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(54) **SURFBOARD AND WATER SPORTS DEVICE**

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(57) **ABSTRACT**

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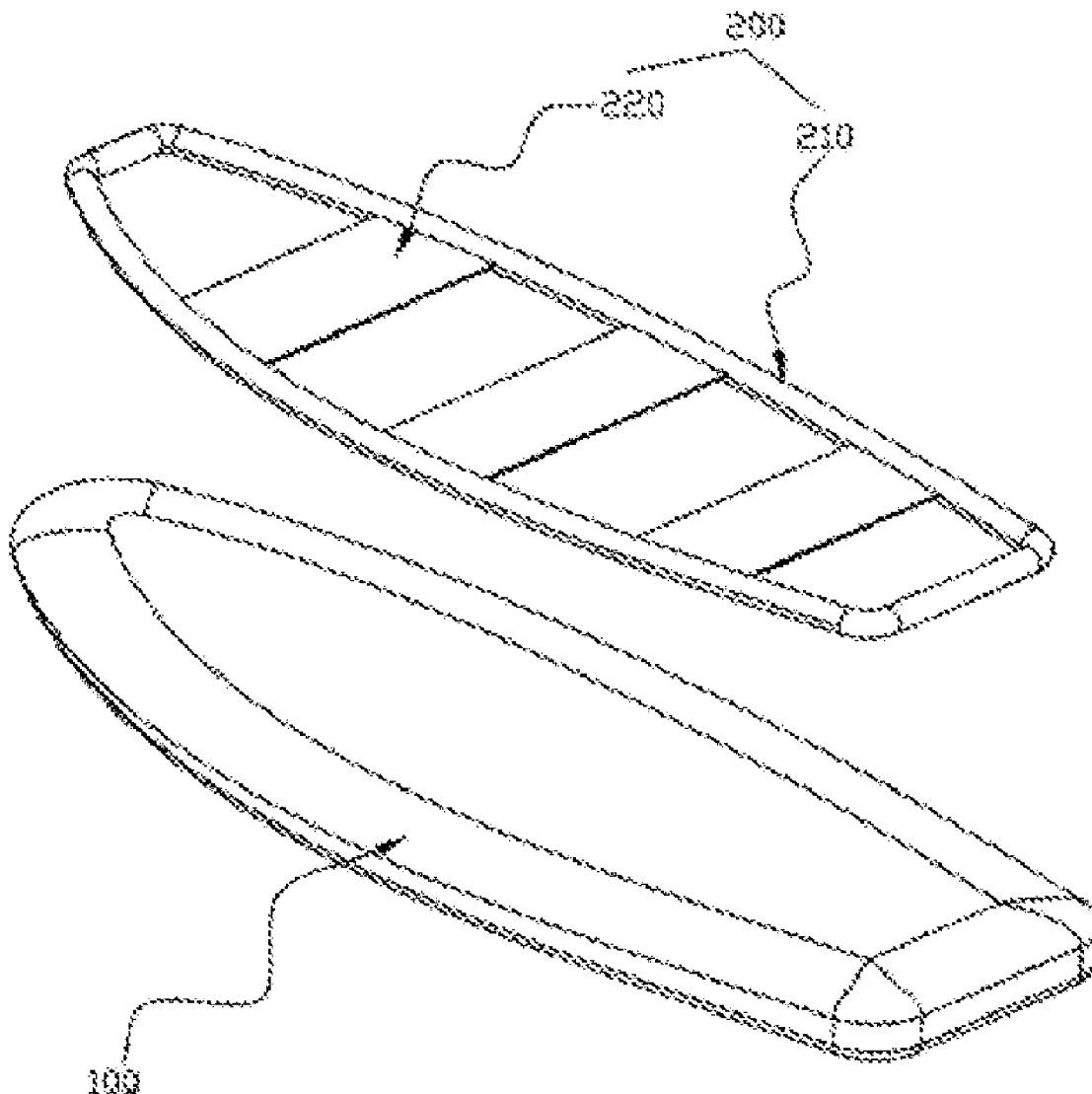
Provided are a surfboard and a water sports device. The surfboard comprises a board body (100) and a rigid support assembly (200) embedded in the board body. The rigid support assembly replaces a carbon fiber layer to serve as an anti-bending framework of the surfboard, such that the production process for the surfboard can be simplified, and the production efficiency can be improved.

