R. WHITMAN.

ACOUSTIC DEVICE.

APPLICATION FILED DEC. 23, 1914.

1,223,545. Patented Apr. 24, 1917.

Fig. 1.

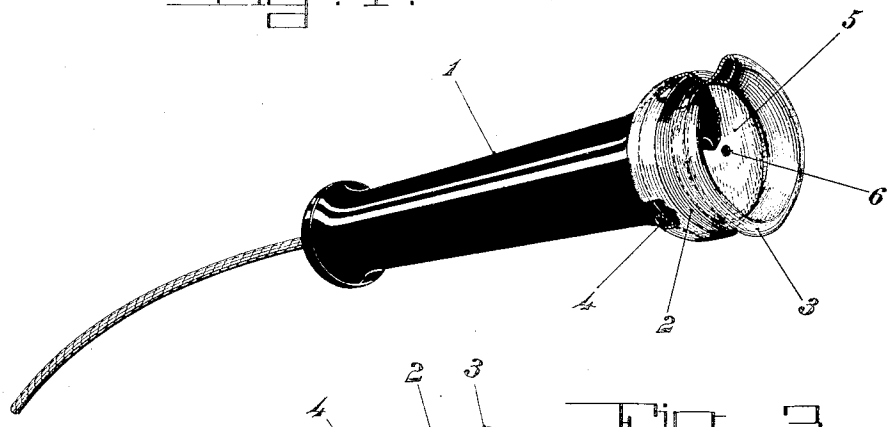


Fig. 2.

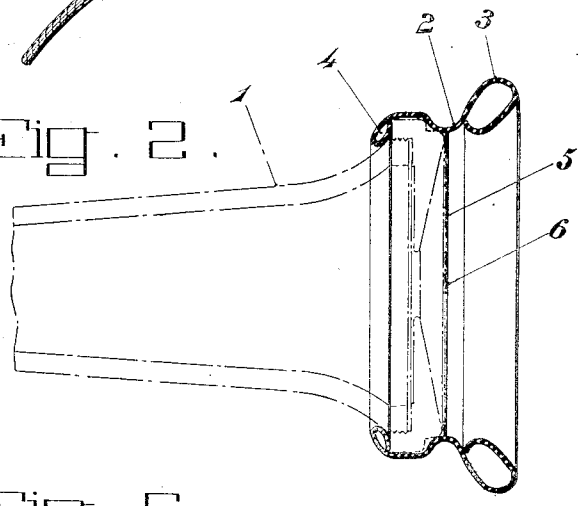


Fig. 3

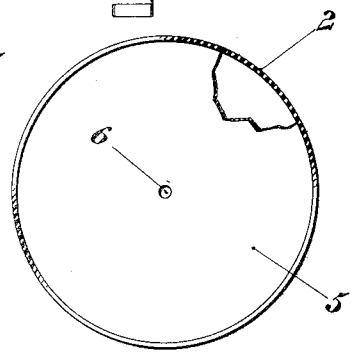


Fig. 6.

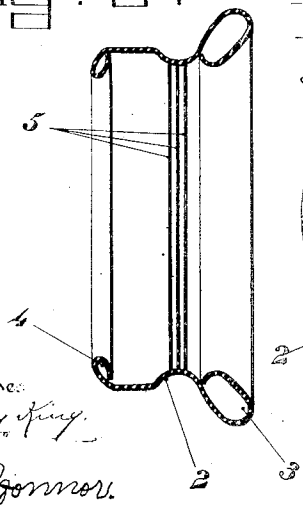


Fig. 4.

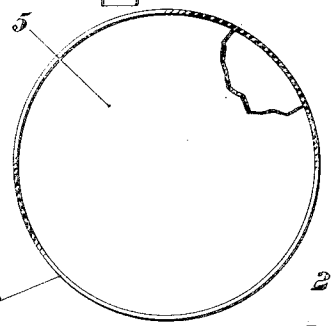
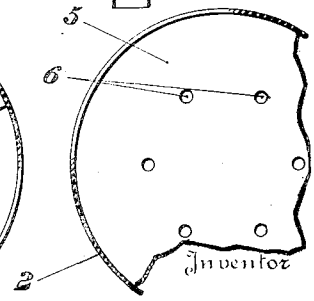


Fig. 5.



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UNITED STATES PATENT OFFICE.

RANDOLPH WHITMAN, OF MOUNT VERNON, NEW YORK.

ACOUSTIC DEVICE.

1,223,545. Specification of Letters Patent. Patented Apr. 24, 1917.

Application filed December 23, 1914. Serial No. 878,688.

To all whom it may concern:

Be it known that I, RANDOLPH WHITMAN, a citizen of the United States, residing at Mount Vernon, Oakwood Heights, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Acoustic Devices, of which the following is a specification, reference being had to the accompanying drawing.

This invention refers to acoustic devices, and more in particular to those used to modify, change or regulate the sound produced in artificial apparatus.

Some of the main objects of this invention are:—

To produce a device for removing metallic and other objectionable extraneous sounds from sound transmitting apparatus.

To provide means for modifying the tone of transmitted sound, to a desirable extent.

To provide means for bringing transmitted sounds directly to the ear mechanism of a hearer, and to the exclusion of extraneous sounds.

To provide means for filtering artificially transmitted sounds so that they will appear to the hearer in their normal values.

To provide means for eliminating or absorbing high tones, and nerve straining sounds before the ear is reached.

