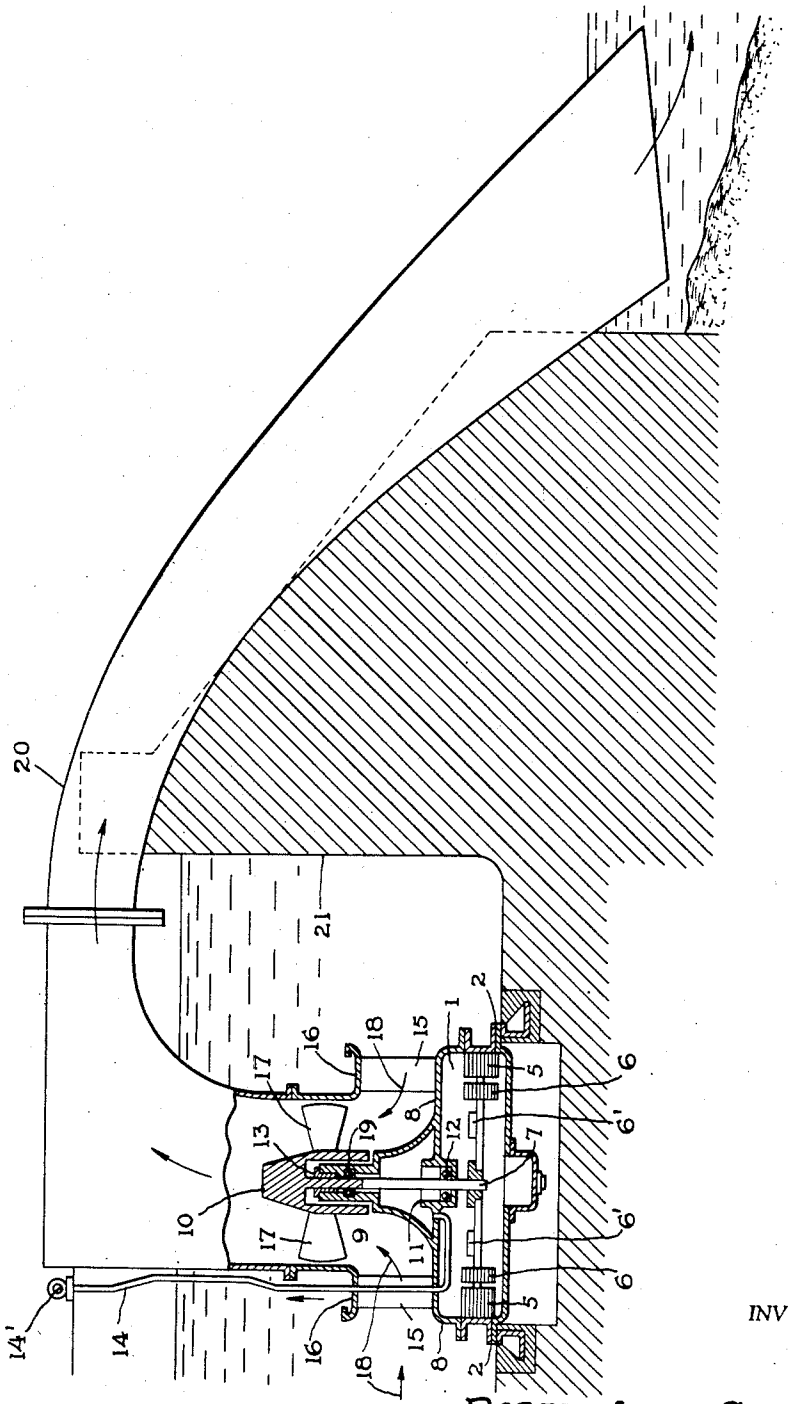
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HYDRO-ELECTRIC TURBO-GENERATOR

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HYDRO-ELECTRIC TURBO-GENERATOR

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3 Claims. (Cl. 290—52)

The invention relates to a hydro-electric turbo-generator having a vertical axis designed to be installed at the upstream side of a dam which does not require extensive civil engineering work, and the generator of which does not incur the risk of untimely overheating.

