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(54) APPARATUS FOR SWIMMING AND DIVING TOWED BY A BOAT

GERÄT ZUM SCHWIMMEN UND/ODER TAUCHEN IM SCHLEPP EINES BOOTES

DISPOSITIF TIRE PAR UN BATEAU POUR LA NAGE ET LA PLONGEE

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(56) References cited:
**FR-A- 2 210 170 FR-A- 2 635 307
US-A- 4 149 483 US-A- 4 207 829**

EP 0 609 447 B1

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Description

The present invention refers to an apparatus that has been conceived and structured in order to allow one to perform a new water sport and that, convenient towed, permits a person to do exercises of riding on the surface of water and of underwater swimming, with the possibility of controlling one's own movements by tilting the apparatus or rudder vertically and transversally as well as in combination, specifically to achieve lateral movement of the body in terms of the imaginary path defined by the tractor vehicle, as well as upward and downward movements in the water.

There are a large number of sports and activities performed in water, some are performed on the surface and others under water. Within this broad range of possible groups of sports can be established, one of which is based exclusively on human skill, which includes swimming, waterpolo, apnea diving, etc. A second group adds to the cited human skill the use of floating elements, and in this sense, "paragüismo", sailing, surfing, wind-surfing, etc. can be cited. There is a third group in which aside from the above cited human skill, floating and mechanical elements are combined, such as for example, motorized sailing boards, water-skiing, etc. There is a fourth group in which elements which permit one to stay underwater, such as diving, skin diving with air tanks, etc., are used.

Specifically within the scope of sports that combine floating and mechanical elements, in which the object of the invention fits, the possibilities that these types of sports permit are rather restricted, since specifically in the scope motorized sailing, it is simply a question of driving vehicles on the surface of water, in a way relatively similar to how driving is done on the ground, specifically without the possibilities of immersion, and the same thing is true for water skiing, where the skier can only try to achieve a speed record on water, towed by the corresponding boat.

In FR-A-2 635 307 there is disclosed a towable board for underwater swimming and riding on the water-surface. The board comprises a substantially flat body having a front-to-rear axis, said body having a deep front notch and and a rear notch dividing the body into two wings that are symmetric with respect to each other about said front-to-rear axis. The board further comprises at least two gripping means for permitting gripping by a the user's hands, said gripping means being disposed in each of said wings and being symmetric with respect to each other about said front-to-rear axis. Finally, there is a traction point having means for being connected to a towing rope, said traction point being disposed on said front-to-rear axis. Finally, the body is equipped with some wings.

According to FR-A-2 635 307, the traction point is situated on a transverse line passing between gripping means.

A disadvantage of the towable board known from FR-A-2 635 307 is its low maneuverability, which results

from the position of the traction point with respect to the transverse line passing between the gripping means.

The combined rudder or towable board as claimed, could be placed in the group of sports in which floating and mechanical elements are combined, but offering a considerably higher level of possibilities than the above cited group of sports, in addition to being completely novel possibilities.

In a more specific manner and as it has already been stated, the towable board that is proposed allows for riding on the surface of water, with control of lateral movement similar to that of water skiing, although at a slower speed, and likewise underwater swimming, with the same control of lateral movement and with a parallel control of the level of depth, either with the limitation of having to come up periodically for air, or else without this need upon using air tanks for breathing purposes.

More specifically, the towable board that is proposed is structured from a flat body, made of a suitable light and resistant material, in which two side lobes perfectly symmetric with regard to the antero-posterior or front to rear axis of the body, are defined, in such a way that in correspondence with said axis a broad front notch which provides access to a sole traction point located upon said axis is defined, and a rear structure that permits the device to be placed in front of the swimmer's-diver's head, when he grasps the apparatus with his arms extended, in the normal usage position, without any risk of the flat body hitting his head.

In each one of the two side wings or lobes of the cited flat body, aligned transversally and placed in front of the traction point, two transversal windows suitable formally and dimensionally to permit one to insert one's fingers in order to grip the apparatus in a normal fashion, the rear edge of said windows having the possibility of being shaped anatomically in order to make it easier to grip same.

