W. SCHWARZHAUPT.

AUXILIARY TELEPHONE RECEIVER.

APPLICATION FILED JUNE 15, 1910.

989,814. Patented Apr. 18, 1911.

Fig. 1.

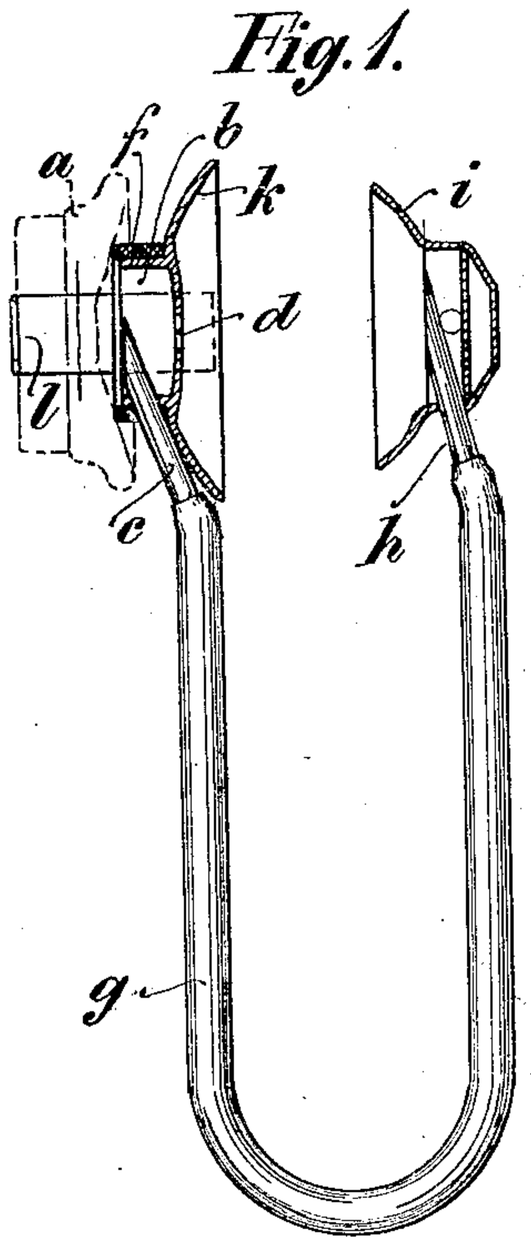


Fig. 2.

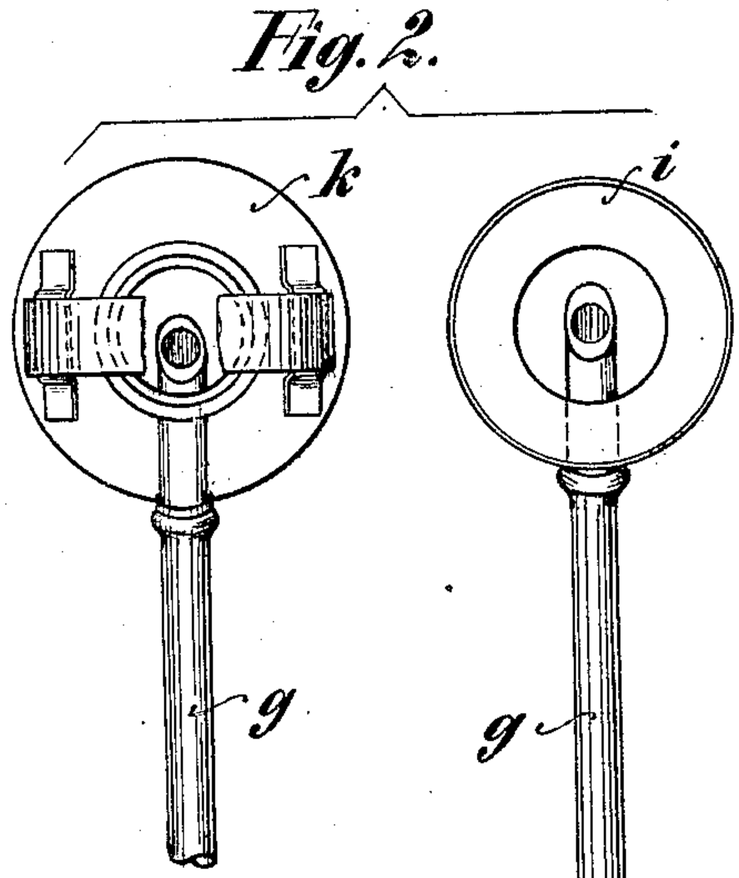


Fig. 3.

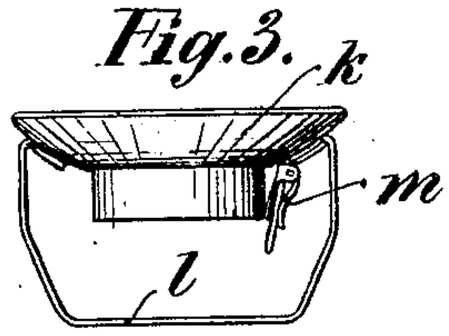


Fig. 4.

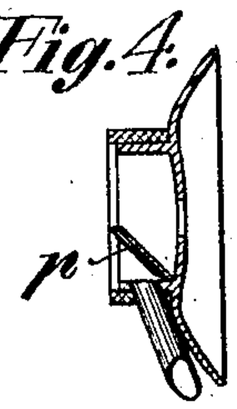
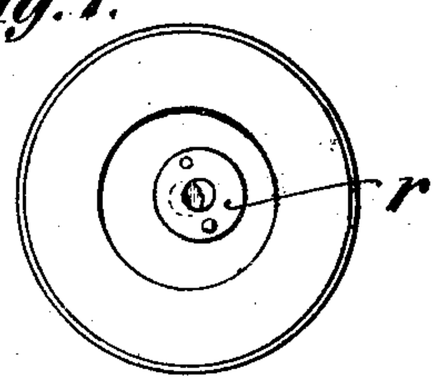


Fig. 5.

Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

WILHELM SCHWARZHAUPT, OF COLOGNE, GERMANY.

AUXILIARY TELEPHONE-RECEIVER.

989,814. Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed June 15, 1910. Serial No. 567,092.

To all whom it may concern:

Be it known that I, WILHELM SCHWARZHAUPT, a subject of the King of Prussia, and resident of Cologne, in the Province of the Rhine, Kingdom of Prussia, German Empire, have invented an Auxiliary Telephone-Receiver, of which the following is a specification.

This invention relates to an auxiliary receiver for a telephone which can be connected in a simple manner with the telephone receiver and thus render possible the hearing of the conversation either with both ears or by another person; at the same time disturbing noises are thereby hindered and the danger of infection is prevented.

The invention utilizes the already known fact that the sound waves coming from the telephone receiver can be so conducted through a tube that they can be heard either by the hearer or by another person. But in this invention the special device which collects a certain portion of the sound waves from the telephone receiver and transmits them to the auxiliary receiver is of the greatest importance.

The device according to the present invention consists in a chamber surrounding the sounding orifice of the telephone receiver on all sides, in which chamber a little tube has its orifice for the reception of the sound waves sent through the tube to the auxiliary receiver, while a central opening transmits the sound waves for the immediate action. This will be further explained by aid of the drawing, and at the same time also other important features of the invention are illustrated.

In this drawing, Figure 1 is a side elevation of the device with portions broken away. Fig. 2 shows face views of the reverberators. Fig. 3 is a side elevation of one of the reverberators with its elastic band. Fig. 4 is a section through a reverberator of modified form. Fig. 5 is a perspective view of the tube removed. Fig. 6 is a similar view with a portion broken away. Fig. 7 is a view showing a modified form of the opening in the chamber.

The telephone receiver *a* is indicated in dotted lines.

b represents the cylindrical chamber into which the little tube *c* projects. The chamber is open toward the principal receiver *a* and is insulated against this latter by means of the rubber ring *f*, so that it closely fits the sound opening of the receiver *a*. Toward the front the chamber *b* is closed but provided with the opening *d*. From the little tube *c* the rubber tube *g* conducts the portion of the sound waves collected by the little tube through the tube *h* (which is, however, not indispensable) into the reverberator *i* which serves as an auxiliary receiver. When in use the user applies one ear to the reverberator *k* connected with the chamber *b* and the other ear to the reverberator *i*. The connection of the chamber *b*, and consequently the entire device with the principal receiver *a*, is effected in an extremely simple manner by means of the elastic band *l* which is attached at its ends to the reverberator *k* and simply wound around the receiver *a* in such a manner that the rubber ring *f* presses against the front surface of the receiver.

In Fig. 2 the same construction is illustrated with the tube and rubber band so broken off that the reverberator *k* is viewed from the outside and the reverberator *i* from the inside respectively.

Fig. 3 shows the attachment of the rubber bands *l* to the reverberator *k* viewed from above. In this is shown moreover that the one end of the rubber band may be provided with a buckle *m*, in order to be able to alter at will the working length of this rubber band according to need.

As already shown in Figs. 1 and 2, it is preferable to permit the little tube *c* to project so far into the chamber *b* that its orifice shall be as close as possible to the diaphragm of the principal receiver *a*. In order to collect the respective part of the sound waves close to the diaphragm, it is also preferable to direct the orifice parallel to the diaphragm by cutting the end of the tube at a corresponding slope (Figs. 1 and 2; see also Fig. 5). In Fig. 5 it is assumed that the little tube in question is of circular section, whereas in Fig. 2 a flattened elliptical section is assumed, in order to diminish the distance of the opening *d* from the diaphragm as much as possible. As Fig. 6 shows, for the same purpose the little tube might also have a flattened quadrangular section.

In Fig. 4 finally, the little tube does not project into the chamber *b;* instead of this there is provided a cross partition *p* in the

chamber, which guides a definite proportion of the sound waves to the little tube *c*, and the partition can be made adjustable for the purpose of altering the proportion of sound waves.

In Fig. 7 is shown in elevation that the opening *d* of the chamber *b* may be adjustably controlled by means of a damper *r*, in order to regulate also the immediately active sound waves. The action consequently always depends upon the fact that the sound waves coming from the diaphragm are collected in the chamber *b* from whence they are suitably divided and are further conducted through a central opening *d* for direct action and through a little tube *c* passing into the chamber for action in the auxiliary receiver *i*.

By this device both portions of the sound waves are utilized to the best effect. As, however, the sound waves which pass to the auxiliary receiver are weakened in passage, these latter must be collected as close to the diaphragm as possible, so that even waves coming directly from the diaphragm will reach the auxiliary receiver. At the same time the division of the sound waves can be adjusted according to need.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. An auxiliary receiver for telephones comprising a reverberator, a tube leading thereto, a tube connected to said tube and with a telephone receiver and having its end beveled and parallel with the diaphragm, and a reverberator connected with the second-named tube and serving as an auxiliary receiver.

2. A main receiver, an auxiliary receiver, and a tube projecting into each receiver, the tube of the auxiliary receiver terminating in proximity to the diaphragm of the main receiver and having its receiving end beveled and parallel therewith, said tubes being independent of the said receivers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILHELM SCHWARZHAUPT.

Witnesses:
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