BL C/147/88

PATENTS ACT 1977

IN THE MATTER OF an application
to amend the specification of
patent application no 8521029
by Universite Rene Descartes

DECISION

On 13 May 1987, an Official Letter issued on application no 8521029, conveying the Examiner's first report under Section 18. Amendments in response were filed on 12 November 1987, thus exhausting the applicants' right to amend of their own volition as prescribed by Rule 36(3) of the Patents Rules 1982. On 10 December 1987, the applicant sought further amendments, of his own volition, by filing Form 11/77 in accordance with Rule 36(4), which provides for such amendments subject to the Comptroller's consent. In an Official letter of 29 January 1988, the Examiner objected that certain of the latter amendments would contravene the provisions of Section 76 of the Act, relating to the addition of matter, and could not be allowed. Further communications did not resolve the issue, which thus came before me at a hearing on 5 July 1988. At the hearing, Mr J A D Cropp appeared as Agent for the applicant, and the Examiner Mr D C Grace was present.

The application is concerned with determining the deformability of red corpuscles from the blood, a matter of both scientific and clinical significance. The purpose of the invention, given on page 1 of the printed specification, is to measure the deformability in a manner which combines the comprehensiveness of one group of prior art methods, which are simple but can give only a single overall figure for a sample of corpuscles, and the accuracy of a second group of prior art methods which can quantify the number of rigid corpuscles but which are expensive, difficult and time consuming to carry out.

An embodiment of the proposed apparatus is described with

reference to Fig. 1 of the drawings. It consists of adjacent compartments, one receiving a suspension of red corpuscles, and the other an electrically conducting buffer. The compartments are separated by a membrane containing pores, masked so that only a suitable number of pores, is exposed. The buffer compartment is open to atmosphere, but the compartment containing corpuscles can be subjected to an above atmospheric pressure selected by an operative. This pressure causes corpuscles to pass through the membrane at a rate dependent on the membrane, the pressure, and the concentration of corpuscles in the suspension, and these parameters are chosen so as to achieve the passage of one corpuscle at a time. Such passages are detected by electrodes provided one on each side of the membrane, and the transit times of the corpuscles can thus be determined and used to assess quantitatively the rigidity of each passing corpuscle. A signal processing and recording device can construct a histogram showing the distribution of this property amongst the corpuscles in the suspension.

The specification as it stood amended on 12 November 1987 included apparatus claims 1-6, method claims 7-9 and omnibus claim 10, but the only claims relevant to the application to amend are:

> "2. Apparatus for determining the deformability of red blood cells and of the type using a filtration method and measuring the transit time of the cells by means of electric impedance variations, said apparatus comprising in combination:
>
> a measurement cell formed of two electrically insulated parts, clamped mechanically one against the other, each of the parts comprising inlet and outlet orifices and a cavity having a lateral hole, one of the cavities being for containing buffer, and the other being for containing a dilute suspension of the cells whose deformability is to be measured;

a vertical filter holder clamped between the two parts of the measurement cell at the position of the two lateral holes;

a vertically mounted filter formed by a membrane made from a plastic material, of a thickness of the order of 3 to 20 microns, and having a plurality of pores having a diameter between 3 and 5 microns;

means for applying sufficient pressure to said dilute suspension contained in the second mentioned cavity to cause substantially a single red blood cell at a time to pass through the membrane;

two electrodes, one in each of said cavities placed at the height of the filter holder opposite the filter and between which the electric impedance variations are measured;

an electronic device for translating into transit times the electric impedance variations corresponding to the transit of a single red blood cell through the membrane; and

a signal processing device and a recorder connected to the electronic device for obtaining a histogram corresponding to the distribution of rheological properties of the red blood cells being examined.

8. A method of measuring the deformability of red blood cells said method comprising:

charging a first cavity of an apparatus as claimed in Claim 2 with a pure buffer and a second cavity of said apparatus with a dilute suspension of red blood cells in an isotonic conducting buffer;

applying a sufficient pressure in the cavity containing said

suspension to cause red blood cells to pass through the multipore membrane of said apparatus substantially one at a

detecting between the electrodes of said apparatus electric impedance variations corresponding to the transit of each single red blood cell through said multipore membrane, translating said variations into transit times; and plotting a histogram of the said transit times.

9. Process according to Claim 8, wherein the volume concentration of the red blood cell suspension is from 0.01% to 0.1%, and wherein said pressure is from 1 to 100 mm of water."

The applicants seek to replace claim 9 by:

"9. A process according to Claim 8 wherein the volume concentration of the red blood cell suspension is from 0.01% to 0.1%, the said pressure is in the range 100 mm to 10 mm of water and the membrane contains 100 to 15 pores.

