

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
12 February 2004 (12.02.2004)

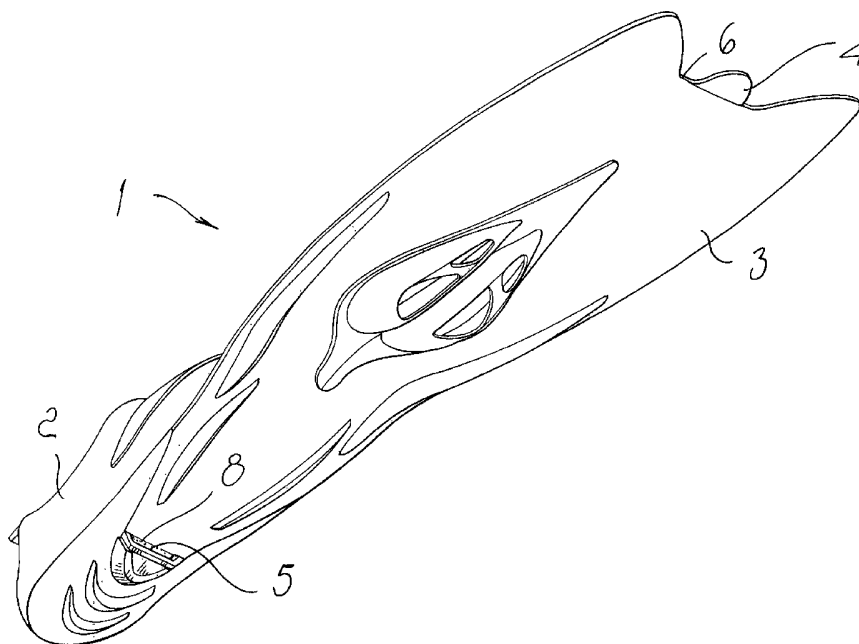
PCT

(10) International Publication Number
WO 2004/012822 A1

- (51) International Patent Classification⁷: **A63B 31/11** (74) Agent: **FORATTINI, A.**; Internazionale Brevetti Ingg. Zini, Maranesi & C. S.R.L., Piazza Castello, 1, I-20121 Milano (IT).
- (21) International Application Number: PCT/EP2003/008051
- (22) International Filing Date: 23 July 2003 (23.07.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: MI2002A001728 1 August 2002 (01.08.2002) IT
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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
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[Continued on next page]

(54) Title: SWIM AND DIVE FIN



(57) Abstract: A swim and dive fin that includes a foot pocket and a blade portion, characterized in that it includes at least one tab and at least one receptacle, the fin being associable with a matching fin that includes at least one matching tab and at least one matching receptacle, so that the tab engages the matching receptacle and the matching tab engages the receptacle, in order to provide an interlocking coupling between the two fins.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SWIM AND DIVE FIN

The present invention relates to a swim and dive fin.

Conventional swim fins are packaged at the time of purchase, in enclosures of various shapes and sizes.

5 Those packages can be constituted by a containment body that encloses the two fins, as occurs for example in the case of bags, or more simply by a wrapping or band made of heat-shrink plastics, which keeps them together. The packaging is meant exclusively to put the fins on display for purchase.

Once it has finished its function, such packaging is no longer used by the user,
10 who normally stores the fins in a bag for transport.

The packages used to market swim fins in fact generally have a short life and cannot be reused except in the case of plastic bags or similar containers, which in any case are not very strong and wear rapidly in addition to being awkward to use.

In use, unpaired fins are always awkward to carry and most of all, when in the
15 presence of many pairs of fins, it is troublesome and wasteful, in terms of time, to match up the loosely piled fins.

The above inconvenience is particularly severe in the case of professional operators, who accompany dozens of people on boat excursions, providing their customers with the equipment for diving or snorkeling.

20 In some cases, the operators also provide a great number of fins, generally piled in a container or other area of the boat, making it time-consuming and troublesome to identify two fins of the same size.

The aim of the present invention is to provide a swim and dive fin that overcomes the cited drawbacks of the prior art.

25 An object of the invention is to provide a fin that allows to store and carry a pair of fins easily and comfortably.

Another object of the invention is to provide a fin that is constructively simple and reliable in use and can be manufactured at competitive costs.

Another object is to provide a fin that is substantially similar to a conventional fin in
30 terms of space occupation and in use.

Another object is to provide a fin that can be manufactured with materials and machines also suitable for producing conventional fins.

This aim and these and other objects that will become better apparent hereinafter are achieved by a swim and dive fin as claimed in the appended claims.

5 Further characteristics and advantages will become better apparent from the description of preferred but not exclusive embodiments of the invention, illustrated by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a bottom perspective view of a fin according to the invention;

Figure 2 is a sectional side view of two fins according to the embodiment shown in
10 Figure 1;

Figure 3 is a sectional side view of the two fins of Figure 2, shown in the engaged position;

Figure 4 is a sectional enlarged-scale view of a tab of a fin during engagement with a receptacle of the other fin;

15 Figure 5 is a view, similar to Figure 4, but showing the engagement position;

Figure 6 is a bottom plan view of the fin according to a further embodiment of the invention;

Figure 7 is a side view of the fin of Figure 6;

Figure 8 is a top plan view of two coupled fins according to the embodiment
20 shown in Figures 6 and 7;

Figure 9 is a partially sectional side view of the two fins shown in Figure 8;

Figure 10 is a bottom plan view of the fin according to a further aspect of the invention;

Figure 11 is a side view of the fin of Figure 10;

25 Figure 12 is a top plan view of two fins according to the embodiment shown in Figures 10 and 11, in the coupled position;

Figure 13 is a partially sectional side view of the two fins of Figure 12 in the coupled condition;

Figure 14 is a bottom perspective view of a fin according to still a further aspect of
30 the invention;

Figure 15 is a top perspective view of the front portion of the fin of Figure 14;

Figure 16 is a sectional side view of two fins according to Figures 14 and 15, shown in the coupled position;

Figure 17 is an enlarged-scale sectional view of a tab of a fin according to Figures 14-16 shown during the step of engaging a receptacle of the other fin;

Figure 18 is a view, similar to Figure 17, of the coupling position.

With reference to the cited figures, a swim and dive fin according to the invention, generally designated by the reference numeral 1, 101, 201, 301, is constituted, in a per se known manner, by an elongated shoe that has a foot pocket 2, 102, 202, 302 that is suitable to contain the foot of the user and a blade portion 3, 103, 203, 303 that constitutes the propelling portion of the fin.

According to the invention, the fin 1, 101, 201, 301 includes one or more tabs 4, 104, 204, 304 and one or more receptacles or slots 5, 105, 205, 305. The tabs 4, 104, 204, 304 are suitable to engage matching receptacles 5, 105, 205, 305 of a matching fin that is coupled to the fin 1, 101, 201, 301, while the receptacles 5, 105, 205, 305 are suitable to accommodate the tabs 4, 104, 204, 304 of the matching fin.

