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File Number: T 0451/89 - 3.2.4  
Application No.: 84 901 939.3  
Publication No.: 0 179 057  
Title of invention: CONVERSION OF MOLECULAR ENERGY INTO POWER

Classification: F01D 1/00

DECISION  
of 1 April 1993

Applicant: BOLESTA, Dymtro

Headword: Power generator/BOLESTA

EPC Articles 71(2), 83, 117(1)(a) and 133(2)

Keyword: "Insufficient disclosure of the invention"  
"Oral proceedings and taking of evidence without the duly informed professional representative"  
"Taking of evidence by hearing the party"

Catchwords

"Taking of evidence by hearing the party is possible without the presence of the duly informed professional representative";

"A person as specified in Article 133(2) EPC cannot himself act as a professional representative during oral proceedings before the Board";

"The knowledge of a person skilled in the art in the technical field of physics and thermodynamics is at least based on the generally accepted laws of thermodynamics".



Case Number : T 0451/89 - 3.2.4

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.4  
of 1 April 1993

**Appellant :** BOLESTA, Dmytro  
9 Jessie Street  
Sunshine, VIC 3020 (AU)

**Representative :** Simpson, Ronald Duncan Innes  
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Northumberland House  
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**Decision under appeal :** Decision of the Examining Division of the  
European Patent Office dispatched on 28 February  
1989 refusing European patent application  
No. 84 901 939.3 pursuant to Article 97(1) EPC.

**Composition of the Board :**

**Chairman :** C.A.J. Andries  
**Members :** M.G. Hatherly  
J.C.M. De Preter  
P. Petti  
J.-P.B. Seitz

### Summary of Facts and Submissions

- I. European patent application No. 84 901 939.3, filed on 24 May 1984 as PCT/AU 84/00090 and published under the publication number WO 85/00266, was refused by a decision of the first instance dispatched on 28 February 1989. The decision was based on Claims 1 to 6 filed with the letter of 11 November 1988.
- II. In its decision the Examining Division stated that the subject-matter of Claim 1 lacks clarity contrary to the requirements of Article 84 and thus 83 EPC. According to Claim 1 heat is directly converted into power, defying thereby the Second Law of Thermodynamics which is actually a postulate and thus based on practical experience. The enervation of such a postulate must be based on reproducible tests and not only on theoretical assertions. The Applicant was not able to produce any validated test results justifying the conclusion that the Second Law of Thermodynamics was defied. The invitation to give a demonstration at the EPO was not taken up. A claim defying this thermodynamic law is considered as based on a false assumption.
- III. An appeal was lodged against the decision on 25 April 1989. The appeal fee was paid on 27 April 1989 and the Statement of Grounds of Appeal submitted on 4 July 1989.
- IV. In the Statement of Grounds the Appellant quoted the Second Law (or postulate) of Thermodynamics as formulated by Zemansky, namely that "No engine has ever been developed that converts the heat extracted from one reservoir into work without rejecting some heat to a reservoir of a lower temperature". Since the law is based on experience it is of a statistical and not an exact nature, moreover nature constantly violates this

law. Just because no engine has yet been built, this fact does not prove that such an engine cannot be built. Zemansky in referring only to the thermal cyclic process is correct in stating that it is impossible to drive a ship across the ocean by extracting heat from the ocean or to run a power plant by extracting heat from the surrounding air. The opinion of the Appellant is that this situation changes completely when instead the thermal cyclic process the process of this invention is employed. This process of the invention which converts heat into work and copies nature provides means by which a power plant can be run by heat extracted from the atmosphere or water. An example of direct conversion of heat into work without involving the thermic cyclic process is a hydrogen, helium, hot-air or hot-water balloon (see page 2 of the Statement of Grounds). In a hot-air balloon the supplied heat can be practically reduced to zero by proper insulation of the skin of balloon. The invention does not contradict any physical law and the postulate expressed as the Second Law of Thermodynamics, without reasoning if it is correct or not, does not apply to the invention as well as it does not apply to the conversion of heat into work when the balloon performs work.

The Appellant continues in his Statement of Grounds by explaining the subject-matter of the application on the basis of an energy comparison, comparing the initial energy at the entry of a divergent channel with the total energy after the fluid has passed the channel, wherein the total energy is the energy generated as power plus the energy contained by the fluid and he concluded that the additional energy must be covered by the heat extracted from the fluid. In the channel fluid is subjected to a special process in which heat is extracted from the fluid in exact required quantity and

is directly converted to mechanical energy. The process takes place only when the rotor rotates.

- V. In a letter dated 15 March 1993 the Representative of the Appellant put forward the main request (R.I) that the impugned decision be set aside and a patent be granted on the basis of the following documents:

Claims 1 to 14 filed with the confirmation copy of the letter of 15 March 1993;

Description pages 1b to 20b filed with the confirmation copy of the letter of 15 March 1993; and

Drawings sheets 1/3 to 3/3 filed with the confirmation copy of the letter of 15 March 1993.

The Representative of the Appellant also put forward five auxiliary requests in a letter dated 22 March 1993, namely:

First auxiliary request (R.II): Grant of a patent with Claims 1 to 14 filed with the confirmation copy of the letter of 22 March 1993 (defined in that letter as auxiliary request 2).

Second auxiliary request (R.III): In the event that some of the claims of the main request (or subsidiarily the claims of the first auxiliary request) are considered allowable, but others are not, then the grant of a patent on the basis of the allowable claims with the other, unallowable claims deleted.

Third auxiliary request (R.IV): In the event that the claims of the main request (or subsidiarily the claims of the first auxiliary request) are found to contain allowable subject-matter, but still require revision of

wording, then remittal to the Examining Division is requested for further prosecution to provide opportunity to make the necessary amendments.

Fourth auxiliary request (R.V): In the event that one or more claims of the main request (or subsidiarily the claims of the first auxiliary request) are found to be allowable, but the description is inconsistent therewith, then remittal to the Examining Division is requested to provide opportunity to amend the description.

Fifth auxiliary request (R.VI): That the Appeal Board use their discretion to propose amendments on the basis of which the application be allowed for grant.

VI. Claim 1 of the main request (R.I) reads as follows:

"A power generator characterised in that it generates power by direct conversion of heat into power without involving a thermal cyclic process and said power generator comprises: a rotor, being a power generating element, provided with blades arranged so that tapered channels are formed between them which have their wider ends located in more forward position than their narrower ends, when relating to the direction of rotation at which power is generated, for conducting a fluid through said channels in which static pressure, which said fluid exerts upon the walls of said channels when it flows, distributes so that it forms a force which has an ability, when it performs work, to reduce molecular velocity of said fluid, which is noticeable as an extraction of heat from fluid, and because such force has the Newtonian reaction of molecular nature which is not noticeable, as normally such kind of forces so have, this force is herein defined as a reactionless appearing force, abbreviated RAF, so when said RAF drives the

rotor and generates power then heat is extracted from said fluid, by said reduction of molecular velocity, and this extracted heat is directly converted into said power so that fluid issues from said rotor correspondingly cooled."

Claim 11 of the main request (R.I) is the same as Claim 11 of the first auxiliary request (R.II) and reads as follows:

"The method of effecting the cooling of a fluid characterised in that the said cooling is effected by the movement of a solid surface upon which static pressure of a fluid acts which comprises: inducing a fluid to flow through a tapered channel and utilising the force formed by said static pressure acting upon the walls of said tapered channel when fluid flows through it to effect said cooling of fluid by moving said tapered channel in such direction that said force performs work."

Claim 12 of the main request (R.I) is the same as Claim 12 of the first auxiliary request (R.II) and reads as follows:

"The generation of power by a power generator characterised in that: that it generates power by a force which is formed when a fluid flows through a tapered channel arranged in a power generating rotor of said power generator in such a way that static pressure of said fluid acting upon its walls forms said force which drives said rotor and generated power; that said rotor generates said power by the heat extracted from the fluid which flows through said channel without involving a thermal cyclic process."

Claim 1 of the first auxiliary request (R.II) reads as follows:

"A power generator characterised in that it generates power by direct conversion of heat into power without involving a thermal cyclic process and said power generator comprises: a rotor, being a power generating element, provided with blades arranged so that tapered channels are formed between them which have their wider ends located in more forward position than their narrower ends, when relating to the direction of rotation at which power is generated, for conducting of said fluid through said channels in which static pressure, which said fluid exerts upon the walls of said channels when it flows, distributes so that it forms a force which has an ability, when it works, to reduce molecular velocity of said fluid, which is noticeable as an extraction of heat from fluid, and because such force has the Newtonian reaction of molecular nature which is not noticeable, as normally such kind of forces have, this force is herein defined as a reactionless appearing force, abbreviated RAF, and when said RAF drives the rotor and generates power, heat is extracted from said fluid and is directly converted into said power."

