

No. 763,755.

PATENTED JUNE 28, 1904.

J. G. HOLMSTRÖM.

COMBINED TELEPHONE RECEIVER AND TRANSMITTER.

APPLICATION FILED AUG. 14, 1903.

NO MODEL.

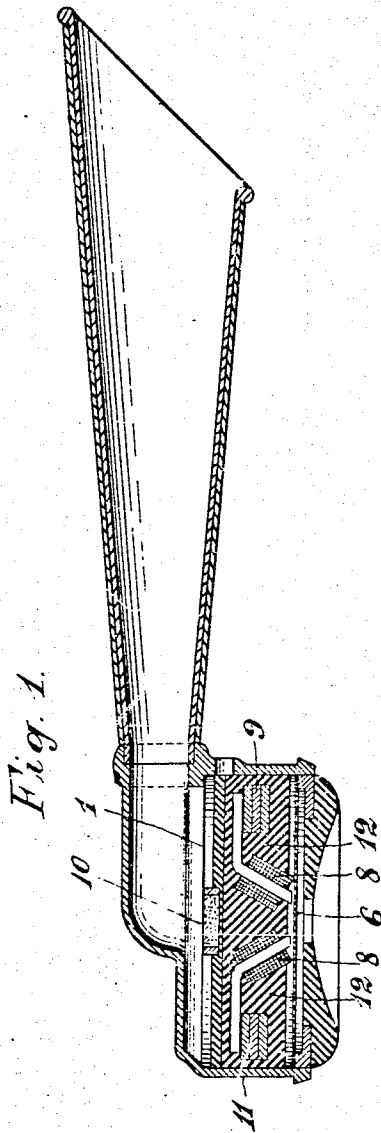
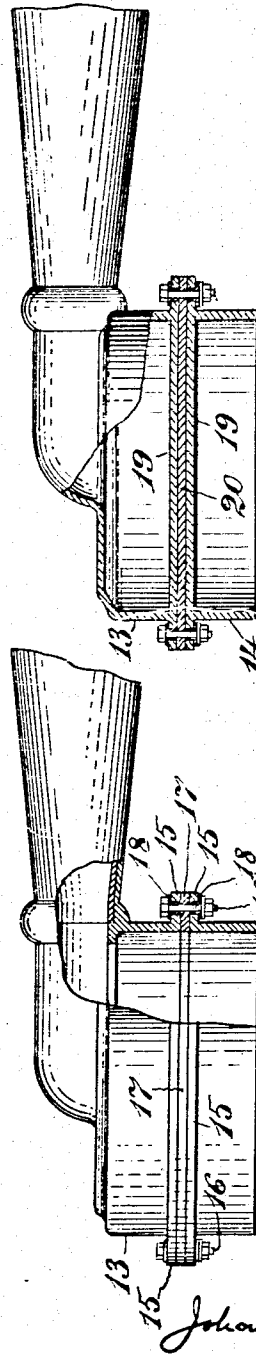


Fig. 1.

Fig. 2.



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COMBINED TELEPHONE RECEIVER AND TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 763,755, dated June 28, 1904.

Application filed August 14, 1903. Serial No. 169,4804. (No model.)

To all whom it may concern:

Be it known that I, JOHAN GUNNAR HOLMSTRÖM, a subject of the King of Sweden and Norway, and a resident of Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in a Combined Telephone Receiver and Transmitter, of which the following is a specification.

This invention relates particularly to telephone instruments or apparatus in which the receiver and transmitter are mounted in the same casing; and it has for its object to prevent "sounding" in telephone which will be produced when the receiver and transmitter are placed in close proximity to each other.

In the accompanying drawings, which illustrate an embodiment of the invention, Figure 1 is a sectional elevation of a telephone instrument provided with the present invention; and Figs. 2 and 3 are views, partly in section, illustrating sectional constructions of the casing.

In many constructions of telephone instruments it is very necessary in practice to mount the receiver and the transmitter in the same casing. The great advantage that would be otherwise gained by such a combination is, however, in a great degree nullified by the fact that where the two diaphragms are thus brought into near proximity the vibration of one influences the other, thus causing it also to vibrate, thereby producing the phenomenon known as the "sounding of the telephone," which makes satisfactory telephoning with such an instrument impossible. The intensity of this sounding is increased because the vibrations are transmitted not only through the stratum of air between the diaphragms, but also through the material of the casing which incloses them. By the present invention, now to be described with especial reference to Fig. 1, the above-recited difficulties are wholly removed by simple and reliable means. This consists, broadly speaking, in filling to a great or less extent the space between the diaphragms, ordinarily filled with air, with a substance adapted to deaden or de-

stroy the vibrations. This substance is so disposed that, like a partition, it divides the space between the diaphragms into two compartments wholly separated from each other and each containing a diaphragm. In other words, a partition of non-vibrating or sound-deadening material is interposed between the diaphragm, but is kept out of contact with the latter. To prevent the vibrations from passing to the other through the walls of the casing, the non-vibrating material is also, in the preferred form, applied to the inner surface of the wall of the casing, and such sound-deadening material may be continuous with that forming the partition.

Referring now especially to Fig. 1, 1 is the diaphragm of the transmitter. 6 is the diaphragm of the receiver. 8 designates the electromagnets. 9 designates the annular steel magnets. 10 is a chamber partly filled with granular carbon, and 11 is the casing containing the above-named parts.

All of the features recited are known. 12 designates the non-vibrating material, which may be wax, paraffin, or the like. This material is so disposed as to form a complete partition across the casing 11 between the two diaphragms 1 and 6 and also to contact with the side walls of the casing 11.

Fig. 2 shows the casing made in two parts 13 and 14, provided with flanges 15 and secured together by bolts 16. A ring 17, of india-rubber or the like, is clamped between the flanges to prevent the transmission of the vibrations from one section or part of the casing to the other. In this two-part casing the material 12 will be employed as in Fig. 1; but it need not necessarily be in contact with the walls of the casing, as the rubber ring or gasket 17 obviates this requirement. There will be sleeve-washers 18, of india-rubber, (seen at the right in Fig. 2,) about the bolts and under the nuts and bolt-heads to prevent the transmission of vibration through the bolts.

Fig. 3 shows also a two-part casing consisting of sections 13^a and 14^a, bolted together as in Fig. 2; but in this case the sections have bot-

toms 19, and in lieu of a rubber ring 17 there is a disk 20, of rubber or like material, between said bottoms.

By "sound-deadening material" as this phrase is herein used is meant a substance of a rather soft elastic or plastic character—such as india-rubber, wax, paraffin, and the like—which will absorb the vibrations and not transmit them. This excludes wood, metal, and the like, which will transmit sound waves or vibrations under the conditions herein contemplated as well or better than air.

Having thus described my invention, I claim—

1. A telephoning instrument, having a casing, a receiver and a transmitter mounted in said casing, and a partition of sound-deadening material within the casing between the diaphragms of the receiver and transmitter and separating the same.

2. A telephoning instrument having a casing, a receiver and a transmitter mounted in said casing, and a partition of sound-deaden-

ing material between the diaphragms of the receiver and transmitters and in contact with the walls of the casing.

3. A telephoning instrument having a receiver and a transmitter mounted in the same casing in near proximity to each other, and having a soft sound-deadening material disposed in the casing in a manner to interrupt the transmission of vibrations from one diaphragm of the instrument to the other.

4. A telephoning instrument having a receiver and a transmitter mounted in the same casing, and a partition of wax within the casing between the diaphragms of the receiver and transmitter and completely separating the same.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHAN GUNNAR HOLMSTRÖM.

Witnesses:

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