Intellectual Property Office

BL O/1057/25

13 November 2025

PATENTS ACT 1977

APPLICANT	Alexandre Tiago Baptista De Alves Martins
ISSUE	Whether patent application GB2311583.5 complies with Sections 1(1)(c), 4(1) and 14(3) of the Patents Act 1977 (as Amended)
HEARING OFFICER	Sally Vinall

DECISION

1 This decision relates to whether patent application GB 2311583.5 ("The application") entitled "Propulsion system, inertia attenuator and force field generator" complies with The Patents Act 1977 (as amended) ("the Act").

2 The application was originally filed under the Patent Cooperation Treaty ("PCT") on the 18th of January 2022, in the name of Alexandre Tiago Baptista de Alves Martin ("the applicant"), claiming priority from an earlier filed Brazilian patent application BR 102021001266-8, filed on the 22nd of January 2021. The application was published as WO 2022/155717 A1 in its international phase. The application subsequently entered the national phase and was published as GB 2617522 A on the 11th of October 2023.

3 To date two examination reports have been issued on the application. The Examiner considers that the application does not meet the requirements of Section 14(3) of the act as the application does not disclose the invention in a manner which is clear and complete enough to perform the invention, or of Section 4(1) of the Act as it is not capable of industrial application. The Examiner has also objected to novelty under Section 2(2) of the Act, although resolution of that issue has been deferred. It is noted that whilst the Examiner offered the applicant the opportunity to request a hearing in their letter of 26th February 2025, no hearing has been requested and therefore the issue has come before me to make a decision based on the papers on file. I confirm that I have carefully considered all of the documents available on file.

4 I must therefore decide whether the disclosure of the invention is sufficient, as required by section 14(3) of the Act and whether the invention is capable of industrial application as required by sections 1(1)(c) and 4(1) of the Act.

5 The period for putting this application in order under section 20 of the Act expired on the 22nd of July 2025. An extension to this period has not been requested within the

prescribed timeframe, as detailed in the Examiner's letter of 22nd July 2025. This decision therefore relates to whether the applicant was in order for the grant of a patent at the end of the compliance period, as there is no further opportunity to amend the application.

The Application

6 The application relates to a propulsion device which uses a propulsion unit comprising a capacitor and a power supply to generate a propulsive force. The capacitor comprises at least two conductors. These may or may not be surrounded by a dielectric in the description, although it is noted that the claims are limited to the conductors being at least partially surrounded by the dielectric. The capacitor generates these forces through being subjected to voltage pulses or electric fields with an asymmetric temporal derivative, which are created directly through use of a suitable power supply or through application of a static, oscillating, rectified or pulsed voltage by the power supply. Propulsion forces may also be generated if an electrically charged capacitor has one if its conductors abruptly charged or discharged via a power supply or switch.

7 The application describes how this can be used to provide a new form of air, land, submarine or space vehicle. Examples given are a spaceship, skateboard, car, airplane, boat, submarine and personally wearable uniforms or armour. Various configurations of conductors are described which can provide the necessary directional control for a vehicle propelled in this manner. It is explained that this will generate forces produced without inertia, as well as repelling any object in the line of motion of the vehicle or device, effectively acting as a protective force field. Where the pulse exceeds a given threshold teleportation will be generated, the size of the 'jump' depending on the total magnitude of the pulse used.

The Claims

8 The claim set which formed the basis of the pre-hearing report, filed on the 26th of June 2025, consists of 14 claims, with a single independent claim as set out below:

> 1. *An electromagnetic propulsion system, comprising at least one propulsion unit wherein said propulsion unit comprises:*
>
> *at least one capacitor formed:*
>
> *by at least one first conductor and at least one second conductor, wherein the at least one first conductor and the at least one second conductor are separated from each other and are partially or completely surrounded by a dielectric material, and*
>
> *one or more power sources; wherein*
>
> *the at least one first conductor and the at least one second conductor are provided in succession on said capacitor, and said first conductor and second conductor are able to be subjected to voltage pulses V or electric fields E with asymmetric temporal derivative, i.e. with the product E.∂E/∂t or V.∂V/∂t asymmetric, between conductors, wherein*

said asymmetric voltage pulses V or electric fields E are applied by said one or more power sources to one or more of the at least one capacitor, or to one or more of the at least one propulsion unit.

