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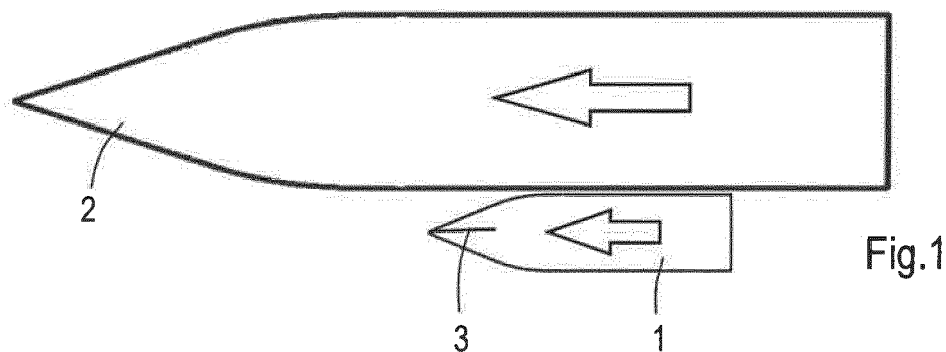
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(54) **A METHOD OF MANEUVERING A SMALLER SHIP AWAY FROM A LARGER SHIP**

(57) A method of maneuvering a smaller ship which is located alongside a larger ship whereas both ships initially have the same course and the same speed. The smaller ship includes a bow rudder or a Magnus rotor at

a bow thereof and is maneuvered away from the larger ship by means of changing the orientation of its bow rudder or activating its Magnus rotor, respectively.



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Description

[0001] The present invention relates to a method of maneuvering a smaller ship away from a larger ship, wherein initially the smaller ship is located alongside and against a larger ship and both ships have the same course and the same speed.

[0002] Such a method of maneuvering is typically performed in case of a pilot vessel which sails alongside a sea-going ship in order to board a pilot. The pilot vessel is much smaller than the ship to serve and has, generally, high maneuvering capabilities and a high maximum speed in order to quickly serve many sea-going vessels one after the other. The pilot vessel may have propulsion concepts as twin screws, water jets and steerable propulsion.

[0003] The pilot vessel is maneuvered alongside and in most cases with its bow or midsection against the sea-going vessel so that a pilot can board or disembark the sea-going vessel. During this boarding or disembarking both ships have the same speed and move in the same direction. After boarding or disembarking the pilot the pilot vessel proceeds to a next vessel. A first known embodiment of the method for moving the pilot vessel away from the sea-going vessel often requires that the pilot vessel diminishes its speed until it is free from the sea-going vessel. This speed reduction takes time and diminishes the effective use of the pilot vessel. In a second known embodiment the pilot vessel has amidships a large fender between the pilot vessel and the sea-going vessel and when sailing away from the sea-going vessel the pilot vessel rotates around this fender with its stern to the sea-going vessel. This might lead to collision of the stern of the pilot vessel with the side of the sea-going vessel, which is undesirable.

[0004] The present invention provides a method of maneuvering the smaller ship away from the larger ship by means of changing the orientation of a bow rudder of the smaller ship or activating a Magnus rotor at the bow of the smaller ship.

[0005] The method according to the invention overcomes the earlier described disadvantages and appears to be highly effective to maneuver the smaller ship easily away from the larger ship.

[0006] In case of the presence of a Magnus rotor at the bow of the smaller ship, a lateral force on the front side of the smaller ship is created by activating it. An advantage of applying a Magnus rotor is that its size does not increase upon activating it. The Magnus rotor may be located within the circumference of the hull of the smaller ship as seen from above and may remain there upon activating it. This minimizes the risk of hitting the larger ship or any other obstacle during maneuvering.

[0007] It is remarked that using a bow thruster that ejects water sideways from the bow of the hull of a ship does not function when the vessel has a more than minimal forward speed. For maneuvering a smaller ship away from a larger ship that both have a forward speed

such a bow thruster has no use for steering the smaller ship away from the larger ship.

[0008] The length of the larger ship may be more than three times larger than the length of the smaller ship. This is typically a condition in which conventional methods of maneuvering the smaller ship away from the larger ship is difficult.

[0009] For example, the smaller ship may comprise a pilot vessel and the larger ship may comprise a sea-going vessel, which transports passengers or load between sea harbours.

