April 12, 1932. R. MONRO 1,853,373

RESPIRATORY VALVE

Filed March 15, 1928

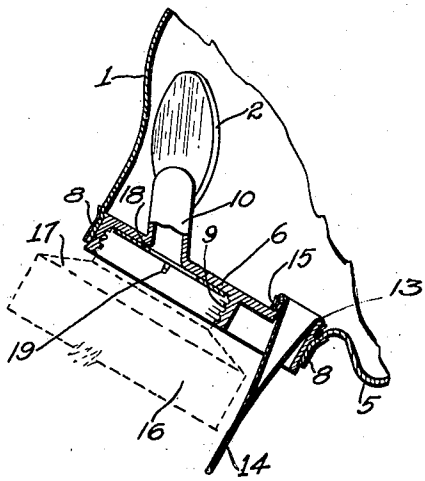


Fig. 2

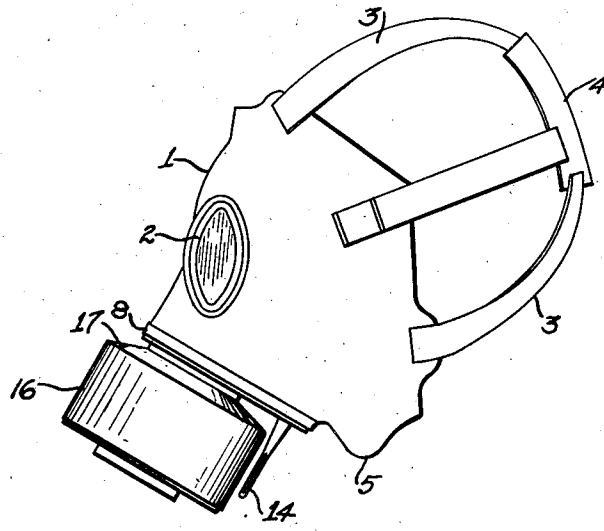


Fig. 1

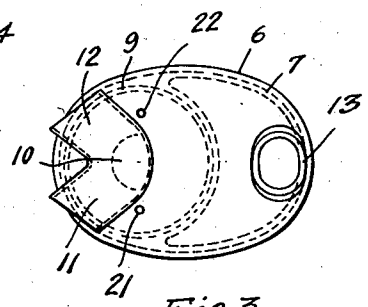


Fig. 3.

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Patented Apr. 12, 1932

1,853,373

# UNITED STATES PATENT OFFICE

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## RESPIRATORY VALVE

Application filed March 15, 1928. Serial No. 261,964.

(GRANTED UNDER THE ACT OF MARCH 3, 1883, AS AMENDED APRIL 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for Government purposes, without the payment to me of any royalty thereon.

This invention relates in general to respiratory apparatus, and more particularly has reference to an improved valve for gas masks.

Previous to this time the masks employed in warfare and industry for protection against toxic and noxious gases or smoke have had embodied in their structure certain fundamental disadvantages, generally centering around the valve elements that this invention seeks to overcome.

The valves forming the connection between the canister and mask heretofore employed have generally been of complicated structure, liable to damage, and the impairment of the function of the mask. The various connections used between the valve and canister have also been generally inefficient, as they have not afforded sufficient protection against leakage.

An object of this invention is to provide a respiratory valve of simple construction, not liable to damage.

Another object of this invention is to provide a respiratory valve designed to cooperate with the neck of a canister to form a leak-proof joint.

A further object of this invention is to provide a respiratory valve that will insure a clear vision through the eye pieces of a gas mask.

This invention consists in general of the provision of a valve for respiratory apparatus, comprising an angle tube having integral tubes adapted to deflect the inhaled air against the eye pieces of the mask, an integral stem designed to seat a valve for disposing of exhaled air, and a threaded recess for the reception of the neck of the canister.

A gasket is interposed in the threaded recess of the respiratory element to insure a leak-proof joint between the canister and the valve. A wire is riveted across the threaded recess to hold the gasket and prevent the check valve flap entering the deflector tubes. A guard for the intake check valve is adapted to be secured in the sleeve with a snap fit and is perforated to allow contaminated air to enter the canister.

With these and other objects in view which may be incident to the improvements, the invention consists in the parts and combinations to be hereinafter set forth and claimed, with the understanding that the several necessary elements comprising the invention, may be varied in construction, proportions and arrangement, without departing from the spirit and scope of the appended claims.

