Dec. 10, 1957 L. FERRARO 2,815,751

BREATHING VALVE FOR A SUBMARINE MASK

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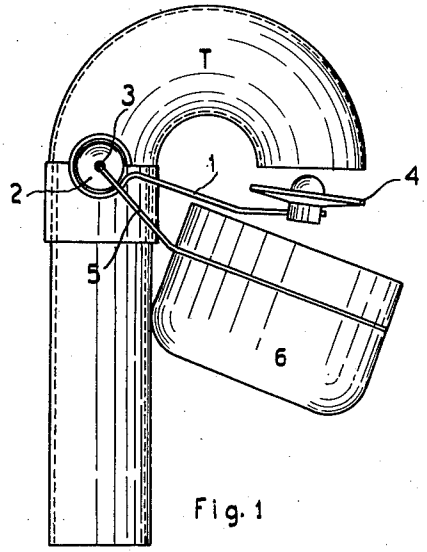
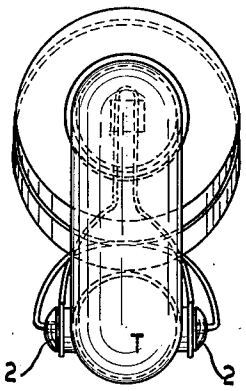


Fig. 1

Fig. 2



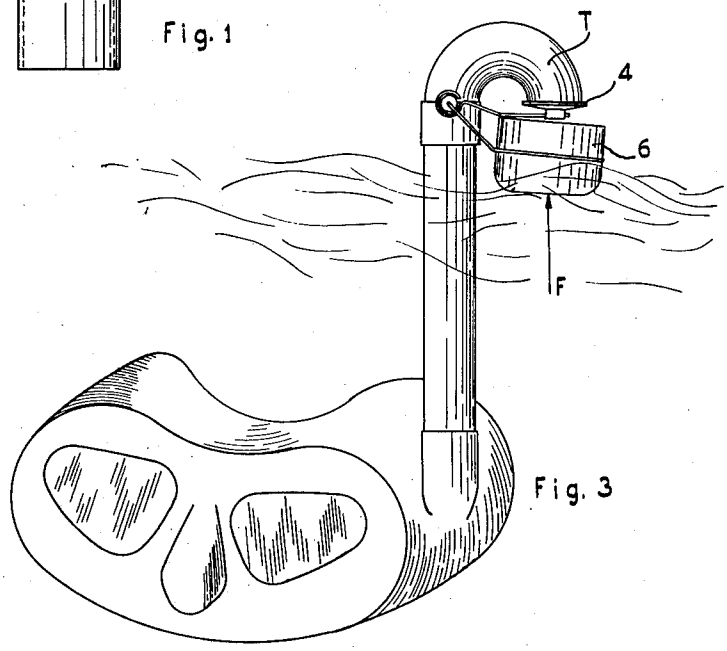


Fig. 3

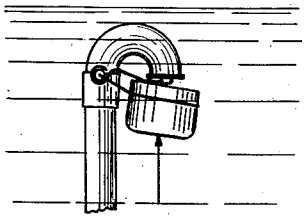


Fig. 4

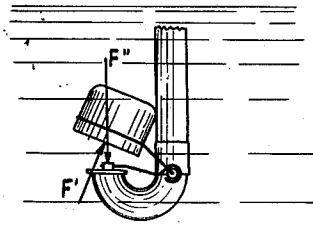


Fig. 5

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BREATHING VALVE FOR A SUBMARINE MASK

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1 Claim. (Cl. 128—145)

The present invention relates to a breathing valve for an underwater mask and more particularly to a valve which provides positive means for preventing water from entering the mask irrespective of the position of the valve.

Valves are known which are, applied to the breathing tube, the main feature of which is the provision of a floating body connected to the closing device of the tube. It appears that defective functioning frequently occurs, as, for example, during turns while swimming. Due to the buoyancy of the floating body, it parts from the orifice of the tube and also from the closing plug so that the tube may still be open, when it should be closed, as is necessary for preventing water from entering the mask.

To overcome these disadvantages a valve is provided in the present invention, which comprises a floating body and a closing device, which are independent from one another.

The closing device is made of a material which is heavier than water, in such a way, that when the device is in the air, due to its weight, the breathing orifice is left open. In water due to the weight of the closing device, the latter force being also augmented by the pressure of the water, the breathing orifice is closed.

According to these principles, the subject valve comprises a plug or closing device, which is fitted upon an oscillating arm, and a buoyant body, which also is similarly fitted on an oscillating arm, the position of which is parallel to the former arm, the pivoting axis of both arms being fitted on the breathing tube and this axis being the same for both arms, whereby each of these arms can operate independently from one another.

The attached drawing represents schematically the present invention, the arrangement being selected out of many possible other arrangements, wherein:

Fig. 1 represents a side-view of a valve, as fitted to a breathing tube.

Fig. 2 is a plan view.

Fig. 3 shows the valve on a breathing tube, as operating on a submarine mask.

Fig. 4 shows a view illustrating the functioning of the valve.

Fig. 5 represents another view also illustrating the functioning of the same valve.

In the above figures, an oscillating arm 1, swings about hub 2, which is built on union T of the breathing tube. Mounted on arm 1 is a disc-shaped closing device 4 which swings about point 3. Device 4 is made of a material heavier than water for reasons which will become more fully apparent hereinafter. There is also pivoted at point 3 an arm 5 having buoyant body 6 disposed on the outer end thereof.

It is clearly visible from the described arrangement, that both closing device 4 and float 6, though pivoting practically about the same point, can operate independently from each other, and it follows that the valve will function as follows: Under normal conditions (Fig. 3) the force F, which represents the buoyancy, will draw floating body 6 upwards whereby by means of device 4, the breathing tube T will be closed (Figures 3 and 4). It follows that in case special turns are taken by the swimmer, for instance, when swinging his body in a revolving movement, the position assumed by the breathing tube will be as illustrated in Fig. 5, whereby the floating body, under action of force F', will part from the closing device and reach the position shown in the figure. However, plug 4, due to its own weight, and its action which is reinforced by the pressure of the water in the direction F, will keep the orifice of the tube closed.

It is clear that in the intermediate positions between the arrangement as shown in Fig. 3 and position shown in Fig. 5, the forces acting on the float and on the plug will from time to time effect alternate movements on the valve, with frequent closing, when necessary. By virtue of this construction the presently described mask is a highly efficient one in under-water swimming.

It is understood that the practical constructive forms adopted for the above described valve can be varied without departing from the spirit of the invention as defined in the following claim.

I claim:

A breathing valve for use with submarine masks comprising a breathing tube, a closing device, an arm for pivotally mounting said closing device on said breathing tube, a float, and a second arm independent of said first-named arm for pivotally mounting said float on said breathing tube, said first and second arms being pivoted to said breathing tube about a single point.

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