



PATENTS ACT 1977

APPLICANT Corey Kaizen Reaux-Savonte

ISSUE Whether patent application 1713135.0 complies with sections 1(1)(c), 4 and 14(3)

HEARING OFFICER Ben Micklewright

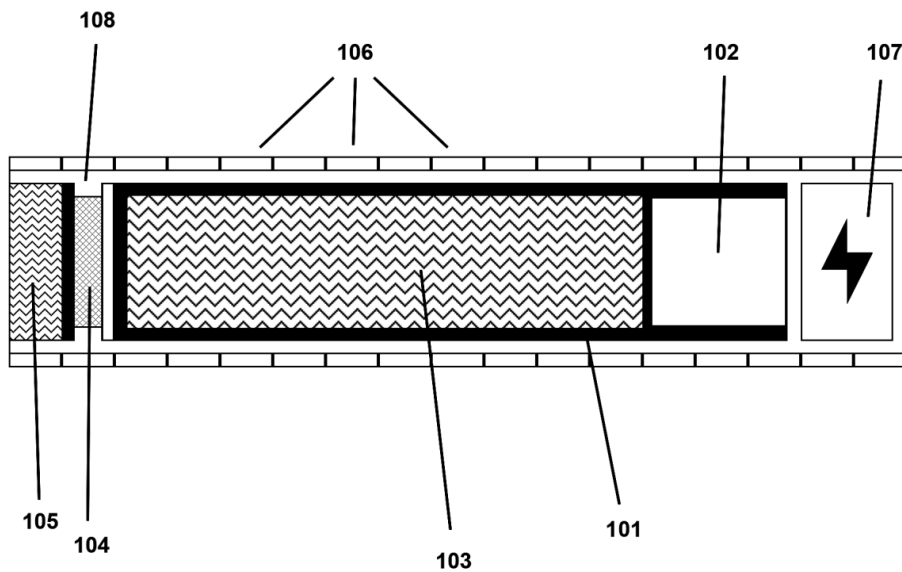
DECISION

Background

- 1 Patent application GB 1713135.0 was filed on 16 August 2017 in the name of Corey Kaizen Reaux-Savonte. It was published on 12 June 2019 as GB 2569087 A. This decision relates to whether this application satisfies the requirements of sections 1(1)(c), 4 and 14(3) of the Patents Act 1977 (“the Act”). It addresses the questions of whether the invention set out in the application is capable of industrial application, in particular whether it operates in a manner which is clearly in accordance with well-established physical laws, and whether the invention is disclosed clearly and completely enough to be performed by a skilled person in the art.
- 2 My analysis is based upon the claims filed on 16 August 2017 and the corresponding specification. The applicant made various arguments and observations in letters dated 25 February 2019, 19 July 2019 and 13 January 2020, and in skeleton arguments filed on 27 June 2020. The applicant did not present any new arguments or amendments at a teleconference hearing which took place on 8 July 2020 but asked me to consider his previous submissions. I confirm that I have considered all the applicant’s arguments in reaching my conclusion.

The invention

- 3 The invention relates to an engine and method to generate thrust using a proton source. According to the application the proton source is situated within a chamber and in use fires protons at different speeds to create an internal directional pressure imbalance. This is illustrated in Figure 1:



- 4 According to the Description, laser 102 fires laser beam 103 within dark walled vacuum chamber 101. The photons of the laser beam impact on and heats the end wall. The heat generated is used by a Thermoelectric Generator (TEG) 104 to generate electricity, which charges power source 107 via wire tunnels 108. TEG 104 also cools the end wall by thermoelectric cooling, using additional cooling unit 105 to help draw the heat away. Solar panels 106 are also used to charge the power source.
- 5 The internal directional pressure imbalance in the above arrangement is, according to page 6 of the Description, “created via the photons travelling through the vacuum chamber in one direction, and photons bouncing around within the laser medium – some of them moving in a direction opposite to the direction of the laser beam.”
- 6 Further explanation as to how the thrust is generated is provided on page 5 of the Description:

“This engine relies on one thing – Internal Directional Pressure Imbalance (IDPI). By creating pressure internally that is greater in one direction than the opposing direction, within an environment where the total of all external resistance being applied to the engine is less than the difference of the directional pressures (such as in a vacuum), the engine is forced to move in the direction of greatest pressure.