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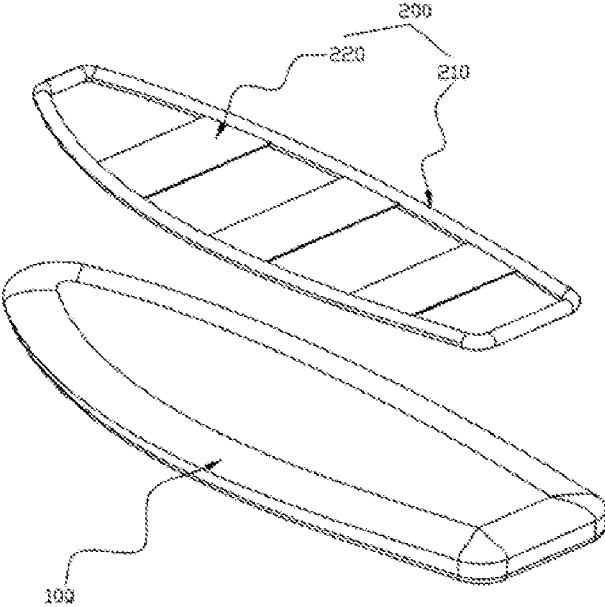


Fig. 1

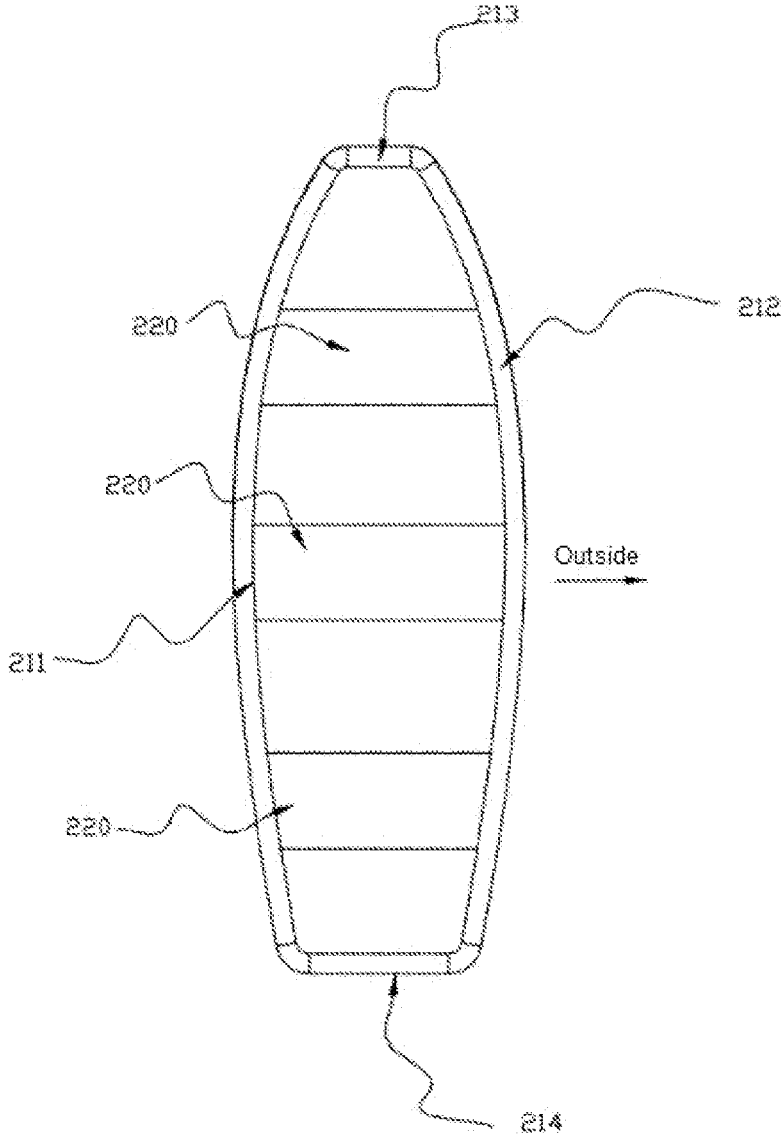


Fig. 2

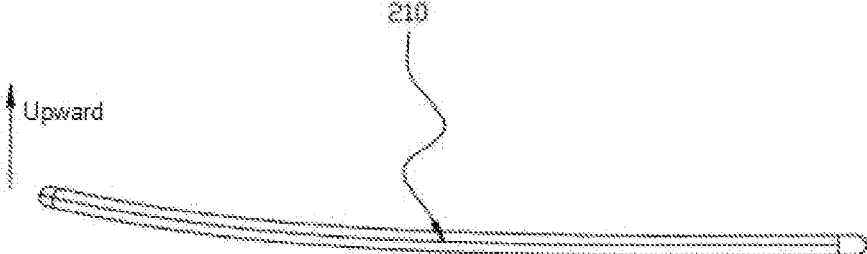


Fig. 3

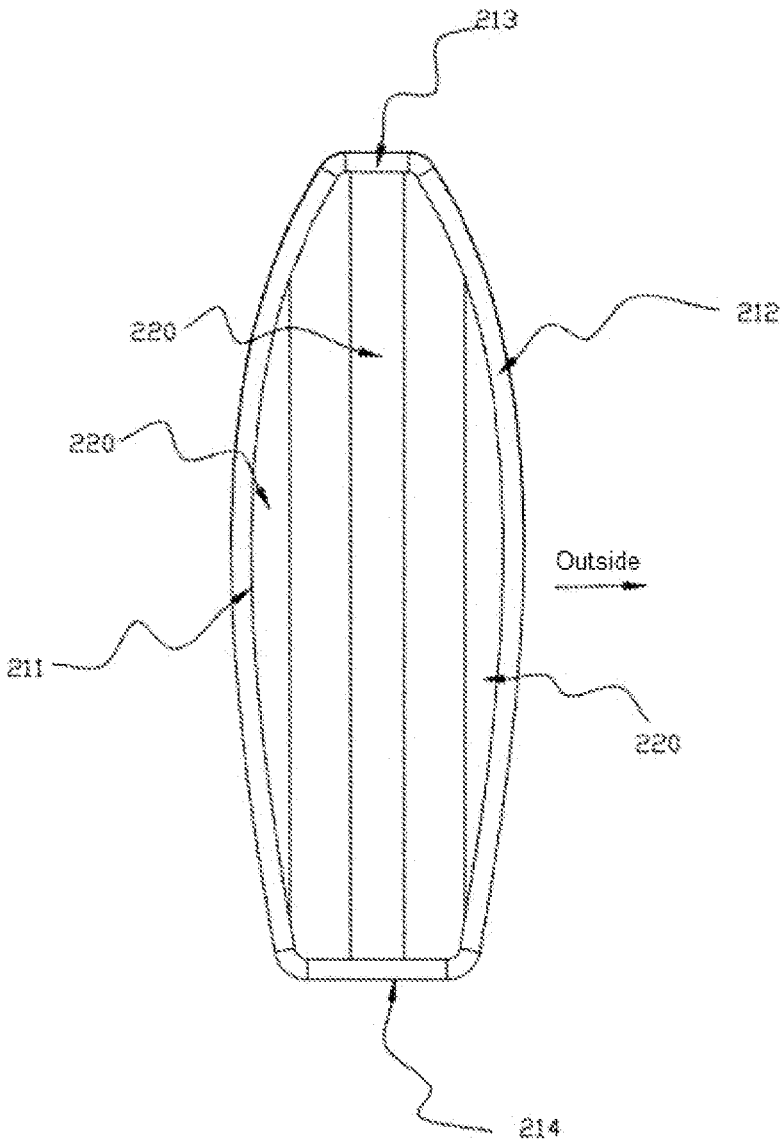


Fig. 4

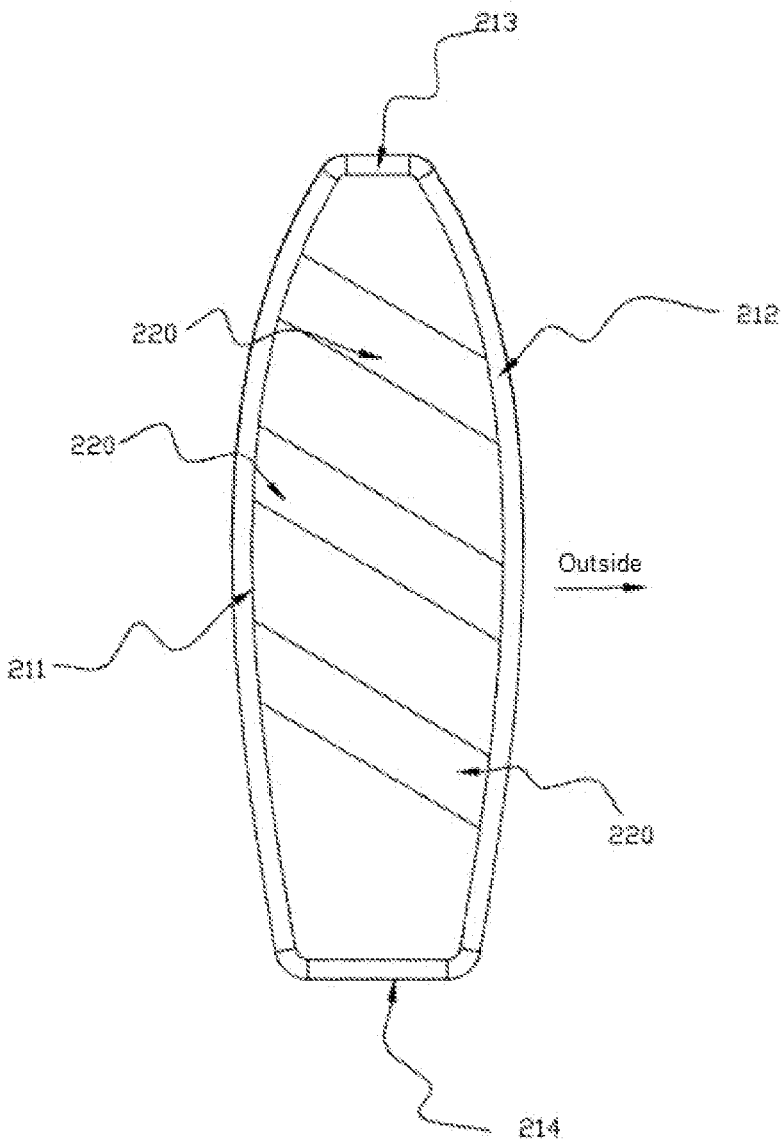


Fig. 5

**SURFBOARD AND WATER SPORTS DEVICE****CROSS REFERENCE TO RELATED APPLICATION**

**[0001]** The present application claims priority to Chinese patent application No. 201910884876.X, filed to the China National Intellectual Property Administration on Sep. 19, 2019 and entitled “Surfboard and Water Sports Device”, the disclosure of which is hereby incorporated by reference in its entirety.

**TECHNICAL FIELD**

**[0002]** The present application relates to the field of water sports, and in particular, to a surfboard and a water sports device.