The Law

Section 14(3) - Sufficiency

9 The examiner raised an objection to sufficiency, the relevant provision of the Act is section 14(3) which is shown below:

> *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.*

10 The relevant principles to be applied when assessing sufficiency was set out by Kitchin J in Eli Lilly v Human Genome Sciences [2008] RPC 29:

> *"The specification must disclose the invention clearly and completely enough for it to be performed by a person skilled in the art. The key elements of this requirement which bear on the present case are these:*
>
> *(i) the first step is to identify the invention and that is to be done by reading and construing the claims.*
>
> *(ii) in the case of a product claim that means making or otherwise obtaining the product.*
>
> *(iii) in the case of a process claim, it means working the process.*
>
> *(iv) sufficiency of the disclosure must be assessed on the basis of the specification as a whole including the description and the claims.*
>
> *(v) the disclosure is aimed at the skilled person who may use his common general knowledge to supplement the information contained in the specification.*
>
> *(vi) the specification must be sufficient to allow the invention to be performed over the whole scope of the claim.*
>
> *(vii) the specification must be sufficient to allow the invention to be so performed without undue burden.*

11 Sufficiency is decided based on the facts at the date that the application was filed. The legal construct of the “skilled person” is used in determining whether the application is sufficient. The “skilled person” is an uninventive, but technically competent person who possesses the common general knowledge of the relevant technical art at the time that the application was filed and has the necessary skill and expertise to apply that knowledge. For the purposes of sufficiency, the skilled person is seeking to make the patent work, and they can carry out routine experimentation, provided that there is no undue burden.

(viii) Further guidance as to determining insufficiency is provided in *Zipher Ltd v Markem Systems Ltd*[1], where Floyd J offers:

"…classical insufficiency is where the express teaching of the patent does not enable the skilled addressee to perform the invention. This type of insufficiency requires an assessment …of the steps to which it would be necessary for the skilled reader or team to take in following the teaching of the specification and in order to arrive within the claim. Plainly the steps should not include inventive ones. But a patent can also be found insufficient if the steps can be characterised as prolonged research, enquiry or experiment."

Industrial Application

12 Section 1(1) of the Act requires an invention is new, inventive and is capable of industrial application. The relevant part of the Act reads as follows:

1(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say –

(a)…

(b)…

(c) It is capable of industrial application.

(d)…

13 The Act defines what is meant by industrial application in section 4(1):

4(1) 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.

14 Blacklight Power was a legal case involving the appeal of two rejected patent applications by Blacklight Power Inc., which proposed inventions based on a controversial form of hydrogen called "hydrino." The Hearing Officer, acting for the Comptroller-General, refused the patents on the grounds that hydrinos contradicted established physical laws and lacked industrial applicability. The Patents Court upheld the need to assess the scientific credibility of the hydrino theory and emphasized that a patent should only proceed if there was a reasonable prospect—based on credible evidence—that further investigation might validate the invention. Mere optimism was deemed insufficient without substantial supporting material.

15 Therefore, if when considering whether an invention operates in a manner which is clearly contrary to well-established physical laws, and there is substantial doubt about an issue of fact which could lead to patentability, it is necessary for the Comptroller to:

a) consider the material before them on the balance of probabilities.

[1] Zipher Ltd v Markem Systems Ltd [2009] FSR 1, para.363

b) consider whether the evidence provided by the applicant gives rise to a reasonable prospect that the applicant's theory might turn out to be valid if it were to be fully investigated at a trial with the benefit of expert evidence.

c) noting that the reasonable prospect must be based on credible material before the Office.

Analysis- Sufficiency

Construing the claims

16 Following the principle set out in *Eli Lilly*, when considering if the application is sufficient, the first step I must take is to construe the claims. This involves applying a purposive construction to the claims, interpreting them considering the description and drawings (i.e. the application 'as a whole').

17 Claim 1 is directed towards 'an electromagnetic propulsion system' comprising a propulsion unit- made up of a capacitor having a first and second conductor provided in succession and at least partially surrounded by a dielectric material- and a power source which 'applies an asymmetrical voltage pulse V or electric field' to the capacitor and/or propulsion unit.

