BL O/228/05

12th August 2005

PATENTS ACT 1977

APPLICANT David Duckett and Joan Duckett

ISSUE Whether patent application number GB 0208751.8 complies with sections 1(1)(a), 1(1)(b) and 1(1)(c)

HEARING OFFICER Mrs S E Chalmers

DECISION

History of the application

1 The application, entitled "Electric Hydraulic Engine DW1" was filed on 17 April 2002. A search report was issued on 14 October 2003. The examiner advised the applicants in the accompanying letter that his preliminary view was that the invention appeared to violate the law of conservation of energy. He therefore warned that an objection to lack of industrial applicability would be raised if the case proceeded to substantive examination. In response, the applicants filed amended claims on 10 November 2003 which were published, together with the application as filed, on 17 December 2003.

2 The examiner issued an examination report on 20 January 2005 in which he argued that the invention operated in a manner clearly contrary to well-established physical laws and hence was not patentable under section 1(1)(c). Specifically, the invention claimed to provide a continuous energy output without any corresponding energy input, contrary to the Law of Conservation of Energy. The examiner further argued that the invention was not new and/or did not involve an inventive step as required by sections 1(1)(a) and 1(1)(b) on the basis of three citations. He also flagged up that there were clarity issues with the claims but agreed to defer these objections pending resolution of the section 1 objections.

3 Following further rounds of correspondence, the examiner accepted that one of the documents raised in respect of novelty was not relevant but maintained that, in the light of the other two documents, the invention was not new and inventive. He also maintained his objection to lack of industrial application. It became clear that neither the examiner nor the applicants were persuaded by the arguments of the other. As a result, a hearing was held before me on 29 July 2005 to resolve these issues. Mr and Mrs Duckett appeared in person, supported by Mr Terry Banning, and the examiner, Mr Peter Middleton, also attended.

The application

4 The invention relates to a propulsion unit that includes an electric system and a hydraulic system. A battery drives an electric motor, which in turn drives a hydraulic pump. The pump supplies hydraulic oil to a motor connected to a gearbox to provide motive power, and also supplies oil to a second motor which drives an alternator, which provides power to charge the battery whilst providing further electricity for auxiliary power. There is a single drawing which depicts, schematically, the electric and hydraulic circuits and further includes such ancillary features as an electric switch and an oil cooler. The abstract contains additional disclosure concerning the arrangement of parts and being filed on the filing date of the application, is considered to be part of the description.

5 The claims as amended on 10 November 2003 read:

> *1. An Electric Hydraulic Engine DW1 includes a rechargeable battery with positive and negative leads and electric positive and negative cables.*
>
> *2. An Electric Hydraulic Engine DW1 as in claim 1 including an on/off switch and an electrical control box.*
>
> *3. An Electric Hydraulic Engine DW1 as in claim 1 including an electric motor, hydraulic motor, hydraulic storage tank, main hydraulic valve and a non-return valve mounted on the hydraulic mains supply pipe. Also hydraulic feeds and returns mains piping.*
>
> *4. An Electric Hydraulic Engine DW1 as in claim 1 including a hydraulic motor powering the gearbox and auxiliary hydraulic motor which powers an electric alternator of the same voltage and polarity as the mains rechargeable battery.*
>
> *5. An Electric Hydraulic Engine DW1 as in claim 1 including a hydraulic oil in line oil cooler radiator.*
>
> *6. An Electric Hydraulic Engine DW1 as in claim 1 with the inbuilt ability, via it's recycling operations, once started with a fully charged battery is able to function and produce power via a gearbox output shaft indefinitely.*
>
> *7. An Electric Hydraulic Engine DW1 as in claim 1 can be built to any shape and dimension required of it, this would be of particular benefit to manufacturers of cars, lorries, ships and aeroplanes.*
>
> *8. It is further claimed that the engine will greatly reduce greenhouse gases omitted from conventional engines, as there will be no toxic emissions released into the environment from this machine.*
>
> *9. An Electric Hydraulic Engine DW1 as in claim 1 has no external moving parts once it is housed in an engine compartment found in most moving vehicles. Therefore the risk of injury anybody operating the device is greatly reduced.*

