

0133/92

**PATENTS ACT 1977****IN THE MATTER OF PATENT APPLICATION No. 2,209,683 A  
IN THE NAME OF GRAHAM ALLAN STEVENS****STATEMENT OF REASONS FOR INTERIM DECISION**

Application No. GB A 2,209,683 was filed on 15th September 1987. It relates to a means of extracting water from the atmosphere by condensation and aims to provide means of providing the conditions necessary for condensation of water in quantities useful for growing plants or for human consumption in regions of the world where there is a shortage of water; for example deserts, savanna, or regions of intermittent rainfall. The aim is to use enhanced cooling effects for condensing water by lowering the temperature of a cooling surface below the dew point and collecting the condensation which forms.

In the first report under Section 18(3) the Examiner objected *inter alia* that the alleged invention was not new and that claim 1 was obscure in scope and did not clearly relate to a patentable invention. Further discussions between the Examiner and Mr Stevens, who was prosecuting the application himself, failed to resolve the issues and the matter came before me at a hearing on 11th March 1992. Mr Stevens appeared in person and Mr N J Miles was present as the Examiner in the case.

At the Hearing I gave an oral interim decision upholding the Examiner's objections and refusing to allow the application to progress to grant on the grounds that it does not meet the requirements of Section 14(5) (a) and (b) in that the claims do not define the matter for which the applicant seeks protection and are not clear and concise, that the alleged invention is not new and does not involve an inventive step as required by Sections 1(1) (a) and (b), and that the claim before me is not a claim to a patentable invention within the meaning of Section 1(2) (a). I now give the reasons for that decision.

Before dealing with the matters in dispute I will refer briefly to Mr Stevens' opening remarks at the hearing that he did not understand why it had taken so long to reach this stage of the proceedings and that he that felt the Office had been slow in processing his application. It is clear from the file that at each stage of the proceedings the Applicant did not

respond until close to the end of the period specified for reply. Further, at the first substantive examination stage no written reply was submitted - as a concession it was agreed to treat the Applicant's telephone conversations with the Examiner as constituting an acceptable reply. Accordingly I am satisfied that the Office has behaved properly in processing this application.

The following documents were cited in the first report under Section 18(3) in support of an objection under Section 1(1)(a):-

GB A 2,178,670 (Roger Harrington)	-	Page 1, lines 31 to 65
GB 958,698 (Kyrle William Willons)	-	Page 1, lines 79 to 86

In addition, the following document was submitted by the applicant prior to the Hearing as being illustrative of the prior art:-

RADIATIVE COOLING TO LOW TEMPERATURES WITH SELECTIVELY EMITTING SURFACES, Granqvist et al, published 1981.

During the Hearing, my attention was drawn to GB 1,577,720 in the name of the present applicant, particularly page 3, lines 80 to 85 and 96 to 102.

GB 2,178,670 describes a dehumidification apparatus in which water is condensed from moist air by cooling the air by passing the air over heat exchange surfaces which may be made from metal, plastics or glass.

GB 958,698 relates to condensing vapours from gases by passing a relatively cool gas through a chamber containing heat absorbent material until the temperature of the heat absorbent material is substantially equal to the temperature of the cool gas and then passing relatively warm, vapour laden gas through the chamber, whereby to condense vapour from the vapour laden gas. In a preferred embodiment, the chamber comprises tunnels cut in an earth or rock hillside and filled with blocks of stone or metal piled one upon another in rows extending across the chamber (page 1, lines 32 to 38). This type of condenser is said to be particularly adapted for use in tropical and sub-tropical regions where there is a considerable difference between day and night air temperatures (page 1, lines 79-83).

Coming to the first of the Examiner's objections, the form of claim before me reads as follows:-

Claim 1 *A system for condensing atmospheric water consisting of a condensing surface shielded from radiant, conductive and convective heat and cooled by a combination of passive and/or mechanically operated means, such as refrigeration, providing radiative cooling and using materials having optical properties that provide maximum radiative cooling effect and accessible to ambient air so as to condense part of its moisture content as water.*

Mr Stevens stated that he considered that he is entitled to a broad claim and that experts in the field had indicated to him that his alleged invention was both new and desirable. Since this did not appear to be advancing the proceedings, I re-stated the outstanding objections to clarify the situation.

Firstly, I drew Mr Stevens' attention to the provisions of Section 76. I pointed out that Section 76 prohibits the introduction of new matter after the date of filing of his application.

With regard to Section 14(5), I put it to Mr Stevens, and he did not disagree, that the characterising feature of his alleged invention lies in "*using materials having optical properties that provide maximum radiative cooling effect*"

Such a claim says to a reader "it is for you to find suitable materials, but if you do you, and then use them in a system for condensing atmospheric water, you will be infringing my patent". Anyone discovering a new material which has such optical properties would be prevented by such a claim from using it to condense atmospheric moisture. Further, it is not clear what "maximum radiative cooling effect" means. It may be construed very narrowly as covering just a single material ie. the best one, such that any material providing less radiative cooling than this "best material" would be outside the scope of the claim. Alternatively it may be construed broadly as referring to a range of materials which provide in excess of some arbitrary lower limit of radiative cooling. A variety of materials are specified in the application as filed, namely; white paint, plastic, metal, glass, stone, aluminised Tedlar (Trade Mark), polythene or Teflon (Trade Mark).

It is not clear from the description whether all these materials are ones which provide maximum radiative cooling, and thus whether they fall within the scope of the claim.

