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(54) **DEVICE FOR INTEGRATING LIGHTING AND SIGNALLING FOR NAVIGATION PURPOSES**

INTEGRIERTES BELEUCHTUNGS- UND SIGNALISIERUNGSSYSTEM FÜR VORRICHTUNG MIT
INTEGRATION VON BELEUCHTUNG UND SIGNALISIERUNG FÜR NAVIGATIONSZWECKE

DISPOSITIF D'INTÉGRATION D'ÉCLAIRAGE ET DE SIGNALISATION POUR NAVIGATION

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Description

FIELD OF THE INVENTION

[0001] The present patent of invention relates to the integration of navigation lighting with mandatory signaling for watercraft, grouped in an integrating device, intended for the nautical sector, especially watercraft equipment.

[0002] International regulations to prevent collisions at sea, in its rules, advocates that the lights must be displayed from sunrise to sunset and in periods of limited visibility and the sector of visibility of the standard navigation lights regulates that sidelights (green to starboard and red to port): must have a sector of visibility of 112.5°, from the bow to 22.5° abaft the beam of its respective side; the masthead lights (continuous masthead lights) located at the center line of the watercraft must show a sector of visibility of 225°, from the bow to 22.5° abaft the beam on both sides of the watercraft; the white light (continuous white sternlight), located as close as possible to the stern, must be visible in a horizontal section of 135°, 67.5° for each side from the stern.

[0003] Watercraft signaling requires the study of its construction and purpose. The launch, for example, is a type of watercraft with a planing hull and its operation regime is different from conventional displacement watercraft. Due to the shape of the hull, moderate displacement and engine power range, the watercraft sails sustained by a vertical dynamic pressure which significantly reduces the wet area of the hull. The displacement hulls have limited maximum speed and, from a certain speed, variable according to length of the water line, the hull begins to climb the wave generated by its own movement. This causes lighting and signaling to be impaired in the usual setups.

[0004] Some watercraft models are equipped with a top frame, a structural reinforcement of the watercraft, with the purpose of pulling skis or wakeboards, setup for a radio antenna, radar reflector. It is, as well an usual place for the setup of watercraft lighting, and also a flag mast.

[0005] The watercraft are equipped with devices for sidelights, installed in the hull or ridge; sternlight installed at or near the stern, masthead lights installed on the mast, when present, or on the center line of the watercraft, for example.

[0006] Most watercraft have several lighting devices installed at different points of the watercraft, requiring different electrical fixtures for each point, adding costs to any maintenance. Another downside is the setup of canopies on the top frames, for example. Fixed device on this accessory, implies canopy improvisations and even cuts to suit the existing setup.

BACKGROUND OF THE INVENTION AND PRIOR ART

[0007] The integration of navigation lights and mari-

time signaling, radar deflector into a single device does not exist in the current market. Some partial solutions can be found by grouping only the sidelights.

[0008] An example of this grouping can be found in patent document no. WO2005026610, "IMPROVEMENTS IN AND RELATING TO SECTORED LIGHTS", published on 3/24/2005, reporting primary sectored lighting for use in the maritime industry by incorporating LEDs as a light source, distributed to a lens in conjunction with a positive (convex) curve that reflects on the elements and promotes a higher "arc of visibility" with weaker light scattering and accentuating the transition cut.

[0009] Although document WO2005026610 claims a device for enlarging the lighting by LED in sectored lights, the grouping has proved relevant to elucidate the technical concept intended in this patent application.

[0010] Integrating navigation lighting with marine signaling requires a refined technique, whose method requires the construction of a device having specific properties for such integration.

SUMMARY OF THE INVENTION

[0011] Massive research, testing and development were employed in the present device, herein entitled **DEVICE FOR INTEGRATING LIGHTING AND SIGNALING FOR NAVIGATION PURPOSES**, and which, in short, is endowed with integrated lighting and signaling for navigation purposes, having a front lighting assembly for the bow, a rear sternlight assembly; an upper anchor light assembly, a lighting assembly at the base of the transparent pole; a signaling assembly also arranged at the rear for stern lighting; starboard and port side signaling light assemblies pre-arranged in a central longitudinal portion of the watercraft, from the center to the rear, preferably on the top frame of the watercraft or a cover; a **DEVICE FOR INTEGRATING LIGHTING AND SIGNALING FOR NAVIGATION PURPOSES**, comprising a skid attached to the watercraft, on the top frame, a column or suitable support, having a split hull providing an inner support for attaching a radar deflection device, a support element for the flagmast and suitably arranged lights and signals on the outside, according to international navigation standards.

FIGURES SHOWING THE OBJECT OF THE PATENT APPLICATION

[0012] The object of this patent application will be described in details, including with numerical reference joint to the description below, without limiting the proportions, materials and components used in its industrial manufacture, where:

Figures 1 to 4 are perspective views, respectively, upper front right, upper rear right, lower front left and lower rear left of the integrating device;
Figures 5 and 6 are orthogonal, respectively, front

and rear views of the integrating device;

Figure 7 is an upper orthogonal view of the integrating device, with geometric scheme of the lighting field for comparison with the international standard, shown in Figure 22;

Figures 8 and 9 are orthogonal views, respectively, lower and left side views of the integrating device;

Figure 10 is a partially exploded view of the integrating device, in upper front left perspective;

Figure 11 is a partially exploded view of the integrating device, in upper rear left perspective;

Figure 12 is an enlarged view of Detail A reported in Figure 4, showing the coupling device between the skid and the base;

Figure 13 is an enlarged view of Detail A reported in Figure 5, showing a coupling mode between the rear hull and the right hull;

Figures 14 and 15 are perspective views, respectively, front and rear ones, of a watercraft having the integrating device mounted on the top frame;

Figures 16 and 17 are orthogonal views, respectively, front and rear ones, of a watercraft having the integrating device mounted on the top frame;

Figure 18 is an orthogonal side view of a watercraft having the integrating device mounted on the top frame, showing a watercraft anchoring state;

Figure 19 is an orthogonal side view of a watercraft in displacement showing the front lighting line of the integrating device mounted on the top frame;

Figure 20 is an orthogonal side view, with suppression of the left hull and its components, the upper optical assembly and the flag, in order to allow a better understanding of the internal arrangement of the elements;

Figure 21 is an enlarged view of Detail A reported in Figure 20, showing the coupling device between the rear cover and the skid;

Figure 22 shows the geometric scheme of the lighting field in accordance with the international standard;

Figure 23 is a view of the right hull, its signaling components, and the inner support, in upper front right exploded perspective;

Figure 24 is an enlarged view of Detail A reported in Figure 11, showing the latched coupling device between the skid and the hull;

DETAILED DESCRIPTION OF THE INVENTION

[0013] According to the figures listed above, the **DEVICE FOR INTEGRATING LIGHTING AND SIGNALING FOR NAVIGATION PURPOSES**, object of the present patent application, according to Figures 7 and 22, consists of an assembly (8) of three lamps, frontally arranged for bow lighting; a set of two rear lamps (12) for stern lighting (A); at least one upper strobe light for anchoring lighting (A,D); backlight (12) with at least one strobe light at the base of the pole (10) made of acrylic

material for flag holder (11); green light signaling assembly (1401) arranged to starboard; red light signaling assembly (14) arranged to port; the integrated lighting and signaling is pre-arranged in a central longitudinal portion of the watercraft (17), from the middle to the rear part, preferably on the top frame (18) of the watercraft or a cover, raising the shaft of height of the lighting source above the lower line of the lighting cone projected above the bow end of the watercraft, as the hull begins to climb the wave -see figure 17- generated by its own motion. The integration includes the arrangement in height that provides the effectiveness of lighting and signaling together with the visibility of the flag mast and free of interference to receive signals of radar, in the radar deflector. There is a superior strobe lighting and another at the base of the pole which, depending on the material of the pole, allows refraction by the body thereof. Strobe lighting only flashes in motion, while it does not flash when the watercraft is at anchor -see figure 16- being kept on at night.