**BACKGROUND**

**[0003]** With the development of science and technology, a water sports device such as an electric surfboard has gradually become popular. During use, a surfboard needs to withstand a reaction force from a water surface, so that the surfboard itself is required to have high strength to avoid bending during surfing, and meanwhile should not have excessive self-weight to facilitate being carried. Due to the above-mentioned factors, most of current surfboards adopt a foam material as a base material, and then a surface of the foam material is connected with a carbon fiber layer to reinforce strength. However, the addition of carbon fiber is very cumbersome, in which an artificial shaping is required, thereby causing low production efficiency. It is difficult to meet actual production needs.

**SUMMARY****Solution to Problem****Technical Solution**

**[0004]** The present application resolves one of the technical problems in the related art at least to a certain extent. To this end, an objective of embodiments of the present application is to provide a surfboard, which uses a rigid support assembly to replace a carbon fiber layer to serve as an anti-bending framework of the surfboard, such that the production process for the surfboard can be simplified, and the production efficiency can be improved.

**[0005]** A second objective of the embodiments of the present application is to provide a water sports device.

**[0006]** The technical solution adopted by the embodiments of the present application is as follows.

**[0007]** In a first aspect, there is provided a surfboard. The surfboard includes a board body, and a rigid support assembly embedded in the board body.

