July 25, 1939. E. H. SCHWENCKE 2,167,377

ACOUSTICAL DEVICE

Filed Jan. 12, 1938

Fig. 1.

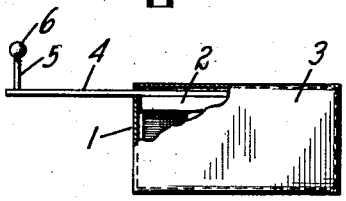


Fig. 2.

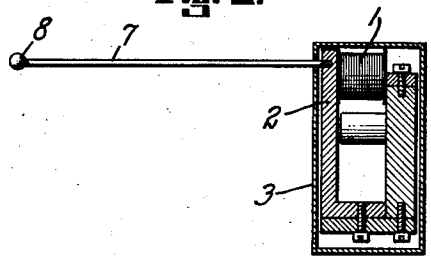


Fig. 3.

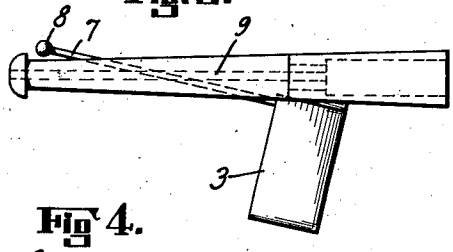


Fig. 7.

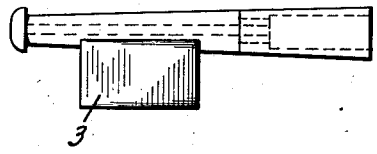


Fig. 4.

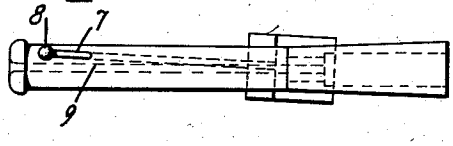


Fig. 5.

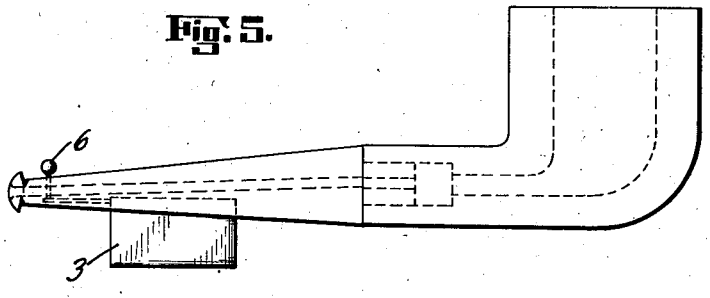
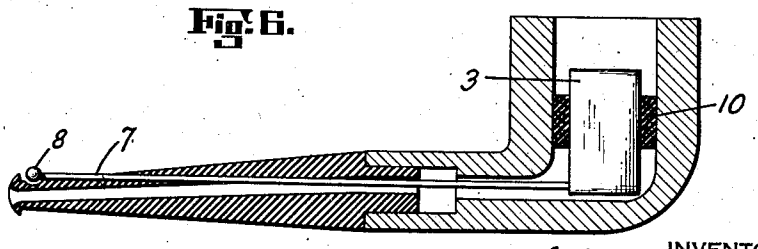


Fig. 6.



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UNITED STATES PATENT OFFICE

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ACOUSTICAL DEVICE

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Application January 12, 1938, Serial No. 184,551

4 Claims. (Cl. 179—107)

This invention relates to acoustical devices adapted to aid the deaf.

Of the various acoustical devices available commercially to the deaf, the most efficient and most popular at the present time are electrical devices in which sound vibrations are picked up by a microphone and are transmitted electrically to a vibrator unit which is placed in contact with the bony structure of the head, usually just behind the ear. Such vibrator units may be of any well known type such as electromagnetic or piezo-electric devices. In order to hold the vibrator unit in proper position, various types of clamps and brackets have been devised, all of which are objectionable because they are difficult to conceal, and make the user conspicuous.

It has also been known that sound vibrations can be conducted through the teeth, and devices employing such electrical vibrator units have been built for this purpose, but while the results obtained from such devices are more satisfactory with respect to clarity and distinctness of sound reception, the devices proposed have been so extremely conspicuous that deaf persons have generally avoided them.

It is an object of the present invention to provide a smoker's article such as a pipe or cigarette holder which is customarily held by the teeth, having mounted thereon, in such manner as to be concealed either by the article itself, or by the hand of the user, a vibrator unit adapted to transmit vibrations to the teeth.

Other objects and advantages of the invention will appear hereinafter.

A preferred embodiment of the invention selected for purposes of illustration is shown in the accompanying drawing, in which,

Figure 1 is an enlarged side elevation, partly broken away, of a vibrator unit having a conductor rod connected thereto extending parallel to the armature.

Figure 2 is an enlarged sectional view of a vibrator unit having a conductor rod connected thereto extending perpendicular to the armature.

Figures 3 and 4 are side elevation and plan views respectively of a cigarette holder having mounted thereon a vibrator unit of the type illustrated in Figure 2.

