

Jan. 24, 1928.

E. A. BOHLMAN

1,657,145

RECEIVER

Filed April 18, 1925

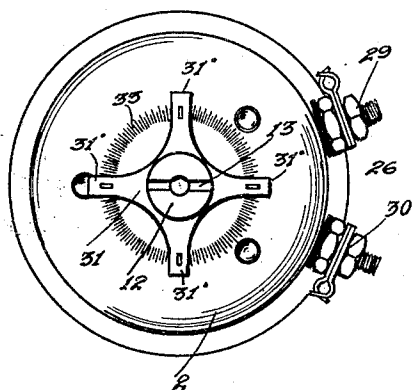


Fig. 1.

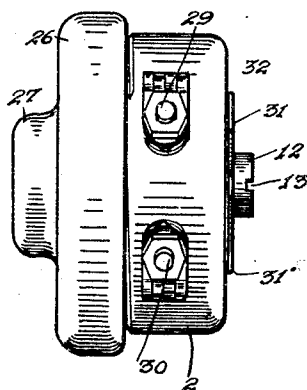


Fig. 2.

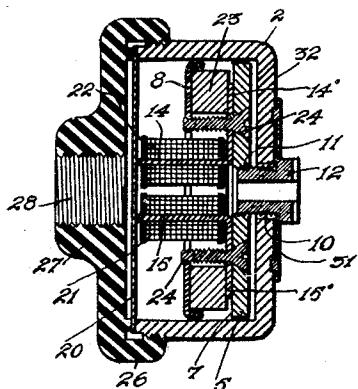


Fig. 3.

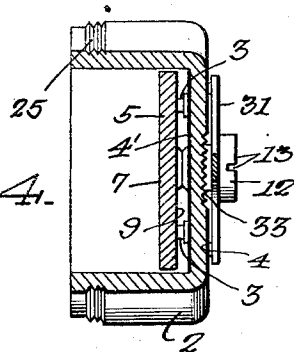


Fig. 4.

Inventor:
Ernest A. Bohلمان
By *Attorney.*

Patented Jan. 24, 1928.

UNITED STATES PATENT OFFICE.

ERNEST A. BOHLMAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

RECEIVER.

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My invention relates to receivers and has to do particularly with loud speaker units as they are commonly known in the radio art. An object of my invention is the provision of a receiver of this type that is provided with novel features of construction and assembly that can be constructed readily, that is simple, and most efficient in its operation.

A feature of my invention is the provision of supporting means for the pole pieces, and associated apparatus, which are supported, as a whole, on springs. I provide adjustable means, associated with the supporting means for moving the supporting means as a whole up or down, in an enclosing cup, to vary the air gap between the pole pieces and the diaphragm to obtain the maximum efficiency for clear and perfect reproduction of sound. A further feature of my invention is the provision of new and novel means for frictionally maintaining the pole pieces and their supporting member in any of their adjusted positions, in relation to the diaphragm.

The above features, as well as others not specifically pointed out, will be more fully described in the following specification and the appended claims.

For a more complete understanding of my invention reference may be had to the accompanying drawing in which like reference characters in the different views denote like parts and in which;

Fig. 1 is a bottom view of the receiver of my invention;

Fig. 2 is a right side view of Fig. 1;

Fig. 3 is a sectional view of Fig. 2; and

Fig. 4 is a side view of my device with part of the casing cut away and with some of the parts removed to facilitate explanation.

Referring to the receiver of my invention it comprises a cup-shaped member 2, formed of any suitable material such as brass, in which is adjustably secured the mechanism of the receiver. Three pins 3 are inserted into suitable orifices provided in the bottom of cup member 2 and their ends are then swaged over to hold them in place. The pins 3 project from the face 4' of the base 4 of the cup member 2 into the interior of the member 2. A disk 5, formed of any suitable material such as brass and of a diameter slightly smaller than that of the cup

member 2, is provided with three orifices which are in alignment with the three pins 3 which extend into these orifices when the disk 5 is positioned in the cup 2. A helical spring (not shown) is placed around each pin 3 and rests between the face 4' of the base 4 of the member 2 and the face 9 of the disk 5 for purposes as will be described presently. The base 4 of the cup member 2 and the disk 5 are provided with central orifices 10 and 11 which are in alignment with each other. A threaded stud 12, provided with a slot 13 in its head, passes through the orifice 10 in the base 4 and has screw threaded engagement with the threaded orifice 11 in the disk 5.

A horseshoe shaped permanent magnet 23 constructed of steel and permanently magnetized is placed in the cup member 2. Its ends are located over the portions 14' and 15' of the angularly shaped pole pieces 14 and 15 and these portions 14' and 15' rest between the face 7 of the disk 5 and the permanent magnet 23. The angularly shaped pole pieces 14 and 15 extend upward in proximity to a diaphragm 20 and carry the magnet coils or spools 21 and 22.

The pole pieces 14 and 15 and the permanent magnet 23 are secured to the disk 5 by means of a clamping member 8 which fits over the permanent magnet 23 and is provided with tapped orifices which have screw threaded engagement with screws 24 which extend through orifices in the disk 5, pole pieces 14 and 15 and into the orifices in the member 8. When the screws are tightened their heads rest in countersunk portions in the disk 5 and the pole pieces, and magnets are secured in their proper positions. As my invention has more to do with the adjusting mechanism of the device, it is not thought necessary to give a further description of the construction and arrangement of the electromagnetic parts of the same.

The cup member 2 is provided with external threads 25 at its forward end upon which is secured a cap 26 which is made of suitable material such as hard rubber or bakelite. The cap 26 is provided with a protruding portion 27 which has internal threads adapted to receive a suitable sleeve member for connecting it, as a unit, to a projector or horn.