**[0008]** Further, the support assembly includes an annular support, and a reinforcing member connected on the support.

**[0009]** Furthermore, the support includes a first arm section, a second arm section, a third arm section, and a fourth arm section. The first and second arm sections extend in a length direction of the surfboard and are arranged oppositely, and both the first and second arm sections are arc-shaped arm sections; both ends of the third arm section are connected to a head end of the first arm section and a head end of the second arm section respectively, and both ends of

the fourth arm section are connected to a tail end of the first arm section and a tail end of the second arm section.

**[0010]** Furthermore, at least one of the third and the fourth arm sections is an arc-shaped arm section, or at least one of the third and the fourth arm sections is a linear arm section.

**[0011]** Further, the support includes a plurality of arm sections connected in sequence, and both ends of the reinforcing member are connected to two oppositely arranged arm sections, respectively.

**[0012]** Further, the support includes a plurality of arm sections connected in sequence, and both ends of the reinforcing member are connected to two adjacent arm sections, respectively.

**[0013]** Further, a plurality of reinforcing members arranged in parallel are included, and there are gaps between the reinforcing members.

**[0014]** Further, the support assembly further includes a handle connected onto the support and protruding from the board body.

**[0015]** Further, the support assembly is made of a metal material, and the board body is a foam layer covering an outside of the support assembly.

**[0016]** In a second aspect, there is provided a water sports device. The water sports device includes a driving assembly and a power assembly, and further includes the above-mentioned surfboard. Both the driving assembly and the power assembly are fixed on the support assembly.

**[0017]** The embodiments of the present application use a rigid support assembly to replace a carbon fiber layer to serve as an anti-bending framework of the surfboard, such that the production process for the surfboard can be simplified, and the production efficiency can be improved.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0018]** FIG. 1 is an exploded schematic diagram of a surfboard in a first embodiment.

**[0019]** FIG. 2 is a front view of a support assembly in a first embodiment.

**[0020]** FIG. 3 is a side view in FIG. 2.

**[0021]** FIG. 4 is a front view of a support assembly in a second embodiment.

**[0022]** FIG. 5 is a front view of a support assembly in a third embodiment.

**DETAILED DESCRIPTION OF THE EMBODIMENTS****Embodiments of the Invention**

**[0023]** This section will describe the embodiments of the present application in detail. The embodiments of the present application are shown in the accompanying drawings. The function of the accompanying drawings is to supplement the description of the text part of the specification with graphics, so that the description of each technical features and the overall technical solutions of the embodiments of the present application can be understood intuitively and vividly, and should not be understood as limits to the present application.

**[0024]** In the descriptions of the present application, if an orientation description is involved, such as “up”, “down”, “front”, “rear”, “left”, “right” and the like are orientation or position relationships shown in the drawings, are adopted not to indicate or imply that indicated devices or compo-

nents must be in specific orientations or structured and operated in specific orientations but only to conveniently describe the present invention and simplify descriptions and thus should not be understood as limits to the present application. If a feature is referred to be “set”, “fixed”, or “connected” to another feature, it may be directly set, fixed, or connected to another feature, or indirectly set, fixed, or connected to another feature.

**[0025]** In the description of the embodiments of the present application, if it refers to “several”, it means more than one; if it refers to “a plurality of”, it means more than two; if it refers to “greater than”, “less than”, and “exceeding”, it should be understood as not including the current number; and if it refers to “over”, “below” and “within” should be understood as including the current number. If “first” and “second” are involved, it should be understood as used to distinguish technical features, but cannot be understood to indicate or imply relative importance or implicitly indicate the number of indicated technical features or implicitly indicate the precedence relation of the technical features.

**[0026]** In addition, unless otherwise defined, the technical and scientific terms used in the embodiments of the present application have the same meanings as commonly understood by those skilled in the art. The terms used in the present application are merely used to describe specific embodiments, not to limit the present application.

