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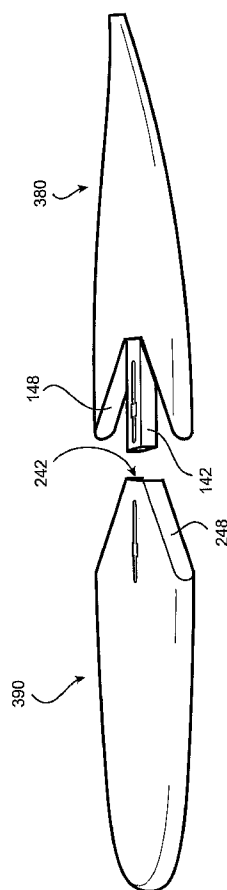
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ning of each regular issue of the PCT Gazette.

(54) Title: SPORTS BOARD ASSEMBLY



(57) Abstract: A sports board assembly for forming a sports board (20) having a nose (24), a tail (22) and a mid-portion (26) therebetween, the sports board assembly comprising: a nose half (30) having a nose end (31) and a mid-portion end (33), a nose half frame (36) extending between the nose end and the mid-portion end, the nose half mid-portion end having a first connection means (39); and a tail half (50) having a tail end (51) and a mid-portion end (53), a tail half frame (56) extending between the tail end and the mid-portion end, the tail half mid-portion end having a second connection means (59) for engaging the first connection means; wherein the nose half can be attached to the tail half via the first and second connection means to form the sports board.

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Sports Board Assembly

Field of the Invention

The present invention relates to a sports board which can be disassembled into two separate parts for easier transport and storage. The sports board can be a
5 sailboard, a surfboard, a surf lifesaving board, a ski board, or any other water sports board of substantial length. The present invention is also applicable to kayaks and canoes.

Background Art

Sailboarding (also called wind surfing) involves a sailboard with a sail attached to
10 the board via a flexible joint. The sailboard is generally similar to a surfboard and can be anywhere from six to fifteen feet long. Due to their size and length, it is difficult to transport and store such sports boards. Generally, vehicle roof racks are required for transport. Also, as surfboards and sailboards are expensive and can cost thousands of dollars, it is undesirable to leave boards on vehicle roof
15 racks when a vehicle is unattended.

It is the object of the present invention to provide a sports board which is easier to transport and store than traditional boards.

Summary of the Invention

In a first aspect, the present invention provides a sports board assembly for
20 forming a sports board having a nose, a tail and a mid-portion therebetween, the sports board assembly comprising:

a nose half having a nose end and a mid-portion end, a nose half frame extending between the nose end and the mid-portion end, the nose half mid-portion end having a first connection means; and
25 a tail half having a tail end and a mid-portion end, a tail half frame extending between the tail end and the mid-portion end, the tail half mid-portion end having a second connection means for engaging the first connection means;

wherein the nose half can be attached to the tail half via the first and second connection means to form the sports board.

The nose half frame preferably extends substantially along the entire length of the nose half from the nose end to the mid-portion end. The tail half frame preferably
5 extends substantially along the entire length of the tail half from the mid-portion end to the tail end. The nose half frame is preferably substantially wholly within the nose half and the tail half frame is substantially wholly within the tail half.

In the preferred embodiment, one of the first and second connection means is an extension of the mid-portion end and the other of the first and second connection
10 means is a cavity in the mid-portion end for receiving the extension.

Preferably, the first connection means includes a member extending from the nose mid-portion end and the second connection means includes a cavity formed in the tail mid-portion end adapted to receive the extension member. Alternatively, the first connection means can be a cavity formed in the nose mid-
15 portion end and the second connection means can be a member extending from the tail mid-portion end.

Preferably, the nose mid-portion end is of a generally concave configuration and the tail mid-portion end is of a generally convex configuration. The nose and tail mid-portion ends are preferably substantially v-shaped.

20 The nose half preferably includes a hollow shell and a frame assembly received within the hollow shell. The frame assembly preferably includes a longitudinal spine having a nose end, a mid-portion end and an extension extending from the mid-portion end. The frame assembly preferably includes side rails extending along each side of the spine, the side rails being curved and connected to the
25 nose end of the spine. The frame assembly preferably includes end plates connected to the spine mid-portion end and distal ends of the side rails, wherein the end plates are sealed with the shell such that an interior of the nose half is fully sealed against water entry. The end plates are preferably angled rearwardly relative to the spine to form a substantially V-shape facing away from the nose
30 end. The extension preferably includes a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot

width. The hollow nose half shell preferably includes a pointed nose end, an open mid-portion end, sides and top and bottom sheets. The frame assembly is preferably of a height to extend and abut both the shell top and bottom sheets

5 Preferably, the frame assembly includes a longitudinal spine having a nose end, a mid-portion end and an extension extending from the mid-portion end, side rails extending along each side of the spine, the side rails being curved and connected to the nose end of the spine, and end plates connected to the spine mid-portion end and distal ends of the side rails, the hollow nose half shell includes a pointed nose end, an open mid-portion end, sides and top and bottom sheets, wherein the
10 end plates are sealed with the mid-portion end of the shell and the extension is sealed such that an interior of the nose half is fully sealed against water entry.

The nose half hollow shell is preferably moulded as a single piece. The nose half hollow shell is preferably substantially transparent or translucent. The nose half shell in another embodiment is substantially filled with low density material.

15 The tail half preferably includes a hollow shell and a frame assembly received within the hollow shell. The tail half frame assembly preferably includes a longitudinal spine having a tail end and a mid-portion end and a cavity extending from the mid-portion end. The frame assembly preferably includes side rails extending along each side of the spine, the side rails being curved and connected
20 to the tail end of the spine. The frame assembly preferably includes end plates connected to the spine mid-portion end and distal ends of the side rails, wherein the end plates are sealed with the shell such that an interior of the tail half is fully sealed against water entry. The end plates are preferably angled rearwardly relative to the spine. The cavity preferably includes a longitudinal slot at a top
25 surface thereof which has an aperture at one location thereof having a width greater than the slot width.

The hollow tail half shell preferably includes a tail end, an open mid-portion end, sides and top and bottom sheets. The frame assembly is preferably of a height to extend and abut both the shell top and bottom sheets.

30 The frame assembly preferably includes a longitudinal spine having a tail end, a mid-portion end and a cavity extending from the mid-portion end, side rails extending along each side of the spine, the side rails being curved and connected

to the tail end of the spine, and end plates connected to the spine mid-portion end and distal ends of the side rails, the hollow tail half shell includes a tail end, an open mid-portion end, sides and top and bottom sheets, wherein the end plates are sealed with the mid-portion end of the shell and the cavity is sealed such that
5 an interior of the tail half is fully sealed against water entry.

The tail half hollow shell is preferably moulded as a single piece. The tail half hollow shell is preferably substantially transparent or translucent. The tail half shell preferably includes a slot and an aperture having a width greater than the slot width. The tail half shell in another embodiment is substantially filled with low
10 density material.

In another embodiment, the nose half includes a base assembly for forming the base of the nose half, a low density material having a predetermined thickness substantially covering the base assembly and a top cover sheet having edges attached to the base assembly for retaining the low density material to the base
15 assembly. Alternatively, the nose half comprises the base assembly and the top cover sheet attached to the base assembly in an air tight manner, and the interior of this assembly is filled with air under pressure.

The base assembly preferably includes a bottom sheet having a pointed nose end, side edges and a mid-portion end, the bottom sheet generally diverging from
20 the nose end to the mid-portion end. Flanges preferably extend along the side edges of the bottom sheet for attachment of the top cover sheet to the bottom sheet. The nose half frame is preferably attached to the top surface of the bottom sheet which extends substantially along the entire length of the bottom sheet. The frame can be X-shaped in cross section substantially along its entire length.
25 Alternatively, the longitudinal frame can be rectangular or circular in cross section. The nose end portion of the frame preferably curves upwardly and tapers toward a point.

The frame preferably includes an extension which extends rearwardly from the mid-portion end for forming the first connection means. The extension preferably
30 includes a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot width. The end frames are preferably connected to the frame, the end frames extending respectively along

edges of the mid-portion end. The bottom sheet top surface is preferably covered with the low density material from the end frames to the nose end. The top cover sheet is preferably attached taut to the base assembly. The top cover sheet in another embodiment is made from moulded material and attached to the base assembly.

The top surface of the low density material is preferably shaped to the desired top surface profile of the nose half of the sports board. The extension is preferably substantially filled or covered with a resilient material, such as foam material.

In another embodiment, the tail half preferably includes a base assembly for forming the base of the tail half, a low density material having a predetermined thickness substantially covering the base assembly and a top cover sheet having edges attached to the base assembly for retaining the low density material to the base assembly. The base assembly preferably includes a bottom sheet having a tail end, side edges and a mid-portion end. Flanges preferably extend along the side edges of the bottom sheet for attachment of the top cover sheet to the bottom sheet. The tail half frame is preferably attached to the top surface of the bottom sheet which extends substantially along the entire length of the bottom sheet. The frame preferably includes a cavity which extends rearwardly from the mid-portion end. The cavity preferably includes a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot width. End frames are preferably connected to the frame, the end frames extending respectively along edges of the mid-portion end. The bottom sheet top surface is preferably covered with the low density material from the end frames to the nose end. The top cover sheet is preferably attached taut to the base assembly. The top cover sheet in another embodiment is made from moulded material and attached to the base assembly.

A resilient material is preferably inserted between the low density material and the top cover sheet at least at portions of the tail half at which a user's feet will be located in use.

The tail half and/or the nose half preferably includes at least one cavity for receiving electronics equipment, such as a GPS transceiver, an Emergency

position-indicating radio beacon (EPIRB), and/or a shark repellent device, and power supplies in connection therewith.

In another aspect, the present invention provides a sports board assembly for forming a sports board having a nose, a tail and a mid-portion therebetween, the sports board assembly comprising:

- a nose half having a nose end and a mid-portion end, the nose half comprising a hollow shell and a frame assembly extending from the nose end to the mid-portion end, the nose half mid-portion end having an extension extending therefrom; and
- 10 a tail half having a tail end and a mid-portion end, the tail half comprising a hollow shell and a frame assembly extending from the tail end and the mid-portion end, the tail mid-portion end having a cavity formed therein for receiving the nose half extension;
- wherein the nose half can be attached to the tail half by inserting the extension into the cavity to form the sports board.

The nose half frame assembly preferably includes a longitudinal spine having a nose end, a mid-portion end and the extension, rails extending along each side of the spine, the side rails being curved and connected to the nose end of the spine, and end plates connected to the spine mid-portion end and distal ends of the side rails, wherein the end plates are sealed with the shell and the extension is sealed such that an interior of the nose half is fully sealed against water entry.

The tail half frame assembly preferably includes a longitudinal spine having a tail end and a mid-portion end having the cavity formed from the mid-portion end, side rails extending along each side of the spine, the side rails being curved and connected to the tail end of the spine, and end plates connected to the spine mid-portion end and distal ends of the side rails, wherein the end plates are sealed with the mid-portion end of the shell and the cavity is sealed that an interior of the nose half is fully sealed against water entry.

The extension and the cavity preferably each include a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot width, wherein the slots and apertures substantially align with each other when the extension is inserted into the cavity, and the assembly

further includes a locking means comprising a threaded shank having a distal head and a base threaded to the shank, wherein the distal head can be inserted through the aligned apertures in use and the shank is moved along the aligned slots such that the distal head is not aligned with the aligned apertures, wherein
5 tightening of the base relative to the distal head clamps the aligned slots to each other, thus locking the nose half to the tail half.

The tail half cavity is preferably shaped and dimensioned to fully receive the nose half extension with a tight fit therebetween.

The locking means base preferably includes a socket for receiving a sail mast
10 base. The locking means base in another embodiment is of a low-profile to be substantially flush with an upper surface of the tail half.

The tail half preferably includes foot hold brackets. A bottom surface tail half preferably includes at least one tail fin slot for attachment of a tail fin.

Brief Description of the Drawings

15 Preferred forms of the present invention will now be described by way of examples only with reference to the accompanying drawings wherein:

Figure 1 shows a sailboard according to the present invention;

Figure 2 shows a bottom view of the sailboard of Figure 1;

Figure 3(a) and (b) show the base assembly for the nose half of the sailboard of
20 Figure 1;

Figure 4 shows the base assembly of Figure 3 with low density material attached to the sheet top surface and foam attached to the frame extension;

Figure 5 is a bottom view of the assembly of Figure 4;

Figure 6 show the assembly of Figure 4 with a top cover sheet attached thereto;

Figures 7(a) and (b) show the base assembly for the tail half of the sailboard of Figure 1;

Figure 8 shows the frame assembly of Figure 7 having low density material attached to the sheet top surface;

- 5 Figure 9 shows the assembly of Figure 8 having foam attached on top of the low density material;

Figure 10 shows the Figure 9 assembly with a top cover sheet attached thereto;

Figure 11 is a bottom view of the Figure 10 assembly;

Figure 12 is an enlarged view of the cavity of the tail half;

- 10 Figure 13 shows the attachment of the tail half to the nose half of the sailboard;

Figure 14 (a) to (d) shows other possible shapes of the tail and nose halves and attachments therebetween;

Figure 15 shows a frame assembly and a shell for the nose half of a sailboard according to a second embodiment of the present invention;

- 15 Figure 16 shows a frame assembly and a shell for the tail half of the sailboard according to the second embodiment;

Figure 17 show the assembled nose half and tail half of the sailboard according to the second embodiment

Figure 18 show the assembled sailboard according to the second embodiment;

20 **Best Mode(s) for Carrying Out the Invention**

The present invention will be described in relation to a sailboard sports board. It is to be understood however that the sports board invention can alternatively be a

surfboard, or any other sports board of substantial length, such as surf lifesaving boards.

Figures 1 and 2 show a sailboard 20 according to the present invention. The sailboard 20 includes a tail 22, a nose 24 and a mid-portion 26. The sailboard 20
5 can be disassembled into a nose half 30 and a tail half 50 for easier transport and storage. When using the sailboard 20, the nose half 30 and tail half 50 are connected to each other along parting line 40, which is generally located and extends across the mid-portion 26.