18 As noted above the invention relates to a new form of air, land, submarine or space propulsion; that is a propulsive system for a mode of transport (such as a submarine or ship, aircraft, motorcycles, cars etc) but also a system that may be used with flying skateboards with automatic height control, drones, flying platforms, hang-gliders or jet-packs; may be suitable for incorporation into suits or armour; creating an 'iron-man (RTM)' style flying suit (see paragraph [90]); as well as 'many other related and unmentioned application possibilities' (see paragraph [091]). A propulsion system in this instance then means a system capable of creating any degree of propulsive force suitable for moving a large range of different masses.

19 As outlined in the claim and as shown in any of Figures 3-5 of the application, a propulsion unit is provided that is made up of a capacitor having a first and second conductor at least partially surrounded by a dielectric material. Paragraph [068] of the description indicates that the possible variation of geometries used for the conductors is unlimited; including any geometry or cross-section (inclusive but not limited to circular, cylindrical, oval, ellipsoidal, convex, concave, square, rectangular, triangular, hexagonal, solid or hollow) and paragraph [077] states that they may be 'two dimensional or three-dimensional'. The conductors may also be 'as thin as paint or thin film' and made of 'any conductive, superconducting or semiconducting material' (see paragraph [074]). The dielectric material can consist of any solid, liquid or gaseous material, with varying permittivity and may be a single material or a mix of materials (see paragraph [086]).

20 The power supply referred to in the claim may be any power supply of high or low voltage or current, constant, oscillating, rectified oscillating or pulsed voltage (see paragraph [087]). Paragraphs [065] and [066] describe how one of the conductors can be abruptly charged or discharged via power supply or a resistive or inductive switch. Examples of power supplies are given in paragraph [87] and may include

Marx generators, inductive voltage pulse generators and microwave generators with asymmetrical voltage pulses, among “many other” options.

21 However, claim 1 requires that the asymmetric voltage is ‘applied by said one or more power sources to one or more of the at least one capacitor, or to one or more of the at least one propulsion unit’. There is little to no information included in the description as to how the required voltage would be applied to the propulsion unit as a whole (which includes the power source) and how this would then create the desired propulsive effect. I am not clear, therefore, on the purpose of this alternative as included in the claim. From the description I consider it clear that the voltage or field is applied to the conductors of the capacitor and shall construe the claim as such.

The skilled person and their common general knowledge

22 Claim 1 is directed towards a device- a propulsion system- i.e. a product. Therefore, in deciding if the invention has been disclosed clearly and completely enough for the invention to be performed by a person skilled in the art, I must consider whether the skilled person can make or obtain the product based on a reading of the specification as a whole. It is therefore essential to identify the skilled person and their common general knowledge to determine whether it would be possible for them to perform the invention of this application without undue burden.

23 The concept of the skilled person is that of the uninventive, but technically competent person (or team of persons). They possess the common general knowledge in the art at the time of the application and have the necessary skill and expertise to apply that knowledge. For testing sufficiency, the skilled person is seeking to make the patent work and does so with the common general knowledge at the time the patent was filed.

24 Neither the applicant nor the examiner has provided any discussion of who they believe the skilled person to be. In this instance, I believe that the skilled person is a person (or team of persons) skilled in the art of design and manufacture of electromagnetic propulsion systems. The person (or team of persons) is not able to exercise any form of invention and has only the common general knowledge of any designer or manufacturer of electromagnetic propulsion systems at the time of filing of this application.

25 Commonplace electromagnetic propulsion systems utilise Lorentz forces to launch projectiles at high speed (railguns), repelling and attractive forces within an induced magnetic field to create propulsion (Maglev trains), or acceleration of ions within an electric field (ion thrusters/Hall effect thrusters). The skilled person (or team of persons) would have some knowledge of the theoretical principles of these types of electromagnetic propulsion and how these have been incorporated into real-world usage, such as that of Maglev trains. It is noted that whilst the propulsion effect of applying a voltage to capacitors was first observed in the 1920s, as referenced in the prior art acknowledged in the application, fully functioning propulsion systems of this type are not commonly known.

What is the skilled person taught by the application?

26 Next, I must consider what the skilled person is taught from the specification of this application. The examiner has argued that ‘voltage pulses with the product E.∂E/∂t or V.∂V/∂t asymmetric’ are not disclosed in the application in a complete enough form for the skilled person to put into practice.