#### First Embodiment

**[0027]** Referring to FIG. 1, FIG. 1 illustrates an exploded schematic diagram of a surfboard in this embodiment. As illustrated, the surfboard includes a board body 100 and a support assembly 200, and the support assembly 200 is embedded in the board body 100. This embodiment uses the rigid support assembly 200 to replace a carbon fiber layer to serve as an anti-bending framework of the surfboard, so that the support assembly 200 may realize industrialized production, the production process for the surfboard can be simplified, and the production efficiency can be improved.

**[0028]** Referring to FIG. 2 and FIG. 3, FIG. 2 illustrates a front view of a surfboard in the present embodiment, while FIG. 3 illustrates a side view in FIG. 2. In the present embodiment, the support assembly 200 includes a support 210, and a reinforcing member 220 connected onto the support 210. The support 210 is an annular structure approximately arranged along an outer contour of the surfboard, that is, it includes a first arm section 211, a second arm section 212, a third arm section 213, and a fourth arm section 214. The first arm section 211 and the second arm section 214 are arranged oppositely and both extend in a length direction of the surfboard (The extending in the length direction referred to herein does not mean that the first arm section 211 and the second arm section 212 are strictly limited to be parallel to the length direction, it is merely necessary to ensure that the first arm section 211 and the second arm section 212 protrude substantially in the length direction), and the third arm section 213 and the fourth arm section 214 are arranged oppositely, and both extend in a width direction of the surfboard, both ends of the third arm section 213 are connected to a head end of the first arm section 211 and a head end of the second arm section 212 respectively, and both ends of the fourth arm section 214 are connected to a tail end of the first arm section 211 and a tail end of the second arm section 212. The integrally formed annular structure may reinforce strength.

**[0029]** The reinforcing member 220 is board-shaped and extends in the width direction, and both ends of the reinforcing member 220 are respectively connected to the first arm section 211 and the second arm section 212, so as to achieve the purpose of further reinforcing strength.

**[0030]** Both the first arm section 211 and the second arm section 212 in the present embodiment are arc-shaped arm sections, and project toward the outside as illustrated in FIG. 2 (the so-called outside refers to the outside of the annular structure), and also project upward as illustrated in FIG. 3. On the one hand, the arc-shaped arm sections conform to the overall shape of the surfboard, and on the other hand can also play a certain reinforcing role as compared to linear arm sections.

#### Second Embodiment

**[0031]** The present embodiment is an improved embodiment of the first embodiment, and differs from the first embodiment in that: the present embodiment is provided with a plurality of parallel reinforcing members 220, and there are gaps between the reinforcing members 220, so as to be able to further reinforce strength and to avoid excessive increase in self-weight at the same time.

#### Third Embodiment

**[0032]** The present embodiment is an alternative embodiment of the first embodiment. Referring to FIG. 4, the present embodiment differs from the first embodiment in that: the reinforcing member 220 in the present embodiment extends in a length direction, two ends of the reinforcing member 220 may be connected to the third arm section 213 and the fourth arm section 214 respectively, or the reinforcing member 220 may be connected to the first arm section 211 and the fourth arm section 214 respectively, or the reinforcing member 220 may be connected to the second arm section 212 and the third arm section 212, respectively.

#### Fourth Embodiment

**[0033]** The present embodiment is an alternative embodiment of the first embodiment. Referring to FIG. 5, the present embodiment differs from the first embodiment in that: the reinforcing member 220 in the present embodiment is inclined with respect to the length direction (the width direction).

#### Fifth Embodiment

**[0034]** The present embodiment is an alternative embodiment of the first embodiment and differs from the first embodiment in that: at least one of the third arm section 213 and the fourth arm section 214 in this embodiment is an arc-shaped arm section projecting toward to the outside.

#### Sixth Embodiment

**[0035]** The present embodiment is an improved embodiment of the first embodiment, and differs from the first embodiment in that: the support assembly 200 further includes a handle connected onto the support 210 and protrudes from the board body 100, and the handle is used for a user to carry the surfboard. Compared with the scheme that the handle is bonded to a carbon fiber layer, the connection strength of the handle in the present embodiment

is higher, and meanwhile the handle may be integrally formed with the support **210**, so that production steps may be simplified.