In the example shown in Figures 1 to 5, the fin 1 includes a single tab 4, which is formed on the front edge 6 of the blade portion 3 and constitutes a sort of extension thereof.

The fin 1 has a single slot 5 that is obtained by means of a case member 7 provided in the structure below the foot pocket 2.

The receptacle 5 is protected against the penetration of sand or other foreign matter when the fins are used by a protective membrane 8, which can be obtained monolithically with the case member and can be deformed elastically in order to allow the insertion of the tab 4, as clearly shown in Figures 4 and 5.

In order to couple two fins 1 it is sufficient to arrange them mutually adjacent, so that their respective lower surfaces face each other and so that the fins are arranged in opposite directions, so that the foot pocket 2 of one fin lies at the blade portion 3 of the other, so that the tab 4 of one fin lies at the slot 5 of the other fin, as shown in Figures 2 and 3.

The elastic deformability of the fins allows to slide the tab 4 within the slot 5, so as to reach a stable locking position in which the two fins 1 are mutually engaged, forming an assembly that is slightly longer than the individual fin 1, as shown more clearly in Figures 2 and 3.

5 The same elastic deformability of the fins 1 allows the sliding of the tab 4 for the mutual disengagement of the fins.

Figures 6 to 18 illustrate further embodiments of the fin according to the invention among the many that are possible.

10 In the example shown in Figures 6 to 9, the fin 101 includes a single tab 104, which is formed on the lower surface 106 of the fin 101 at the end of the blade portion 103.

The fin 101 further has a single slot 105, which is formed on a protruding flap 106 that is obtained from the foot pocket and substantially constitutes an extension of the lower surface 106 beyond the foot pocket 102.

15 The tab 104 is substantially fin-shaped and is elongated toward the outside of the blade 103 so that it can be inserted in the corresponding seat 105 of the matching fin, engaging therewith.

In order to couple two fins 101, the respective lower surfaces 106 are arranged mutually adjacent so that the foot pocket 102 of one fin is located at the blade portion 103 of the other, so that the tab 104 of one fin lies at the slot 105 of the other fin 101.

20 The elastic deformability of the fins allows to slide the tab 104 inside the slot 105, so as to reach a stable locking position in which the two fins 101 are mutually engaged, forming an assembly whose length is equal to the length of the individual fin 101, as shown in Figures 8 and 9. In this case also, the elastic deformability of the fins 101 allows
25 the sliding of the tab 104 for the mutual disengagement of the fins.

In the further example shown in Figures 10 to 13, the fin 201 includes two tabs 204, which are formed on the lower surface 206 of the fin 201 and are arranged symmetrically, with respect to the longitudinal axis of the fin, in a central position at the blade portion.

30 The fin has two corresponding receptacles or slots 205, which are also

symmetrical with respect to the longitudinal axis of the fin and are arranged at the blade portion 203 but are adjacent to the foot pocket 202.

Each tab 204 is substantially fin-shaped and is elongated toward the end of the blade 203 so that it can be inserted in the corresponding receptacle 205 of the matching
5 fin, engaging with it.

When the fins 201 are not used, they can be coupled by arranging the respective lower surfaces 206 mutually adjacent, so that the blade portion 203 of one fin lies at the foot pocket 202 of the other fin and so that each tab 204 is arranged proximate to the corresponding slot 205. By utilizing the elastic deformability of the fins 201, the tabs 204
10 are made to slide within the respective slots 205, for both fins 201, until a stable locking position is reached in which the fins 201 mutually engage. The two fins 201 are coupled with their respective lower surfaces in contact, so that as a whole they do not exceed the length of the individual fin 201. It is possible to disengage the tabs 204 from the respective slots 205 by forcing the mutual spacing of the fins 201 until they uncouple
15 completely.

In the example shown in Figures 14 to 18, the fin 301 includes a single tab 304 that is formed on the front edge 306 of the blade portion 203, constituting a sort of extension thereof.

The fin 301 has an open slot 305, which is obtained by means of a bridge 307 that
20 is provided in the fin below the foot pocket 302.

The tab 304 includes a raised portion 308 which blocks the tab inside the slot 305 by interference with the bridge 307, as shown in Figure 18.

In order to couple two fins 301 it is sufficient to arrange them mutually adjacent so that their respective lower surfaces face each other and so that the fins are arranged in
25 opposite directions, so that the foot pocket 302 of one fin lies at the blade portion 303 of the other fin, so that the tab 304 of one fin is located at the slot 305 of the other fin, as shown in Figure 16.

The elastic deformability of the fins allows to make the tab 304 slide within the slot 305, so as to reach a stable locking position in which the two fins 301 are mutually
30 engaged, forming an assembly that is slightly longer than the individual fin 301, as shown

in Figure 16.

By pressing on the tab 304 at the raised portion 308, the elastic deformability of the fins 301 and particularly of the bridge 307 and of the tab 304 allows the sliding of the tab 304 for the mutual disengagement of the fins.

5 In practice, it has been found that the invention achieves the intended aim and objects, since it has provided a swim and dive fin that allows to couple the fins rapidly and easily and without using external components.

The fin according to the invention allows particularly handy carrying and allows to stow the fins after use with minimal space occupation.

10 The fin has the great advantage of eliminating the need for packaging for transport and for display and sale, thus avoiding the use of material that will ultimately be discarded into the environment.

The fin according to the invention has the additional advantage that the tabs and slots, sized and shaped appropriately, not only do not hinder the normal operation of the fin but also can increase the propulsion efficiency of the fins.

15 The fin according to the invention is susceptible of numerous modifications and variations, within the scope of the appended claims. All the details may be replaced with technically equivalent elements.

The materials used, as well as the dimensions, may of course be any according to requirements and to the state of the art.

20

CLAIMS

1. A swim and dive fin comprising a foot pocket and a blade portion, characterized in that it comprises at least one tab and at least one receptacle, said fin being associable with a matching fin that comprises at least one matching tab and at least one matching
5 receptacle, so that said tab engages said matching receptacle and said matching tab engages said receptacle, in order to provide an interlocking coupling between the two fins.

2. The fin according to claim 1, characterized in that said tab is formed on the edge of said blade portion, constituting an extension thereof.

10 3. The fin according to claim 1 or 2, characterized in that it comprises an open slot that is obtained by means of a bridge provided in the structure in a position that lies below said foot pocket.

4. The fin according to claim 3, characterized in that said tab comprises a raised portion that is suitable to block said tab inside said slot by interference with said bridge.

15 5. The fin according to claim 1 or 2, characterized in that it comprises a single slot that is formed in a case member that is provided in the fin below the foot pocket.

6. The fin according to claim 5, characterized in that said seat comprises a protective membrane that is suitable to close said seat when the fin is not mated with a matching fin, in order to avoid the penetration of sand or other foreign matter.

20 7. The fin according to claim 6, characterized in that said membrane is obtained monolithically with said case member and can be deformed elastically in order to allow the insertion of the tab.