Finally and as a complement of the described structure, in each one of these two lobes or wings of the sheetlike body, on the bottom surface thereof and preferably behind the cited windows, both fins are established. These fins will preferably adopt an arrangement perpendicular to the flat body, but they can likewise adopt an oblique arrangement, enhancing controllability of the apparatus in any case.

Obviously not only the two lobes or wings of the flat body should be perfectly symmetric to the front to rear axis of the apparatus, but the cited windows and fins also should adopt perfectly symmetric positions, in order to ensure a suitable balance, it being obvious that the larger the distance between the traction point and the transverse line corresponding to the windows defining the hand grips, the greater the maneuverability of the apparatus, but this maneuverability will be more difficult, requiring some better physical conditions and greater mastery, for which reason the existence of different apparatus, suitable to different levels of use, from beginners up to real experts, or optionally the arrangement of a sole apparatus in which the traction point is

unrelated to the flat body, has been provided for, being established on a small transversal bridge with adjustable positioning all along the axis of the apparatus, so that each user, in terms of his own possibilities and criteria, will place said bridge in the working position considered most convenient.

In order to complete the description that is being made and for the purpose of providing a better understanding of the characteristics of the invention, the present specification is accompanied by a set of drawings, as an integral part thereof, in which the following has been represented in an illustrative and non-rescriptive manner:

Figure 1 shows a plan view of the towable board for underwater swimming and riding on the surface, made in accordance with the object of the present invention.

Figure 2 shows a front raised view of the same combined rudder.

Figure 3 shows a side raised view, in which the windows corresponding to the grips of the apparatus have been represented with a broken line.

Figure 4: According to a schematic and perspective view it shows an example of practical use of the towable board of the above figures.

Figure 5 shows a plan view similar to that of figure 1 but corresponding to a towable board with an adjustable traction point.

In view of these figures it can be seen how the apparatus that is proposed is structured from a considerably flat body (1), which as it has been said above will be made out of a light and resistant material, such as suitable rigid plastic material, for example, whose contour adapts to a shape relatively similar to that of a butterfly, with its wings extended. The shape is perfectly symmetric to the imaginary front to rear axis thereof (2) and defines in the same a deep front notch (3), which approaches the traction point of the apparatus, materialized in a simple hole (4), to which the towing rope (5) that connects the apparatus with the boat towing the same can be connected. Another broad outer notch (6) is defined by the apparatus which, as is also seen in figure 4, enables movement of the user's head, without the risk of hitting his head on the flat body, in the normal tilting of the arms to maneuver the apparatus.

In each one of the side wings or lobes of this flat body (1) and in the front, a transversal window (7) is established. Window (7), as can also be seen in figure 4, constitutes the grips of the apparatus, so that the user will rest his arms on the top surface of the lobes, passing his fingers through these windows.

Complementary to the bottom surface of the flat body (1) and in each one of its lobes, a longitudinal fin (8), that can have the triangular shape represented in figure 3 or any other shape that is considered convenient, is established. Likewise, these fins (8) can be perpendicular to the flat body (1), as seen in figure (2), or

form any other suitable angle with the flat body, without this affecting the essence of the invention.

The windows (7), that adopt just like the fins (8) positions perfectly symmetric to the front-to-rear axis (2), will be preferably slanted slightly outward and backward for the purpose of attaining a perfect placement for one's hands, taking into consideration the slightly diverging position that the user's arms must adopt in turn and that also appear represented in the above cited figure 4.

As it has already been pointed out above, the distance between the imaginary line that connects the two side windows (7) and the traction point (4) determines the degree of maneuverability of the apparatus, which is greater the greater this distance is, though this requires some better physical conditions and greater experience. Hence, it is implied that while initially, that is to say for beginners, this distance must be minimal, the same must increase progressively with the user's experience. In this sense and in accordance with the representation of figure 5, a variant of the embodiment of the apparatus in which the cited front notch (3') is considerably deeper, establishing on both sides of the same both alignments of holes (9) that permit fastening, with the possibility of positional adjustment, for a transversal bridge (10) that is that which includes the traction point (4), has been provided for. This bridge (10) can be positioned in any suitable position by means of screws or any other suitable fastening means.

Furthermore, the portion (11) established between the front notch (3) and the rear notch (6) can be delimited in such a degree that to normal front to rear and side tilting movements for the flat body (1) a relative tilting movement between the side wings or lobes thereof can be added, which obviously permits one to make "spirals" under the water, though obviously this possibility is reserved for real expert sportsmen.

