Nov. 3, 1925.

1,560,303

H. G. PAPE

DOUBLE EARPIECE

Filed Jan. 17, 1924

Fig. 1.

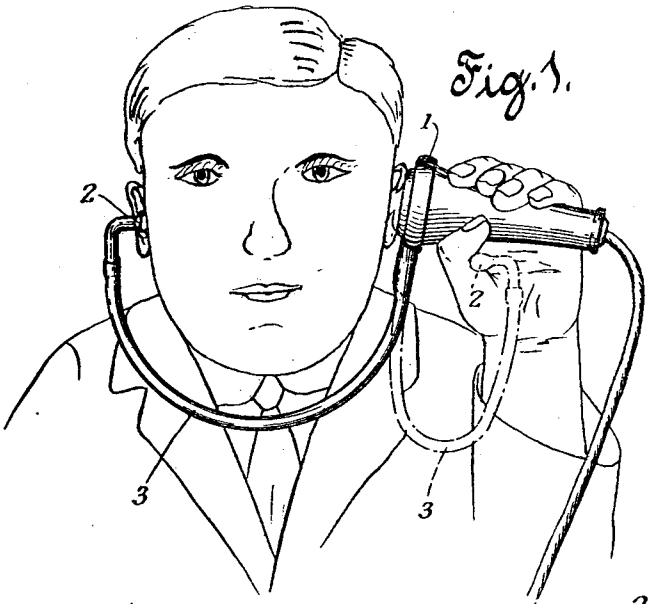


Fig. 2.

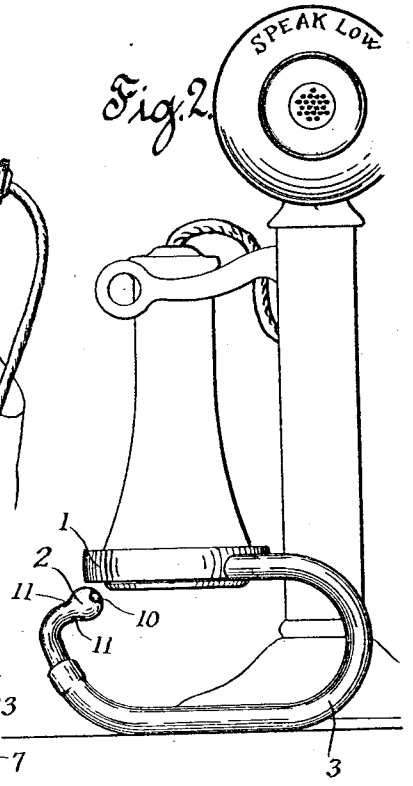


Fig. 3.

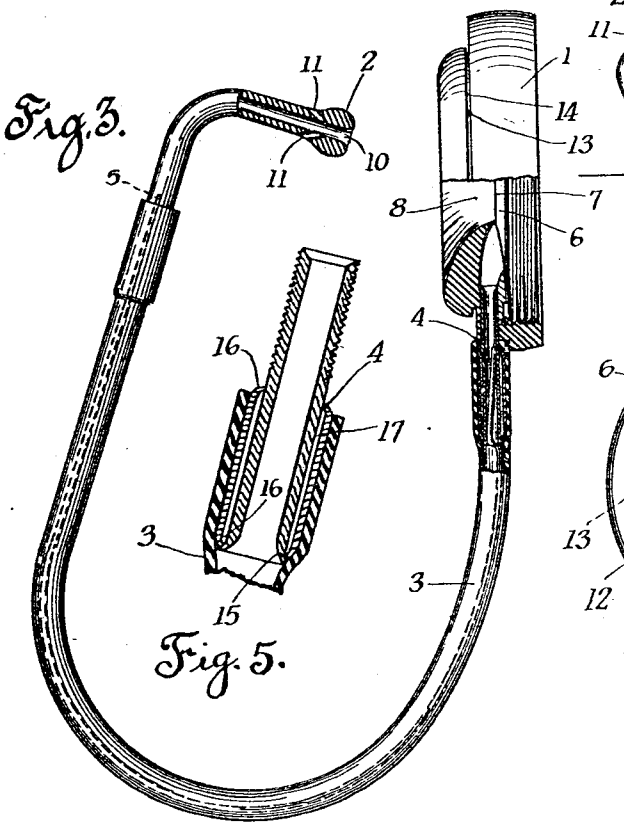
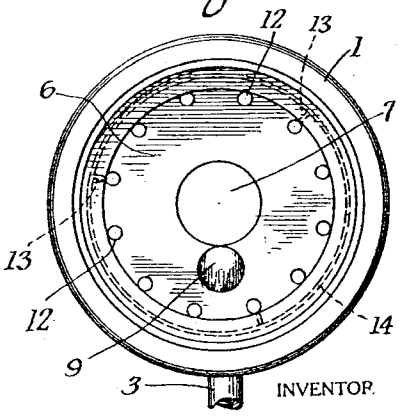