[0014] A method for integrating lighting and signaling for navigation purposes consisting of a device (1) having a fixed skid (2), including light assembly for bow lighting (8), preferably in the number of three (3) units (800, 801 and 802), with minimum power of 3 Watts, frontally arranged, interposing the green lighting signaling assembly (1401), arranged to starboard, allowing visualization, being in a position perpendicular to the watercraft, with visibility sector (B) of 112.5°, from bow to 22.5° abaft the beam of its respective side and to the red lighting signaling assembly (14), arranged to port, allowing visualization, being in a position perpendicular to the watercraft, with visibility sector (C) of 112.5°, from bow to 22.5° abaft the beam of its respective side; the support device including strobe lighting (6), superimposed on front lighting (8) and port (14) and starboard (1401) signaling lighting, with visibility sector of 360° for anchoring lighting; the support device includes the light assembly, preferably, in a number of two (2) units, with minimum power of 3 Watts, arranged in the rear part of the middle portion of the width of the support device, for stern lighting (13), with visibility sector of 133°; the support device includes back lights (12), with minimum power of 3 Watts, and a pole (10) made of an acrylic material for the flag holder (13), backlighting the pole (10) and increasing the signaling option for other watercrafts.

[0015] A **DEVICE FOR INTEGRATING LIGHTING AND SIGNALING FOR NAVIGATION PURPOSES**, comprising a hull (1) attachable to a fixed skid (2) to be mounted on the top frame (18), column or suitable support of the watercraft (17). In a preferred embodiment, the hull (1) is split, having a left hull (3) and a right hull (4) for interlocking with latches (301/401) attachable to the fixed skid (2). The rear cover (5) can be split, with coupled portions or incorporated into the left (3) and right (4) hull or can be independent, with a monoblock body, also coupled or incorporated into the left (3) and right (4) hulls; said rear cover (5) is formed by a central portion

(501), which is flexible due to the ribs (503) forming it, having a lower tooth (502) for locking with grooves (202) of the locking device (201) of the fixed skid (2) whose flanges (203) comprise channels (204) with an asymmetric portion (205) for interlocking with latches (301/401) or further integrated pins or bolts, at the lower edge (302/402) of the left hull (3) and right hull (4). The hull (1) is superimposed by the upper headlamp (6) of the anchoring lighting comprising an upper lens (601), an upper reflector (602) and lighting (603) which may be single or multiple, arranged on a triangular support, for example, for lighting at 360°.

[0016] Internally, the hull (1) comprises a combined support (7) being shaped with frontal sectors (701, 702 and 703) to support an assembly (8) having sockets and lighting (800, 801 and 802), mounted with a front reflector (803) and front lens (804); moreover, a base sector (704) for a radar deflector device (9), adjacent to a platform sector (705) for the pole (10) of the flag (11) superimposed to the backlights (12) of said pole (10); the combined support (7) is further shaped by the rear sector (706), where sockets and backlight are mounted (13); the side ones, in the upper portion of the hull (1), comprise a reflector support (14 and 1401), having lenses (1402 and 1403) for side signaling (15 and 1501).

[0017] In a preferred embodiment, the hull (1) has the plastic shape of a shark fin, flowing aerodynamically and in harmony with the lines of any watercraft (17). The body has an elongated-trunk shape, tapered to the upper lens (601), its base being superimposed by a tapered middle portion (302 and 402) having a protruding portion (303 and 403) to incorporate port and starboard optical signaling assembly and, at the rear part, the middle portion (304 and 404) of the hull (1) juts out, providing a reinforced structure for rear support (16) of the pole (10) of the flag (11), whose lower end extends into the protruding rear portion of the base (304). Preferably, lighting and signaling comprise lamps or an electronic device of the LED type, aiming for lighting economy and efficiency. A fastening means between the single components (3, 4 and 5) consists in providing pierced towers (19) in one of the components (3 or 4) coincident with a perpendicular device (20) with a pin in the rear cover (5).

[0018] A preferred embodiment for mounting the assembly consists of placing the hull (1) on the front of the fixed skid (2), in such a way that the latches (301/401) are placed in the channels (204) and, by back sliding of the hull (1) on the fixed skid (2), said latches (301/401) are directed towards the asymmetrical portion (205), jointly with the interlocking of the tooth (502) with the groove (202) of the locking device (201) of the fixed skid (2). Electrical wiring is then connected.

[0019] The assembly can be electrically interconnected to the fixed skid (2) by means of a flexible cable with connectors or by means of a metal track, coincident by contact sliding. This allows the assembly to be removed easily and quickly, either for withdrawal for maintenance purposes, replacement of the assembly or damaged

components, or for preventing weather exposure when not in use.

[0020] Such a withdrawal for locking with grooves (202) of the locking device (201) of the fixed skid (2) whose flanges (203) comprise channels (204) with an asymmetric portion (205) for interlocking with latches (301/401) or, the flanges (203) further comprise holes -not shown- for integral pins or bolts on the lower edge (302/402) of the left hull (3) and the right hull (4).

[0021] The dismantling of the assembly consists of disconnection of the electrical wiring, compression displacement of the locking device (201), releasing locking between the tooth (502) and the grooves (202), and then the sliding, opposite the front, on the hull (1), causing the latches (301/401) of the asymmetric portion (205) to be dislodged, placing them in the channels (204), the assembly being lifted, for withdrawal.

[0022] In a preferred manufacturing embodiment, the hull (1), the fixed skid (2), rear cover (5), combined support (7), pole (10), reflectors (602, 803, 14 and 1401) and lenses (601, 804, 1402 and 1403), are manufactured in polymeric material with UV rays (Ultra Violet) protection.

Claims

1. A device for integrating lighting having a front assembly of lamps for bow lighting; a rear assembly of lamps for stern lighting; upper strobe lighting for anchoring lighting; signaling assembly, arranged at the rear for stern lighting; green signaling assembly placed to starboard; red signaling assembly placed to port for navigation with watercraft mandatory signaling, intended for the nautical sector, especially for watercraft, grouped into device (1), comprising a split hull, with fixed skid (2) endowed with flanges (203) having holes, mounted on the top frame (18) or column or suitable support of the watercraft (17) including the light assembly for bow lighting (8), frontally arranged, interposing the green lighting signaling assembly (1401), arranged to starboard, allowing visualization, being in a position perpendicular to the watercraft, with visibility sector (B) of 112.5°, from bow to 22.5° abaft the beam of its respective side, and to the red lighting signaling assembly (14), arranged to port, allowing visualization, being in a position perpendicular to the watercraft, with visibility sector (C) of 112.5°, from bow to 22.5° abaft the beam of its respective side; the support device including strobe lighting (6), superimposed on front lighting (8) and port (14) and starboard (1401), with visibility sector of 360° for anchoring lighting; the support device includes sternlights (13), with visibility sector of 135°, **characterized in that** it comprises a hull (1) attachable to a fixed skid (2) by means of latches (301/401); it comprises a rear cover (5) formed by a central portion (501), which is flexible due to the ribs (503) forming it, having a lower tooth

