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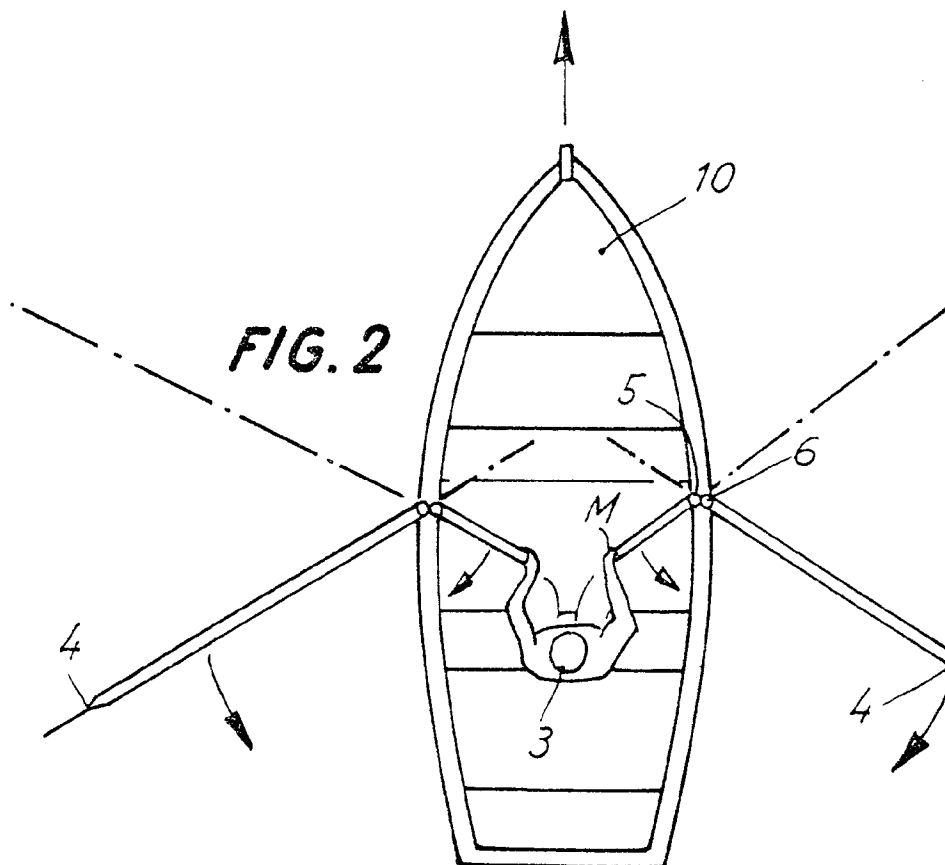
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(54) Improvements in the oars of boats

(57) Improvements in oars of boats which consist of an oar with a toothed articulation (5, 6) which divides the oar into two parts (1, 2) in such a way that when the oarsman (3) bends his forearm and drives the part (1) backwards, the part (2) of the blade (4) is also driven

backwards making the boat (10) move forwards, said articulation (5, 6) being mounted in a tilting way on the bulwark (12) so that pushing downwards the part (1) of the oar its blade (4) rises leaving the water to return to the initial position.



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Description

Field of the Invention

The object of the present invention pertains to improvements in the oars of watercraft, such as small boats, boats and the like, which have considerable advantages, in particular for the oarsman in the direction of moving, compared with prior-art oars.

Prior art of the Invention

The traditional rowing system has always been performed in such a manner that there are three basic points:

- 1) The blade that is in contact with the water and forms the support.
- 2) The opposite end of the oar, which is handled by the oarsman, which forms the point of application of power.
- 3) A point between both ends, at which the oar is joined to the boat and forms the place where the resistance of the vessel is overcome.

Due to the physical nature of the human body, it is capable of building up a greater force when the forearm is bent on the arm that when it is extended. For this reason, rowing is always done such that the oarsman drives the boat by supporting the blade on the water in the bending movement of the forearm and by removing it (blade) from the water to move the blade backwards through the air, which coincides with the extension of the forearm in a movement of less energy buildup.

When the forearms are bent in order to support the blade in the water, the boat, whose contact with the oar is located between both ends of same, is driven such that it advances behind the oarsman, and for this reason, rowing has always been done backwards to the direction of navigation when the oar rests in the boat.

Navigating backwards leads to various drawbacks, the most evident of which is that the navigator does not see what he is approaching, which forces him to make frequent twisting manoeuvres of his back and neck and may also be the cause of deviations in the route or of a collision with fixed or moving obstacles that were not seen.

