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(54) **A MOORAGE WITH A COVER FOR INHIBITING THE FOULING OF A VESSEL**

VERSTÄUUNG MIT UMMANTELUNG ZUR VERMINDERUNG DER VERSCHMUTZUNG EINES
SCHIFFES

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Description

[0001] The invention relates to a mooring in a water area having elements for mooring a vessel and comprising that the mooring is arranged with a cover moored to said elements or other elements at the mooring, that the cover has a rest position allowing entering of the vessel and an active position in which the cover is mainly close to the entered vessel, that the cover is made of a flexible material which is at least substantially light- and water-proof, and that the cover is enclosing at least the chief part of the vessel which is below the water surface as the cover in the active position is extending in under the moored vessel from a free edge on one side of the vessel to a free edge on the other side of the vessel, and that the cover is provided with at least one buoyant body along its free edges for keeping the free edges afloat in the water.

[0002] In water areas such as oceans and lakes, organisms live that preferably will grow on the part of the vessel which is below the water line.

[0003] The fouling which typically includes algae and acorn barnacles is liable to cause damage to the underwater body of the vessel and moreover, it increases the resistance which the vessel encounters while advancing in the water. The fouling is therefore attempted to be fought with antifouling paints containing toxic chemicals which said organisms cannot stand.

[0004] However, the chemicals are dissolved or dispersed in the surrounding water to a great or small extent to the detriment of the fauna and flora in the respective water area. By way of the food chain, the chemicals can ultimately end up in the organism of people who for example eat fish from the area.

[0005] The authorities in many countries have therefore already banned or are thinking of banning, after a possible specified transitional period, the use of these toxic paints.

[0006] This problem is tried solved by arranging moorings with light- and waterproof covers which enclose the underwater body of a moored vessel and protect it against fouling of living organisms without thereby polluting the environment and causing damage to the fauna and flora in the water area where the vessel is.

[0007] Such a cover shuts out the light and thereby prevents the photosynthesis which is a condition of organisms such as algae being able to live in the surrounding water and settling as unwanted fouling on the underwater body.

[0008] Moreover, the cover blocks the inflow of fresh water to the area around the underwater body. Thereby, an advantage is obtained in that living organisms such as e.g. acorn barnacles cannot or only to a very limited extent can live in the modest water volume which is left between the underwater body and the cover.

[0009] From US Patent No 5,279,244 is known a mooring with an envelope for protecting the underwater body of a vessel against fouling. The envelope is heavier

than water and will therefore sink to the bottom when it is not in use.

[0010] A similar mooring is known from US Patent No 4,282,822. In this case, a shroud is kept forcedly under water when not in use. In use, the shroud is brought up under the underwater hull of the vessel by inflatable buoyant bodies.

[0011] From US Patent No 3,205,851 is known a sheet with solid buoyant bodies placed along the edge of the sheet and serving for keeping the edge end of the sheet afloat on the water surface.

[0012] The sheet is made of a flexible material which in an uncontrolled manner is hanging down into the water from the buoyant bodies.

[0013] The above known moorings have that in common that they are costly to establish and slow and difficult to operate. Furthermore, the associated covers have to be customized to the respective vessel in each case.

[0014] The object of the invention is to provide a mooring of the kind mentioned in the opening paragraph, that has a simple and inexpensive design.

[0015] A second object of the invention is to provide mooring of the kind mentioned in the opening paragraph, that is quick and easy to operate.

[0016] A third object of the invention is to provide a cover arranged for a mooring of the kind mentioned in the opening paragraph, and which easily and quickly can be fitted to vessels of different sizes and shapes.

[0017] A fourth object of the invention is to provide a cloth for manufacturing a cover for a mooring of the kind mentioned in the opening paragraph.

[0018] The novel and unique features according to the invention, whereby this is achieved, is the fact that at least one lower weight having a weight smaller than the total buoyancy of the buoyant bodies is disposed at the bottom of the cover.

[0019] In the rest position, the vessel is freely allowed to sail out of and in to the cover whereas the cover in its active position encloses a water volume so small that the conditions for living organisms to exist are very limited.

[0020] By letting the free edges of the cover pass into an end edge at its rear end, a passage is defined in the rest position that allows the vessel to sail in to and out of the cover.

[0021] The end edge can be provided with a preferably elongated weight for keeping the passage open during this.

[0022] When the vessel has entered the cover, the opening can be closed with a closing line which pulls the free edges at the rear end of the cover together whereby the end edge can be folded by the preferably elongated weight hanging down from the free edges.

[0023] The cover can be hanged on e.g. posts at the mooring by means of ropes but in an advantageous embodiment, the cover is arranged in such a way that it itself can float on the water.

[0024] For this purpose, an upper buoyant body can be made along each of the two free edges of the cover whereas a lower weight can be disposed at the bottom of the cover, said weight having a weight/size smaller than the total buoyancy of the buoyant bodies and serving for keeping the cover down in the water.

[0025] As mentioned earlier, it is preferred that the cover in its active position is close to the underwater body of the vessel in order to thereby limit the chances of survival of the living organisms in the remaining small amount of water around the hull.

[0026] The cover can e.g. be pulled in to the underwater body by means of lines which are pulled by the crew of the vessel but thereby the crew are forced to carry out the heavy and hard job of displacing the large volumes of water which are between the cover and the hull in the rest position.

[0027] In an elegant solution according to the invention, this job is instead carried out by buoyant bodies which are located on either side of the cover in an area between the lower weight and the upper buoyant body and which jointly have a buoyancy that is smaller than the weight of the lower weight.

[0028] The crew now only have to pull at one or several ropes which are connected to the lower weight in order to be able to affect this with a slightly greater vertical force than the difference between the weight of the lower weight and the buoyancy of the other buoyant bodies.

[0029] Relieved of a part of the weight of the lower weight, the last-named buoyant bodies will now rise in the water and during this draw the cover up with them whereby the water in the cover automatically will be forced out through the passage at the rear end of the cover.

[0030] In the cases where the underwater body is provided with a keel, the other buoyant bodies can advantageously be placed in such a way on the cover that they will be at the transition between the hull and the keel of the moored vessel in the active position of the cover.

[0031] The invention also relates to a cover for the above-mentioned mooring. In an advantageous embodiment this cover, in an area between the lower weight and the upper buoyant bodies, can be designed with at least one pocket having a volume which is enlarged by filling with a fluid such as air or water.

[0032] When said pocket is enlarged from a flat-laid to an enlarged state, its extent is reduced in the plane of the cover whereby the size and shape of the cover can be adapted individually to a specific vessel.

[0033] A number of pockets or channels located and shaped appropriately are normally required for this purpose.

[0034] When the two walls of a pocket or channel have a, seen in cross section, unequal length and the longest wall is on the inside of the cover, this wall will advantageously be able to enter into and fill cavities in the area at e.g. propeller, rudder and keel when the

pocket or channel are inflated so that as little water as possible also will be left in these areas for organisms to live in, organisms that otherwise would be inclined to settle as fouling on the underwater body of the vessel.

[0035] Pockets in form of channels can advantageously be extending in direction from the entrance end to the head of the vessel and be placed at the transition between the hull and keel of a moored vessel when the cover is in its active position.

[0036] The cover can furthermore consist of a flexible cloth which is stiffened by a number of elongated, flexible stiffening members that can comprise at least one flexible stiffening member placed on either side of the keel and mainly extending in direction from the entrance end to the head of the vessel.

[0037] In an advantageous embodiment the flexible stiffening member can be formed by a fluid-filled channel.