10. A process according to Claim 8 wherein the volume concentration of the red blood cell suspension is from 0.01% to 0.1%, the said pressure is in the range 100 mm to 10mm of water and the membrane contains 100 to 15 pores."

In addition, it appeared at the hearing that the figure of 0.1% in both claims 9 is an error, and should be 1%. Mr Cropp sought correction of this, which I allow.

It will be seen that the new claim 9 adds to old claim 9 the feature that the membrane contains 100 to 15 pores. In the light of the passages at page 1 lines 123-127 and page 3 lines 39-43 of the printed specification, this is clearly allowable.

The features of the new claim 10 are a range of red blood cell suspension concentration of 0.01% to 0.1%, a pressure range of

100 mm to 10 mm of water, and a range of 100 to 15 pores in the membrane. This differs from claim 9 (as corrected) by its references to a concentration of 0.1% and a pressure of 10 mm. The concentration figure is disclosed on page 3 of the printed specification at line 91 as an example within the range 0.01% to 1%, but it is not in dispute that the figure of 10 mm is nowhere explicitly mentioned in the application as first filed. It is to the inclusion of this figure that the Examiner objected.

The general power to amend the application of the applicant's volition is conferred by Section 19(1) of the Act, which provides:

> 19. (1) At any time before a patent is granted in pursuance of an application the applicant may, in accordance with the prescribed conditions and subject to section 76 below, amend the application of his own volition.

Such amendment is therefore subject to the well-known constraint of Section 76. Subsections (2) and (3) of this Section provide that:

> (2) No amendment of an application or the specification of a patent shall be allowed under any of the provisions of this Act to which this subsection applies if it -
>
> (a) results in the application or specification disclosing any such matter, or
>
> (b) (where a patent has been granted) extends the protection conferred by the patent.
>
> (3) Subsection (2) above applies to the following provisions of this Act, namely, sections 17(3), 18(3), 19(1), 27(1), 73 and 75.

The "such matter" of Subsection (2)(a) is that specified in Subsection (1) of this Section, namely:

> "... matter which extends beyond that disclosed in ... the application for the patent, as filed."

It is therefore clear that if indeed the introduction of the figure of 10 mm would add such matter, it cannot be allowed.

The disclosure of the specification as printed relating to pressure values is to be found in the passage on page 3 lines 71-105. This passage is:

MEASURE EXAMPLE

The filtering membrane which is used is, for example, the polycarbonated membrane commercialized by NUCLEPORE of a thickness of 11 micron, containing $4.10^5$ pores per $cm^2$, whose average diameter is about 5 micron. On this membrane is bonded an adhesive ribbon (of trademark 3M for example) in a sufficient amount to leave only about 20 to 50 pores; the mask formed by this adhesive film is pierced with a hole of a diameter of 175 micron for example.

The membrane thus formed is then mounted in the vertical filter holder. Then the two cavities of the two compartments of the measurement cell are filled using the electrode needles connected to syringes; one cavity is filled with buffer Tris-HCl with ph=7.4, the other with the suspension to be measured, of a volume concentration (hematrocite Ht) of the order of 0.01% to 1%, for example 0.1%. The value of this concentration depends on the number of effective pores and on its characteristics. It is desirable to have a single corpuscle passing at a time as quickly as possible.

The red blood corpuscle suspension is prepared by diluting a small volume of red corpuscles in a large volume of isotonic

conducting buffer. To obtain flow of the red blood corpuscles through the filtering membrane, a desired over pressure is applied of the order of 1 to 100 mm of water, for example 50 mm of water, by means of a device 10 connected to a compartment containing the suspension to be measured.

Mr Cropp's argument is that the figure of 10 mm pressure, though not explicitly mentioned, can be fairly deduced by the man skilled in the art when looking at this passage as a whole. This man would note that the suggested range of concentration was from 0.01% to 1%, and of pressure 1 to 100 mm. In view of the likely effect of each variable on the rate of corpuscle passage, there is an implication that the 0.01% would be associated with 100 mm, and the 1% with 1 mm, each pair giving the same rate of passage. He would then understand that the exemplary intermediate of 0.1% would require a pressure of 10 mm, and perceive this to be what the passage suggests he should do.

As I see it, there are two difficulties with this argument. The first is that with the remaining variable, namely the membrane characteristics, being clearly of great influence, and the pore number alone having a suggested range of six or seven to one, there can be no clear presumption that the description does intend to convey a correlation between the suggested concentration range end points and the suggested pressure range end points. If there were such a correlation, it could only hold for one pore number (other membrane characteristics being equal), and none is suggested. Secondly, there is an intermediate pressure suggested, namely 50 mm. This tends to destroy any suggestion of a concentration/pressure correlation of the kind Mr Cropp puts forward. If there were, the intermediate pressure quoted would surely be 10 mm, not 50 mm. The applicant has created an opportunity to make plain his advice on pressure, and takes it by mentioning 50 mm, not 10 mm.

