CLAIMS

1. A propeller (10) comprising a boss (14) with a boss diameter ($\varnothing_B$) and at least one propeller blade (12), said propeller (10) further comprising an adjusting member (34), adapted to be displaced along a first dimension (L), and a transformation arrangement (64) connecting said adjusting member (34) to said propeller blade (12) such that a displacement, in said first dimension (L), of said adjusting member (34) results in a change in the pitch of said propeller blade (12), said transformation arrangement (64) comprising a slot (54) comprising a slot portion (56) with a slot centre (C_s) extending in a slot extension direction (ED_s) which direction is arcuate with a radius of curvature (R_C), said transformation arrangement (64) further comprising a control element (62) slidably engaged with at least said slot portion (56), characterized in that said radius of curvature (R_C) is within the range of 0.2 to 0.7 times said boss diameter ($\varnothing_B$) and that said adjusting member comprises a piston rod head (34), wherein said slot (54) is provided on said piston rod head (34) and said piston rod head (34) comprises a first piston rod head member (50) and a second piston rod head member (52), each one of said first and second piston rod head members comprising a portion of said slot (54) and said first and second rod head member abut against each other in an abutment plane (A_P) extending substantially perpendicularly to said first dimension (L).

2. The propeller (10) according to claim 1, wherein said radius of curvature (R_C) is within the range of 0.4 to 0.6, preferably within the range of 0.45 to 0.55, times said boss diameter ($\varnothing_B$).

3. The propeller (10) according to claim 1 or 2, wherein said propeller (10) comprises a servo (20) located in said boss (14), said servo (20) comprising a piston (22) which is displaceable along said first dimension (L), said piston (22) being rigidly connected to said adjusting member (34).

4. The propeller (10) according to any one of the preceding claims, wherein said control element (62) comprises a block (58) and a pin (42), said block (58) comprising a block opening (60) and being slidably engaged with said slot (54), said pin (42) engaging with said block opening (60).

5. The propeller (10) according to any one of the preceding claims, wherein said slot (54) is associated with said adjusting member (34) and at least a portion of said control element (62) is rigidly connected to said propeller blade (12).

6. The propeller (10) according to any one of claims 3 to 5, wherein said adjusting member (34) comprises a piston rod (32) and a piston rod head (34), said piston rod (32) being fixedly attached to said piston (22) and said piston rod head (34) being fixedly attached to said piston rod (32), wherein said slot (54) is provided on said piston rod head (34).

7. The propeller (10) according to any one of the preceding claims, wherein said adjusting member (34) comprises a substantially rectangular engagement region (66) comprising a first (68), second (70), third (72) and fourth (74) edge, said first (68) and third (72) edge being located on opposite sides of said engagement region (66) and extending substantially parallel to said longitudinal dimension (L), said second (70) and fourth (74) edge being located on opposite sides of said engagement region (66) and extending substantially transversal to said longitudinal dimension (L), said slot extending in said engagement region (66) from said first edge (68) to said second edge (70).

8. The propeller (10) according to claim 6, wherein said slot (54) extends in a slot extension (ED_s) direction from said first edge (68), said slot (54) having a width (S_W) extending perpendicularly to said slot extension direction (ED_s), said slot (54) comprising a first slot portion (76) and a second slot portion (78) wherein said second slot portion (78) is located downstream of said first slot portion (76) in said slot extension direction (ED_s), said first slot portion (76) having a first slot width (S_{W1}) and said second slot portion (78) having a second slot width (S_{W2}) such that said second slot portion (78) is adapted to accommodate at least one component of said control element (62).

9. The propeller (10) according to any one of the preceding claims, wherein said boss (14) comprises a cavity (36) in which at least a portion of said adjusting member (34) is located, said propeller (10) further comprising an inlet duct (37) and an outlet duct (39) which ducts both are in fluid communication with said

cavity (36), the inlet duct (37) and the outlet duct (39) being interconnected outside the boss (14) for circulating a lubrication fluid through said cavity (36).

10. The propeller (10) according to any one of the preceding claims, wherein said propeller (10) comprises a plurality of propeller blades (12), each one of said plurality of propeller blades being provided with a corresponding transformation arrangement (64).