8. The fin according to claim 1, characterized in that said tab is substantially fin-shaped and is elongated toward an end of the fin so that it can be inserted in the
25 corresponding seat of the matching fin, engaging with it.

9. The fin according to claim 1 or 8, characterized in that it comprises two tabs that are formed symmetrically with respect to the longitudinal axis of the fin on the lower surface of said fin, said tabs being suitable to engage corresponding seats that are formed symmetrically with respect to the longitudinal axis of the matching fin to be
30 coupled.

10. The fin according to one or more of the preceding claims, characterized in that said fins are coupled by arranging said lower surfaces mutually adjacent so that the blade portion of one fin lies at the foot pocket of the other fin, each one of said tabs being located proximate to said corresponding slots.

5 11. The fin according to one or more of the preceding claims, characterized in that the mutual engagement and disengagement of the fins occurs by utilizing the elastic deformability of said fins, by making said tabs of one fin slide within said respective seats of the other fin, until a stable locking position is achieved in which said fins are mutually coupled, said two fins being coupled with the respective lower surfaces in contact, so that
10 as a whole they do not exceed the length of the individual fin, said fins being disengageable by disengaging said tabs from said respective slots.

12. The fin according to one or more of the preceding claims, characterized in that said seat is formed on a flap that protrudes from the contour of the fin.

15 13. The fin according to one or more of the preceding claims, characterized in that said protruding flap that comprises said receptacle is obtained from the foot pocket and substantially constitutes an extension of the lower surface of the fin beyond said foot pocket.