For example, if pressure moving left within the engine is equal to 10, and pressure moving right is equal to 4, the difference is 6, and 6 is the value of the thrust. If the external resistance value is 6 or greater, the engine can't move because the thrust is being equalised or dominated by external resistance. However, if the external resistance value is lower than 6, the thrust becomes dominant, and the engine moves left. The greater the difference between thrust and resistance, the faster the engine moves.

If used on the ground, the movement of matter created when impacted upon by photons would usually be equalised or dominated by friction or air resistance in the opposite direction due to photon impact being so weak, but in an environment with no resistance – such as the vacuum of space – there is nothing preventing movement because there is nothing working against the movement.

This disproves the law "every action has an equal and opposite reaction", which is why it works. Pressure cannot be exerted upon energy, so, when a photon impacts upon matter, the matter cannot exert pressure upon the photon in retaliation.

Now, creating a propellantless engine requires the use of photons, which are used because they naturally move without the need of pressure being exerted upon them. The sole requirements for this engine are a photon source, a chamber in which photons impact opposing walls at different average speeds, and a power source. The easiest way to do this is using a chamber which has vacuum space between one end wall and a medium, and no vacuum space between a medium and the opposing end wall, and firing photons from a photon source (such as a laser) in the direction of the vacuum space. All photons travelling through the vacuum travel at light speed at the point of impact, and exert the maximum amount of pressure possible against the end wall, and the average speed will be light speed, while some photons travelling through the medium in the opposing direction will be travelling slower than light speed at the point of impact if it is a direct matter-to-matter transfer, will create an impact at an average speed of less than light speed, and will contain less energy due to some being lost as they passed through the medium, creating less than the maximum amount of pressure possible. This is how the IDPI is created. The engine will then move in the direction in which the pressure being created is the greatest, which may not always be in the direction of the vacuum, as this is largely dependent on photon build up, reflection, refraction, and any other factors that can change the behaviour of a photon."

7 Claims 1, 12 and 13 are independent and read:

1. An engine, comprising:

one or more photon sources;

one or more chambers; and

one or more power sources;

wherein the one or more photon sources fire photons against opposing walls, either directly or indirectly, within a chamber, at different average speeds upon impact, to create an Internal Directional Pressure Imbalance with a greater pressure difference than the external resistance, creating thrust.

12. A method of creating thrust, the method comprising firing photons from one or more photon sources towards opposing walls at different average speeds upon impact to create an Internal Directional Pressure Imbalance.

13. The use of photons in a chamber to create an Internal Directional Pressure Imbalance, wherein the internal pressure difference between opposing directions is greater than the external resistance it faces, creating thrust.

The law

8 Section 1(1) of the Act states:

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

...

(c) it is capable of industrial application;

...

and references in this Act to a patentable invention shall be construed accordingly.

9 Section 4(1) states:

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.

10 Processes or articles alleged to operate in a manner which is clearly contrary to well-established physical laws are regarded as not having industrial application, as is set out in paragraph 4.05 of the Manual of Patent Practice¹.

11 Section 14(3) states:

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.

12 There is no dispute concerning the relevant law and its application to the facts of this case.

Argument and analysis

13 In his letters Mr Reaux-Savonte argued that, due to the balance of forces exerted by photons on the walls of the chamber, his device would move and, in the vacuum of space, would continue to move. He expressed his view that the use of the engine in space will enable the engine to generate thrust because the engine has a system in which photons are fired from a photon source such as a laser into a vacuum chamber acting independently of the source that generates them. Mr Reaux-Savonte describes this, “...as there are zero external forces in space...the engine will behave as if it is being pushed by an external force upon its exterior”. According to Mr Reaux-Savonte, because the photons travel through a vacuum in one direction and through a medium in another direction the photons will travel more quickly through the vacuum. There will therefore be a net pressure imbalance and thrust will be created. He described several experiments as examples to illustrate this principle, the experiments involving men punching a box to move it, a hollow ball with explosives in one hemisphere, and a drone within a box firing a projectile. I have carefully considered them but am not convinced that they assist in the present case. They do not demonstrate that the well-established physical law that every action has an equal and opposite reaction is wrong. Nor do they fully take into consideration the principle of the conservation of momentum. Also, they are not fully analogous to the present invention in which the photon source is physically connected to the chamber. I have examined Mr Reaux-Savonte’s submissions carefully and cannot find