Figure 3 shows a base assembly 32 for the nose half 30. The base assembly 32
10 includes a bottom sheet 34 having a pointed nose end 31, side edges 35 and a mid-portion end 33. The sheet 34 generally diverges from the nose end 31 to the mid-portion end 33. The side edges 35 are curved as desired and the nose end 31 is curved upwardly relative to the rest of the sheet 34 to provide the desired shape of the base of the nose half 30. The mid-portion end 33 has a substantially
15 V-shaped cutout portion 37 therein. Flanges 44 extend along the side edges 35, as can be more clearly seen in Figure 4.

Attached to the middle of the top surface of the sheet 34 is a longitudinal frame 36 which extends along the entire length of the sheet 34. The longitudinal frame 36 is X-shaped in cross section along its entire length. The cross-section dimension
20 of the frame 36 is substantially constant along the flat portion of the sheet 34 and tapers toward a point at the upwardly curved nose end of the sheet 34. Generally, the frame 36 provides a substantially flat top surface, except for adjacent the nose end 31 where it curves slightly upwardly. The frame 36 includes an extension 39 which extends rearwardly from the mid-portion end 33 into the cutout portion 37.
25 The extension 39 includes a longitudinal slot 42 at a top surface thereof which has an aperture 43 at one location thereof having a width greater than the slot width. Connected to the frame 36 are end frames 38 extending respectively along edges of the mid-portion end 33. The frame 36 and end frames 38 are attached to the sheet 34 by suitable brackets and rivets.

30 As shown in Figure 4, the top surface of the sheet 34 is covered with a low density material 47, such as polystyrene, from the end frames 38 to the nose end 31. The

material 47 is shaped to provide a substantially flat top surface and to fill the v-shaped cavities of the frame 36. The bottom surface of the material 47 is shaped to correspond to the profile of the top surface of the sheet 34, particularly the upwardly curved front end 31. Generally, the top surface of the material 47 is shaped to correspond to the top surface of the frame 36, as well as being shaped to provide the desired top surface profile of the nose half 30 of the sailboard 20. The v-shaped cavities of the extension 39 are filled with a resilient material, such as foam material 41, which in the embodiment is PE30 closed cell foam. This material, which is typically used in personal floatation devices (PFDs), is waterproof and resilient to retain its initial shape. The material 41 extends over the v-shaped cavities of the extension 39 by a small amount. The material 41 however does not cover the slot 42 and aperture 43 of the extension 39.

Figure 5 shows a bottom view of the assembly of Figure 4. As shown therein, the bottom surface of the sheet 34 is smooth and the extension 39 is covered with the foam 41 at all sides thereof.

Figure 6 shows a top cover sheet 45 attached to the assembly of Figure 4. The cover sheet 45 is attached taut to the side edge flanges 44 and the end frames 38. However, the foam covered extension 39 is left exposed. Distal portions 46 of the mid-portion end 33 are also left exposed for engagement and alignment with the tail half 50, as will be explained below. The cover sheet 45 thus retains the material 47 onto the sheet 34. The assembled nose half 30 is as shown in Figure 6.

Figure 7 shows a base assembly 52 for the tail half 50. The base assembly 52 includes a bottom sheet 54 having a rounded tail end 51, side edges 55 and a mid-portion end 53. The sheet 54 generally diverges from the tail end 51 to the mid-portion end 53. The side edges 55 are curved as desired to provide the desired shape of the base of the tail half 50 of the sailboard 20. The mid-portion end 53 is substantially V-shaped to correspond to the nose half cutout portion 37. Flanges 64 extend along the side edges 55, as can be more clearly seen in Figure 8.

Attached to the top surface of the sheet 54 is a longitudinal frame 56 which extends along the entire length of the sheet 54. The longitudinal frame 56 is rectangular in cross section substantially along its entire length except for a rear portion 61 adjacent the tail portion 51 at which the frame 56 is of a lower height.

5 The frame 56 includes a receiving cavity 59 extending from the mid-portion end 53, as best shown in Figure 12. The cavity 59 includes a longitudinal slot 62 at a top portion thereof which has an aperture 63 at one point thereof having a width greater than the slot width. The cavity 59 is dimensioned to receive the extension 39 of the nose half 30. Connected to the frame 56 are end frames 58 extending

10 respectively along edges of the mid-portion end 53. The frame 56 and end frames 58 are attached to the sheet 54 by suitable brackets and rivets.

As shown in Figure 8, the top surface of the sheet 54 is covered with the low density material 67 from the end frames 58 to the tail end 51. The material 67 is shaped to provide a substantially flat top surface which extends to a height below

15 the frame 56. Also attached to the frame 56 are foot hold brackets 70.

As shown in Figure 9, a resilient material 71, which in the embodiment is PE30 closed cell foam material, is laid on top of the material 67 provide a substantially flat top surface which extends to the height of the frame 56. The material 71 is rounded at the side edges of the sheet 54. The material 71 includes slots 72 for

20 brackets (not shown) for attaching foot straps to the frame 56 or sheet 54, as will be explained below.

Figure 10 shows a top cover sheet 83 attached to the assembly of Figure 9. The cover sheet 83 is attached taut to the side edge flanges 64 and the end frames 58. The cover sheet 83 thus retains the materials 67 and 71 onto the sheet 54.

25 The cover sheet 83 has a slit 84 therein for exposing the slot 62 and aperture 63. The cover sheet 83 also has apertures therein (not shown) for attachment of front foot straps 91 and rear foot strap 92. One end of the front foot straps 91 are attached to the brackets 70 as shown in Figures 8 and 9 and the other end thereof are attached to brackets (not shown) received in the foam material slots 72 (see

30 Figure 8), which brackets are attached to the bottom sheet 54 and frame 56. Similarly, one end of the rear foot strap 92 is attached to the frame 56 while the

other end is attached to the frame rear portion 61. In use, the foot straps 91 and 92 assist in retaining the user's feet onto the sailboard 20.

The assembled tail half 50 is as shown in Figure 10. Figure 11 shows a bottom view of the assembly of Figure 10. As shown therein, the bottom surface of the sheet 54 is smooth. A tail fin slot 75 is formed in the sheet 54 adjacent the tail end for attachment of a tail fin (not shown).

Figure 12 is an enlarged view of the cavity 59. The cavity 59 is shaped and dimensioned to fully receive the extension 39 of the nose half 30. As such, the cavity 59 is rectangular in cross-section and its cross section is dimensioned to be slightly larger than the nose half frame extension 39. The outer dimensions of the foam 41 in the extension 39 however is slightly larger than the cross section dimensions of the cavity 59 to provide a tight fit when the extension 39 is inserted into the cavity 59 as shown in Figure 13.

In Figure 13, the extension 39 is fully inserted into the cavity 59. The nose half distal portions 46 (see Figure 6) are also inserted into corresponding cavities of the tail half mid-portion end 53. In alternative embodiments, the tail half can include male portions (protrusions/extensions) and the nose half can include female portions (cavities). In this fully inserted position, the nose half extension slot 42 aligns with the tail half slot 62, and the apertures 43 and 63 of these slots align with each other. A mount 100 is then used to lock the nose half 30 to the tail half 50. The mount 100 includes a threaded shank (not shown) having a distal head (not shown) extending downwardly from the base 101 thereof. The base 101 is threaded to the shank by having a nut at its lower surface which is rotatable therewith. The distal head is inserted through the aligned apertures 43 and 63 and the mount 100 is moved along the slots 42 and 62 such that the distal head is not aligned with the apertures 43 and 63. The distal head in this position can engage the inside surface of the extension slot 42. Tightening of the base 101 relative to the distal head clamps the slots 42 and 62 to each other, thus locking the nose half 30 to the tail half 50. The top portion of the mount 100 has a socket 103 for receiving a sail mast, with the mount 100 including a flexible joint between the base 101 and the socket 103.

The above completes the assembly of the sailboard 20. A sail mast and fin can then be attached to the sailboard 20 as required.

The present invention thus provides a sailboard which can be disassembled substantially into two equal parts, thus providing easier transport and storage of
5 the sailboard. Having foam material underneath the foot straps 91 and 92 provides for a more comfortable ride, as compared to conventional sailboards.

As mentioned above, the sports board invention can alternatively be a surfboard or surf lifesaving paddle board or any other board of substantial length. In each particular case, the board will be shaped as required and desired. For example,
10 foot straps are generally not required in regular surfing and so such foot straps will not be fitted onto a surfboard according to the present invention.

Although preferred embodiments of the present invention have been described, it will be apparent to skilled persons that modifications can be made to the above embodiments or that the invention can be embodied in alternative forms. For
15 example, the sheet 34 and 54 and frames 36 and 56 in the embodiment can be made from steel, carbon fibre, aluminium, or other suitable material. Other low density material 47 and 67 apart from polystyrene can also be used, including PE30 foam material. Alternatively, the nose half 30 can comprise the base assembly and the top cover sheet attached to the base assembly in an air tight
20 manner. The interior of this assembly can then be filled with air under pressure. The base assembly including the sheet, the flanges and end frames can also be made as a one-piece assembly from carbon fibre. The frame can also be made from carbon fibre.

The top cover sheet 45 and 83 can be made from fabric, fibre glass, flexible
25 plastics material, carbon fibre or aluminium. The cavities in the frames 36 and 56 can also be used to store useful electronics equipment for sailboarding, such as a GPS transceiver, an Emergency position-indicating radio beacon (EPIRB), and/or a shark repellent device, and power supplies in connection therewith.

Also, as shown in the drawings, the nose half 30 and tail half 50 are not of equal
30 lengths, with the nose half 30 being longer than the tail half 50. The parting line

40 can be located anywhere along the mid-portion 26 of the sports board 20. It is possible for the two halves 30 and 50 to be of substantially equal length to further provide easier transport and storage.

Figures 14 (a) to (d) show possible alternative shapes of the mid-portion ends 33 and 53 of the nose and tail halves. In other alternative embodiments, the extension 39 can form part of the tail half while the cavity can form part of the nose half of the sailboard. Also, it is possible to provide more than one extension and cavities to the tail half and the nose half. Further, each of the tail half and the nose half can have at least one extension and cavity, the respective extensions and cavities being positioned for engagement with each other for connecting the tail half to the nose half.

Also, to save on costs, the foam material in the tail half can be inserted between the polystyrene material and the top cover sheet only at locations of the tail half below the foot straps where a user's feet will be located in use.

A second illustrated embodiment of a sailboard 400 according to the present invention will now be described with reference to Figures 15 to 18.

Figure 15 shows a frame assembly 120 and a hollow shell 200 for the nose half 380 of a sailboard 400 according to the second embodiment; The frame assembly 120 includes a longitudinal spine 136 having a nose end 138, a mid-portion end 140 and an extension 142 extending from the mid-portion end 140. Side rails 143 extend along each side of the spine 136, which are curved and connected to the nose end 138 of the spine 136. Essentially, the side rails 143 follow the shape of the side rails of the sailboard 400. The side rails 143 are made from square cross-section material having spaced apertures formed therein to lessen its weight.

Connected to the spine mid-portion end 140 are end plates 148 which are angled rearwardly relative to the spine 136 to form a V-shape facing away from the nose end 138. The distal ends of the end plates 148 are connected to the ends of the side rails 143.

The spine 136 is rectangular in cross section along its length. The cross-section dimension of the spine 136 is substantially constant but tapers toward a point at the nose end 138 to provide the nose end shape of the sailboard 400.. The spine 136 is initially made from U-shaped cross-section material such that the top edges thereof can be shaped to provide the tapered nose end as desired. An elongated flat plate is then attached to the top edges of the U-shaped material to provide the rectangular cross-section of the spine 136.

The spine 136 provides a flat top surface. The extension 142 extends rearwardly from the mid-portion end 148 and includes a longitudinal slot 150 at a top surface thereof which has an aperture 152 at one location thereof having a width greater than the slot width.

The nose half shell 200 includes a pointed nose end 202, an open V-shaped mid-portion end 204, sides 205 and top and bottom sheets 208 and 206. The hollow shell 200 is substantially oval in cross-section and the sides 205 and nose end 202 are curved as desired to provide the desired shape of the nose half 380. In the preferred embodiment, the hollow shell 200 is moulded as a single piece from suitable material, such as fibre glass, plastics material or polymer such as polycarbonate.

To assemble the nose half 380, the frame assembly 120 is inserted into the shell 200 such that the side rails 143 abut the shell sides 205 and the nose end 138 abuts the shell nose end 202. The end plates 148 will then cover the shell open end 204 with the extension 142 extending rearwardly therefrom, as shown in Fig. 17. The spine 136 will then extend longitudinally inside the shell 200. The spine 136 is of a height to extend and abut both the shell top and bottom sheets 208 and 206. Further curved pieces 160 can be inserted between the side rails 143 and the shell sides 205 to fill any gaps between these portions, if desired. These curved pieces 160 would be attached to the side rails 143 by glue prior to insertion of the frame assembly 120 into the shell 200. Once in position, the frame assembly 120 is then attached to the shell 200 using any suitable means such as industrial glue, rivets or welding.

The shell open end 204 is then fully sealed with the end plates 148, such as by sealing the all edges of the end plates 148 to the edges of the open end 204. Also, the spine 136 is sealed by a plate 154 attached within the spine 136 between the slot 150 and the mid-portion end 140. This sealing traps air within
5 the shell 200 which allows the assembled nose half 380 to be buoyant. The assembled nose half 380 is shown in Figure 17.

Figure 16 shows a frame assembly 220 and a hollow shell 280 for the tail half 390. The tail half 390 of the sailboard 400 is assembled in a similar manner as shown in Figure 16. The frame assembly 220 includes a longitudinal spine 236
10 having a mid-portion end 240 and a nose end 238. A receiving cavity 242 is formed at the mid-portion end 240 which is dimensioned to receive the nose half extension 142.. Side rails 243 extend along each side of the spine 236, which are curved and connected to the spine tail end 238. The side rails 243 follow the shape of the side rails of the sailboard 400.

15 Connected to the spine mid-portion end 240 are end plates 248 which are angled rearwardly relative to the spine 236 to form a V-shape. The distal ends of the end plates 248 are connected to the ends of the side rails 243. Foot strap plates 250 also extend between the spine 236 and the side rails 243. In another embodiment, the foot strap plates can be square cross section material similar to
20 the side rails 243.

The spine 236 is also rectangular in cross section along its length and provides a flat top surface. The cavity 242 includes a longitudinal slot 250 at a top surface thereof which has an aperture 252 at one location thereof having a width greater than the slot width, which correspond in dimensions to the slot 150 and aperture
25 152 of the nose half 380.

