July 17, 1928. 1,677,185

W. KAISLING

RECEIVER

Original Filed March 3, 1921

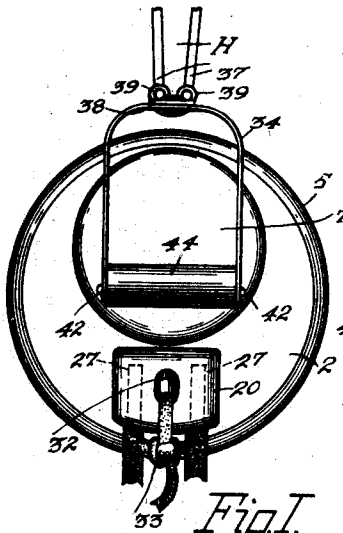

Fig. 1.

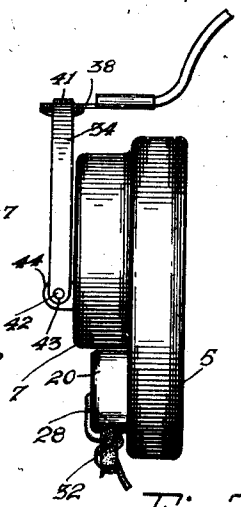

Fig. 2.

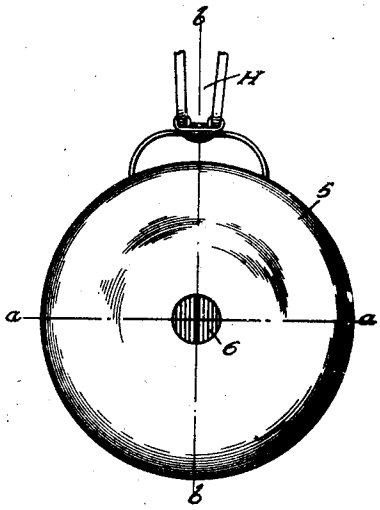

Fig. 3.

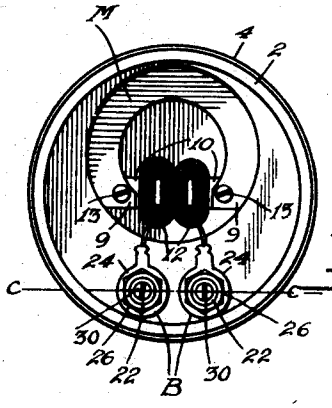

Fig. 4.

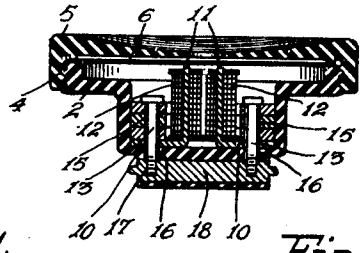

Fig. 5.

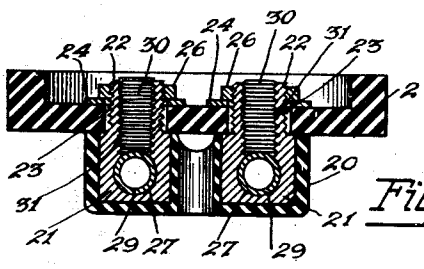

Fig. 7.

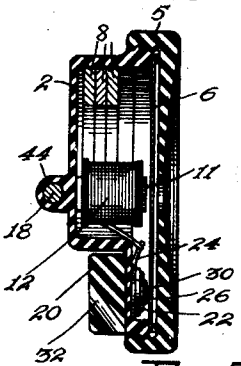

Fig. 6.

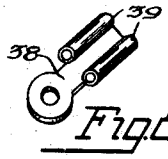

Fig. 8.

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Patented July 17, 1928. 1,677,185

UNITED STATES PATENT OFFICE.

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RECEIVER.

Original application filed March 3, 1921, Serial No 449,396. Patent No. 1,551,310, dated August 25, 1925. Divided and this application filed March 14, 1925. Serial No. 15,440.

My invention relates to receivers and has to do more particularly with the so-called watch-case receivers which are used as head receivers for telephone switchboard operators.

An object of my invention is the provision of a receiver of simplified construction, and in which the weight is reduced to a minimum without impairing the efficiency of the device. This application is a division of my application S. N. 449,396, filed March 3, 1921 which matured into Patent No. 1,551,310, granted Aug. 25, 1925.

A feature of my invention is the provision of an improved means for securing the head band to the receiver, whereby it is pivotally supported and held to its supporting means without additional fastening means such as screws.

