Nov. 20, 1962 G. L. MILLER 3,064,646

BREATHING APPARATUS

Filed Oct. 15, 1958

Fig. 2.

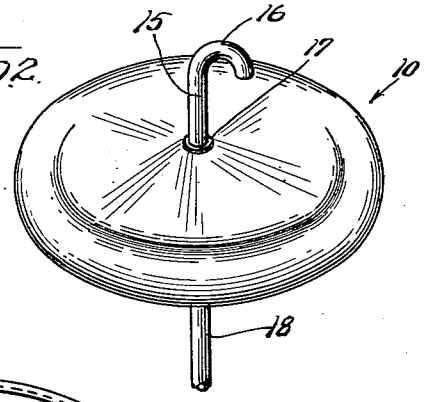


Fig. 3.

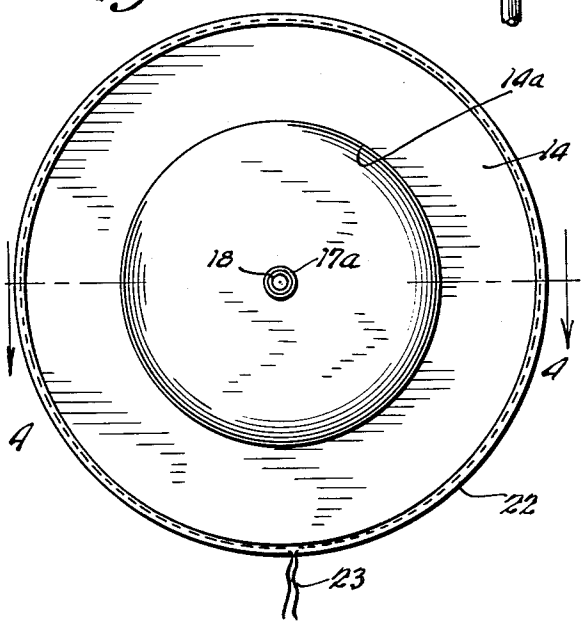


Fig. 4.

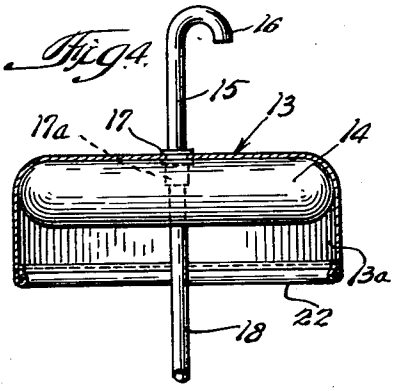


Fig. 5.

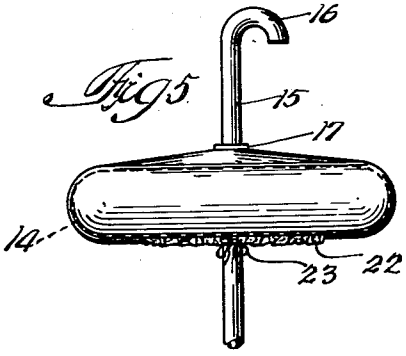
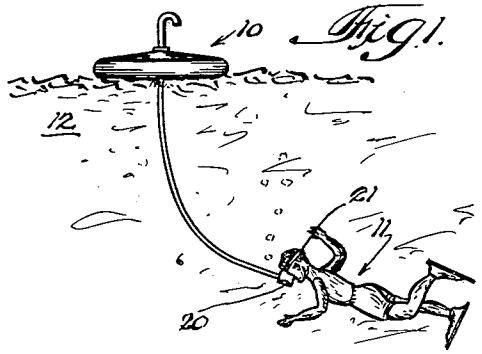


Fig. 1.



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BREATHING APPARATUS

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This invention relates to a brathing apparatus and, more particularly, to an apparatus adapted for use by a swimmer to facilitate remaining submerged for extended periods of time.

Underwater swimming and exploration has become increasingly popular for the amateur swimmer and, in many geographical regions, is a highly developed sport possessed of intrigue, fascination, and highly educational virtues. The sport is one which can be enjoyed by young and old alike.

Various apparatus of this type have heretofore been proposed; however, because of design, they are possessed of one or more of the following shortcomings: (*a*) the apparatus is bulky and awkward to handle; (*b*) the apparatus seriously curtails the activities of the user thereof as to the depth and time of submersion permissible, and the extent of movement; (*c*) the apparatus is of costly and complex construction and capable of use by one possessed of a high degree of swimming skill; and (*d*) the apparatus is possessed of dangerous potentialities and requires the exercise of a high degree of care when being used.

Thus, it is one of the objects of this invention to provide an apparatus which is not beset with the aforementioned shortcomings.

It is a further object of this invention to provide an apparatus which is readily portable, effective in operation, and inexpensive to produce.

Further and additional objects will appear from the description, accompanying drawings, and appended claims.

In accordance with one embodiment of this invention, a breathing apparatus is provided for use with a horizontally disposed buoyant apertured unit. The apparatus comprises a base adapted to be removably mounted on the unit. Mounted on the base, and extending upwardly therefrom, is an elongated inflexible first conduit having the upper free end thereof downwardly deflected toward the upper surface of the base and terminating a substantial distance therefrom.

Insertable through an aperture in the buoyant unit and connected in fluid seal relation with the lower end of the first conduit is one end of an elongated flexible conduit. Both the first and second conduits are impervious to the fluid in which the unit is buoyant.

For a more complete understanding of this invention, reference should be made to the drawing, wherein:

FIGURE 1 is a view, on reduced scale, showing the improved apparatus in operation.

FIG. 2 is a fragmentary perspective view of the improved apparatus in assembled relation.

FIG. 3 is an enlarged bottom view of the improved apparatus in partially assembled relation with respect to a buoyant unit.

FIG. 4 is a sectional view, on reduced scale, taken along line 4—4 of FIG. 3.

FIG. 5 is a side elevational view of the improved apparatus in fully assembled relation.

Referring now to the drawing and, more particularly to FIG. 1, the improved breating apparatus **10** is shown in use by a swimmer **11** submerged in a fluid, such as water, **12**. The apparatus **10** is provided to facilitate underwater swimming or exploration.

Apparatus **10** comprises a base **13** which, in this instance, is formed at least in part of a pliable sheet material and is adapted to be removably mounted on a buoyant unit **14** which, in this instance, is in the form of an inflatable inner tube. By reason of the pliable character of base **13**, the latter is adapted to readily conform to the contour of unit **14**.

Mounted centrally on base **13**, and extending upwardly therefrom, is an inflexible conduit or pipe **15**, which has the upper free end thereof **16** deflected in a downward direction toward the upper surface of base **13**. End **16** of pipe **15** is spaced a substantial distance above the upper surface of base **13** and, in turn, the surface of the water **12** on which the unit **13** floats. Because of its downwardly deflected configuration, the possibility of liquid passing through the pipe is minimized, notwithstanding the fact that there is considerable turbulence of the water.

The pipe **15** terminates within a connector **17** which is affixed, in this instance, to the central portion of base **13**. The central portion of base **13** may, if desired, be of thicker material than the remainder of the base and thus prevent unbalancing of conduit **15** in the event the swimmer exerts a sudden jerk on the flexible conduit **18**. The connector **17** has a downwardly extending portion **17***a* which is disposed within the central opening **14***a* of the unit **14**. Portion **17***a* of the connector **17** is provided with internal threads and is adapted to accommodate an externally threaded end of an elongated flexible conduit or pipe **18**. The length of pipe **18** is dependent upon the depth of the water in which the swimmer **11** desires to swim or otherwise maneuver.

To the lower end of pipe **18**, in this instance, is connected a mouth and/or nose-piece **20** which is adapted to be properly positioned on the face of the swimmer and held in such positioned by suitable straps **21** or the like. Pipes **15** and **18** are preferably of a lightweight fluid-impervious material. Such piece **20** may, if desired, be omitted and the lower end of pipe **18** held directly in the mouth of the swimmer.

The marginal portion **13***a* of the base **13**, in this instance, is provided with a hem **22** in which is disposed a draw-cord **23**. The cord **23**, when drawn up tightly, causes the base **13** to snugly envelop the unit **14**. Because of the pliable character of base **13** and the adjustability of draw-cord **23**, the base is adapted to accommodate buoyant units **14**, which vary widely in shape and size. When the base **13** is brought into snug engagement with unit **14**, the central portion of base **13** might be raised up slightly, as seen in FIG. 5.

Thus, it will be seen that an improved apparatus has been provided which is extremely simple and inexpensive in construction, does not interfere with the movement of the arms and legs of the swimmer, may be utilized by young and old alike, and is of material aid to the swimmer when engaged in underwater activity.

While a particular embodiment of this invention is shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. In combination with an apertured buoyant unit, a breathing apparatus comprising a detachable base mounted on said buoyant unit, said base having a pliable sheet-like marginal portion extending about the entire periphery of and effecting partial envelopment of such unit, an upright inflexible elongated first conduit mounted on said base, the upper end of said first conduit being downwardly deflected and spaced a substantial distance above the upper surface of said base when the latter is in assembled relation with such unit, releasable means cooperating with said base marginal portion for effecting retention of said

marginal portion in said unit-enveloping position, and an elongated flexible second conduit having one end thereof inserted through an aperture in such unit and removably connected in fluid seal relation to the other end of said first conduit; said first and second conduits being impervious to the fluid in which such unit is buoyant.

2. The apparatus recited in claim 1, wherein the releasable means includes a draw-cord carried on the marginal portion of said base.

3. In combination with an apertured buoyant unit, a breathing apparatus comprising a detachable base mounted on said buoyant unit, said base having an imperforate sheetlike top portion adapted to overlie said buoyant unit and close the aperture therein and a pliable sheetlike marginal portion extending about the periphery of and effecting at least partial envelopment of said buoyant unit, releasable means cooperating with said base marginal portion for effecting retention of said marginal portion in said unit-enveloping position, a connector mounted centrally in said imperforate top portion, a first conduit attached to and extending upwardly from one end of said connector and having a downwardly deflected tip spaced a substantial distance above the top portion of said base when said base is in assembled relation with said buoyant unit, and a flexible second conduit having one end thereof removably connected in a fluid seal relation to the other end of said connector.

4. In combination with an apertured buoyant unit, a breathing apparatus comprising a detachable base mounted on said buoyant unit, said base having an imperforate sheetlike top portion adapted to overlie said buoyant unit and close the aperture therein, a pliable sheetlike marginal portion extending about the periphery of and effecting at least partial envelopment of said buoyant unit, releasable means cooperating with said marginal portion for effecting retention of said marginal portion in said unit-enveloping position, and a conduit connected to said imperforate top portion and having a first relatively inflexible part extending upwardly from said imperforate top portion and a second relatively flexible part extending downwardly from said imperforate top portion, the first part of said conduit having a downwardly deflected tip spaced a substantial distance above the top portion of said base when said base is in assembled relation with said buoyant unit.

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