[0038] The invention will be explained in greater detail below, describing only exemplary embodiments with reference to the drawing, in which

Fig. 1 is a perspective view of a mooring for a vessel with a first embodiment of a cover in rest position,

fig. 2 is the view in fig. 1 in active position where the cover is protecting a moored vessel against being fouled by e.g. algae,

fig. 3 is a cross-sectional view of the view in fig. 1,

fig. 4 is a perspective view of a mooring for a vessel with a second embodiment of a cover in rest position,

fig. 5 is the view in fig. 4 in active position where the cover is protecting a moored vessel against being fouled by e.g. algae,

fig. 6 is a cross-sectional view of the view in fig. 4 after a vessel has sailed in to the cover while this cover is in its rest position,

fig. 7 is the view in fig. 4 in a phase where the cover is closing around the underwater body of the moored vessel,

fig. 8 is the view in fig. 4 but with the cover in its active position where the cover now is closed around the underwater body of the vessel,

fig. 9 is a fractional side elevational view of a third embodiment of a cover provided with inflatable channels and in its active position on a vessel,

fig. 10 is on a larger scale a perspective view of a section of the cloth in fig. 9 with flat-laid channel,

fig. 11 is the view in fig. 10 but with inflated channel,

fig. 12 is a cross-sectional view of a fourth embodiment of a cover provided with inflatable channels and in its active position on a vessel, and

fig. 13 is a perspective view of a mooring for a vessel with a fifth embodiment of a cover in its rest position.

[0039] Figs. 1 - 3 show a mooring 1 with a first embodiment of a cover 2 according to the invention for protecting a vessel 3 against being fouled by living organisms, such as acorn barnacles and algae.

[0040] At the mooring are an only fractionally shown bridge 4 and two posts 5 driven into the seabed. The cover is moored to the bridge 4 and the posts 5, respectively, by means of mooring lines 6.

[0041] The vessel, which in fig. 2 is shown in phantom line, is moored to the bridge 4 and the posts 5, respectively, by means of other mooring lines 7.

[0042] One or several of the mooring lines to the cover and the vessel can be stiff or elastic according to need.

[0043] The cover consists of a flexible cloth 8 made of a light- and waterproof material. Along the upper edge, the cloth is provided with buoyant pipes 9 for keeping the cloth afloat on the water, and it is provided with a chain 10 along the lower edge for weighing it down in the water.

[0044] In fig. 1, the cover 2 is in its rest position ready to receive the vessel 3.

[0045] In figs. 2 and 3, the vessel has sailed in to the cover, and as seen best in fig. 2, the cover has then been closed around the stern of the vessel by means of a closing line (not shown).

[0046] The lightproof cloth is now forming a barrier to the light which therefore is not able to penetrate in to the living organisms that might be behind the cover and that need light for the photosynthesis which is a condition of them being able to exist. The fouling of the underwater body of the vessel is prevented or hindered by lack of light.

[0047] In figs. 4 - 8, the mooring 1 is provided with a second embodiment of a cover 11 according to the invention for protecting the vessel 3 against being fouled by e.g. acorn barnacles and algae.

[0048] The cover consists of a flexible cloth 12 of a light- and waterproof material. Along the upper edge of the cloth is a buoyant pipe 13 for keeping the cloth 12 afloat on the water and at the bottom a lower chain 14 for weighing the cloth down in the water.

[0049] However in this case, the cloth is not open at the bottom as in the embodiment of the cover in figs. 1 - 3 but is on the contrary closed, the cloth now extending all the way under the water between a - seen in the figures - right upper edge 15a and a left upper edge 15b.

[0050] At the front 16, the cover 11 is moored to the bridge 4 and at the rear end 17 to the posts 5 by means of the mooring lines 6.

[0051] At the rear end 17 of the cover, the upper edges 15a,b pass into an end edge 18. In a central part of this end edge, a chain 19 is located for weighing the cloth down in the water at the area at the end edge.

[0052] The lower chain 14 is connected to a left and right line 20a,b which in the case shown, are fastened in the area at the end edge 18 of the cover and the upper edges, 15a and 15b respectively, of the cloth.

[0053] In the rest position in fig. 4, the upper edges 15a,b of the cloth at the end edge 18 are kept at a distance from each other by the mooring lines 6 for the posts 5 whereas the end edge and the adjoining area of the cloth is kept down in the water by the chain 19.

[0054] Thereby, a passage 21 is formed that allows the vessel to sail in to and out of the cover when this cover is in its rest position.

[0055] In fig. 6, the vessel is in place in the cover and has been moored to the bridge 4 and the posts 5, respectively (fig. 5). But as shown, the cover still contains a significant amount of water which must be dislocated in order to allow the cover to assume its active position close to the underwater body.

[0056] For this purpose, the cloth is provided with buoyant bodies 22a,b along each side, which is seen best in figs. 6, 7 and 8. These buoyant bodies are placed in an area between the lower weight 14 and the respective upper edge 15a,b.

[0057] The operation of emptying the cover of the amount of water that it contains in its rest position will take place in the following way.

[0058] An area of each of the lines 20a,b is caught by means of e.g. a boathook (not shown) and lifted quickly and easily up around a hook (not shown) on the stern of the vessel so that at least a part of the weight of the lower chain is now supported by these lines.

[0059] Now, the buoyant bodies 22a,b are not kept down by the lower weight anymore and they will therefore, as shown in fig. 7, rise in the water and during this pull the surrounding cloth up with them whereby the entrapped amount of water in the cover is successively forced out through the still open passage 21 at the end of the cover.

[0060] In fig. 8, this part of the operation is over. The cover is now close to the hull except in the area at the stern.

[0061] Now, the upper edges 15a,b of the cloth are pulled together in the area at the end edge 18 by means of a closing line (not shown) whereby the end edge 18 simultaneously is folded up and the passage to the vessel thereby is closed.

[0062] This closing takes place the easiest when the mooring lines 6 to the posts 5 are elastic so that it will not be necessary to spend time and man power on first freeing the mooring lines and then mooring the cover again.

[0063] Now, the cover is tightly closed around the underwater body of the vessel and is blocking out the light on all sides in this position, the light which is a condition

of living organisms such as algae being able to exist.

[0064] In addition, the cover is hindering new living organisms access to the hull and is blocking the inflow of fresh water. Living organisms such as acorn barnacles will not be able to survive in the long run in the mod-

[0065] Therefore, the cover is an effective means of preventing fouling of the underwater body of a vessel, and the effect is advantageously achieved without polluting the surrounding environment and without causing unwanted damage to the fauna and the flora in the water area.

[0066] Fig. 9 shows a third embodiment of a cover 23 in active position on the vessel 3. A lower chain 24 is weighing the cloth 25 of the cover down in the water whereas upper buoyant pipes 26 are keeping the edges of the cover afloat on the water surface 27.

[0067] The cloth 25 is provided with a number of inflatable channels 28 which in this case are interconnected so that quite a network of channels are formed that can be inflated via a valve 29 connected to a source (not shown) of e.g. air or water under pressure.

[0068] Figs. 10 and 11 show a section of the cloth 25 with a channel 28 which is flat-laid in fig. 10 and inflated in fig. 11. As can be seen, the cloth 25 is contracting crosswise of the channel 28 when this channel is inflated.

[0069] This characteristic is advantageously utilised to fitting the cover 23 in fig. 9 to the underwater body of the vessel 3 as the cloth 9 is contracted around the hull when the channels 28 are inflated.

[0070] Thereby, the significant advantage is obtained in that practically no water is left between the hull and the cloth in which living organisms such as acorn barnacles would be able to live.

[0071] Another significant advantage is that the same cover easily can be fitted individually to vessels of different sizes and shapes. Therefore, the covers do not need to be customised to specific vessels but can be prefabricated and held in stock in a small number of standard sizes so that the covers can be manufactured at a reasonable price.

[0072] Seen in cross-section, fig. 12 shows a fourth embodiment of a cover 30 in active position on the vessel 3. A lower chain 31 is weighing the cloth 32 of the cover down in the water whereas upper buoyant pipes 33 are keeping the edges of the cover afloat on the water surface 27.

[0073] In this case, a first channel 34 and a second channel 35 are found in the area at the transition between the keel and hull of the vessel.

[0074] Seen in cross-section, the length of the interior wall 36 of the first channel 34 facing the vessel is longer than the exterior wall 37 of the channel 34. When the channel is inflated, the interior wall of the channel will therefore settle as close as possible in the corner between the keel and the hull and thereby fill this corner

so that there will be no favourable living conditions for living organisms in this area either.

[0075] When the second channel 35, which is in the exterior wall 37 of the first channel 34, is inflated, this wall 37 is contracting crosswise of the channel so that the cloth automatically adapts itself to the size and shape of the respective vessel.