Fig. 5.

Fig. 4.



INVENTOR.

Herman G. Pape

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1,560,303

UNITED STATES PATENT OFFICE.

HERMAN G. PAPE, OF NEW YORK, N. Y.

DOUBLE EARPIECE.

Application filed January 17, 1924. Serial No. 686,861.

To all whom it may concern:

Be it known that I, HERMAN G. PAPE, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Double Earpieces, of which the following is a specification.

The objects of this invention are to facilitate the private reception of a speaker's voice over an ordinary telephone or kindred device with realistic personifications, even in a place of considerable noisy surroundings. This I accomplish by shutting out, or excluding, surroundings sounds from the listeners ears; letting him receive the message with both ears in such clear and natural manner, under conditions of full possible mental concentration, as to inspire him with a thrill and sense of awe—and all this without the use of the ordinarily uncomfortable and unsanitary sound-proof booth: bringing to the mental vision of the listeners, as far as sound is concerned, only the voice of the speaker.

Other objects of my invention are to enable one to receive the transmitted voice of a speaker, or other sounds, nature's way or physiologically: without any undue pneumatic or ear strain, and without the accompaniment of any undesirable bi-noises from the device itself.

Still another feature of this invention resides in it having no interference with the free operation of the usual hand receiver switch hook or fork, because of a swivel joint, as illustrated and hereafter further defined.

Still another object of my invention resides in the ability of a user of this device to have one of its earpieces swing out of the way when it is desired to use one earpiece only.

The functions of my invention have long been felt wanting and will therefore present itself as one of class and distinction throughout and of exceptional value and usefulness.

The underlying principles of this invention, which in my drawing is presented for application to, or used with, a so-called standard telephone hand receiver of the electro-phonetic type employing a diaphragm, is naturally applicable to a wide variety of receivers, such as for instance the watch-case styles of receivers which include auxiliary watch case receivers or corroborating receivers, switch board operators receivers, radio receivers, ear phones for deaf persons, aviation phones, stethoscopes, etc., and most any and all forms of acoustic tubular sound receivers including those of the house speaking tube sets, the limousine phones, trouble locating and detecting sets, etc.

Similar reference numerals are employed to designate corresponding parts in all figures of the drawing, showing one embodiment of this invention only.

Figure 1 is a perspective view of my invention in use by the user of a telephone hand receiver.

Figure 2 is a perspective view of the same with the receiver suspended from the usual telephone switch hook or fork.

Figure 3 is a sectional side view of my invention showing the main and auxiliary earpiece, part perspective and part sectional.

Figure 4 is an interior or underside view of the main earpiece.

Figure 5 is an enlarged sectional detail view of the tubular swivel joint employed, to which is fastened the sound conducting tube, that transmits the sounds from the main earpiece to the auxiliary earpiece.

In the drawing similar reference numerals designate corresponding parts. Thus, 1 is the main earpiece of my invention; 2 is the auxiliary earpiece; 3 is the sound conducting tube between them; 4 the swivel tubular joint uniting the main earpiece with the sound conducting tube; 5 is the spring tension within the sound conducting tube; 6 is the central inner sound chamber of the main earpiece; 7 its main conducting outlet, while 8 is its exterior sound amplifying chamber and ear seat, and 9 is its auxiliary conducting outlet leading into the conducting tube, with final outlet at 10 of the auxiliary earpiece that is provided with pneumatic concussion release vents 11; 12 are swell chambers, from one to three of which are provided with minute air exhaust vents 13 that conduct into their exterior protecting groove or hollow 14.