Attempts have been made to introduce various improvements in the assembly and the shape of the oars, e.g.: Spanish Patent Application No. 9201415 refers to a mechanism for increasing the lever arm and, consequently, the force exerted by the blade of the oar on the basis of a complex series of braces and accessory crossbars; European Patent no. 0364954 dealt with a rowing machine, with which attempts were made to increase the speed; and Spanish Patent No. 491458 dealt with a propulsion means for watercraft based on a crankshaft, which, driven by means of pedals, brings

about an alternating movement of some propulsion blades. Nevertheless, none of them anticipates the improvements with the corresponding advantages that are proposed below.

Brief Description of the Invention

To overcome the drawbacks described, improvements in the oars are proposed such that the propulsion of the boat is carried out in the anterograde direction with regard to the oarsman, i.e., rowing is done forwards, while simultaneously maintaining the system, in which the propulsion is created by means of bending the forearm, which is most suitable because of the human anatomy and physiology.

Therefore, the present invention consists of an articulated oar, which is interrupted at a point located between the blade and the opposite end, and both parts are each joined by toothed ends. This produces the reverse of the moving with respect to the rowing direction as will be explained.

Detailed Description of the Invention

In order to facilitate the explanation, two sheets of drawings, in which a practical embodiment is shown, which is mentioned only by way of example, which does not limit the scope of the present invention, are attached to the present specification.

In the said drawings:

Figure 1 shows a top view of the middle part of the oar where it has its articulation;

Figure 2 shows a schematic top view of a boat, in which the directions of rowing and advancement of the boat itself are seen;

Figure 3 shows a cross section with regard to the front of Figure 1;

Figure 4 is another top view corresponding to another articulation of the middle part of the oar; and Figure 5 corresponds to a longitudinal, elevated view with regard to the front of Figure 4.

According to these figures (Figures 1 and 2), the improvements, which are the object of the present invention, basically consist of articulating the oar in two parts: one part (1), which is driven by the oarsman (3), and another part (2), which guides the blade (4). The fact that the facing ends of the said two parts (1, 2) are each provided with teeth (5, 6), which are meshed with another and which pivot on corresponding axles (7, 8), is fundamental.

Thus, when the oarsman (3) bends his right arm and pulls towards himself (Figure 2), the end of the oar grasped by the hand (M) rotates the teeth (5), viewed from above, in a counterclockwise direction.

When (5) rotates in a counterclockwise direction, the toothed articulation makes (6) rotate in a clockwise

direction.

When the toothed end (6) rotates in a clockwise direction, the end of the blade (4) is driven backwards inside the water, whereby the boat (10) is driven forwards, towards the front of the oarsman, which leads to the boat (10) moving forwards, with the same physical work having been carried out as in the case of a traditional oar.

Note that the rotations described for the teeth on the starboard side will have the opposite sign for their counterparts on the port side.

In a second manoeuvring phase, the oarsman (3) must again bring the blade (4) forwards, through the air, in order to be able to repeat the same propulsion manoeuvres.

In the traditional system, in order for the oar to go through the air, the oarsman brings his hands downwards so that the end of the blade is raised over the water, does not offer resistance and does not counteract the moving forward.

With the oars, which are the object of the improvements according to the present invention, it is provided (Figure 3) that, so that the oarsman (3) is able to remove the blade from the water and to move it forward through the air, the two articulated parts (1, 2) of each oar have a common base, which is convex, has a hemispherical surface (9) or the like, in which the axles (7, 8) are lined up, and that the said base can be inserted in a recess (11) of the same shape provided in the bulwark, such that, when the oarsman pushes the end of the oar (M) downwards, he makes the common base (9) tilt, so that the part (1) drops and the part (2) rises, and he manages to get the blade (4) to leave the water.

In this position, and with the hands lowered, the extension of the right forearm moves (M) forwards (dash-dotted lines in Figure 2), makes (5) rotate in a clockwise direction, which leads to a counterclockwise rotation of (6) and to a displacement of the blade (4) forwards or the end of the part (2) through the air, and he (the oarsman) will again be in a position to stop the blade (4) from falling into the water and to start a new manoeuvre for advancing the boat.

Hooks, like the axles (13), which are inserted in respective grooves (14) of the convex base (11) itself, one of which, at least, can easily be removed in order to be able to detach the articulated oar (1, 2) from the boat when it has reached the shore, have been provided so that the convex base (11) mentioned is maintained in the bulwark (12) and does not escape.