[0076] If the channels 34 and 35 are filled with air, they will advantageously be fulfilling the same function as the buoyant bodies 22a,b in figs. 6 - 8. The same applies, though to a less extent, if the channels are filled with fresh water instead.

[0077] The channels in figs. 9 - 12 can be interconnected and arranged to be inflated jointly via e.g. one valve each time the vessel is moored.

[0078] Alternatively, the channels can be inflated in advance so that the recurrent job of having to inflate them each time advantageously is eliminated.

[0079] The channels do not have to be interconnected either but can individually or in groups be provided with each their valve. In case of individual inflation of the channels, the cloth of a standard cover can thereby be adapted in advance to the size and shape of a specific vessel.

[0080] Instead of channels or in addition to channels, the cloth can be arranged with inflatable pockets serving the same purpose as said channels. The pockets can e.g. be designed in such a way that they in inflated state will fill cavities at e.g. propeller and rudder.

[0081] Fig. 13 shows in perspective a fifth embodiment of a cover 38 in rest position. A lower chain 39 is weighing the cloth 40 of the cover down in the water while an upper buoyant pipe 41 is keeping the edges of the cover afloat on the water surface. A chain 42 is serving for weighing the cloth down in the water in the area at the end edge.

[0082] In this case, the flexible cloth 40 is stiffened by means of a longitudinal stiffening member 43 on either side of the keel area and a number of cross members 44. Among other things, the stiffening members are serving for keeping the cloth open in the rest position so that it is easy to sail in to it when the vessel is to be moored.

[0083] The stiffening members can e.g. be formed by air- or water-filled channels.

[0084] Above, the invention is described on the assumption that chains (10;14;24;31;42) were used to weigh the cloth of the cover down in the water. However, weights of any kind can be used for this purpose within the scope of the invention.

[0085] The weight need not necessarily consist of one continuous weight either but can instead consist of a number of individual parts which are placed on the cover in mutual spaced relationship.

[0086] The mentioned buoyant pipes along the upper side of the cover can be stiff so that they will stabilise the cover. But they can also have a flexibility that enable them to function as fenders.

[0087] The buoyancy at the edges of the cover can alternatively be provided by a number of individual buoyant bodies placed in mutual spaced relationship along the respective edge.

[0088] The other buoyant bodies placed between the lower weight 14 and upper edges 15a,b of the cover 11 can consist of buoyant pipes or a number of individual buoyant bodies placed in mutual spaced relationship along the cloth of the cover.

[0089] Alternatively, the upper part of the cloth of the cover can in itself be arranged with an appropriate buoyancy.

[0090] Furthermore, the cover can be made of a solid or more solid material such as e.g. polycarbonate within the scope of the invention.

Claims

1. A mooring in a water area with elements (4;5) for mooring a vessel (3) and comprising
 - that the mooring (1) is arranged with a cover (2; 11) moored to said elements (4;5) or other elements at the mooring,
 - that the cover has a rest position in which it allows entrance of a vessel and an active position in which it is mainly close to the entered vessel,
 - that the cover (2;11) is made of a flexible material (8;12) which is at least substantially light- and waterproof, and
 - that the cover (2;11) is enclosing at least the chief part of the vessel (3) that is below the water surface as the cover in the active position is extending in under the moored vessel (3) from a free edge (15a) on one side of the vessel (3) to a free edge (15b) on the other side of the vessel (3), and
 - that the cover is provided with at least one buoyant body (13;26;33;41) along its free edges (15a,b) for keeping the free edges (15a,b) afloat in the water,

characterised in

 - **that** at least one lower weight (14;24;31;42) having a weight smaller than the total buoyancy of the buoyant bodies (13;26;33;42) is disposed at the bottom of the cover (11).
2. A mooring according to claim 1, **characterised in that** the cover (11) is designed with at least two other buoyant bodies (22a,b) placed on either side of the cover (11) in an area between the at least one lower weight (14) and the at least one upper buoyant body (13), and jointly having a buoyancy which is smaller than the weight of the lower weight (14).
3. A mooring according to claim 2 and where the vessel (3) is provided with a keel, **characterised in that** the other buoyant bodies (22a,b) are placed in such a way on the cover (11) that they will be at least close to the transition between the hull and the keel of the moored vessel (3) in the active position of the cover (11).
4. A mooring according to any of the claims 1 - 3, **characterised in that** the free edges (15a,b) of the cover (11) at one end (17) pass into an end edge (18) defining a passage (20) in the rest position that allows the vessel to sail in to and out of the cover (11).
5. A mooring according to claim 4, **characterised in that** at least one flexible weight (19) in form of e.g. a chain is placed on the end edge of the cover (11).
6. A mooring according to any of the claims 1 - 5, **characterised in that** the free edges (15a,b) of the cover (11) are adjoining each other at the end edge (18) when the cover is in its active position.
7. A mooring according to any of the claims 1 - 6, **characterised in that** at least one line (20a,b) is part of the cover (11), said line is connected to the at least one lower weight (14) and arranged to be able to affect said lower weight (14) with an upwardly directed force.
8. A cover for a mooring according to claims 1 - 7, **characterised in that** the cover (11) is modified by that the cover in an area between the at least one lower weight (14) and the at least one upper buoyant body (13a,b) is designed with at least one pocket having a volume which is enlarged upon filling with a fluid, such as air or water.
9. A cover according to claim 8, **characterised in that** the at least one pocket is a channel with two walls located close to or against each other in the nonfluid-filled state of the channel.
10. A cover according to claim 9, **characterised in that** the length of the wall of the at least one channel is longer than the length of the second wall of the channel, seen in direction crosswise to the channel.
11. A cover according to claim 10, **characterised in that** the channel wall with the greatest length is on the inside of the cover.
12. A cover according to claim 11, **characterised in that** the at least one channel is mainly extending in direction from the entrance end to the head of the vessel.
13. A cover according to any of the claims 8-12 and

where the vessel is provided with a keel, **characterised in that** an elongated channel on either side of the keel is placed in such a way that it will be at least close to the transition between the hull and the keel of the moored vessel (3) in the active position of the cover (11).

14. A cover according to any of the claims 8 - 13, **characterised in that** the at least one pocket or channel is made of the same material as the rest of the cover. 10
15. A cover according to any of the claims 8 - 14, **characterised in that** the at least one pocket or channel has a valve which operatively can be connected to a fluid source upon filling. 15
16. A cover according to any of the claims 8 - 15, **characterised in that** the fluid for filling the at least one pocket or channel is fresh water. 20

Patentansprüche

1. Anlegeplatz auf einer Wasserfläche mit Elementen (4; 5) zum Festmachen eines Wasserfahrzeugs (3), wobei
 - der Anlegeplatz (1) mit einer Hülle (2; 11) versehen ist, die an den Elementen (4; 5) oder anderen Elementen an dem Anlegeplatz festgemacht ist, 30
 - die Hülle eine Ruheposition hat, in der sie die Zufahrt eines Fahrzeugs erlaubt, und eine aktive Position hat, in der sie im wesentlichen dicht an dem eingefahrenen Fahrzeug anliegt, 35
 - die Hülle (2; 11) aus einem flexiblen Material (8; 11) besteht, das wenigstens im wesentlichen licht- und wasserdicht ist, 40
 - die Hülle (2; 11) wenigstens den Hauptteil des Fahrzeugs (3), der unter der Wasseroberfläche liegt, einschließt, wobei die Hülle sich in der aktiven Position unter dem festgemachten Fahrzeug (3) von einem freien Rand (15a) auf der einen Seite des Fahrzeugs (3) zu einem freien Rand (15b) auf der anderen Seite des Fahrzeugs (3) erstreckt, und 45
 - die Hülle entlang ihrer freien Ränder (15a; 15b) mit wenigstens einem Schwimmkörper (13; 26; 33; 41) zum auf dem Wasser aufschwimmenden Halten der freien Ränder (15a; 15b) versehen ist, 55

dadurch gekennzeichnet, dass

an dem Boden der Hülle (11) wenigstens ein Lastgewicht (14; 24; 31; 42) mit einem Gewicht, das kleiner ist als der Gesamtauftrieb der Schwimmkörper (13; 26; 33; 42), angeordnet ist.

