

PATENTS ACT 1977

APPLICANT The Secretary of State for Defence

ISSUE Whether Patent Application Number GB0904563.4
 complies with sections 14(5) of the Patents Act

HEARING OFFICER A Bartlett

DECISION**Introduction**

- 1 This decision relates to the issue of whether the claims of GB0904563.4 clearly define the invention and are supported by the description.
- 2 The application derives from PCT application number PCT/GB2007/003617 which was filed on 24 September 2007 claiming an earliest priority date of 22 September 2006. It was published as WO2008/035107 on 27 March 2008. It entered the national phase in the UK as Patent Application No GB0904563.4 and was reprinted as GB2454848.
- 3 Despite numerous rounds of amendment the examiner and the applicant's attorney have been unable to agree whether the claims are in an acceptable form to define the invention. A hearing took place on 29 June 2011 to resolve the outstanding disagreement.
- 4 At the hearing the applicant was represented by Mr Thomas Phillips, Ms Linda Prentice and Mr Thomas Jenkins. The examiner, Mr Kunal Saujani was also in attendance.

The Law

- 5 Section 14(5) of the Act sets out various requirements that the claims must meet for a patent to be granted. Amongst these subsections 14(5)(a)(b) & (c) are relevant to the present decision. They read:

14 (5) The claim or claims shall –

- (a) define the matter for which the applicant seeks protection;
- (b) be clear and concise;

- (c) be supported by the description

The application

- 6 The application is concerned with a lens arrangement that is particularly suitable for use in a covert surveillance scenario where the subject under surveillance is observed through a pin hole in a wall. Conventional wisdom is that such a device (indeed any lens) requires a physical lens stop on the object side of the lens to limit the amount of light that passes through the lens on its way to being viewed. This causes a number of difficulties in a pinhole surveillance situation. The separation between the physical lens stop and the lens adds to the bulkiness of the device which is a problem of itself. Additionally, the object end of the lens/lens stop arrangement needs to be placed in the pinhole making it more easily detectable from the object side of the pin hole. Finally the quality of the image produced is very susceptible to slight misalignment inaccuracies.
- 7 The inventor, it is alleged, has challenged this conventional wisdom in realising that the physical lens stop can be dispensed with by optimising the components of the lens arrangement so as to create a “virtual aperture”. In short, it is alleged, he has invented a stopless lens.
- 8 The examiner’s objections as to clarity and support reflect the difficulty of drafting a claim to this concept sufficiently precisely.
- 9 The form of application I was asked to consider at the hearing was last amended with the attorney’s letter dated 23 May 2011 though the claims were those filed with his letter of 13 May 2011. There are 19 claims in total of which claims 1 and 13 are independent - claim 1 being to the lens arrangement and claim 13 being to the method of obtaining images covertly using what is in effect the lens arrangement of claim 1. Those claims read as follows:
1. A lens arrangement, adapted for looking through a remote pinhole comprising a plurality of lens elements designed and configured to operate without the presence of an integral physical lens stop, such that in use the lens arrangement defines a “virtual aperture” in a pre-determined plane in object space remote from a first end of the lens arrangement, said first end being the end of the lens arrangement closest to the subject being viewed, wherein the virtual aperture acts as a remote entrance pupil in object space beyond the first end of the lens arrangement and defines a pencil of rays that passes through the lens arrangement.
13. A method of obtaining images covertly, comprising the steps of:
- configuring a lens arrangement comprising of a plurality of lens elements such that in use the lens arrangement defines a “virtual aperture” in a pre-determined plane in object space remote from a first end of the lens arrangement, said first end being the end of the lens arrangement closest to a subject being viewed, said virtual aperture being configured to act as a remote entrance pupil and define a pencil of rays that passes through the lens arrangement;
 - locating said lens arrangement behind a pinhole in a barrier that is unconnected to the lens arrangement;

- arranging the lens arrangement behind the pinhole such that the pinhole acts as the aperture stop of the lens arrangement, and;
- locating an image capturing means at an image plane to capture the image.