While the teeth (5, 6) provided at the ends of each part of the oar (1, 2) themselves were shown in the embodiment of Figure 1, the said ends shown in the embodiment of Figures 4 and 5 are lined up with respective pinions or toothed wheels (5a, 6a), which are enclosed in a housing (15) having lateral openings (20), pivoting back and forth in the neck (16) of the bulwark (12) by means of two half-axles (17, 18), which are fixed in the edge of same, in order to make it possible for the corresponding oar to be able to be inserted into the water

when driving the boat, or to be able to be removed from it (water) in order to again return to the situation of stopping the blade (4) from falling into the water, as was already explained above.

In addition to achieving the principal object of the present improvements, thanks to the same toothed articulation design already described, an additional advantage is achieved: the toothed ends (5, 6) or pinions (5a, 6a) do not have to necessarily have the same diameter or number of teeth, but it is possible to have a distinct ratio between them, as shown in Figure 4. In this manner, the power/rowing angle of the parts (1, 2) of the oar can be varied respectively.

In other words, with a small pinion (5a) at the end of the part (1) of the oar driven by the oarsman (3) and a large wheel (6a) at the end of the part (2) of same corresponding to the blade (4), the force necessary for its running is reduced, but also the rowing angle within the water and therefore the speed of advancement of the boat are reduced. By making the former pinion large and by making the said wheel small, more force is needed to row, but the rowing angle would also be large, and the whole thing follows one of the basic principles of mechanics. As explained above, at least one of these half-axles (17, 18) shall be able to be easily removed.

In its essence, the present invention can be achieved in practice in other embodiments, which differ only in detail from the embodiment that was given only by way of example, to which the protection that was applied for extends as well. Thus, these improvements may be achieved in oars of boats with the most suitable means, components and accessories by all being included within the spirit of the following claims.

Claims

1. Improvements in oars of boats, characterized by providing the oar in question with a toothed articulation, which divides the oar into two parts: a part (1) grasped by the oarsman (3) and a part (2) carrying the blade (4), said articulation being fastened in a pivoting manner in the bulwark (12) of the said boat (10).
2. Improvements in accordance with claim 1, characterized in that the said articulation consists of toothed portions (5, 6) of each facing end of the said two parts (1, 2) of the oar.
3. Improvements in accordance with claim 1, characterized in that the said articulation consists of toothed pinions or wheels (5a, 6a) each assigned to both facing ends of the said two parts (1, 2) of the oar.
4. Improvements in accordance with the above claims, characterized in that the said articulation is mount-

ed on a base, such as a hemispherical housing (9), which is inserted in a pivoting manner with regard to an axle perpendicular to the oar, and is detachable, in a recess (11) having a similar shape that is provided in the said bulwark (12) of the said boat itself (10). 5

5. Improvements in accordance with claims 1, 2 and 3, characterized in that the said articulation is enclosed in a housing (15) with lateral openings (20), which is mounted in a pivoting manner with regard to an axle that is perpendicular to the oar, and detachable, in the bulwark of the boat itself. 10
6. Improvements in accordance with the above claims, characterized in that the ratio between the said gear teeth (5, 6, 5a and 6a) of the said articulation is 1:1. 15
7. Improvements in accordance with the claims 1 through 5, characterized in that the ratio between the said gear teeth (5 and 6, 5a and 6a) of the said articulation is different from 1:1. 20

