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(54) **PROPELLING SYSTEM OF POWERED SHIP**

(57) A propelling system (16) of a powered ship (10) includes a support (18), outboard motor (20), guide component (34) and water inlet unit (40). The support (18) is disposed at a stern (12). The outboard motor (20) is mounted on the support (18). A blade wheel (30) is disposed at the bottom of the outboard motor (20). The axis of the blade wheel (30) is higher than a hull (14). The guide component (34) has a guide ring (36) for concealing the blade wheel (30) and a nozzle (38) connected to the

guide ring (36). The water inlet unit (40) is disposed at the stern (12) and below the support (18). The water inlet unit (40) has a water inlet hole (42) and water outlet hole (44). A water inlet channel (46) is formed between the water inlet hole (42) and water outlet hole (44). The support (18) enables the outboard motor (20) to be mounted higher. The guide component (34) and water inlet channel (46) enable water to be conveyed at low pressure and ejected at high flow rate.

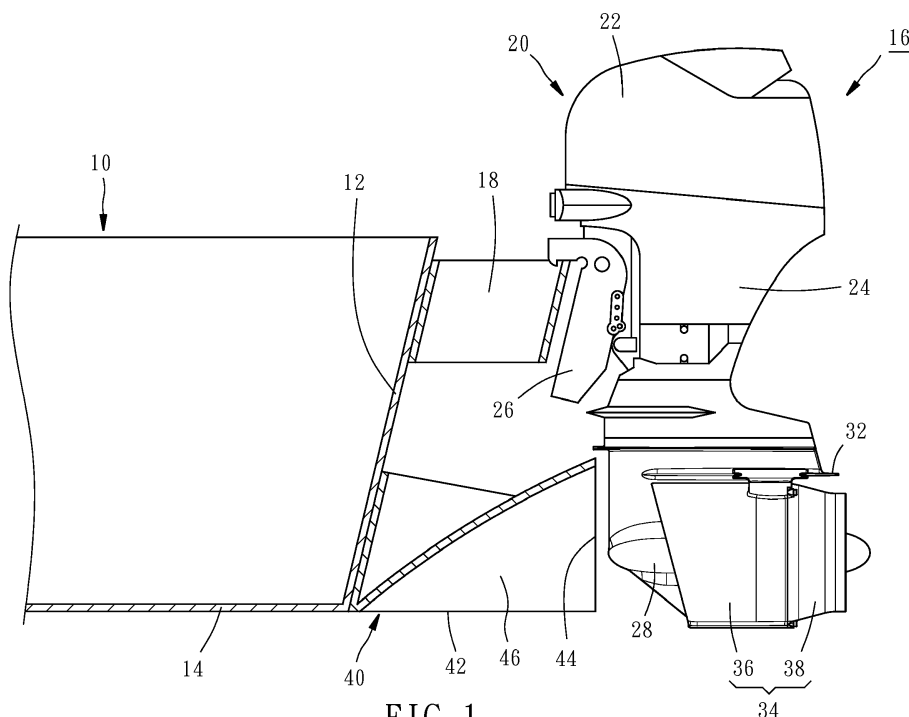


FIG. 1

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present disclosure relates to propelling systems of powered ships and, more particularly, to a propelling system conducive to enhancement of propulsion efficiency and applicable even when the ship has a shallow draft.

2. Description of the Related Art

[0002] An outboard motor is a demountable power device affixed to the stern of a ship and designed to transmit power (for example, that supplied by an internal combustion engine or a generator) to a propeller such that the propeller rotates. The rotation of the propeller causes the ship to move forward. The outboard motor is suitable for small ships sailing on rivers, lakes and coastal waters.

[0003] To ensure that the outboard motor has high propulsion efficiency, the prior art discloses immersing the propeller in water such that the propeller has a sufficiently deep draft. The prior art, however, is disadvantaged by an increase in water drag and an increase in the likelihood that the propeller hits the beds of the rivers/lakes/coastal waters or entangles itself with foreign bodies, such as plastic bags, fishing nets and waterweed, in the water. The latter disadvantage causes damage to the propeller and even marine organisms.