The law

6 Section 1(1) of the Act states:

> *"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) ..... "*

7 The Act defines "industrial application" in section 4(1):

> *"Subject to subsection (2) below, 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".*

8 It is settled law that 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.

The issues

9 At the hearing, I explained to Mr Duckett that I would focus on the major issues raised under section 1(1) by the examiner, namely industrial applicability, novelty and inventive step. I would not be looking at the clarity of the claims since the examiner had raised this objection only in general terms. However, should I decide in the applicants' favour, the application would be referred back to the examiner for further examination when the clarity points would be spelt out in detail and Mr Duckett would have the chance to address them. Finally, in coming to my decision, I wish to make it plain that I have considered not only the arguments raised by the applicants at the hearing but also those raised in the correspondence. I will start with industrial applicability since this is the most serious objection.

Is the invention industrially applicable?

10 The examiner objected that the invention violated the established physical principle that energy cannot be created or destroyed otherwise known as the Law of Conservation of Energy. He argued that if power were delivered from the engine then there must be a supply of power to the engine otherwise energy would have to be created. In short, the system gave out more energy that was put into it.

11 I invited Mr Duckett to explain his invention which he did at considerable length. He explained the arrangement of motor, pumps and alternator and how power was transmitted to drive the engine. In his view, the question of his invention defying the laws of physics did not arise as he was using the same principle used in a standard internal combustion engine whereby the engine could be started by using power from

the storage battery. Thereafter, the alternator not only replaced the power used to start the engine initially but also provided enough electrical power to maintain all the functions of a modern motor car.

12 I questioned Mr Duckett about the statement on page 1 which stated that "*the alternator has the capacity to produce enough electricity to maintain the battery at full charge and have the ability to release further electricity.*" I pointed out that, to remain fully charged, the battery would need to be recharged continuously to replace the power drained. To do this, the system would need to operate without any power losses which was impossible as no engine operated at 100% efficiency. Furthermore, I was also unclear how the alternator had the ability to release further electricity. On the face of it, the engine appeared to create energy out of nothing.

13 Mr Duckett assured me that his engine would work as described and I am grateful to him for his careful and patient explanation. Quoting from the transcript, he said: "*We are not actually putting fuel into the machine. We are using energy from a battery to motivate a hydraulic motor, which in turn increases the power by whatever anybody requires. ……If we put 20 HP into the electric motor I would anticipate, that we would get about 60 HP back, which is diverted over to 2 hydraulic motors the greater being to drive the gear box of the vehicle itself and the other one to drive an alternator at a set speed, generating a set amount of current …*". Mr Duckett stated that he had built a working model of the engine and had generated electricity. He left me in no doubt that he sincerely believed that, given enough time and the necessary resources, he could build an engine that worked and would operate as described in his application.

14 I have done my best to understand the applicants' invention in the light of the application, the arguments in the correspondence and the explanation at the hearing. However, I am bound to say frankly that I remain in the dark as to how the engine could work as described. It remains inescapable that all machines expend energy in terms of heat, resulting from the action of frictional forces for example, and that no machine can ever be 100% efficient. I see no reason why the engine cannot be built and used to generate power – indeed Mr Duckett said he has a working model and he has succeeded in generating electricity – but I am at a loss to understand how such an engine can maintain the battery at full charge and generate more energy than is put in. In the absence of any evidence to suggest that the applicants' invention is anything other than a machine made up of conventional components, I am bound to conclude that the principle of the conservation of energy would have to be broken for the engine to operate in the way described. I therefore find that the invention is not capable of industrial application as required by section 1(1)(c).

Is the invention new and does it involve an inventive step?

15 I now move on to consider the examiner's objections of novelty and inventive step. I explained to Mr Duckett that for an invention to qualify as "new" under patent law, it had to be different from what was already known. Using the term "kit" as a shorthand for the term "invention", I explained that if a "kit" were already known, patent law did not allow you to patent it even though it was used in a new way or for a new purpose. To be "new", it had to be different. To be "inventive", this difference between the old and new "kit" must not be an obvious development.

