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(54) **Steering device**

Steuerungsgerät für Schiffe

Dispositif pour gouverner un bateau

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Description

Technical area and background

[0001] The purpose of this invention is to enable sailing boats and the like to steer sideways directly by the application of side thrust when navigating in confined waters e.g. when docking with a quay or manoeuvring through narrow passages.

[0002] The conventional method for achieving this is to mount a propeller in a tunnel across the boat and below the waterline. Such a thruster tunnel can be mounted at the bow or the stern of the boat, and is disclosed, for example, in document NL 9402184.

[0003] Modern hulls, especially for sailing boats, are often designed with a planing hull, which needs very shallow draft at the bow, which means that a conventional tunnel is often mounted close to or above the water surface (fig 3). To counter this the tunnel can be moved closer to the centre of the boat but this gives a lower turning effect for a given power input.

[0004] This invention makes it possible to place the propeller under the water surface, even at the shallowest part of the hull, whilst also reducing the volume of internal space required for a conventional thruster tunnel.

[0005] The invention achieves these objectives by the features of claim 1, namely by swinging down the propeller and the propeller housing through a recess in the bottom of the boat, to which a flexible ring is attached, that is arranged around the propeller carrying arm; thus the propeller will be placed under the water surface (fig 1)

Description of the drawings

[0006] The invention is best described and understood by reference to the attached drawings.

Fig 1. Illustrates the main principles of the invention; showing how the propeller, and its housing / shroud is swung down from a recess in the bottom of the boat.

Fig 2. Shows an example of the conventional design; a propeller in a thruster tunnel.

Fig 3. Shows a more typical profile of the bottom of modern boat hulls.

Fig 4. Shows the pivot point around which the propeller assembly swings.

Fig 5. Shows how, when fully deployed, the propeller housing locates to the boat structure so that the side forces are not directed through the pivot point

Claims

1. A steering device for assisting the steering of a boat (2), comprising; a propeller assembly (1) with bevel gearbox, propeller and shroud arranged to steer the boat (2) sideways, wherein said propeller assembly (1) is attached to a first end of a main carrying arm (4); a pivot shaft (6) held in a retaining ring (7) and attached to said main carrying arm (4); a carrying arm yoke (5); a rigid sealed housing (9) surrounding the upper part of said propeller assembly (1); an adjustable support (11) arranged in the housing (9) for taking up side forces; a recess opening arranged in the bottom of the boat inside said housing (9); a hinged lid of approximately the same size as said recess opening; the device further comprises an actuator (12) connected to said carrying arm yoke (5) and arranged to pivot said main carrying arm (4) around a pivot point arranged forward of said propeller assembly (1), whereby said propeller assembly (1) is arranged to be pivoted through said recess, a motor is attached to a second end of said main carrying arm (4), and said first and second ends are connected by a drive shaft (8), **characterized by** a flexible sealing ring (10) which is arranged around the circumference of said main carrying arm (4) and attached to the inside of the housing (9).
2. A steering device according to claim 1, **characterized in that**, said pivot point is situated on said main carrying arm (4).

Patentansprüche

1. Steuervorrichtung zur Unterstützung des Steuerns eines Bootes (2), umfassend: eine Propelleranordnung (1) mit einem Kegelradgetriebe, einem Propeller und einem Mantel, die derart angeordnet ist, um das Boot (2) seitwärts zu steuern, wobei die Propelleranordnung (1) an einem ersten Ende eines Haupttragearms (4) angebracht ist; eine Schwenkwelle (6), die in einem Haltering (7) gehalten und an dem Haupttragering (4) angebracht ist; ein Tragearmjoch (5); ein starres abgedichtetes Gehäuse (9), das den oberen Teil der Propelleranordnung (1) umgibt; eine einstellbare Abstützung (11), die in dem Gehäuse (9) angeordnet ist, um Seitenkräfte aufzunehmen; eine Ausnehmungsöffnung, die in dem Boden des Bootes innerhalb des Gehäuses (9) angeordnet ist; einen angelenkten Deckel mit in etwa derselben Größe wie die Ausnehmungsöffnung; wobei die Vorrichtung ferner einen Aktuator (12) umfasst, der mit dem Tragearmjoch (5) verbunden und derart angeordnet ist, um den Haupttragearm (4) um einen Drehpunkt zu schwenken, der vorwärts der Propelleranordnung (1) angeordnet ist, wobei die Propelleranordnung (1) derart angeordnet ist, dass sie durch die Ausneh-