The tail half shell 280 includes a tail end 282, an open V-shaped mid-portion end 284, sides 285 and top and bottom sheets 288 and 286. The hollow shell 280 is substantially oval in cross-section and the sides 285 and nose end 282 are curved as desired to provide the desired shape of the tail half 390. In the preferred
30 embodiment, the hollow shell 280 is moulded as a single piece from suitable

material, such as fibre glass. The shell 280 includes a slot 250a and aperture 252a corresponding to the frame assembly slot 250 and aperture 252.

To assemble the tail half 390, the frame assembly 220 is inserted into the shell 280 such that the side rails 243 abut the shell sides 285 and the tail end 238 abuts the shell tail end 282. The end plates 248 will then cover the shell open end 284. The spine 236 will then extend longitudinally inside the shell 280. The spine 236 is of a height to extend and abut both the shell top and bottom sheets 288 and 286. Further curved pieces 260 can be inserted between the side rails 243 and the shell sides 285 to fill any gaps between these portions, if desired by gluing such pieces to the side rails 243. Once in position, the frame assembly 220 is then attached to the shell 280 using any suitable means such as industrial glue, rivets or welding.

The shell open end 284 is then fully sealed with the end plates 248, such as by sealing all edges of the end plates 248 to the edges of the open end 284. Also, the spine 236 is sealed by a plate 254 attached within the spine 136 adjacent the slot 250. This sealing traps air within the shell 280 which allows the assembled nose half 390 to be buoyant. The assembled tail half 390 is shown in Figure 17. Foot strap apertures (not shown) can be formed in the shell 390 for attaching foot straps to the spine 236 and the plates 250. Such apertures are sealed to maintain the full seal of the tail half 390.

Figure 17 shows the assembled nose half 380 and tail half 390. Each of these halves 380 and 390 are air-tight and fully sealed from water entry, apart from the extension 142 and the cavity 242.

Figure 18 shows the assembled sailboard 400, where the extension 142 is inserted into the cavity 242 and the plates 148 and 248 substantially abutting each other. The cavity 242 includes a resilient foam lining in its inside surfaces to provide a tight fit with the extension 142. A mount 100 is then used to lock the nose half 380 to the tail half 390 similar to the first embodiment above. For surfboards which do not require a mount for a mast, the mount 100 can have a flat top profile substantially flush with the shell 280.

The frame assemblies 120 and 220 can be made from aluminium, titanium alloy, wood or other suitable material. The shells 200 and 280 can also be made from fibre glass, plastics, carbon fibre or other suitable material. In one embodiment, the shells are transparent such that the frame assemblies are visible which will provide a distinctive look for the sailboard, particularly if the curved pieces 160 and 260 are made from distinctive material compared to the frame assemblies such as wood. In another embodiment, the shells 200 and 280 can be filled with buoyant material such as foam or polystyrene instead of air. The side rails 143 and 243 can also be made from elongated plates instead of hollow rectangular sections as shown. Also, the nose half can include extensions of the side rails 143 at the mid-portion end which are to be received in cavities in the tail half mid-portion end for further alignment and support in the assembly of the sailboard 400.

The present invention can also be applied to other floatation devices such as a ski board, a kayak or a canoe. In such applications, the frame assemblies can extend to the sides and top edges of the floatation device.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

The claims defining the invention are as follows:

1. A sports board assembly for forming a sports board having a nose, a tail and a mid-portion therebetween, the sports board assembly comprising:
5 a nose half having a nose end and a mid-portion end, a nose half frame extending between the nose end and the mid-portion end, the nose half mid-portion end having a first connection means; and
a tail half having a tail end and a mid-portion end, a tail half frame extending between the tail end and the mid-portion end, the tail half mid-portion end having a second connection means for engaging the first connection means;
10 wherein the nose half can be attached to the tail half via the first and second connection means to form the sports board.
2. The sports board assembly of claim 1 wherein the nose half frame extends substantially along the entire length of the nose half from the nose end to the mid-portion end.
15
3. The sports board assembly of claim 1 or 2 wherein the tail half frame extends substantially along the entire length of the tail half from the mid-portion end to the tail end
4. The sports board assembly of any one of claims 1 to 3 wherein the nose half frame is substantially wholly within the nose half and the tail half frame is substantially wholly within the tail half.
20
5. The sports board assembly of any one of claims 1 to 4 wherein one of the first and second connection means is an extension of the mid-portion end and the other of the first and second connection means is a cavity in the mid-portion end for receiving the extension.
25
6. The sports board assembly of claim 5 wherein the first connection means includes an extension extending from the nose half mid-portion end and the second connection means includes a cavity formed in the tail half mid-portion end adapted to receive the extension.
30

7. The sports board assembly of claim 5 wherein the first connection means is a cavity formed in the nose half mid-portion end and the second connection means is an extension extending from the tail half mid-portion end.
- 5 8. The sports board assembly of any one of claims 1 to 7 wherein the nose half mid-portion end is of a generally concave configuration and the tail half mid-portion end is of a generally convex configuration.
9. The sports board assembly of claim 8 wherein the nose and tail mid-portion ends are substantially v-shaped.
- 10 10. The sports board assembly of any one of claims 1 to 9 wherein the nose half includes a hollow shell and a frame assembly received within the hollow shell.
11. The sports board assembly of claim 10 wherein the frame assembly includes a longitudinal spine having a nose end, a mid-portion end and an extension extending from the mid-portion end.
- 15 12. The sports board assembly of claim 10 wherein the frame assembly includes side rails extending along each side of the spine, the side rails being curved and connected to the nose end of the spine.
13. The sports board assembly of claim 12 wherein the frame assembly includes end plates connected to the spine mid-portion end and distal ends of the side rails, wherein the end plates are sealed with the shell such that an interior of the nose half is fully sealed against water entry.
- 20 14. The sports board assembly of claim 13 wherein the end plates are angled rearwardly relative to the spine to form a substantially V-shape facing away from the nose end.
- 25 15. The sports board assembly of any one of claims 11 to 14 wherein the extension includes a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot width.

16. The sports board assembly of any one of claims 10 to 15 wherein the hollow nose half shell includes a pointed nose end, an open mid-portion end, sides and top and bottom sheets.
17. The sports board assembly of claim 16 wherein the frame assembly is of a height to extend and abut both the shell top and bottom sheets
18. The sports board assembly of claim 10 wherein the frame assembly includes a longitudinal spine having a nose end, a mid-portion end and an extension extending from the mid-portion end, side rails extending along each side of the spine, the side rails being curved and connected to the nose end of the spine, and end plates connected to the spine mid-portion end and distal ends of the side rails, the hollow nose half shell includes a pointed nose end, an open mid-portion end, sides and top and bottom sheets, wherein the end plates are sealed with the mid-portion end of the shell and the extension is sealed such that an interior of the nose half is fully sealed against water entry.
19. The sports board assembly of any one of claims 10 to 18 wherein the nose half hollow shell is moulded as a single piece.
20. The sports board assembly of any one of claims 10 to 19 wherein the nose half hollow shell is substantially transparent or translucent.
21. The sports board assembly of any one of claims 10 to 20 wherein the nose half shell is substantially filled with low density material.
22. The sports board assembly of any one of claims 1 to 21 wherein the tail half includes a hollow shell and a frame assembly received within the hollow shell.
23. The sports board assembly of claim 22 wherein the tail half frame assembly includes a longitudinal spine having a tail end and a mid-portion end and a cavity extending from the mid-portion end.
24. The sports board assembly of claim 23 wherein the frame assembly includes side rails extending along each side of the spine, the side rails being curved and connected to the tail end of the spine.

25. The sports board assembly of claim 24 wherein the frame assembly includes end plates connected to the spine mid-portion end and distal ends of the side rails, wherein the end plates are sealed with the shell such that an interior of the tail half is fully sealed against water entry.
- 5 26. The sports board assembly of claim 25 wherein the end plates are angled rearwardly relative to the spine.
27. The sports board assembly of any one of claims 23 to 26 wherein the cavity includes a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot width.
- 10 28. The sports board assembly of any one of claims 22 to 27 wherein the hollow tail half shell includes a tail end, an open mid-portion end, sides and top and bottom sheets.
29. The sports board assembly of claim 28 wherein the frame assembly is of a height to extend and abut both the shell top and bottom sheets
- 15 30. The sports board assembly of claim 22 wherein the frame assembly includes a longitudinal spine having a tail end, a mid-portion end and a cavity extending from the mid-portion end, side rails extending along each side of the spine, the side rails being curved and connected to the tail end of the spine, and end plates connected to the spine mid-portion end and distal ends of the side rails, the hollow tail half shell includes a tail end, an open mid-portion end, sides and top and bottom sheets, wherein the end plates are sealed with the mid-portion end of the shell and the cavity is sealed such that an interior of the tail half is fully sealed against water entry.
- 20 31. The sports board assembly of any one of claims 22 to 30 wherein the tail half hollow shell is moulded as a single piece.
- 25 32. The sports board assembly of any one of claims 22 to 31 wherein the tail half hollow shell is substantially transparent or translucent.

33. The sports board assembly of any one of claims 22 to 32 wherein the tail half shell includes a slot and an aperture having a width greater than the slot width.
- 5 34. The sports board assembly of any one of claims 22 to 33 wherein the tail half shell is substantially filled with low density material.
- 10 35. The sports board assembly of any one of claims 1 to 9 wherein the nose half includes a base assembly for forming the base of the nose half, a low density material having a predetermined thickness substantially covering the base assembly and a top cover sheet having edges attached to the base assembly for retaining the low density material to the base assembly.
- 15 36. The sports board assembly of claim 35 wherein the base assembly includes a bottom sheet having a pointed nose end, side edges and a mid-portion end, the bottom sheet generally diverging from the nose end to the mid-portion end.
37. The sports board assembly of claim 36 wherein flanges extend along the side edges of the bottom sheet for attachment of the top cover sheet to the bottom sheet.
- 20 38. The sports board assembly of claim 35 or 36 wherein the nose half frame is attached to the top surface of the bottom sheet which extends substantially along the entire length of the bottom sheet.
39. The sports board assembly of claim 38 wherein the frame includes an extension which extends rearwardly from the mid-portion end for forming the first connection means.
- 25 40. The sports board assembly of claim 39 wherein the extension includes a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot width.
- 30 41. The sports board assembly of any one of claims 38 to 40 wherein end frames are connected to the frame, the end frames extending respectively along edges of the mid-portion end.

42. The sports board assembly of claim 41 wherein the bottom sheet top surface is covered with the low density material from the end frames to the nose end.
- 5 43. The sports board assembly of any one of claims 35 to 42 wherein the top cover sheet is attached taut to the base assembly.
44. The sports board assembly of any one of claims 35 to 42 wherein the top cover sheet is made from moulded material and attached to the base assembly.
- 10 45. The sports board assembly of any one of claims 1 to 9 and 35 to 44 wherein the tail half includes a base assembly for forming the base of the tail half, a low density material having a predetermined thickness substantially covering the base assembly and a top cover sheet having edges attached to the base assembly for retaining the low density material to the base assembly.
- 15 46. The sports board assembly of claim 45 wherein the base assembly includes a bottom sheet having a tail end, side edges and a mid-portion end.
- 20 47. The sports board assembly of claim 46 wherein flanges extend along the side edges of the bottom sheet for attachment of the top cover sheet to the bottom sheet.
48. The sports board assembly of claim 46 or 47 wherein the tail half frame is attached to the top surface of the bottom sheet which extends substantially along the entire length of the bottom sheet.
- 25 49. The sports board assembly of claim 48 wherein the frame includes an cavity which extends rearwardly from the mid-portion end.
50. The sports board assembly of claim 49 wherein the cavity includes a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot width.

51. The sports board assembly of any one of claims 48 to 50 wherein end frames are connected to the frame, the end frames extending respectively along edges of the mid-portion end.
52. The sports board assembly of claim 51 wherein the bottom sheet top surface is covered with the low density material from the end frames to the nose end.
53. The sports board assembly of any one of claims 45 to 52 wherein the top cover sheet is attached taut to the base assembly.
54. The sports board assembly of any one of claims 45 to 52 wherein the top cover sheet is made from moulded material and attached to the base assembly.
55. The sports board assembly of any one of claims 45 to 54 wherein a resilient material is inserted between the low density material and the top cover sheet at least at portions of the tail half at which a user's feet will be located in use.
56. The sports board assembly of any one of claims 1 to 55 wherein the tail half and/or the nose half includes at least one cavity for receiving electronics equipment, such as a GPS transceiver, an Emergency position-indicating radio beacon (EPIRB), and/or a shark repellent device, and power supplies in connection therewith.
57. A sports board assembly for forming a sports board having a nose, a tail and a mid-portion therebetween, the sports board assembly comprising:
- a nose half having a nose end and a mid-portion end, the nose half comprising a hollow shell and a frame assembly extending from the nose end to the mid-portion end, the nose half mid-portion end having an extension extending therefrom; and
- a tail half having a tail end and a mid-portion end, the tail half comprising a hollow shell and a frame assembly extending from the tail end to the mid-portion end, the tail mid-portion end having a cavity formed therein for receiving the nose half extension;

wherein the nose half can be attached to the tail half by inserting the extension into the cavity to form the sports board.

58. The sports board assembly of claim 57 wherein the nose half frame assembly includes a longitudinal spine having a nose end, a mid-portion end and the extension, rails extending along each side of the spine, the side rails being curved and connected to the nose end of the spine, and end plates connected to the spine mid-portion end and distal ends of the side rails, wherein the end plates are sealed with the shell and the extension is sealed such that an interior of the nose half is fully sealed against water entry.
59. The sports board assembly of claim 58 wherein the tail half frame assembly includes a longitudinal spine having a tail end and a mid-portion end having the cavity formed from the mid-portion end, side rails extending along each side of the spine, the side rails being curved and connected to the tail end of the spine, and end plates connected to the spine mid-portion end and distal ends of the side rails, wherein the end plates are sealed with the mid-portion end of the shell and the cavity is sealed that an interior of the nose half is fully sealed against water entry.
60. The sports board assembly of claim 59 wherein the extension and the cavity each include a longitudinal slot at a top surface thereof which has an aperture at one location thereof having a width greater than the slot width, wherein the slots and apertures substantially align with each other when the extension is inserted into the cavity, and the assembly further includes a locking means comprising a threaded shank having a distal head and a base threaded to the shank, wherein the distal head can be inserted through the aligned apertures in use and the shank is moved along the aligned slots such that the distal head is not aligned with the aligned apertures, wherein tightening of the base relative to the distal head clamps the aligned slots to each other, thus locking the nose half to the tail half.