In accordance with the above, the user gripping the apparatus with his hands, as is shown in figure 4, can ride or the surface of the water, dive underwater, swim underwater and come up for air voluntarily, with a minimal effort and without any more conditions, in principle, than those of a non-specialized swimmer-diver. As one gains experience and improves his skill, the possibilities are multiplied progressively, the limits being set by the sportsman's physical capacity and playfulness.

The structure is designed in accordance with all safety regulations, it being impossible for the same to injure the user, since it is always in front of him, the grips being designed ergonomically, for easy grip as well as for the loss of grip, freeing pressure from one's hands, there being no impediment at all that permits separation from the motorboat and its moving away at will. The profiles, curves and ends have smooth and rounded shapes, incapable of causing the minimal injury or scratches on the user's skin.

The material forming the apparatus will have the density required to ensure optimal floatability and submergibility, allowing the swimmer to rest while being

supported and without requiring great effort in underwater swimming.

The underwater swimming can be done apnea with goggles and a snorkel, or with breathing with air tanks.

It permits several people to sail parallel, just like in water skiing with the required separation in the pulling points of the motorboat.

The speed of the motorboat and the length of the towing rope (5) are elements that will logically affect in a directly proportional manner the speed of riding on the water and the scope of possible maneuverability.

The scope of maneuverability is circumscribed in a semi-circle, base of a cone whose vertex is the traction point of the motorboat. The diameter of this semi-circle will be larger or smaller depending on two parameters, on the one hand the riding speed and on the other hand the length of the towing rope. The longer the rope and the slower the speed, within the required minimum, the possible maneuverability diameter increases. Likewise, the maneuverability response will be a result of the riding speed; at maximum possible speeds the responses to the changes of direction will be rapid and spectacular, similar to maneuvers of dolphins.

The riding speed necessary is variable, varying between one and eight knots, which permits easy enjoyable riding, and even acrobatics. Higher speeds will be possible for experienced skin divers, equipped with diving suits and goggles.

The length of the towing rope starts with a minimum of 24 meters for boats with a motor up to 25 HP. With more powerful motors the length will be progressively longer, 2 more meters for each HP increased.

The ease of riding on water and maneuverability, with the minimal effort makes it possible for this apparatus to have multiple uses, among which the following may be cited:

- Gliding and slalom on the surface of water;
- Observing the bottom of the sea, fauna and flora;
- Recreational exercise;
- Entertaining sports;
- Competitive sports;
- Locating sunken bodies and objects;
- Locating wreckage or remains of shipwrecks;
- Underwater photography;
- Filming underwater movies;
- Recreational devices at water installations or underwater amusement parks;
- Underwater sightseeing at reefs or coral beds;
- Recreation and competition on rapids;
- Ski acrobatics and underwater acrobatics, sports and exhibition acrobatics;

It is not considered necessary to make this description any longer in order for any expert in the material to be able to understand the scope of the invention and the advantages that are derived from the same.

The materials, shape, size and arrangement of the elements are vulnerable to variation as long as they do

not imply a change of the essence of the invention.

The terms in which this specification has been written should always be taken in a broad and non-restrictive sense.

Claims

1. A towable board for underwater swimming and riding on the water-surface comprising:

- a substantially flat body (1) having a front-to-rear axis (2), said body (1) having a deep front notch (3) and a rear notch (6) dividing the body (1) into two wings that are symmetric with respect to each other about said front-to-rear axis (2);
- at least two gripping means (7) for permitting gripping by a the user's hands, said gripping means (7) being disposed in each of said wings and being symmetric with respect to each other about said front-to-rear axis (2);
- a traction point (4) having means for being connected to a towing rope (5), said traction point (4) being disposed on said front-to-rear axis (2);
- at least one fin (8) being disposed on a bottom surface of said body (1),

characterized in that

the traction point (4) is disposed in a rear position with respect to a transverse line passing through said gripping means (7).

2. A towable board according to Claim 1, characterized in that said gripping means (7) are windows.

3. A towable board according to any of the preceding claims, characterized in that said traction point (4) is a hole.

4. A towable board according to any of the preceding claims, characterized in that said traction point (4) is located in a detachable piece (10).