[0010] The bow rudder or the Magnus rotor may project or is projectable below the bow of the smaller ship in order to make the bow rudder or Magnus rotor more effective. Particularly, smaller ships like pilot vessels sail in relatively deep water such that space below the hull can be used for locating at least a part of the bow rudder or the Magnus rotor.

[0011] In a preferred embodiment the bow rudder or the Magnus rotor is movable with respect to the bow in vertical direction, since this minimizes the risk of a collision in shallow water or getting stuck in a fishnet or the like. For example, the bow rudder or the Magnus rotor may be movable with respect to the bow in vertical direction from below the bow into the bow and vice versa. The Magnus rotor may be moved downwardly along its longitudinal axis upon activating it and moved upwardly after the smaller vessel has left the larger vessel. Alternatively, it may be moved downwardly and upwardly by means of linkage bars. During maneuvering the smaller ship away from the larger ship the rudder or the Magnus rotor can extend below the bow of the smaller ship.

[0012] The smaller ship may have a substantially vertical bow. This facilitates placing of a bow rudder or a Magnus rotor and reduces the vertical movement of the bow in heavier seas and ensures that the rudder or Magnus rotor remains immersed and remains effective.

[0013] The invention will hereafter be elucidated with reference to drawings showing an embodiment of the invention by way of example.

Figs. 1-3 are very schematic top views of two ships, illustrating an embodiment of a method according to the invention.

Fig. 4 is a perspective view of a front side of a smaller ship in order to illustrate an alternative embodiment of the method according to the invention.

Fig. 5 is a similar view as Fig. 4, but showing an alternative embodiment of the smaller ship.

[0014] Fig. 1 shows two ships as seen from above. A smaller ship 1 is a pilot vessel and a larger ship 2 is a sea-going vessel, for example a freight carrier. The dimensions of the larger ship 2 are much larger than of the smaller ship 1. In the situation as illustrated in Fig. 1 the first vessel 1 is located alongside the larger ship 2 and both ships have the same sailing direction and the same sailing speed. In this condition a pilot may move between

the smaller ship 1 and the larger ship 2. Generally, the period of time during which the smaller ship 1 is located alongside the larger ship 2 is as short as possible. After transferring staff between the ships, the smaller ship 1 leaves the larger ship 2. Fig. 1 shows an initial situation in which both ships have the same course and the same speed.

[0015] The smaller ship 1 includes a bow rudder 3. When it is desired to leave its position alongside the larger ship 2, the orientation of the bow rudder 3 can be changed so as to maneuver away from the larger ship 2. This is illustrated in Fig. 2. The bow rudder 3 may have numerous shapes and dimensions. European patent EP 2 040 978 shows several examples.

[0016] The new orientation of the bow rudder 3 causes a lateral force of the water onto the bow rudder 3 near the bow of the smaller ship 1 in a direction away from the larger ship 2 without first pushing the rear of the smaller ship 1 towards the larger ship 2. The effect is illustrated in Fig. 3. An advantage of controlling the bow rudder 3 in this situation is that at first a front side of the smaller ship 1 leaves the larger ship 2 after which the back side thereof follows. In conventional cases, upon using aft rudders it takes much more time to get the front side of the smaller ship 1 separated from the larger ship 2 or there is the risk that the rear side of the smaller ship 1 collides with the larger ship 2.

[0017] Fig. 4 illustrates an alternative embodiment of the method according to the invention. Fig. 4 shows a foreship 4 of the smaller ship 1. The foreship 4 has a bow 5 where a Magnus rotor 6 is installed. When the smaller ship is upon leaving the larger ship 2 the Magnus rotor 4 is activated, resulting in a lateral force in a similar way as with the bow rudder 3 as illustrated in Figs. 1-3. Fig. 4 further shows that in this embodiment the bow 5 of the smaller ship 1 extends substantially vertically and the Magnus rotor 4 is mounted in the bow 5.