27 The applicant has provided discussion of what is meant by such a voltage in their letter of the 26th June 2025. They demonstrate that the voltage pulse with an asymmetric temporal derivative can readily be produced by initially charging and then abruptly discharging a capacitor and detailing the relevant arrangement. Their argument is suitably persuasive and therefore I will accept, on the benefit of the doubt, that the skilled person would understand, or be able to work out by relying on their common general knowledge, how to generate ‘voltage pulses V or electric fields E with asymmetric temporal derivative, i.e. with the product E.∂E/∂t or V.∂V/∂t asymmetric’.

28 However that is not the end of the matter as the skilled addressee must be able to implement this in a practical propulsion system suitable for the uses outlined. I am not convinced that the skilled person is given enough information as to how this could be implemented in practice. It is not clear how such a power supply would be configured to produce and control the required voltage signature for various applications. Considering the application as a whole there are multiple suggestions as to the potential application of such a propulsion unit, and detailed examples as to how to arrange the conductors to generate thrust to control the direction of propulsion, but no single embodiment is described in detail to enable the skilled person to understand how to power such a unit in a practical context. Whilst the applicant has provided evidence of propulsion generated in an experimental set up, following the teaching of the present application it is not clear how this could be scaled or adapted for use in any of the practical implementations suggested in the application.

29 The applicant has included considerable detail within the description about how the propulsive forces of the system are generated; including comprehensive discussion of the mathematical relationships which govern the proposed propulsion- as well as provided many example set-ups for the arrangement of conductors within the capacitor of the propulsion unit. However, no single technical embodiment of a ‘propulsive system’ in its entirety is provided.

Is the skilled person able to perform the invention across the breadth of its scope without undue burden?

30 The last step of the approach set out in *Eli Lilly* is to determine if the specification is sufficient to allow the invention to be performed over the whole scope of the claim without undue burden.

31 Whilst it is clear from the application and the subsequent evidence provided that a propulsive force can be generated by applying a voltage or electric field to a capacitor, it is not clear to me how such an arrangement could be adapted to provide a “propulsion system” in practice. The means of incorporating the propulsive unit or power source into any of the devices suggested in the application such that they are able to provide any required scale of propulsive force required is not discussed, such that the skilled addressee is left to consider how much power is required and how

this should be generated in a form small and portable enough to be incorporated into the relevant device, particularly for example in embodiments such as a uniform or armour. While the skilled person would likely understand how a ‘conventional’ electromagnetic propulsion means could be incorporated into a vehicle (such as used in a Maglev train), it is my opinion that the technical means by which a capacitor-based propulsion system could be incorporated into a vehicle would not fall within the common general knowledge of the skilled person.

32 Paragraph [019] gives some indication of the expected ability to scale up from small to giant forces by increasing the pulse rate, but beyond that I can find no practical information in the application which would assist the skilled addressee in making such a device. It is noted that the ability to apply a voltage to a capacitor to propel the capacitor has been known since the 1920s but not applied to a practical propulsion system in this time, further reinforcing my conclusion that the skilled addressee would not have the skill or knowledge to move from the theoretical teaching of the application to the practicalities of making or obtaining the claimed product.

33 I therefore consider that the skilled person would not have sufficient information to understand what is needed to realise the successful implementation of the propulsion unit and power supply of claim 1 as a propulsion ‘system’. I do not consider that the skilled addressee would be able to develop the principles set out in the application to provide a propulsion unit that could be used in any of the practical implementations identified in the application, let alone across its broad scope, without significant further teaching and/or extensive experimentation, as well as potentially exercising some inventive thought.

34 Consequently, I find that the application is insufficient as required by section 14(3) of the Act.

Analysis – Industrial application

35 Having determined that the application lacks sufficiency and that there is no further opportunity for amendment I do not need to determine whether the application also lacks industrial application.

Conclusion

36 I find that the application does not enable the skilled person to work the invention of claim 1. Therefore, the application does not comply with Section 14(3) of the Patents Act 1977 and is refused under section 18(3) of The Act.

Appeal

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

SALLY VINALL

Patent Examination Group Head, acting for the Comptroller