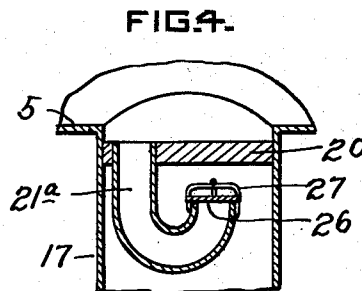
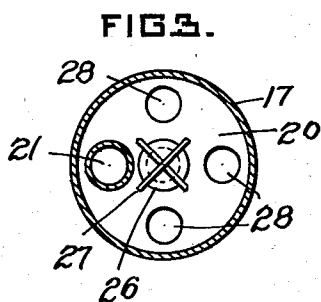
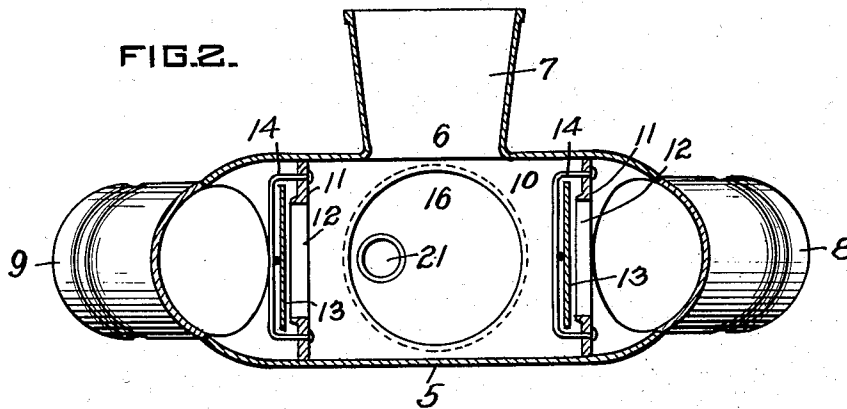
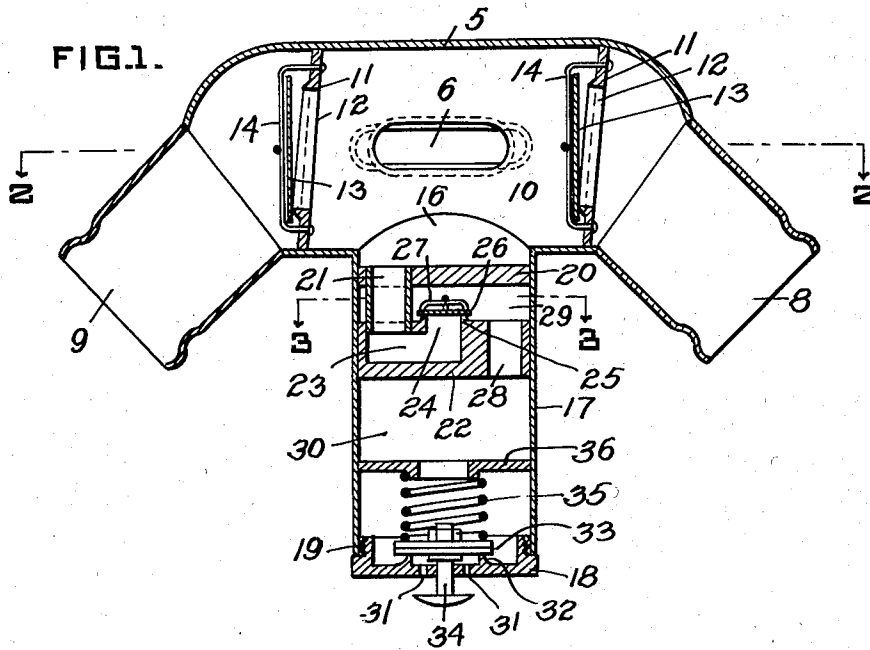


J. T. RYAN.
MOUTHPIECE FOR BREATHING APPARATUS.
APPLICATION FILED MAY 15, 1919.

1,328,057.

Patented Jan. 13, 1920.



WITNESSES

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MOUTHPIECE FOR BREATHING APPARATUS.

1,328,057.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN T. RYAN, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Mouthpieces for Breathing Apparatus, of which the following is a specification.

This invention relates to mouthpieces for so-called "breathing apparatus", that is, apparatus for supplying an artificial atmosphere to a person surrounded by noxious or poisonous gases or fumes.

The object of the invention is to provide mouthpieces for such apparatus with a combination saliva trap and air release valve so arranged that the saliva and excess air can be evacuated therefrom at pleasure, without danger of any of the noxious gases or fumes entering the mouthpiece.

In the accompanying drawings Figure 1 is a vertical section through the body of the mouthpiece and the saliva trap; Fig. 2 is a horizontal section through the body of the mouthpiece on the line 2—2, Fig. 1; Fig. 3 is a horizontal section on the line 3—3, Fig. 1; and Fig. 4 is a sectional detail of a modified form of construction illustrating the principle of the control passage from the mouthpiece to the trap.