The above feature, as well as others, will be more fully hereinafter described, and for a clearer understanding of my invention reference may be had to the accompanying drawing, in which like reference characters in the several views denote like parts, and in which

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

Fig. 2 is a side view of the receiver;

Fig. 3 is a face view of the receiver of my invention;

Fig. 4 is a face view of the receiver with the ear piece or cap and the diaphragm removed;

Fig. 5 is a sectional view of the receiver along the line *a*—*a* of Fig. 3;

Fig. 6 is a sectional view of the receiver along the line *b*—*b* of Fig. 3;

Fig. 7 is a sectional view along the line *c*—*c* of Fig. 4 to more clearly illustrate the construction of the binding posts; and

Fig. 8 is a perspective view of the support member to which the head band is secured.

Referring now more in detail to my invention as illustrated, it comprises a shallow shell or casing 2 of suitable insulating material, such as a phenolic condensation product or hard rubber, the said casing 2 being provided with exterior threads 4 at its forward end, upon which is screwed the ear piece or receiver cap 5, which is also of insulating material such as a phenolic condensation product, the said cap 5 serving to clamp the receiver diaphragm 6 between the forward end of the casing 2 and receiver cap 5. The casing 2 is provided with a rearwardly extending cup member 7 eccentrically disposed in relation with the center of the casing 2, the said cup member 7 being integrally formed with the said casing and the said cup member 7 receiving the permanent magnet M, as will now be described.

The permanent magnet M consits of a plurality of horeshoe-shaped pieces 8 of steel or other suitable magnetic material, each of which is permanently magnetized, said magnets being placed one upon another and being of such shape as to rest in the rearwardly extending cup member 7 and fit along the inner periphery of the said cup member 7, with their ends 9 terminating over the portions 10 of the pole pieces 11, as clearly illustrated in Fig. 5. The pole pieces 11 are bent, the portions 10 passing beneath the ends 9 of the permanent magnet M, and the portions 11 extending upwardly in proximity to the receiver diaphragm 6 and carry the magnet coils 12. The permanent magnet M, when resting in the eccentrically disposed cup-shaped member 7, is necessarily eccentrically placed in relation to the center of the casing 2 and the diaphragm 6, but the ends 9 of the magnet M are so positioned in relation with the cup-shaped member 7 as to bring the pole pieces 11 in the center of the diaphragm. The pole pieces 11 and magnet M are secured against movement in the cup-shaped member 7 by means of the screws 13, which pass through suitable openings 15 in the ends 9 of the magnet M and openings 16 in the bottom of the cup-shaped member 7 and have screw-threaded engagement with suitable tapped orifices 17 in the metal rod 18, which rod may be imbedded in a rib on the bottom outer face of the cup member 7 of the receiver during the moulding operation of the same. The rod 18 also serves as a securing means or supporting means for the receiver head band H, as will be more fully hereinafter described.

From the above description it may be seen that by providing an eccentrically disposed cup member 7, I am enabled to reduce the size of the magnet considerably, and the magnet M which rests in the eccentrically disposed cup is so constructed as to bring the poles of the magnets in the center with relation to the diaphragm. This type of

construction permits the use of a much smaller magnet and reduces the weight considerably, but does not impair the efficiency of the receiver.

In order to connect the magnet coils 12 in the electrical circuit in which the instrument is to be used, suitable binding posts B are provided. A separate terminal block 20 is provided and is of suitable insulating material, and the terminal studs 21 are provided and are suitably imbedded in the terminal block 20 during the moulding operation of the same. The studs 21 are provided with reduced portions 22, which are threaded and extend through suitable orifices 23 in the bottom of the casing 2 when the said terminal block 20 is in place upon said casing 2. Terminal clips 24 are provided with central orifices of a size to permit them to be slipped over the threaded portions 22 of the studs 21 which protrude through the openings 23 in the casing 2. Lock nuts 26 are provided, which lock nuts have screw-threaded engagement with the threaded portions 22 of the studs 21 and clamp the terminal clips 24 between said nuts 26 and the casing 2. The terminal clips 24 are provided with terminal ends (Fig. 4) to which the terminals of the coils 12 are soldered. When the lock nuts 26 are tightened upon the threaded portions 22 of the studs 21, the said nuts 26 also secure the terminal block 20 to the bottom face of the casing 2. The portion of the studs 21 which are imbedded in the terminal block 20 are provided with transverse orifices 27, and the terminal block 20 is also provided with openings 28 which are in alignment with said openings 27, and said openings 27 and 28 receive the metal tips 29 of the receiver cord, thus connecting coils 12 with the electric circuit in which the receiver is to be used, and to secure the metal tips 29 in orifices 27, clamping screws 30 are provided, engaging the centrally tapped orifices 31 in the stud 21. The said screws 30 when tightened clamp the metal tips 29 in the said openings 27 against displacement. The terminal block 20 is provided with an orifice 32 through which the strain cord 33 of the receiver cord is inserted and tied so as to relieve the strain from the cord terminals 29.

