Claims

1. Arrangement (20) for reducing a propulsion power requirement of a watercraft (100), in particular, a ship, comprising at least one rudder (21) and at least one accommodating space (22) for a propeller (30), wherein the accommodating space (22) is formed in the direction of travel (F) of the watercraft (100) in front of the rudder (21), wherein in the direction of travel (F) in front of the accommodating space (22) of the propeller (30), at least one pre-nozzle (23) comprising at least one guide surface (24) is arranged, characterized in that at least one side fin (25) is arranged on the rudder (21), wherein the pre-nozzle (23) with the at least one guide surface (24) and the at least one side fin (25) are arranged asymmetrically opposite the rudder (21) in such a way that, in non-deflected rudder position, the at least one side fin (27) is arranged on one side of the rudder (21) and the pre-nozzle (23) with the at least one guide surface (24) is arranged predominantly, preferably completely, on the other side of the rudder (21)), and such that no side fin (25) is arranged on the side of the rudder (21) on which the pre-nozzle (23) is predominantly or completely arranged.

2. An arrangement according to Claim 1, wherein the pre-nozzle (23) is shaped as a ring nozzle or as at least one ring nozzle section, wherein the pre-nozzle (23) at least partially circumferentially limits a flow channel (40).

3. An arrangement according to Claim 2, wherein the at least one guide surface (24) of the pre-nozzle (23) is designed in the form of a fin, which is arranged at the ring nozzle or the at least one ring nozzle section.

4. An arrangement according to Claim 3, wherein the at least one guide surface (24) designed as a fin projects from an outer shell surface of the pre-nozzle (23) designed as a ring nozzle or as a ring nozzle section.

5. Arrangement according to any one of the preceding claims, wherein the at least one guide surface (24) is designed as a support strut (50) of the pre-nozzle (23).

6. Arrangement according to any one of the preceding claims, wherein the at least one guide surface (24) is arranged in the flow channel (40) of the pre-nozzle (23).

7. Arrangement according to any one of the Claims 2 to 6, wherein the at least one guide surface (24) radially extends from a rotational axis (RA) of the pre-nozzle (23) beyond the ring nozzle or the ring nozzle section.

8. Arrangement according to any one of the preceding claims, wherein the pre-nozzle (23) comprises a plurality of guide surfaces (24, 50), which are evenly or unevenly distributed.

9. Arrangement according to any one of the Claims 1 to 8, wherein the at least one side fin (25) is essentially aligned at a right angle to the first lateral surface (26) and/or the second lateral surface (27) of the rudder (21).

10. Arrangement according to any one of the preceding claims, wherein the at least one side fin (25) is aligned at an angle to the first lateral surface (26) and/or the second lateral surface (27) of the rudder (21), which is less than 90°, preferably less than 75°, being particularly preferred, less than 60°.

11. Arrangement according to any one of the preceding claims, wherein the at least one side fin (25) comprises a tapered sweep.

12. Arrangement according to any one of the preceding claims, wherein the at least one side fin (25) attached to the rudder (21) comprises a cap arranged on its face side, or a winglet (29) arranged on its face side.

13. Watercraft (100), in particular a ship, comprising an arrangement (20) according to any one of the preceding claims.