VII. The Representative communicated the Appellant's intention to represent himself at oral proceedings arranged by the Board. The Board thereupon informed the Representative that, the Appellant having neither a residence nor his principal place of business in one of the Contracting States, he (the Appellant) - according to Article 133(2) EPC - could not himself act before the Board during the oral proceedings and would have for this to be represented by a professional representative. However the Appellant would be given the opportunity to be **heard** at the oral proceedings in accordance with Article 117(1)(a) EPC (Taking of evidence). In his



letter of 15 March 1993 the Representative communicated that the formalities provided for in Rule 72 and Article 117(4) EPC were renounced to enable the Appellant himself to be heard.

The oral proceedings duly took place on 1 April 1993 without the duly informed Representative being present, as foreseen in his letter of 15 March 1993. During the taking of evidence by hearing the party, in accordance with Article 117(1)(a) EPC, the Appellant only answered questions put forward by the Board.

VIII. After deliberation by the Board, the Chairman gave the decision that the appeal was dismissed.

#### Grounds for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC; it is admissible.
2. Disclosure of the Invention
  - 2.1 The European patent application must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC).
  - 2.2 The relevant person skilled in the art is a person having ordinary skill and knowledge. This ordinary knowledge is at least the common general knowledge in the technical field involved, as presented in standard reference textbooks of this technical field.
  - 2.3 Technical problem disclosed in the application

The technical problem which can be understood from page 4b, lines 9 to 13 and page 19b, lines 31 to 35 of the present description is to convert directly the heat of the environmental fluid, like air or water, into work and to use the immense energy source stored as the heat of these fluids.

2.4 An essential part of the solution of the technical problem is a so called reactionless appearing force (RAF) (see page 5b, lines 20 to 22 and 24 to 31 of the present description). According to the explanation in the description (see page 4b, lines 17 to 30), when the reactionless appearing Archimedian force lifting a body is destroyed, by destroying the body's buoyancy-producing shape, the body will plunge downwards and the work performed by the reactionless appearing force lifting the body will return to the fluid in the form of heat caused by the friction of the falling body and the heat generated by impact on the ground. This conversion of heat extracted from the surrounding fluid into the useful work takes place in nature, according to the Appellant, in spite of the generally prevailing view that the Second Law of Thermodynamics prohibits it. It is further explained in the description (see page 5b, lines 24 to 31) that the present invention introduces a new kind of power generators in which and by means of which RAF is generated and facilitated to perform work, utilising the special ability of RAF to extract heat from the employed fluid, including fluids of the environment, like the atmosphere or water. RAF is explained by making reference to a balloon lifting a weight attached by a rope (see description page 6b, line 37 to page 7b, line 5). The force acting on the rope is formed by the static pressure acting on the balloon and this force is formed so that its reaction is not perceivable, noticeable or detectable by any known instruments. Such force is herein defined as the

Archimedian force and it is also RAF. RAF possesses the ability to extract heat from the surrounding fluid, air or water and convert it into work and RAF performs this work so when the weight is being lifted.

This explanation covers the basic idea of the subject-matter of Claims 1, 11 and 12 of both the main request (R.I) and the first auxiliary request (R.II).

It is clear from the application taken as a whole (e.g. page 9b, lines 10 to 15; page 10b, lines 24 to 30 and page 18b, lines 15 to 17) and it was furthermore confirmed by the Appellant during the taking of evidence that the present power generator according to Claim 1, the method of effecting the cooling of a fluid according to Claim 11 and the generation of power according to Claim 12 of both the main (R.I) and first auxiliary (R.II) requests are all intended to convert continuously and directly heat extracted from the surrounding fluid into power or work. External energy is used in all the embodiments disclosed in the application to start the power generator, that means to bring the generator to a certain rotational speed (starting speed). At this speed the supply of the external driving force is stopped, and no further external energy is then supplied, except in the embodiment of Figures 10 and 11 in which the whole system is continuously heated. After reaching the certain speed the generators of all embodiments, externally heated or not, are driven by the so-called reactionless appearing force (RAF).

