are screwed into the attachment plate from inside the hub. Thus, each blade is tightened radially inwards against the hub by means of said screws. It should be pointed out that said blades during operation of the mixer, which is arranged to be driven in rotation, experience considerable bending load in the rotational direction as well as torsional load about a radially extending axis extending across the attachment plate of the blade. Due to the radial mounting of the blade to the hub, both loads shall be carried by the screws by means of which the blades are fastened. Besides that, the mounting is time consuming and troublesome since the great number of screws per blade and since the accessibility for tightening the screws is extremely limited.

In other known embodiments each blade presents at its most inner portion in the radial direction a rod/pin, which is inserted in the radial direction into a seat of the hub. The object of said rod is, together with the hub, to carry a part of the above mentioned bending load in the rotational direction of the mixer. However, such a set of rod and seat must present a play free engagement with each other, which result in the disadvantage that they, due to the inhospitable and demanding environment in which the mixer is located, easily corrodes and thereby irrevocably becomes connected to each other. This entails that even if a single blade is broken the entire mixer assembly must nevertheless be exchanged.

Summary~~Brief description of the object~~ of ~~the~~ Invention

Embodiments of t~~T~~he present invention seek to~~aims at~~ obviati~~ng~~e the aforementioned disadvantages and failings of previously known propeller assemblies, and to~~at~~ provid~~ing~~e an improved propeller assembly. Embodiments~~A primary object~~ of the present invention seek~~is~~ to provide an improved propeller assembly of the initially defined type, which admits simple and easily accessible mounting and attachment of each blade to the hub.

Embodiments~~It is another object~~ of the present invention seek to provide a propeller assembly where the bending and torsional loads on each blade is not carried by the attachment means by means of which the blades are secured to the hub.

Embodiments~~It is yet another object~~ of the present invention seek to provide a propeller assembly that admits a great number of mounting and demounting of the blades without auxiliary tools, without running the risk of mounting the blades incorrectly and thereby causing misbalance of the propeller assembly.

~~Brief description of the features of the Invention~~

According to an aspect, there is provided a mixer assembly for generating and maintaining a movement within waste water, comprising a hub and at least two blades, which are releasably connected to said hub and which extends in the radial direction in relation to the hub, furthermore the hub presents a free front end and a rear end, the hub in said rear end being arranged to be connected to a drive shaft and thereby being arranged to be driven in rotation about an axially extending centre axis,~~the invention at least the primary object is attained by means of the initially defined propeller assembly, which is~~ characterized in that the hub comprises a seat for each of said at least two blades, each seat comprising an axially extending first engagement means, and that each blade comprises an axially extending second engagement means, said first engagement means and said second engagement means together~~concurrently~~ being arranged to admit axial mutual displacement of said hub and each of said blades during mounting/demounting of the propeller assembly, and is thereto arranged to prevent radial mutual displacement of said hub and each of said blades when the mixer assembly is in an assembled condition.

Thus, embodiments of the present invention are~~is~~ based on the understanding that axial mounting of each of the blades to the hub entail a simple and easily accessible mounting, and that the bending and torsional loads that the attachments of the blades to the hub are subject to are carried by engagement means instead of the attachment means by means of which each blade is secured to the hub.

~~Preferred embodiments of the present invention are further defined in the dependent claims.~~

Preferably each blade comprises an attachment means, which is disengageably connected to the hub and which is arranged to prevent axial mutual displacement of the hub and each of said blades in a mounted condition of the propeller assembly. This entail that the attachment means is used to attach the blade to the hub only and that the attachment means does not carry the torsional or bending loads, which result in a more safe attachment of the blades to the hub.

According to a preferred embodiment the hub comprises a rear hub base and a front hub top, said at least two blades being disengageably connectable to said hub base, and that said hub top is disengageably connectable to said hub base. Furthermore, it is more preferred that said first engagement means of each seat of the hub, and said second engagement means of each blade, are arranged radially inside the outer envelope surface of the hub. This division of the hub in a hub base and a hub top entails that the attachment of each blade in the hub base and the design of the first and the second engagement means, respectively, does not affect the fluid currents around the propeller assembly in a negative way, but are enclosed and protected by the hub top.

