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F1S S28B1

(56) Documents Cited:
GB 2110763 A **WO 2004/007953 A1**
WO 1981/002329 A1 **DE 019949828 A1**
DE 010031310 A1 **FR 002487918 A**
US 6759757 A **US 20020195823 A1**

(58) Field of Search:
UK CL (Edition X) **F1S, F1T**
INT CL **F03B**
Other: **EPODOC, WPI**

(54) Abstract Title: **Floating marine current mill**

(57) A marine current mill comprises a floating paddle wheel 1 attached through a structure 4 to a mooring 8. The movement of waves causes the wheel to rotate, producing mechanical energy which can be converted into electrical power using a generator. Waterproof compartments 6 in the paddle wheel 1 keep the device afloat. The mill may also be used to produce hydrogen or provide desalination of sea water.

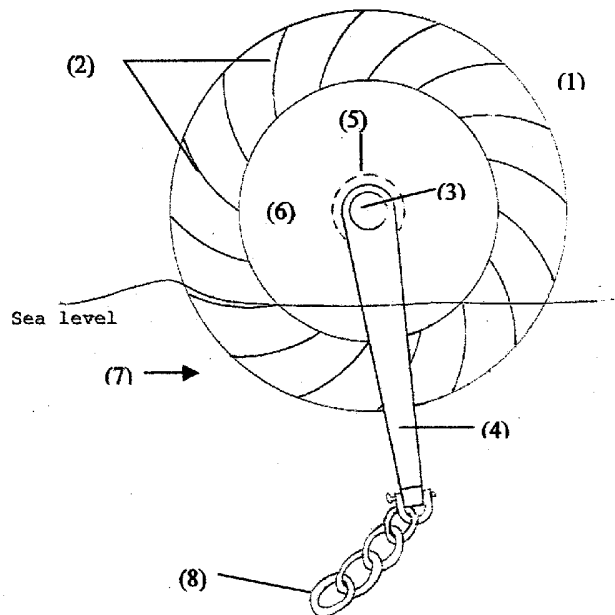


Figure 1

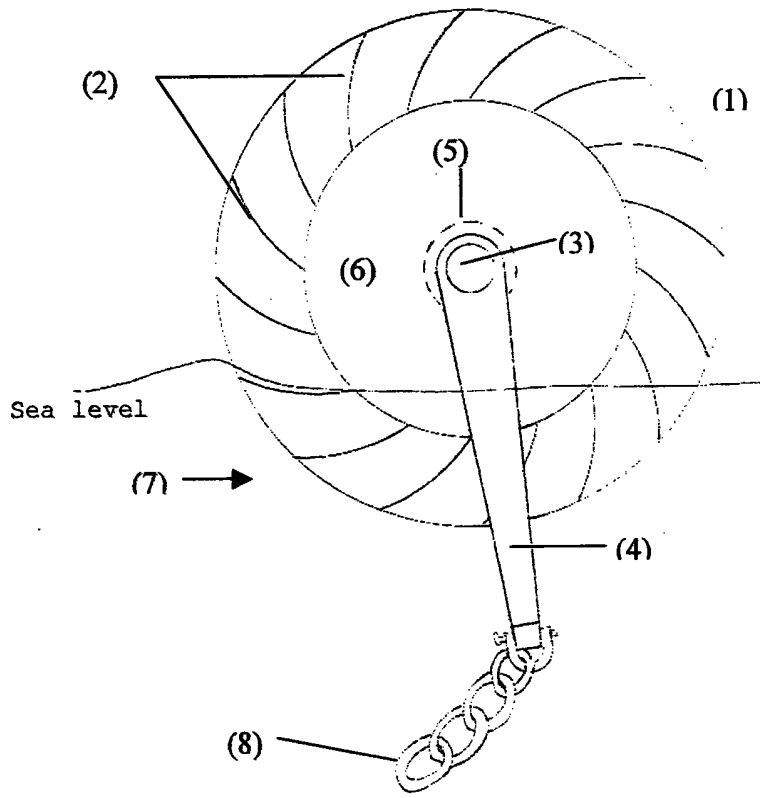


Figure 1

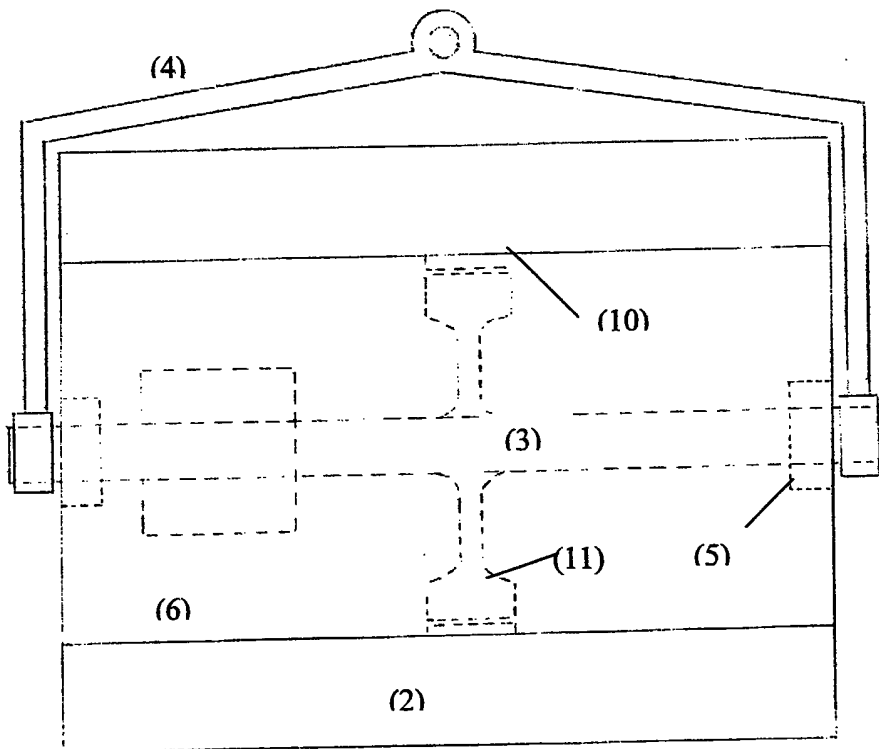


Figure 2

Floating Marine Current Mill

The present invention is a device producing power by transformation of the kinetic energy of marine or river current. It is characterized by getting at least one paddle wheel with its axis orientated parallel to the sea surface and perpendicular to the current flow. This paddle wheel floats itself so that his paddles below dive in the water, and his upper paddles get out of the water.

The paddle wheel which can freely rotate about his axis is attached by a structure which is linked to a mooring tightly maintaining it in position and preventing the whole device to drift with the current.

Thus the paddle wheel rotates by action of the water current which pushes on his submerged paddles.

A power generator driven by the wheel motion converts a part of the rotation energy of the wheel in electric power. The generator may be direct driven or not, inside or outside the paddle wheel, set on the structure. The electric power is eventually exported to the shore in order to be connected to the grid.

In other applications, the device can eventually be used for electrolysis of water in order to produce hydrogen or to produce fresh water from sea water for instance.

The already known devices for this usage are currently underwater and fully submerged devices, using one or several horizontal shaft propellers rotating in a perpendicular plane to the current.

Unfortunately, these systems need big infrastructures, set on the seabed for maintaining the propeller in the water. These infrastructures are costly to carry out, to maintain and dismantle while, the device itself, being submerged, is costly to manufacture.

The purpose of this invention is to drive these costs down by carrying out a device floating at the surface of the sea. Thus the device can easily be moved, removed and maintained. This floating device is regularly moored and doesn't need other fixed infrastructure than an anchored device on the seabed. Another advantage is that the device by floating itself instead of being supported by floating pontoons is more resistant and less costly.