2.5 The relevant technical field in the present case therefore is the field of physics and thermodynamics, so that the knowledge of the relevant person skilled in the art is therefore based on laws of this field which are generally accepted.

- 2.6 One of these laws is the Second Law of Thermodynamics, which in fact is a postulate, and according to which heat can never transfer spontaneously from a body of lower temperature to a body of higher temperature. According to this Second Law it is necessary to have two different energy levels in order to be able to transform or convert energy or heat into work during a process changing the state of the system (fluid). In other words a temperature difference, which is needed to perform work, can never appear spontaneously in a body originally at a uniform temperature.
- 2.7 The Appellant agrees that the Second Law of Thermodynamics is valid for cyclic processes. He is however, of the opinion that the thermal cyclic process is not involved in the generator, the method and the generation of power of the present application.
- 2.8 Notwithstanding the consideration of a process as an open or a cyclic process, energy only can be transformed into work during a process changing the state of a system by the use of a high energy source and a low energy source, according to the Second Law of Thermodynamics. Without a difference in the energy levels of the energy sources no work can be performed therefrom. A generator therefore is only capable of performing work when the system is in an unbalanced state. This principle, for instance, is applicable for the water of a river which can perform work when it flows from a higher to a lower altitude (two different energy levels). This principle also finds its application, contrary to the Appellant's opinion, in the rising movement of a balloon lifting an object and it also must be taken into account in the claimed generator, method and generation of power.

2.9 Indeed, before a balloon connected to an object can rise in the air, it has to be inflated to such a point that the Archimedian Force (buoyancy) overcomes the weight of the entity "balloon-rope-object" (gravity). Inflating the balloon entails adding energy to the balloon, so that the initial (before inflation) balanced state (equilibrium) of the balloon is disturbed. That the inflated balloon is in an unbalanced state is shown by the fact that the entity has to be held down, otherwise it would rise (buoyancy greater than gravity). Due to the state of unbalance, i.e. due to the different energy level with respect to the surroundings it is possible that after the entity is released that it rises towards a new state of equilibrium and thereby performs work. The ability of the entity to perform work is exhausted once it arrives at the new state of equilibrium and no further additional work can be extracted from that system. Only by adding new external energy can a state of unbalance once again be created and work again be performed. If the balloon falls after deflation the process again can be carried out as a part of a cycle wherein the necessity of two energy levels again must be taken into account. A balloon floating at a certain altitude in a state of equilibrium can also rise if the sun shines upon it causing the fluid in the balloon to be warmer than the temperature around the balloon so that the balloon further inflates and rises until it reaches a new state of equilibrium, the heat required for the inflation is here provided not from the fluid surrounding the balloon but from the sun.

The phenomena taking place during the rising of the balloon can therefore be explained without difficulty on the basis of the generally accepted laws of physics and thermodynamics. The Appellant's statement that nature itself violates the postulate of the Second Law of Thermodynamics, e.g. that a balloon can lift a weight by

the heat extracted from atmosphere, which is directly converted into work, and without any addition of external energy, can therefore not be accepted by the Board. The process of the rising balloon in fact does not contravene the existing, commonly accepted physical and thermodynamic laws but on the contrary is fully within their framework.

- 2.10 The Second Law of Thermodynamics also applies to the claimed apparatus and methods. As the Appellant stated, the apparatus must be brought up to a certain speed. This means that energy is added to the system bringing the system up to in a state of a energy level higher than that of the surroundings. The apparatus will stop when this energy is exhausted.

The Board cannot accept the argument of the Appellant that a continuous movement of the generator will be created solely by the so called reactionless appearing force (RAF), which is an unperceivable force going beyond the commonly accepted force which lifts the balloon. The explanation given in the Statement of Grounds of Appeal, "Appeal Brief", pages 3 and 4, completely ignores the fact that external energy (starting energy) has been provided, necessary for driving the generator at the start and bringing the generator up to the necessary speed. Therefore, it cannot be accepted that an energy comparison (balance) is made only with those parameters which are the result of the energy put into the system without taking into account the initial input.

The Appellant is of the opinion that the thermic cyclic process is not employed in the generator, method or generation of power according to the application. However, the consideration of the energy transformation between the inlet and the outlet of the channels of the

rotor does not take into account that this process must be periodically repeated in order to drive the engine continuously.