mung geschwenkt werden kann, ein Motor an einem zweiten Ende des Haupttragearms (4) angebracht ist und das erste und zweite Ende durch eine Antriebswelle (8) verbunden sind, **gekennzeichnet durch** einen flexiblen Dichtungsring (10), der um den Umfang des Haupttragearms angeordnet und an der Innenseite des Gehäuses (9) befestigt ist. 5

2. Steuervorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Drehpunkt an dem Haupttragearm (4) angeordnet ist. 10

Revendications

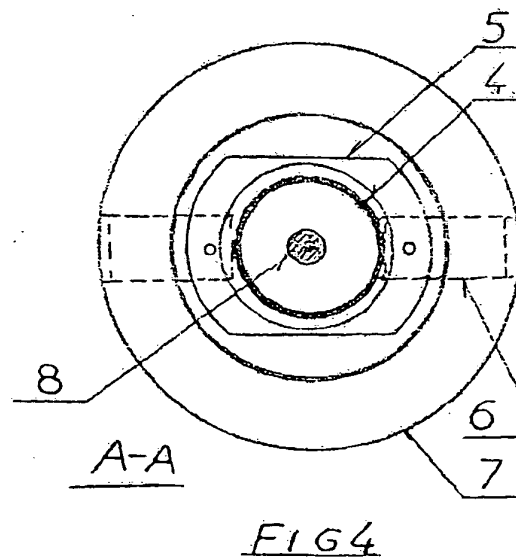
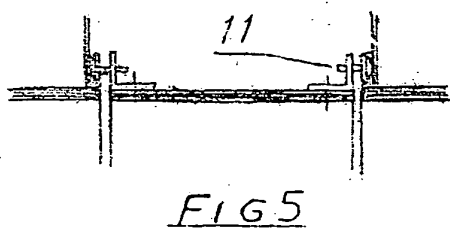
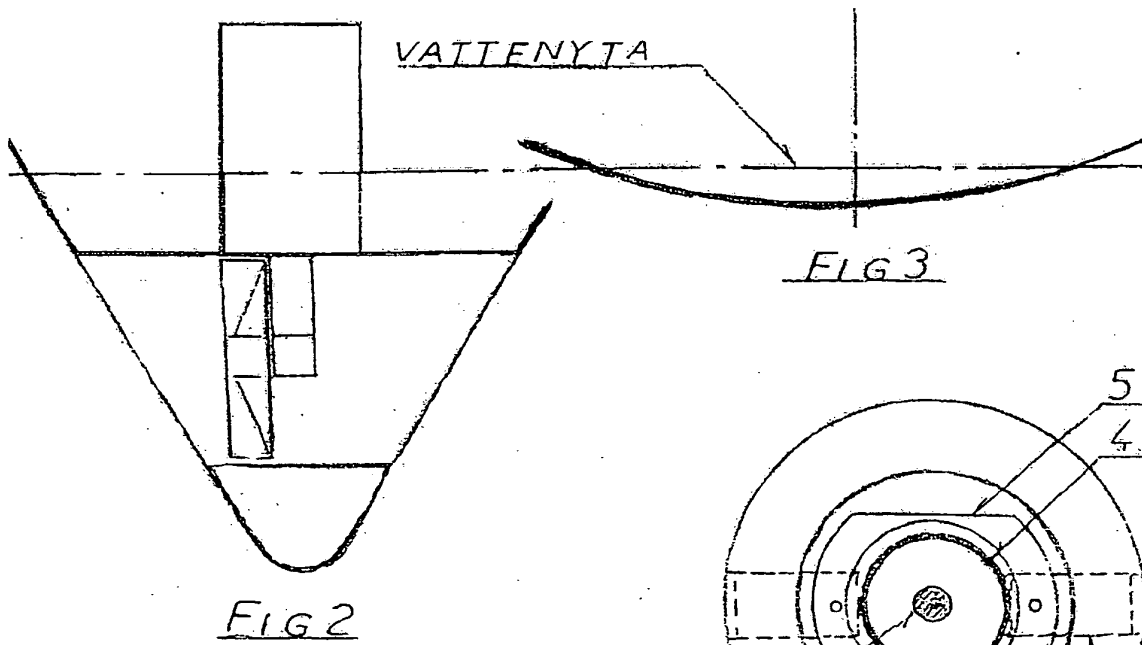
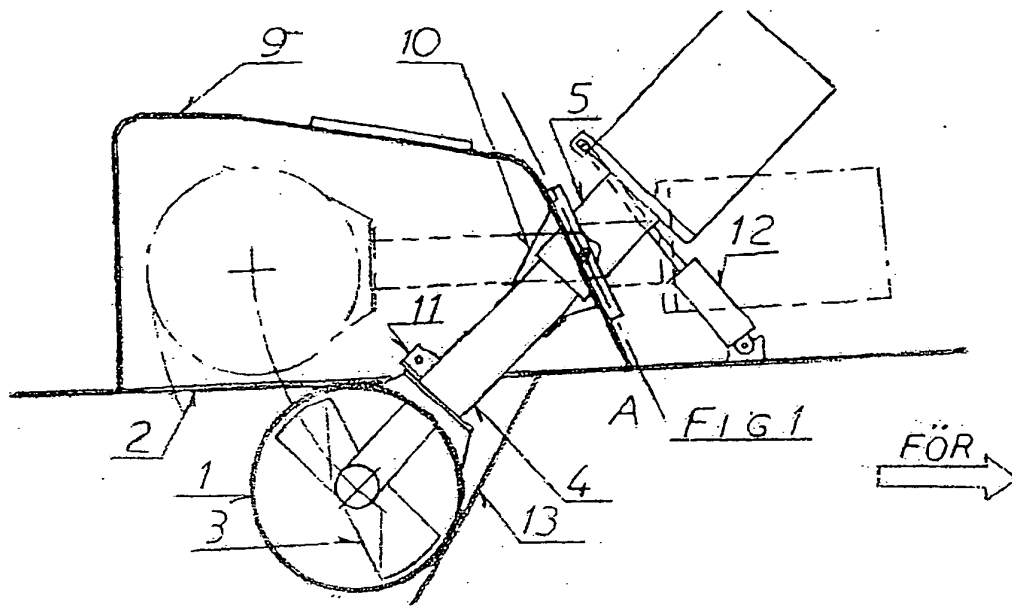
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1. Dispositif d'assistance au pilotage d'un bateau (2), comprenant :

- . un ensemble de propulsion (1) avec une boîte de vitesse à engrenages coniques, une hélice et un carénage prévu pour diriger latéralement le bateau (2), dans lequel ledit ensemble de propulsion (1) est fixé à une première extrémité d'un bras porteur principal (4) ; 20
- . un axe de pivotement (6) maintenu par un anneau de blocage (7) et fixé audit bras porteur principal (4) ; 25
- . un étrier de bras porteur (5);
- . un carter étanche rigide (9) entourant la partie supérieure dudit ensemble de propulsion (1) ; 30
- . un support réglable (11) logé dans le carter (9) pour absorber les forces latérales ;
- . une ouverture évidée ménagée dans le fond du bateau à l'intérieur du carter (9) ;
- . un couvercle à charnière approximativement de la même taille que ladite ouverture évidée ; 35

le dispositif comprenant en outre un actionneur (12) raccordé audit étrier de bras porteur (5) et prévu pour faire pivoter ledit bras porteur principal (4) autour d'un point de pivotement prévu en avant dudit ensemble de propulsion (1), moyen par lequel ledit ensemble de propulsion (1) est prévu pour être pivoté à travers ledit évidement, un moteur étant fixé une seconde extrémité dudit bras porteur principal (4), et lesdites première et seconde extrémités étant reliées par un arbre d'entraînement (8), **caractérisé en ce qu'un** anneau d'étanchéité flexible (10) est prévu sur le pourtour dudit bras porteur principal et fixé à la paroi intérieure du carter (9). 40 45 50

2. Dispositif de gouvernail selon la revendication 1, **caractérisé en ce que** ledit point de pivotement est situé sur le bras porteur principal (4). 55



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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