- (502) for locking with grooves (202) of the locking device (201) of the fixed skid (2) whose flanges (203) comprise channels (204) having an asymmetrical portion (205) of interlocking with latches (301/401); the hull (1) is superimposed by the upper headlamp (6) of the anchoring lighting comprising an upper lens (601), an upper reflector (602) and lighting (603); the hull (1) comprises a combined support (7) being shaped with frontal sectors (701, 702 and 703) to support an assembly (8) having sockets and lighting (800, 801 and 802), mounted with a front reflector (803) and front lens (804); the combined support comprises a base sector (704) for a radar deflector device (9), adjacent to a platform sector (705) of a pole (10) of the flag (11) superimposed to the backlights (12) of said pole (10); the combined support (7) comprises a rear sector (706) for sockets and stern lightings (13); the hull (1) laterally comprises a reflector support (14 and 1401), having lenses (1402 and 1403) for side signaling (15 and 1501); the assembly is electrically interconnected to the fixed skid (2) by means of a flexible cable with connectors.
2. The integrating device, according to claim 1, **characterized in that** the hull (1) comprises a left hull (3), a right hull (4) and a rear cover (5).
 3. The integrating device, according to claim 1, **characterized in that** the hull (1) comprises latches (301/401) attachable to the fixed skid (2).
 4. The integrating device, according to claim 1, **characterized in that** the rear cover (5) is split, with portions coupled to either the left (3) or right (4) hull; the rear cover (5) is split, with portions incorporated to the left (3) and right (4) hulls; the rear cover (5) is independent, having a monoblock body coupled to either the left (3) or right (4) hull; the rear cover (5) is independent, having a monoblock body, incorporated into the left (3) and right (4) hulls.
 5. The integrating device, according to claim 1, **characterized in that** comprises flanges (203) with interlocking by integrated pins; comprises flanges (203) with bolt interlocking.
 6. The integrating device, according to claim 1, **characterized in that** the hull (1) has the plastic shape of a shark fin, elongated-trunk, tapered to the upper lens (601), its base being superimposed by a tapered middle portion (302 and 402) having a protruding portion (303 and 403) and, at the rear part, the middle portion (304 and 404) of the hull (1) juts out, providing a reinforced structure for rear support (16) of the pole (10) of the flag (11), whose lower end extends into the protruding rear portion of the base (304).
 7. The integrating device, according to claim 1, **characterized in that** the assembly is electrically interconnected to the fixed skid (2) by means of a metal track, coincident by contact sliding.
 8. The integrating device, according to claim 1, **characterized in that** the left hull (3) and the right hull (4) internally comprise pierced towers (19).
 9. The integrating device, according to claim 1, **characterized in that** the rear cover (5) comprises a perpendicular device (20) with a pin.
 10. The integrating device, according to claim 1, **characterized in that** the hull (1), the fixed skid (2), the rear cover (5), the combined support (7), the pole (10), the reflectors (602, 803, 14 and 1401) and the lenses (601, 804, 1402 and 1403) comprise manufacturing with a polymeric material.
 11. The integrating device, according to claim 10, **characterized in that** the polymeric material comprises UV (Ultra Violet) protection.
 12. The integrating device, according to claim 1, **characterized in that** the pole (10) comprise material enabling the light refraction by the body thereof.
 13. The integrating device, according to claim 1, **characterized in that** strobe lighting (6 or 12) flashes when the watercraft (17) moves.
 14. The integrating device, according to claim 1, **characterized in that** strobe lighting (6 or 12) remains lit without flashing, when the watercraft (17) is anchored at night.
 15. The integrating device, according to claim 1, **characterized in that** bow lighting (8) comprises three (3) units (800, 801 and 802), with minimum power of 3 Watts; **in that** stern lighting (13) comprises two (1) units, with minimum power of 3 Watts; **in that** backlights has a minimum power of 3 Watts.

45 Patentansprüche

1. Vorrichtung zum Integrieren von Beleuchtung, die eine vordere Anordnung von Lampen zur Bugbeleuchtung, eine hintere Anordnung von Lampen zur Heckbeleuchtung, eine obere Blitzleuchte zur Beleuchtung bei der Verankerung, eine Signalisierungsanordnung, die an der Rückseite zur Heckbeleuchtung angeordnet ist, eine grüne Signalisierungsanordnung, die in Richtung Steuerbord platziert ist, eine rote Signalisierungsanordnung, die in Richtung Backbord zur vorgeschriebenen Signalisierung bei der Navigation mit einem Wasserfahrzeug platziert ist, für den nautischen Bereich, insbe-

sondere für Wasserfahrzeuge, bestimmt ist und in der Vorrichtung (1) gruppiert ist, umfassend ein geteiltes Gehäuse mit einer feststehenden Gleitplatte (2), die mit Flanschen (203) ausgestattet ist, die Löcher aufweisen, und der an dem oberen Rahmen (18) oder der Säule oder einem geeigneten Halterung des Wasserfahrzeugs (17) montiert ist, einschließlich der Lichtanordnung zur Bugbeleuchtung (8), die vorne angeordnet ist, zwischen der grünen Beleuchtungssignalisierungsanordnung (1401) positioniert ist, in Richtung Steuerbord angeordnet ist, wobei eine Sichtbarmachung durch eine Position senkrecht zu dem Wasserfahrzeug mit einem Sichtbarkeitsbereich (B) von 112,5°, von dem Bug bis 22,5° achterlich des Strahls seiner jeweiligen Seite und zu der roten Beleuchtungssignalisierungsanordnung (14) ermöglicht wird, die in Richtung Backbord angeordnet ist, wobei eine Sichtbarmachung durch eine Position senkrecht zu dem Wasserfahrzeug mit einem Sichtbarkeitsbereich (C) von 112,5°, von dem Bug bis 22,5° achterlich des Strahls seiner jeweiligen Seite ermöglicht wird, wobei die Trägervorrichtung eine Blitzleuchte (6) einschließt, welche auf der vorderen Beleuchtung (8) und der Backbordbeleuchtung (14) und der Steuerbordbeleuchtung (1401) gelagert ist, mit einem Sichtbarkeitsbereich von 360° zur Beleuchtung bei der Verankerung, wobei die Trägervorrichtung Heckleuchten (13) mit einem Sichtbarkeitsbereich von 135° einschließt, **dadurch gekennzeichnet, dass** sie ein Gehäuse (1) umfasst, das mittels Verriegelungen (301/401) an einer feststehenden Gleitplatte (2) befestigbar ist, wobei es eine hintere Abdeckung (5) umfasst, die durch einen zentralen Abschnitt (501) ausgebildet ist, der aufgrund der ihn ausbildenden Rippen (503) flexibel ist, und einen unteren Zahn (502) zum Sperren mit Kerben (202) der Sperrvorrichtung (201) der feststehenden Gleitplatte (2) aufweist, deren Flansche (203) Öffnungen (204) umfassen, die einen asymmetrischen Abschnitt (205) zum Sperren mit den Verriegelungen (301/401) aufweisen, wobei das Gehäuse (1) auf dem oberen Scheinwerfer (6) der Beleuchtung bei der Verankerung gelagert ist, die eine obere Streuscheibe (601), einen oberen Reflektor (602) und eine Leuchte (603) umfasst, wobei das Gehäuse (1) eine kombinierte Halterung (7) umfasst, die mit vorderen Bereichen (701, 702 und 703) ausgebildet ist, um eine Anordnung (8) zu halten, die Fassungen und Leuchten (800, 801 und 802) aufweist, und mit einem vorderen Reflektor (803) und einer vorderen Streuscheibe (804) montiert ist, wobei die kombinierte Halterung einen Basisbereich (704) für eine Radar-Ablenkvorrichtung (9) umfasst, die sich benachbart zu einem Plattformbereich (705) einer Stange (10) der Flagge (11) befindet, und welcher die Rücklichter (12) der Stange (10) überlagert, wobei die kombinierte Halterung (7) einen hinteren Bereich (706) für Fassungen und Heckleuchten (13)

umfasst, wobei das Gehäuse (1) seitlich einen Reflektorträger (14 und 1401) umfasst, der Streuscheiben (1402 und 1403) zur seitlichen Signalisierung (15 und 1501) aufweist, wobei die Anordnung mit der feststehenden Gleitplatte (2) mittels eines flexiblen Kabels mit Verbindern elektrisch verbunden ist, aufweist.

2. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse (1) ein linkes Gehäuse (3), ein rechtes Gehäuse (4) und eine hintere Abdeckung (5) umfasst.
3. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse (1) Verriegelungen (301/401) umfasst, die an der feststehenden Gleitplatte (2) befestigbar sind.
4. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die hintere Abdeckung (5) geteilt ist, wobei Abschnitte entweder mit dem linken (3) oder rechten (4) Gehäuse gekoppelt sind, wobei die hintere Abdeckung (5) geteilt ist, wobei Abschnitte in dem linken (3) und rechten (4) Gehäuse integriert sind, wobei die hintere Abdeckung (5) unabhängig ist und einen Monoblockkörper aufweist, der entweder mit dem linken (3) oder rechten (4) Gehäuse gekoppelt ist, wobei die hintere Abdeckung (5) unabhängig ist und einen Monoblockkörper aufweist, der in dem linken (3) und rechten (4) Gehäuse integriert ist.
5. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** sie Flansche (203) mit einer Sperrung durch integrierte Stifte umfasst, Flansche (203) mit einer Sperrung durch Schrauben umfasst.
6. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse (1) die plastische Form einer Haifischflosse, eines länglichen Gehäuses, aufweist, die sich zu der oberen Streuscheibe (601) hin verjüngt, wobei seine Basis von einem verjüngten mittleren Abschnitt (302 und 402) überlagert ist, der einen vorstehenden Abschnitt (303 und 403) aufweist, und der mittlere Abschnitt (304 und 404) des Gehäuses (1) von dem hinteren Abschnitt herausragt, und eine verstärkte Struktur zum hinteren Halten (16) der Stange (10) der Flagge (11) bereitgestellt ist, deren unteres Ende sich in den vorstehenden hinteren Abschnitt der Basis (304) erstreckt.
7. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Anordnung mit der feststehenden Gleitplatte (2) mittels einer Führung aus Metall elektrisch verbunden ist, die durch Gleitkontakt zusammenfällt.

8. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das linke Gehäuse (3) und das rechte Gehäuse (4) in ihrem Inneren durchbohrte Türme (19) umfassen. 5
9. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die hintere Abdeckung (5) eine senkrechte Vorrichtung (20) mit einem Stift umfasst. 10
10. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse (1), die feststehende Gleitplatte (2), die hintere Abdeckung (5), die kombinierte Halterung (7), die Stange (10), die Reflektoren (602, 803, 14 und 1401) und die Streuscheiben (601, 804, 1402 und 1403) eine Herstellung aus einem Polymermaterial umfassen. 15
11. Integrierende Vorrichtung nach Anspruch 10, **dadurch gekennzeichnet, dass** das Polymermaterial UV(ultraviolett)-Schutz umfasst. 20
12. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Stange (10) Material umfasst, welches die Lichtbrechung durch ihren Körper ermöglicht. 25
13. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Blitzleuchte (6 oder 12) blinkt, wenn sich das Wasserfahrzeug (17) bewegt. 30
14. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Blitzleuchte (6 oder 12) weiterhin ohne zu blinken leuchtet, wenn das Wasserfahrzeug (17) nachts verankert ist. 35
15. Integrierende Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Bugbeleuchtung (8) drei (3) Einheiten (800, 801 und 802) mit einer minimalen Leistung von 3 Watt umfasst; dass die Heckbeleuchtung (13) zwei (1) Einheiten mit einer minimalen Leistung von 3 Watt umfasst; dass die Rücklichter eine minimale Leistung von 3 Watt aufweisen. 40 45

Revendications

1. Dispositif pour l'intégration d'éclairage ayant un ensemble avant de lampes pour l'éclairage de proue ; un ensemble arrière de lampes pour l'éclairage de poupe ; un éclairage stroboscopique supérieur pour l'éclairage d'ancrage ; un ensemble de signalisation, disposé sur la partie postérieure pour l'éclairage de poupe ; un ensemble de signalisation vert placé à tribord ; un ensemble de signalisation rouge placé à bâbord pour la navigation avec la signalisation obli- 50 55

gatoire pour les embarcations, destiné au secteur nautique, surtout pour les embarcations, regroupés dans le dispositif (1), comprenant une coque fendue, avec patin fixe (2) pourvu de brides (203) ayant des orifices, monté sur le châssis supérieur (18) ou la colonne ou le support approprié de l'embarcation (17) comportant l'ensemble d'éclairage pour l'éclairage de proue (8), disposé frontalement, interposant l'ensemble de signalisation d'éclairage vert (1401), disposé à tribord, permettant la visualisation, étant dans une position perpendiculaire à l'embarcation, avec un secteur de visibilité (B) de 112,5°, de la proue à 22,5° sur l'arrière de la poutre de son côté respectif, et à l'ensemble de signalisation lumineuse rouge (14), disposé à bâbord, permettant la visualisation, étant dans une position perpendiculaire à l'embarcation, avec un secteur de visibilité (C) de 112,5°, de la proue à 22,5° sur l'arrière de la poutre de son côté respectif ; le dispositif de support comportant un éclairage stroboscopique (6), superposé sur l'éclairage avant (8) et à bâbord (14) et tribord (1401), avec un secteur de visibilité de 360° pour l'éclairage d'ancrage ; le dispositif de support comporte des feux de poupe (13), avec un secteur de visibilité de 135°, **caractérisé en ce qu'il** comprend une coque (1) pouvant être fixée à un patin fixe (2) au moyen de loquets (301/401) ; il comprend un capot arrière (5) formé d'une partie centrale (501), qui est flexible en raison des coupures (503) le formant, ayant une dent inférieure (502) de verrouillage avec des rainures (202) du dispositif de verrouillage (201) du patin fixe (2) dont les brides (203) comprennent des canaux (204) ayant une partie asymétrique (205) d'interverrouillage avec des loquets (301/401) ; la coque (1) est superposée par la lampe frontale supérieure (6) de l'éclairage d'ancrage comprenant une lentille supérieure (601), un réflecteur supérieur (602) et un éclairage (603) ; la coque (1) comprend un support combiné (7) en forme de secteurs frontaux (701, 702 et 703) pour supporter un ensemble (8) ayant des douilles et un éclairage (800, 801 et 802), monté avec un réflecteur avant (803) et une lentille frontale (804) ; le support combiné comprend un secteur de base (704) pour un dispositif de déflecteur radar (9), adjacent à un secteur de plateforme (705) d'un mât (10) du drapeau (11) superposé au rétroéclairage (12) dudit mât (10) ; le support combiné (7) comprend un secteur arrière (706) pour des douilles et des éclairages de poupe (13) ; la coque (1) comprend latéralement un support de réflecteur (14 et 1401), ayant des lentilles (1402 et 1403) pour la signalisation latérale (15 et 1501) ; l'ensemble est interconnecté électriquement au patin fixe (2) au moyen d'un câble souple à raccords.

2. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** la coque (1) comprend une coque gauche (3), une coque droite (4) et un capot

arrière (5).

3. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** la coque (1) comprend des loquets (301/401) pouvant être fixés sur le patin fixe (2). 5
4. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** le capot arrière (5) est fendu, en parties couplées à la coque gauche (3) ou droite (4) ; le capot arrière (5) est fendu, en parties incorporées aux coques gauche (3) et droite (4) ; le capot arrière (5) est indépendant, ayant un corps monobloc couplé à la coque gauche (3) ou droite (4) ; le capot arrière (5) est indépendant, ayant un corps monobloc, incorporé aux coques gauche (3) et droite (4). 10
5. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce qu'il** comprend des brides (203) avec interverrouillage par des broches intégrées ; comprend des brides (203) avec interverrouillage par boulons. 20
6. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** la coque (1) a la forme plastique d'un aileron de requin, de tronc allongé, effilé jusqu'à la lentille supérieure (601), sa base étant superposée par une partie médiane effilée (302 et 402) ayant une partie en saillie (303 et 403) et, sur la section postérieure, la partie médiane (304 et 404) de la coque (1) se projette, fournissant une structure renforcée pour le support arrière (16) du mât (10) du drapeau (11), dont l'extrémité inférieure s'étend dans la partie postérieure en saillie de la base (304). 25
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7. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** l'ensemble est interconnecté électriquement au patin fixe (2) au moyen d'une piste métallique, coïncident par glissement de contact. 40
8. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** la coque gauche (3) et la coque droite (4) comprennent à l'intérieur des tours percées (19). 45
9. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** le capot arrière (5) comprend un dispositif perpendiculaire (20) avec une broche.
10. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** la coque (1), le patin fixe (2), le capot arrière (5), le support combiné (7), le mât (10), les réflecteurs (602, 803, 14 et 1401) et les lentilles (601, 804, 1402 et 1403) comprennent la fabrication avec un matériau polymère. 50
55
11. Dispositif d'intégration, selon la revendication 10, **caractérisé en ce que** le matériau polymère com-

prend une protection UV (Ultra Violet).

12. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** le mât (10) comprend un matériau permettant la réfraction de la lumière par son corps.
13. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** l'éclairage stroboscopique (6 ou 12) clignote lorsque l'embarcation (17) se déplace.
14. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** l'éclairage stroboscopique (6 ou 12) reste allumé sans clignoter, lorsque l'embarcation (17) est ancrée la nuit.
15. Dispositif d'intégration, selon la revendication 1, **caractérisé en ce que** l'éclairage de proue (8) comprend trois (3) unités (800, 801 et 802), avec une puissance minimale de 3 Watts ; **en ce que** l'éclairage de proue (13) comprend deux (1) unités, avec une puissance minimale de 3 Watts ; **en ce que** le rétroéclairage a une puissance minimale de 3 Watts.

Figure 1

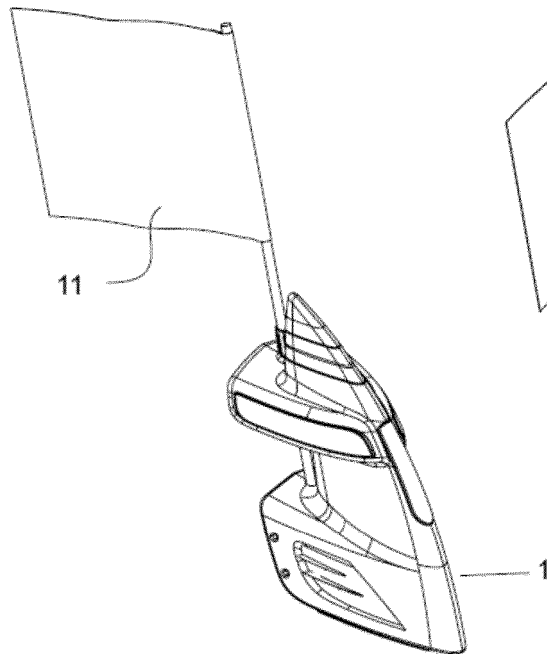


Figure 2

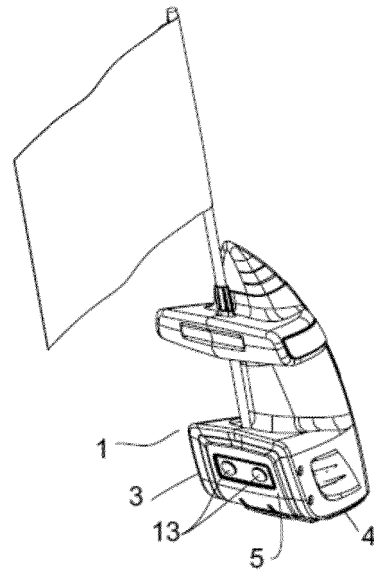


Figure 3

Figure 4

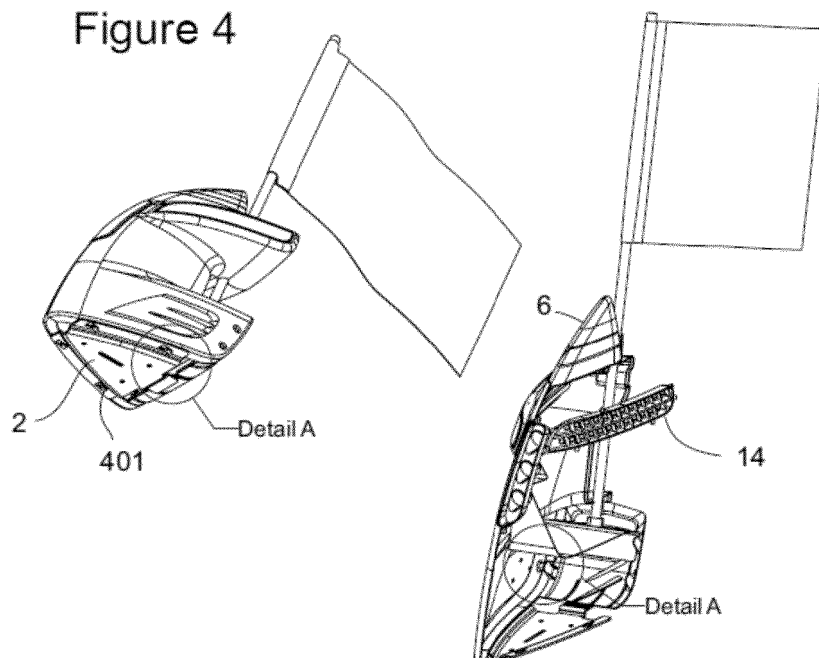


Figure 5

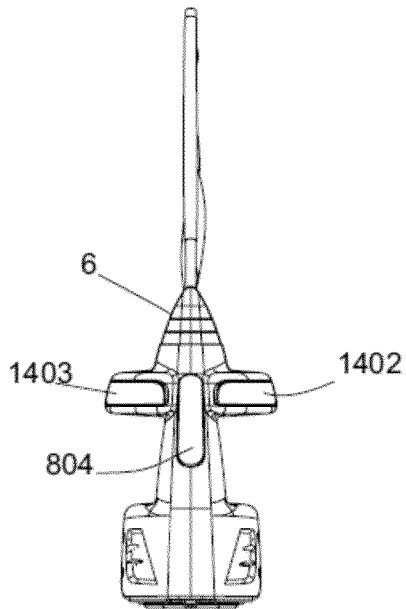


Figure 6

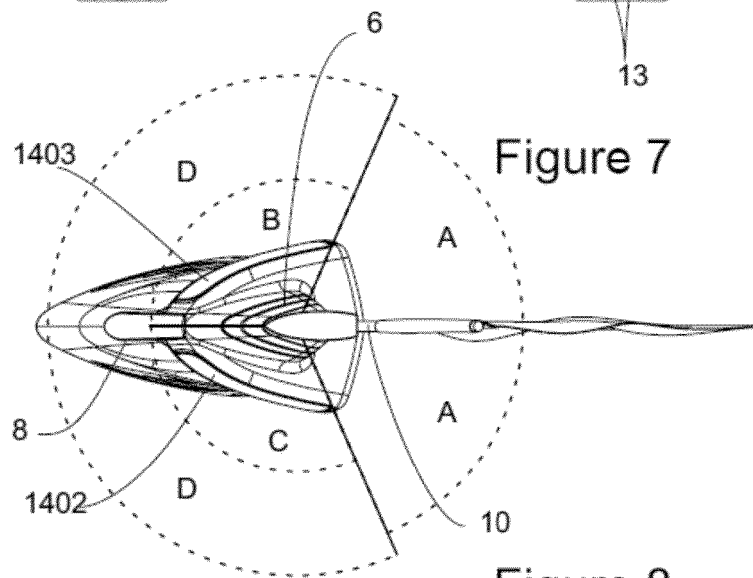
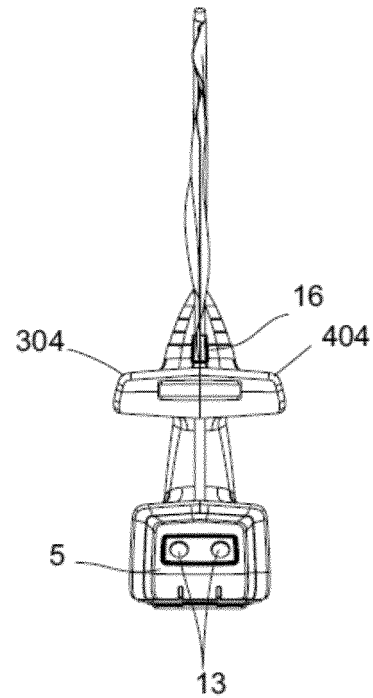