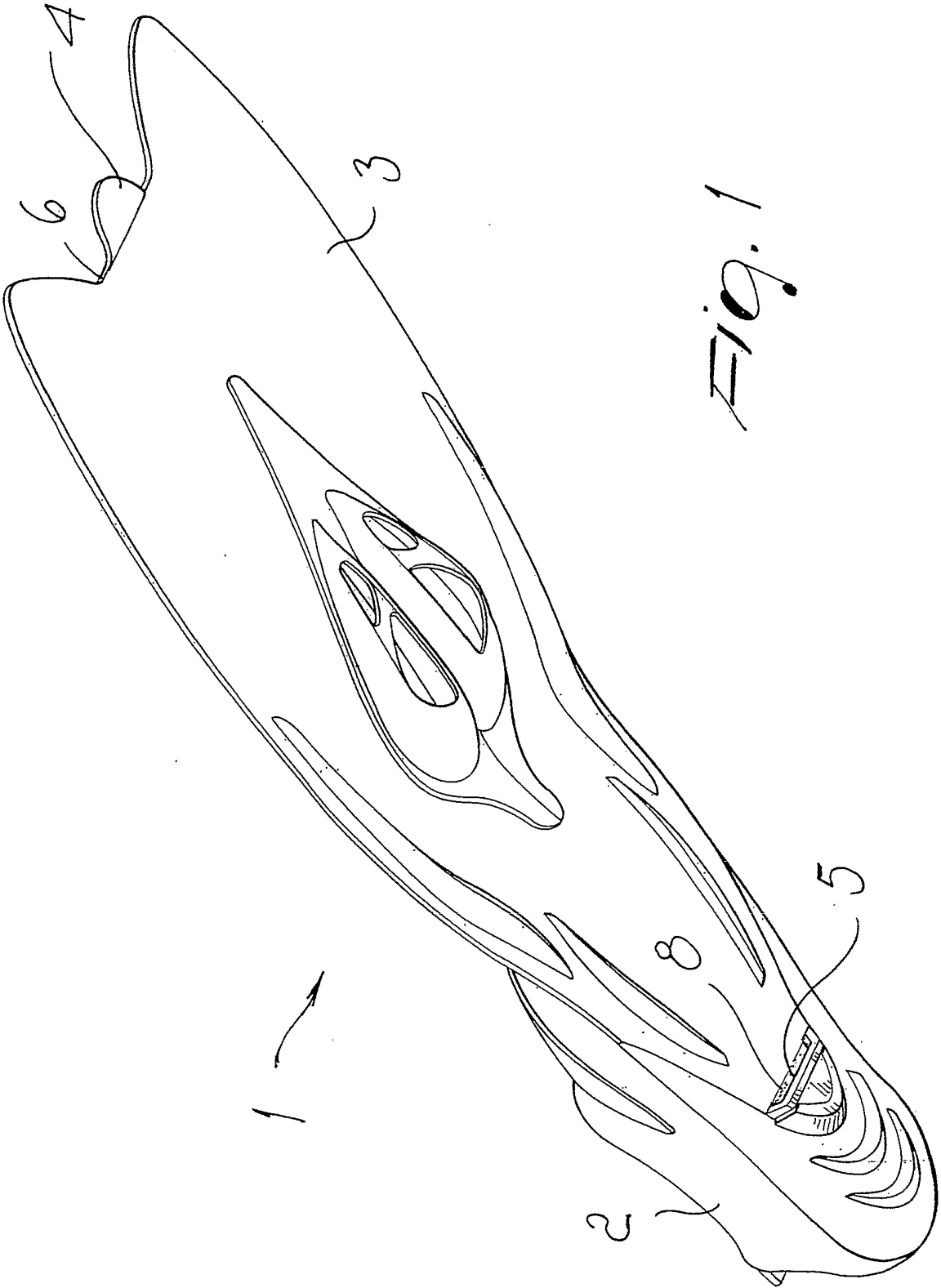
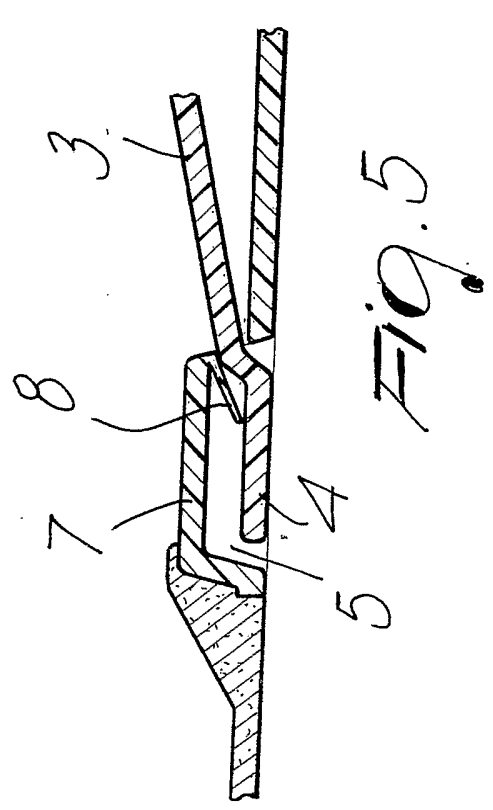
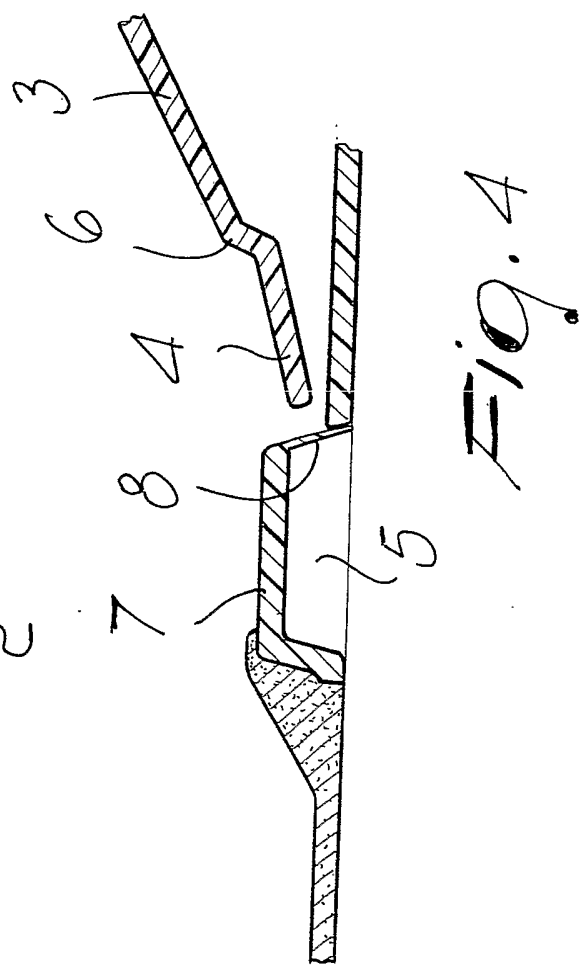
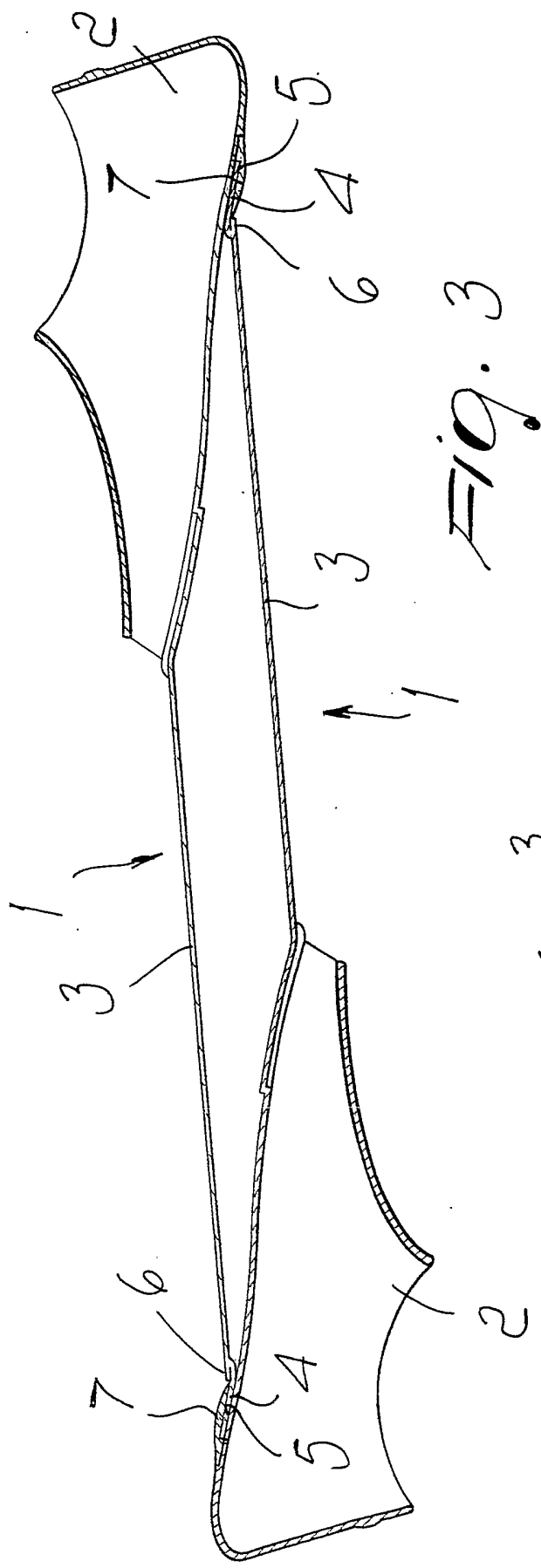