The receiver head band support comprises a U-shaped member 34 of suitable spring metal upon which the head band H of spring wire is pivotally secured by means of the clip 38 provided with a pair of integrally formed extensions 39, which are suitably formed over the ends 37 of the wire head band H. The member 38, which supports the head band H, is pivotally secured by means of the pivot-rivet 41 upon the U-shaped member 34 to permit adjustment of the head band H when placed in position upon the head of the operator. To support the U-shaped member 34 to the receiver shell, the rod 18 associated with the casing, as already described, is provided with reduced portions which form pins 42, and the legs of the U-shaped member 34 are provided with orifices 43 of a size to receive the pins 42. The span of the U-shaped member 34 is slightly smaller than the width of the rib 44 formed upon the cup member 7, and to place the member 34 in pivotal engagement with the pins 42 the legs of the U-shaped member 34 are forced apart and released so as to slip orifices 43 over the pins 42. When in this position the legs of the member 34 are under spring tension and hold said member 34 and head band H in pivotal position upon the pins 41 and the pivotal support of the head band H by means of the pivot 41 and the pivotal supports of the U-shaped member 34 upon the pins 42 permits a ready adjustment of the receiver so that it can always rest in a correct and easy position against the operator's ear.

Having described a specific form of my invention, I do not wish, however, to be limited to the exact structure as illustrated and described, but aim to cover all changes and modifications as will readily suggest themselves in the appended claims.

What I claim as new and desire to secure by United States Letters Patent, is:

1. In a receiver of the character described including a casing, a permanent magnet, a pivot member secured to said casing, means for securing said permanent magnet to said pivot member, a head band, a clip member having integrally formed extensions adapted to encompass the ends of said head band, and a U-shaped spring member pivotally secured to said clip member for engaging said pivot member to pivotally secure said head band by means of said clip on said casing.

2. In a receiver of the character described including a casing, a head band, a U-shaped member pivotally secured to said head band by means of a clip having integrally formed extensions adapted to encompass the ends of said head band, and a member having reduced end portions secured to said casing, a permanent magnet in said casing secured to said member having reduced ends, said U-shaped member pivotally supported by said last member whereby said head band is supported on said casing.

3. In a receiver of the character described including a casing, a permanent magnet, a rod member, means for securing said permanent magnet to said rod member and other means including a portion of said casing for securing said rod member to said casing, a head band, and means including a clip member having integrally formed extensions for pivotally supporting and securing said head band on said rod member.

4. In a receiver of the character described including an enclosing case, a member having reduced end portions secured to the back of said enclosing case, a permanent magnet in said casing secured to said member, a head band, a U-shaped member having its legs engaging the reduced end portions of said member whereby said U-shaped member is pivotally supported on said member, said head band being pivotally secured to and intermediate the legs of said U-shaped member by means including a clip having integrally formed extensions adapted to encompass the ends of said head band.

5. In a receiver of the character described including an enclosing case, a member having reduced end portions secured to one side of said enclosing case, a permanent magnet in said casing secured to said member having reduced end portions intermediate of said reduced end portions, a spring member engaging said reduced end portion and pivotally supported thereon, a head band, and a member having integrally formed extensions adapted to encompass the ends of said head band for pivotally securing said head band to said spring member.

6. In a receiver of the character described including an enclosing case, a member having reduced end portions secured to said enclosing case, a permanent magnet in said casing secured to said member having reduced end portions, a spring member spanning the intermediate portion of said member and engaging said reduced end portions of said member, a head band, and means including a clip having integrally formed extensions adapted to encompass the ends of said head band for pivotally supporting said head band on said spring member.

7. In a receiver of the character described including an enclosing case, a rod member having reduced end portions secured on said casing, a head band, a permanent magnet in said casing, means for securing said magnet to said rod member, a spring member pivotally supported on the reduced end portions of the member secured on said case, means including integrally formed extensions adapted to encompass the ends of said head band for pivotally supporting said head band on said spring member, said means and said spring member adapted to permit adjustment of said head band relative to said receiver.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 12th day of March, 1925.

WILLIAM KAISLING.