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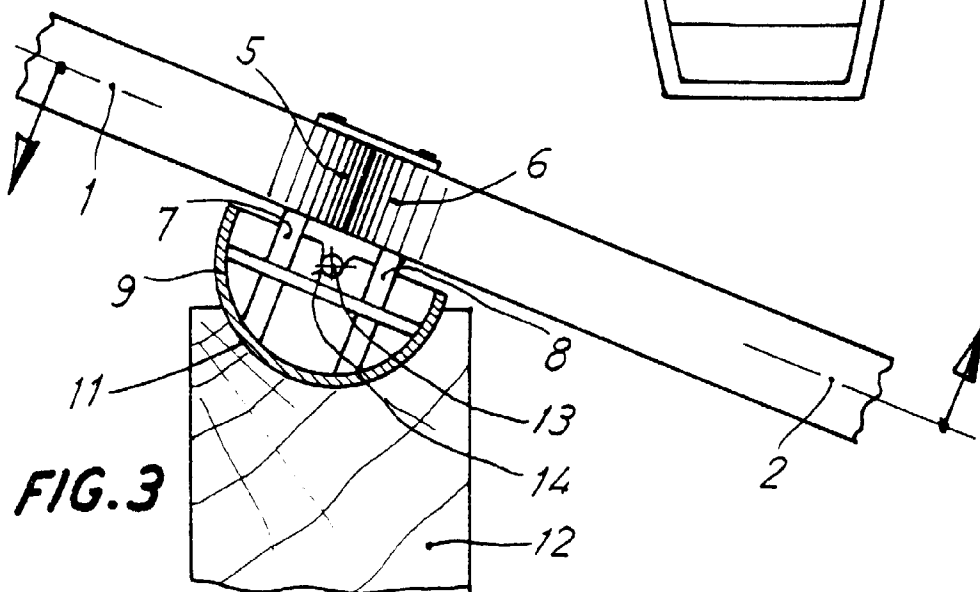
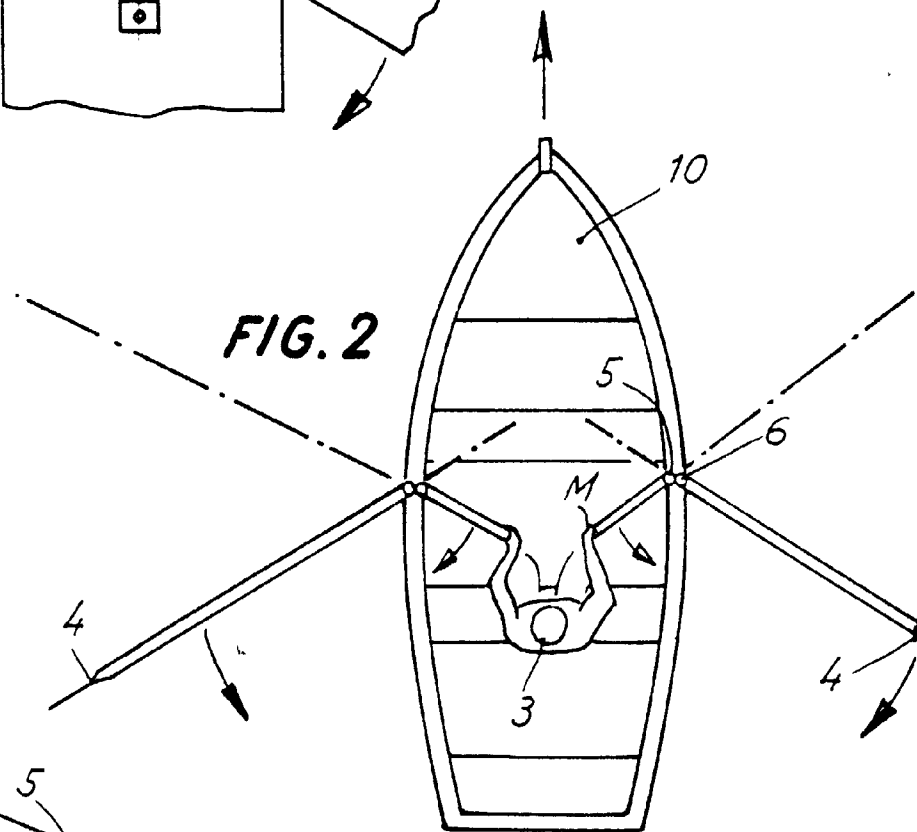
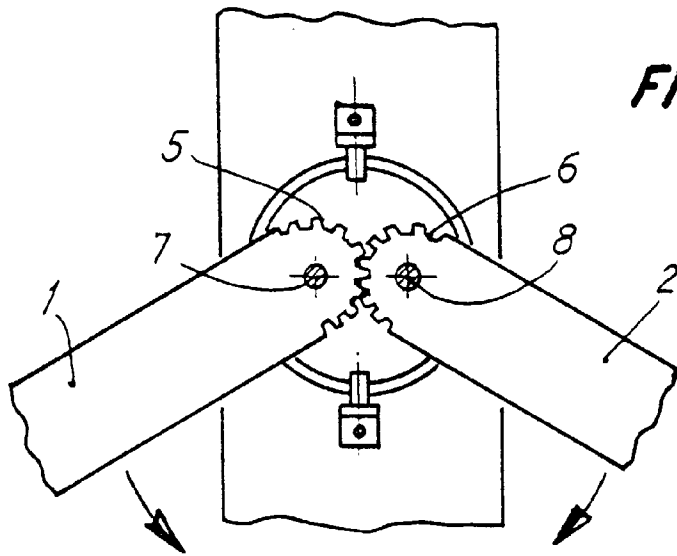
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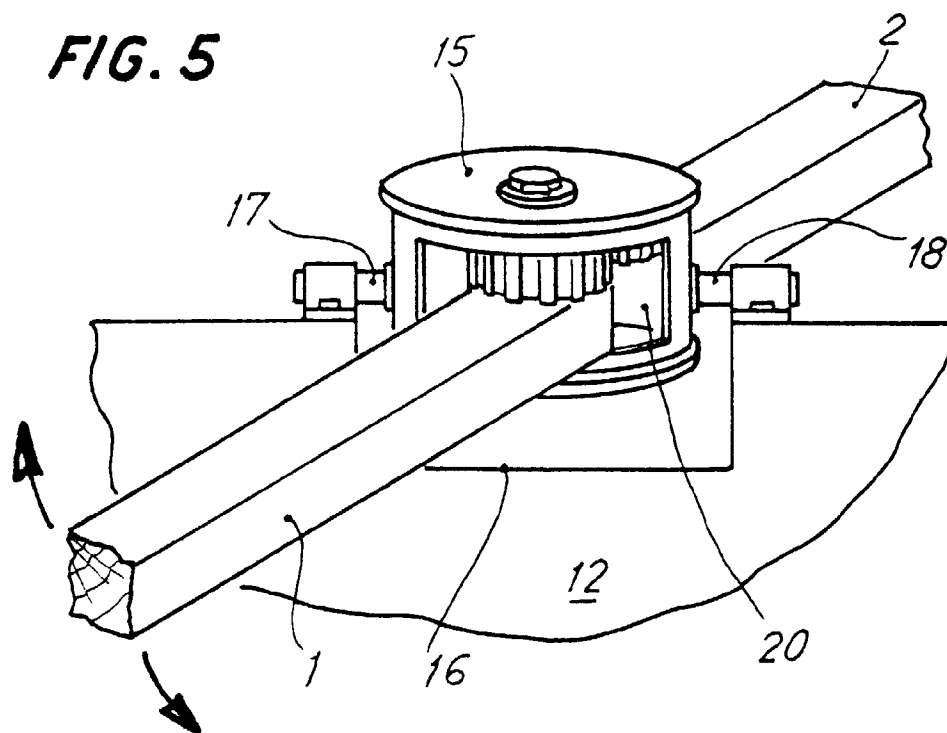
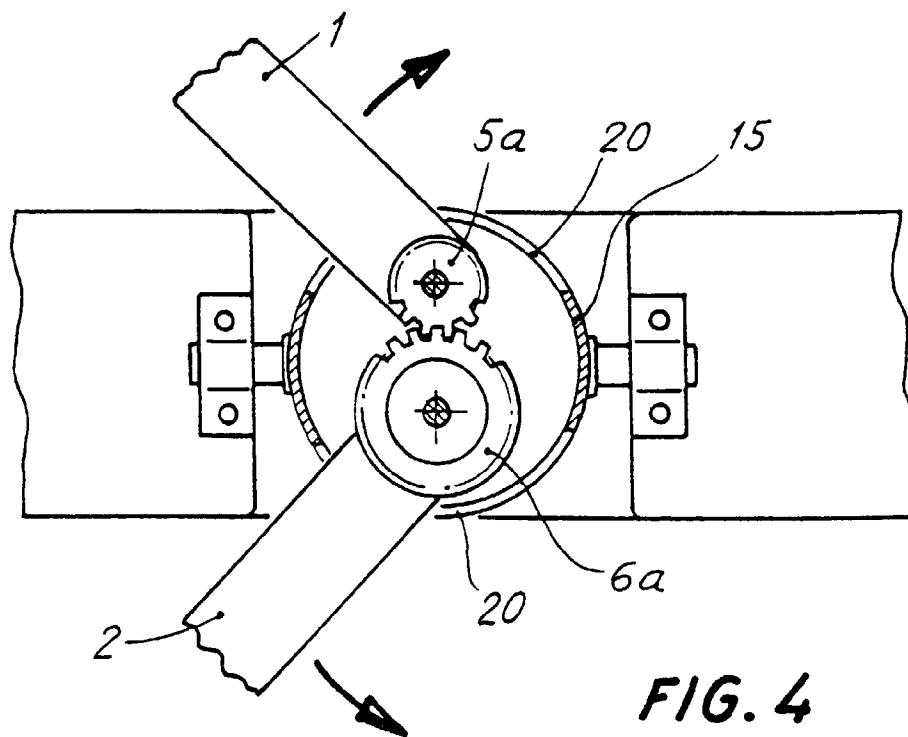
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EUROPEAN SEARCH REPORT

Application Number
EP 96 50 0158

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 3 156 934 A (KASHEW) * the whole document *	1-6	B63H16/10
X	US 4 738 643 A (NOGGLE) * the whole document *	1-6	
X	US 3 884 175 A (BELLIS) * the whole document *	1-5,7	
X	US 5 112 261 A (HUMPHREY) * the whole document *	1-5,7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B63H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27 February 1997	Examiner DE SENA, A
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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