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Remarks:
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(54) **Generator device**

(57) Device which is arranged to be used as a generator, comprising a tubular housing (6) with a feed opening and a discharge opening, at least one rotor (7, 13) arranged to be driven at a high rotation speed arranged in the tubular housing (6), wherein the rotor (7, 13) comprises a hub (10, 14) on which a number of blades (11, 15) are arranged characterized in that the blades (11, 15) are spiral-shaped and increase in effective surface area in the direction (P) in which the water is guided through the device.

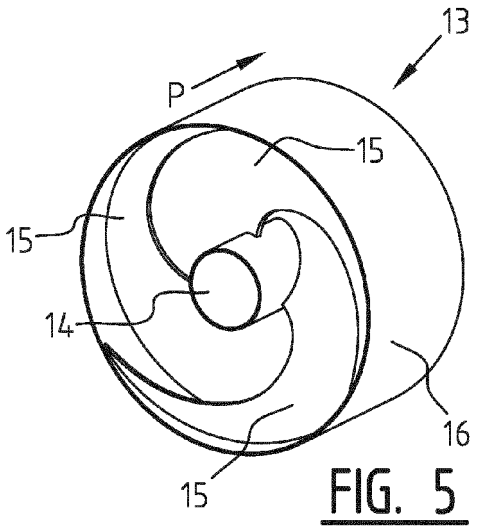

FIG. 5

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Description

[0001] The invention relates to a device which is arranged to be used as a generator.

[0002] According to the invention the rotor comprises a number of blades. The blades are spiral-shaped and their effective surface area increases in the direction in which the water is guided through the device.

[0003] Preferably the rotor comprises a cylindrical casing, which casing lies sealingly against the inner wall of the tubular housing.

[0004] In a preferred embodiment of the device according to the invention a number of rotors are arranged successively in the tubular housing as seen in axial direction.

[0005] In yet another embodiment of the device according to the invention the spiral-shaped blades taper in the direction in which the water is guided through the device from the hub toward the casing.

[0006] In yet another embodiment of the device according to the invention the spiral-shaped blades taper in the direction in which the water is guided through the device from the casing toward the hub.

[0007] The device according to the invention can further comprise a generator coupled to the pump rotor. It hereby becomes possible to generate energy, for instance by having water flow from a higher level to a lower level.

[0008] These and other features of the invention are further elucidated with reference to the accompanying figures.

Figure 1 shows a pumping station having therein a sinking pump according to the invention.
Figures 2-4 show a first embodiment of a pump rotor for a sinking pump.
Figures 5-7 show a second embodiment of a pump rotor.

[0009] Figure 1 shows a pumping station 1. This pumping station 1 has a sinking pump 2. Sinking pump 2 pumps surface water 3 from a lower level over a dike body 4 to surface water 5 at a higher level. The sinking pump can also be used as generator, for instance in the embodiment according to figure 1. Motor 9 must here be replaced with a generator. Surface water 5 can then be guided from the higher level, through the sinking pump to lower level 3. Pump rotor 7 is herein driven, and thereby the generator.

[0010] A hybrid form with a motor 9 and a generator is also possible.

[0011] Sinking pump 2 has a tubular housing 6 in which three pump rotors 7 are arranged on an axial drive shaft 8. Drive shaft 8 is driven by a motor 9.

[0012] Figure 2 shows a perspective view of a pump rotor 7 for a sinking pump 2 according to the invention. Pump rotor 7 has a hub 10 on which a number of blades 11 are arranged. Arranged around these blades 11 is a cylindrical casing 12 which is attached to the blades. This cylindrical casing 12 has a diameter which is substantially equal to the internal diameter of tubular housing 6 of sinking pump 2. A seal can optionally be provided between cylindrical casing 12 and tubular housing 6. Figure 3 shows a front view of pump rotor 7, i.e in pumping direction P, where the water first comes into contact with pump rotor 7. As can be seen, blade 11 starts from hub 10 and then tapers spirally to the rear side of pump rotor 7. Figure 4 shows the view in pumping direction P on the rear side of pump rotor 7. It will be apparent that the effective surface area of blades 11 increases from hub 10 toward casing 12.

[0013] Figures 5-7 show a second embodiment of a pump rotor 13. Also present here is a hub 14 on which blades 15 are arranged. The blades are enclosed by a cylindrical casing 16. As shown clearly in figure 6 and figure 5, blades 15 are spiral-shaped and taper from casing 16 to hub 14. As shown in figure 7, the surface area of blades 15 increases here in the pumping direction P.

Claims

1. Device which is arranged to be used as a generator, comprising:

   a tubular housing (6) with a feed opening and a discharge opening;
   at least one rotor (7, 13) arranged to be driven at a high rotation speed arranged in the tubular housing (6);
   wherein the rotor (7, 13) comprises a hub (10, 14) on which a number of blades (11, 15) are arranged;
   characterized in that the blades (11, 15) are spiral-shaped and increase in effective surface area in the direction (P) in which the water is guided through the device.