The invention will now be described solely by way of example by referring to the accompanying drawings, this drawings being non restricted of the invention itself as described above:

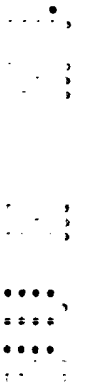
Figure 1 shows the device from the side

Figure 2 shows the device from the top

Figure 1 shows an exemple of the device including a paddle wheel (1) with 16 paddles (2) and a waterproof compartment (6). The shaft (3) is maintained by a structure (4) through two bearings (5) allowing the paddle wheel (1) to rotate freely activated by the current (7) while the whole device is attached to a mooring (8).

Figure 2 shows a solution of electric generator by direct drive even though other types of generators can be used. It includes permanent magnets (10) set on the interior of

cylinder (6) while the stator (11) is set to the shaft (3) and the mechanical structure (4).



CLAIMS

1. A floating marine current mill powered by the marine or river current producing energy by transformation of the kinetic energy of the current. It has at least a floating paddle wheel orientated perpendicular to the current so that his paddles below dive in the water while the upper paddles get out of the water. The paddle wheel is tightly attached through a structure to a mooring preventing it to be drifted by the stream.

2. A floating marine current mill according to claim 1 in which the mechanical power is converted to electrical power by a generator driven by the paddle wheel rotation, the generator being direct driven or not.

3. A floating marine current mill according to claim 1 and 2 floating thanks to at least one waterproof compartment in the paddle wheel itself.

4. A floating marine current mill according to claim 1 eventually allowing electrolysis of water in hydrogen or production of fresh water from sea water.



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Application No: GB0525304.2

Examiner: Catherine Allen

Claims searched: 1 to 4

Date of search: 7 February 2006

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-3	DE19949828 A1 QUASCHNER see WPI Abstract Accession No. 2001-301345 and figure 1
X	1-3	GB2110763 A DASHWOOD see page 3, lines 117-122 and figures
X	1-3	WO1981/02329 A1 WINCRANTZ see figures 1-3
X	1-3	FR2487918 A TOUTENKAMON see WPI Abstract Accession No. 1982-C5743E and figures
X	1 & 2	US2002/195823 A1 AGUIRRE see abstract and figure 1
X	1 & 2	DE10031310 A1 TRUOEL see WPI Abstract Accession No. 2000-040571 and figures
X	1 & 4	US6759757 A CAMPBELL see abstract
A	-	WO2004/007953 A1 KOBASHIKAWA

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :



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F1S; F1T

Worldwide search of patent documents classified in the following areas of the IPC

F03B

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI