig. 4.

Referring now to Fig. 4 specifically, at 8 I show a laminated core comprising a plurality of sheet iron laminæ riveted together by a rivet 9 which likewise secures angle pieces 10 and 11 to the bottom of the said laminations whereby a ready means of securing the core 8 to the bridge 6 is provided, the magnet winding bobbin would be slipped over the core 8 in the same manner as that illustrated for the bobbin 4, illustrated in Fig. 3.

Having now described my invention in a preferred embodiment, and in a modified form thereof, I am aware that numerous and extensive departures may be made from the embodiments herein illustrated and described, but without departing from the spirit of my invention.

I claim:—

In a telephone receiver, the combination with a flattened and approximately cylindrical receiver casing, and magnet core, a return pole piece for the said core, a permanent magnet, said permanent magnet and said return pole piece being annular in form, said pole piece surrounding the said core and said annular magnet surrounding the said pole piece, a magnet winding disposed over the said core and within the said pole piece, a diaphragm, said core, a permanent magnet and diaphragm being entirely mounted in the casing, the pole pieces of the said core and return pole piece being disposed therein and closely adjacent the said diaphragm.

In witness whereof, I have hereunto signed my name this 24th day of January, 1923.

WILHELM SCHEPPMANN.