The groove or hollow 14 prevents ready

covering or clogging of the minute exhaust vents 13, which would otherwise be too often the case with the use of a dusting or wiping cloth on the earpiece; or, when these vents are used in the earpieces of watch-case receivers or head receivers, of a design similar to that as shown, for instance, in my Patent #800,676, when they also would be too frequently closed by the operator's grip of the hand.

The tubular swivel joint is composed of an interior small metal tube, which has its outlet end slightly bent outward, so as to provide a boss 15 for shouldering a second and larger metal tube over it, that has its ends 16 burnished inward for a close fit upon the smaller or inner tube and to create between its inwardly turned ends the space 17, for preventing possible binding of these tubes with each other by way of dust or dirt getting between them.

Although I have described my improvements with considerable detail and with respect to certain particular forms of my invention, I do not desire to be limited to such details, since many changes and modifications may well be made without departing from the spirit and scope of my invention in its broadest aspect.

Having thus described my invention, I claim:—

1. A double earpiece of the class described, comprising a main earpiece for fitting over or to a person's ear, an auxiliary earpiece carried by said main earpiece, said earpieces being cooperatively united by a springed tubular conductor, said main earpiece having an interior sound concentrating chamber, a sound swell chamber adjoining the same, a compression release vent of minute size entering into said swell chamber, and a protective groove or hollow located on the outside of said main earpiece for said compression release vent.

2. A double earpiece of the class described, comprised of a main and an auxiliary earpiece, said earpieces being united by a springed tubular conductor, a minute pressure exhaust or vent for each of said earpieces, a main conducting bore for each earpiece with which the pressure exhaust of each coacts, and a protective means located on the exterior of one of said earpieces for the protection of its exhaust or vent.

3. An earpiece of the class described having an interior sound chamber of convex formation, said sound chamber being provided with a series of sound swell chambers, said sound swell chambers being provided with a minute compression release or vent, said release or vent opening into a protective groove or hollow located on the exterior of said earpiece.

4. An earpiece of the class described having an interior sound chamber, said sound chamber coacting with a concentrically arranged sound swell chambering formation, a minute compression release vent for said swell chambering formation, said release vent connecting cooperatively with a protective exhaust or hollow on the exterior of said earpiece.

5. An earpiece of the class described having an interior sound chamber of convex inverted trumpet bell formation, said sound chamber being provided with a series of sound swell chambers, one or a few of said swell chambers being provided with minute means of compression release, a means of protection for said compression release, said means of protection being located on the exterior of said earpiece.

6. An earpiece of the class described having an exterior convex line sound chamber and an interior convex line sound chamber, said interior sound chamber being united with said exterior sound chamber by a central bore, a concentric sound swell chambering formation in remotest distant location around said bore adjoining said interior sound chamber or coacting directly therewith, and one or a few minute compression release vents for said swell chambering, and a protective hollow or groove for the vents located on the exterior of the earpiece to insure complete final exhaust.

7. An earpiece of the class described having an interior sound chamber, said sound chamber provided with a plurality of coacting sound swell chambers, one or a few of minute compression release vents connecting said swell chamber formation with the outer air by way of a protective groove or hollow forming a main exhaust.

8. A double earpiece of the class described comprising a main earpiece and an auxiliary earpiece, said auxiliary earpiece being in communication with the main earpiece by way of a swivelled tubular conductor, said conductor communicating with the outer air through one of said earpieces through an exteriorly located and protected main exhaust.

9. For an earpiece of the class here described and claimed, a tubular swivel joint for connecting said earpiece co-operatively with an auxiliary earpiece, said swivel joint comprising an interior small tubular member having a boss or outwardly burnished end for shouldering with one end of a larger tubular member, said larger tubular member having its ends formed or burnished inwardly to a close fit upon said small tubular member, and a substantial clearance between the exterior of said small tubular member and the interior of said large tubular member between the formed or inwardly burnished over ends of said large tubular member.

