July 14, 1964 A. V. MOTSINGER 3,140,754

GAS MASK SPEECH TRANSMISSION

Original Filed Feb. 12, 1954

Fig. 1

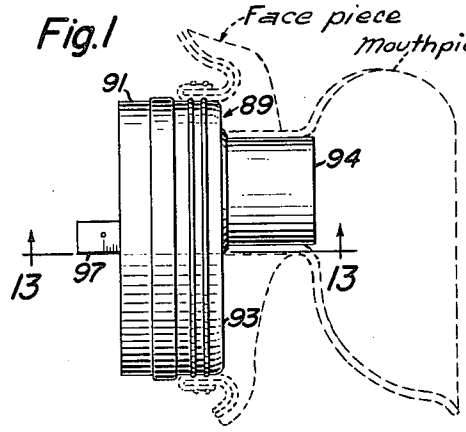


Fig. 2

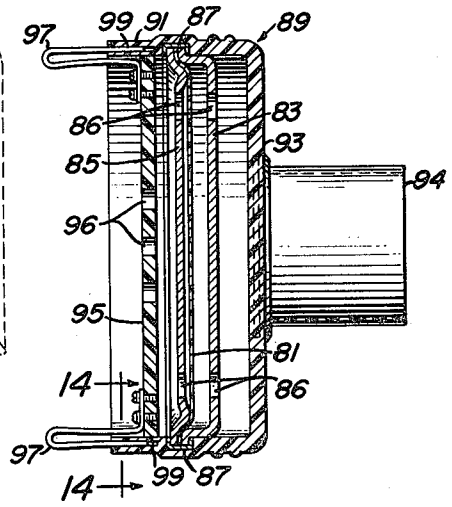
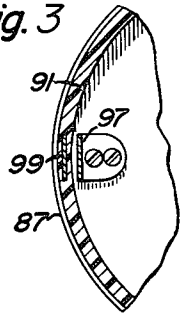


Fig. 3



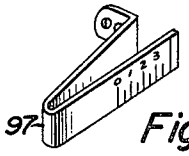
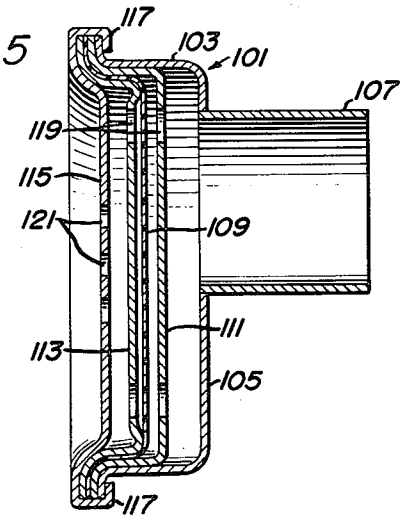


Fig. 4

Fig. 5



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GAS MASK SPEECH TRANSMISSION

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Original application Feb. 12, 1954, Ser. No. 410,056, now Patent No. 2,974,665, dated Mar. 14, 1961. Divided and this application Dec. 3, 1959, Ser. No. 102,328

2 Claims. (Cl. 181—31)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment to me of any royality thereon.

This is a division of application Serial Number 410,056, filed February 12, 1954, now U.S. Patent Number 2,974,665, entitled Gas Mask Speech Transmission.

This invention relates to a voice transmitting means for gas masks.

In my Patent No. 2,410,454, November 5, 1946, I have shown a voice-transmitting gas mask which includes a vibratable diaphragm of thin sheet material, such as cellulose film, and a resonating chamber between the diaphragm and the mouth of wearer.

An object of this invention is to improve the basic structure shown in my patent.

A further object of my invention is to provide a voice-transmitting means for a gas mask in which the diaphragm is protected against punctures or other injury.

A further object of my invention is to provide an improved resonator structure.

FIGURE 1 is a side elevation of my voice-transmitting means. FIGURE 2 is a longitudinal section, on an enlarged scale taken on line 13—13, FIGURE 1. FIGURE 3 is a section on line 14—14 of FIGURE 2. FIGURE 4 is a perspective view of an adjusting slide of the device shown in FIGURE 1.

FIGURE 5 is a longitudinal section of a modification, similar to that of FIGURES 1–4, but without the adjustment means.

In the mask shown in my Patent No. 2,410,454, a resonating chamber was provided inside the face-piece, between the diaphragm and the mouth of the wearer. In all the modifications of the present invention, a resonating chamber is provided on the exterior side of the diaphragm and is constructed in such a manner that there is no direct opening from the outside to the diaphragm. The diaphragm is thus protected against punctures.

The invention is shown in FIGURES 1 to 4. In this embodiment, diaphragm **81** and fixed plates **83** and **85**, which are peripherally perforated at **86** are crimped in a metal ring **87** which is set in a housing **89** of molded plastic. The housing is formed by a cylindrical wall **91** and a base **93**. Eccentrically mounted in the base is a voice tube **94**. In the outer end of the housing is mounted a movable plate **95** centrally perforated at **96**. A pair of spring slides **97** of substantially U-shaped form are secured to the movable plate **95**. One leg of the U is fastened to the plate while the other leg is slidably mounted in slots **99**. The slides are so dimensioned as to exert pressure on the slot walls, thus holding the movable plate in a set position but permitting adjustment when desired. As shown in FIGURE 4, a scale is provided on each of these slides to permit setting the wall to a desired position.

In FIGURE 5, I have shown the simplest form of my transmitter, which retains the advantages of multiple resonating chambers and a protected diaphragm but which does not have the adjustment provided by the other form. This modification comprises a housing **101** having a cylindrical wall **103** and a base **105**. Voice tube **107** is shown as eccentrically mounted in the base. However, when the utmost compactness is desired, this voice tube may be replaced by perforations in the housing base. Mounted within the housing is a diaphragm **109** and fixed plates **111**, **113**, and **115**. The housing **101**, voice tube **107**, and plates **113** and **115** are preferably formed of plastic or hardboard and the diaphragm is formed of several, for instance four, sheets of thin material. While cellulose acetate or the other materials mentioned in my patent may be used, I have found that superior results are secured by the use of thin sheets of polyvinylidine chloride such as is sold under the name of "Saran." Plate **115** is preferably formed of metal such as aluminum and is crimped around the edges of the members as shown at **117** to hold the assembly together. Plates **111** and **113** are peripherally perforated at **119** while plate **115** is centrally perforated at **121**.

While I have described specific embodiments in detail, the invention is obviously susceptible to variations. I do not, therefore, desire to be limited except by the scope of the appended claims.

I claim:

1. A voice-transmitting device for gas masks comprising a cup-shaped housing having a cylindrical wall and a base, at least one aperture for the entrance of sound waves eccentrically positioned in said base, a diaphragm of thin sheet material extending across said housing joined at its periphery to said cylindrical wall, and spaced from and parallel to said base, a perforated plate between and parallel to said base and diaphragm, a second perforated plate on the other side of, spaced from, and substantially parallel to said diaphragm, a third perforated plate between and parallel to said second plate and said diaphragm, said first and third plates being perforated only in their peripheral areas and said second plate being perforated only in its central area.

2. A device according to claim 1 wherein a single eccentric aperture is provided in said base and wherein a tube extends from said aperture.

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