2. Anlegeplatz nach Anspruch 1, **dadurch gekennzeichnet, dass** die Hülle (11) mit wenigstens zwei weiteren Schwimmkörpern (22a,b) versehen ist, die auf jeweils einer Seite der Hülle (11) in einem Bereich zwischen der wenigstens einen Last (14) und dem wenigstens einen Schwimmkörper (13) angeordnet sind und die gemeinsam einen Auftrieb haben, der geringer ist, als das Gewicht des unteren Gewichts (14).
3. Anlegeplatz nach Anspruch 2, wobei das Fahrzeug (3) mit einem Kiel versehen ist, **dadurch gekennzeichnet, dass** die anderen Schwimmkörper (22a, b) derart auf der Hülle (11) angeordnet sind, dass sie in der aktiven Position der Hülle (11) wenigstens nahe zwischen dem Übergang zwischen dem Rumpf und dem Kiel des festgemachten Fahrzeugs (3) sind.
4. Anlegeplatz nach einem der Ansprüche 1 - 3, **dadurch gekennzeichnet, dass** die freien Ränder (15a,b) der Hülle (11) an einem Ende (17) in einem Endrand (18) auslaufen, der in der Ruheposition eine Passage (20) bildet, die es dem Fahrzeug erlaubt, in die Hülle (11) hinein und aus dieser hinaus zu fahren.
5. Anlegeplatz nach Anspruch 4, **dadurch gekennzeichnet, dass** wenigstens ein flexibles Gewicht in Form beispielsweise einer Kette an dem Endrand der Hülle (11) angeordnet ist.
6. Anlegeplatz nach einem der Ansprüche 1 - 5, **dadurch gekennzeichnet, dass** die freien Ränder (15a,b) der Hülle (11) miteinander an dem Endrand (18) verbunden sind, wenn die Hülle in ihrer aktiven Position ist.
7. Anlegeplatz nach einem der Ansprüche 1 - 6, **dadurch gekennzeichnet, dass** wenigstens eine Leine (20a,b) Teil der Hülle (11) ist, wobei die Leine mit dem wenigstens einen Lastgewicht (14) verbunden und so angeordnet ist, dass die Last (14) mit einer nach oben gerichteten Kraft beaufschlagt werden kann.
8. Hülle für einen Anlegeplatz nach einem der Ansprüche 1 - 7, **dadurch gekennzeichnet, dass** die Hülle (11) in einem Bereich zwischen der wenigstens einen Last und dem wenigstens einen oberen Schwimmkörper (13a, b) mit wenigstens einer Tasche ausgebildet ist, deren Volumen bei dem Füllen mit einem Fluid wie Luft oder Wasser vergrößert

wird, modifiziert ist.

9. Hülle nach Anspruch 8, **dadurch gekennzeichnet, dass** die wenigstens eine Tasche ein Kanal mit zwei Wänden ist, die in dem nicht mit einem Fluid gefüllten Zustand des Kanals nahe aneinander oder aneinander anliegend angeordnet sind. 5
10. Hülle nach Anspruch 9, **dadurch gekennzeichnet, dass** die Länge der Wandung des wenigstens einen Kanals länger ist als die Länge der zweiten Wandung des Kanals, gesehen in einer Richtung quer zu dem Kanal. 10
11. Hülle nach Anspruch 10, **dadurch gekennzeichnet, dass** die Wandung des Kanals mit der größten Länge auf der Innenseite der Hülle ist. 15
12. Hülle nach Anspruch 11, **dadurch gekennzeichnet, dass** der wenigstens eine Kanal sich im wesentlichen in Richtung von dem Eintrittsende zu dem Bug des Fahrzeugs erstreckt. 20
13. Hülle nach einem der Ansprüche 8 - 12 und wobei das Fahrzeug mit einem Kiel versehen ist, **dadurch gekennzeichnet, dass** ein länglicher Kanal auf jeder der Seiten des Kiels derart angeordnet ist, dass er wenigstens nahe an dem Übergang zwischen dem Rumpf und dem Kiel des festgemachten Fahrzeugs (3) in der aktiven Position der Abdeckung (11) ist. 25 30
14. Hülle nach einem der Ansprüche 8 - 13, **dadurch gekennzeichnet, dass** die wenigstens eine Tasche oder der Kanal aus demselben Material wie die Hülle im übrigen gefertigt ist. 35
15. Hülle nach einem der Ansprüche 8 - 14, **dadurch gekennzeichnet, dass** die wenigstens eine Tasche oder der Kanal ein Ventil haben, dass betriebsmäßig mit einer - Fluidquelle bei dem Füllen verbunden werden kann. 40
16. Hülle nach einem der Ansprüche 8 - 15, **dadurch gekennzeichnet, dass** das Fluid zum Füllen der wenigstens einen Tasche oder des Kanals Frischwasser ist. 45

Revendications

1. Poste d'amarrage dans une zone aquatique avec des éléments (4 ; 5) pour amarrer un vaisseau (3) et comprenant le fait :

que le poste d'amarrage (1) est pourvu d'un revêtement (2 ; 11) amarré auxdits éléments (4 ; 5) ou à d'autres éléments au poste d'amarrage,

que le revêtement a une position de repos dans laquelle il permet l'entrée d'un vaisseau et une position active dans laquelle il est surtout proche du vaisseau à l'intérieur,

que le revêtement (2 ; 11) est fabriqué dans une matière flexible (8 ; 12) qui est au moins essentiellement résistant à la lumière et à l'eau, que le revêtement (2 ; 11) enferme au moins la partie principale du vaisseau (3) qui est sous la surface de l'eau lorsque le revêtement en position active s'étend sous le vaisseau amarré (3) à partir d'un bord libre (15a) sur un côté du vaisseau (3) jusqu'à un bord libre (15b) sur l'autre côté du vaisseau (3), et

que le revêtement est pourvu d'au moins un corps flottant (13 ; 26 ; 33 ; 41) le long de ses bords libres (15a, b) pour maintenir les bords libres (15a, b) à flot dans l'eau,

caractérisé en ce que

au moins un lest inférieur (14 ; 24 ; 31 ; 42) ayant un poids inférieur à la flottabilité totale des corps flottants (13 ; 26 ; 33 ; 42) est placé au fond de du revêtement (11).

2. Poste d'amarrage selon la revendication 1, **caractérisé en ce que** le revêtement (11) est conçu avec au moins deux autres corps flottants (22a, b) placés de chaque côté de du revêtement (11) dans une zone entre le au moins un lest inférieur (14) et le au moins un corps flottant supérieur (13) et qui à eux deux ont une flottabilité inférieure au poids du lest inférieur (14).
3. Poste d'amarrage selon la revendication 2, **caractérisé en ce que**, et dans le cas où le vaisseau (3) est pourvu d'une quille, les autres corps flottants (22a, b) sont placés de telle manière sur le revêtement (11) qu'ils seront au moins proches de la transition entre la coque et la quille du vaisseau amarré (3) quand le revêtement (11) est en position active.
4. Poste d'amarrage selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** les bords libres (15a, b) du revêtement (11) forment à une extrémité (17) un bord terminal (18) délimitant dans la position de repos un passage (20) qui permet au vaisseau d'entrer et de sortir du revêtement (11).

5. Poste d'amarrage selon la revendication 4, **caractérisé en ce qu'**au moins un lest flexible (19) ayant la forme par exemple d'une chaîne est placé sur le bord terminal du revêtement (11).

6. Poste d'amarrage selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** les bords libres (15a, b) du revêtement (11) sont attenants l'un à l'autre en leur bord terminal (18) quand l'abri est

dans sa position active.