Figure 7

Figure 8

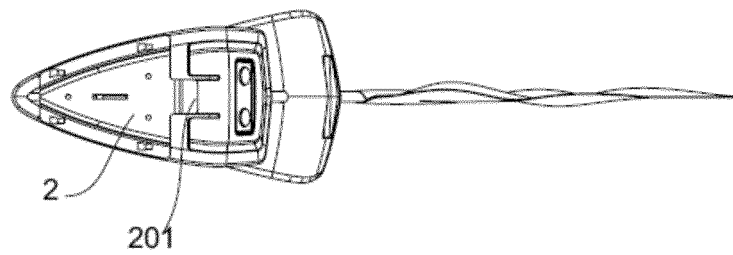


Figure 9

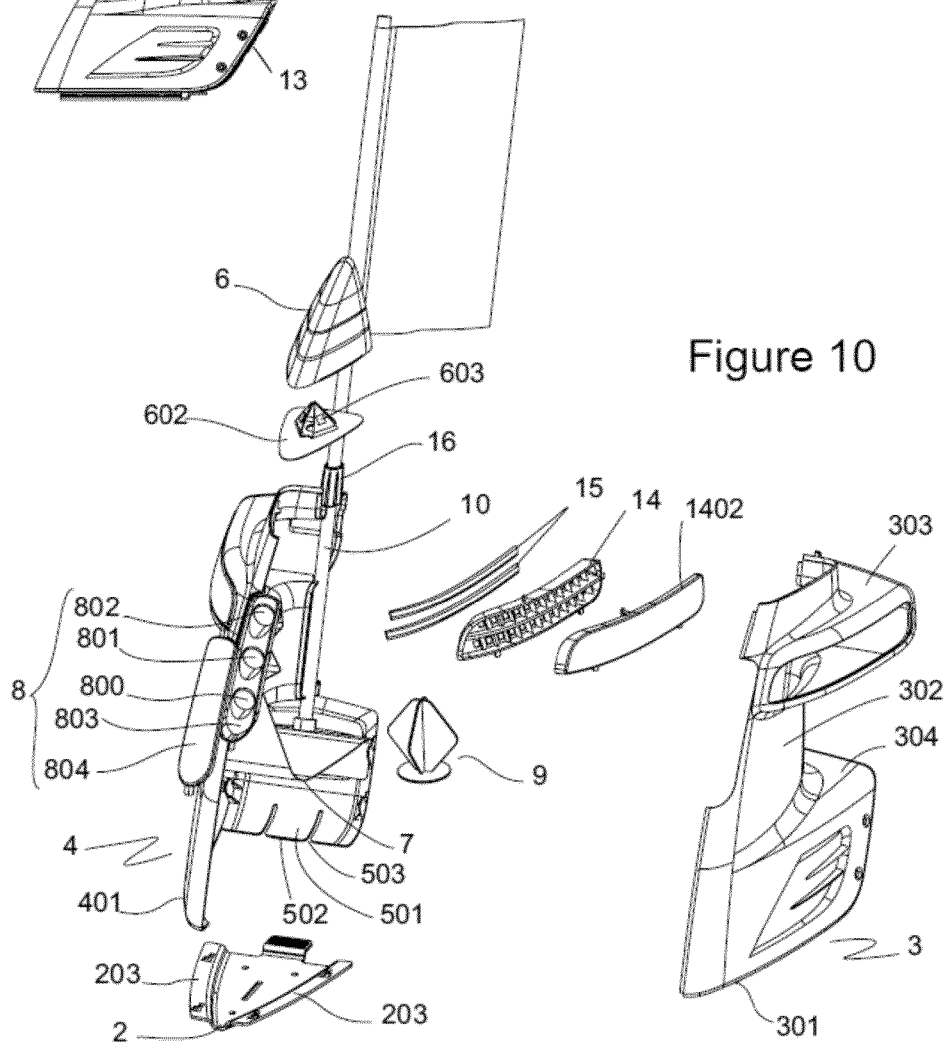
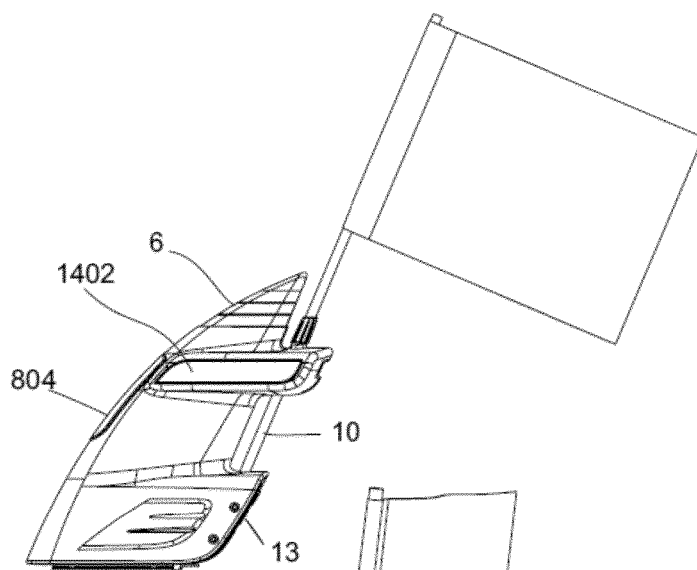