61. The sports board assembly of claim 60 wherein the tail half cavity is shaped and dimensioned to fully receive the nose half extension with a tight fit therebetween.
- 5 62. The sports board assembly of claim 60 wherein the locking means base includes a socket for receiving a sail mast base.
63. The sports board assembly of claim 60 wherein the locking means base is of a low-profile to be substantially flush with an upper surface of the tail half.
- 10 64. The sports board assembly of claim 61 wherein the tail half includes foot hold brackets.
65. The sports board assembly of any one of claims 1 to 61 wherein a bottom surface tail half includes at least one tail fin slot for attachment of a tail fin.
- 15 66. A floatation device having a nose, a tail and a mid-portion therebetween, the floatation device comprising:
a nose half having a nose end and a mid-portion end, a nose half frame extending between the nose end and the mid-portion end, the nose half mid-portion end having a first connection means; and
a tail half having a tail end and a mid-portion end, a tail half frame
20 extending between the tail end and the mid-portion end, the tail half mid-portion end having a second connection means for engaging the first connection means;
wherein the nose half can be attached to the tail half via the first and second connection means to form the floatation device.
- 25 67. The floatation device of claim 66, wherein the floatation device is a sailboard, a surfboard, a surf lifesaving board, a ski board, a kayak or a canoe.
- 30 68. A sports board assembly substantially as herein described with reference to Figures 1 to 14 or Figures 15 to 18 of the accompanying drawings.