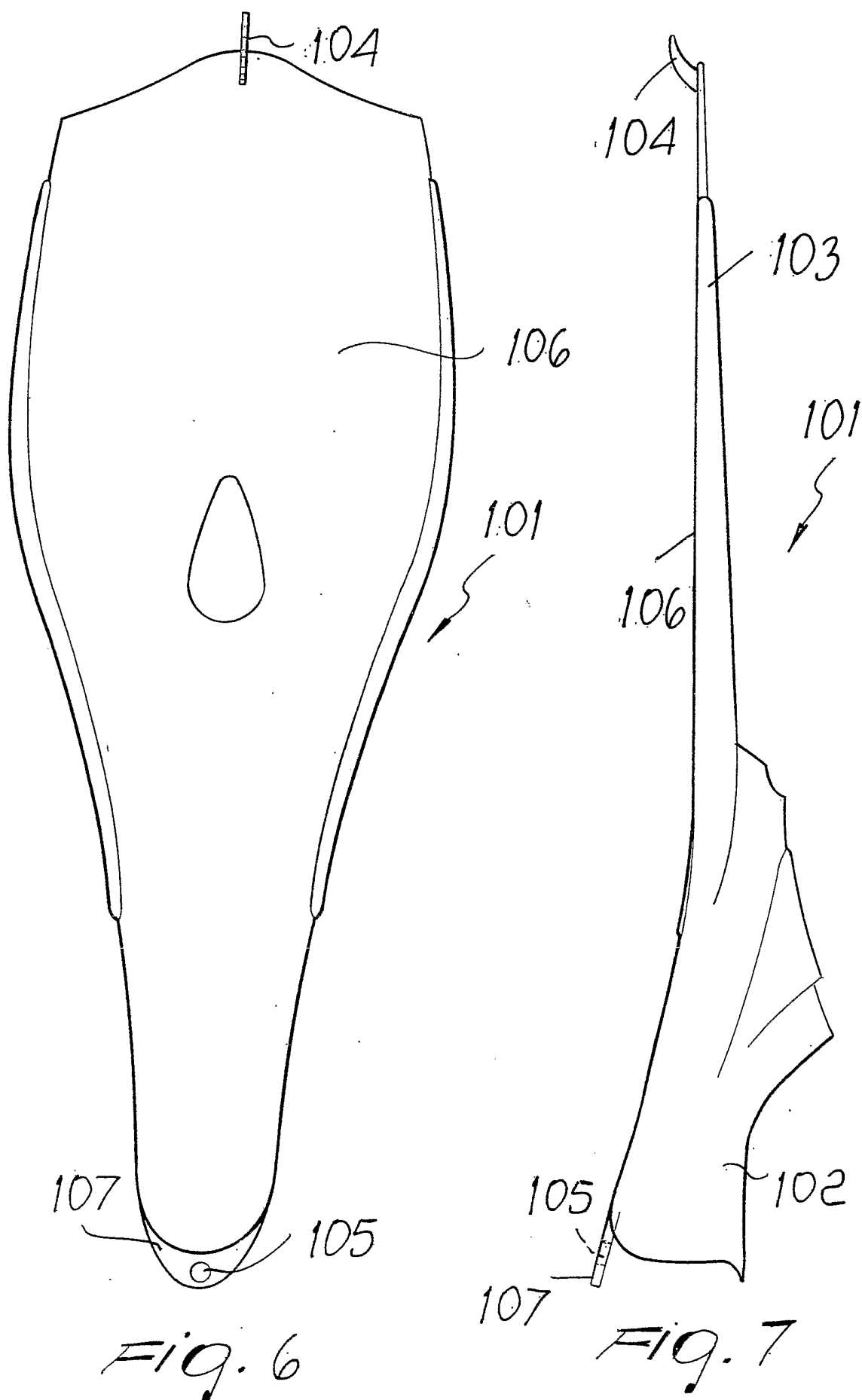
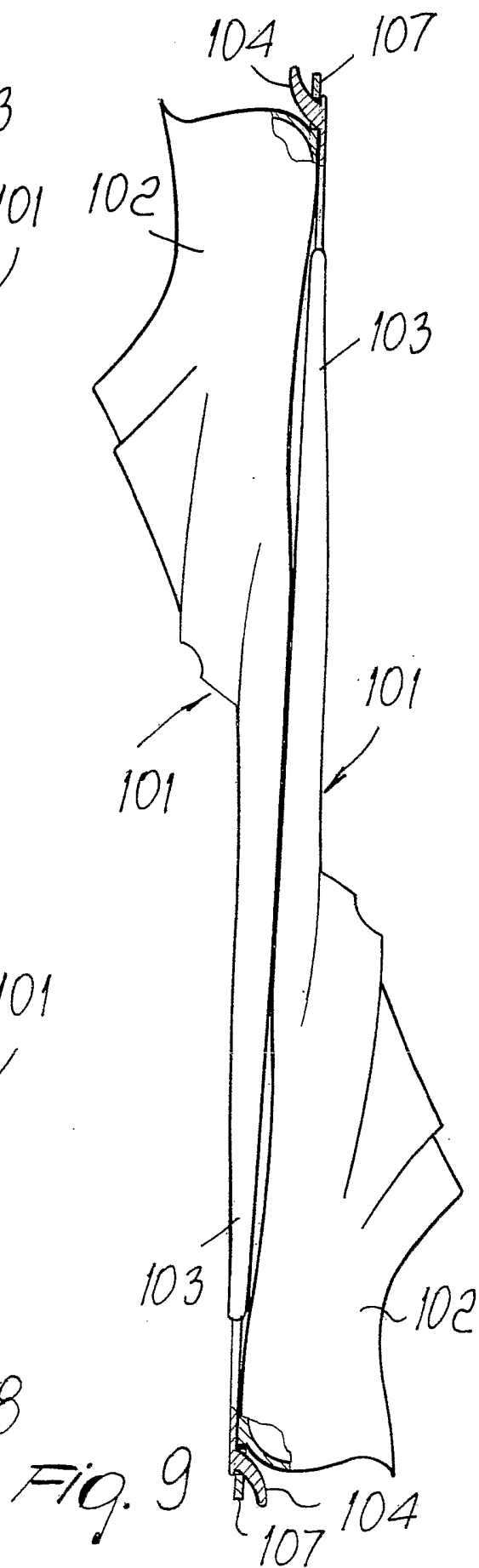
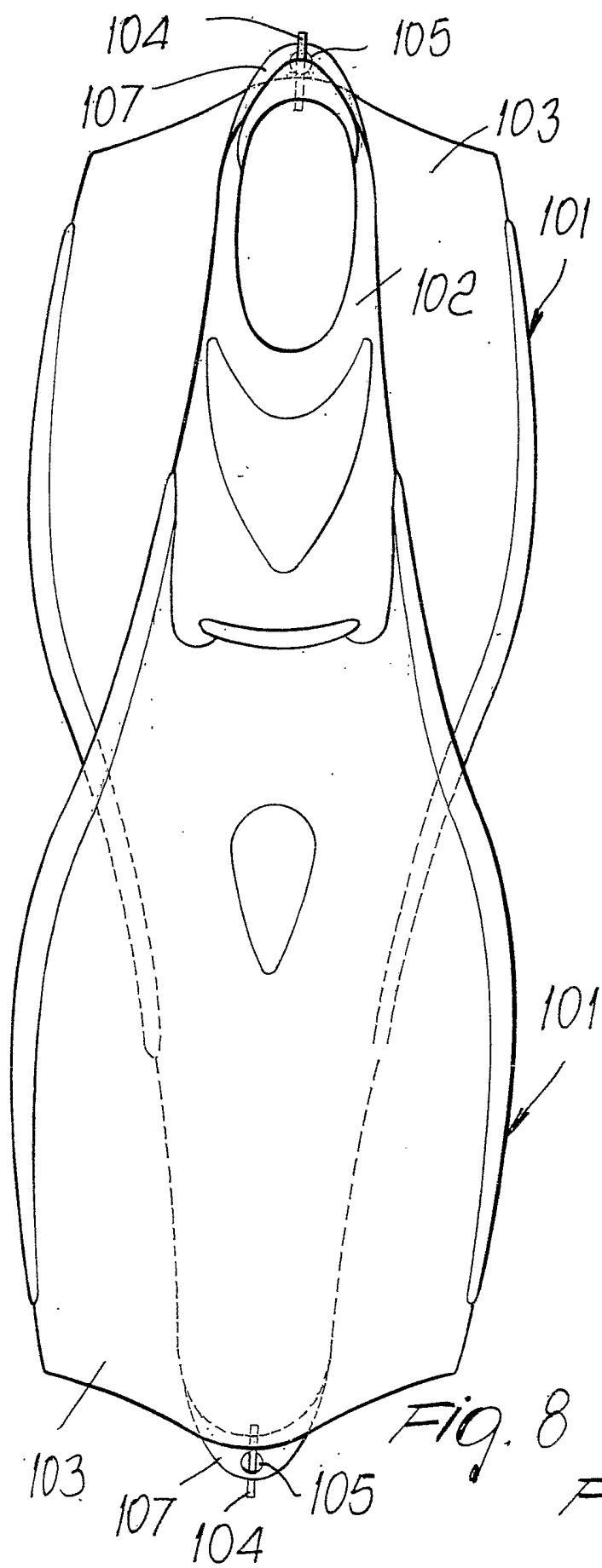