The improved saliva and air release trap can be applied to practically any form of mouthpiece used with apparatus of the kind described. In the drawings one standard form of mouthpiece is illustrated. This comprises the body portion 5 provided on one side with the orifice 6 from which extends the usual trumpet or mouthpiece proper 7 which is applied to the mouth of the user. One end of the body is provided with a connection 8 for the inhalation tube and at its opposite end with a connection 9 for the exhalation tube. Between these connections and the chamber 10 in the body of the device are diaphragms 11 provided with openings 12 surrounded by seats with which cooperate disk valves 13 which are held in operative relation to their seats by means of wire cages or spiders 14. Preferably these valves are thin mica disks which will seat and unseat with the reversal of current of air through the device. The two valves are shown as oppositely arranged, for an obvious reason.

The parts so far described are already known in the art, and the particular con-

struction of these parts illustrated have been chosen merely to show one form of mouthpiece to which the improvements can be applied. The improvements will now be described.

The bottom of the body 5 is provided with an opening 16, and extending downwardly from said body is a casing 17, preferably cylindrical and of the same diameter as the opening 16, and hermetically attached to the body and having its lower end closed by means of the head 18 having a threaded connection in the lower end of the casing 17, with the interposition of a gasket 19 to make a tight joint at this point. Within the casing 17, slightly below its upper end is a diaphragm or partition 20 hermetically joined to the casing and provided with an opening in which is hermetically secured the upper end of the saliva discharge conduit or pipe 21. In the form shown in Fig. 1 the lower end of the conduit 21 is connected to an opening in the top of a horizontal disk 22 which is provided within its body with a horizontal passage 23 communicating with an opening 24 located centrally of the disk 22 and opening on the upper surface thereof, which opening is surrounded by a valve seat 25 with which cooperates a valve 26, which is shown in the form of a mica disk held in operative relation to the valve seat by the wire spider or cage 27. The disk 22 is provided with one or more openings 28 therethrough which form a communication from the space 29 between the diaphragm 20 and disk 22 and the chamber 30 in the lower end of the casing 17, which latter chamber forms the trap for the saliva.

To permit the discharge of the saliva or air from this trap at pleasure, the head 18 closing the lower end of the casing 17 is provided with one or more discharge openings 31, shown as a series of openings arranged in a circle around the center of said head, and which openings are surrounded by an upwardly projecting valve seat 32 with which cooperates a disk valve 33 provided with a stem 34 projecting through the head 18 and provided at its lower end with a head or abutment by means of which said valve can be lifted from its seat to permit the discharge of the saliva or air from the chamber 30. This valve is held to its seat by means of a helical spring 35 interposed be-

tween the valve and a perforated disk 36 extending transversely of the chamber 30.

It will be observed that the opening 16 in the bottom of the body 5 of the mouthpiece extends laterally somewhat farther than the ends of the breathing opening 6 so that the saliva which enters the mouthpiece will be sure to drop down into the pocket formed by said opening 16, and therefore will escape through the conduit 21. This conduit leads downwardly, and then horizontally, and finally upwardly, being controlled by the automatically operating valve 26. The saliva or air passes through this conduit, past the valve 26, into the space 29, and thence through the openings 28 in disk 22 into the chamber 30, from which it can be discharged at pleasure by lifting the valve 33. No noxious gases however can enter the body of the mouthpiece because the disk valve 26 will close the instant that a current of air or gas tends to pass upwardly through the trap.

The conduit formed by the tube 21 and passage 23 and opening 24 in the disk 22 forms in effect a trap whose principle is embodied in the simplified construction shown in Fig. 4, in which this trap is formed by a piece of pipe 21^a attached in the diaphragm 20, as in Fig. 1, and bent sidewise and then upwardly with its upper end forming a valve seat controlled by valve 26.

The trap described can be attached to any form of mouthpiece. It is of simple construction, insures the collection of all the saliva, and permits of its discharge, or the discharge of excess air, at the will of the user, and in a manner to avoid all possibility

of noxious gases entering the body of the mouthpiece. Various changes obviously can be made in the form and construction of the parts.

I claim:

1. A mouthpiece for breathing apparatus comprising a body, a chamber depending therefrom and provided with a discharge orifice, a passage connecting the body with said chamber, a non-return check valve in said passage, and a hand opening automatically closing relief valve controlling the discharge orifice from the chamber.

2. A mouthpiece for breathing apparatus comprising a body, a chamber depending therefrom and provided with a discharge orifice, a hand opening automatically closing relief valve controlling said discharge orifice, a conduit leading downwardly from the body and then extending horizontally and upwardly, and a gravity closing check valve controlling the inner end of said conduit.

3. A mouthpiece for breathing apparatus comprising a body, a chamber depending therefrom and provided in its bottom with a discharge orifice, a hand opening automatically closing relief valve controlling said discharge orifice, a conduit extending downwardly from the chamber in the mouthpiece into said casing and having an upwardly extending branch opening into the chamber, and a gravity seating disk cooperating with the upwardly extending branch of said conduit.

In testimony whereof, I have hereunto set my hand.

JOHN T. RYAN.