7. Poste d'amarrage selon l'une quelconque des revendications 1 à 6, **caractérisé en ce qu'**au moins une ligne (20a, b) fait partie du revêtement (11), ladite ligne étant reliée à au moins un lest inférieur (14) et disposée de façon à appliquer au lest inférieur (14) une force dirigée vers le haut. 5
8. Revêtement pour un poste d'amarrage selon les revendications 1 à 7, **caractérisé en ce que** le revêtement (11) est modifié **en ce que** le revêtement dans une zone comprise entre le au moins un lest inférieur (14) et le au moins un corps flottant supérieur (13a, b) il est conçu avec au moins une poche dont on peut augmenter le volume en la remplissant avec un fluide, tel que de l'air ou de l'eau. 10 15
9. Revêtement selon la revendication 8, **caractérisé en ce qu'**au moins une poche est un conduit avec deux parois situées l'une près de l'autre ou l'une contre l'autre quand le conduit n'est pas rempli de fluide. 20
10. Revêtement selon la revendication 9, **caractérisé en ce que**, si l'on regarde une section transversale du au moins un conduit, la longueur d'une paroi du conduit est supérieure à la longueur de la seconde paroi du conduit. 25 30
11. Revêtement selon la revendication 10, **caractérisé en ce que** la paroi du conduit ayant la plus grande longueur est sur la face intérieure du revêtement. 30
12. Revêtement selon la revendication 11, **caractérisé en ce que** le au moins un conduit s'étend principalement dans une direction allant de l'extrémité d'entrée vers la proue du vaisseau. 35
13. Revêtement selon l'une quelconque des revendications 8 à 12, **caractérisé en ce que**, et dans le cas où le vaisseau est pourvu d'une quille, un conduit allongé est placé sur chaque côté de la quille de telle manière qu'il sera au moins proche de la transition entre la coque et la quille du vaisseau amarré (3) quand le revêtement (11) est en position active. 40 45
14. Revêtement selon l'une quelconque des revendications 8 à 13, **caractérisé en ce que** la au moins une poche ou conduit est fabriqué dans la même matière que le reste du revêtement. 50
15. Revêtement selon l'une quelconque des revendications 8 à 14, **caractérisé en ce que** la au moins une poche ou conduit a une valve qui en fonctionnement peut être reliée à une source de fluide au moment du remplissage. 55

16. Revêtement selon l'une quelconque des revendications 8 à 15, **caractérisé en ce que** le fluide pour le remplissage de la au moins une poche ou conduit est de l'eau douce.