I assume for present purposes that an argument of this nature is permissible, in that it is capable of justifying the addition of

a figure not specified in the application as filed, without offending against the provisions of Section 76, but in my view the facts in this case do not support the argument, and the notionally skilled man would not be led by the passage I have quoted to suppose that a pressure of 10 mm was being suggested, and certainly could not maintain this conclusion with any confidence even if it occurred to him.

The Official letter of 29 January 1988 also touched on the question of whether the disclosure of a figure of 10 mm as an example within a specified range, supports a claim involving a range having this figure as an end-point. This question applies equally to the 0.1% range end point in new claim 10 (where it is intended) and in both versions of uncorrected claim 9 (where it is not). Mr Cropp addressed me at some length on this point, at my request, and drew my attention to "Shell" Patent (Revocation) [1959] RPC 154 and [1960] RPC 35. He referred also to decisions T08/81, T54/82 and T201/83 of the European Patent Office, reported in that Office's Journals of October 1982, November 1983, and October 1984.

In the Shell case, the Hearing Officer observed at pages 158-159:

> As regards the proposed amendment to Claim 2, Mr Tookey submitted that the introduction of the limitation that "the organic ester is present to the extent of about 0.2 theories" has the result that the claim ceases to be supported by the description. The latter makes several references to the use of 0.2 theories of the ester additive, but does not indicate that 0.2 is an upper limiting value. The specification does suggest that the invention covers a wide range of amounts of ester additive. To limit the monopoly in a subordinate claim to a part of that range, and moreover a part stopping at a point which has had some emphasis placed upon it in the description, is in my view a legitimate amendment. I thus find that Claims 1 and 2, and consequentially Claims 10 and 11, may be amended as the

Patentees ask.

I am not convinced that in this case, the intermediate fiqure of 0.1% receives as much attention as did the exemplary figure of 0.2 theories in the Shell specification (quoted in [1959] RPC at pages 156-7), attention which, to judge from the passage I have quoted, contributed to the Hearing Officer's decision (subsequently upheld in the Patents Appeal Tribunal and the Court of Appeal). However, the difference seems to me to reside solely in the degree of prominence of the figure, rather than in the nature of what is said about it, and on balance I am not prepared to find that there is insufficient support in the description as first filed to permit this amendment to be made.

In the case of the 10 mm figure, I find myself in this difficulty, that the range end-point question only has to be decided if I am wrong on the allowability of the 10 mm figure, and if I am wrong, I need to know exactly what can be introduced relating to this figure before I can decide whether or not new claim 10 would be allowable in this respect. In the end, it seems to me that it would serve no useful purpose for me to come to any conclusion on this point.

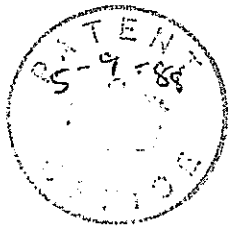
There is no request before me to amend the description: since I have found, for the reasons given above, that the figure of 10 mm is not suggested by the description, it follows not only that the inclusion of this figure in new claim 10 would contravene the provisions of Section 76, whereby it is forbidden by Statute, but also that the claim would not be supported by the description as required by Section 14(5)(c), and for this reason I withold the Comptroller's consent necessary to allow new claim 10, were it otherwise permissible.

By 10 December 1987, when Form 11/77 was filed, the application for a patent had been reported in order for grant under Section 18(4), though the applicants had not been informed of that report. I am not disposed to go behind that report (assuming

that I am empowered to do so), consequently I allow a period of one month from the date of this decision for the applicant to file a fresh page 16 in duplicate incorporating those amendments to claim 9 that I have found allowable, namely addition of the feature relating to pore number and correction of 0.1% to 1%. Failing that, the application will proceed to grant in the form it assumed when amended on 12 November 1987.

Dated this 5 day of September 1988

D H ROWLAND
Principal Examiner acting for the Comptroller



Erratum to Decision titled

IN THE MATTER OF an application
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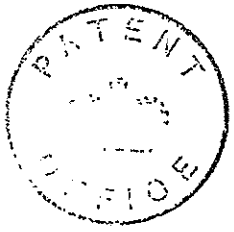
Rene Descartes"

There is a clerical error on page 4 of the decision where it reproduces the replacement claim 9 submitted by the applicant on 10 December 1987. To correct this error, "10 mm" in line 15, page 4 should be replaced by "1 mm".

Dated this 18th day of November 1988

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