SWIM FIN WITH PIVOTED HYDROFOILS

This invention relates to improvements in the propulsive efficiency of swim fins, as used by underwater divers.

The present invention utilises pivoted hydrofoils (also known as vanes) to improve the propulsive efficiency of swim fins attached to the feet of divers. The hydrofoils automatically pivot to provide the optimum angle of attack to the flow of water during both the upstroke and downstroke. The vertical kicking motion of the diver's feet is therefore efficiently converted to rearward horizontal motion of water passing over the hydrofoils. The rearward motion of the water produces thrust to propel the diver forward.

In one form of the invention three pairs of hydrofoils are attached on either side of a rigid spine. Axles pass through the spine to join each pair of hydrofoils. Pins also project from the spine at strategic locations to limit the rotational movement of the hydrofoils. A plate is attached to the spine for fixing a shoe or similar device that encloses the diver's foot.

This form of the invention has only three moving parts (the three axles) and is a compact, robust design making it suitable for operation in seawater.

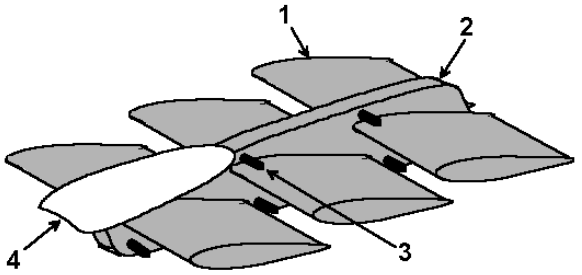
To assist in understanding the invention reference will now be made to the accompanying drawings which show one form of the invention.

Referring to Figure 1, it can be seen that there are six hydrofoils, mounted in pairs along the spine. Each hydrofoil is associated with a pair of pins that project from the spine and limit the rotational movement of the hydrofoil. This movement is illustrated in Figure 2. The angle of the hydrofoil at its limit of movement is intended to provide an optimum angle of attack to the flow of water. The cascading effect of the three hydrofoils on each side further improves the efficiency of the device.

Figure 2 shows a cross-section through one of the hydrofoils. The axle is located so that it is forward of the centre of pressure of the hydrofoil. In this way the hydrofoil automatically aligns to the direction of water flow during both the upstroke and the downstroke.

The mechanism may be adapted for other forms of propulsion within a fluid where thrust is required in a direction which is perpendicular to a reciprocating motion.

MICHAEL PHILIP PAINE SYDNEY 23 FEBRUARY 2000



1. Pivotted hydrofoil (3 pairs)
2. Spine
3. Pin to limit rotation of hydrofoil
4. Plate for attachment of shoe

Figure 1

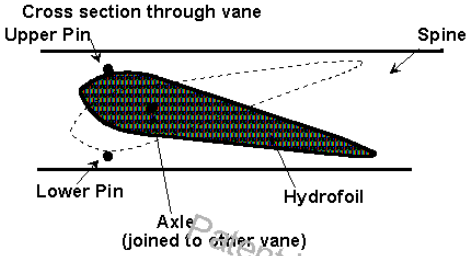


Figure 2

Diagrams accompanying 'Swim fins with pivoted hydrofoils', Michael Paine 23 February 2000



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