16 The examiner argued that the invention was not new and/or was an obvious development of the engines described in GB 2354042 and DE 4429020. Since the claims did not clearly define the construction of the engine and its essential components, the discussion focused on the invention as shown in the description and drawing.

17 GB 2354042 describes an engine in which a hydraulic pump is driven by a battery-powered electric motor. The hydraulic fluid from the pump drives a hydraulic motor which provides both useful output power and drive for an alternator which provides electrical power to recharge the battery. Cooling radiators and a fan are also described. The examiner therefore considered that this document showed the main components of Mr Duckett's engine and that providing other features such as the gearbox and the on/off switch was obvious.

18 Mr Duckett conceded that the engine shown in GB 2354042 was similar to his engine but maintained that it was not the same. For example, he pointed out that the citation used a propeller and so was not suitable for land vehicles. He also said he could not see how this could be adapted into motorcycles, motor cars or lorries because to have a large unshielded fan travelling at high speed in the vicinity of the public would be dangerous. Mr Duckett also stated that his invention could run at 1-200 volts whereas the earlier device ran at 24 volts. In reply, the examiner argued that the citation did not say what was connected to the output shaft of the engine. He maintained that since it was said to be suitable for land vehicles, it was obvious that the output shaft could be connected to a gearbox transmission. The examiner also pointed out that it required no inventive skill to vary the voltage of the system according to specific requirements although he noted that there was nothing in the application to indicate that the invention ran at 1-200 volts.

19 Turning now to DE 4429020. This document also describes a power system for a vehicle in which a turbine is driven by high pressure water from a reservoir. The reservoir is primed by two pumps, one driven off the turbine and the other driven by an electric motor. A battery is recharged by a generator driven by the turbine and the turbine drives the transmission. Excess heat generated in the water circuit is removed by fan cooled radiators and the return flow water is collected in a low pressure tank The examiner also considered that this document showed the main components of Mr Duckett's engine and that providing other features such as the on/off switch was obvious.

20 Mr Duckett pointed out that the turbines relied on the pressure of water driven by two pumps driven by further electric pumps which were doing a very similar job to the hydraulic system. However, the system used water not hydraulics. With water, the system would produce steam, so it would need to be constantly topped up and therefore, unlike his invention, could not be a sealed unit.

21 I have carefully reviewed the citations against the (albeit unclear) amended claims and the apparent statement of invention set out in the third paragraph of page 1 of the description. My task is made all the more difficult since the claims (taken singly and as a whole) and the description do not agree on what are the essential features of the applicants' invention. For example, claim 1 merely relates to an electric hydraulic engine including a rechargeable battery which is clearly not new.

22 For the purposes of my decision, I have arbitrarily designated the following engine components and arrangement as essential:

> *The engine includes a battery that drives an electric motor which in turn drives a hydraulic pump. The pump supplies hydraulic oil to a motor connected to a gearbox to provide motive power, and also supplies oil to a second motor which drives an alternator, which provides power to charge the battery. The engine also includes an on/off switch for the battery and a cooler for the hydraulics.*

23 On that basis, neither GB 2354042 nor DE 4429020 discloses the specific arrangement of the applicants' invention. For example, GB 2354 042 does not disclose a gearbox and DE 4429020 uses water not oil as the hydraulic fluid although it does have a gearbox (reference 1 in Figure 1). I therefore accept Mr Duckett's arguments and find that the applicants' invention is new. Turning to the issue of inventive step, I agree with the examiner's view that it would be obvious to a skilled automotive engineer that the output shaft of the engine described in GB 2354042 could be connected to a gearbox transmission as disclosed in the engine arrangement of DE 4429020. Although neither citation discloses an on/off switch, I also consider that would also be obvious as it is hard to see how the engine, in use, could operate without it. I therefore find that the applicants' invention does not involve an inventive step as required by section 1(1)(b).

Conclusion

24 I have found that the invention as described does not comply with sections 1(1)(b) and 1(1)(c) and see nothing in the application that could form the basis of an allowable amendment that would meet these objections. I therefore refuse the application under section 18(3).

Appeal

25 Under the Practice Direction to Part 52 of the Civil Procedure Rules, any appeal must be lodged within 28 days.

MRS S E CHALMERS
Deputy Director acting for the Comptroller