5. A towable board according to Claim 4, characterized in that said detachable piece (10) is a transverse bridged shaped piece fastened to the body (1) by means of holes (9) disposed in said wings.

6. A towable board according to claim 4 or 5, characterized in that the position of said traction point (4) can be adjusted along the front-to-rear axis (2).

7. A towable board according to claim 6, characterized in that said adjustable position is defined by lines of consecutive holes (9) disposed on both sides of

said front-to-rear axis (2).

8. A towable board according to claim 5 or 6, characterized in that said detachable piece (10) has consecutive holes by means of which it is coupled to at least two holes (9) in said wings of the body (1). 5
9. A towable board according to any of the preceding claims, characterized in that said gripping means (7) have ergonomical edges and said at least one fin (8) and said body (1) have smooth and rounded shapes without any sharp edges. 10
10. A towable board according to any of the preceding claims, characterized in that the front notch (3) has a saddle-point, said saddle-point being located in a rear position with respect to the transverse line passing through said gripping means (7) and in that the traction point (4) is located between said saddle-point and said transverse line. 15 20

Patentansprüche

1. Ein Schleppbrett zum Unterwasserschwimmen und Gleiten auf der Wasseroberfläche, umfassend: 25
- einen im wesentlichen flachen Körper (1), der eine von vorne nach rückwärts verlaufende Achse (2) hat, wobei der genannte Körper (1) eine tiefe Vordereinkerbung (3) und eine rückwärtige Einkerbung (6) aufweist, die den Körper (1) in zwei Flügel teilen, die in bezug zueinander zu der genannten von vorne nach rückwärts verlaufenden Achse (2) symmetrisch sind; 30
 - mindestens zwei Greifeinrichtungen (7), die von den Händen eines Benutzers ergriffen werden können, wobei die genannten Greifeinrichtungen (7) in jedem der genannten Flügel angeordnet sind und in Bezug zueinander zu der vorne nach rückwärts verlaufenden Achse (2) symmetrisch sind; 40
 - ein Zugpunkt (4) mit Mitteln, um mit einem Schleppseil (5) verbunden zu werden, wobei der genannte Zugpunkt (4) auf der genannten vorne nach rückwärts verlaufenden Achse (2) angeordnet ist; 45
 - mindestens eine Rippe (8), die an einer Unter- oberfläche des genannten Körpers (1) angeordnet ist, 50
- dadurch gekennzeichnet, daß** 55
- der Zugpunkt (4) in bezug auf eine Querlinie, die durch die Greifeinrichtungen (7) hindurchgeht, in einer rückwärtigen Position angeordnet

ist.

2. Ein Schleppbrett, gemäß Anspruch 1, **dadurch gekennzeichnet**, daß die genannten Greifeinrichtungen (7) Fenster sind.
3. Ein Schleppbrett gemäß irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß der genannte Zugpunkt (4) ein Loch ist.
4. Ein Schleppbrett gemäß irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß der genannte Zugpunkt (4) an einem lösba- ren Teil (10) angeordnet ist.
5. Ein Schleppbrett gemäß Anspruch 4, **dadurch gekennzeichnet**, daß das genannte lösbare Teil (10) ein querverlaufendes, brückenförmiges Teil ist, das an dem Körper (1) mittels Löchern (9) befestigt ist, die in den genannten Flügeln angeordnet sind.
6. Ein Schleppbrett gemäß Anspruch 4 oder 5, **dadurch gekennzeichnet**, daß die Position des genannten Zugpunktes (4) entlang der von vorne nach rückwärts verlaufenden Achse (2) eingestellt werden kann.
7. Ein Schleppbrett gemäß Anspruch 6, **dadurch gekennzeichnet**, daß die genannte einstellbare Position durch Linien aufeinanderfolgender Löcher (9) festgelegt ist, die auf beiden Seiten der genannten von vorne nach rückwärts verlaufenden Achse (2) angeordnet sind.
8. Ein Schleppbrett gemäß Anspruch 5 oder 6, **dadurch gekennzeichnet**, daß das genannte lösbare Teil (10) aufeinanderfolgende Löcher hat, durch die es mit mindestens zwei Löchern (9) in den genannten Flügeln des Körpers (1) gekoppelt ist.
9. Ein Schleppbrett gemäß irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß die genannten Greifeinrichtungen (7) ergonomische Ränder aufweisen und daß die genannte mindestens eine Rippe (8) und der genannte Körper (1) glatte und runde Formen ohne irgendwelche scharfe Kanten aufweisen.
10. Ein Schleppbrett gemäß irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß die vordere Einkerbung (3) einen Sattelpunkt hat, wobei sich der genannte Sattelpunkt in einer rückwärtigen Position in bezug auf die querverlaufende Linie befindet, die durch die genannten Greifeinrichtungen (7) hindurchgeht, und daß sich der Zugpunkt (4) zwischen dem genannten Sattelpunkt und der genannten querverlaufenden Linie befindet.