A pair of terminals 29 and 30 are suitably secured to the cup member 2 for securing a

pair of external conductors thereto. A spider 31 which has a central orifice of a size to permit the insertion of the body portion of the threaded screw 12 is placed in position and is held in fixed relation to the screw 12 by means of a swaging operation. The spider has four legs 31' which are slightly bent so that they are under tension when the central portion is held against the face 32 of the base 4 of the cup member 2. A plurality of small ridges 33 are stamped into the face 32 of the base 4 in the form of a circle as illustrated in Fig. 1 of the accompanying drawing. The arms 31' of the spider 31 are provided with slight protuberances upon the bottom side thereof. These protuberances are stamped so as to be in a longitudinal direction in relation to the arms 31' and are adapted to fit between the ridges 33 stamped in the face 32 of the base 4 of the cup member 2.

The disk 5 and its supported apparatus may be adjusted as a whole up or down in the cup member 2 to vary the air gap between the pole pieces 14 and 15 and the diaphragm 20. When the stud 12 is turned in a clockwise direction, through the agency of a suitable tool placed in the slot 13 of the stud 12, the disk 5 and its associated parts are drawn farther into the cup member 2 against the tension of the helical springs around the pins 3, this movement enlarges the air gap between the pole pieces 14 and 15 and the diaphragm 20. When the stud 12 is turned in a counter-clockwise direction the springs around the pins 3 force the disk 5 and its associated parts upward to lessen the air gap between the diaphragm 20 and the pole pieces 14 and 15.

The disk 5 is guided in its different movements by the pins 3 which extend upward into the aligned orifices in the disk 5. These pins 3, in addition to serving as guide means for the disk 5, prevent the disk 5 from tilting in its movement and from rotating when the stud 12 is turned. The spider 31 being rigidly fastened to the stud 12 turns when the said stud 12 is turned and the arms 31' each of which has a slight protuberance on its under side are caused to travel over the small ridges 33 formed on the bottom of the cup member 2. As before explained the arms 31' have a spring tension and, when the rotation of the stud 12 is finished, the protuberances on the under side of arms 31' rest between adjacent ridges. The four arms 31' each being under similar conditions hold the spider 31 and the stud 12, to which it is rigidly fastened, in any adjusted position due to the friction between the arms 31 and the ridges 33 and prevents the vibrations of the device from changing its adjustment. The stud 12 thus being prevented from moving the disk 5 and its associated parts are also prevented from movement and conse-

quently the air gap between the diaphragm 20 and the pole pieces 14 and 15 will not vary except when the stud 12 is rotated as before explained.

While I have illustrated and described a preferred embodiment of my invention, it is to be understood, that changes and modifications will readily suggest themselves to those skilled in the art, and I, therefore, aim to cover all such changes as come within the spirit and scope of the appended claims.

Having described my invention what I claim as new and desire to secure by United States Letters Patent, is:

1. A device of the character described including a cup member, a disk, a diaphragm, a pair of pole pieces, a magnet, said pole pieces and said magnet supported on said disk, said disk and its supported parts being in adjustable relationship to said diaphragm, and means including a spider member adapted to engage a plurality of ridges on said cup member for yieldingly holding said disk and its associated parts in adjusted position in relation to the said diaphragm.

2. A device of the character described including a cup member, a disk, a diaphragm, a pair of pole pieces in adjustable relation to said diaphragm, a stud for adjusting said pole pieces in relation to said diaphragm, and means rigidly secured to said stud including a spider member adapted to engage a plurality of ridges on said cup member for preventing movement of said pole pieces relative to said diaphragm.

3. A device of the class described including a cup member, a disk supported in said cup member, a diaphragm, a pair of pole pieces supported on said disk in adjustable relationship to said diaphragm, a stud for changing said relationship, and means including a spider rigidly affixed to said stud for yieldingly holding said pole pieces in adjusted position relative to said diaphragm.

4. A device of the class described including a cup member, a plurality of ridges on the bottom thereof, a diaphragm, a disk, a pair of pole pieces supporting magnet coils, all supported on said disk in adjustable relationship to said diaphragm, a stud for changing said relationship, and a spider rigidly secured to said stud and engaging said plurality of ridges to hold the pole pieces in any adjusted position in relation to said diaphragm.

5. A device of the character described including a cup member, a plurality of ridges on the bottom thereof, a rotatable stud, a spider rigidly affixed to said stud, a plurality of arms forming said spider and adapted to engage said plurality of ridges to prevent any unauthorized rotation of said rotatable stud when said stud has been adjusted to any position.

6. A device of the character described including a cup member, a plurality of ridges in circular form on the base of said cup member, an adjustable stud, a spider having
5 a plurality of arms rigidly affixed to said stud and adapted to engage said plurality of ridges, and a protuberance on each arm adapted to engage the adjacent sides of two successive ridges, said arm and said protuberances adapted to frictionally maintain
10 said stud in adjusted position.

7. A device of the character described including a diaphragm, an electromagnet mounted below said diaphragm, means for
15 adjusting the position of said electromagnet relative to said diaphragm, and means including a spider member adapted to engage

a plurality of ridges on said cup member for yieldingly holding said adjusting means in an adjusted position. 20

8. A device of the character described including a casing, a diaphragm for said casing, an electromagnetic coil included in said casing and beneath said diaphragm, adjusting means for regulating the position of
25 said coil relative to said diaphragm, and means including a spider member adapted to engage a plurality of ridges on said cup member for maintaining said adjusting
30 means in an adjusted position.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 16th day of April, 1925.

ERNEST A. BOHLMAN.