¹ The Manual of Patent Practice is available at <https://www.gov.uk/guidance/manual-of-patent-practice-mopp>

anything that supports the notion that Newton's third law of motion is incorrect or not applicable in its application with regards to the present invention.

- 14 In the engine of the present invention the components of the engine are connected to one another. In addressing this, Mr Reaux-Savonte states on page 12 of his letter of 19 July 2019:

"The laser is physically connected to the engine, and the laser medium produces a net force of zero when emitting photons because it does so equally in all directions, but it's not the laser that exerts the driving force on the engine, it's the photons themselves upon impact with any of the walls, and, like the men in the box and the explosive material particles from the earlier experiments, the photons are not physically attached to the engine, so the force they exert is one way – in the direction of their movement – with no way to balance it in the opposing direction. The engine cannot then exert pressure back upon the photon because pressure can only be exerted upon matter, nor can the engine exert pressure back upon itself in this way ..."

- 15 I do not agree with Mr Reaux-Savonte's analysis because the principle of conservation of momentum is also in effect in the arrangement, and photons do have momentum, even though they do not have mass. In accordance with this principle, when the photon source emits photons the photons will have momentum and therefore a force will be applied to the laser device in the opposite direction to that of the movement of the photons. This would result in movement of the photon source in the absence of any external forces. When the photons are absorbed or reflected by the end wall of the engine the end wall would be provided with momentum from the photons and so would result in a movement of the end wall which is equal and opposite to that of the laser device. The laser device is attached to the opposing wall and no thrust will therefore be generated by the engine. At most the engine may wobble but its centre of mass would not move. The energy consumed by the photon would ultimately be converted into heat. This would apply to photons moving in any direction. I agree that the vacuum of space would remove external forces such as air resistance, but all the forces act internally in the present invention and any external forces, or lack of such forces, do not influence these internal forces.
- 16 It is therefore the case that any force imparted by the impact of the photons on the end wall of the vacuum chamber will be equal and opposite to the force that the photons exert on the photon source when emitted. The end wall of the vacuum generator and the photon source are connected to each other as part of a single system and the net force will therefore be zero. I cannot therefore see how the engine system provides thrust in the way Mr Reaux-Savonte has described it, nor how it operates in a manner contrary to Newton's third law that for every action there is an equal and opposite reaction. I therefore conclude that the invention does not generate thrust in a manner consistent with the well-established laws of physics and is not therefore capable of industrial application.
- 17 It follows that the invention is not disclosed in a manner clearly or completely enough to be performed by a person skilled in the art in that there would be an undue burden on the skilled person to work the invention and it would be impossible to find a solution within the scope of the claimed invention to achieve the desired result of thrust from an engine of this type. I find that the application fails to meet the requirements of section 14(3) of the Act.

Other matters

- 18 A search has not been performed on this application and assessment of novelty and inventiveness has not taken place. If therefore the matters in hand had been resolved in the applicant's favour, the application would need to be remitted back to the examiner for further consideration of these matters.

Conclusion

- 19 I have found that the claimed invention operates in a manner which is clearly contrary to well-established physical laws and would not generate thrust. It is not therefore capable of industrial application as is required by section 1(1)(c) of the Act. Moreover, the invention is not disclosed clearly and completely enough to be performed by a person skilled in the art, as is required by section 14(3) of the Act. The application is therefore refused under section 18(3) of the Act.

Appeal

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

Ben Micklewright

Deputy Director, acting for the Comptroller.