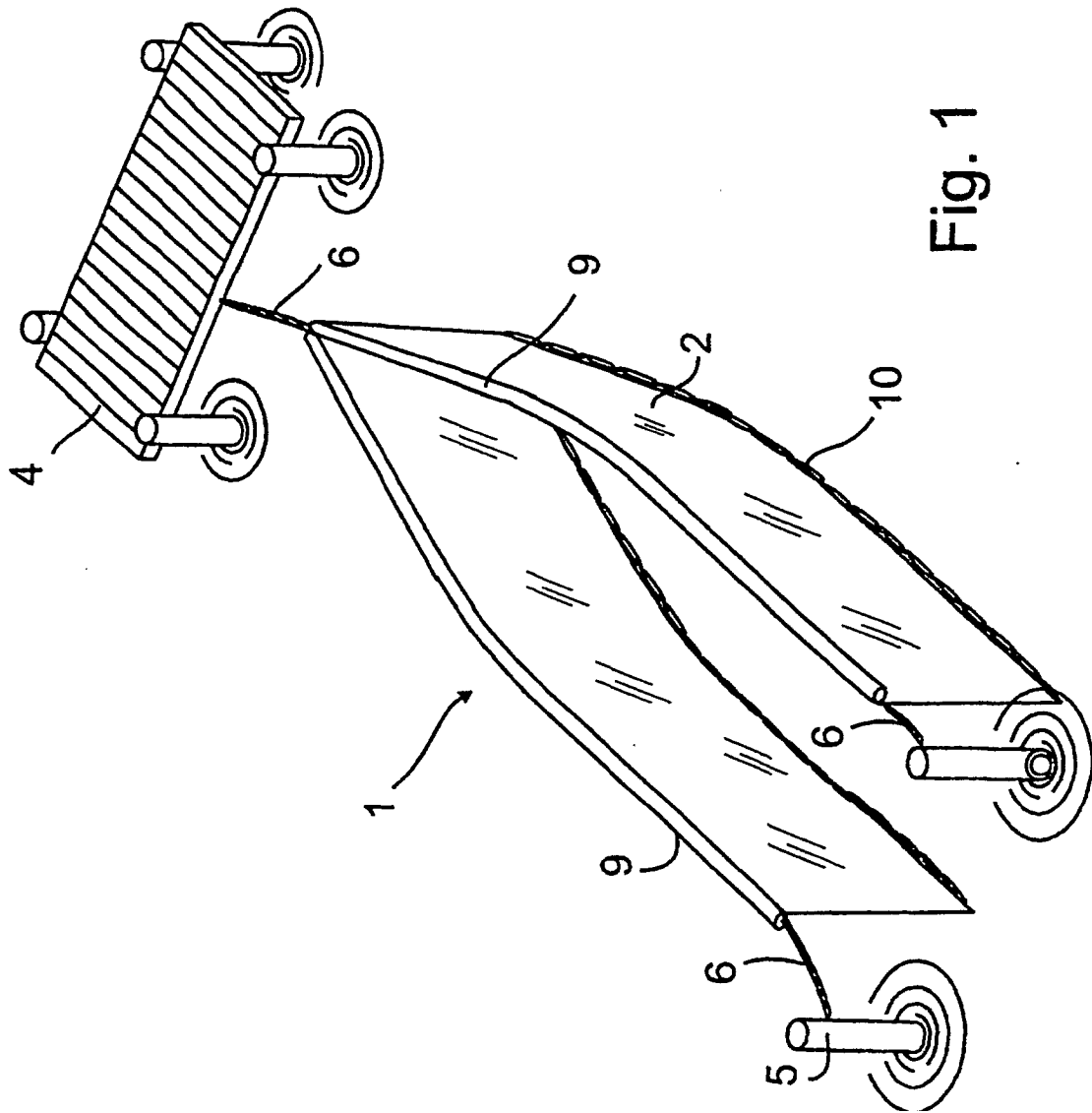


Fig. 1

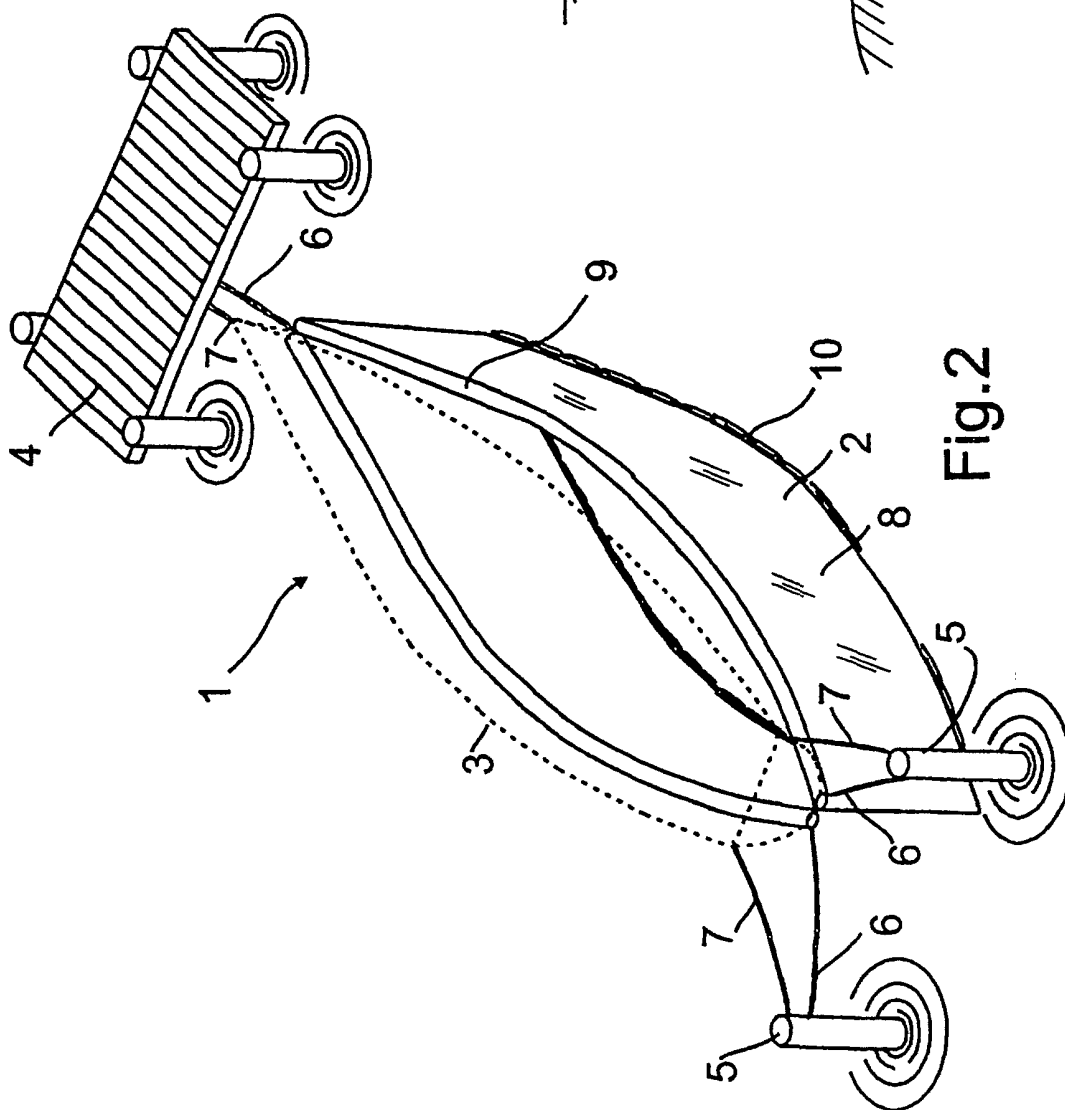


Fig. 2

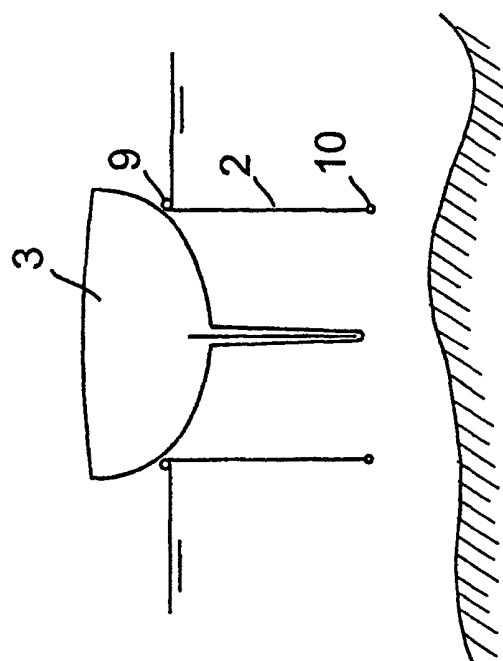


Fig. 3

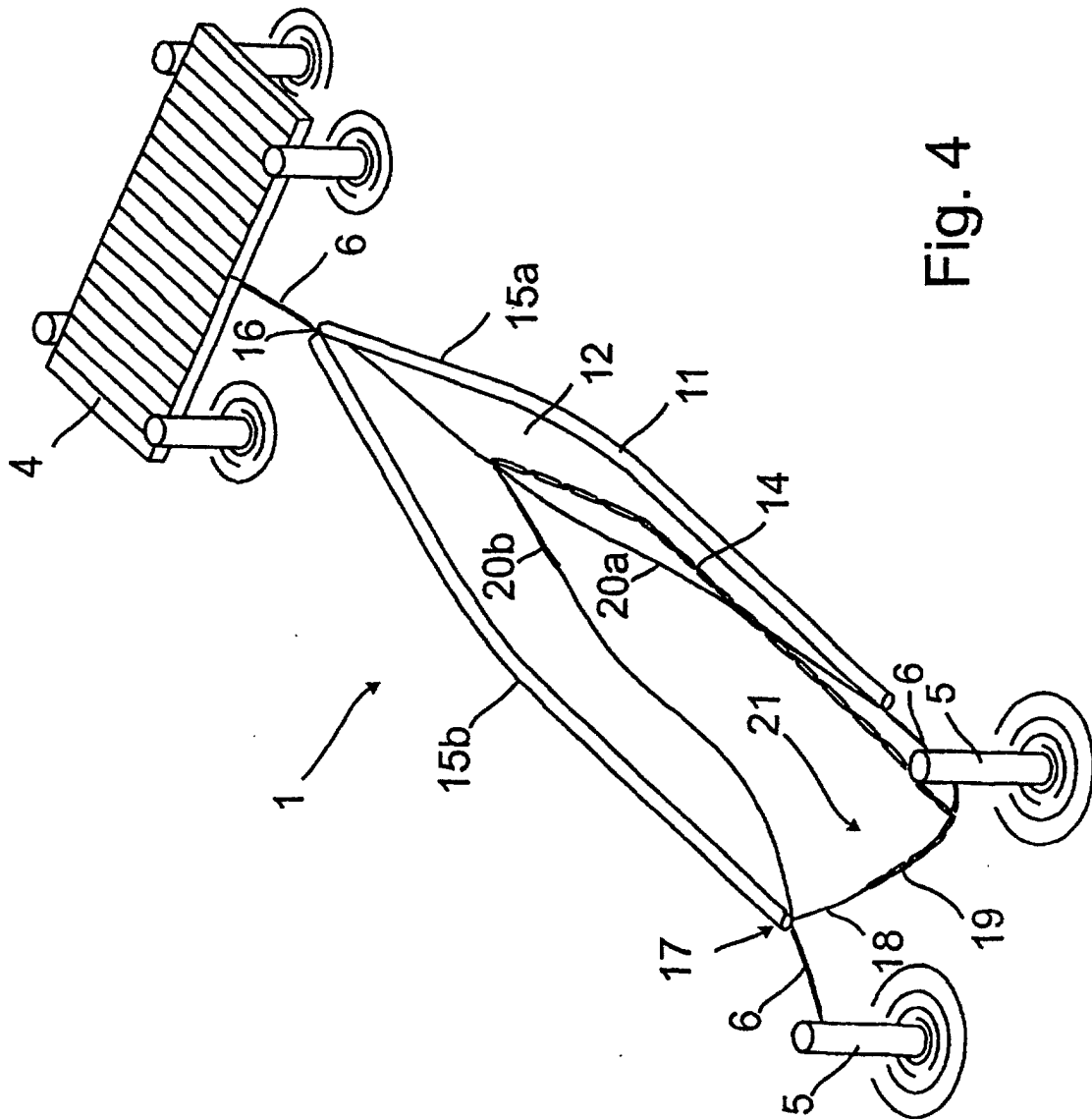


Fig. 4