To help Mr Stevens understand that the claim is obscure in scope and does not satisfy the requirements of Section 14(5) (a) and (b), I invited him to put himself in the position of someone reading his claim and having to decide what the limits of the monopoly are. He agreed that it would be difficult for a reader of the present claim to determine which materials he may or may not use, and I reminded Mr Stevens that it is essential that a claim defines the scope of the invention clearly and concisely so that the public is aware of the extent of the monopoly granted.

In looking to the possibility of an amended claim based on the application as filed, consideration was given to restricting the definition of the materials having the required optical properties to those which "*reflect all radiation outside the wavelength range 8-13 microns but absorb and emit within these limits as a black body*", as specified on page 1 of the application as filed.

In an article entitle "RADIATIVE COOLING TO LOW TEMPERATURES WITH SELECTIVELY EMITTING SURFACES" by Granqvist *et al*, published in 1981, and submitted by the Applicant, it is stated that:-

*"Efficient radiative cooling is feasible with surfaces which radiate predominantly in the 8 - 13 micron atmospheric window range"*

and that:-

*"... the experiments seem to open up several possibilities for passive cooling ... in areas with arid climate."*

This suggests to the man skilled in the art that in a situation where radiative cooling effects are called for, it would be obvious to select materials exhibiting the property of radiating predominantly in the 8 - 13 micron range. This is precisely the preferred criteria specified in the present application for selecting materials having optical properties that provide maximum radiative cooling. In addition it would appear to be directed specifically to the skilled man working in areas with arid climate. Accordingly, a claim corresponding to the present claim 1 but wherein

the choice of materials was limited in this way would not involve an inventive step.

Consideration was also given to restricting the claim to the aluminised plastics materials referred to on page 3 paragraph 3 of the original application and which appear to be the most preferred materials. In this respect my attention was drawn to the Applicant's own patent, GB 1,577,720, which is directed to structures with walls comprising an outer skin of a plastics film material that is transparent to short wave solar radiation while being relatively opaque to long wave heat radiation. In discussing such materials it is stated on page 3 lines 80-85 and lines 96-102 that:-

*"Such reflectivity can conveniently be accomplished by "silvering" the base material of the skin as by metal deposition thereon or by incorporation of a suitable metallic layer in a laminated skin construction. .... if the characteristics of the inner skin are such that it reflects solar energy it may take up a temperature below the dew-point of the ambient atmosphere and so be available for use as a condensing surface."*

This would appear to indicate to the skilled man that such "silvered" plastics film will provide a suitable surface for condensation wherein the surface itself is cooled by radiative cooling. Accordingly, a claim restricted to such materials would not appear to involve an inventive step.

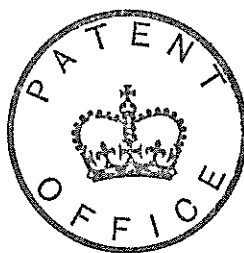
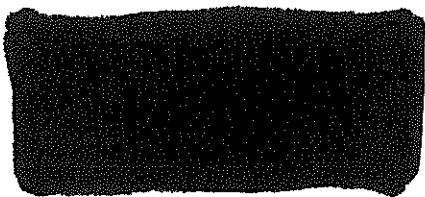
Accordingly, claim 1 in its present form does not satisfy the requirements of Section 14(5) (a) and (b) in that it does not define the matter for which the applicant seeks protection and is not clear and concise. Further, an amended claim restricting the scope of the invention to the use of materials which "*reflect all radiation outside the wavelength range 8-13 microns but absorb and emit within these limits as a black body*" or to specified aluminised plastics materials disclosed in the application as filed would not satisfy the requirements of Section 1(1)(b) for the reasons set out above.

With regard to the patentability requirements of Section 1(2)(a) and the novelty requirement of Section 1(1)(a), the materials specified in the application as providing suitable condensing surfaces are well known. The discovery that these materials have new properties that make them particularly suitable as condensing surfaces is not in itself patentable although the use of such materials in a new process may be patentable. In this case, the discovery appears to involve the realisation that materials

having particular optical properties are suitable for use as condensing surfaces. However, selection of materials on the basis of these optical properties results in the use of materials which are already known to provide good condensing surfaces, eg. the metal or stone referred to in GB 958,698, the metal, plastics or glass referred to in GB 2,178,670 and the aluminised plastics materials referred to in GB 1,577,720. Thus the application of the apparently new selection criteria results in the use of materials which are indistinguishable from materials already in use for the same purpose. Accordingly, the alleged invention as claimed in the present claims is not novel and is not patentable within the meaning of Sections 1(1)(a) and 1(2)(a).

In summary, I find that the application does not meet the requirements of Section 14(5) (a) and (b) in that the claims do not define the matter for which the applicant seeks protection and are not clear and concise, that the alleged invention is not new and does not involve an inventive step as required by Sections 1(1) (a) and (b), and that the claim before me is not a claim to a patentable invention within the meaning of Section 1(2)(a). I am prepared to give the applicant an opportunity to amend to overcome this finding but I am of the opinion that it is unlikely that an acceptable claim can be drafted which is broader in scope than the specific embodiment described on page 3 of the application as filed and illustrated in Fig 1 of the drawings. Such amendments should be submitted within the period prescribed by Section 20(2) for appealing this decision, which, being a substantive issue, is six weeks from the date of the oral decision, namely 11th March 1992. If no satisfactory amendment is submitted in that period, I shall refuse to allow the application to proceed.

Dated this 31 day of March 1992



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Principal Examiner, acting for the Comptroller