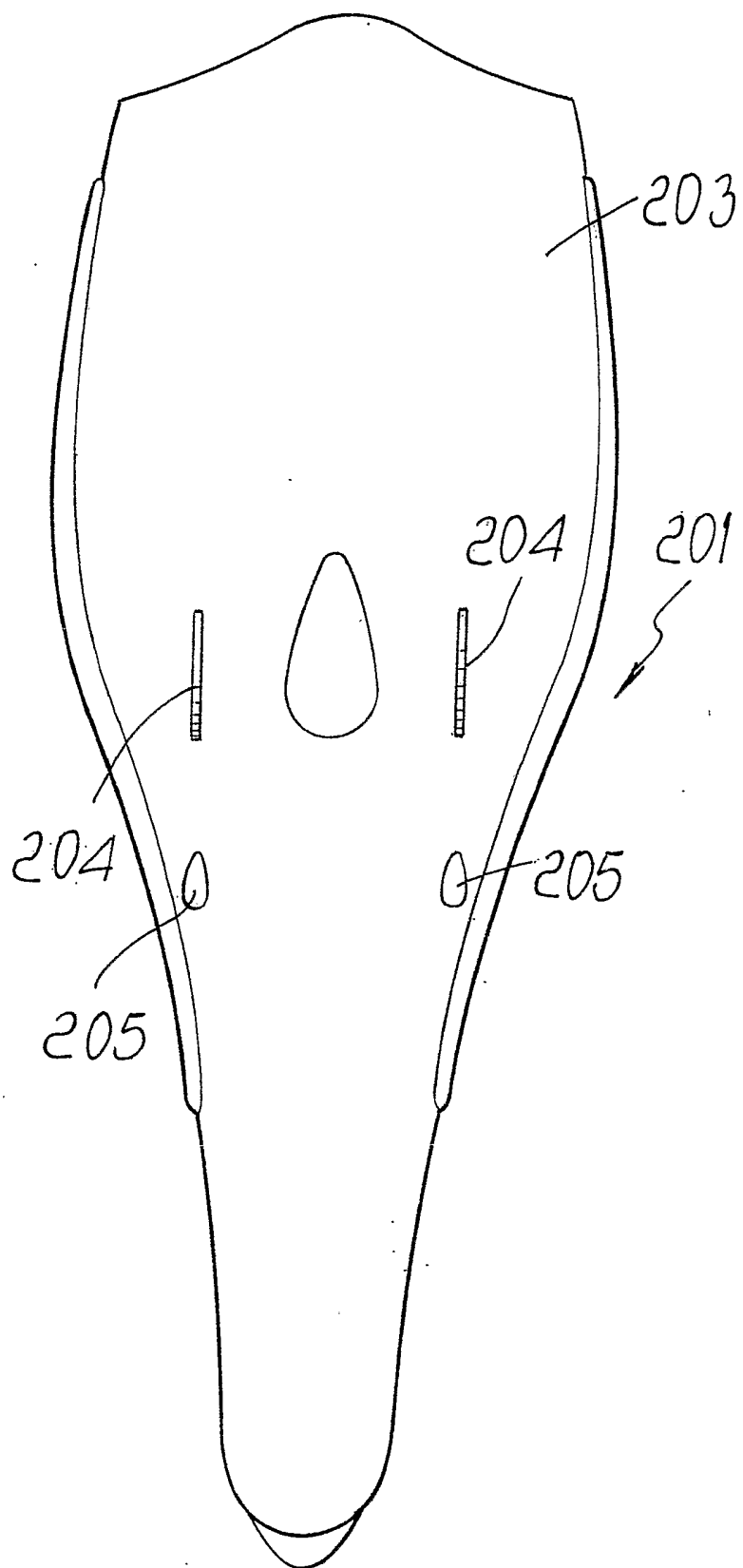
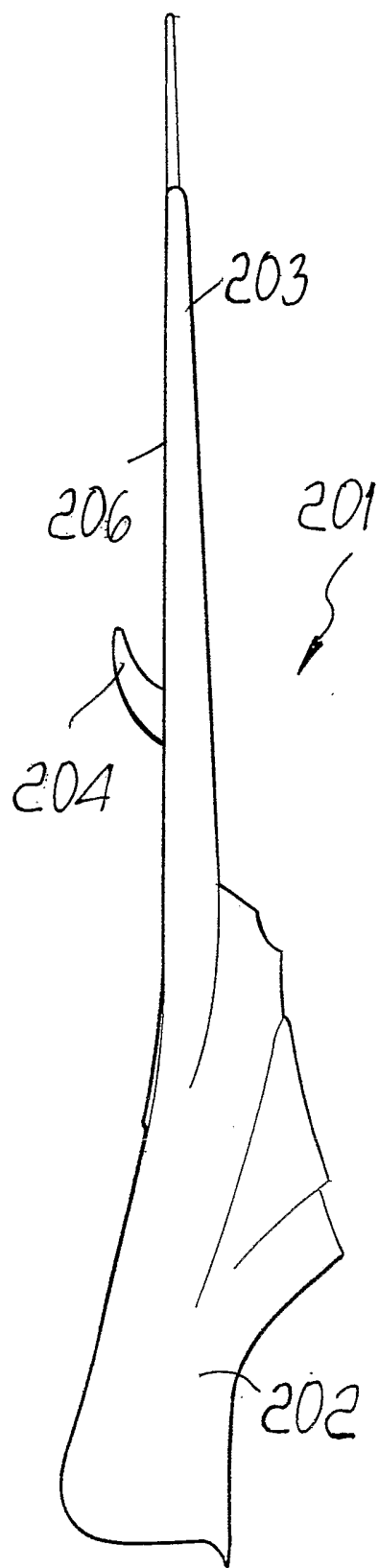


