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(54) **Apnea and skin-diving flippers**

(57) Apnea and underwater fishing flippers, comprising a body made of a flexible material to be worn on one's foot and a blade made of a rigid material to be applied onto said body, characterized in that said blade is made of polycarbonate.

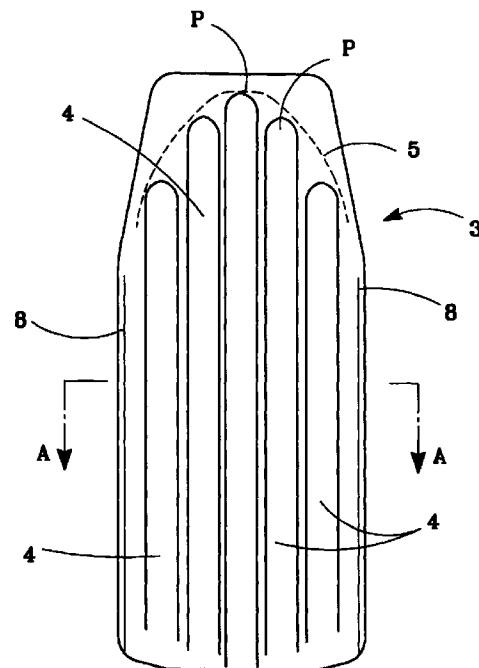


Fig. 2

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Description

[0001] The present invention provides an apnea flipper characterized in that it comprises a blade made of polycarbonate, preferably transparent polycarbonate.

[0002] More particularly, the blade of the flipper according to the invention has a plurality of ribs of decreasing height from the foot to the blade end and the ends of which have a substantially parabolic outline, for improved water canalization and thrust.

[0003] The invention falls within the field of sports articles and, more particularly, of skin-diving equipment, by providing an apnea flipper which is characterized by its high efficiency, besides its low production costs.

[0004] As known, apnea flippers, which are those peculiar flippers being used for skin-diving or depth sports, comprise a body, generally made of rubber or any other flexible material, which is worn on one's foot and has a pair lateral elements with grooves receiving a blade made of a rigid material, which provides the necessary thrust.

[0005] As known in the art, these blades are made either of ABS or of a composite material, in particular Kevlar[®] or carbon fibre.

[0006] ABS blades are relatively cheap to manufacture but they have the drawback of limited durability, since in time the employed material tends to lose its stiffness peculiarities, whereby the blade efficiency diminishes and the blade is no longer suitable for sports.

[0007] From this point of view blades made of carbon fibre or Kevlar give better results, but they have considerable drawbacks due to their cost and fragility.

[0008] As a matter of fact, blades made of carbon fibre, though providing good stiffness peculiarities in time, are extremely fragile, so that they must be worn only after getting into water, since a light knock against the bottom of the sea or against the deck of a boat would be sufficient to break them.

[0009] Further, these blades cannot be moulded, whereby on one hand they are extremely expensive and, on the other hand, blades with ribs of a certain height cannot be provided at acceptable costs, whereby the flippers have limited directionality.

[0010] A further, non negligible drawback of these blades is the fact that when they rest on the bottom of the sea they make an abrupt noise frightening the fish, thus being little suitable for underwater fishing.

[0011] For the above mentioned reasons the need is felt in the field for blades which are easy and cheap to manufacture, have considerable stiffness and keep it unchanged in time, are not fragile and do not make any noise when one moves on the bottom of the sea.

[0012] These objects are achieved by the blade of the invention, which is characterized in that it is made of polycarbonate, a material which is durable, rigid, easy to mould, and has also the considerable advantage of being transparent and having a refraction coefficient

which is approximately equal to the coefficient of water, whereby the blade is practically invisible.

[0013] The polycarbonate blade does not make any noise when resting on the bottom of the sea and, since it can be moulded, it also permits to provide stiffening ribs being sufficiently deep and having an optimum shape for improved water canalization and for greater thrust and directionality relative to known flippers.

[0014] The present invention will now be described in detail, by way of non restrictive example, with reference to the accompanying drawings, in which:

- figure 1 shows a perspective view of an apnea flipper according to the invention;
- figure 2 is a plan view of a blade to be applied onto a flipper according to the invention;
- figure 3 is a cross-sectional view taken along line A-A of figure 2.

[0015] With reference to figure 1, the flipper of the invention comprises a body 1, made of rubber or any other suitable material, to be worn on one's foot and having on its front a pair of lateral elements 2 being provided, on their facing sides, with grooves receiving a blade, shown as a whole with numeral 3.

[0016] This blade is characterized in that it is made of polycarbonate, in particular transparent polycarbonate.