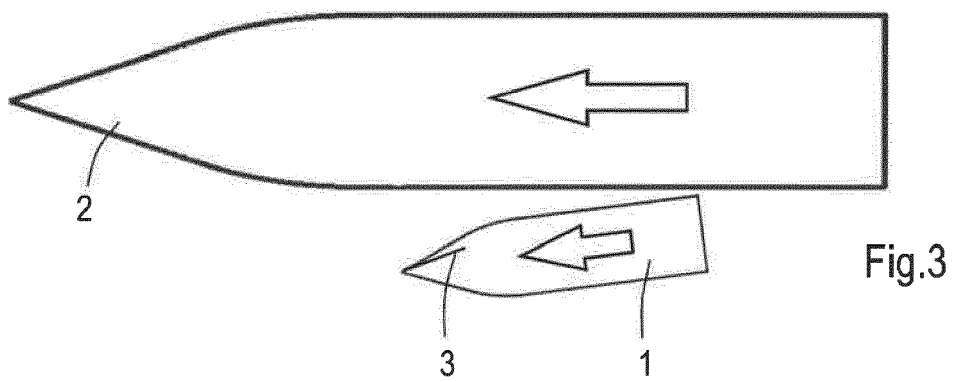
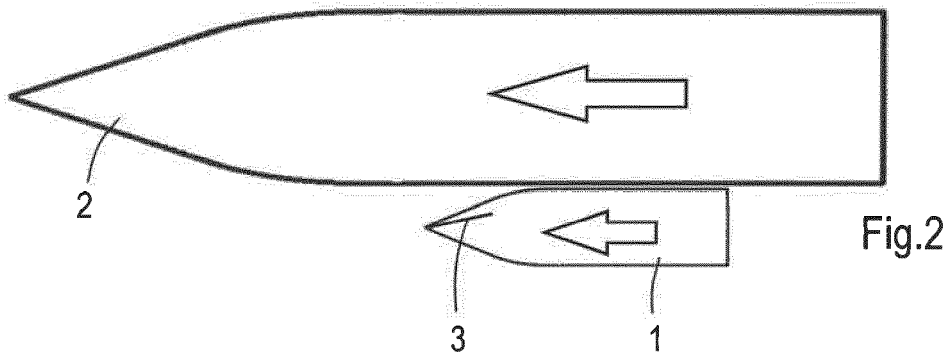
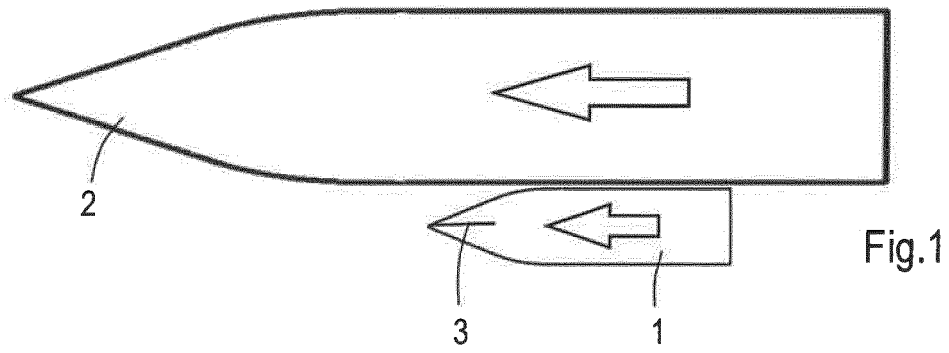
[0018] Fig. 5 shows the foreship 4 of an alternative embodiment of the smaller ship 1. In this case, the Magnus rotor 6 is extendable downwards with respect to the bow 5 as illustrated by a double-headed arrow in Fig. 5. Upon activating the Magnus rotor 6 in order to leave the larger ship 2 the Magnus rotor 6 is moved downwardly along its longitudinal axis. After the smaller vessel 1 has left the larger vessel 2 the Magnus rotor 6 is retracted upwardly. In another embodiment the rudder or the Magnus rotor can be moved from a compartment in the hull of the ship behind the bow 5 to under or below the foreship 4 and the rudder or Magnus is activated when it is below the foreship 4.

[0019] From the foregoing, it will be clear that the invention provides an improved method for maneuvering the smaller ship away from the larger ship.

[0020] The invention is not limited to the embodiment shown in the drawings and described hereinbefore, which may be varied in different manners within the scope of the claims and their technical equivalents.

