



PATENTS ACT 1977

APPLICANT Bernard Matthews Limited

ISSUE Whether patent application numbers
GB1513695.5, GB1515825.6,
GB1515826.4 and GB1515827.2 comply
with sections 1(1)(a), 1(1)(b) and 76

HEARING OFFICER H Jones

DECISION

Introduction

- 1 The four applications in issue were filed as divisional applications of GB1403203.1 in August and September of 2015. GB1403203.1, now granted, was in turn divided from GB1109454.7, which is also now granted. The compliance date of the four applications was extended from 7 December 2015 to 7 April 2016 following filing of forms 52 on 24 November 2015 and 12 February 2016. The subject matter of all four applications is the treatment of meat to reduce the number of viable micro-organisms thereon without impinging on the fresh, i.e. unfrozen, nature of the meat.
- 2 The examiner argues that the applications do not meet the requirements of the Act either through want of novelty or inventive step or through the disclosure of subject matter not contained in the earlier applications (i.e. added matter). There are also some minor clarity objections. In view of the short amount of time remaining before the compliance date, the applicant requested a hearing to resolve the examiner's outstanding objections. As a matter of expediency, it was decided to hear all four applications together: at the hearing, the applicant was represented by Dr Adrian Bradley and Hazel Stewart (of Cleveland, patent attorneys for the applicant) and Dr John Normanton of Oxandia Limited.

The law

- 3 The relevant sections of the Act concerning novelty, inventive step and added matter are set out below:

1(1) 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) ...*

2(1) An invention shall be taken to be new if it does not form part of the state of the art.

2(2) The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything else) which has at

any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.

2(3) The state of the art in the case of an invention to which an application for a patent or a patent relates shall be taken also to comprise matter contained in an application for another patent which was published on or after the priority date of that invention, if the following conditions are satisfied, that is to say -

(a) that matter was contained in the application for that other patent both as filed and as published; and

(b) the priority date of that matter is earlier than that of the invention.

76(2) No amendment of an application for a patent shall be allowed under section 15A(6), 18(3) or 19(1) if it results in the application disclosing matter extending beyond that disclosed in the application as filed.

4 I shall deal with each application in turn.

GB1513695.5

5 Claim 1 as amended on 25 January 2016 now reads:

A process for reducing the number of viable microorganisms present on the surface of meat comprising the steps of:

a) providing an untreated meat item having a surface membrane and muscle tissue, said untreated meat item having viable microorganisms on the surface membrane;

b) exposing the surface membrane to cooling by exposure to a spray of liquid nitrogen until the surface membrane reaches a selected first temperature as measured by a probe inserted within or just below the membrane of between -5°C and 2°C;

c) immediately allowing the surface membrane to warm to a temperature of below 4°C to give a treated meat item;

characterized in that the number of viable microorganisms present on the surface membrane is reduced, whilst the β -hydroxyacyl-CoA dehydrogenase (HADH) activity of the muscle tissue is not increased by more than a factor of two in the treated meat item compared with the untreated meat item.

6 The examiner objects to the claim on the grounds of lack of inventive step over the disclosure in WO2004/080189, CA2016939, US4940599 and WO03/024235, and also to lack of clarity.

Arguments and analysis

7 The examiner has followed the four-step approach to assessing inventive step set out in *Windsurfer/Pozzoli*¹, and Dr Bradley agreed that the examiner's assessment of the skilled person and the common general knowledge of that person as set out in the pre-hearing report was correct.

¹ *Pozzoli SPA v BDMO SA [2007] EWCA Civ 588* - para. 23

8 The examiner has identified the inventive concept of claim 1 as being:

“a method suitable for reducing the number of viable microorganisms present on the surface of meat comprising exposing the surface to a spray of liquid nitrogen until the temperature measured by a probe inserted within or just below the membrane is -5°C to 2°C, and then immediately allowing the surface membrane to warm to a temperature of below 4°C, characterised in that the HADH activity of the meat is not increased by a factor of more than 2.”