#### Seventh Embodiment

**[0036]** The present embodiment is an improved embodiment of the first embodiment, and defines based on the first embodiment that: the support assembly **200** is made of metal, specifically lightweight and high-strength materials, such as an aluminum alloy framework or a titanium alloy framework, so as to reduce weight on the basis of ensuring strength. The support assembly **200** of metal materials may be prepared in batches by casting or the like, and the production efficiency is high. The board body **100** is a foam layer covering the outside of the support assembly **200** in an integrally formed manner, and the integrally formed foam material is also used for improving the production efficiency. The foam material of the present embodiment may be Expandable Pielcelan (EPO), Expandable Polypropene (EPP), Expandable Polystyrene (EPS), Expandable Polyethylene (EPE), Polyurethane (PU), etc.

**[0037]** An embodiment of the present application further provides a water sports device, which includes a driving assembly, a power assembly, and the surfboard in the above-mentioned various embodiments. The driving assembly and the power assembly are both fixed onto the supporting assembly. Compared with a connection manner of providing a threaded hole on the carbon fiber layer, the water sports device in the present embodiment may reinforce the connection strength of the driving assembly and the power assembly and reduce production difficulty.

**[0038]** The embodiments of the present application are specifically described above, but the present application is not limited to the described embodiments, and those skilled in the art may further make equivalent variations or substitutions without departing from the spirit of the present application, and these equivalent variations or substitutions are all included in the scope of the claims of the present application. In addition, in the case of no conflict, the embodiments in the present application and the features in the embodiments may be combined with each other.

What is claimed is:

1. A surfboard, comprising a board body, and a rigid support assembly embedded in the board body.

2. The surfboard of claim 1, wherein the support assembly comprises an annular support, and a reinforcing member connected onto the support.

3. The surfboard of claim 2, wherein the support comprises a first arm section, a second arm section, a third arm section, and a fourth arm section, the first and second arm sections extend in a length direction of the surfboard and are arranged oppositely, and both the first and second arm sections are arc-shaped arm sections, both ends of the third arm section are connected to a head end of the first arm section and a head end of the second arm section respectively, and both ends of the fourth arm section are connected to a tail end of the first arm section and a tail end of the second arm section.

4. The surfboard of claim 3, wherein at least one of the third and the fourth arm sections is an arc-shaped arm section, or at least one of the third and the fourth arm sections is a linear arm section.

5. The surfboard of claim 2, wherein the support comprises a plurality of arm sections connected in sequence, and both ends of the reinforcing member are connected to two oppositely arranged arm sections, respectively.

6. The surfboard of claim 2, wherein the support comprises a plurality of arm sections connected in sequence, and both ends of the reinforcing member are connected to two adjacent arm sections, respectively.

7. The surfboard of claim 2, wherein a plurality of reinforcing members arranged in parallel are comprised, and there are gaps between the reinforcing members

8. The surfboard of claim 2, wherein the support assembly further comprises a handle connected onto the support and protruding from the board body.

9. The surfboard of claim 1, wherein the support assembly is made of a metal material, and the board body is a foam layer covering an outside of the support assembly.

10. A water sports device, comprising a driving assembly and a power assembly, and further comprising the surfboard of claim 1, wherein both the driving assembly and the power assembly are fixed on the support assembly.

11. The water sports device of claim 10, further comprising the surfboard of claim 2, wherein both the driving assembly and the power assembly are fixed on the support assembly.

12. The water sports device of claim 10, further comprising the surfboard of claim 3, wherein both the driving assembly and the power assembly are fixed on the support assembly.

13. The water sports device of claim 10, further comprising the surfboard of claim 4, wherein both the driving assembly and the power assembly are fixed on the support assembly.

14. The water sports device of claim 10, further comprising the surfboard of claim 5, wherein both the driving assembly and the power assembly are fixed on the support assembly.

15. The water sports device of claim 10, further comprising the surfboard of claim 6, wherein both the driving assembly and the power assembly are fixed on the support assembly.

16. The water sports device of claim 10, further comprising the surfboard of claim 7, wherein both the driving assembly and the power assembly are fixed on the support assembly.

17. The water sports device of claim 10, further comprising the surfboard of claim 8, wherein both the driving assembly and the power assembly are fixed on the support assembly.

18. The water sports device of claim 10, further comprising the surfboard of claim 9, wherein both the driving assembly and the power assembly are fixed on the support assembly.

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