[0017] The blade 3, best shown in figure 2 and 3, comprises a substantially bidimensional body having such a configuration that it is provided with a plurality of ribs/grooves 4, of decreasing height from the area of connection with the flipper body to their end.

[0018] The outline of the ribs is substantially rounded, as shown in figure 3, and at the head, towards the foot, each rib has a rounded or, rather, parabolic outline P.

[0019] Each rib is substantially configured like a hull, to provide water lines which improve flipper efficiency.

[0020] The ribs have also such a length that their ends are located along the outline of a parabole (said outline is shown by dotted lines and the letter S in figure 2).

[0021] According to another aspect of the invention, the sides of the blade 3 are bent downwards to define two lateral elements 8 bounding the blade sides, said lateral elements improving water canalization to increase the flipper directionality, besides providing greater thrust.

[0022] As can be easily understood from the description, the flipper with the polycarbonate blade of the invention has various advantages with respect to known flippers.

[0023] As a matter of fact, a flipper is provided which in time can keep rigid, light, resistant to knocks.

[0024] Further, since this material can be easily moulded, the blade can be configured to provide sufficiently high ribs, for good water canalization and, thus, for improved flipper directionality and thrust.

[0025] Moreover, polycarbonate does not make any noise when the flipper rests on the bottom of the sea

and it is perfectly transparent and, thus, invisible underwater.

[0026] Furthermore, since the specific weight of this material is quite equal to the specific weight of water, the flippers do not change the skin-diver's ballast. 5

[0027] Those skilled in the field can then provide several modifications and variations, all of which, anyway, are included within the scope of the present invention.

Claims 10

1. Apnea and underwater fishing flippers, comprising a body made of a flexible material to be worn on one's foot and a blade made of a rigid material to be applied onto said body, characterized in that said blade is made of polycarbonate. 15
2. The flipper of claim 1, characterized in that said blade is made of transparent polycarbonate. 20
3. The flipper of any preceding claim, characterized in that the body of said blade has a plurality of ribs with an outline substantially parallel to the blade axis. 25
4. The flipper of any preceding claim, characterized in that the blade sides are bent downwards to define two lateral elements for water canalization during motion. 30
5. The flipper of claim 3 or 4, characterized in that said ribs have a decreasing height from the foot to the rib end.
6. The flipper of claim 3 or 4, characterized in that the cross-section of said ribs has a rounded outline and the head of said ribs has a substantially parabolic shape. 35
7. The flipper of claim 6, characterized in that the ends of said ribs are arranged along a parabolic outline. 40

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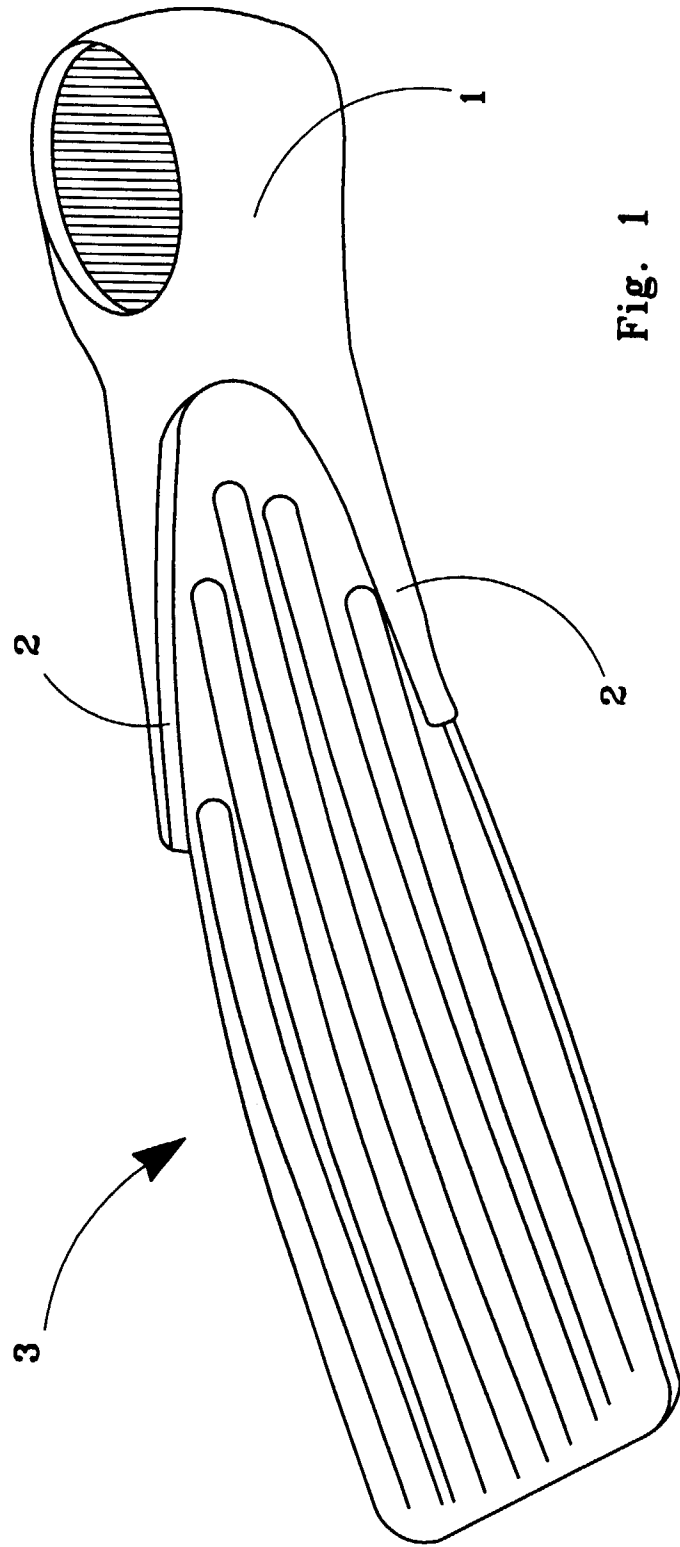


