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<p>(21) International Application Number: PCT/AU91/00542 (22) International Filing Date: 25 November 1991 (25.11.91) (30) Priority data: 66959/90 26 November 1990 (26.11.90) AU (71)(72) Applicant and Inventor: TARCA, Douglas [AU/AU]; Office 10, Capita Building, 175 Sturt Street, Townsville, QLD 4810 (AU). (74) Agent: CULLEN & CO.; 240 Queen Street, Brisbane, QLD 4000 (AU). (81) Designated States: AT (European patent), BE (European patent), BR, CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, KR, LU (European patent), NL (European patent), SE (European patent), US.</p>		<p>Published <i>With international search report.</i></p>
<p>(54) Title: FLOTATION DEVICE</p>		
<p>(57) Abstract</p> <p>A flotation device (10) is designed to support a user in water in a generally horizontal orientation, without substantially restricting arm and leg movement. The flotation device (10) comprises a pair of spaced-apart floats (12) which, in use, are located adjacent the sides of the user. The floats (12) are connected by a pair of web members (16, 18) which supports the torso of the user. The flotation device (10) permits the user to enjoy snorkelling and similar activities, without the exertion normally required to stay afloat in water. An underwater viewing mask (35) may be detachably connected to the flotation device (10).</p>		

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+ Any designation of "SU" has effect in the Russian Federation. It is not yet known whether any such designation has effect in other States of the former Soviet Union.

"FLOTATION DEVICE"

THIS INVENTION relates to a flotation device for supporting a user in water. In particular, the invention is directed to an inflatable snorkelling aid for supporting a snorkeller afloat to thereby minimise exertion during snorkelling and similar activities, although the invention is not limited to such application.

BACKGROUND OF THE INVENTION

Inexperienced or weak swimmers can become fatigued relatively quickly when snorkelling or engaging in a similar activity such as coral viewing. As a result, they are unable to continue these enjoyable activities as long as they otherwise would prefer. Furthermore, inexperienced or weak swimmers on becoming fatigued may be unable to return to a boat or shore, necessitating a rescue operation. Even competent swimmers often find their snorkelling activities curtailed by the exertion required to stay afloat in the water.

There are known swimming aids and flotation devices, such as tyre tubes or inflatable rings, which help maintain the user afloat. However, these swimming aids and flotation devices tend to orientate the user vertically, rather than in the horizontal position required for snorkelling, and they also restrict or hinder arm movement. Other swimming or flotation aids, such as surfboards and air mattresses, support the user in a horizontal position but still impede or restrict arm and/or leg movements by the user.

Many persons, although wishing to engage in snorkelling activities, particularly when visiting reefs and other scenic marine locations, are afraid to do so. Inexperienced or weak swimmers tend not be confident in the water and are often nervous about immersing their face underwater to view fish and coral, and/or have difficulties in breathing effectively. Many are also

unable to breathe through a snorkel, or do not feel comfortable doing so.

It is an object of the present invention to provide an improved flotation device which will substantially overcome or ameliorate at least some of the abovementioned disadvantages.

SUMMARY OF THE INVENTION

In one broad form, the present invention provides a flotation device suitable for supporting a user afloat in water in a generally horizontal position, the flotation device comprising a pair of spaced elongate floats which, in use, are located at either side of the user's torso, and a body support means extending between the floats.

Preferably, the floats are of such length as to extend generally from the swimmer's armpit to the hip region in use. The device may be made in several sizes, e.g. a children's size and an adult size, to suit different users.

Typically, the floats are inflatable tubes of plastics material. Such tubes can be manufactured economically, and packaged and stored compactly in deflated form. The inflatable tubes may have internal baffles to divide each float into a plurality of buoyancy chambers to increase the stability of the swimming aid. The tubes may be provided with check valves of the type commonly found on inflatable swimming aids.

Alternatively, the floats may comprise solid buoyant material such as a foamed plastic, e.g. expanded polystyrene, or natural buoyant material such as cork or balsa wood.

The body support means preferably comprises a pair of spaced web members extending transversely between the floats. The web members may be inflatable and may also be provided with baffles and air valves. Preferably, at least one of the web members is provided with an adjustment mechanism to vary the distance between

the floats so as to allow the flotation device to suit a range of body sizes.

The spaced web members of the preferred embodiment include a forward web and a rear web, the forward web in use supporting generally the chest portion of the user and the rear web supporting generally the hip/waist portion of the user. Preferably, the forward web is of angled or curved configuration and the rear web is provided with the adjustment means.

In a preferred embodiment, the flotation device is provided with an underwater viewing mask, suitably connected to the leading portion on the angled forward web. The viewing mask is so constructed and connected to the flotation device that, in use, it extends below water while its eyepiece remains above the surface of the water. Preferably the viewing mask is detachably connected to the flotation device.

