Intellectual Property Office

BL O/0521/24

06 June 2024

PATENTS ACT 1977

APPLICANT	Derek Edward Bird
ISSUE	Whether patent application GB2000986.6 complies with sections 1(1)(b) &(c), section 3 and section 14(3)
HEARING OFFICER	Joanne Pullen

DECISION

Introduction

1 Patent application GB2000986.6 was filed on 22 January 2020 by Derek Edward Bird. The application was published on 11 August 2021 as GB2591738.

2 A combined search and examination was requested on 22 January 2020, to which the examiner issued a search report along with an examination opinion stating the applicant may have difficulty in obtaining a patent due to the application not being novel or inventive.

3 As the applicant failed to respond to the opinion an examination of the application was carried out which raised clarity issues with the claims and reiterated the previous point the examiner had made regarding novelty.

4 Several rounds of amendments followed where the applicant attempted to address the clarity issues, but to no avail. These issues were finally addressed with the amended claims submitted on 7 December 2022, which allowed the examiner to perform a full search and examination on the application. In their examination the examiner raised several key sufficiency objections to the application.

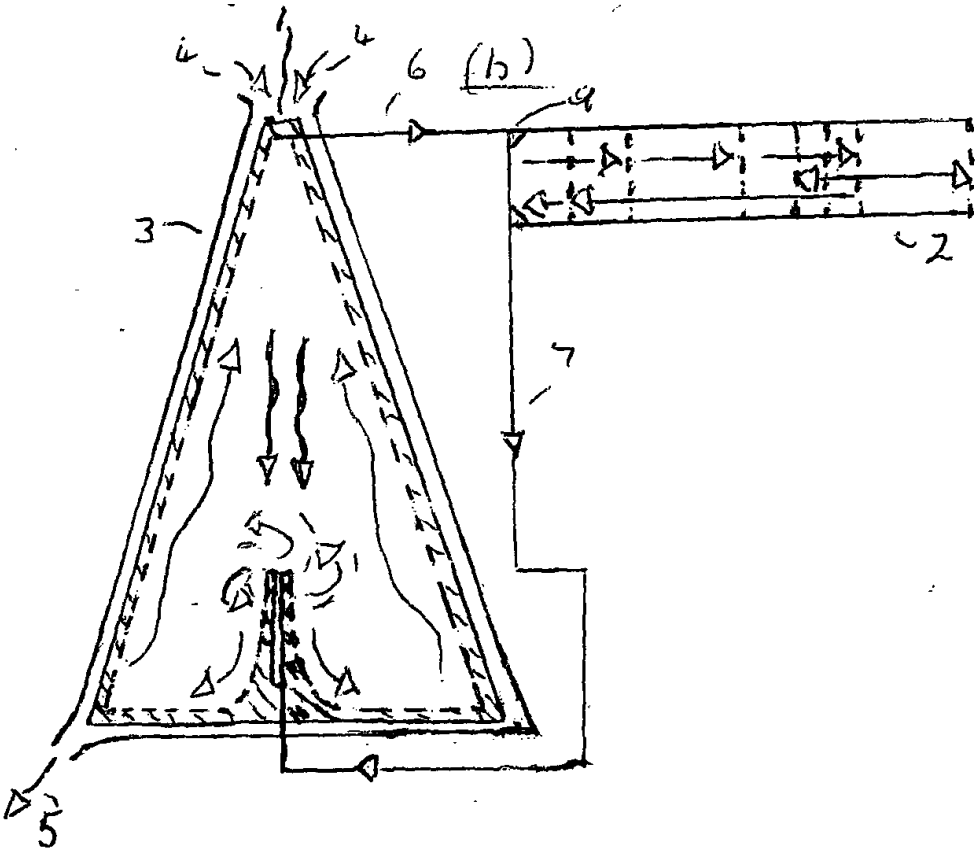
5 Regrettably it was not until the final examination report dated 3 August 2023 that patentability issues were raised under section 1(1)(c) of the Patents Act. The report claimed the invention was not patentable as it breaches the second law of thermodynamics. Objections with regards to inventive step and sufficiency were also raised.

6 The applicant requested a hearing to deal with these matters, which came before me on 17 January 2024. The applicant represented themselves at the hearing. Also present was the examiner Mr Michael Shaw and my assistant Mr Andrew Bushell.

7 I am grateful for the applicant's submissions prior to, during and following the hearing which attempted to explain the intended operation of their invention. In so far as these additional submissions are supported by the original filing, I have considered them in reaching my decision.

The application

8 The invention is best understood with regards to the figures. Consequently figure 1/1(b) has been reproduced below for ease of reference. This is one of three concepts the applicant disclosed in their application and is also the figure they referred to at the hearing. The invention described in its simplest form involves a pressure vessel which holds a liquid, (most likely nitrogen) which is subsequently heated until it changes into a gaseous form. This gas is subsequently released from the expansion chamber which in turn creates energy to push a piston forward. The chamber is subsequently sealed, and the piston continues to operate on the pressure of the gas alone, until such point the temperature drops, and the gas reverts to vapour form which no longer drives the piston. The invention claims the vapour subsequently returns to the expansion chamber from the piston where it once again resides as a liquid ready to be reheated to complete the cycle again.