Revendications

1. Une planche susceptible d'être remorquée, destinée à permettre de nager sous l'eau ou de voguer à la surface de l'eau comprenant :
 - un corps sensiblement plat (1) qui présente un axe avant-arrière (2), ledit corps (1) présentant une profonde encoche avant (3) et une encoche arrière (6) qui divisent le corps (1) en deux ailes qui sont symétriques l'une par rapport à l'autre par rapport audit axe avant-arrière (2);
 - au moins deux moyens de saisie (7) destinés à permettre une saisie par les mains de l'utilisateur, lesdits moyens de saisie (7) étant disposés dans chacune desdites ailes et étant symétriques l'un par rapport à l'autre par rapport audit axe avant-arrière (2) ;
 - un point de traction (4) qui comporte un moyen destiné à le connecter à une corde de remorquage (5), ledit point de traction (4) étant disposé sur ledit axe avant-arrière (2) ;
 - au moins une ailette (8) disposée sur une surface inférieure dudit corps (1), caractérisée en ce que le point de traction (4) est disposé dans une position arrière par rapport à une ligne transversale qui passe par lesdits moyens de saisie (7).
2. Une planche susceptible d'être remorquée selon la revendication 1, caractérisée en ce que lesdits moyens de saisie (7) sont des fenêtres.
3. Une planche susceptible d'être remorquée selon l'une quelconque des revendications précédentes, caractérisée en ce que ledit point de traction (4) est un orifice.
4. Une planche susceptible d'être remorquée selon l'une quelconque des revendications précédentes, caractérisée en ce que ledit point de traction (4) est situé dans une pièce détachable (10).
5. Une planche susceptible d'être remorquée selon la revendication 4, caractérisée en ce que ladite pièce détachable (10) est une pièce transversale à configuration de pont fixée au corps (1) au moyen d'orifices (9) ménagés dans lesdites ailes.
6. Une planche susceptible d'être remorquée selon la revendication 4 ou 5, caractérisée en ce que la position du point de traction (4) peut être réglée le long de l'axe avant-arrière (2).
7. Une planche susceptible d'être remorquée selon la revendication 6, caractérisée en ce que ladite position réglable est définie par des lignes d'orifices successifs (9) disposées sur les deux côtés dudit

axe avant-arrière (2).

8. Une planche susceptible d'être remorquée selon la revendication 5 ou 6, caractérisée en ce que ladite pièce détachable (10) comporte deux orifices successifs au moyen desquels elle est accouplée à au moins deux orifices (9) desdites ailes du corps (1).
9. Une planche susceptible d'être remorquée selon l'une quelconque des revendications précédentes, caractérisée en ce que lesdits moyens de saisie (7) comportent des bords ergonomiques, et les configurations de ladite ailette (8) et dudit corps (1) sont lissées et arrondies sans aucun bord aigu.
10. Une planche susceptible d'être remorquée selon l'une quelconque des revendications précédentes, caractérisée en ce que ladite encoche avant (3) comporte un point d'ensellement, ledit point d'ensellement étant situé dans une position arrière par rapport la ligne transversale qui passe par lesdits moyens de saisie (7), et en ce que ledit point de traction (4) est situé entre ledit point d'ensellement et ladite ligne transversale.