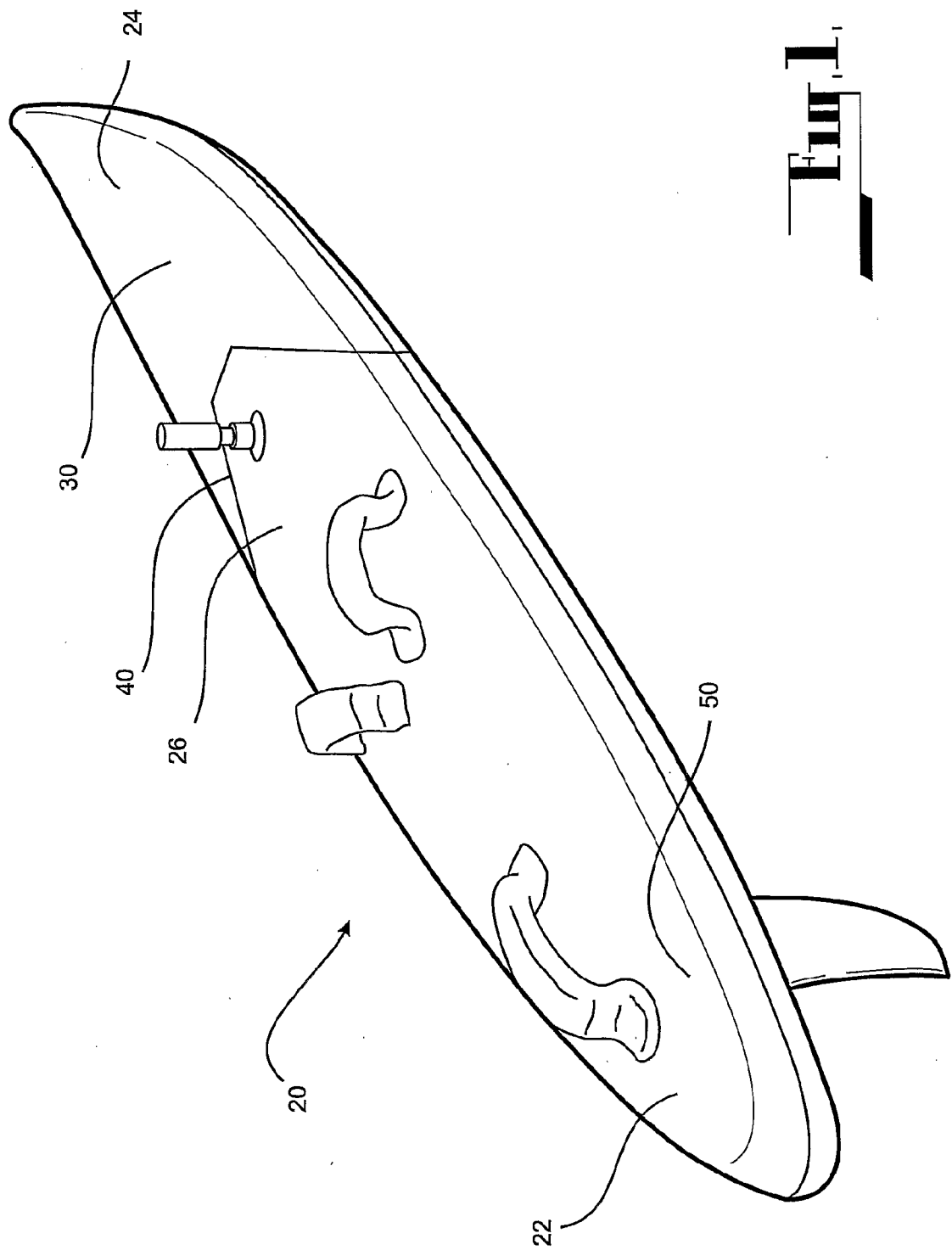


Fig. 1

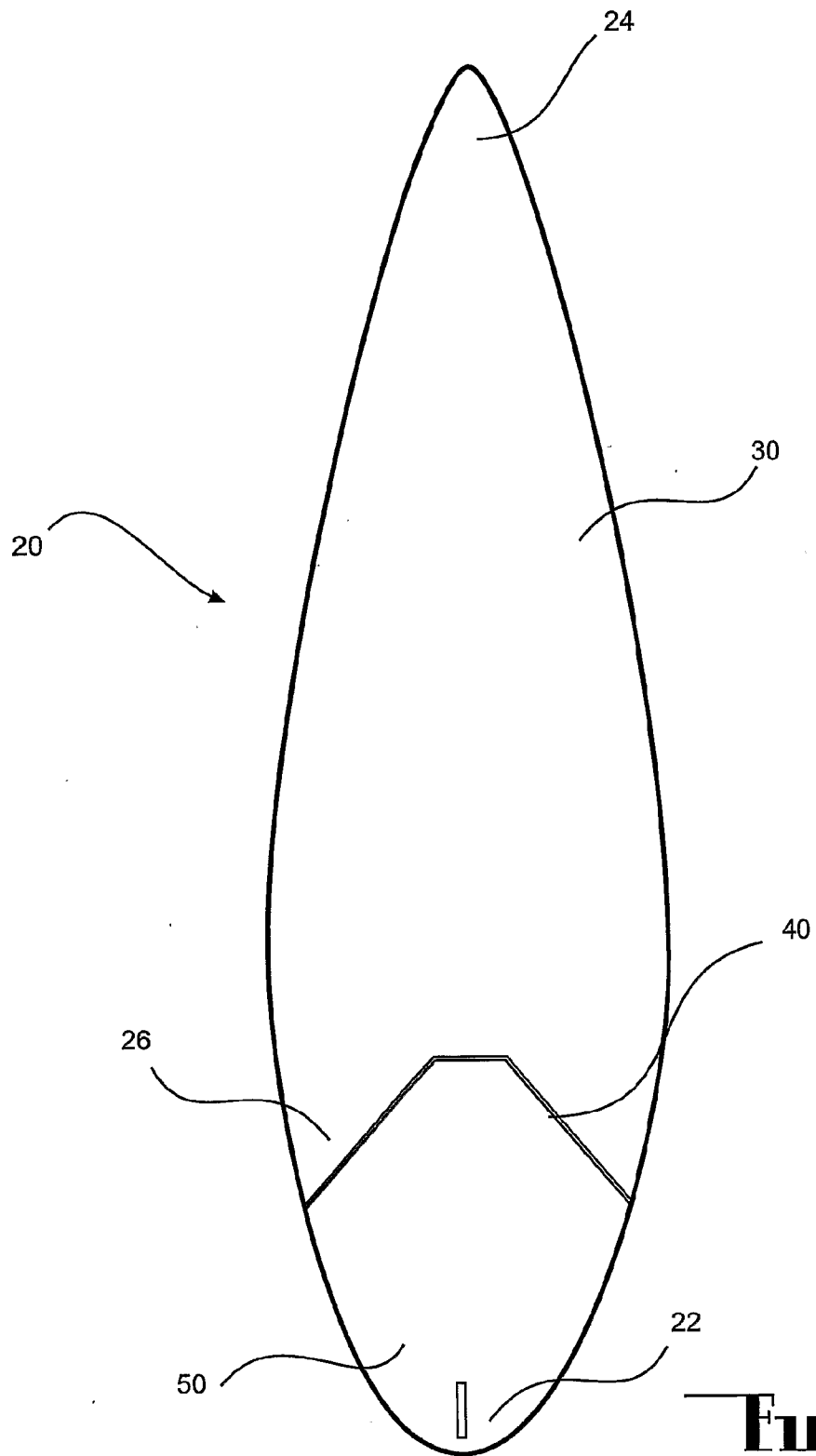


Fig. 2

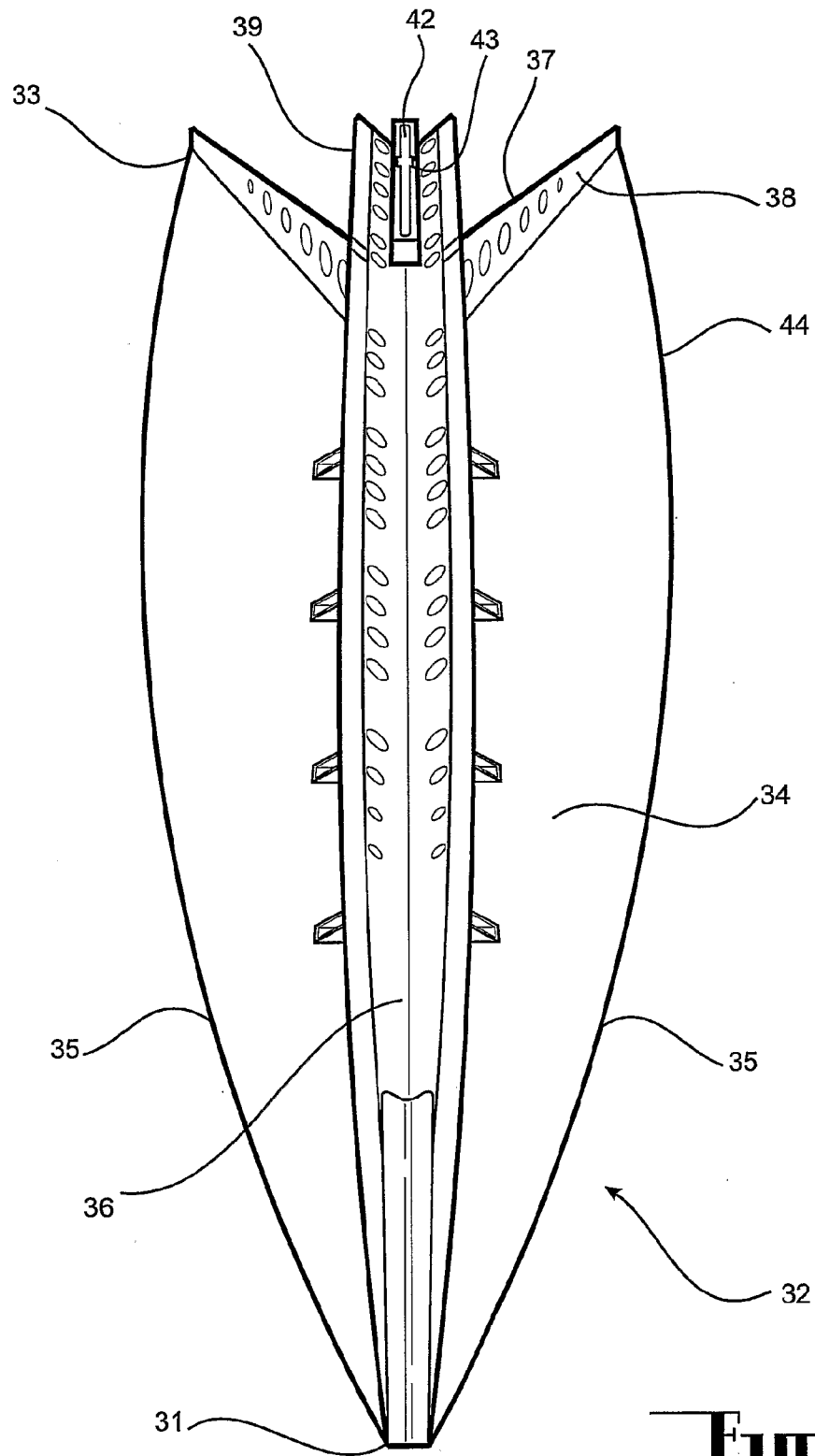


Fig. 3a,

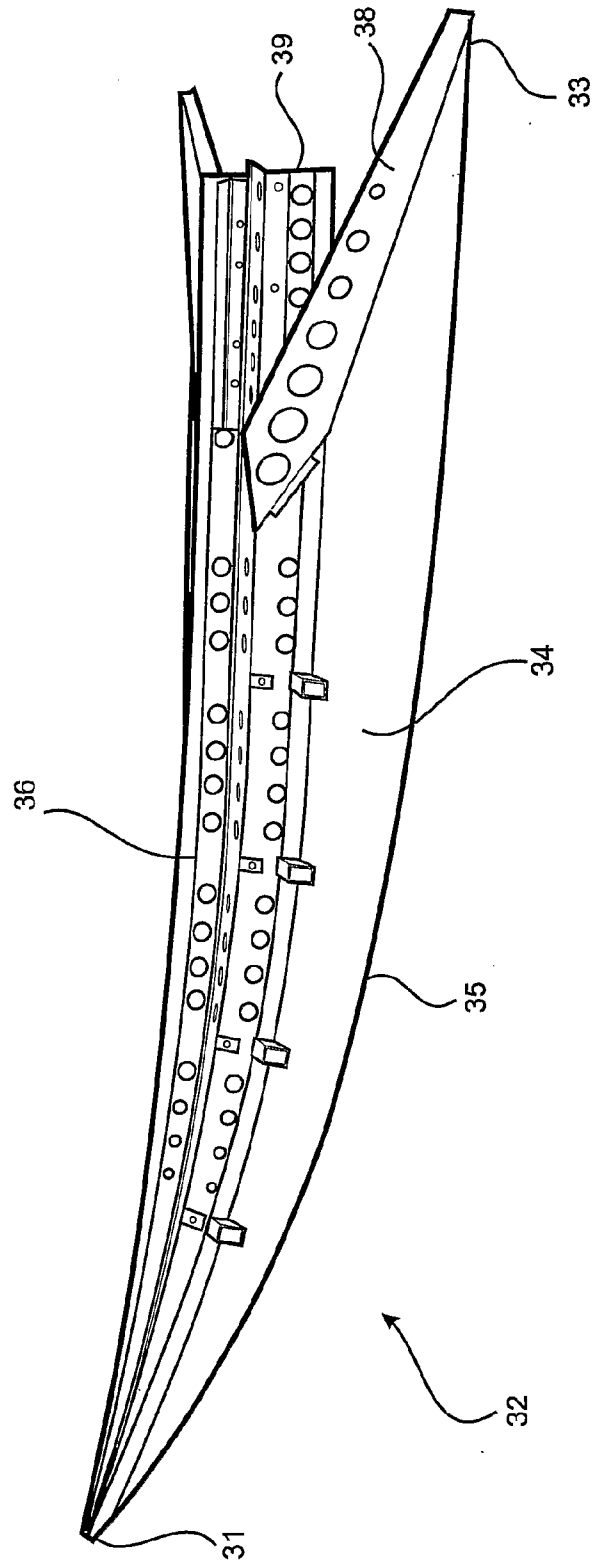


Fig. 3b

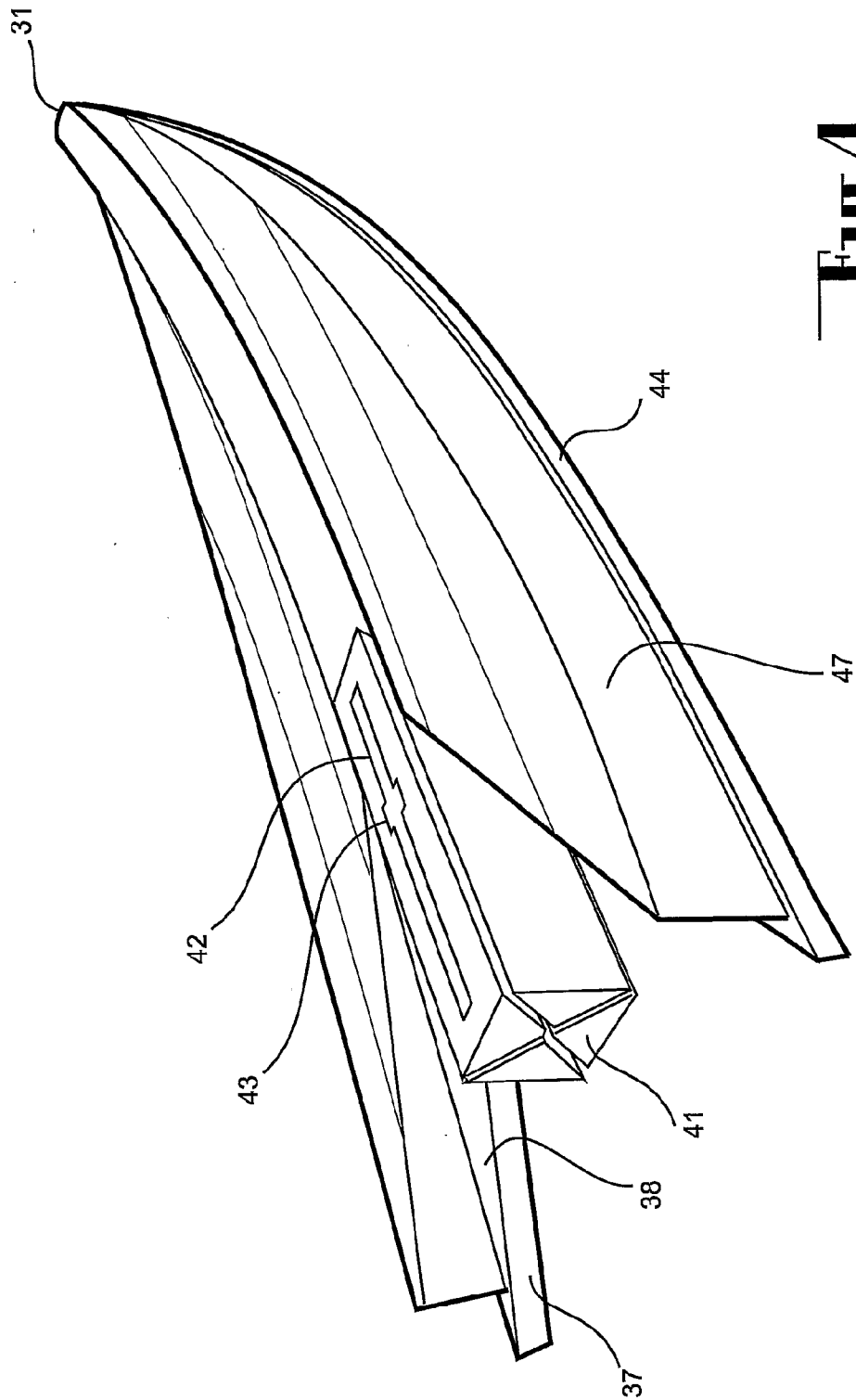


Fig. 4

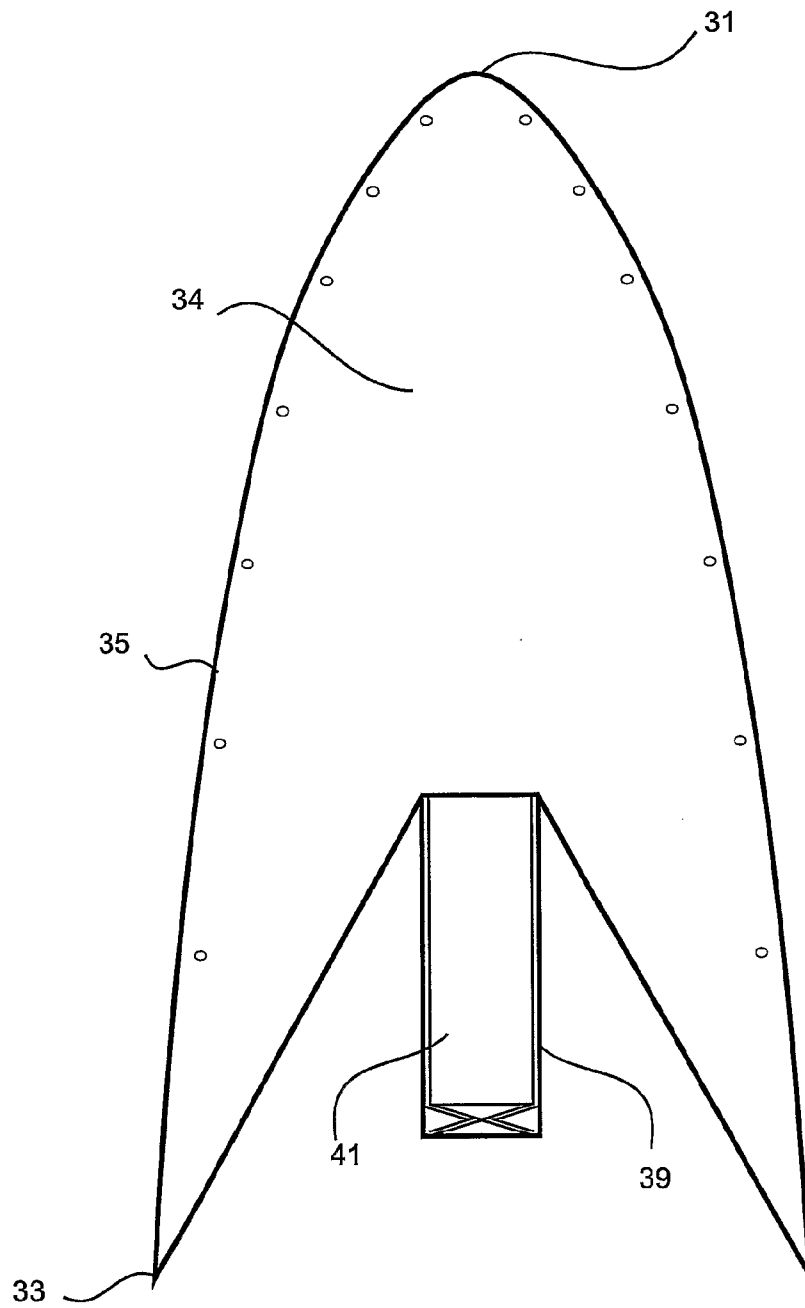


Fig. 5

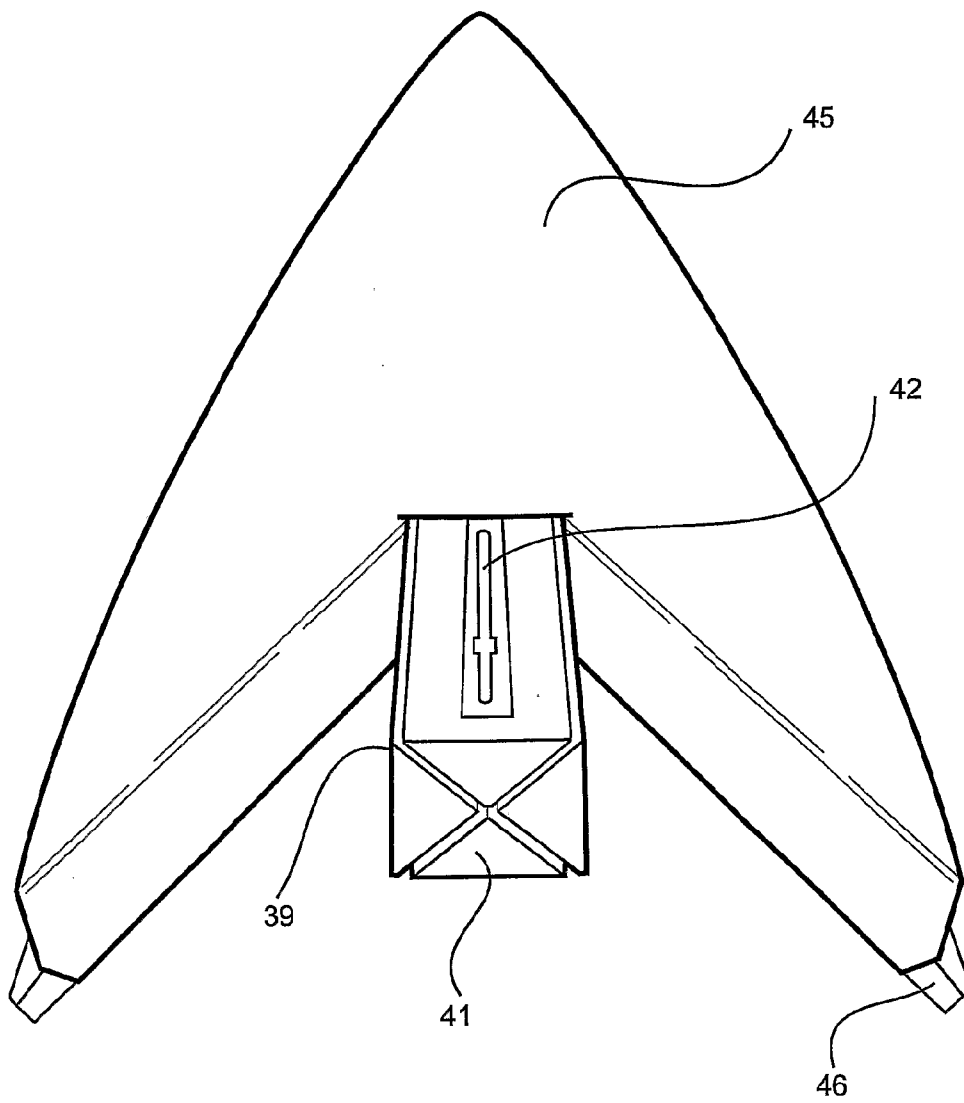


Fig. 6.

