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UNDERWATER BREATHING APPARATUS

Filed Aug. 10, 1964

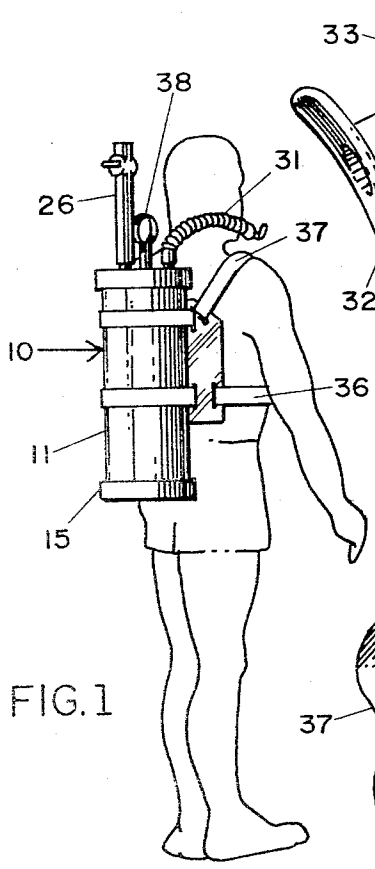


FIG. 1

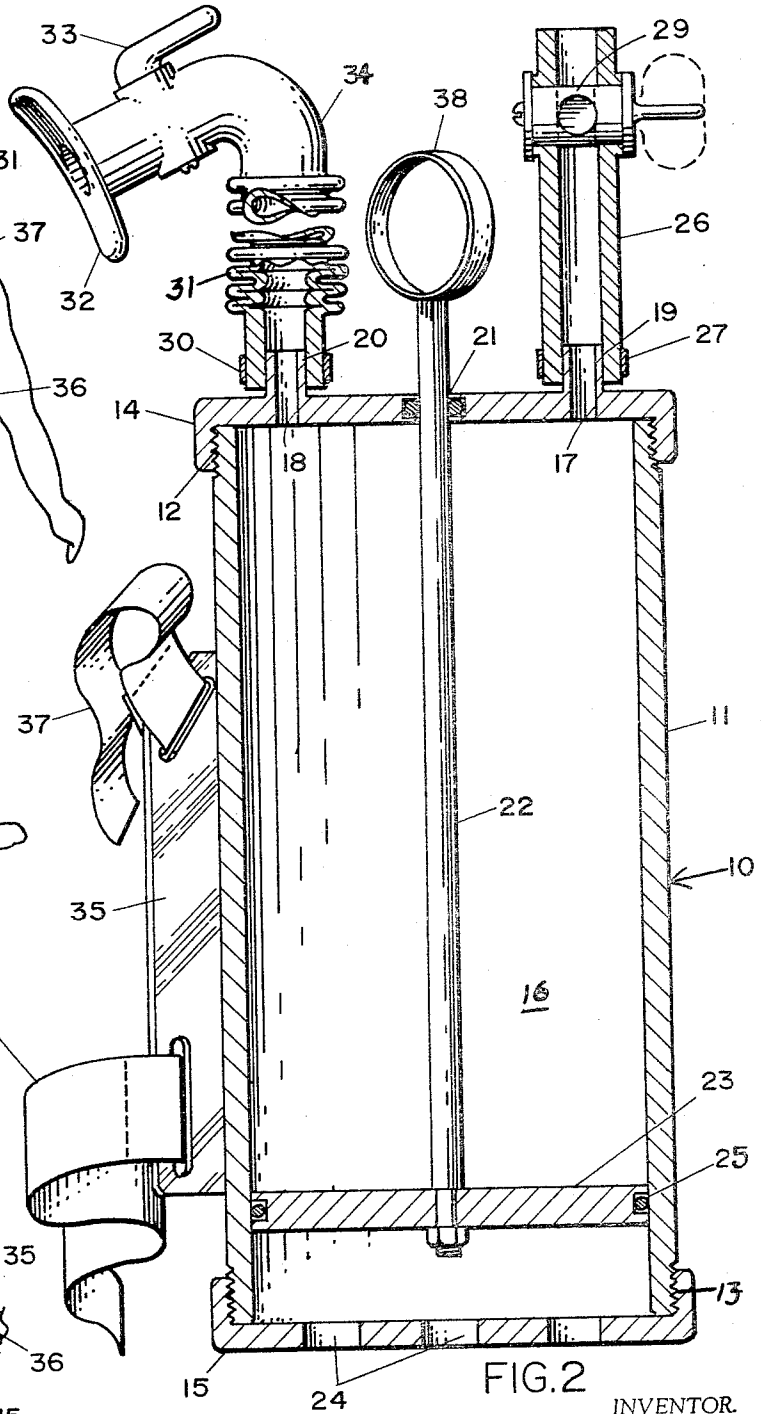


FIG. 2

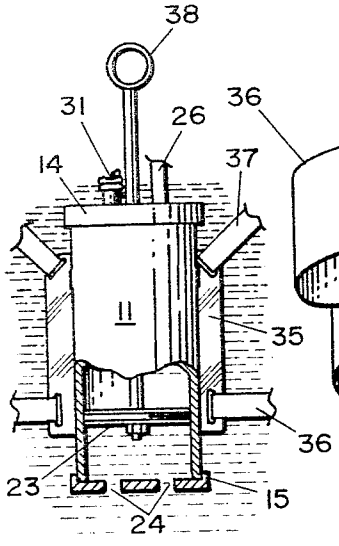


FIG. 3

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UNDERWATER BREATHING APPARATUS

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This invention relates to underwater breathing apparatus but is more particularly directed to such an apparatus which can be instantly recharged with fresh air while the person remains in the water.

A principal object of the present invention is to provide an underwater breathing apparatus which has a reservoir of air that can be easily and instantly replenished by the person using the apparatus without leaving the water.

Another object of the present invention is to provide an underwater breathing apparatus which permits a person to remain under water a relatively long period of time and recharging the apparatus with fresh air by merely coming to the surface and pumping by hand fresh air into the apparatus.

A further object of the present invention is to provide an underwater breathing apparatus which is simple in construction, inexpensive in cost, most effective to permit a person to stay underwater as much as ten minutes and readily recharge my device with fresh air.

With these and other objects in view, the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming a part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the inventions as expressed in the appended claims.

In the drawing:

FIGURE 1 is a perspective view of my under water breathing device shown in position on a person using same.

FIGURE 2 is a cross sectional view of my under water breathing device.