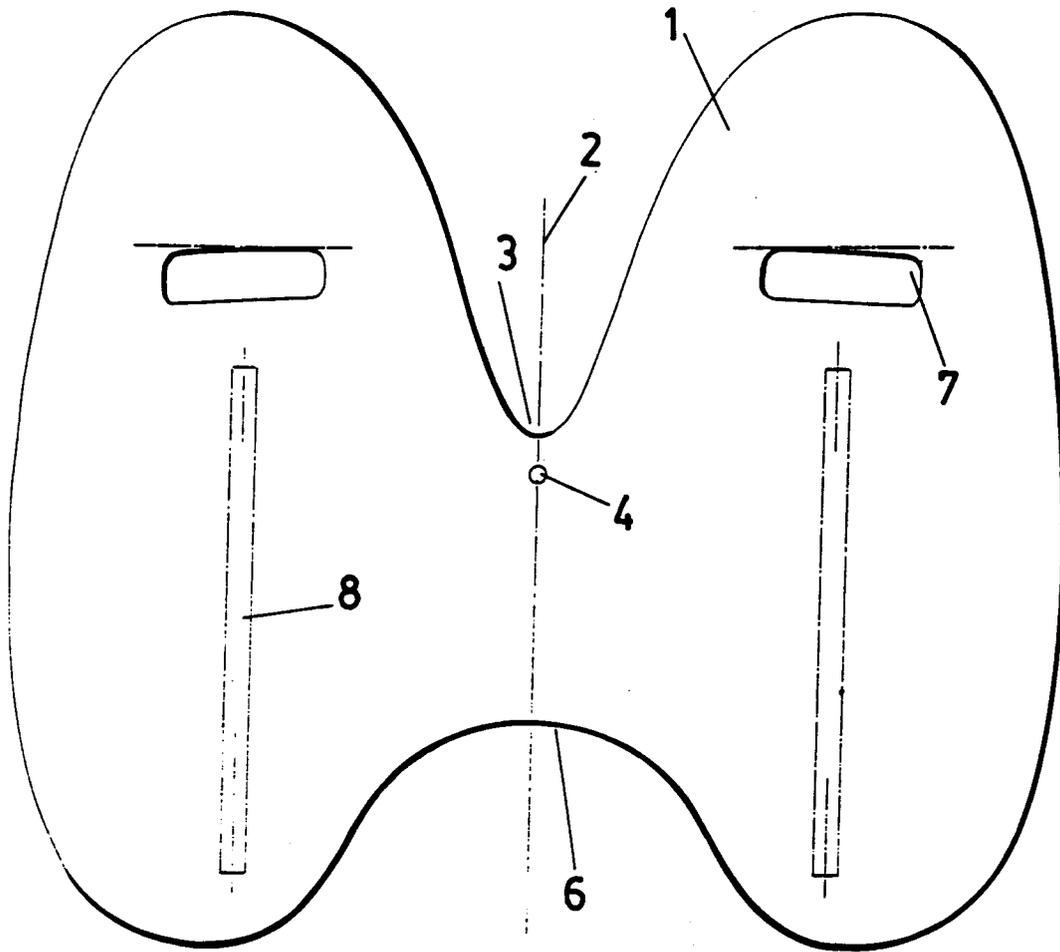


FIG-1

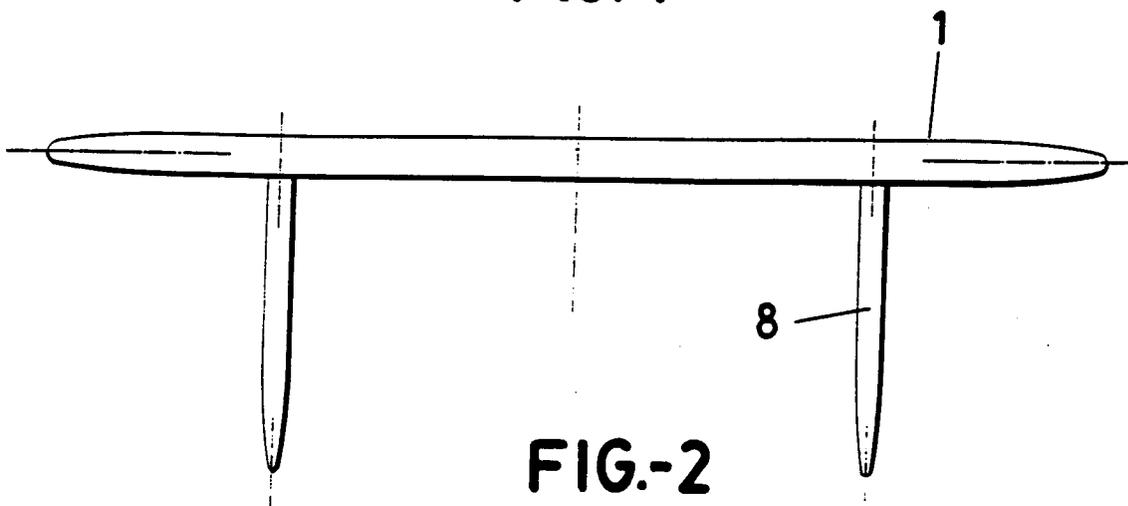