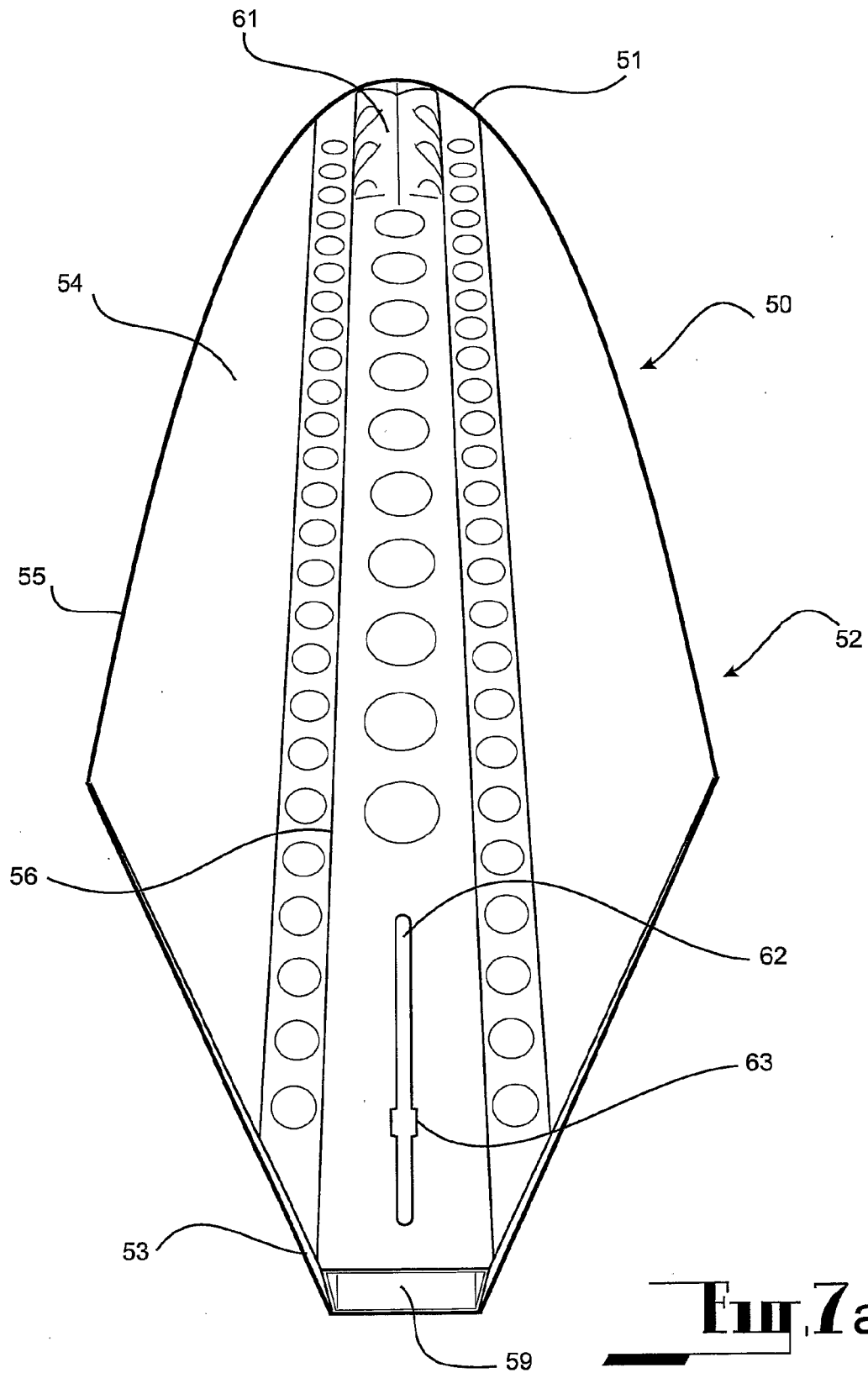


Fig. 7a

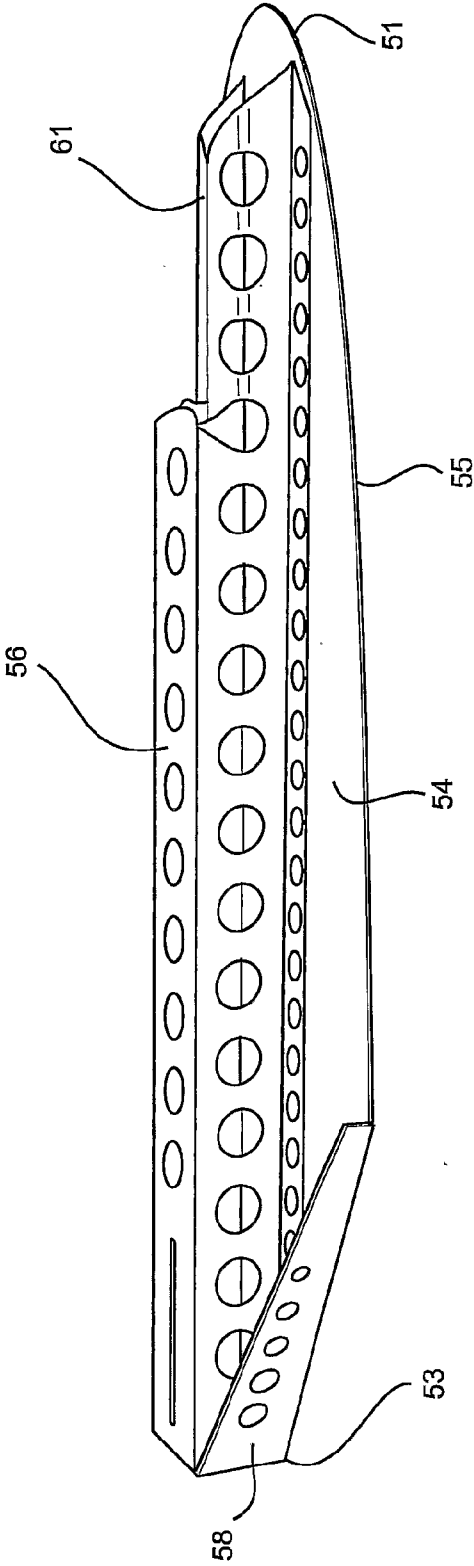


Fig. 7b,

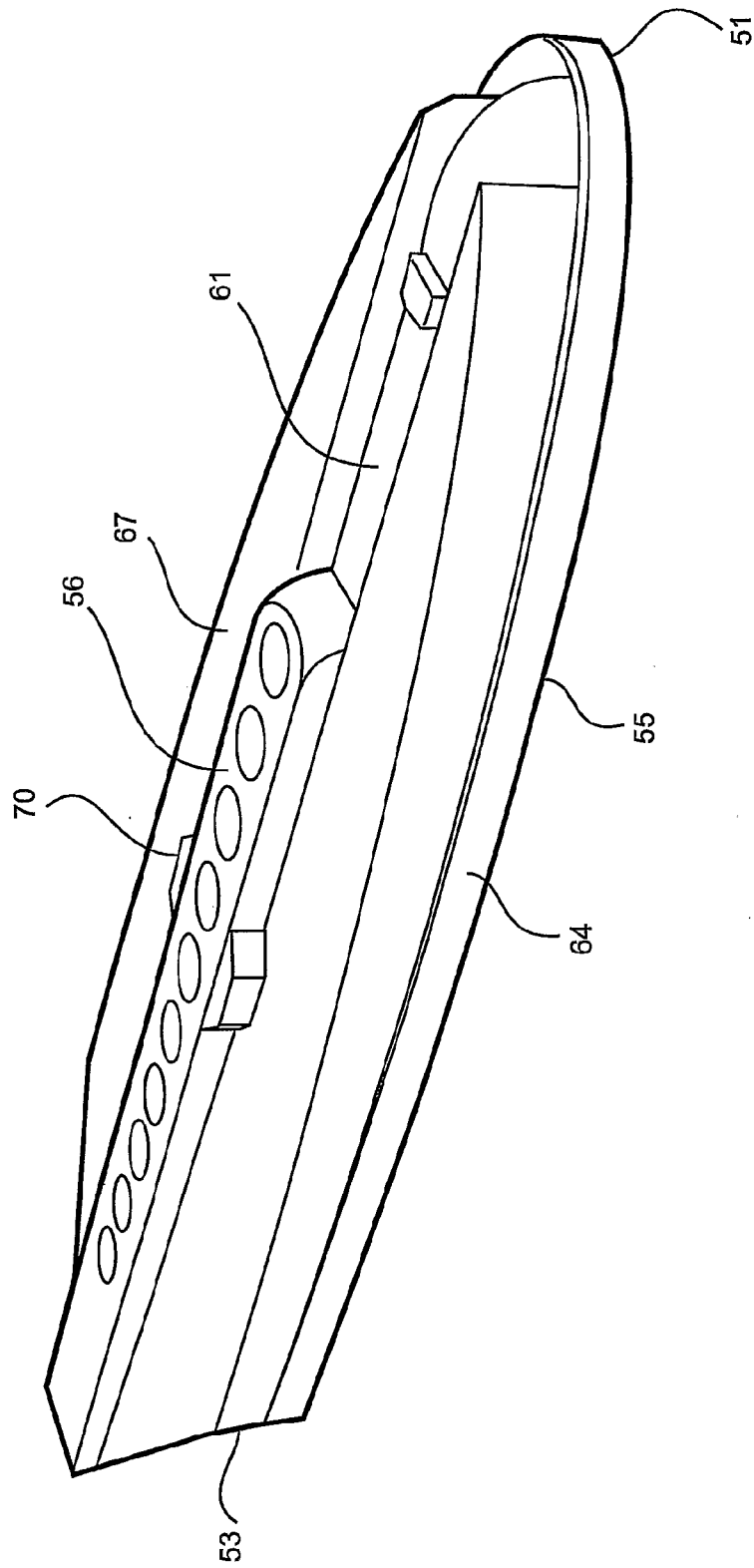


Fig. 8

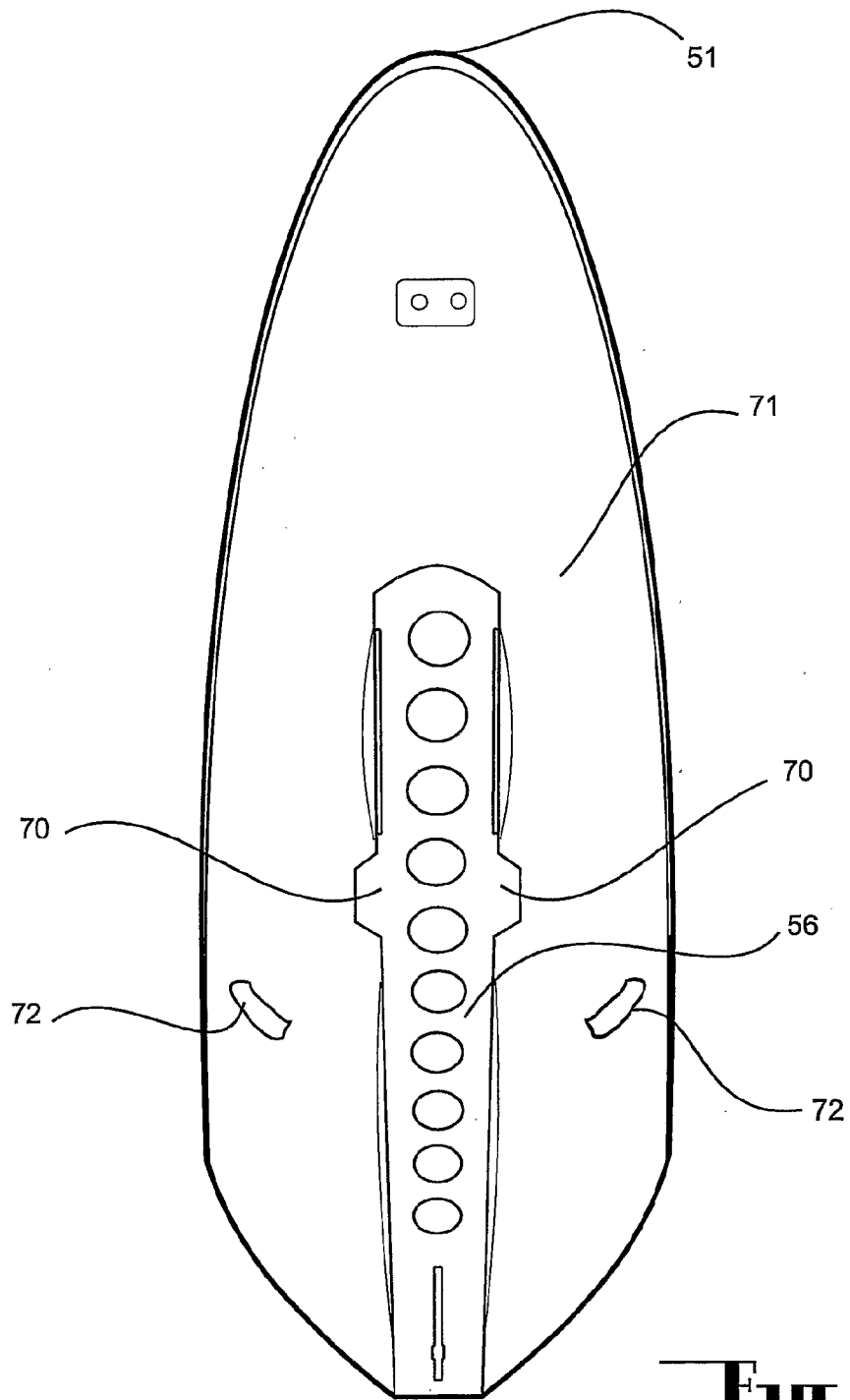
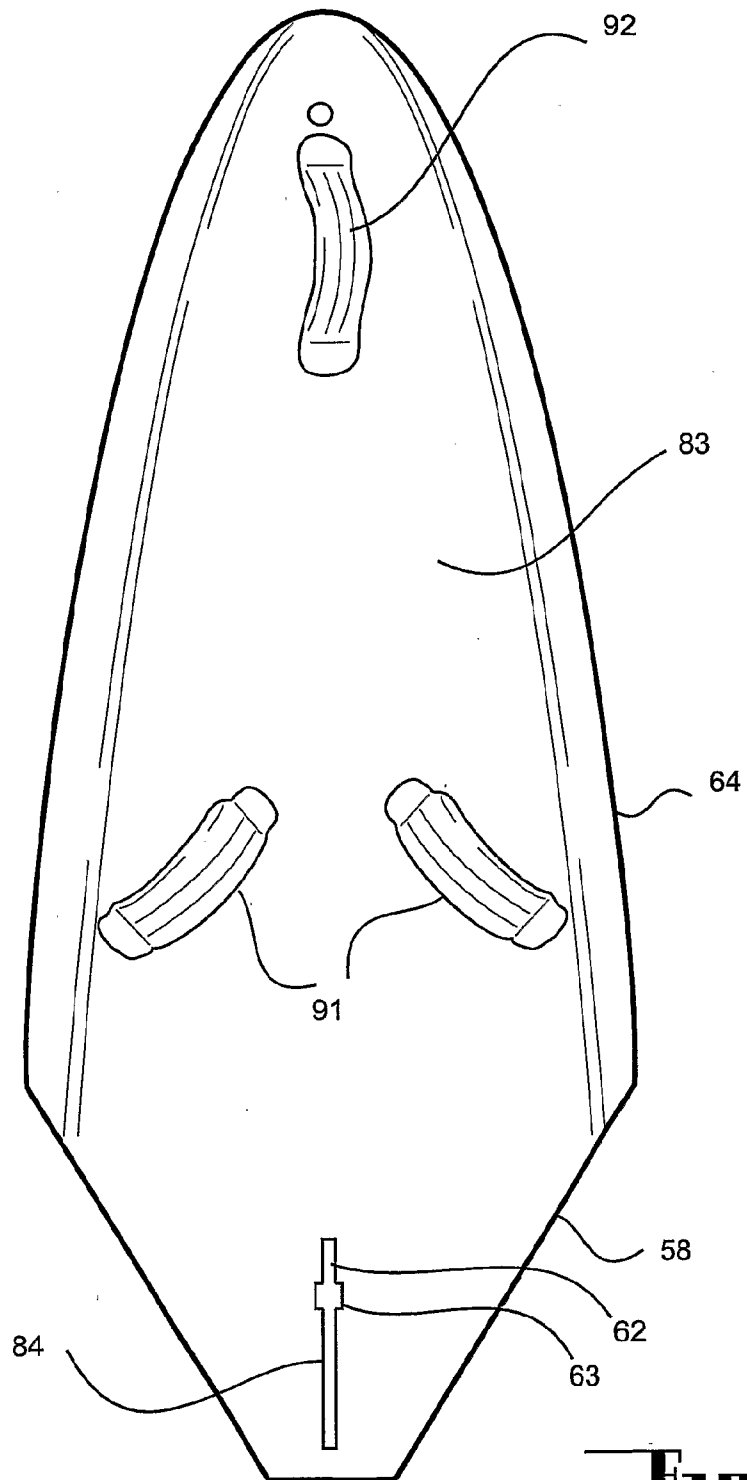