10 The method claim is not subject to the same objections as claim 1 for reasons I will mention later and I will therefore focus on claim 1 for the bulk of my decision.

The Argument

11 The crux of the examiner's objection to claim 1 is that the invention is defined in terms of the result achieved rather than by specifying the various parameters of the lens arrangement that achieve that result. He has reported that this renders the claim unclear and, whilst a number of embodiments are described in the application, that the description does not support such a broad claim.

12 For his part, the applicant (via his attorney) has argued that there are a myriad of ways that the invention could be implemented and that it would give the applicant unduly narrow protection to require him to define the invention in terms of specific parameters that achieve the result. He says that wider protection than that is appropriate to reflect the size of contribution that the inventor has made in challenging conventional wisdom that a physical lens stop is required. In support of that position, the applicant has relied upon the judgement in *No-Fume*¹. What *No-Fume* tells us was not at issue and is adequately summarised in paragraph 14.120 of the Manual of Patent Practice:

14.120 The area defined by the claims must be as precise as the invention allows. As a general rule, claims which attempt to define the invention, or a feature thereof, by a result to be achieved should not be allowed. However, they may be allowed if the invention can only be defined in such terms and if the result is one which can be directly and positively verified by tests or procedures adequately specified in the description and involving nothing more than trial and error. In *No-Fume Ltd v Frank Pitchford Co Ltd*, 52 RPC 231, a claim to an ash receptacle for smokers in which the dimensions of certain parts were such that smoke from objects thrown into the receptacle did not emanate from the receptacle was allowed on the grounds that the invention could be realised by dimensions other than those disclosed, by experiments not involving inventive ingenuity. However, claims of this kind are generally undesirable and it should be noted that the *No-Fume* claim was allowed solely because the invention did not admit of precise definition independently of the result achieved. Any claim which includes a subordinate clause prefaced by words such as "so that" or "the arrangement being such that" requires special consideration from this point of view.

13 Thus *No-Fume* tells us that claims which define the invention in terms of the result to be achieved can in limited circumstances be allowable. The question I have to answer is whether the form of claim presently employed defines the invention clearly.

14 At the hearing, Ms Prentice talked me through the process of designing a lens arrangement to illustrate how the inventor determines the optimum lens arrangement of claim 1. This process is now predominantly done using software that enables the researcher to specify and adjust various parameters of the system to test what the

¹ *No-Fume Ltd vs Frank Pitchford & Co Ltd* 52 RPC 231

end result is and thus to create the optimum arrangement to best meet their particular needs. Ms Prentice informed me that such is the strength of conventional thinking as to the need for a physical lens stop that the software used for this purpose requires one to be present. In designing the optimum arrangement in the present invention she said that the designer was required to specify the presence of a physical aperture that limits the field of view of the lens ie the solid angle of light rays that will enter the lens system. The designer then specifies the parameters of the various elements of the lens arrangement that are able to transmit this range of rays (but no others) so as to be processed. In other words the lens arrangement is such that the rays passing through the very extremities of the lens elements are those emanating from the extremities of the physical aperture. For a lens arrangement designed in this way the physical aperture stop then becomes redundant since the lens arrangement itself defines the solid angle of rays that can pass through it and be processed. The optimised lens arrangement thus acts to create a virtual aperture in the object space.

15 On the basis of that explanation I am content that the meaning of “virtual aperture” (which the examiner had previously questioned) is clear. My difficulty with claim 1 is rather more fundamental than that however.

16 In explaining how the invention achieves the “virtual aperture” effect, the description (at page 3) characterises the invention in the following terms:

“The present invention solves these problems with the prior art by using a novel lens arrangement which is similar to a converging telescope eyepiece except that the eyepiece arrangement is reversed so that the hole through which the subject is viewed is placed where the eye would normally be.”