Figure 10

Figure 11

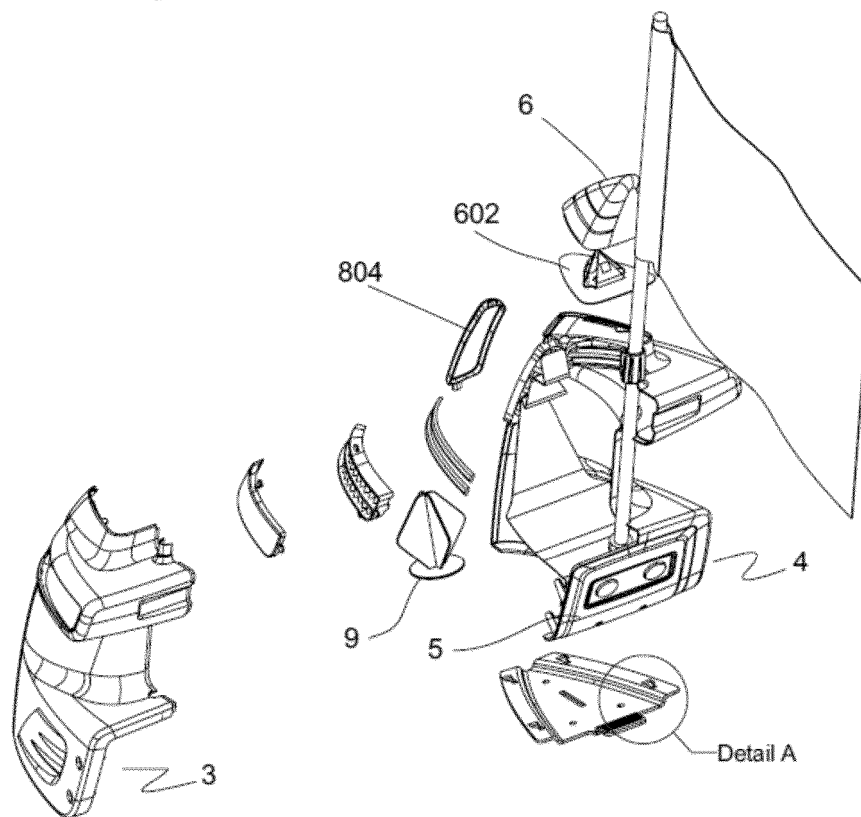


Figure 12

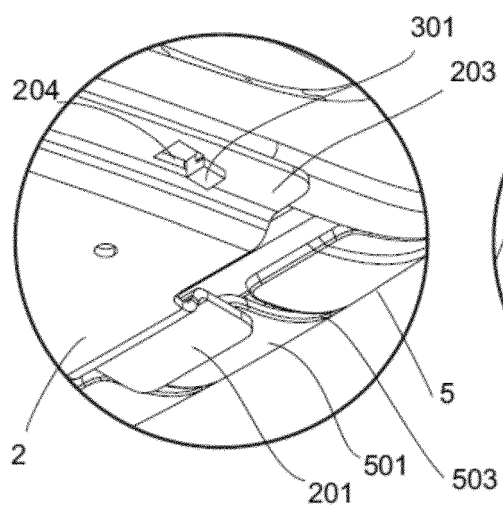


Figure 13

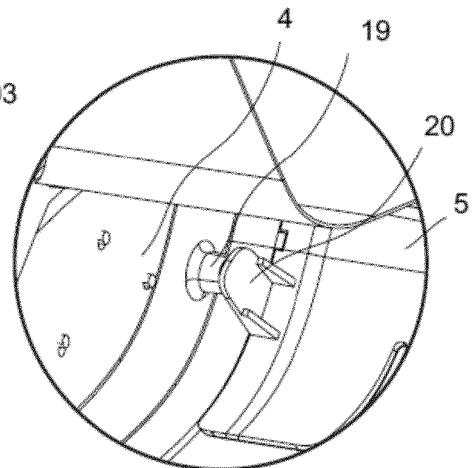


Figure 14

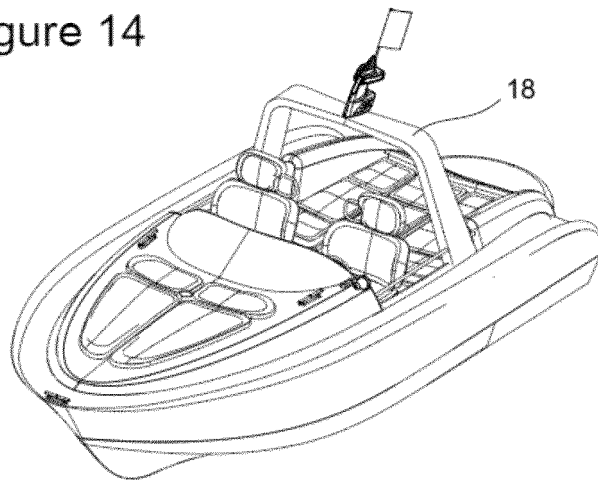


Figure 15

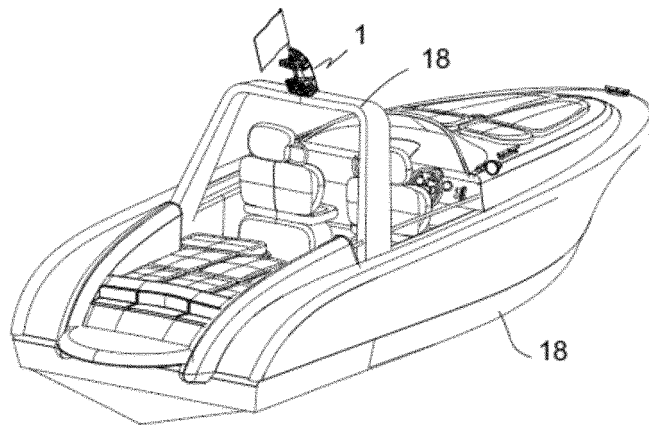


Figure 16

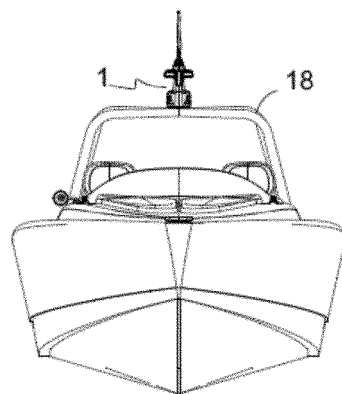


Figure 17

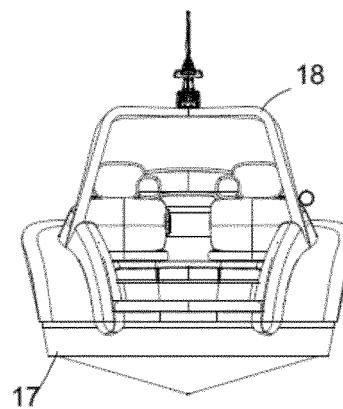


Figure 18

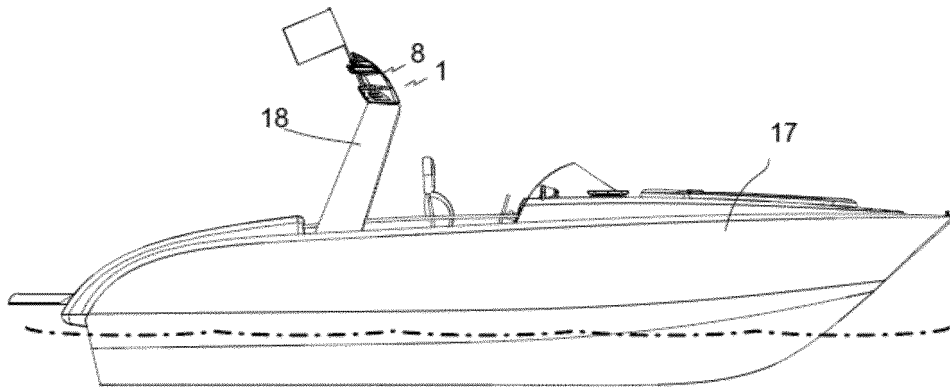