9 At the hearing, Dr Bradley presented an alternative construction, and proposed an amendment which more clearly defines that concept, namely:

“a method of reducing the number of viable microorganisms present on the surface of meat as part of a production line process comprising exposing the surface to a spray of liquid nitrogen until the temperature measured by a probe inserted within or just below the membrane is -5°C to 2°C, and then immediately allowing the surface membrane to warm to a temperature of below 4°C, characterised in that the HADH activity of the meat is not increased by a factor of more than 2.”

The proposed claim 1 reads:

A process of reducing the number of viable microorganisms present on the surface of meat as part of a production line for the preparation of meat products comprising the steps of:

a) ...

b) exposing the surface membrane to cooling by exposure to a spray of liquid nitrogen until the surface membrane reaches a ~~selected~~ first temperature as measured by a probe inserted within or just below the membrane of between -5°C and 2°C;

c) ...

characterized in that ... [as previously].

10 I have considered the proposed amendments and agree that contingent on the above amendment, the contribution can be construed as presented by Dr Bradley.

11 I will now review steps 3 and 4 of the *Windsufer/Pozzoli* approach taken by the examiner in the light of the contribution now claimed.

12 The difference between the state of the art and the inventive concept of claim 1 as proposed to be amended is the rapid surface cooling of meat in a production line process using a spray of liquid cryogen to reduce viable surface microorganisms.

13 None of the citations disclose or suggest a process which would be suitable for use in a production line process or which would make it obvious for the skilled person to modify the method taught for such a purpose. Briefly, WO2004/080189 has as its preferred embodiment the use of mechanical refrigeration in a cabinet, thus teaching away from cryogenic cooling and providing no motivation to explore rapid in-line cooling. CA2016939 discloses the cooling of meat on an endless conveyor within a freezer enclosure, while US4940599 and WO03/024235 disclose rapid chilling of

poultry for the purpose of reducing moisture loss and tenderisation respectively. While the skilled person would appreciate these processes would have a bacteriostatic effect, i.e. they would slow or prevent the growth of surface bacteria, they would not, it seems to me, consider the processes to have a bactericidal effect. I am therefore satisfied that the claim amended in line with Dr Bradley's proposal is not rendered obvious by the prior art.

- 14 The proposed amendment also removes the word "selected" from claim 1 to overcome the examiner's remaining objection to lack of clarity. I agree that the amendment also overcomes that objection.

GB1515825.6

- 15 Claim 1 as amended on 4 January 2016 reads:

A process for reducing the number of viable microorganisms present in the body cavity of an eviscerated poultry carcass, comprising the steps of:

a) providing an untreated poultry carcass having a surface membrane and muscle tissue, said untreated poultry carcass having viable microorganisms on the surface membrane of a body cavity;

b) exposing the surface membrane of the body cavity to a cryogen by means of a spray nozzle connected to a cannula or probe for a period of less than two minutes;

c) allowing the surface membrane to warm to give a treated meat item;

characterized in that the number of viable microorganisms present on the surface membrane is reduced, whilst the β -hydroxyacyl-CoA dehydrogenase (HADH) activity of the muscle tissue is not increased by a factor of more than 2 in the treated meat item compared with the untreated meat item.

- 16 The examiner objects to the claim on the grounds of added matter, in that it specifies a time range, i.e. "a period of less than two minutes", which is not fully justified by the application as filed.

Arguments and analysis

- 17 The examiner argues that the lower limit of zero seconds encompassed by the range specified in claim 1 has no basis in the application as filed. The application as filed discloses a number of lower limits for cooling, the lowest being 30 seconds.

- 18 The applicant's case is that the lack of a defined non-zero lower limit is consistent with the application as filed, which states at page 10, lines 32-33, that the meat item is preferably exposed to the surface cooling conditions for as short a period of time as possible. Specific lower time limits are discussed and periods as low as 30 seconds are established as suitable through experiment. The teaching of the application as filed is that the surface membrane is to be cooled for as short a time as to produce the characterizing effect set out in the claim as presently amended, i.e. reducing the number of viable microorganisms. The skilled person would understand this to require a non-zero time period consistent with the effect to be produced. I

accept Dr Bradley's argument that the limit as stated, i.e. "a period of less than two minutes", is consistent with this teaching.