FIG-2

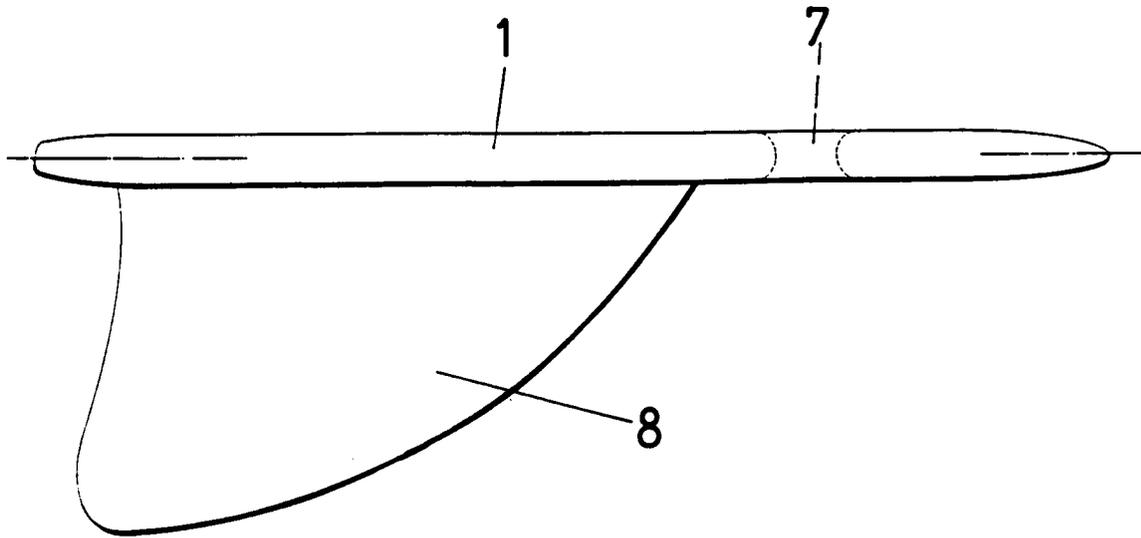


FIG.-3