10. A sound transmission cap or disc for

a sound producing instrument of the class described having a main bore and an interior sound chamber, a diaphragm seat within the same, a sound swell chamber adjoining said diaphragm seat, one or more constantly open vents of minute size for said swell chamber, said vent or vents terminating into a protective hollow or groove constituting a final exhaust, said exhaust located on the exterior of said disc.

11. A sound transmission disc embraced with an interior sound chamber and a main bore, a diaphragm seat within said interior sound chamber, a concentrically arranged sound swell chambering formation around said main bore for said interior sound chamber, an exterior hollow or groove for said disc, one or more minute vents joining said swell chambering formation with said exterior hollow or groove, said exterior hollow or groove constituting a protective final exhaust chamber.

12. A sound transmission disc of the class described comprising an interior sound chamber and a main sound transmission bore, a diaphragm seat within said sound chamber, a concentrically arranged series of sound swell chambers adjoining said diaphragm seat, a protective exterior groove or hollow for said disc, one or several of said swell chambers connecting with said exterior hollow or groove by one or more minute bores or vents, the outlets of said vents being protected by said exterior groove or hollow, said groove or hollow constituting a means of final and protective exhaust for said vents.

13. A sound transmission disc of the class described comprising an interior sound chamber, a central sound transmission bore for said sound chamber, a concentric in relation to said central bore sound swell chambering formation within said interior sound chamber, one or more vents of minute size, said vent or vents being in cooperative relation with said sound swell chambering formation and the outer air, said central sound transmission bore and said vent or vents being in substantial right angle relation with each other.

14. A sound transmission disc of the class described comprising an interior sound chamber, a central sound transmission bore directly communicative with the exterior for said interior sound chamber, a sound swell chambering formation within said interior sound chamber, a diaphragm seat within said interior sound chamber, said swell chambering formation being in close alinement with said diaphragm seat and in concentric relation with said central sound transmission bore, a periphery to said disc, one or more vents of minute size connecting said swell chambering formation with said periphery by direct passage between them.

15. A sound transmission disc of the class described comprising an interior sound chamber, a central sound transmission bore directly communicative with the exterior for said interior sound chamber, a diaphragm seat within said interior sound chamber, a series of sound swell chambers concentric to said central sound transmission bore adjoining said diaphragm seat, one or more minute exhaust vents for one or more of said sound swell chambers, said exhaust vent or vents entering said swell chamber or chambers from the outer periphery of said disc.

16. A sound transmission disc for a sound producing instrument of the class described having a main bore and an interior sound chamber, a diaphragm seat adjoining said chamber, one or more constantly open passages of minute size in co-operative relation with said interior sound chamber and terminating into an exterior protective groove or hollow.

17. A sound transmission disc embraced with an interior sound chamber and a main bore, a diaphragm seat adjoining said interior sound chamber, an exterior hollow or groove for said disc, one or more wave passages of minute size in co-operative relation with said interior sound chamber and said exterior hollow or groove.

18. An earpiece of the class described having an interior sound chamber of convex formation, a diaphragm seat surrounding the same, said interior sound chamber being co-operatively related with a protective groove or hollow located on the exterior of said earpiece by way of a minute wave passage.

19. An earpiece of the class described having an interior sound chamber, a diaphragm seat surrounding said sound chamber, a protective cavity or hollow on the exterior of said earpiece, said interior sound chamber and said cavity or hollow being in co-operative relation with each other by way of a minute sound passage.

20. An earpiece of the class described having an interior sound chamber of convex inverted trumpet bell formation, said sound chamber being in co-operative relation with the exterior of said earpiece by way of one or more minute wave paths, and means of protection for said wave path or wave paths.

21. An earpiece of the class described having an exterior convex line sound chamber and an interior convex line sound chamber, said interior sound chamber being united with said exterior sound chamber by a central bore, a concentric sound swell chambering formation in remotest position around said central bore coacting with said interior sound chamber, one or more minute wave paths for said swell chambering for-

mation, and a protective hollow or groove for said wave path or wave paths located on the exterior of said earpiece.

22. An earpiece of the class described having an interior sound chamber and a diaphragm seat surrounding same, said sound chamber being provided with one or more coacting sound swell chambers, one or more minute wave paths or runs co-operatively connecting said swell chambering formation with the outer air.

In testimony whereof I have signed my name to this application.

HERMAN G. PAPE.