Fig. 2







*Fig. 10**Fig. 11*

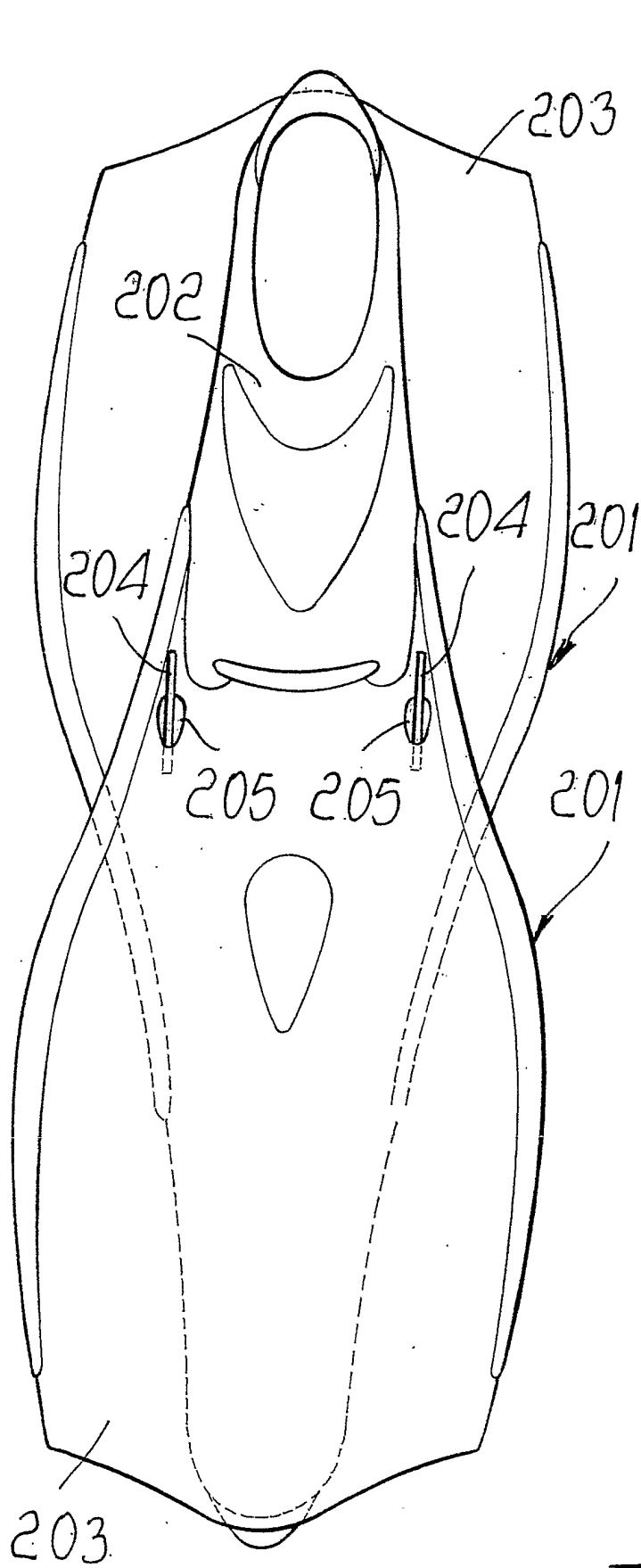


Fig. 12

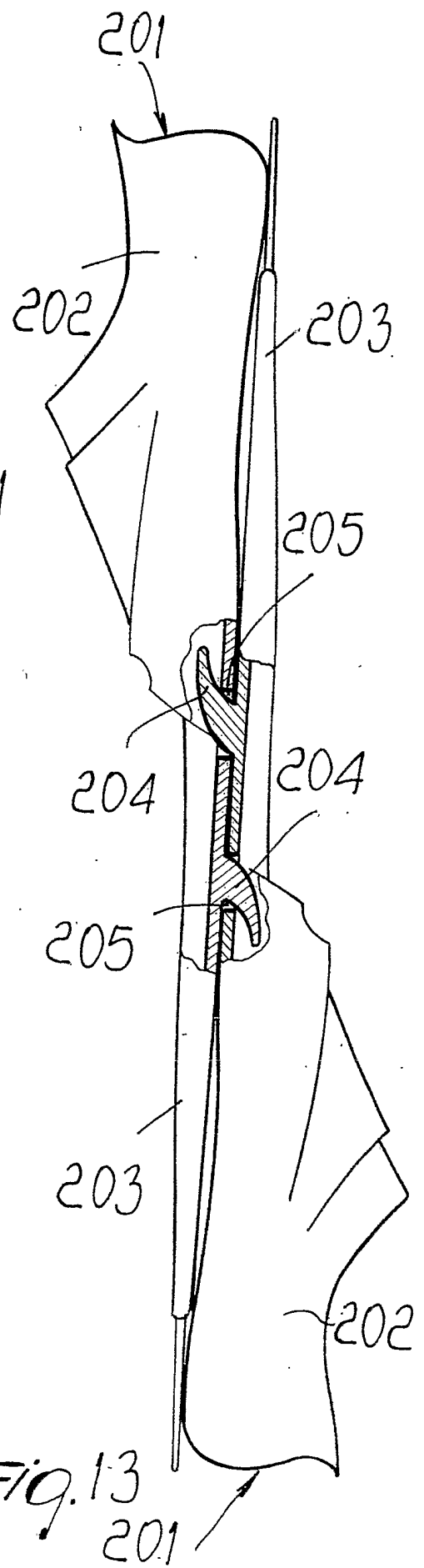
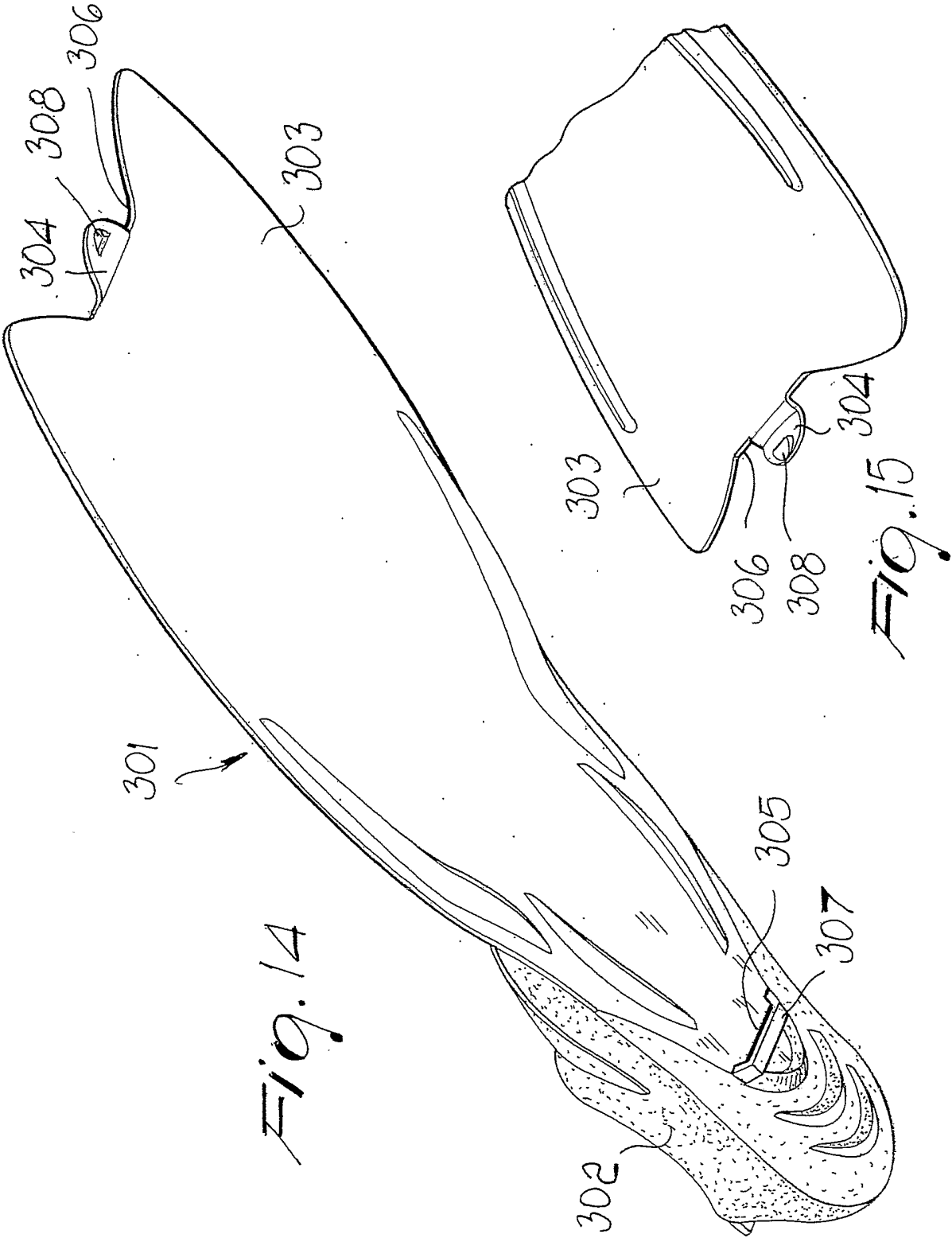
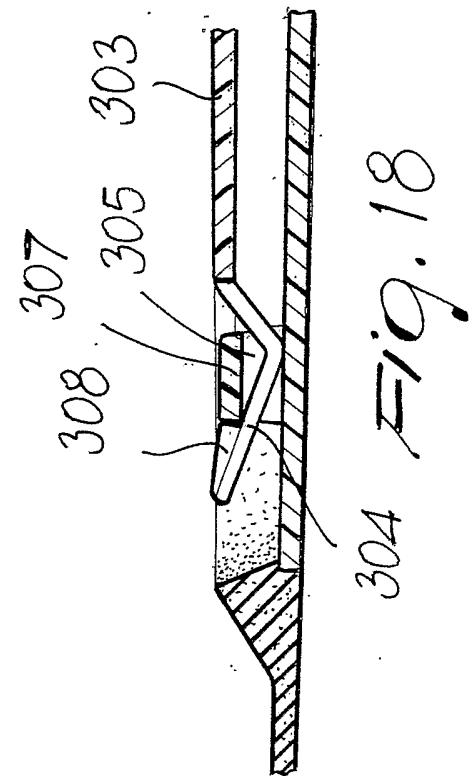
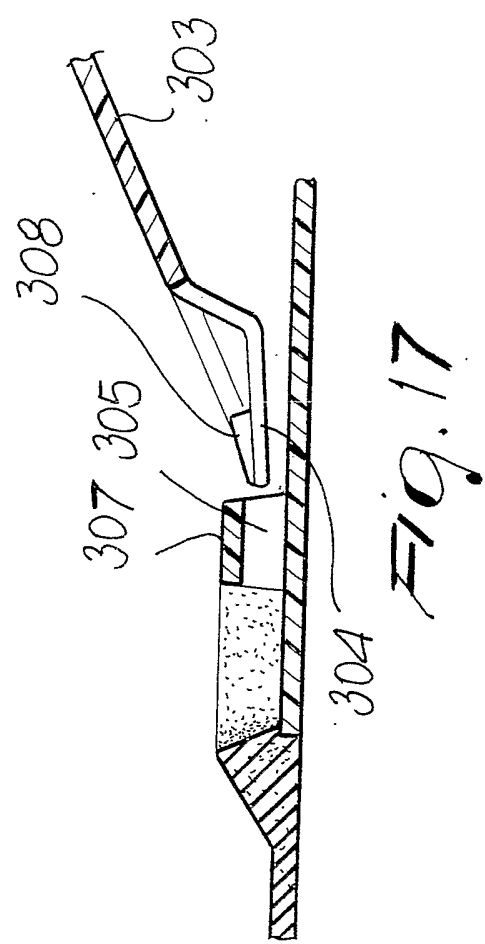
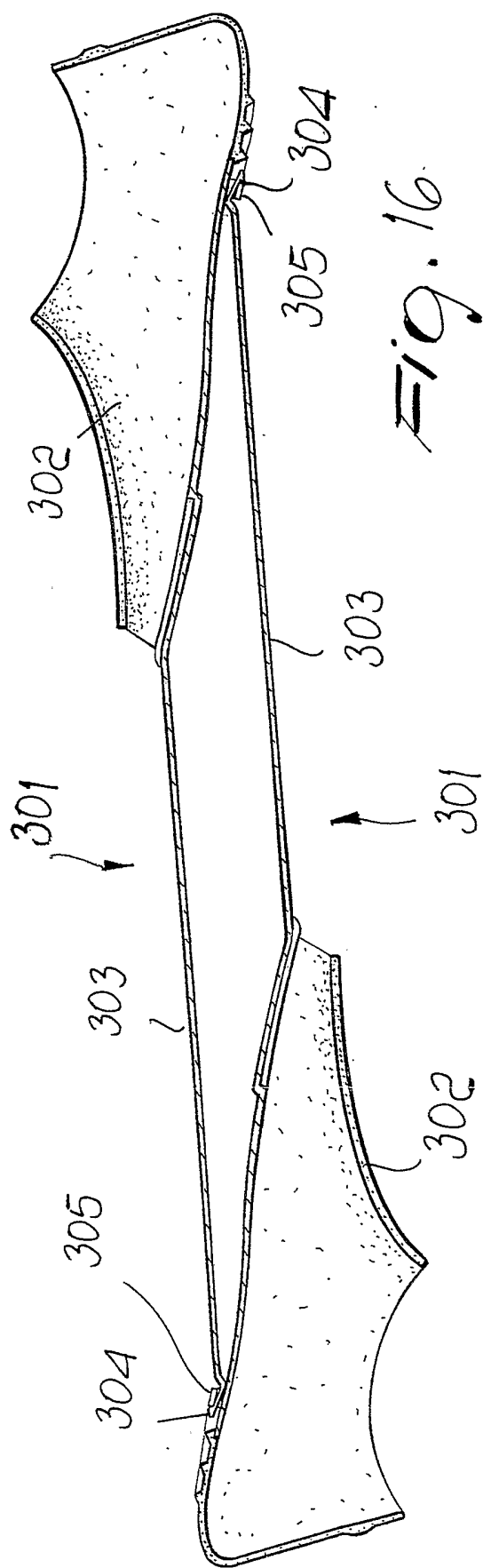


Fig. 13





INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 03/08051

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A63B31/11

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 165 764 A (CHRISTIANSEN JAMES S) 19 January 1965 (1965-01-19) column 6, line 60 - column 7, line 3; figures 1,8-11,24,25,31 ----	1,2,9
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A	EP 0 572 853 A (TECHNISUB SPA) 8 December 1993 (1993-12-08) -----	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

15 October 2003

Date of mailing of the international search report

22/10/2003

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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