In use, the user lies face down on the body support means between the spaced floats, thereby being suspended afloat effortlessly in a generally horizontal position, with unrestricted arm and leg movement. The location of the floats on either side of the user's body helps stabilize the user. Further, the detachable mask allows the user to view objects underwater without immersing his head in the water.

The present invention allows non-swimmers or poor swimmers, or others who lack confidence in water, to practise and enjoy snorkelling, underwater coral viewing and similar activities. Further, it permits the user to practise such activities for longer periods of time as it obviates or minimises the effort required to stay afloat.

In order that the invention can be more fully understood and put into practice, a preferred embodiment thereof will now be described by way of example with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a plan view of the flotation device

of the preferred embodiment without a viewing mask;

Fig. 2 is an exploded view of a portion of the device of Fig. 1, with a detachable viewing mask; and

5 Fig. 3 is a perspective view of the flotation device of the preferred embodiment in use.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in Fig. 1, the flotation device 10 comprises a pair of spaced, elongate inflatable floats 12. The floats 12 are provided with check valves 14 to permit inflation. The floats 12 may be subdivided internally by baffles into separate buoyancy chambers. Typically, the floats 12 are made of flexible, gas impermeable, plastics material. The floats may be of constant cross-section or tapered, of circular or other suitable cross-section, and formed of single or plural tubes.

Extending transversely between the floats 12 are two spaced webs, a forward web 16 and a rear web 18. Each web is secured at each end to the floats 12 and may be formed integrally therewith. The forward web 16 is curved or angled in shape which, in use, supports the upper portion of the swimmer's chest while allowing freedom of arm movement. The forward web 16 is also inflatable and may be provided with a separate air valve 17, or in fluid communication with either or both floats 12.

The rear web 18 is preferably adjustable in length. (Alternatively, the flotation device 10 may be made in different sizes). In the illustrated embodiment, the web 18 is divided into two portions 20, 22, the adjacent ends 25, 26 of which are provided with reinforced holes 30 which may be laced together by cord 32. In this manner, the spacing between ends 25, 26, and hence the length of web 18, may be varied to suit users of different body sizes.

As shown in Fig. 2, an underwater viewing mask 35 may be detachably connected to the forward web 16.

The viewing mask is provided with a flange 45 which may be attached to a front flange 36 on the forward web 16 by press studs 46.

5 The viewing mask 35 comprises a generally tubular housing 42 having a sealed glass or perspex lens plate 37 at the bottom thereof, and an eyepiece 39 at its top as shown in Fig. 2. In use, the lens plate 37 is located below the water surface to avoid surface refraction and reflection, while the eyepiece 39 is
10 located above the surface of the water. The use of the viewing mask 35 allows the user to view underwater objects clearly without immersing his head in the water.

Fig. 3 illustrates the flotation device 10 in use. The floats 12 are located on either side of the
15 user's body and extend from generally under the armpit to the hip of the user, thereby maintaining the user in a stable horizontal floating position. The curved forward web 16 supports the user's chest and allows free arm movement, while the rear web 18 supports the waist
20 portion of the user. The flotation device may be used either with or without the viewing mask 35. In the latter case, a conventional diving mask (and snorkel) may be worn by the user.

The foregoing describes only one embodiment of
25 the present invention and modifications obvious to those skilled in the art, can be made thereto without departing from the scope of the present invention as defined in the following claims. For example, the floats 12 may be of solid buoyant material.

30 Further, an opening may be provided in the forward web in which the user may insert a conventional underwater or diving mask worn by the user, or a custom mask may be fitted to the opening.

Although the invention has been described with
35 particular reference to its use in snorkelling activities, it has wider application. For example, it can be used in swimming tuition by maintaining the pupil

afloat while the pupil gains confidence and swimming expertise.

CLAIMS:-

1. A flotation device suitable for supporting a user afloat in water in a generally horizontal position, the flotation device comprising a pair of spaced elongate floats which, in use, are located adjacent the sides of the user, and body support means extending between the floats.
2. A flotation device as claimed in claim 1, wherein each float comprises an inflatable tubular member.
3. A flotation device as claimed in claim 2, wherein the body support means comprises a pair of spaced web members extending transversely between the elongate floats.
4. A flotation device as claimed in claim 3, wherein at least one of the web members is inflatable.
5. A flotation device as claimed in claim 4, wherein at least one web member is of adjustable length.
6. A flotation device as claimed in claim 1 wherein each float is made substantially of solid buoyant material.
7. A flotation device as claimed in claim 1, further comprising an underwater viewing mask mounted thereto.
8. A flotation device as claimed in claim 7, wherein the viewing mask is detachably connected to the body support means.
9. A flotation device as claimed in claim 7, wherein the viewing mask comprises (a) a generally tubular housing having a sealed lens member at the bottom thereof which, in use, is located below the water surface, and an eyepiece at the upper end thereof, and (b) attachment means for detachably connecting the viewing mask to the flotation device.
10. A flotation device as claimed in claim 3, wherein the forward web member is of angled configuration.