Fig. 9



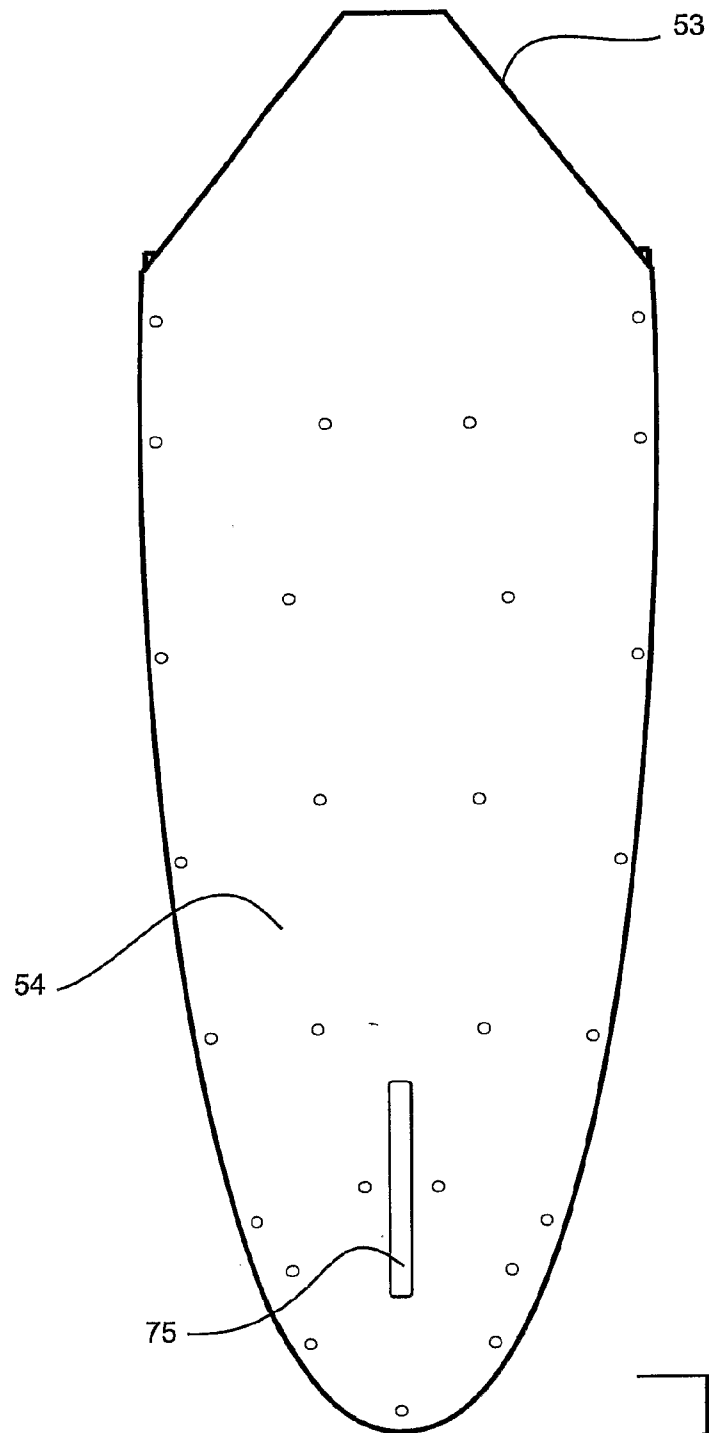


Fig. 11

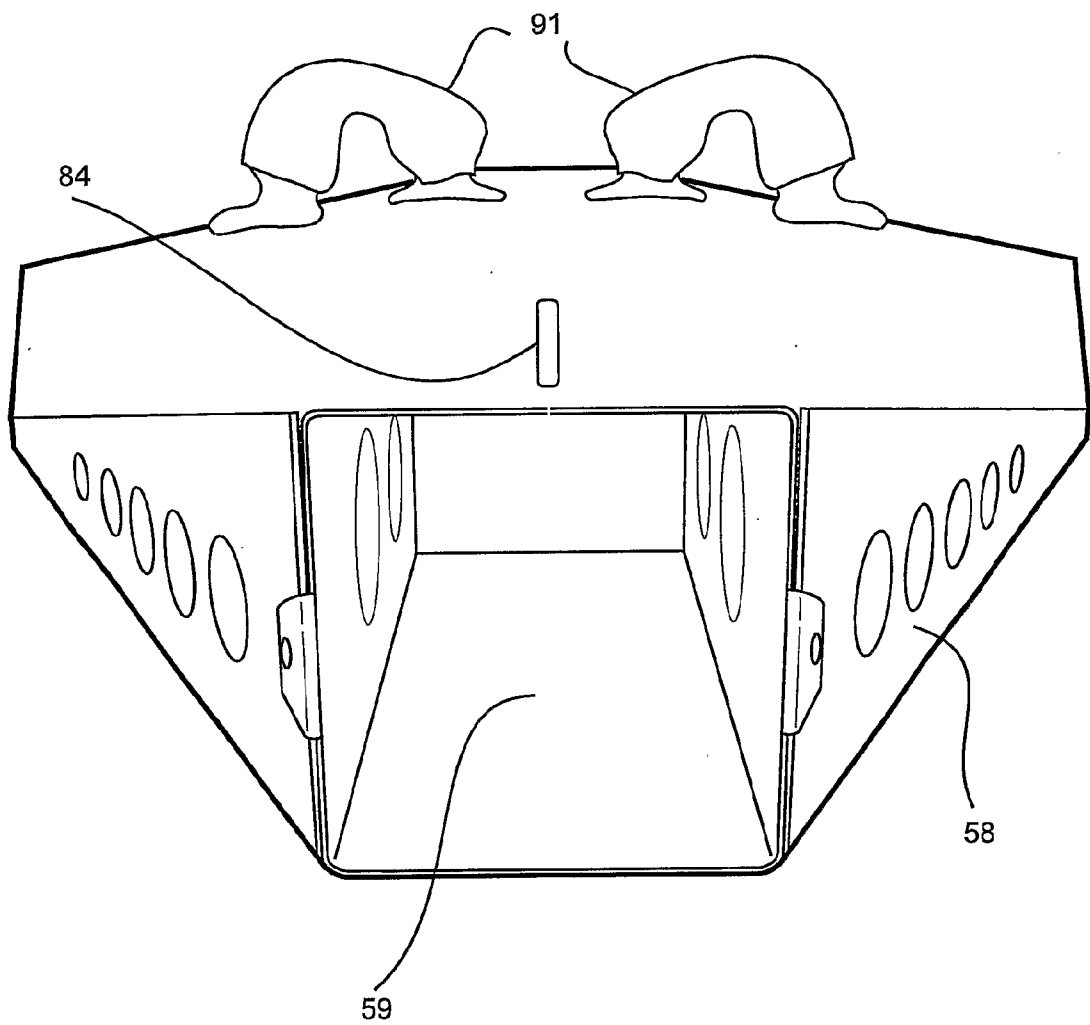


Fig. 12

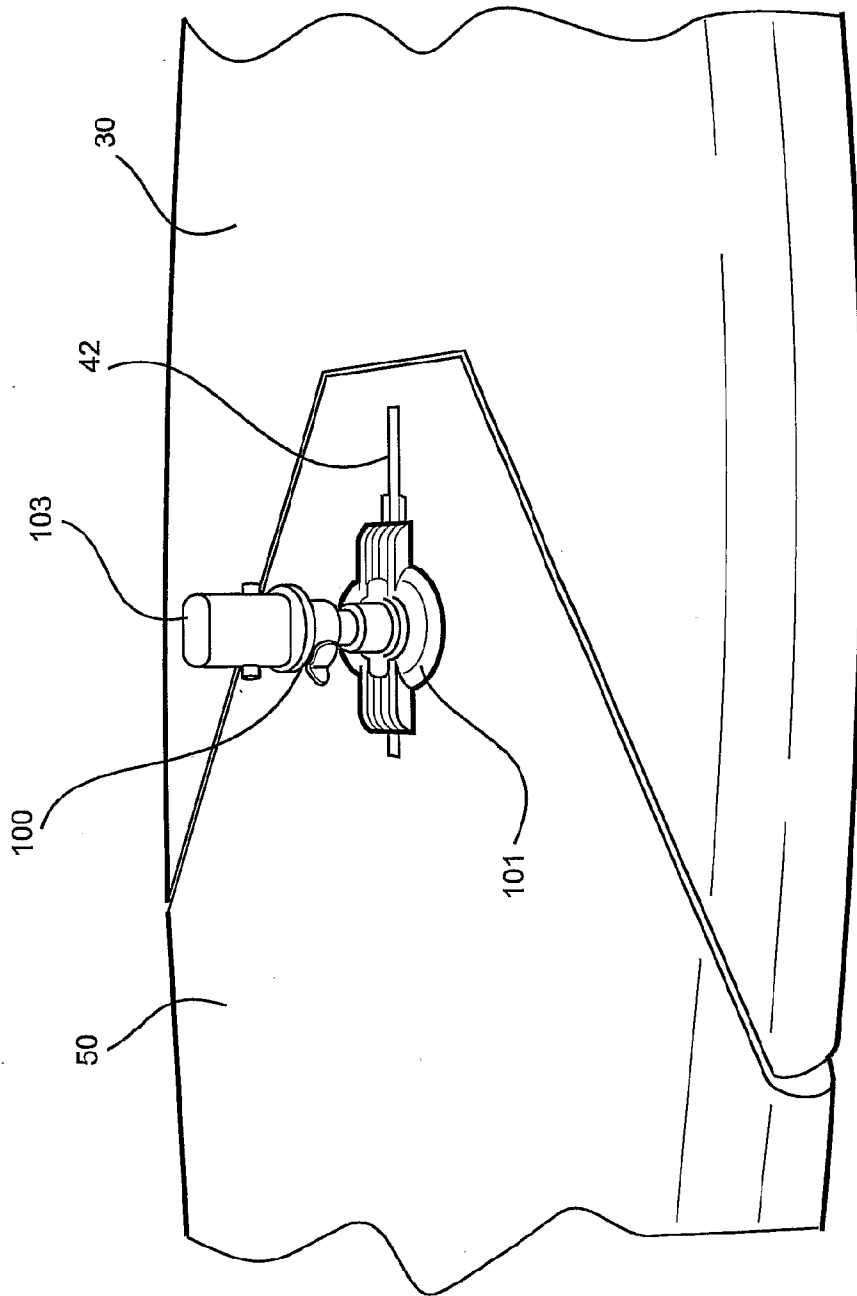
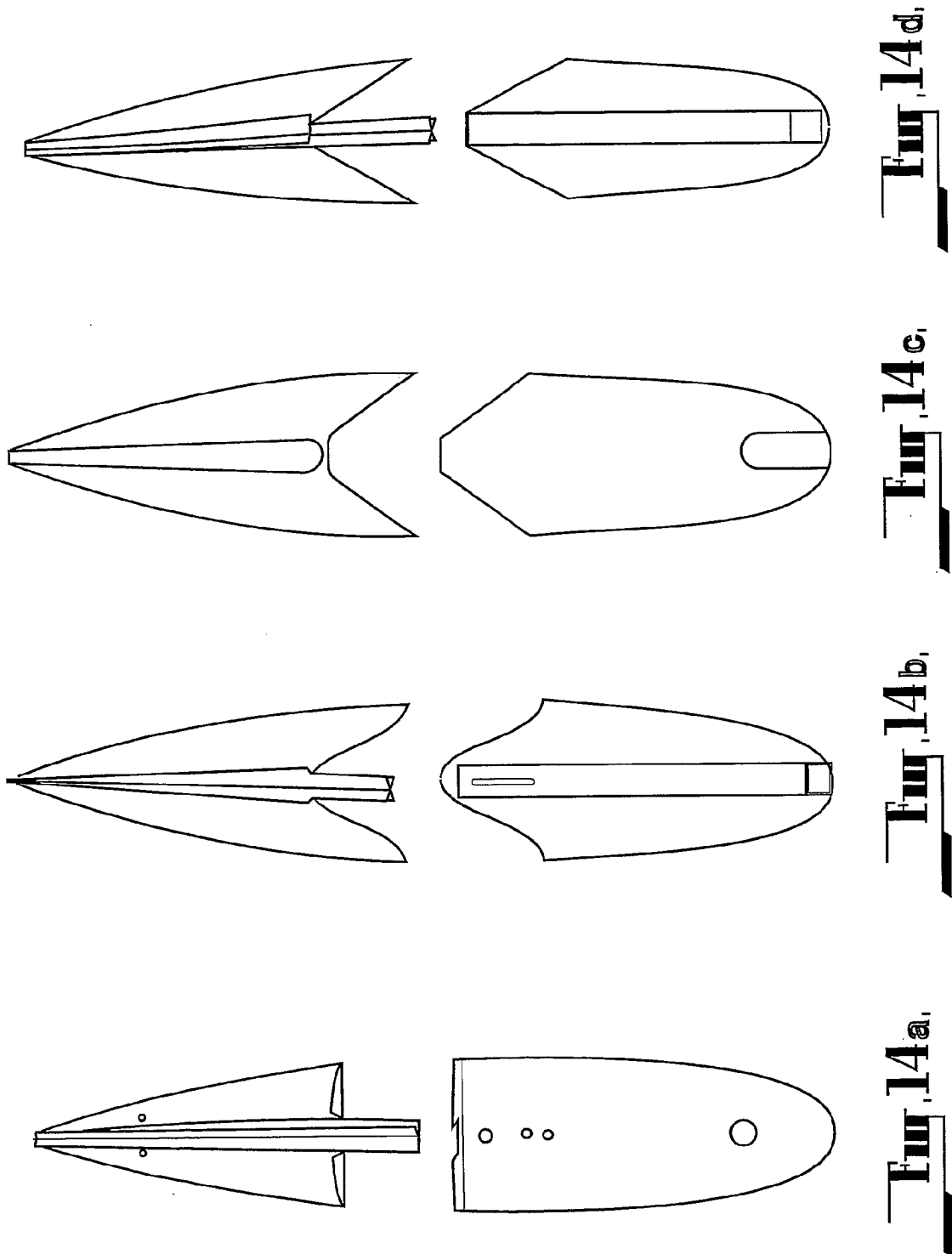