17 The description then goes on to explain that such telescope eyepieces do not require a physical lens stop because they are always used with an objective lens which will have a physical stop that limits the light entering the eyepiece. Such an eyepiece, as the description acknowledges, when used in its normal configuration will have an exit pupil where the eye is placed to view the resulting image, and only light rays which pass through this exit pupil are able to exit the system.

18 On page 4 the description goes on to say that

“By reversing this eyepiece lens apparatus, the “exit pupil” becomes a kind of “virtual aperture”” and

“In order to pass through the lens arrangement light must pass through the virtual aperture and remain within the limits of the truncated cone”.

19 Thus the description makes clear that the lens arrangement of present claim 1 can be a reversed telescope eyepiece wherein the exit pupil is acting as a virtual aperture. Now it may well be that no one has ever thought to use a telescope objective in reverse configuration to harness this “virtual aperture” effect, but it seems to me that since any telescope eyepiece will have an exit pupil that will act as this virtual aperture without any modification of the lens arrangement itself, then any telescope objective would anticipate the lens arrangement of claim 1 unless

elements of the language of claim 1 are intended to impose some other limitation on the scope of the claim. But what is that intended limitation?

- 20 Unfortunately, the form of claim 1 is such that it does not provide a precise definition of the invention. It purports to be to a “lens arrangement” but then goes on to define that lens arrangement in terms of the use to which it is to be put (adapted for looking through a remote pinhole), the process of making it and the end result it achieves (it is designed and configured to operate without the presence of an integral physical lens stop such that in use it defines a virtual aperture).
- 21 In trying to argue that claim 1 does clearly define the invention, Ms Prentice put it to me that a conventional telescope objective would not have been designed with this purpose in mind and moreover would not have been intended to be used (nor actually used) in reverse formation and without a physical lens stop. That though is of no help in relation to claim 1 which seeks protection for the lens arrangement itself. It seems to me that a conventional telescope eyepiece has all the intrinsic properties required of the lens arrangement in claim 1 and that the meaning of any additional limitations included in claim 1 are not clear. Turning the whole lens arrangement round is not to my mind **adapting** the lens arrangement so much as specifying how it is used. Defining the invention by the result to be achieved does not in this instance distinguish the invention over conventional telescope eyepieces. And specifying that the lens has been **designed and configured** to provide the virtual aperture effect is akin to a product by process claim which, following the decision of the House of Lords in *Kirin-Amgen*² is only allowable if the product itself is novel and inventive (and cannot satisfactorily be defined by reference to its structure) which the lens arrangement here does not appear to be.
- 22 Thus I find that claim 1 does not meet the requirements of section 14(5)(a) and (b) in that it does not define the invention and is not clear. In light of that finding I do not consider it necessary to try to decide whether the claim is supported. That is not though to say that there is no invention here. Indeed as I have already mentioned, claim 13 is not subject to the same problem as claim 1 as it is directed to a method of using such a lens arrangement. Furthermore as discussed at the hearing I can envisage acceptable forms for an apparatus claim albeit that it might not be possible to claim the lens arrangement per se. It is of course for the applicant to decide on the form of claims to submit.

Decision

- 23 I have found that the application as presently on file does not comply with the Act as claim 1 does not meet the requirements of section 14(5)(a) and (b).
- 24 Amendment to overcome that non-compliance is however feasible. The applicant has requested an extension of the section 20 period to allow for the filing of amendments should I find that necessary. In the circumstances I consider it appropriate to exercise the Comptroller’s discretion to extend the compliance period which the applicant should request by filing Form 52. That would extend the compliance period to 22 July 2011. Any amendment to overcome the non-compliance with section 14(5) should be filed before 19 July 2011. If no amendments

² *Kirin-Amgen Inc v Hoechst Marion Roussel Ltd* [2005] RPC 9

are filed or the amendments fail to satisfy me, the application will be refused under section 20(1).

Appeal

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

A BARTLETT

Deputy Director acting for the Comptroller