11. A flotation device suitable for supporting a user afloat in water in a generally horizontal orientation, the device comprising a pair of generally parallel, spaced-apart elongate floats which in use are located adjacent the sides of the user, and body support means extending between the floats for supporting the torso of the user in water.

Fig.1.

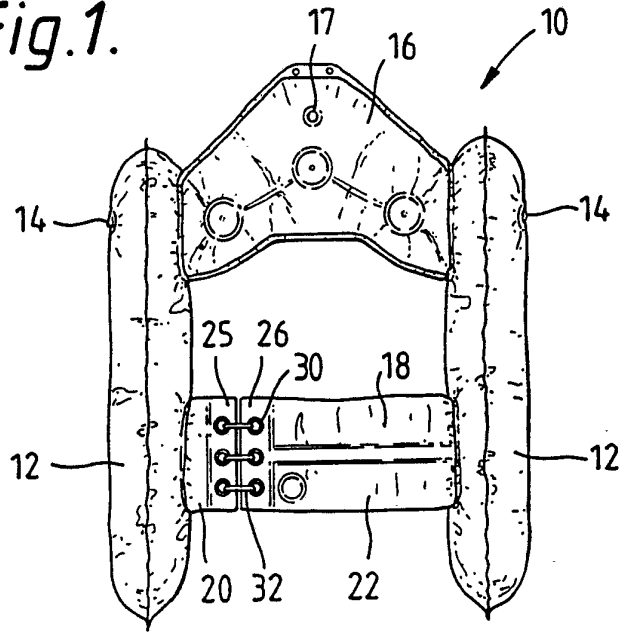
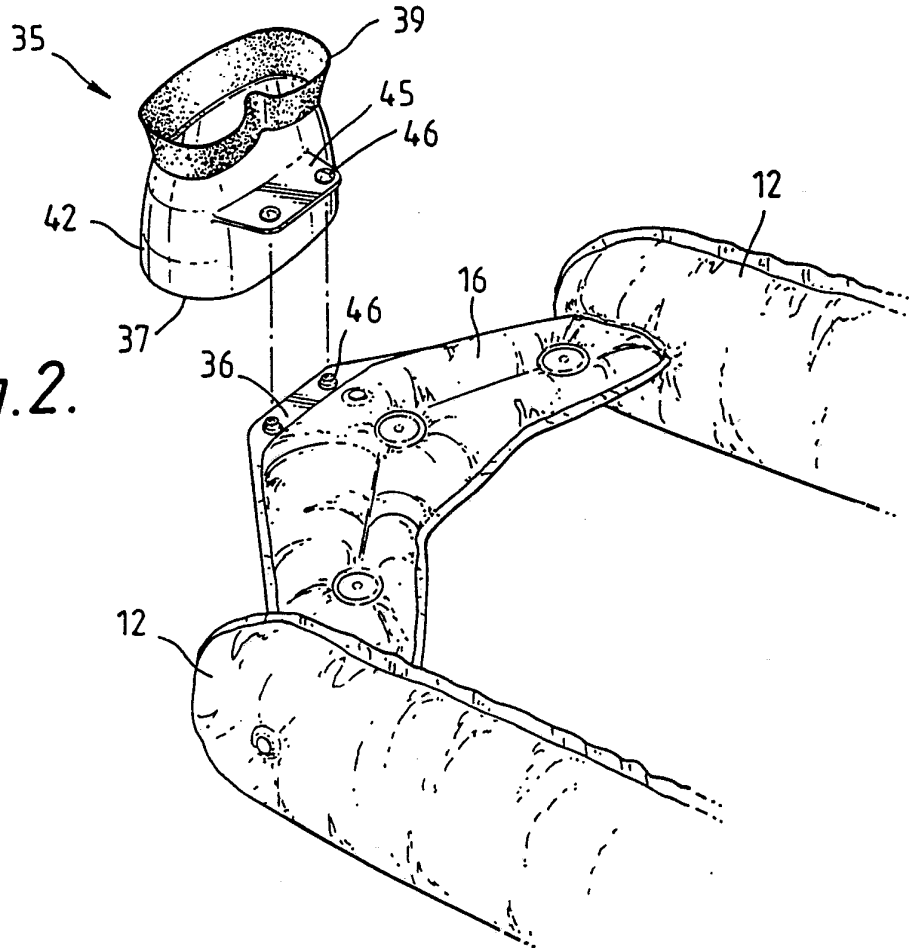


Fig.2.