According to yet another preferred embodiment the second engagement means of each blade comprises at least two projections, which are mutually separated and which are arranged to engage at least two recesses of the cooperating first engagement means, each of said at least two projections of the second engagement means having the shape of a truncated cone tapering backwards in the axial direction. This results in that during mounting of the blade to the hub, they will automatically take the correct mutual position.

Further advantages and features of the invention are apparent from the appended~~other dependent~~ claims as well as from the following detailed description of preferred embodiments.

Claims

1. Mixer assembly for generating and maintaining a movement within waste water, comprising a hub ~~(3)~~ and at least two blades ~~(4)~~, which are releasably connected to said hub ~~(3)~~ and which extends in the radial direction in relation to the hub ~~(3)~~, furthermore the hub ~~(3)~~ presents a free front end and a rear end, the hub ~~(3)~~ in said rear end being arranged to be connected to a drive shaft and thereby being arranged to be driven in rotation about an axially extending centre axis, **characterized** in that the hub ~~(3)~~ comprises a seat ~~(9)~~ for each of said at least two blades ~~(4)~~, each seat ~~(9)~~ comprising an axially extending first engagement means ~~(10)~~, and that each blade ~~(4)~~ comprises an axially extending second engagement means ~~(11)~~, said first engagement means ~~(10)~~ and said second engagement means ~~(11)~~ together being arranged to admit axial mutual displacement of said hub ~~(3)~~ and each of said blades ~~(4)~~ during mounting/demounting of the propeller assembly, and is thereto arranged to prevent radial mutual displacement of said hub ~~(3)~~ and each of said blades ~~(4)~~ when the mixer assembly is in an assembled condition.

2. Mixer assembly according to claim 1, **characterized** in that each blade ~~(4)~~ comprises at least one attachment means ~~(12)~~, which is releasably connected to the hub ~~(3)~~ and which is arranged to prevent axial mutual displacement of the hub ~~(3)~~ and sat each blade ~~(4)~~ when the mixer assembly is in an assembled condition.

3. Mixer assembly according to claim 1 or 2, **characterized** in that said hub ~~(3)~~ comprises a rear hub base ~~(5)~~ and a front hub top ~~(6)~~, said at least two blades ~~(4)~~ being releasably connected to said hub base ~~(5)~~, and in that said hub top ~~(6)~~ is releasably connected to said hub base ~~(5)~~.

4. Mixer assembly according to any of the claims 1-3, **characterized** in that said first engagement means ~~(10)~~ of each seat ~~(9)~~, and said second engagement means ~~(11)~~ of each blade ~~(4)~~, are arranged radially inside the outer envelop surface of the hub ~~(3)~~.

5. Mixer assembly according to any preceding claim, **characterized** in that said first engagement means ~~(10)~~ of each seat ~~(9)~~ comprises at least two recesses, which are mutually separated in a circumferential direction of the hub ~~(3)~~.

6. Mixer assembly according to claim 5, **characterized** in that said second engagement means ~~(11)~~ of each blade ~~(4)~~ comprises at least two projections, which are mutually separated and which are arranged to engage said at least two recesses of the first engagement means ~~(10)~~.

7. Mixer assembly according to claim 6, **characterized** in that each of said at least two projections of the second engagement means ~~(11)~~ presents truncated cone shape tapering in the rearward axial direction.

8. Mixer assembly according to claim 6 or 7, **characterized** in that each of said at least two projections of the second engagement means ~~(11)~~ presents a polygonal cross section.

9. Mixer assembly according to claim 6 or 7, **characterized** in that each of said at least two projections of the second engagement means ~~(11)~~ presents a round cross section.

10. Mixer assembly according to any of the claims 6-9, **characterized** in that each of said at least two projections of the second engagement means ~~(11)~~ presents a less axial extension than the axial extension of the corresponding

recess of said at least two recesses of the first engagement means ~~(10)~~.