Fig. 13



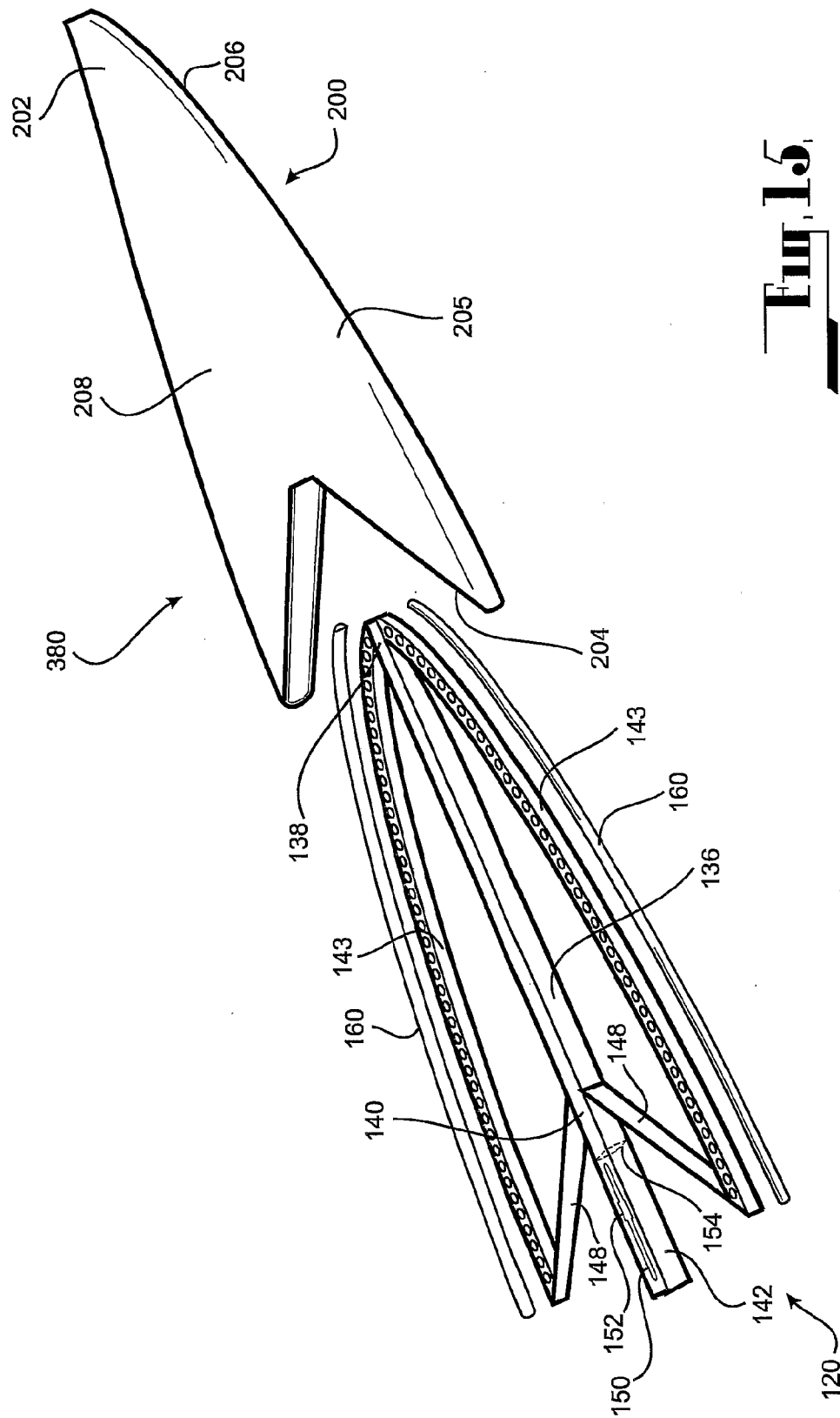
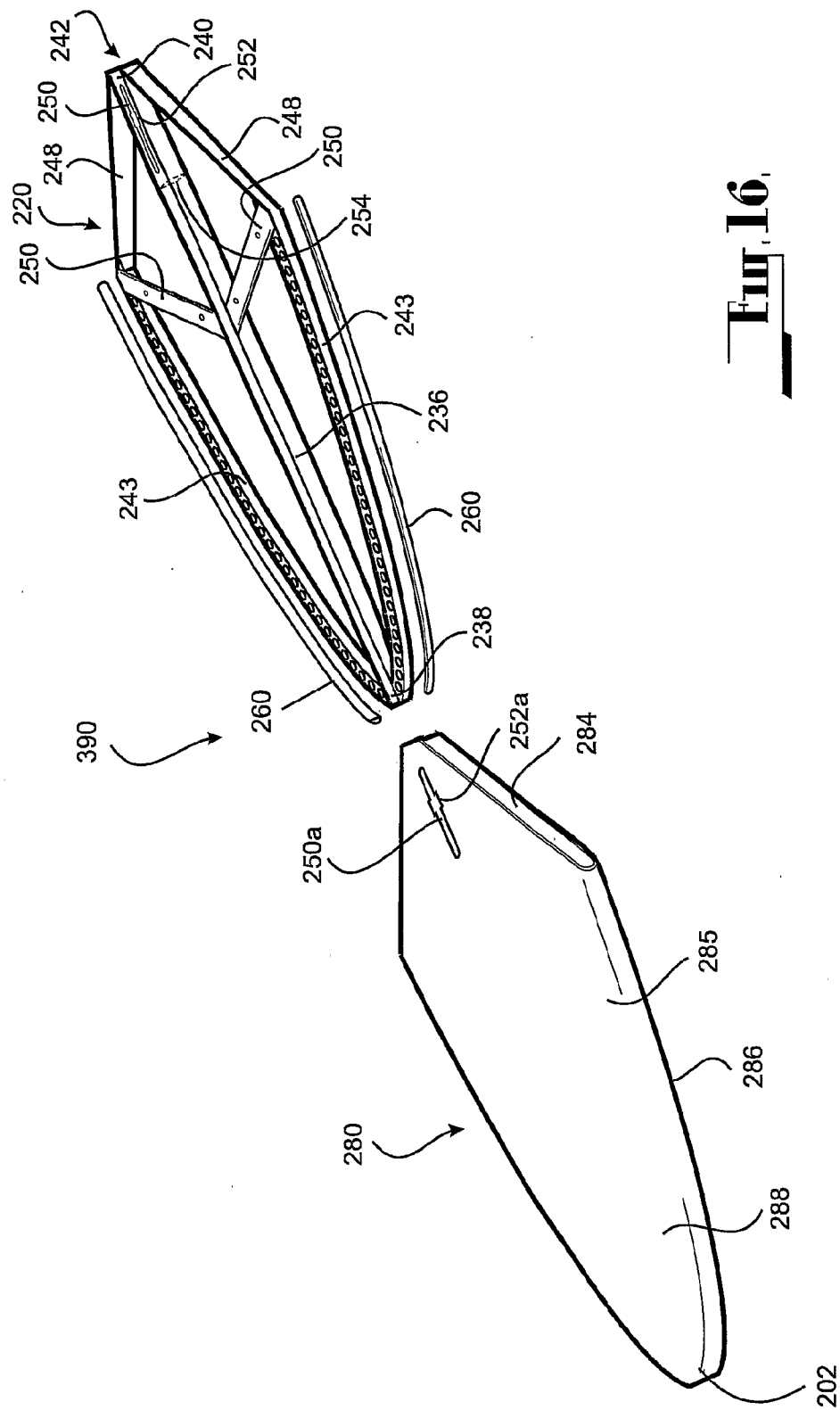
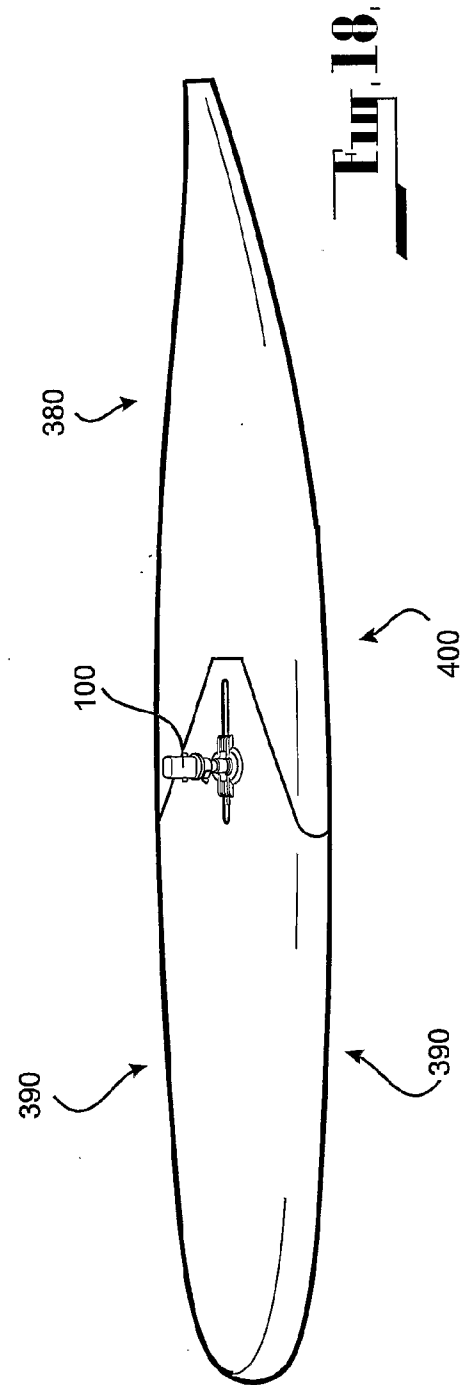
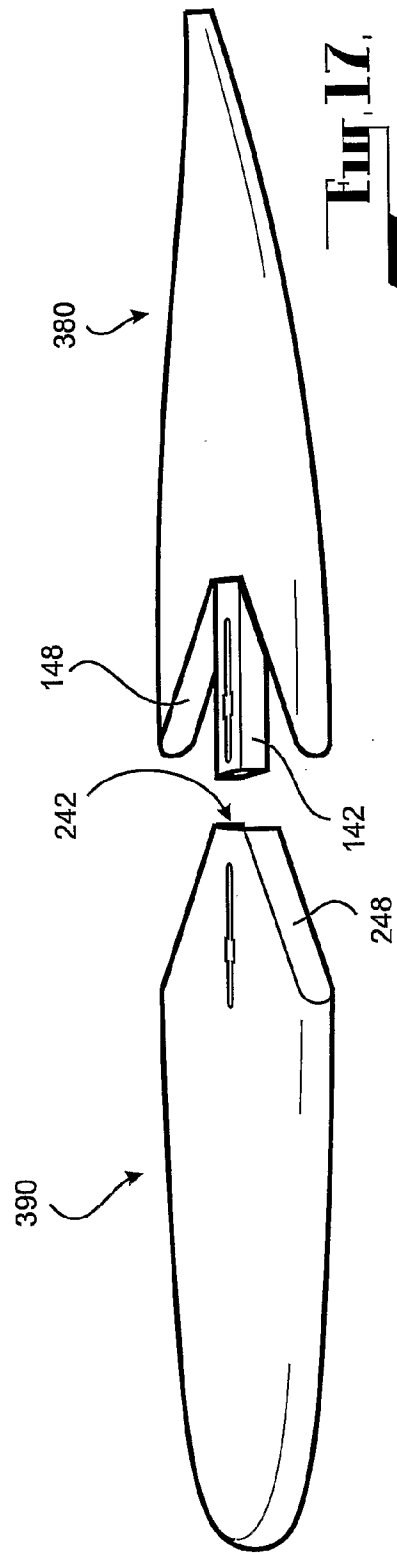


Fig. 15





INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2007/000332

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

B63B 35/79 (2006.01)

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)

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 practicable, search terms used)
DWPI IPC B63B 35/79, 35/87, A63C 5/ and Keywords: frame and section and component and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 2006/118969 A1 (MEYERHOFFER) 9 November 2006 Par. 0005-0006; 0044-0046; 0054; 0057; 0068; 0071-0072; figs. 3C, 3F, 6F-6H, 10B, 11B, 12B, 13A, 13B	1-67
X	US 2005/0148248 A1 (KATZFEY) 7 July 2005 Whole document	1-11, 16-17, 19-23, 28-29, 31-32, 34-39, 41-49, 51-57, 65-67

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 20 April 2007	Date of mailing of the international search report 30 APR 2007
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer S.J. DESCHANEL AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No : (02) 6283 2368

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2007/000332

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6656005 B2 (MEYERHOFFER) 2 December 2003 Whole document	1-11, 16-17, 19-23, 28-29, 31-32, 34-39, 41-49, 51-57, 65-67
A	US 6652340 B2 (MOLLIN) 25 November 2003	
A	US 5711692 A (POPE) 27 January 1998	
A	FR 2572703 A1 (GERMAIN) 9 May 1986	
A	US 3409920 A (BROWNLEY) 12 November 1968	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2007/000332

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
WO	2006118969	US	7121909
		US	2006246795
US	2005148248	US	7029350
US	6656005	US	2003199213
US	6652340	US	2002137408
US	5711692		
FR	2572703		
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.			
END OF ANNEX			