The Appellant, furthermore, is of the opinion ("Appeal Brief", page 4, lines 9 to 12) that the calculated additional energy **must** be covered by the heat extracted from the fluid, since in the channel no heat or other energy is added to the fluid. The Appellant however arrives at this conclusion only because the starting energy needed to drive the generator is wrongly not taken into account in the energy balance of the whole system. The argumentation in the Statement of Grounds of Appeal (Appeal Brief, page 1) that nature itself violates the postulate of the Second Law of Thermodynamics therefore cannot be accepted by the Board.

2.11 Having a logical explanation for the lifting of a balloon, which is based on common physical and thermodynamical laws, it is not possible for the skilled person to understand the reactionless appearing force (RAF) explained in the description of the application by means of an imperceptible force lifting the balloon. The skilled person can neither understand this force (RAF) nor understand that power generators driven by RAF having a unperceivable reaction, will lack such a reaction as maintained in lines 19 to 22 on page 7b of the description. The skilled person would not understand by which means or method Newton's Third Law, which states that action and reaction are equal and opposite, can be overcome or satisfied. The skilled person would come to the conclusion that adding of energy is not only necessary to start the apparatus but also to keep it moving. It would not be possible for him to understand how the claimed continuous conversion of environmental energy into work which is contrary to the well

established Second Law of Thermodynamics, can be carried out, particularly since the calculation brought forward by the Appellant cannot be correct, due to a wrong energy balance which is used by the Appellant to come to the conclusion that heat is extracted from fluid and directly converted into work.

Therefore, the person skilled in the art is unable to understand the subject-matter of the application and, on the basis of the information given in the application, he is unable to carry out the invention in order to arrive at a solution of the technical problem posed (Article 83 EPC).

The argument of the Appellant that the invention can be carried out with the information disclosed (e.g. a specific construction of the generator) and that therefore Article 83 EPC cannot be contravened, is unacceptable since the proposed generator, method and generation of power cannot be regarded as being able to overcome the Second Law of Thermodynamics and therefore to be able to solve the problem posed.

- 2.12 Claims 11 and 12 of the main and of the first auxiliary requests must be understood in the context of the description and cannot give a solution for the problem posed in the application. None of the features stated therein is able to overcome the Second Law of Thermodynamics. It is not understandable from Claim 11 how the cooling of a fluid is effected by the movement of a solid surface upon which static pressure of the fluid acts. Reading the description the skilled person must come to the conclusion that here again the static pressure is the obscure RAF which indeed is explained in the description to be a static pressure (see page 8b, first paragraph). This also applies to Claim 12 according to which a generator generates power by a



force which is formed when a fluid flows through a tapered channel arranged in a power generating rotor in such a way that static pressure of said fluid acting upon its wall forms said force.

3. In view of the fact that the application does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, the main request ( R.I), as well as all auxiliary requests (R.II) to (R.VI), which all relate to the invention as disclosed in the description and drawings, have to be rejected.

4. The Appellant was informed of the Board's provisional opinion in a communication that the disclosure of the invention in the present application was not in accordance with Article 83 EPC and that the Board intended to take a decision at the end of the oral proceedings. During the taking of evidence by hearing the party no new facts appeared, so that the Board was indeed able to take a decision at the end of the oral proceedings, on the basis of the same opinion as expressed before.

5. Procedural matters

5.1 Article 133(2) EPC stipulates that natural or legal persons not having either a residence or their principal place of business within the territory of one of the Contracting States must be represented by a professional representative and act through him in all proceedings established by this Convention, other than in filing the European patent application; the Implementing Regulations may permit other exceptions.

5.2 The Appellant, being an Australian citizen having neither a residence nor his principal place of business

within the territory of one of the Contracting States must therefore be represented by a professional representative in order to be able to act before the Board during oral proceedings, and cannot himself act like a professional representative, e.g. to file new requests.

- 5.3 Due to the present specific case, wherein a power generator, a method of effecting cooling of a fluid, and the generation of power were disclosed which seemed to operate in a manner clearly contrary to well-established physical laws, the Board decided to proceed to take evidence by hearing the Party (Appellant) in accordance with Article 117(1)(a) EPC in order to give the Appellant the opportunity to reply to questions put forward by the Board. Such a taking of evidence by hearing the party is possible without the presence of the duly informed professional representative.

Order

For the above reasons, it is decided that:

The appeal is dismissed

The Registrar:

  
S. Fabiani

The Chairman:

  
C. Andries