11. A vessel, characterized in that said vessel comprises a propeller (10) according to any one of the preceding claims.

12. A method for assembling a propeller (10) comprising a boss (14) with a boss diameter ($\varnothing_B$) and at least one propeller blade (12) comprising a blade root (38) which in turn comprises a pin (42), said propeller (10) further comprising an adjusting member (34), adapted to be displaced along a first dimension (L), and a transformation arrangement (64) connecting said adjusting member (34) to said propeller blade (12) such that, after assembly, a displacement in said first dimension (L) of said adjusting member (34) results in a change in the pitch of said propeller blade (12), said adjusting member (34) comprising a piston rod head which in turn comprises a first piston rod head member (50) and a second piston rod head member (52), said first piston rod head member (50) comprising a second slot portion (78), said boss (14) comprising a cavity (36) in which at least a portion of said adjusting member (34) is located, said transformation arrangement (64) comprising a slot (54) comprising a first slot portion (76) with a slot centre (C_s) extending in a slot extension direction (ED_s) which direction is arcuate with a radius of curvature (R_C) within the range of 0.2 to 0.7 times said boss diameter ($\varnothing_B$), said transformation arrangement (64) further comprising a control element (62) slidably engaged with at least said first slot portion (76), said control element (62) comprising said pin (42) characterized in that said method comprises the steps of

- introducing said first piston rod head member (50) into said cavity (36);
- introducing at said pin (42) into said cavity (36);
- rotating said blade root (38) such that said pin (42) is conducted through said second slot portion (78) and at least a portion of said first slot portion (76);

- introducing said second piston rod head member (52) into said cavity (36), and
- attaching together said first piston rod head member (50) and said second piston rod head member (52) to thereby form said first arcuate slot portion (76) such that said pin (42) is located between said first and second piston rod members (50, 52) in said first arcuate slot portion (76).

13. The method according to claim 12, wherein said control element (62) further comprises a block (58) adapted to be connected to said pin (42) wherein the method further comprises the steps of;
    - moving said first piston rod head (50, 52) away from said pin (42);
    - connecting said block (58) to said pin (42), and
    - moving said first piston rod head such that said control element (62) is adjacent to said first piston rod head member (50).

14. The method according to any one of claims 12 or 13, wherein said first piston rod head member (50) and said second piston rod head member (52) are attached together by means of a bolt joint arrangement.

CLAIMS:

1. A propeller (10) comprising a boss (14) with a boss diameter ($Ø_B$) and at least one propeller blade (12), said propeller (10) further comprising an adjusting member (34), adapted to be displaced along a first dimension (L), and a transformation arrangement (64) connecting said adjusting member (34) to said propeller blade (12) such that a displacement, in said first dimension (L), of said adjusting member (34) results in a change in the pitch of said propeller blade (12), said transformation arrangement (64) comprising a slot (54) comprising a slot portion (56) with a slot centre (C_s) extending in a slot extension direction (ED_s) which direction is arcuate with a radius of curvature (R_C), said transformation arrangement (64) further comprising a control element (62) slidably engaged with at least said slot portion (56), characterized in that said radius of curvature (R_C) is within the range of 0.2 to 0.7 times said boss diameter ($Ø_B$) and that said adjusting member comprises a piston rod head (34), wherein said slot (54) is provided on said piston rod head (34) and said piston rod head (34) comprises a first piston rod head member (50) and a second piston rod head member (52), each one of said first and second piston rod head members comprising a portion of said slot (54) and said first and second rod head member abut against each other in an abutment plane (A_P) extending substantially perpendicularly to said first dimension (L).

2. The propeller (10) according to claim 1, wherein said radius of curvature (R_C) is within the range of 0.4 to 0.6, preferably within the range of 0.45 to 0.55, times said boss diameter ($Ø_B$).

3. The propeller (10) according to claim 1 or 2, wherein said propeller (10) comprises a servo (20) located in said boss (14), said servo (20) comprising a piston (22) which is displaceable along said first dimension (L), said piston (22) being rigidly connected to said adjusting member (34).

4. The propeller (10) according to any one of the preceding claims, wherein said control element (62) comprises a block (58) and a pin (42), said block (58) comprising a block opening (60) and being slidably engaged with said slot (54), said pin (42) engaging with said block opening (60).

5. The propeller (10) according to any one of the preceding claims, wherein said slot (54) is associated with said adjusting member (34) and at least a portion of said control element (62) is rigidly connected to said propeller blade (12).