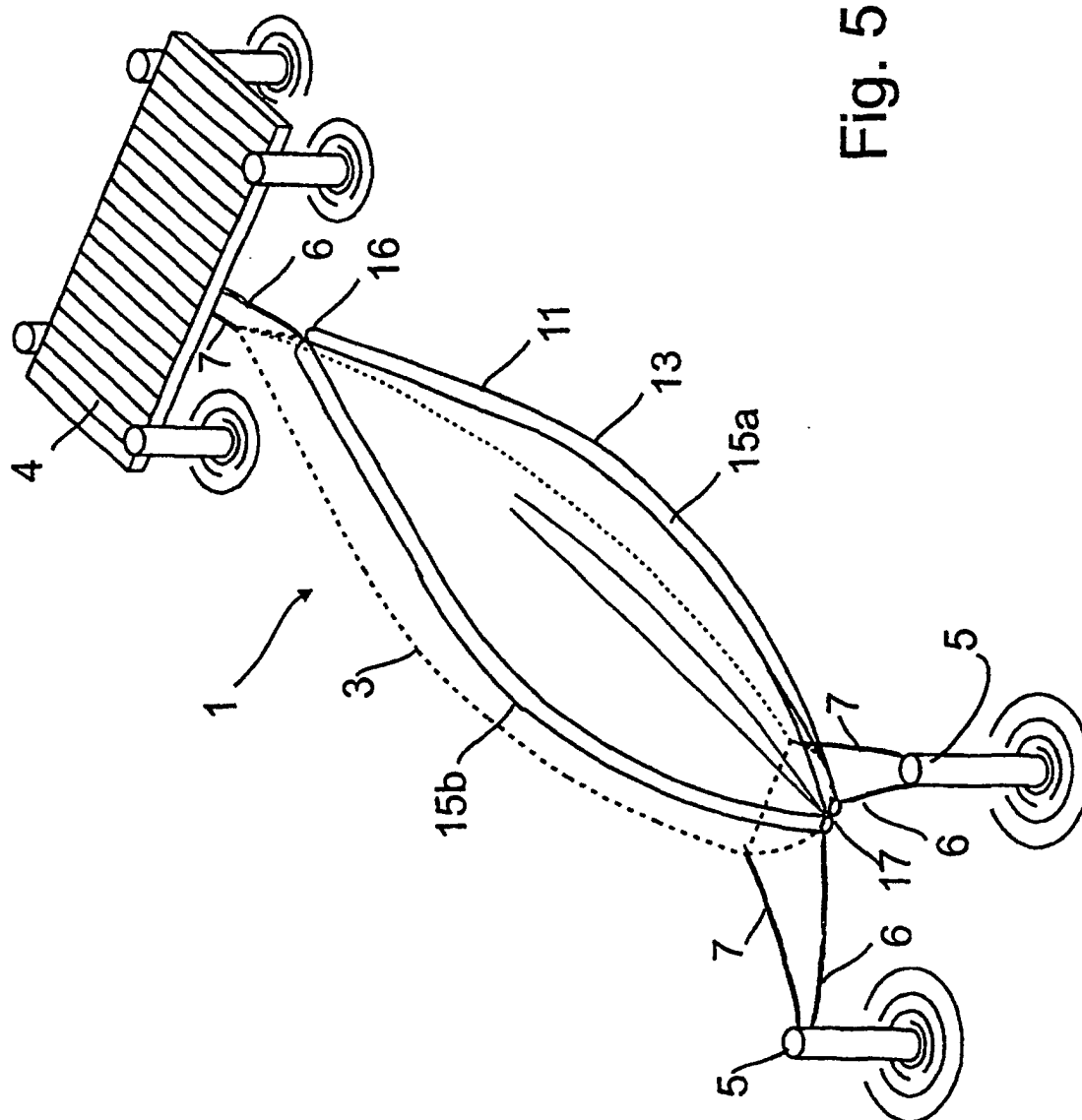


Fig. 5

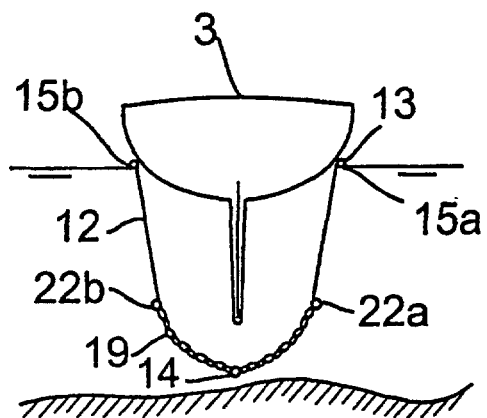


Fig. 6

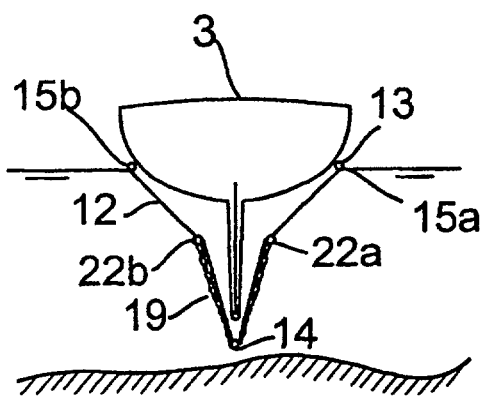


Fig. 7

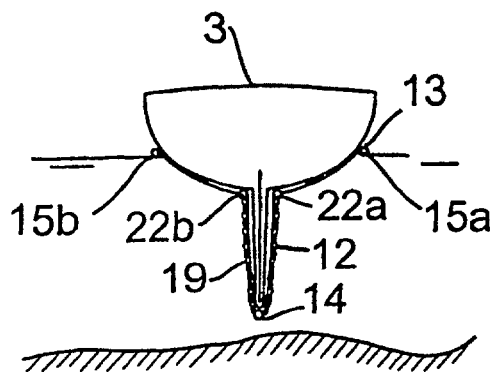


Fig. 8