Hitherto it has been necessary, whatever may be the manner of operating a turbo-generator, to carry out rather extensive civil engineering work, particularly in order to establish the support.

According to the present invention the turbo-generator is constituted by a mono-block assembly comprising a casing enclosing the generator, on top of which the vertical axis turbine is mounted, the lower portion of the casing having the form of a base designed to rest on the bottom, and the upper portion of the casing having a profile suitable for guiding the water upwardly towards the vanes of the turbine.

This mono-lock assembly will now be described more in detail with reference to an embodiment, given by way of example, and illustrated in the accompanying drawing. In the course of the following description moreover supplementary features of the invention will become apparent.

The single figure is a vertical section on a plane through the axis of the turbine, of a mono-block assembly according to the invention.

The turbo-generator represented in the drawing comprises a lower casing **1** resting at the bottom directly by means of a flange **2** on a suitable anchorage.

The fitting can be effected quickly, and contrary to the usual case, it is not necessary to carry out extensive work either for fitting the draft tube or for the keying-up of the different elements. The casing **1** has the form of a base which requires merely an approximately plane and rigid site for being installed.

It will be understood that in addition various types of fixing members, such as bolts, may be provided for assuring that the assembly is kept at rest on its anchorage.

The casing **1** encloses the generator which comprises a stator **5** and a rotor **6**. The rotor **6** is keyed on the shaft **7** of the turbine.

The upper portion **8** of the casing isolates the generator from the flow of water; this portion is extended by a body of rotation **9** the profile of which lines up with the runner body **10** of the turbine.

The element **9** is hollow and the shaft **7** passes through it. It may enclose a cup **11** in which a bearing **12** and a gland (not shown) may be mounted.

The water which may leak through the gland **13** situ-

ated in the runner body **10** arrives at the interior of the body of rotation **9**, from where it can be discharged by a conduit **14** connected to a pump set **14'**.

The stator vanes **15** of the turbine may be situated between the portion **8** of the casing **1** and a speed ring **16** surrounding the assembly of the runner body **10** and runner vanes **17** of the turbine.

During the operation of the turbine, the air churned up by the rotor **6** in the casing **1** comes into contact with the portion **8** of the casing where it is cooled since the flow of water in the direction of the arrows **18** is guided by the portion **8** at its entry into the turbine. Accordingly there is no risk of overheating of the generator.

Moreover, if desired, paddles **6'** may be provided on the rotor **6** which accelerate the circulation of the air, and direct the same towards the upper portion of the casing **1**.

Finally it should be noted that the bearings **12** and **19** of the turbine shaft **7** are relieved in the course of operation of the turbine owing to the fact that the flow is upwardly directed. This is, by the way, a factor favourable to the fitting of the assembly on the seat; for the water flow does not produce a reaction vertically downward on said seat.

It will be understood that the invention is not limited to the embodiment herein described, the details of which may be modified without departing from the scope of the invention. In particular, the turbo-generator is supplemented by any necessary accessory, for example a draft tube **20** may pass over the crest of the dam **21** or through the upper wall of the dam **21**.

What I claim is:

1. A hydro-electric turbo-generator having a vertical axis, constituted by a mono-block assembly comprising a casing enclosing the generator, on top of which the vertical axis turbine is mounted, the lower portion of the casing having the form of a base designed to rest on the bottom beneath the surface of the water, and the upper portion of the casing having a profile suitable for guiding the water upwardly towards the vanes of the turbine.

2. A turbo-generator according to claim 1, wherein the casing has its profiled upper portion extended to line up with runner body of the turbine.

3. A turbo-generator according to claim 1, wherein the stator vanes of the turbine are mounted upon the upper portion of the generator casing.

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