2. Device as claimed in claim 1, wherein the blades (11) start from the hub (10) and then taper spirally to the rear side of the rotor (7).

3. Device as claimed in claim 1 or 2, wherein the rotor (7, 13) comprises a cylindrical casing (12, 16), which casing lies (12, 16) sealingly against the inner wall of the tubular housing (6).

4. Device as claimed in claim 3, wherein the spiral-shaped blades (11) taper in the direction (P) in which the water is guided through the device from the hub (10) to the casing (12).

5. Device as claimed in claim 3, wherein the spiral-shaped blades (15) taper in the direction (P) in which the water is guided through the device from the casing (16) to the hub (14).

6. Device as claimed in any of the foregoing claims, wherein a number of rotors (7, 13) are arranged successively in the tubular housing (6) as seen in axial direction.

7. Device as claimed in any of the foregoing claims, comprising a generator (9) coupled to the rotor (7, 13).

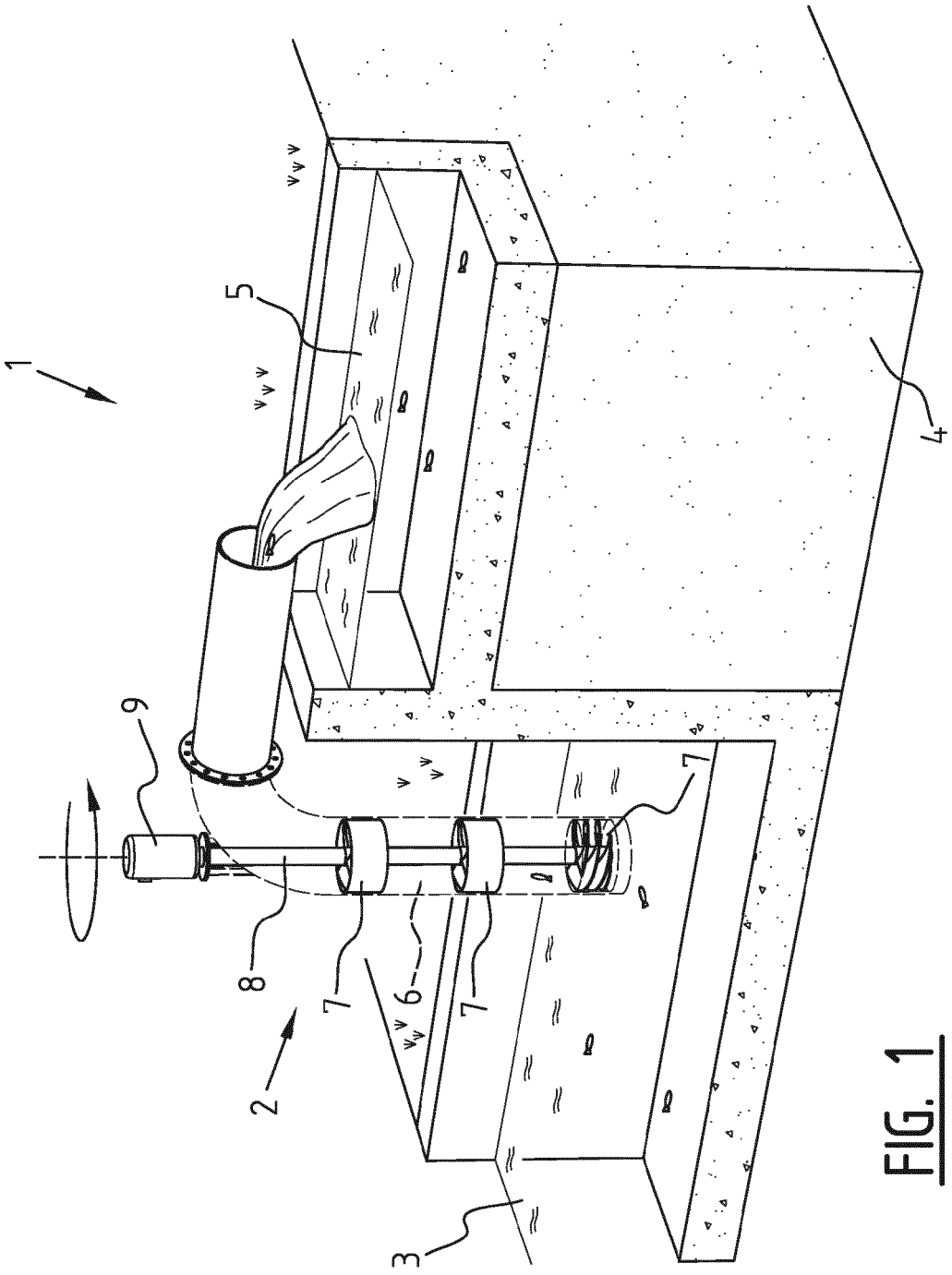

FIG. 1

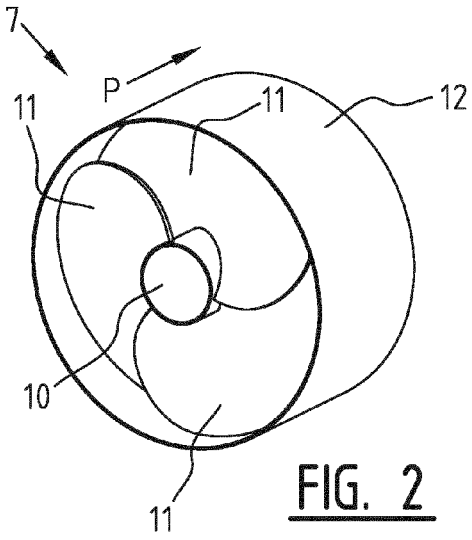

FIG. 2

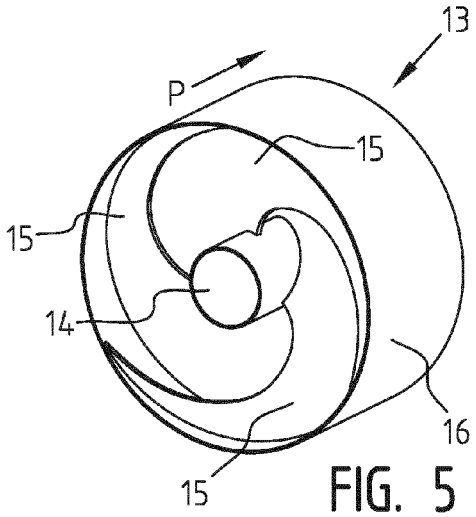

FIG. 5

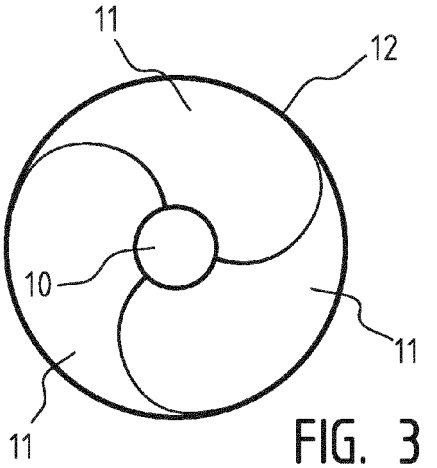

FIG. 3

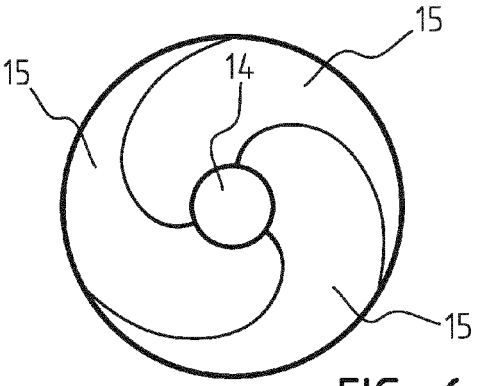

FIG. 6

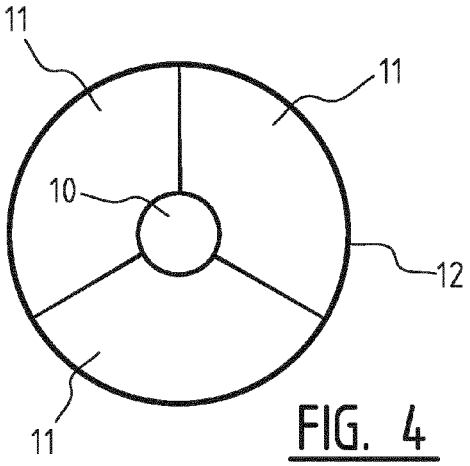

FIG. 4

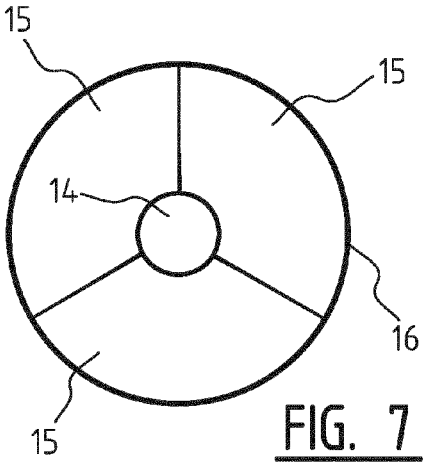

FIG. 7