

United States Patent

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[73] Assignee **Under Sea Industries, Inc.**
Continuation of application Ser. No.
679,846, Nov. 1, 1967, now abandoned.

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[54] **SNORKEL**
8 Claims, 6 Drawing Figs.

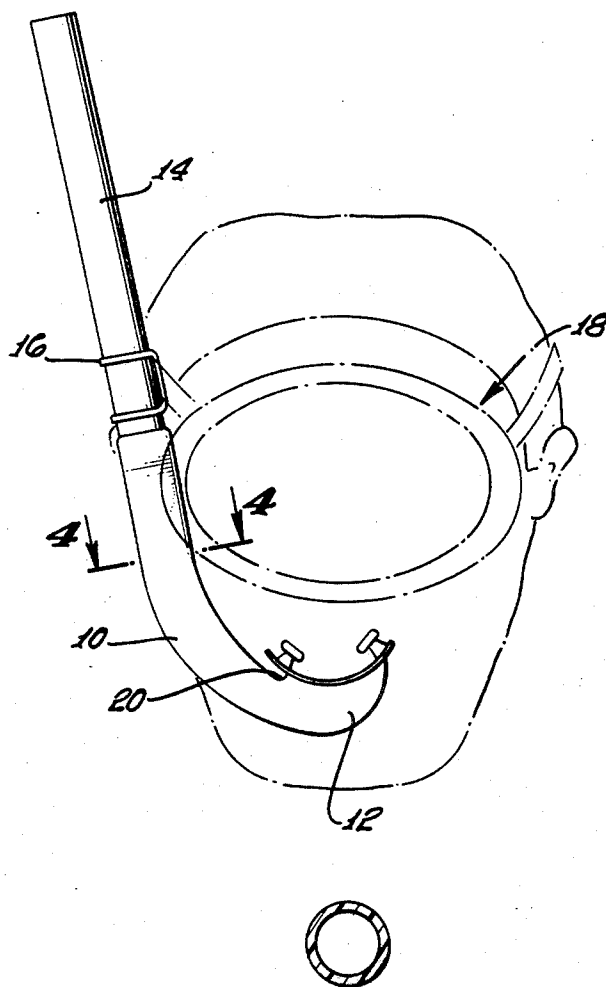
[52] U.S. Cl. 128/145 A
[51] Int. Cl. A63b 7/00
[50] Field of Search 128/145,
145 A, 145.5, 147

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ABSTRACT: The improved snorkel (FIGS. 1-4) in contrast to the prior art snorkel (FIG. 5) is shaped and designed to fit closely to the face of the wearer whereby viscous drag is minimized. Unnecessary curves in the snorkel tube are eliminated whereby minimum resistance is encountered to water being purged from the snorkel by exhalation. The feathered edge (FIG. 3) also assists in this function.