FIGURE 3 is a side elevational view of my under water breathing device shown under water and partially broken away.

Referring to the drawing wherein like numerals are used to designate similar parts throughout the several views, the numeral **10** refers generally to my underwater breathing apparatus which consists of a cylindrical tank or reservoir **11** for containing the air that is to be utilized by the swimmer while he is below the surface of the water. The tank **11** is provided with threaded portions **12** and **13** at the ends thereof for threadedly receiving a top cover **14** and a bottom cover **15** to form an enclosed air chamber **16**. The top cover **14** is provided with threaded openings **17** and **18** for receiving nipples **19** and **20**, respectively, in addition to a bore **21** being positioned in the cover **14** for slidably receiving a piston rod **22** on the end of which is a piston **23** fitted in the cylinder **11**. At the free end of the piston rod **22** beyond the top cover **14** is a charging ring **38**.

The bottom cover **15** is provided with a plurality of openings which act as water scuppers to permit water to enter and leave the chamber **16** on one side of the piston **23** as air is discharged or received in the chamber **16** on the other side of the piston **23** as is explained hereinafter.

To prevent the leakage of water past the piston **23** the latter is provided with a rubber sealing ring **25**. A relatively stiff or inflexible rubber tubing **26** is secured to

the free end of the nipple **19** by a hose clamp **27**. The tubing **26** which extends erectly above the tank **11** is provided at its free end with a stop cock valve **29**. By opening and closing the stop cock valve **29**, the flow of air from the tank **11** to the atmosphere and vice versa is controlled thereby.