6. The propeller (10) according to any one of claims 3 to 5, wherein said adjusting member (34) comprises a piston rod (32) and a piston rod head (34), said piston rod (32) being fixedly

attached to said piston (22) and said piston rod head (34) being fixedly attached to said piston rod (32), wherein said slot (54) is provided on said piston rod head (34).

7. The propeller (10) according to any one of the preceding claims, wherein said adjusting member (34) comprises a substantially rectangular engagement region (66) comprising a first (68), second (70), third (72) and fourth (74) edge, said first (68) and third (72) edge being located on opposite sides of said engagement region (66) and extending substantially parallel to said longitudinal dimension (L), said second (70) and fourth (74) edge being located on opposite sides of said engagement region (66) and extending substantially transversal to said longitudinal dimension (L), said slot extending in said engagement region (66) from said first edge (68) to said second edge (70).

8. The propeller (10) according to claim 6, wherein said slot (54) extends in a slot extension (ED_s) direction from said first edge (68), said slot (54) having a width (S_W) extending perpendicularly to said slot extension direction (ED_s), said slot (54) comprising a first slot portion (76) and a second slot portion (78) wherein said second slot portion (78) is located downstream of said first slot portion (76) in said slot extension direction (ED_s), said first slot portion (76) having a first slot width (S_{W1}) and said second slot portion (78) having a second slot width (S_{W2}) such that said second slot portion (78) is adapted to accommodate at least one component of said control element (62).

9. The propeller (10) according to any one of the preceding claims, wherein said boss (14) comprises a cavity (36) in which at least a portion of said adjusting member (34) is located, said propeller (10) further comprising an inlet duct (37) and an outlet duct (39) which ducts both are in fluid communication with said cavity (36), the inlet duct (37) and the outlet duct (39) being interconnected outside the boss (14) for circulating a lubrication fluid through said cavity (36).

10. The propeller (10) according to any one of the preceding claims, wherein said propeller (10) comprises a plurality of propeller blades (12), each one of said plurality of propeller blades being provided with a corresponding transformation arrangement (64).

11. A vessel, characterized in that said vessel comprises a propeller (10) according to any one of the preceding claims.

12. A method for assembling a propeller (10) comprising a boss (14) with a boss diameter ($Ø_B$) and at least one propeller blade (12) comprising a blade root (38) which in turn comprises a pin (42), said propeller (10) further comprising an adjusting member (34), adapted to be

displaced along a first dimension (L), and a transformation arrangement (64) connecting said adjusting member (34) to said propeller blade (12) such that, after assembly, a displacement in said first dimension (L) of said adjusting member (34) results in a change in the pitch of said propeller blade (12), said adjusting member (34) comprising a piston rod head which in turn comprises a first piston rod head member (50) and a second piston rod head member (52), said first piston rod head member (50) comprising a second slot portion (78), said boss (14) comprising a cavity (36) in which at least a portion of said adjusting member (34) is located, said transformation arrangement (64) comprising a slot (54) comprising a first slot portion (76) with a slot centre (C_s) extending in a slot extension direction (ED_s) which direction is arcuate with a radius of curvature (R_C) within the range of 0.2 to 0.7 times said boss diameter ($Ø_B$), said transformation arrangement (64) further comprising a control element (62) slidably engaged with at least said first slot portion (76), said control element (62) comprising said pin (42) characterized in that said method comprises the steps of

- introducing said first piston rod head member (50) into said cavity (36);
- introducing at said pin (42) into said cavity (36);
- rotating said blade root (38) such that said pin (42) is conducted through said second slot portion (78) and at least a portion of said first slot portion (76);
- introducing said second piston rod head member (52) into said cavity (36), and
- attaching together said first piston rod head member (50) and said second piston rod head member (52) to thereby form said first arcuate slot portion (76) such that said pin (42) is located between said first and second piston rod members (50, 52) in said first arcuate slot portion (76).

13. The method according to claim 12, wherein said control element (62) further comprises a block (58) adapted to be connected to said pin (42) wherein the method further comprises the steps of;
    - moving said first piston rod head (50, 52) away from said pin (42);
    - connecting said block (58) to said pin (42), and
    - moving said first piston rod head such that said control element (62) is adjacent to said first piston rod head member (50).

14. The method according to any one of claims 12 or 13, wherein said first piston rod head member (50) and said second piston rod head member (52) are attached together by means of a bolt joint arrangement