SUMMARY OF THE INVENTION

[0004] It is an objective of the present disclosure to provide a propelling system of a powered ship such that the propelling system is conducive to enhancement of propulsion efficiency and applicable even when the ship has a shallow draft.

[0005] In order to achieve the above and other objectives, the present disclosure provides a propelling system comprising a support, an outboard motor, a guide component and a water inlet unit. The support is disposed at a stern of the powered ship. The outboard motor is disposed at the support and has a blade wheel. The axis of the blade wheel is higher than a hull of the powered ship. The guide component has a guide ring and a nozzle. The guide ring conceals the blade wheel. The nozzle is connected to the back of the guide ring and disposed proximate to the blade wheel. The water inlet unit is disposed at the stern of the powered ship and below the support. A water inlet hole is disposed at the bottom of the water inlet unit. The water inlet unit has a water outlet hole opening toward the guide ring. A water inlet channel is formed between the water inlet hole and the water outlet hole.

[0006] Therefore, as soon as the blade wheel rotates, water in the hull is admitted to the water inlet channel

through the water inlet hole of the water inlet unit, then conveyed to the guide ring through the water outlet hole of the water inlet unit, and finally subjected to commutation performed by the blade wheel before being ejected from the nozzle, enabling water to be conveyed at low pressure and ejected at high flow rate. Therefore, the propelling system of a powered ship according to the present disclosure is conducive to enhancement of propulsion efficiency and applicable even when the ship has a shallow draft.

[0007] Fine structures, features, assembly or operation of the propelling system of the present disclosure are illustrated by embodiments and described below. However, persons skilled in the art understand that the description below and the specific embodiments are illustrative of the present disclosure rather than restrictive of the claims of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

FIG. 1 is a schematic view of how a propelling system is mounted on a powered ship according to the present disclosure.

FIG. 2 is a partial cross-sectional view of the propelling system of the present disclosure.

FIG. 3 is a partial rear view of the propelling system of the present disclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0009] Directional wording used hereunder must be interpreted in accordance with the accompanying drawings. Identical reference numerals used hereunder and in the accompanying drawings denote identical or similar components or structural features thereof.

[0010] Referring to FIG. 1 through FIG. 3, a propelling system **16** of the present disclosure comprises a support **18**, an outboard motor **20**, a guide component **34** and a water inlet unit **40**.

[0011] The support **18** is fixed to a stern **12** by welding or by screws and disposed proximate to the top of the stern **12**.

[0012] The outboard motor **20** has a casing **22** for concealing its engine (which is disclosed by prior art and is not shown in the accompanying drawings). An extension box **24** is connected to the casing **22** from below and adapted to contain a driving shaft (which is disclosed by prior art and is not shown in the accompanying drawings). A bracket **26** is disposed on the front of the extension box **24**. The outboard motor **20** is hung on the support **18** by the bracket **26**. A gear box **28** is connected to the extension box **24** from below and adapted to connect to the driving shaft. An eddy-preventing baffle **32** is disposed between the gear box **28** and the extension box **24**. A blade wheel **30** is connected to the gear box **28** from behind, as shown in FIG. 2. The axis of the blade

wheel **30** is higher than a hull **14**. Therefore, power generated by the engine is transmitted to the gear box **28** by the driving shaft. The power undergoes a deceleration process performed by the gear box **28** before being transmitted to the blade wheel **30**, enabling the blade wheel **30** to rotate.

[0013] The guide component **34** has a guide ring **36** and a nozzle **38**. The guide ring **36** is disposed at the eddy-preventing baffle **32** of the outboard motor **20** and conceals the blade wheel **30** completely and the gear box **28** partially. The nozzle **38** is connected to the back of the guide ring **36** by screws and disposed proximate to the blade wheel **30**.

[0014] The water inlet unit **40** is fixed to the stern **12** by welding or by screws and disposed below the support **18**. A water inlet hole **42** is disposed at the bottom of the water inlet unit **40**. The water inlet hole **42** is substantially as high as the hull **14**. A water outlet hole **44** opening toward the guide ring **36** is disposed on the back of the water inlet unit **40**. A water inlet channel **46** extending obliquely is formed between the water inlet hole **42** and the water outlet hole **44**.

[0015] Therefore, as soon as the blade wheel **30** rotates, water in the hull **14** is admitted to the water inlet channel **46** through the water inlet hole **42** of the water inlet unit **40**, then conveyed to the guide ring **36** through the water outlet hole **44** of the water inlet unit **40**, and finally subjected to commutation performed by the blade wheel **30** before being ejected from the nozzle **38**, enabling water to be conveyed at low pressure and ejected at high flow rate. To slow down or stop a ship **10**, all it needs to do is control the blade wheel **30** to decelerate, stop and rotate reversely.

[0016] In conclusion, compared with the prior art, the propelling system **16** of the present disclosure has advantages as follows:

1) First, the support **18** enables the outboard motor **20** to be mounted higher. Second, the rotation of the blade wheel **30** is confined to the guide ring **36**. The first and second advantages together not only reduce the likelihood that the blade wheel **30** hits riverbeds or entangles itself with foreign bodies and thus gets damaged, but also reduce the likelihood that the blade wheel **30** injures the fish, swimmers or divers in the vicinity of the hull **14**. Therefore, the propelling system **16** of the present disclosure is applicable to the ship **10** with a shallow draft and rescue ships **10**.

2) When the propelling system **16** of the present disclosure is in operation, water is admitted to the water inlet unit **40**, then conveyed from the water inlet unit **40** to the guide ring **36**, and finally subjected to the commutation performed by the blade wheel **30** before being ejected from the nozzle **38**. Therefore, eddies are unlikely to occur behind the stern **12**, thereby enhancing propulsion efficiency and augmenting controllability of the ship **10**.

Claims

1. A propelling system (16) of a powered ship (10), the powered ship (10) having a stern (12) and a hull (14), the propelling system (16) comprising:

a support (18) disposed at the stern (12);
an outboard motor (20) disposed at the support (18) and having a blade wheel (30), wherein an axis of the blade wheel (30) is higher than the hull (14);

a guide component (34) having a guide ring (36) and a nozzle (38), the guide ring (36) concealing the blade wheel (30), the nozzle (38) being connected to a back of the guide ring (36) and disposed proximate to the blade wheel (30); and
a water inlet unit (40) disposed at the stern (12) and below the support (18), having a water inlet hole (42) formed from below, and having a water outlet hole (44) opening toward the guide ring (36), wherein a water inlet channel (46) is formed between the water inlet hole (42) and the water outlet hole (44).

2. The propelling system (16) of a powered ship (10) according to claim 1, wherein the water inlet hole (42) is as high as the hull (14).

3. The propelling system (16) of a powered ship (10) according to claim 1, wherein the outboard motor (20) further has a gear box (28) connected to the blade wheel (30) and partially concealed by the guide ring (36).

4. The propelling system (16) of a powered ship (10) according to claim 1, wherein the guide ring (36) is disposed at an eddy-preventing baffle (32) of the outboard motor (20).

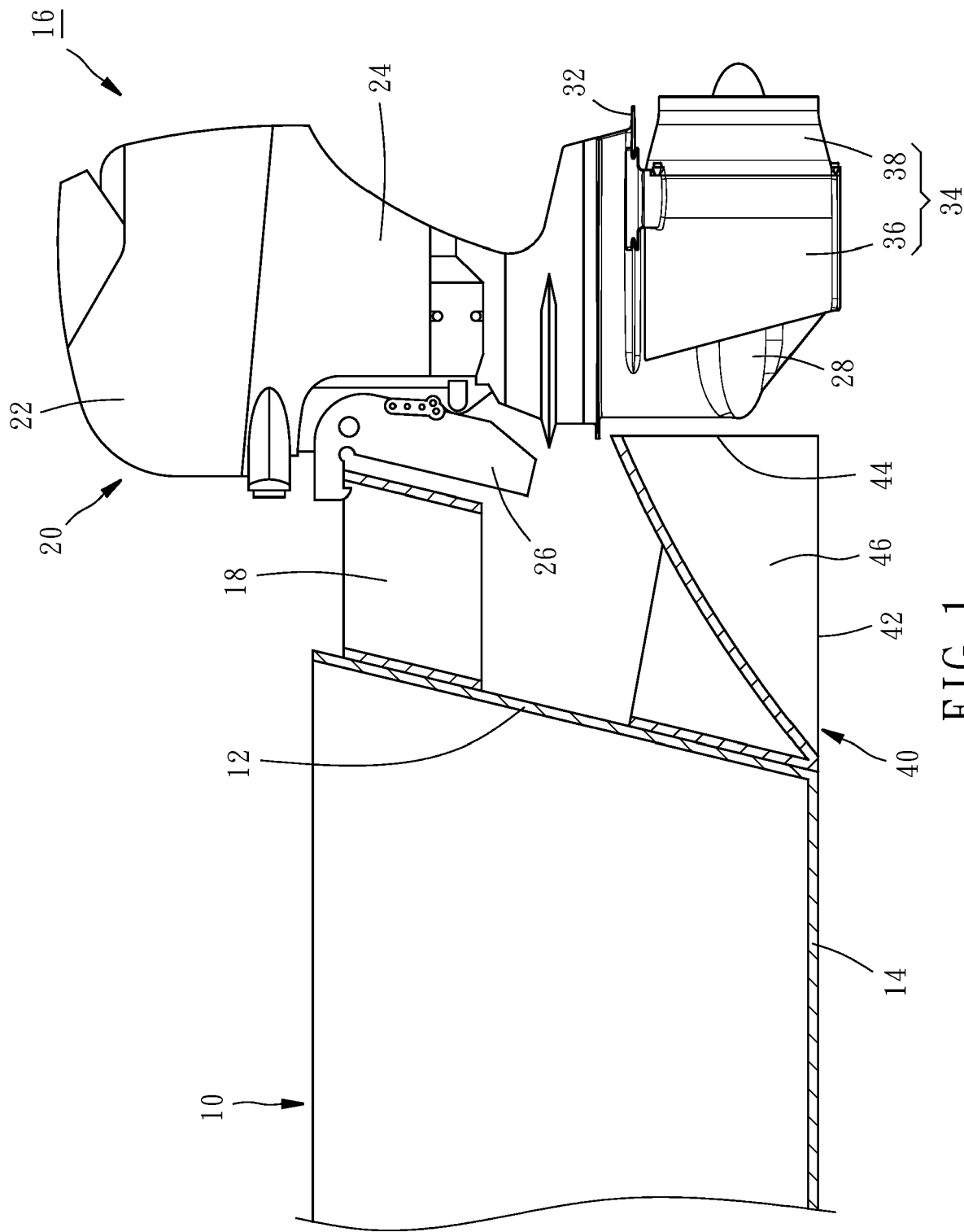


FIG. 1

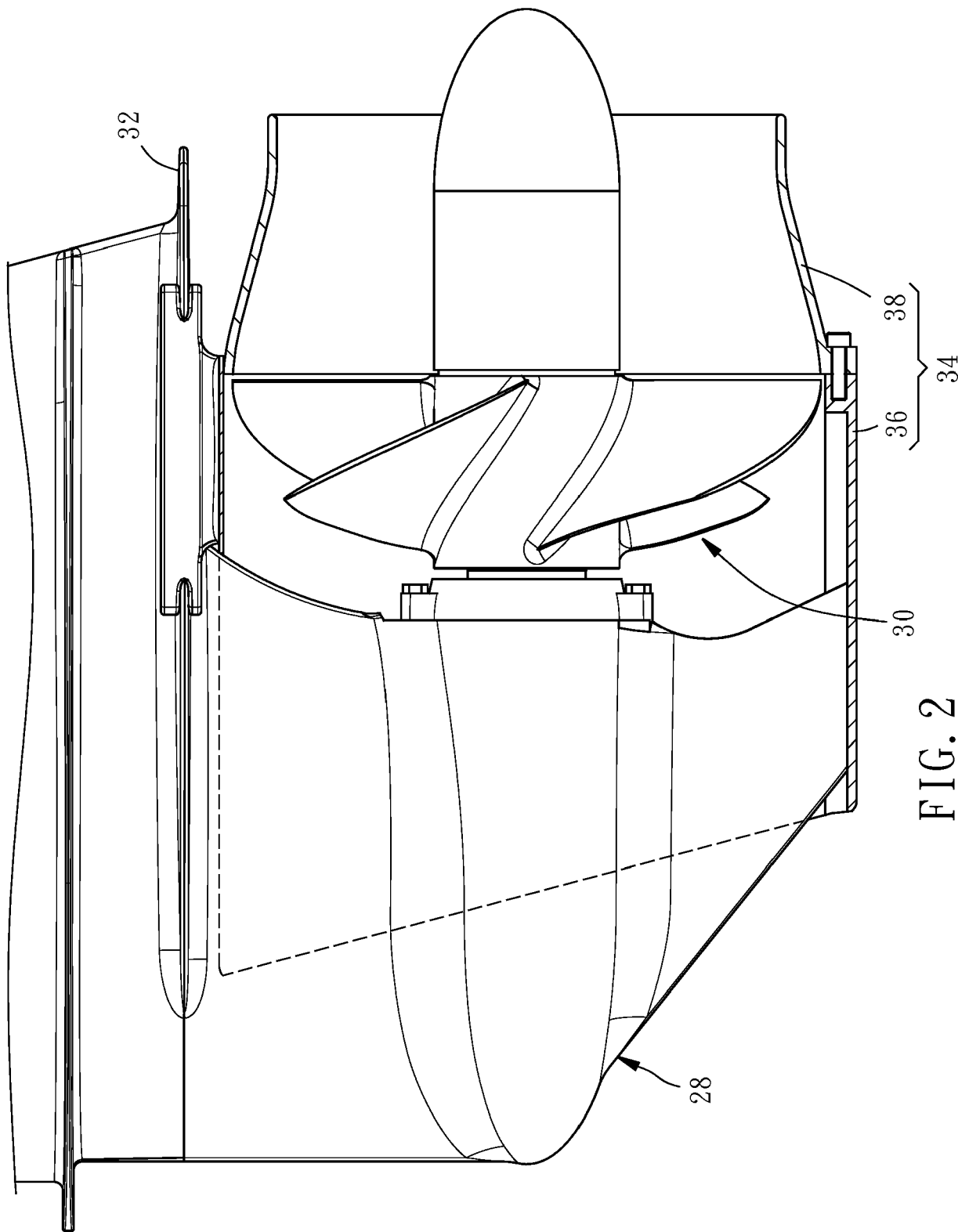


FIG. 2

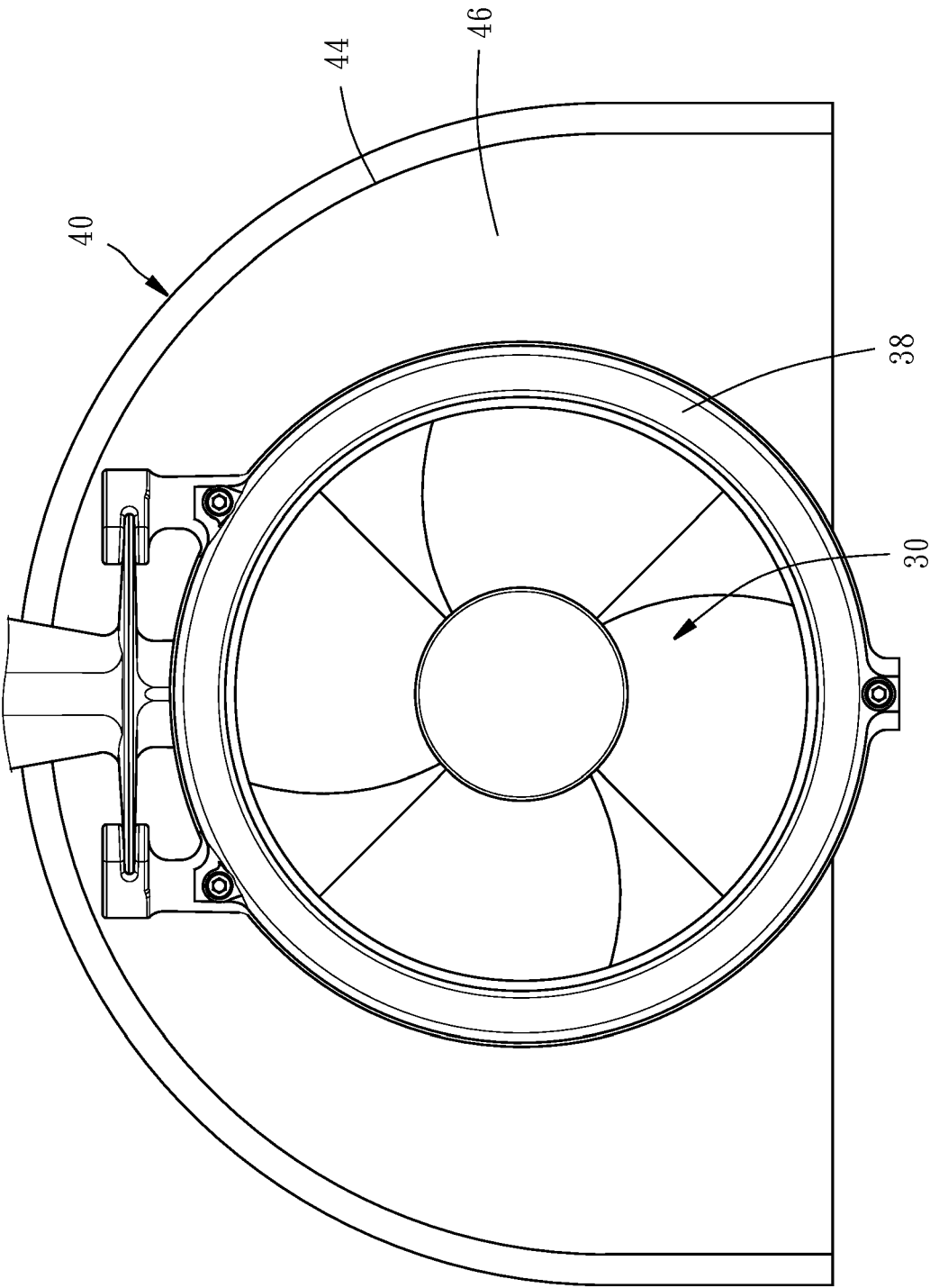


FIG. 3



EUROPEAN SEARCH REPORT

Application Number
EP 19 17 2233

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 281 996 A (MOURARET MICHEL) 4 August 1981 (1981-08-04) * abstract; figure 1 *	1-4	INV. B63H11/00 B63H23/32
X	RU 2 671 592 C1 (KOLMYKOV M V) 2 November 2018 (2018-11-02) * figure 1 *	1-4	
			TECHNICAL FIELDS SEARCHED (IPC)
			B63H B63J B63B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 30 October 2019	Examiner Balzer, Ralf
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	

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 19 17 2233

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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30-10-2019

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