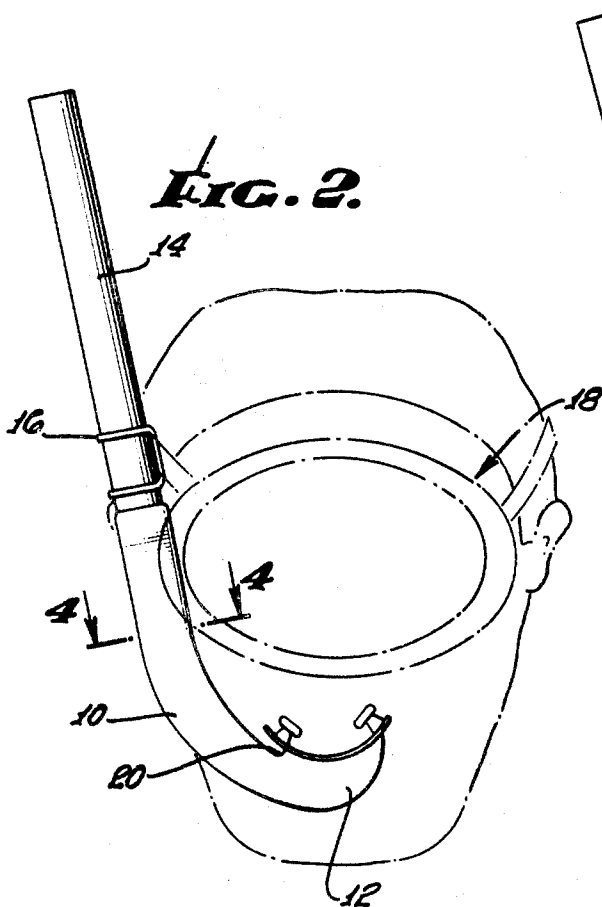
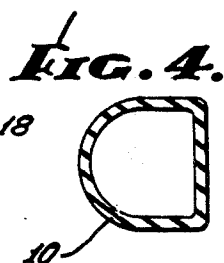
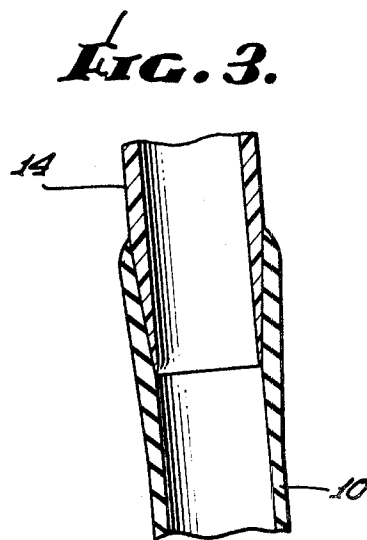
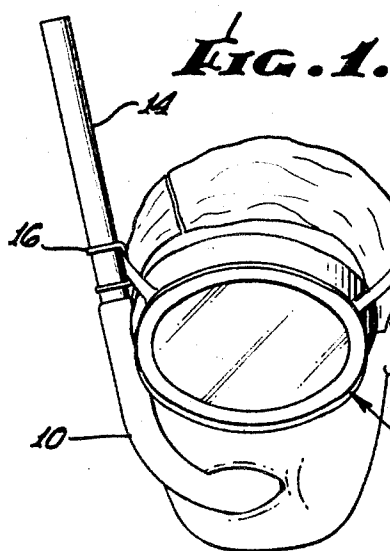


FIG. 5.
PRIOR ART

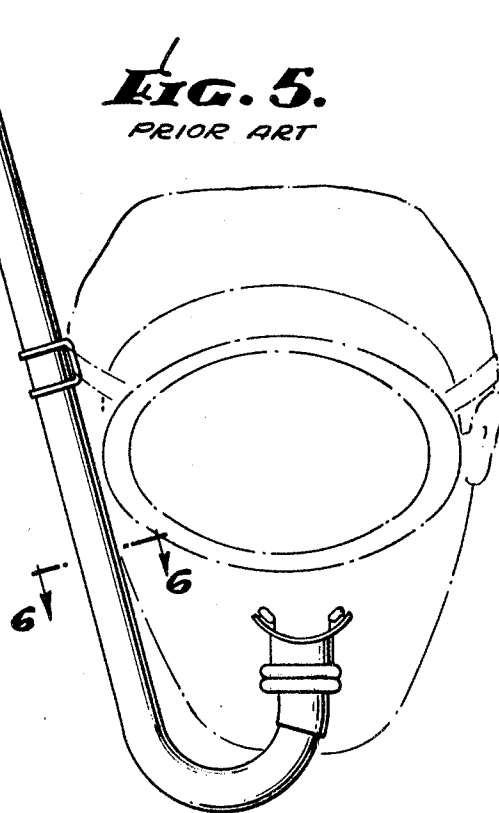


FIG. 6.
PRIOR ART



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SNORKEL

CROSS REFERENCE TO RELATED APPLICATION

This is a continuation of application Ser. No. 679,846 filed Nov. 1, 1967, now abandoned.

BRIEF SUMMARY OF THE INVENTION

This invention relates to snorkels particularly useful by skin divers and spear fishermen. A spear fisherman floats on the surface face down, using his snorkel for breathing while he observes the ocean depths for possible kills. When the fisherman decides upon pursuit, he holds his breath and dives. The snorkel goes along for the ride and fills with water. Prior snorkels substantially impede the progress of the diver. This may be due to a number of factors, all stemming from the fact that such snorkels do not fit closely to the diver's face. The projecting portions of the snorkel expose excess areas to the water with consequent viscous drag. Vibration and instability result from the fact that the snorkel is anchored only at two spaced points—one at the mask and the other at the mouthpiece. The primary object of this invention is to provide a snorkel that closely fits and essentially becomes a part of the diver's face, whereby the snorkel is stabilized against movement and whereby viscous drag is minimized.

When the diver surfaces say, following a short abortive dive, he likely will continuously maintain his surveillance of the water as the snorkel end emerges from the water. To resume breathing, the water must be purged by a vigorous exhalation. Another object of this invention is to provide a snorkel so designed as to minimize the effort required for such purging.

Another object of this invention is to provide a structural form that uniquely accomplishes both of the foregoing objects at the same time. For this purpose, the snorkel is formed so that the tube adjoining the mouthpiece extends smoothly and upwardly both to fit the diver's face and to minimize curvatures that would obstruct water flow.

This invention possesses many other advantages and has other objects which may be made more clearly apparent from a consideration of one embodiment of the invention. For this purpose, there is shown a form in the drawings accompanying and forming a part of the present specification, and which drawings are true scale. This form will now be described in detail, illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of this invention is best defined by the appended claims.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a pictorial view of a snorkel incorporating my new design and in place on the diver's face.

FIG. 2 is a front elevational view of the improved snorkel, the diver's face being shown in phantom lines.

FIG. 3 is an enlarged, longitudinal, fragmentary sectional view taken at the juncture of the tubular portions comprising a part of the improved snorkel.

FIG. 4 is an enlarged sectional view taken along a plane corresponding to line 4—4 of FIG. 2.

FIG. 5 is a front elevational view of a typical prior art snorkel.

FIG. 6 is an enlarged sectional view taken along a plane corresponding to line 6—6 of FIG. 5.

DETAILED DESCRIPTION

My improved snorkel as shown in FIGS. 1 to 4, is made in two parts. One part 10 is molded of highly flexible and conformable neoprene or other rubberlike material that is sufficiently resilient to return to a designed shape. The lower part 10 has an integrally formed mouthpiece 12 at one end and an opening at the other. The mouthpiece 12 has a flange adapted to fit inside the user's lips. The other part 14 of the snorkel is made of tubular stock material that may be a more rigid

plastic. The end of the lower part 10, as shown in FIG. 3, is telescoped over the feathered or tapered end edge of the upper part 14.

In contrast to the typical prior art snorkel shown in FIGS. 5 and 6, the lower snorkel part 10 has a configuration designed to fit closely to the face of the diver. For this purpose, the part 10 curves very gently so that the aggregate curvature from a point immediately adjacent the mouthpiece to the opposite end is approximately 90°, whereas the aggregate curvature of the prior art snorkel from the mouthpiece to the opposite end is about 180°. The lower part 10 thus can closely conform to or fit the face of the diver. Furthermore, as shown in FIG. 4, the side of the lower part 10 engaged by the diver's face is flat. A substantial area of contact is insured, especially since the part 10 is made of flexible and conformable material. A typical strap 16 looped about the upper snorkel part 14, engages the strap of the mask 18 in a typical manner. However, instead of merely anchoring the snorkel, the strap holds the part 10 in position against the diver's face.