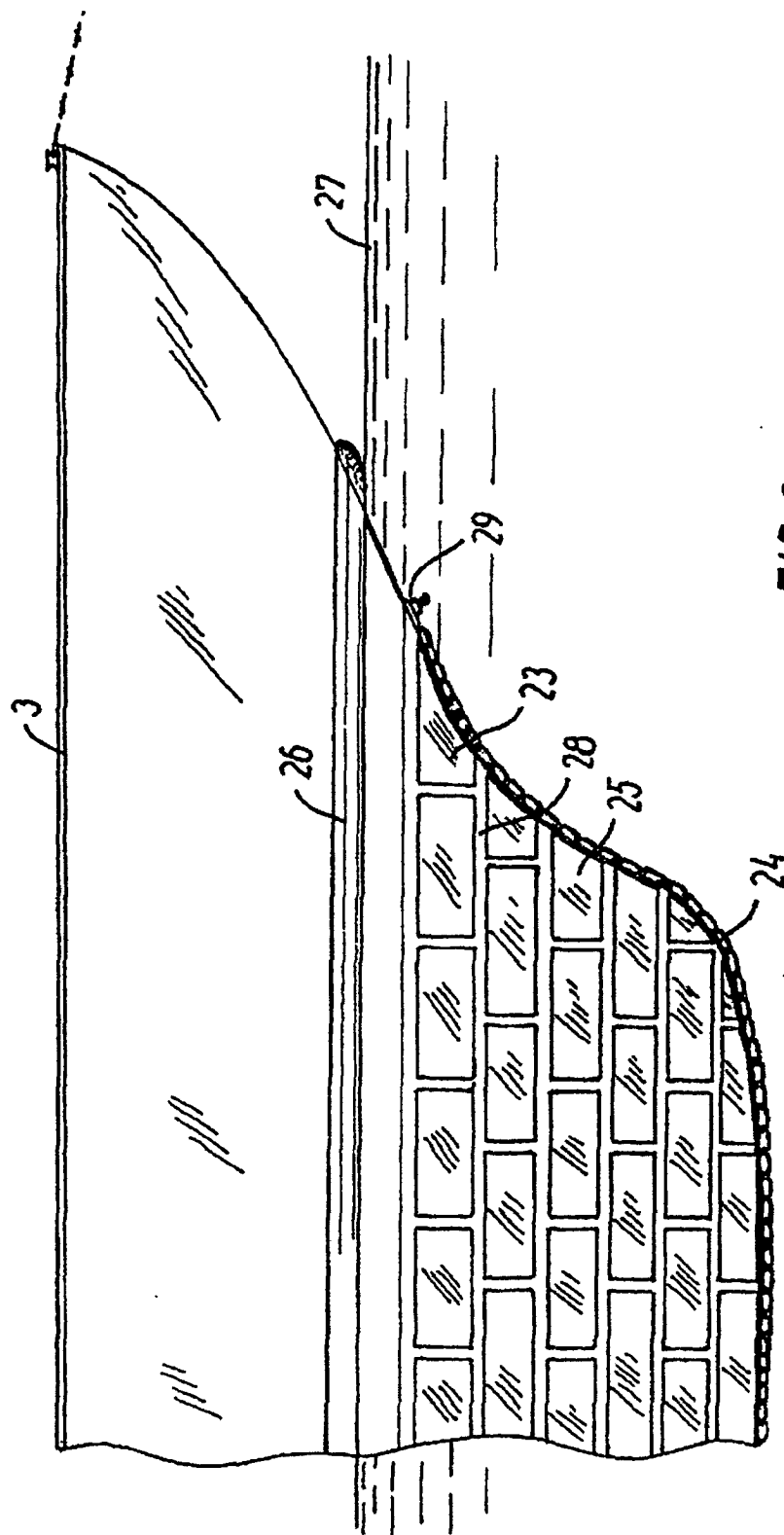
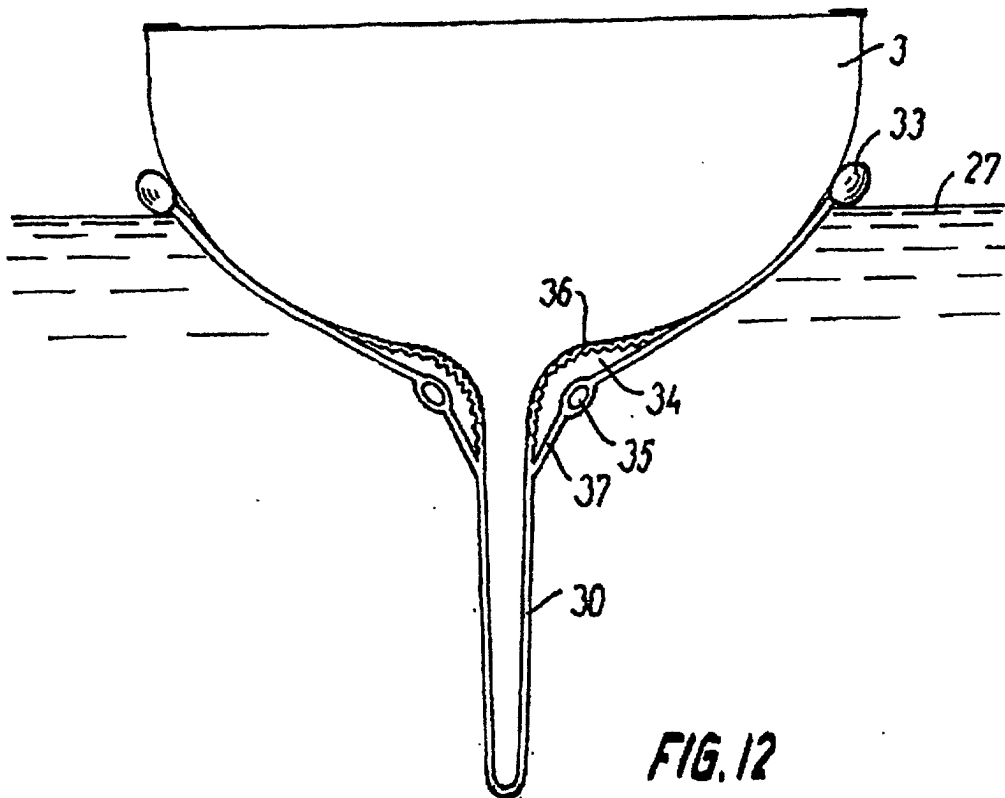
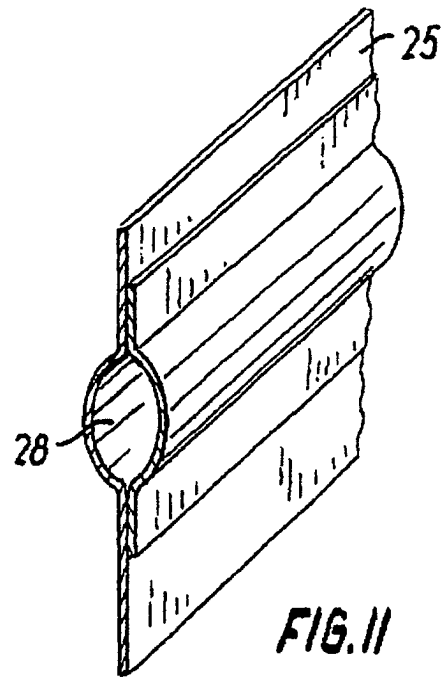
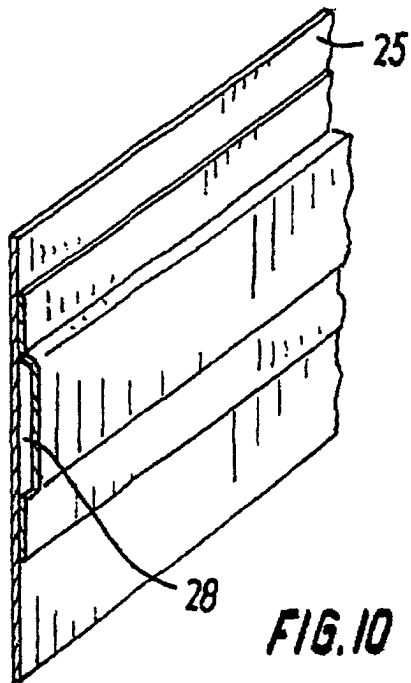


FIG. 9



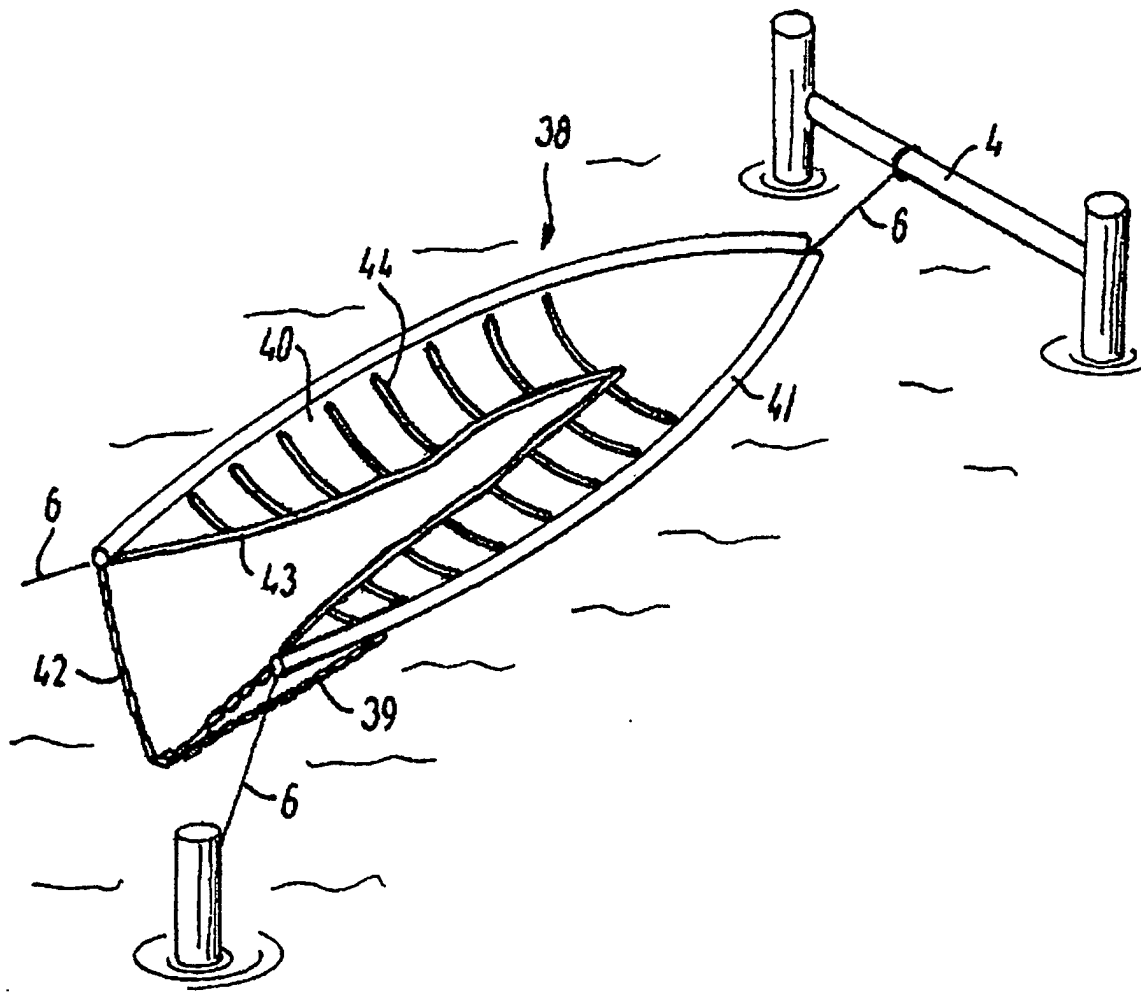


FIG. 13