- 19 The examiner also argues that the upper limit of 2 minutes is not supported by the application as filed except for where birds are crust frozen within a cabinet freezer. There is no mention of the use of a cannula or probe in this example.
- 20 In example 2 on page 15, an upper limit of 2 minutes is disclosed as part of an experimental example which used a cabinet chiller. At the hearing, Dr Bradley said that a skilled person would have understood that the timeframes established by the experimental examples would be applicable to the other embodiments disclosed and especially the preferred embodiment now claimed. On this basis, I agree with Dr Bradley that the claim does not add subject matter.

GB1515826.4

- 21 Claim 1 as amended on 4 January 2016 reads:

A process of reducing the number of viable *Campylobacter* microorganisms present on the surface of a poultry carcass, comprising the steps of:

a) providing an untreated poultry carcass having a surface membrane and muscle tissue, said untreated poultry carcass having viable *Campylobacter* microorganisms on the surface membrane;

b) exposing the surface membrane to cryogenic cooling by passage of the poultry carcass through a refrigerated tunnel for a time of less than 2 minutes;

c) allowing the surface membrane to warm to give a treated meat item;

characterized in that the number of viable *Campylobacter* microorganisms present on the surface membrane is reduced, whilst the β -hydroxyacyl-CoA dehydrogenase (HADH) activity of the muscle tissue is not increased by a factor of more than 2 in the treated poultry carcass compared with the untreated poultry carcass.

- 22 The examiner objects to claim 1 on the ground of lack of inventive step over WO03/024235, and makes the same objection to added matter as in GB1515825.6 above. I have already found that the time limit stated as "a time of less than two minutes" is justified and supported by the application as filed. I note that part c) of the claim refers to a "treated meat item" whereas it later refers to a "treated poultry carcass".

Arguments and analysis

- 23 As in GB1513695.5, the examiner has followed the four-step approach to assessing inventive step set out in *Windsurfer/Pozzoli* and Dr Bradley agrees that the examiner's assessment of the skilled person as set out in the pre-hearing report was correct. In setting out the common general knowledge of the skilled person, the examiner asserts that the skilled person would know that freezing will kill a proportion of the bacteria present on meat. This was disputed by Dr Normanton, who asserted

that freezing will not inevitably kill a proportion of *Campylobacter* on a poultry carcass and that the skilled person would not view bacteriostatic and bactericidal processes as interchangeable. WO03/024235 only discloses a process which inhibits bacterial growth rather than killing bacteria. I accept this assertion.

24 The inventive concept of claim 1 is:

"a method of reducing the number of viable *Campylobacter* microorganisms on the surface of a poultry carcass comprising exposing the surface membrane to cryogenic cooling by passage of the carcass through a refrigerated tunnel for a time of less than 2 minutes, and then allowing the surface membrane to warm, characterised in that the HADH activity of the meat is not increased by a factor or more than 2."

25 WO03/024235 addresses the problem of tenderisation of poultry, and it does not envisage a method of killing *Campylobacter* nor provides a detailed disclosure of the use of cryogenic cooling. On this basis, I agree with Dr Bradley that a skilled person working from WO03/024235 would find no motivation to employ cryogenic cooling to kill *Campylobacter*. Therefore I consider that claim 1 of GB1515826.4 does involve an inventive step.

GB1515827.2

26 Claim 1 as amended 26 October 2015 reads:

A process for reducing the number of viable microorganisms present on the surface of meat comprising the steps of:

a) providing an untreated meat item having a surface membrane and muscle tissue, said untreated meat item having viable microorganisms on the surface membrane;

b) exposing the surface membrane to a cryogen in combination with an impinging gas until the surface membrane reaches a selected first temperature as measured by a probe inserted within or just below the membrane of between -5°C and 2°C;

c) allowing the surface membrane to warm to give a treated meat item;

characterized in that the number of viable microorganisms present on the surface membrane is reduced, whilst the β -hydroxyacyl-CoA dehydrogenase (HADH) activity of the muscle tissue is not increased by more than a factor of two in the treated meat item compared with the untreated meat item.

27 The examiner objects to claim 1 on the grounds of lack of novelty and inventive step based on the disclosure of CA2016939, GB2105570, WO2004/080189, US4940599 and WO03/024235.