In order to make the invention more clearly understood, there is shown in the accompanying drawings means for carrying the same into practical effect, without limiting the improvements in their useful applications to the particular constructions, which for the purpose of explanation, have been made the subject of illustration.

In the drawings:

Figure 1 is a side elevational view of the valve shown installed in a conventional gas mask;

Fig. 2 is a side elevational, partly sectional view of the respiratory valve and lower part of the gas mask;

Fig. 3 is a top plan view of the respiratory valve.

Referring by numerals to the drawings wherein the same elements are designated by the same numerals throughout, and more particularly to Fig. 1, there is shown a conventional gas mask, having a usual front portion composed of any suitable substance 1, eye pieces 2 made of glass, or any desirable transparent composition, head straps 3, a centering band 4 for the straps 3, and a back portion 5, joined or continuous with the front portion 1 and made of like material.

Secured to the front portion 1 and the back 5, is the novel respiratory valve 6. The valve 6 is provided with a peripheral channel 7 adapted to afford a leak-proof connection, and the joint secured by a tape 8 treated with adhesive substance, as shown in Fig. 2. The valve 6 comprises a threaded recess 9, integral deflector tubes 11 and 12 communicating with an aperture 10 through the threaded inlet and a valve stem 13 adapted to receive a flutter valve 14. The flutter valve 14 is

firmly fitted in the stem 13 and the joint made leak-proof by tape 15 treated with adhesive substance.

A canister comprising a casing having a cylindrical body portion 16 and a tapered top portion 17 is provided with a threaded neck adapted to engage the threaded aperture 9 in the respiratory valve 6.

A gasket 18 is adapted to be interposed between the canister and the respiratory valve 6 when the neck is in engagement with the threaded recess on the valve. A wire 19 is riveted across the inlet through the threaded aperture 9 in holes 21 and 22 on the valve to hold the gasket in place and prevent the check valve flap on the canister from clogging the inlet tubes 11 and 12.

There is accomplished by this invention an improved valve for gas masks adapted to overcome the difficulties heretofore experienced in these elements in which the valve is simply and sturdily constructed, not liable to damage and has provisions for forming a leak-proof joint with a canister.

While I have shown and described the preferred embodiment of the invention, it is to be understood that I do not confine myself to the precise details of construction herein set forth, by way of illustration, as it is apparent that many changes and variations may be made therein, by those skilled in the art, without departing from the spirit of the invention, or exceeding the scope of the appended claims.

I claim:

1. A respiratory valve comprising a plate, a flange therearound, a partition joining diametrically opposite points on said flange, said partition forming an air inlet compartment and an air outlet compartment, the plate provided with an opening communicating with the air inlet compartment and deflector tubes at the same end of the plate as said inlet compartment, and communicating with said opening.

2. A respiratory valve comprising a plate, a flange therearound, a partition joining diametrically opposite points on said flange, said partition forming an air inlet compartment and an air outlet compartment, said plate being provided with an opening communicating with the air inlet compartment and a valve stem communicating with the valve outlet compartment, deflector tubes at the same end of the plate as said inlet compartment and positioned in the opening of the plate so as to communicate with the air inlet compartment.

3. A respiratory valve comprising an annular plate, a grooved flange extending around the periphery thereof, said flange adapted to have the material forming a mask secured thereto, a partition joining diametrically opposite points on the flange so as to form an air inlet compartment at one end of the plate and an air outlet compartment at one end of the plate, said plate being provided at the inlet compartment and with an opening communicating with the air inlet compartment and a valve stem at the outlet compartment and communicating with the air outlet compartment, and deflector tubes at the inlet compartment and communicating with the opening into the air inlet compartment.

4. A respiratory valve formed of a single piece of material, said valve comprising an annular plate, a grooved flange formed integral therewith, an integral partition adjoining diametrically opposite points on said flange so as to form an air inlet compartment at the upper end of the plate and an air outlet compartment at the lower end of the plate, said air inlet compartment adapted to receive a canister, said plate being provided at the inlet compartment and with an opening communicating with the air inlet compartment and an integral valve stem at the outlet compartment and communicating with the air outlet compartment, and deflector tubes at the inlet compartment and formed integral with the plate and communicating with the air inlet compartment.

In testimony whereof I affix my signature.

RANDOLPH MONRO.