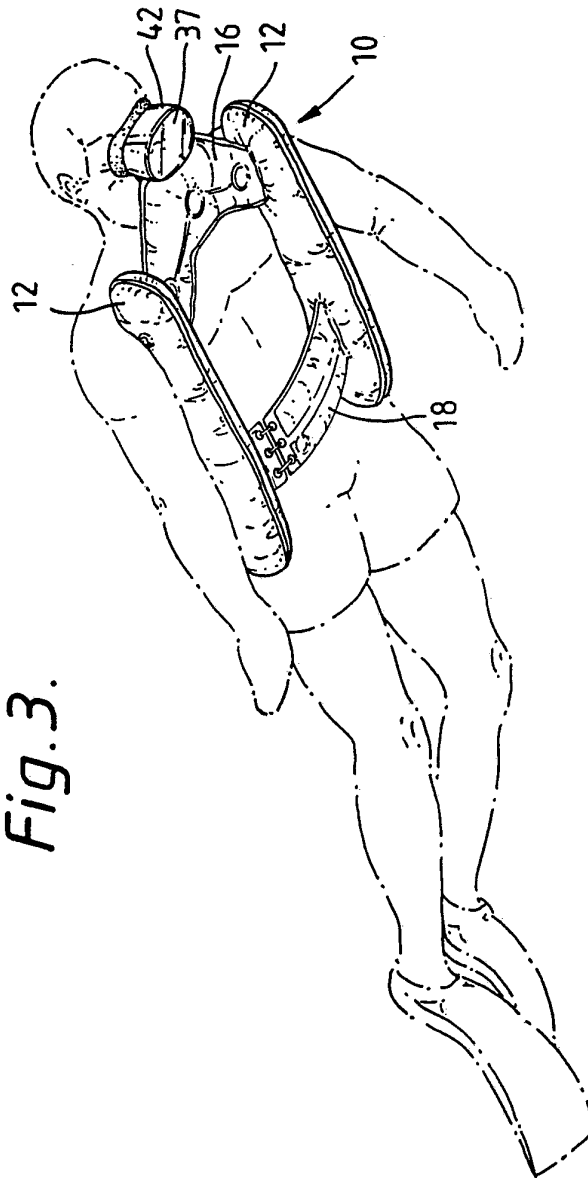


Fig. 3.

INTERNATIONAL SEARCH REPORT

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶				
According to International Patent classification (IPC) or to both National Classification and IPC Int. Cl. ⁸ A63B 31/00				
II. FIELDS SEARCHED				
Minimum Documentation Searched ⁷				
Classification System	Classification Symbols			
IPC US Cl.	A63B 31/00, B63C 9/08, 9/11, 9/12, 9/125, B63B 35/73 441/106, 441/108, 441/129, 441/132			
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸				
AU : IPC as above				
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹				
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate of the relevant passages ¹²	Relevant to Claim No ¹³		
X	DE,A, 2321610 (MEHRBREY) 14 November 1974 (14.11.74) See the whole document, in particular claim 1 and figure 1.	(1,2,3,5,11)		
X	US,A, 3056979 (HOLLADAY) 9 October 1962 (09.10.62) See column 2, line 13 to column 3, line 28.	(1,2,3,11)		
X	DE,A, 861808 (GEIER) 13 November 1952 (13.11.52) See the whole document.	(1,2,11)		
X	US,A, 1798479 (MARGOLITH) 31 March 1931 (31.03.31) See page 1, line 55 to page 1, line 75.	(1,11)		
<p>* Special categories of cited documents :¹⁰</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>"A" Document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; vertical-align: top;"> <p>"T" Later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>"A" Document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" Later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
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IV. CERTIFICATION				
Date of the Actual Completion of the International Search 5 March 1992 (05.03.92)	Date of Mailing of this International Search Report 13 MARCH 1992 (13.03.92)			
International Searching Authority AUSTRALIAN PATENT OFFICE	Signature of Authorized Officer J.W. THOMSON <i>John Thomson</i>			

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V. OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claim numbers ..., because they relate to subject matter not required to be searched by this Authority, namely:
2. Claim numbers ..., because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. Claim numbers ..., because they are dependent claims and are not drafted in accordance with the second and third sentences of PCT Rule 6.4a

VI. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ²

This International Searching Authority found multiple inventions in this international application as follows:

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.
2. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:
3. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:
4. As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

- The additional search fees were accompanied by applicant's protest.
- No protest accompanied the payment of additional search fees.