In the prior art device and in my improved device, the mouthpiece has an opening that defines a mouthpiece axis that is substantially parallel to but offset from the main body or straight portion of the snorkel tube. The offset in both cases is approximately the same. In my improved device, the portion adjoining the mouthpiece angles or curves upwardly toward the main body of the snorkel from a point immediately adjacent the mouthpiece flange. It projects neither downwardly nor to the side.

Since the lower snorkel part 10 fits closely to the diver's face, the snorkel is substantially stabilized. Furthermore, viscous drag is materially reduced, since the total combined surface of the diver and snorkel exposed to the water is reduced.

Due to the minimized curvature of the snorkel, water is readily purged. The water need not move through sinuous paths before emerging from the open upper end. By feathering the edge of the part 14 (FIG. 3) the interior surfaces of the parts 10 and 14 merge smoothly. No sharp shoulder is formed that would impede the outward flow of the purged water.

In order to achieve the limited curvature configuration a substantial section of the snorkel is molded in contrast to the prior art device shown in FIG. 5. The snorkel angles upwardly immediately from its juncture with the mouthpiece part 12. Just enough clearance is provided at 20 to allow the corner of the mouth to fit in place.

The parts 10 and 14 could be made as a single-molded unit, but are made separately for purposes of economy of manufacture.

I claim:

1. A snorkel for use by divers or the like having a mouthpiece and a substantially straight tube part, the mouthpiece having a flange adapted to fit under the lips of the user, said mouthpiece defining an axis substantially parallel to but offset from said tube part; said snorkel having a curved portion joining the mouthpiece to said tube part that angles upwardly from a point immediately adjacent said mouthpiece flange whereby said curved portion is adapted closely to extend along the user's face to minimize friction drag and to increase stability; said curved portion having a flat surface on the side adapted to contact or oppose the user's face, the flat surface having a width that is at least a major fraction of the corresponding width of said curved portion.

2. The snorkel as set forth in claim 1 in which said curved portion has a total curvature of approximately 90°.

3. The snorkel as set forth in claim 1 in which said curved portion is made of flexible resilient material conformable to the user's facial contours.

4. A snorkel for use by divers or the like having a mouthpiece and a substantially straight tube part, the mouthpiece having a flange adapted to fit under the lips of the user, said mouthpiece defining an axis substantially parallel to but offset from said tube part; said snorkel having a curved portion joining the mouthpiece to said tube part that angles

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upwardly from a point immediately adjacent said mouthpiece flange whereby said curved portion is adapted closely to extend along the user's face to minimize friction drag and to increase stability; said curved portion having a substantially D-shaped cross section with the flat part of the "D" positioned on the inside of the snorkel to contact or be opposed to the user's face.

5. The snorkel as set forth in claim 4 in which said curved portion is made of flexible resilient material conformable to the user's facial contours.

6. The snorkel as set forth in claim 3 in which said curved portion is formed as an integral part of said mouthpiece and as a part separate from said tube part and connected thereto by telescopic engagement with the end of said portion remote from said mouthpiece flexed to receive said tube part, the end of said tube part telescoped into the end of said flexible curved portion being feathered to a sharp edge to minimize flow drag in said snorkel.

7. A snorkel having a flanged inner cheek engaging mouthpiece; a substantially straight tube portion adapted to

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extend in close proximity to and above a user's head; said substantially straight tube portion being substantially parallel to the axis of said mouthpiece and interconnected therewith by a curved tubular portion extending throughout a minor outer cheek engaging portion of its length in closely spaced substantially parallel relation to a portion of the mouthpiece flange and forming therewith a recess for receiving the corner of a user's mouth; said recess being dimensioned for substantial conformity with the thickness of the cheek at the corner of the mouth of a user; and the remainder of said curved tubular portion extending between said minor portion thereof and said substantially straight tube portion having a total curvature of not more than approximately 90° whereby the entire length of said curved tubular portion extends in close proximity to the user's face.

8. The snorkel of claim 7 wherein said curved tubular portion is made of flexible resilient material conformable to the user's facial contours.

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