The law

9 The law regarding the industrial applicability of inventions is set out in section 1 of the Patents Act 1977 as follows:

A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say -
(a) the invention is new;
(b) it involves an inventive step;
(c) it is capable of industrial application;
(d) the grant of a patent for it is not excluded by subsections (2) and (3)or section 4A below; and references in this Act to a patentable invention shall be construed accordingly.

10 Section 4(1) of the Patents Act 1977 defines “capable of industrial application” as follows:

> *An invention shall be taken to be capable of industrial application if it can be made or used in any kind of industry, including agriculture.*

11 Processes or articles alleged to operate in a manner which is clearly contrary to well-established physical laws, such as those often referred to as perpetual motion machines, are regarded as not being capable of industrial application.

12 The Act also sets out various requirements that must be met for a patent to be granted. These include, amongst other things, that the specification must disclose the invention so it can be performed by anyone skilled in the art, that the invention must be new and also involve an inventive step. The relevant parts of the Act read as follows:

> *Section 3*
>
> *An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms state of the art by virtue only of section 2(2) above.*
>
> *Section 14(3)*
>
> *The specification of an application shall disclose the invention in a manner which is clear enough and complete enough for the invention to be performed by a person skilled in the art.*

13 I shall begin by assessing whether the invention is capable of industrial application.

Arguments and assessment regarding industrial applicability

14 Both prior to, and during the hearing the applicant disagreed that their claimed invention breaches the second law of thermodynamics. This law is reproduced below for ease of reference:

> *A cyclic transformation whose only final result is to transform heat extracted from a source which is at the same temperature throughout into work is impossible.*

15 It is clear from the application, and the applicant’s arguments at the hearing, it is intended that the gas which powers the piston cools itself down to turn into a vapour before finally condensing into a liquid and returning to the expansion chamber to begin the cyclical process once again.

16 What is unclear from the applicant’s arguments is how the gas cools itself, as it is evident from the application this is a closed loop system, and a cooling device such as a heat sink is not used during the process. Without a cooling means it is

impossible to envisage how the piston is reciprocated, as the gas will not return to either vapor or liquid form, meaning the cyclical process ends.

17 During the hearing the applicant struggled to explain this part of the process and made some assumptions of what is already known in the art. As no convincing reason was given to explain how the gas cooled of its own accord I must once again refer the applicant to the second law of thermodynamics which states that this type of reaction is impossible.

18 Without a means of cooling the gas it is impossible for the invention to operate in the manner the applicant claims, as aspects of the invention are contrary to well-established physical laws. Consequently, the invention is not patentable since it is not capable of industrial applicability contrary to section 1(1)(c) of the Act. Having read the specification in its entirety I have not been able to identify any allowable amendment to overcome these issues.

Other matters

19 Whilst the hearing mainly focused on the key issue of patentability, the examiner also raised inventive step, sufficiency and added matter objections in his prehearing report. Given the invention is clearly not patentable under section 1(1)(c) of the Patents Act I shall briefly comment on each of these aspects below for completeness.

Sufficiency

20 At the hearing the applicant failed to convince me the skilled person would know how to operate the invention from the published specification. Despite being asked several times how the gas reverted to liquid form to complete the cyclical process the applicant was unable to provide a satisfactory explanation, other than it cools naturally. Without this key information being present in application as filed, the skilled person would not be able to work the invention, therefore I must conclude that the application also fails to meet the requirements of section 14(3) of the Patents Act.

Inventive step

21 In their prehearing report the examiner assessed the invention against the four steps of Windsurfer/Pozzoli and found it to lack inventive step. At the hearing the applicant claimed their invention differed from the Gamgee engine referred to in the examiners report as it used condensed gas, exemplified as nitrogen, rather than ammonia. However, these arguments failed to persuade me that a person skilled in the art would not have found it obvious to approach the construction of the invention in the way described in the application.

Added matter

22 Whilst this was only briefly discussed at the hearing it is clear from the case file that amendments have been submitted which alter the scope of the invention from what was originally filed. At the hearing the applicant claimed that it had not been his intention to file amendments which add matter. However, such amendments have clearly been filed so I agree with the examiner they cannot be accepted.

Conclusion

23 Having considered all the information available to me I find the application lacks industrial applicability under section 1(1)(c) and lacks sufficiency under section 14(3). I therefore refuse the application under section 18(3) of the Act.

Appeal

24 Any appeal must be lodged within 28 days after the date of this decision.

JOANNE PULLEN

Deputy Director, acting for the Comptroller