Claims

1. A method of maneuvering a smaller ship (1) which is located alongside a larger ship (2) whereas both ships (1, 2) initially have the same course and the same speed, wherein the smaller ship (1) includes a bow rudder (3) or a Magnus rotor (6) at a bow (5) thereof and is maneuvered away from the larger ship (2) by means of changing the orientation of its bow rudder (3) or activating its Magnus rotor (6), respectively.
2. A method according to claim 1, wherein the length of the larger ship (2) is more than three times larger than the length of the smaller ship (1).
3. A method according to claim 1 or 2, wherein the smaller ship (1) comprises a pilot vessel and the larger ship (2) comprises a sea-going vessel.
4. A method according to one of the preceding claims, wherein the bow rudder (3) or the Magnus rotor (6) projects below the bow (5) of the smaller ship (1).
5. A method according to claim 4, wherein the bow rudder (3) or the Magnus rotor (6) is movable in vertical direction with respect to the bow (5).
6. A method according to claim 5, wherein the bow rudder (3) or the Magnus rotor (6) is movable between a position in the bow (5) and a position below the bow (5).
7. A method according to one of the preceding claims, wherein the smaller ship (1) has a substantially vertical bow (5).



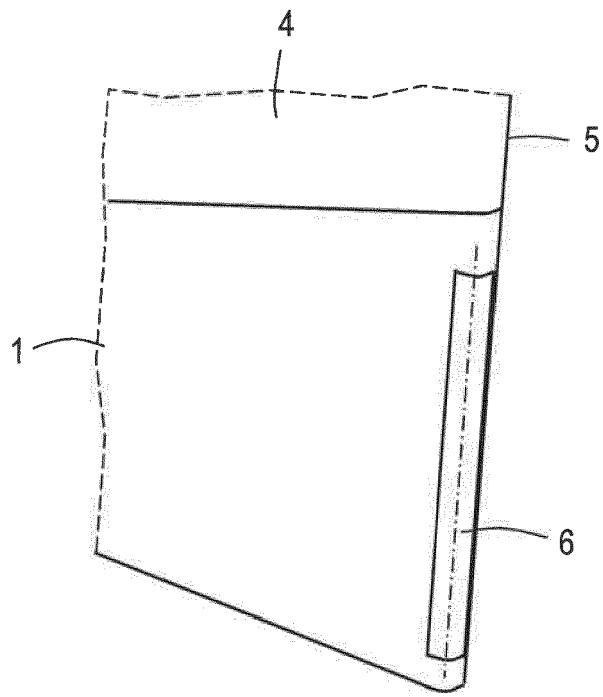


Fig.4

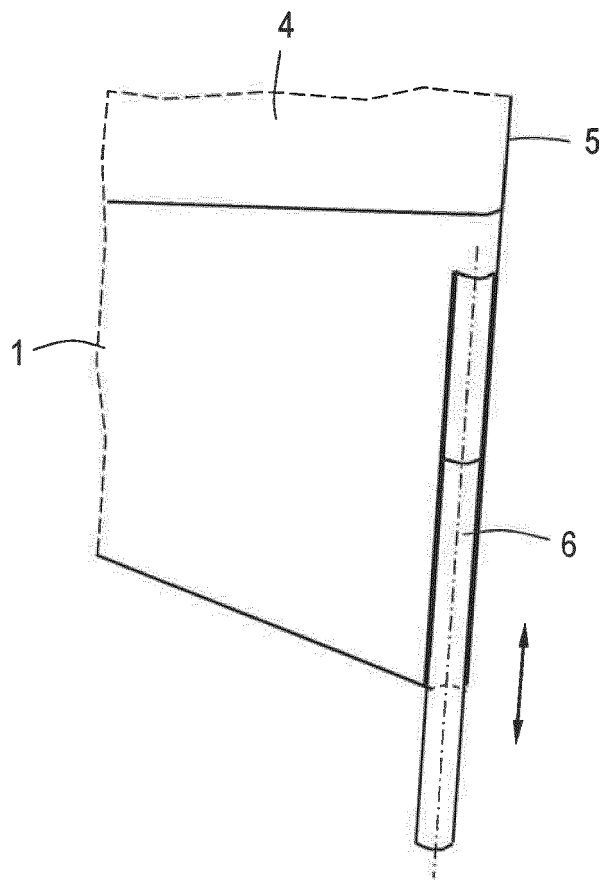


Fig.5



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Application Number
EP 15 17 4233

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Place of search The Hague		Date of completion of the search 2 December 2015	Examiner Blazquez Lainez, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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