Figure 5 is a side elevation of a pipe having mounted thereon a vibrator of the type illustrated in Figure 1.

Figure 6 is a sectional view of a pipe having a vibrator unit mounted in the bowl thereof, and

Figure 7 is a side elevation of a cigarette holder having a vibrator mounted thereon.

Referring to the drawing, a conventional type of electro-magnetic vibrator unit is illustrated in Figures 1 and 2 having a coil 1, an armature 2 and a casing 3 surrounding and enclosing the same. In Figure 1, a conducting rod 4 is connected to the armature and extends parallel thereto. In this form, the conducting rod preferably terminates in an upturned portion 5 having a knob 6 thereon for contact with the teeth. In Figure 2 the conducting rod 7 is connected to the armature and extends perpendicular thereto. Said rod also terminates in a knob 8 for contact with the teeth.

Either of the vibrator units shown in Figures 1 and 2 or other conventional vibrator units similarly equipped with conductor rods may be employed in connection with smokers' articles such as pipes or cigarette holders in the manner hereinafter described.

Referring to Figures 3 and 4 for example, a vibrator unit of the type illustrated in Figure 2 is shown as applied to a cigarette holder. The casing of the vibrator unit may be secured to the stem of the holder in any suitable manner (as by clamp, cement or screws, for example) and the stem is drilled to provide a passage for the conducting rod, which extends therethrough to emerge from the stem at a point such that the knob, or the end of the rod if no knob is provided, terminates at a point closely adjacent the position where said stem is normally gripped by the teeth. It will be noted that the passage for the conducting rod is offset from the smoke passage 9 and does not communicate therewith so that the use of the device does not interfere in any way with the use of the holder for smoking purposes.

The vibrator unit is not concealed by the holder, of course, but when mounted on the under side of the holder as shown in Figure 3, may be entirely concealed within the palm of the hand when the holder is grasped in the manner customary with smokers, i. e., with the stem extending between the forefinger and the second finger of the hand. If then the wires connected to the vibrator unit are led through the sleeve of the user, the device can be used without detection.

In the device illustrated in Figure 5 a vibrator unit of the type illustrated in Figure 1 is shown as applied to a pipe. In this case in order to shorten the conducting rod as much as possible, the vibrator unit is mounted on the under side of the stem of the pipe, but it will be understood that it may be mounted in other positions, if de-

sired. In this case, as before, the conducting rod is offset from the smoke passage in order not to interfere with using the pipe for smoking.

In the device illustrated in Figure 6, intended for non-smokers, the vibrator unit may be mounted within the bowl of the pipe in order to be entirely concealed thereby. In this case the ordinary smoke passage may be used in part as a passage for the conducting rod, and the stem may be drilled for a short distance in order to permit the rod to emerge at the proper point for contact with the teeth. If desired, the vibrator unit in this form of the invention may be surrounded by a sleeve 10 of rubber or other suitable material in order to hold the unit in place, and in order to prevent the vibrations from being transmitted to the pipe itself.

In each of the devices previously described, except that shown in Figure 6, it will be understood that the primary conduction of sound vibrations is through the conductor rod, but due to the fact that the vibrator unit is rigidly conneced to the pipe or holder, there is also a secondary conduction directly from the vibrator unit to the stem itself. In some cases, as illustrated in Figure 7, this secondary or direct conduction is sufficient, without the provision of a conducting rod, to give good results.

It will be understood that the invention may be variously modified and embodied within the scope of the subjoined claims.

I claim as my invention:

1. A smoker's article having a stem adapted to be gripped by the teeth, an acoustical vibrator unit mounted on said article, and a conducting rod operatively connected to said vibrator unit and extending through said stem, said rod emerging therefrom to terminate outside of said stem at a point closely adjacent the position where said stem is normally gripped by the teeth.

2. A smoker's article having a stem adapted to be gripped by the teeth, said stem having a smoke passage therethrough, an acoustical vibrator unit mounted on said article, and a conducting rod operatively connected to said vibrator unit and extending through said stem, said rod being offset from said smoke passage and emerging from said stem to terminate outside of said stem at a point closely adjacent the position where said stem is normally gripped by the teeth in order that said rod may contact the teeth when the stem is so gripped.

3. A pipe having a bowl and a stem adapted to be gripped by the teeth, an acoustical vibrator unit mounted in said bowl, and a conducting rod operatively connected to said vibrator unit and extending from said bowl through said stem, said rod emerging therefrom to terminate outside of said stem at a point closely adjacent the position where said stem is normally gripped by the teeth.

4. A pipe having a bowl and a stem adapted to be gripped by the teeth, an acoustical vibrator unit mounted in said bowl, a sleeve of rubber surrounding said unit and spacing the same from said bowl, and a conducting rod operatively connected to said vibrator unit and extending from said bowl through said stem, said rod emerging therefrom to terminate outside of said stem at a point closely adjacent the position where said stem is normally gripped by the teeth.

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