The nipple **20** has a hose clamp **30** mounted thereon to secure one end of a length of flexible tubing **31** which is provided at its free end with a nipple **34** to which a conventional mouth piece **32** for breathing is secured. A stop cock valve **33** is positioned on the nipple **34** between the mouth piece **32** and the free end of the flexible tubing **31** to control the flow of air between the air reservoir **16** and the mouth piece **32**.

To counterbalance the buoyant effect of the tank **11**, a weighted mounting bracket plate **35** is fastened to the tank **11** with conventional waist straps **36** and shoulder straps **37** extending from each edge of the plate **35**. The straps **36** and **37** are provided with the usual buckles or fastening members to secure the apparatus **10** on the back of the person using the device **10**.

My underwater breathing apparatus **10** is intended to supplement the normal capacity of air in a person's lungs for a relatively short period so that the person may remain underwater up to ten minutes before the necessity to come to the surface and replenish the air in the reservoir **16**. The apparatus **10** is placed on a person's back with the waist straps **36** and the shoulder straps **37** properly positioned and fastened about the person's body to place the tubing **26** upright with the nipple **29** abovet he person's head. The flexible tubing **31** will extend over the person's shoulder with the mouth piece **32** in proximity of the person's mouth. Before the mouthpiece is placed in the person's mouth, the tank **11** must be charged with fresh air. This is done by the person reaching over his shoulder, opening the stop cock **29** and grasping the charging ring **38**. Upon pulling upwardly on the charging ring to expel all of the air from the chamber **16** in the tank **11** through the tubing **26**. Then the person pushes downwardly on the charging ring to place the piston to its lowermost position causing air to be taken from the atmosphere to fill the chamber **16**. The stop cock valve **29** is then closed.

The person then opens the stop cock valve **33** and places the mouth piece **32** into his mouth. When the person goes underwater he commences breathing in and out through the mouthpiece **32**. As he swims about under water the piston **23** will be subjected to the water pressure and will cause the piston **23** to slide inwardly placing the air in the chamber **16** under the same pressure. This then permits the person who is underwater to breath the air in the tank **11** with ease since the air in the tank **16** will be under the same water pressure as the body and lungs of a person using the apparatus. After a period of some ten minutes depending upon the capacity of the tank **11**, the air in the tank **11** will have been breathed in an expelled back into the tank **11**. The person then comes up to the surface of the water, opens the stopcock **29**, pulls upwardly on the charging ring **38** and then downwardly to its original position to recharge the tank **11** with fresh air. The stop cock **29** is closed and the person is ready to go under water again for another similar period. This cycle of operation may be continued as long as the person desires to swim underwater.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An underwater breathing apparatus comprising a tank, said tank having a cover at each end mounted thereon to form an air chamber, a piston slidably mounted on said tank, one of said covers having a plu-

rality of openings, a piston rod secured at one end to said piston slidably mounted in one of said openings, a charging member mounted on the free end of said piston rod, an inflexible tube mounted on another of said opening in said one of said covers, a valve mounted on the free end of said inflexible tube controlling the flow of air into and from said tank, a flexible tube secured to another of said openings, a mouth piece mounted at the free end of said flexible tube, and at least one opening in the other of said covers permitting the flow of water into said tank and against said piston, subjecting said air in said air chamber to the pressure of said water.

2. An underwater breathing apparatus comprising a tank, said tank having a cover at each end mounted thereon to form an air chamber, a piston slidably mounted on said tank, one of said covers having a plurality of openings, a piston rod secured at one end to said piston slidably mounted in one of said openings, a charging member mounted on the free end of said piston rod, an inflexible tube mounted on another of said opening in said one of said covers, a valve mounted on the free end of said inflexible tube controlling the flow of air into and from said tank, a flexible tube secured to another of said openings, a mouth piece mounted at the free end of said flexible tube, and at least one opening in the other of said covers permitting the flow of water into said tank and against said piston, subjecting said air in said air chamber to the pressure of said water, a weighted bracket secured to said tank and a plurality of straps secured to said weighted bracket for removably securing said tank to the back of a person.

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