Arguments and analysis

28 Neither CA2016939 nor GB2105570 specify that the process required reduces the number of viable *Campylobacter* microorganisms present on the surface of meat.

However, CA2016939 does disclose that the cell structure of microorganisms ruptures when subjected to sudden cooling.

- 29 CA2016939 discloses exposing the surface membrane of eviscerated poultry to a cryogen in combination with an impinging gas. Page 3, lines 2-5, states that “a crust may be created while the carcasses move along an endless belt in a freezer enclosure while fans and liquid cryogen spray nozzles are used to create a blizzard of snow”. The temperature range given is “low 30°F range”, which I construe as meaning 30°F or slightly above (equivalent to -1.1°C or slightly above). The carcasses are then allowed to warm. On page 4, line 21-23, it is stated that “the cell structure of other microorganisms will rupture when dropped below 32°F, in about 2 minutes or less”.
- 30 According to the treatment protocol described in *“The Effect of Superchilling and Rapid Freezing on the HADH Assay for Chicken and Turkey”*, *J Assoc. Publ. Analysts*, 2010, 38, 13-23, which is incorporated in the application by reference, it is said that the HADH level increases 5-fold on total freezing of fresh chicken. The examiner extrapolates this to mean that 25% of a meat item would need to be frozen to increase the HADH level by a factor of 2. On this basis, and on the basis that the cooling step of CA2016939 is disclosed as forming a “soft-crust”, the examiner argues that the process described in CA2016939 would not increase HADH activity of muscle tissue by more than a factor of two. So, even though the effect of reducing the number of viable microorganisms present on the surface of meat was not recognised, the process of CA2016939 would inevitably reduce the number of viable microorganisms present on the surface of the meat and would not increase HADH levels by more than a factor of two.
- 31 GB2105570 discloses a process which is intended to reduce weepage in poultry in fresh-pack condition. The process includes exposing the surface of meat products to a cryogen in combination with an impinging gas; the outer skin of poultry is frozen using liquid CO₂ from pressurized nozzles in freeze tunnels with a series of blowers. The skin of the poultry is rapidly frozen, but the meat remains substantially unfrozen. The temperature of the poultry is then allowed to equalise. Since the meat remains substantially unfrozen, the examiner argues that HADH activity of the muscle tissue is not increased by a factor of more than 2. Since the method disclosed in GB2105570 is substantially similar to that set out in claim 1, it is inevitable that the method will reduce the number of viable microorganisms on the surface of the meat.
- 32 It is established in UK case law that the use of a known substance in a known method cannot derive novelty from the discovery of a previously unrecognised effect. Lewison J set this out in a decision of the Patents Court in *Tate & Lyle Technology Ltd v Roquette Frères*² (para. 76):

In Moliere’s play Le Bourgeois Gentilhomme, Monsieur Jourdain asks something to be written in neither verse nor prose. A philosophy master says to him, “Sir, there is no other way to express oneself than with prose or verse”. Jordain replies, “By my faith! For more than forty years I have been speaking prose without knowing anything about it, and I am much obliged to you for having taught me that.” That is this case. The industry has been using

² [2010] FSR1 - upheld on appeal

maltotriitol to control or determine crystal habit without knowing it. What is left of the patent as granted is no more than a discovery as such.

- 33 That is also this case. The industry has been processing meat in a manner which would reduce the number of viable microorganisms, including *Campylobacter*, on the surface, although this was not previously recognised. This application merely acknowledges this effect and so is no more than a discovery as such. The process set out in claim 1 is not novel in the light of CA2016939 and GB2105570.

Conclusion

- 34 I have found that the amendments proposed at the hearing in respect of GB1513695.5 overcome the examiner's objections. The amendments, plus any consequential changes to the description, should be submitted by 7 April 2016. Amendments to bring the description of GB1515825.6 and GB1515826.4 into line with claim 1 as presently on file should also be submitted by this date. I remit these applications back to the examiner for further processing, addressing also the inconsistency in wording of claim 1 noted at paragraph 22 above.
- 35 I do not accept the arguments put forward by the applicant in respect of GB1515827.2 and accordingly I refuse this application under section 18(3) for lack of novelty.

Appeal

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

H Jones

Deputy Director, acting for the Comptroller