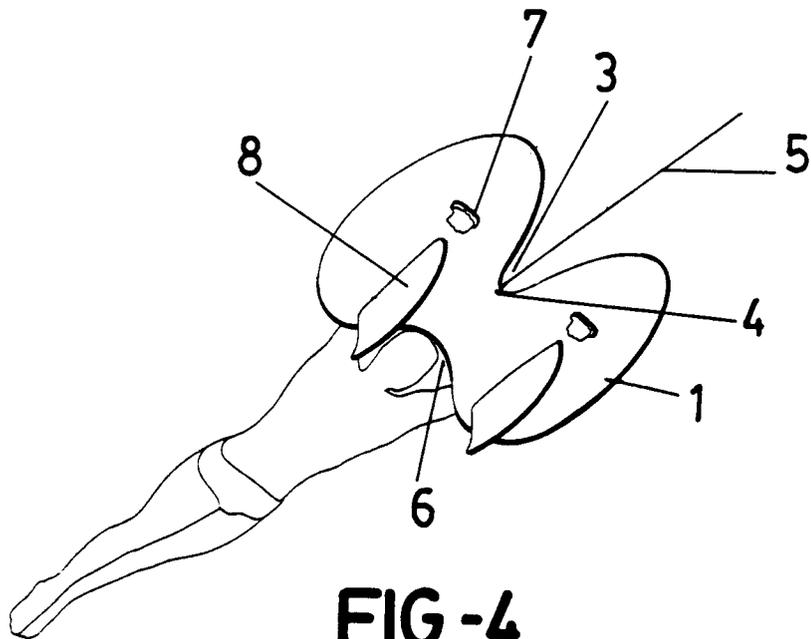


FIG-4

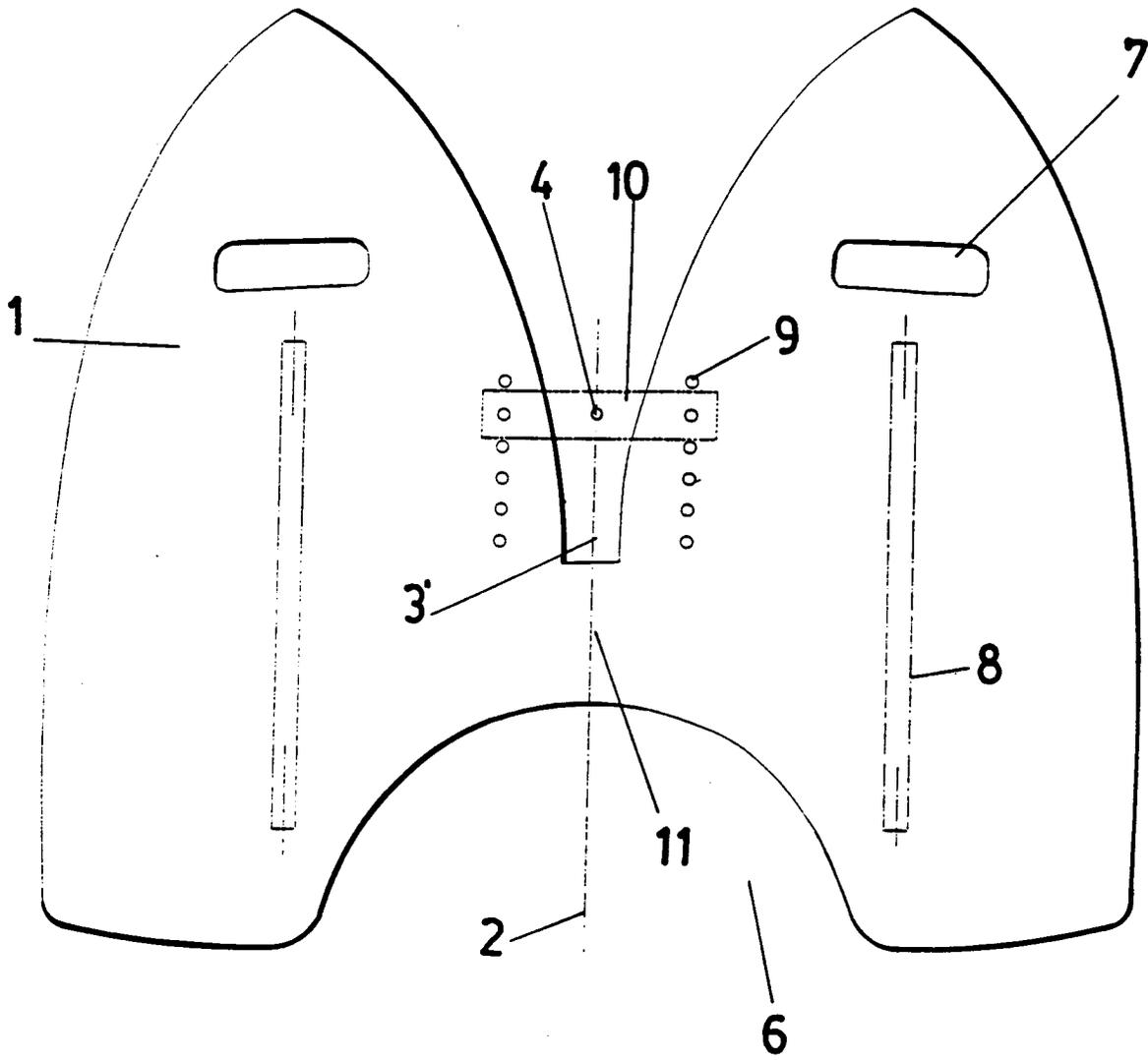


FIG.-5