Figure 19

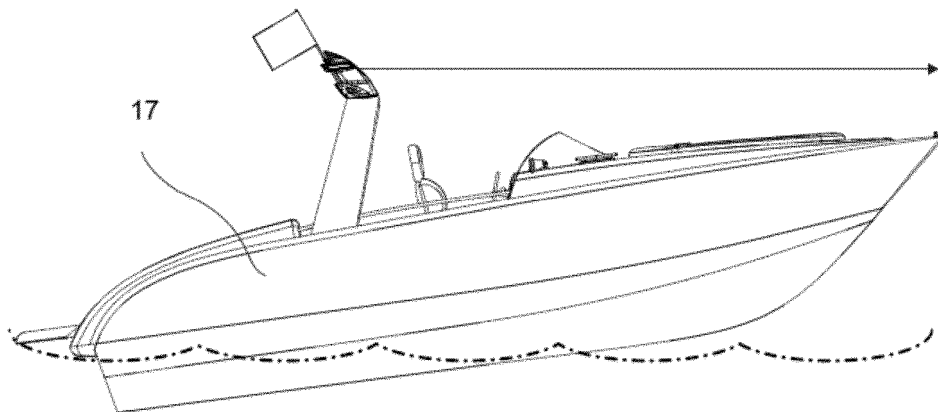


Figure 20

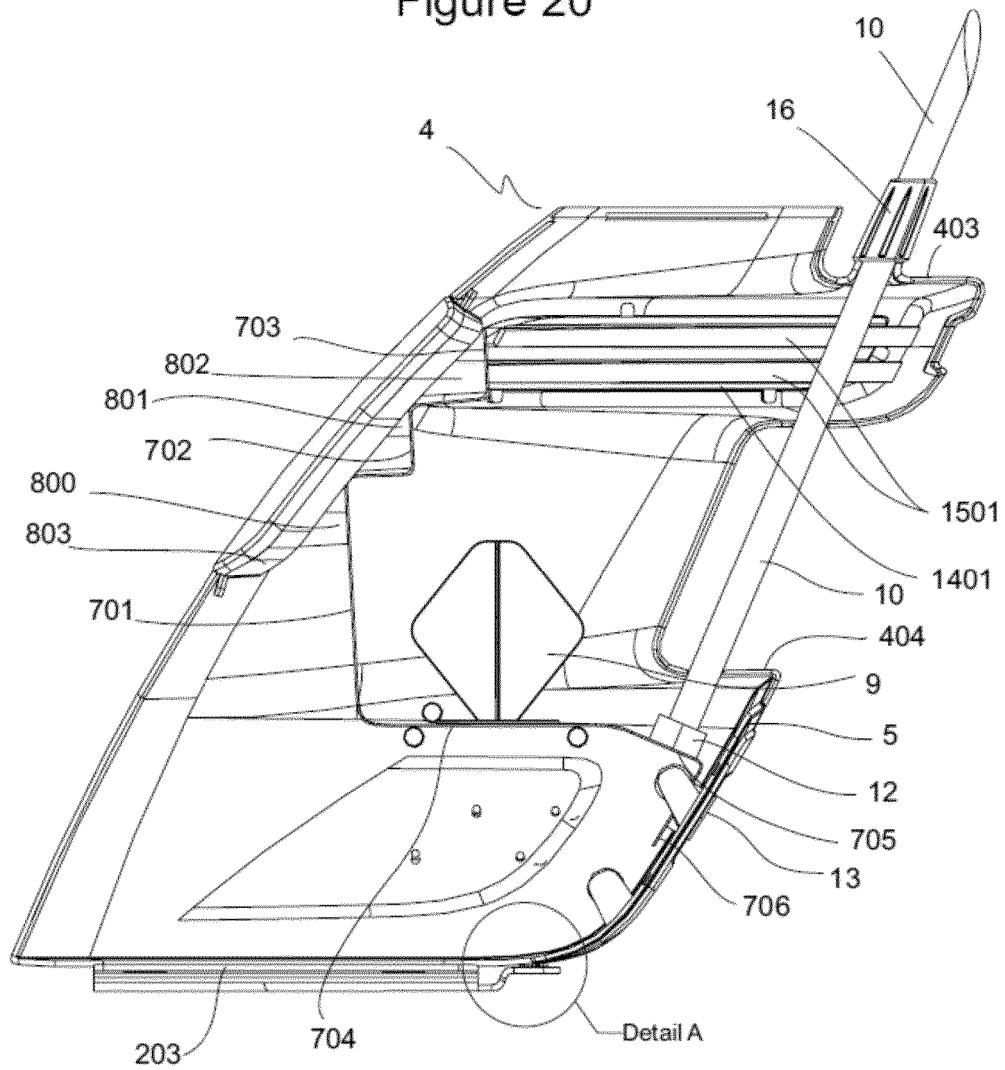


Figure 22

Figure 21

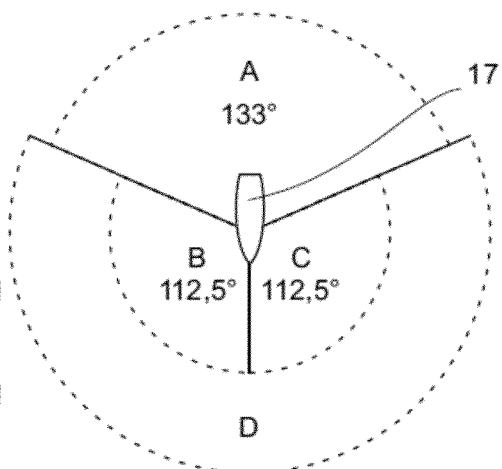
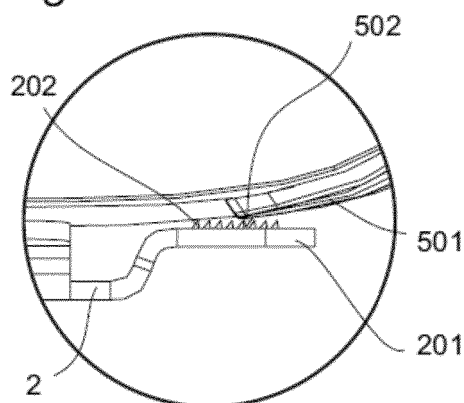


Figure 23

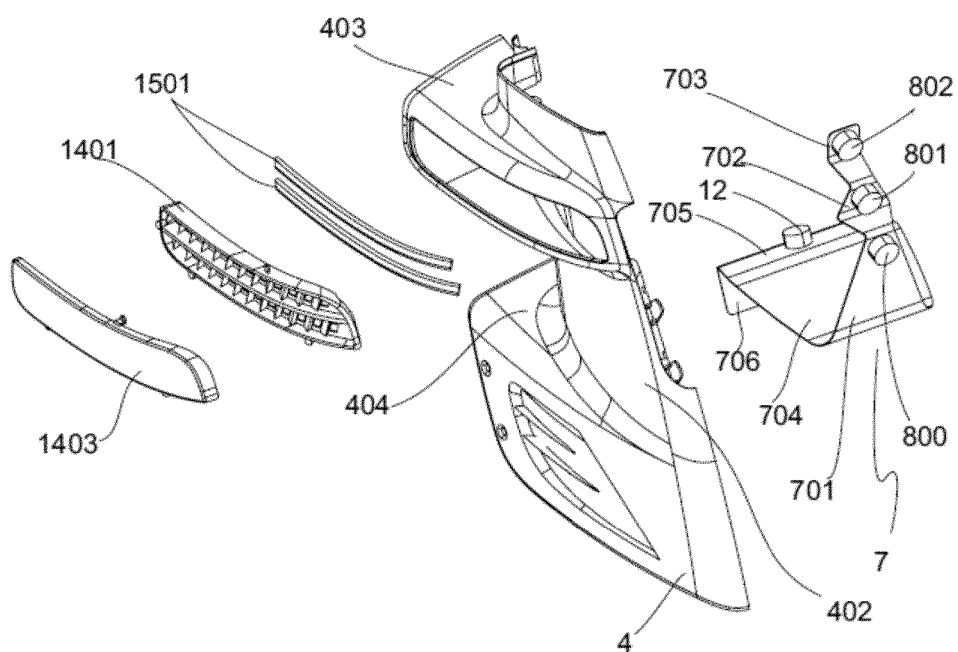
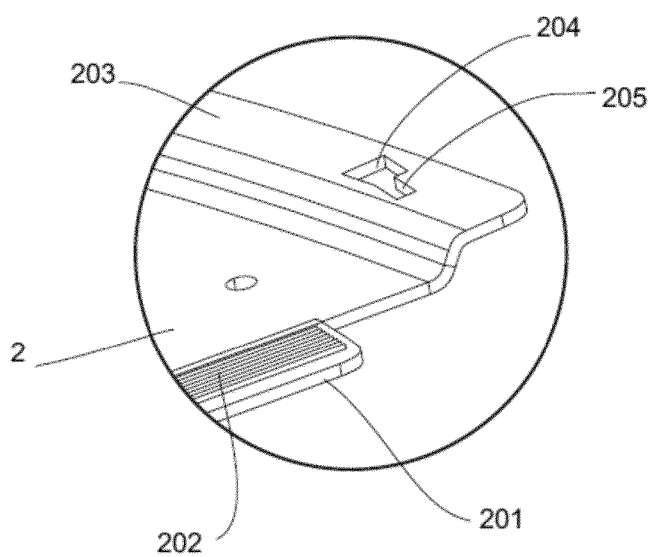


Figure 24



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2005026610 A [0008] [0009]