Fig. 1

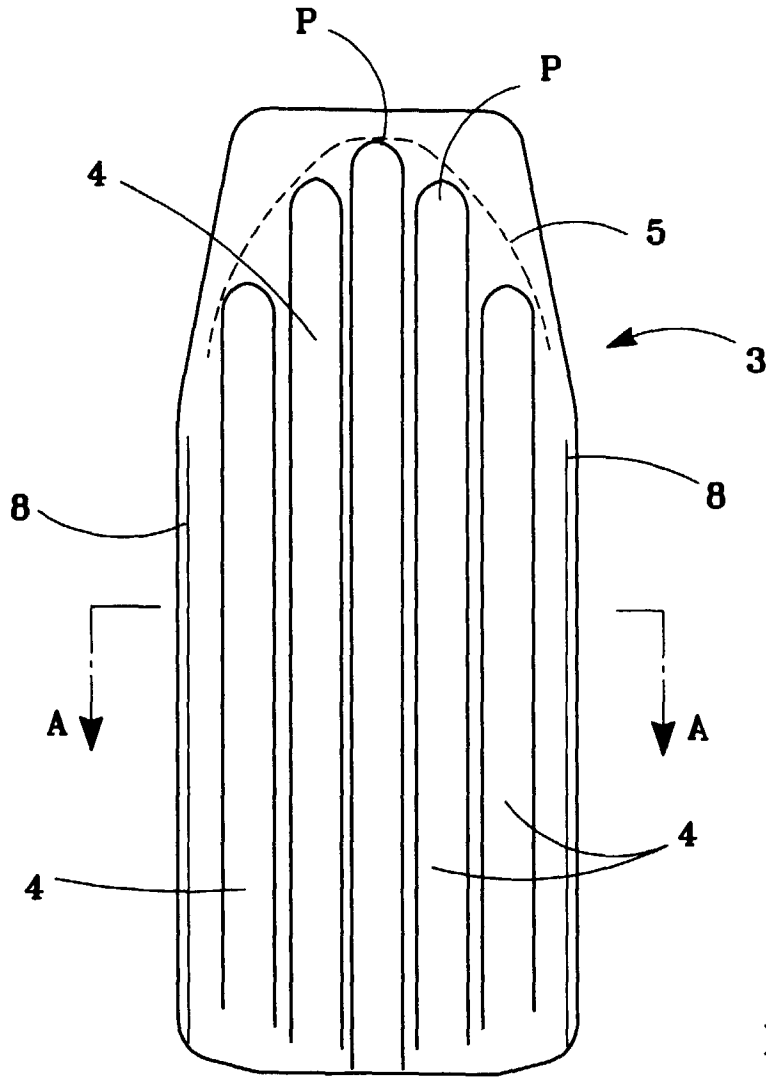


Fig. 2

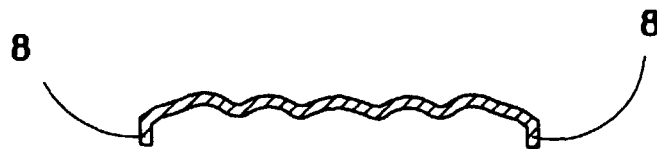


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 99 10 4801

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| The present search report has been drawn up for all claims | | | |
| Place of search MUNICH | | Date of completion of the search 26 May 1999 | Examiner Curzi, D |
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26-05-1999

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