To provide means for making the conversation over telephone lines and the like, more distinct and agreeable.

Other objects will become apparent as the invention is more fully set forth.

Many devices have been used to eliminate the difficulties or objections met with in transmitted sound practice and this has been particularly noticeable in connection with telephone receivers. Rubber caps have been used, over the diaphragm end of receivers, but in every case they have impeded the action of the sound waves arising from the receivers, so as to make their use objectionable. In apparently every case, efforts have been directed to keep out extraneous sounds, rather than improve or change the sound in question itself. This invention is directed toward the sound as it comes from the receiver or other apparatus, and taking the sound it converts it mainly by means of a cushion, into tones more suitable to the hearer or the purpose.

In the drawings, which show by way of example, an embodiment of this example:

Figure 1 is a view in perspective showing the device embodying this invention, applied to a telephone receiver.

Fig. 2 is a sectional view of the device.

Fig. 3 is a plan view of the device.

Fig. 4 shows a modification of the diaphragm which is not perforated.

Fig. 5 shows a modification with a plurality of holes in its diaphragm.

Fig. 6 shows a modification of the device with a plurality of diaphragms.

Similar reference characters refer to similar parts throughout the drawings.

In the construction shown in the drawings, the reference character 1 represents a telephone receiver and on which is mounted a device 2, which consists of a ring like body having both ends 3 and 4 turned inwardly. The body swells out at the end 3 so as to give a quasi-megaphone shape, and the other end 4 is arranged to closely embrace the telephone receiver under its cap. The body is preferably constructed of stiff yet substantially flexible material such as rubber of semi-hardness.

A diaphragm 5 of very flexible and elastic material (such as gum elastic, or that which play balloons are constructed of) is secured inside of the body in a suitable manner, and may be made integral therewith if desired. It is not desired, however, to limit the diaphragm or body of the device construction to any particular material.

The diaphragm is so placed is the body that it will preferably close the end of the receiver adjacent to the diaphragm of the latter so the sound waves from the same will efficiently act upon the diaphragm 5 in the device. It is also preferred to have the diaphragm 5 perforated, as shown at 6. In perforating the diaphragm it is preferable to avoid locations in the same, where the effective elasticity of the diaphragm might be affected or where the maximum waves effect is found or known to take place from.

The diaphragm 5 is of course made taut in the body. The amount of the perforating can be arranged to suit the circumstances as well as the number of the diaphragms. For ordinary usage on a telephone receiver it is preferable to use only one diaphragm with a slight perforation.

In operation, the sound waves from the apparatus, in this case the diaphragm of the receiver, impinge upon the diaphragm 5 of the device, and the air being contained and

elastic, a cushion and filter is provided for the sound. The diaphragm 5 then conveys the sound, but with a less amplitude thereby lowering the tone of the sound and improving its timbre. The sound at last acts upon the ear which is held against the end 3, and surges back and forth from the device diaphragm, acting in quasi-unison therewith and practically directly from the diaphragm. The form of the end 3 serves to exclude extraneous sounds, and its material, being relatively flexible, offers no shock to the ear.

While but one general form and use of this invention is shown in the drawings, it is not desired to limit this application for patent to the same, or in any other way otherwise than limited by the prior art, as many forms of construction of this invention may be made without departing from the principles thereof, and coming within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. In combination with a sound giving device, a very flexible perforated diaphragm, and flexible means adapted to connect the diaphragm with the device and adjacent to its sound giving part, and means for delivering sound waves directly to the ear of a user, when said diaphragm is acted upon by the sound waves from said device.

2. In combination with a sound giving device, very flexible perforated diaphragm means, means for flexibly connecting the diaphragm means to the device and adjacent to the sound giving part, and means provided for permitting sound waves to pass directly through the diaphragm means.

3. In combination with a sound device, an attachment comprising a holder adapted to embrace a portion of the sound device, a perforated diaphragm transversely disposed in the holder, and having a perforation therein for indicating the proper tension of the diaphragm and the position of the holder on the device.

4. In combination with a telephone receiver, an attachment comprising a soft rubber holder adapted to embrace the receiver, an elastic diaphragm stretched across the holder, said diaphragm being provided with a relatively small central hole therein, said diaphragm being arranged to lower and soften the tone of sounds coming from the receiver without apparently reducing their force.

5. In combination with a telephone receiver, an attachment comprising an inclosed holder adapted to cup over the receiver, a centrally disposed elastic diaphragm means in the holder arranged between the receiver shell and the outer opening of the holder whereby a cushion of air will be provided on both sides of the diaphragm and the diaphragm will also act as a cushion so that the sounds from the receiver will be modified.

6. An attachment for telephone receivers comprising in combination, a soft rubber receiver-inclosing member having rolled inclosing edge portions and its outer portion inwardly bell-mouthed, a relatively small elastic diaphragm integrally connected to the bell-mouthed portion of the said member and centrally arranged with respect to the member, and a perforation centrally arranged in the diaphragm, said perforation being so flexibly held by the member that the stress put thereon will cause such variation in the form of the perforation as to indicate the action of the attachment on the sound waves acting and passing therethrough.

7. An elastic ear piece having a diaphragm permanently secured thereto adapted to be stretched over the ear piece of a telephone receiver and a quasi-megaphone projection for engaging the head of the user.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

RANDOLPH WHITMAN.

Witnesses:
E. W. DAVIDSON,
STUART R. WHITMAN.