

IN THE HIGH COURT OF JUSTICE
CHANCERY DIVISION
PATENTS COURT

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 12 June 2008

Before :

MR PETER PRESCOTT QC
(sitting as a Deputy Judge)

Between :

ALAN NUTTALL LIMITED

Claimants

- and -

(1) FRI-JADO UK LIMITED

Defendants

(2) FRI-JADO BV

Mr Giles Fernando and Miss Anna Edwards-Stuart (instructed by **DLA Piper UK LLP**) for
the Claimants

Mr Guy Tritton and Mr Richard Davis (instructed by **Manches LLP**) for the Defendants

Hearing dates : 29, 30 April, 1 and 9 May 2008

JUDGMENT

Peter Prescott QC :

I. Introduction

1. This case is about a patent for a self-service display cabinet in which food (e.g. roast chickens) may be kept hot. Such display cabinets are used by supermarkets.
2. Health regulations require that every part of the food in a display cabinet must be kept at a temperature of 63 °C or higher. The traditional way to do that was to use hot plates or hot lamps. A disadvantage was that the food was not heated evenly. Some parts tended to burn or to dry out. (Sometimes there would be a tray of water in the base to reduce desiccation.) Also, if there was a hot plate, supermarket staff who were refilling the cabinet might burn their hands on it.

The Proceedings

3. The Claimants sue for infringement of patent GB 2,348,697. The alleged infringement is a display cabinet called the Multi-Deck Mark 2. (It was also claimed that the Mark 1 infringed too, but later on this claim was abandoned.) The Defendants deny infringement and allege that the relevant claims of the patent are invalid for obviousness and insufficiency.
4. The trial of this action was scheduled to last four days. That is already rather too long for a case of this simplicity. It would have lasted quite a lot longer still if the parties had not been encouraged to drop aspects of their respective cases that were irrelevant or did not really matter.

Legally Irrelevant or Unhelpful Evidence

5. In order to rebut the allegation of obviousness the Claimants wanted to run a case based on commercial success. That was commonplace when I first came to the Bar. But nowadays it is not often considered to be relevant to what the court has to decide. Evidence of that sort is called the “secondary evidence” and it must be kept “firmly in its place”: *Molnlycke AB v. Procter & Gamble Ltd (No 5)* [1994] RPC 49, 113, C.A. It must at least be relevant. The thinking behind the “commercial success” idea was best explained by Tomlin J in *Samuel Parkes & Co Ltd v. Cocker Bros Ltd* (1929) 46 RPC 241, 248:

The user of this particular clip has been large. Over 1 ¼ millions were sold up to the end of 1927. The Railway Companies have adopted it as standard, and to that extent it has beaten its competitors out of the field. The truth is that, when once it has been found, as I have found here, that the problem had waited solution for many years, and that the device is in fact novel and superior to what had gone before, and has been widely used, and used in preference to alternative devices, it is, I think, practically impossible to say that there is not present that scintilla of invention necessary to support the Patent.

If people skilled in the art have been trying to crack the problem for years, but have failed, it suggests the solution cannot have been obvious. But that presupposes that they failed despite being aware of the cited prior art. It was a reasonable assumption to make in the early days of patents because most inventions were made by men on the shop floor¹ and they knew the prior art: it was what they had seen before. It may still be a reasonable assumption to make nowadays in certain specific industries where people are in the habit of scrutinising patents carefully. But I do not think it can be presumed in all industries.

6. Having considered the evidence the Claimants proposed to adduce on this point I ruled that it was irrelevant. It did not begin to establish what would need to be established, namely, that as a fact, or proper inference in the circumstances, those skilled in this art had probably read the cited prior art yet had failed to come up with the invention.
7. The Claimants also wanted to prove that the Defendants had copied the concept of their Turboserve product, which is covered by their patent. I did not allow this controversy to be ventilated because it is not relevant to what I have to decide. If the Mark 2 is covered by a valid claim of the patent it does not matter that it was or was not copied. If the Mark 2 is not covered by a valid claim of the patent the Defendants were entitled to copy the concept (which they anyway denied). Copying would be relevant if the Defendants had been aware of the cited prior art, had been trying to solve the same problem but had failed, and so were obliged to resort to copying in order to come up with the solution².

8. The Defendants for their part cited a considerable number of items of prior art in support of their case on obviousness. That is seldom sound policy because, if the alleged invention was indeed obvious in the light of one particular item of prior art, it does not make the case any better that there were other items that were not quite as good. On the contrary, to cite numerous pieces of prior art in an obviousness case tends, if anything, to suggest that the invention was not so obvious after all. At the trial the Defendants dropped most of those and wanted to rely on four, including a prior user of their own. In the end they decided to rely on just the two best citations, plus common general knowledge.
9. Still another complication was that at the beginning of the trial the parties were not even in agreement about exactly what the alleged infringing cabinet consisted of. That should not have happened. There should have been an agreed Product and Process Description. In the end it was agreed that certain drawings annexed to the Defendants' skeleton argument should be taken to be an accurate depiction of the relevant aspects of the machine.

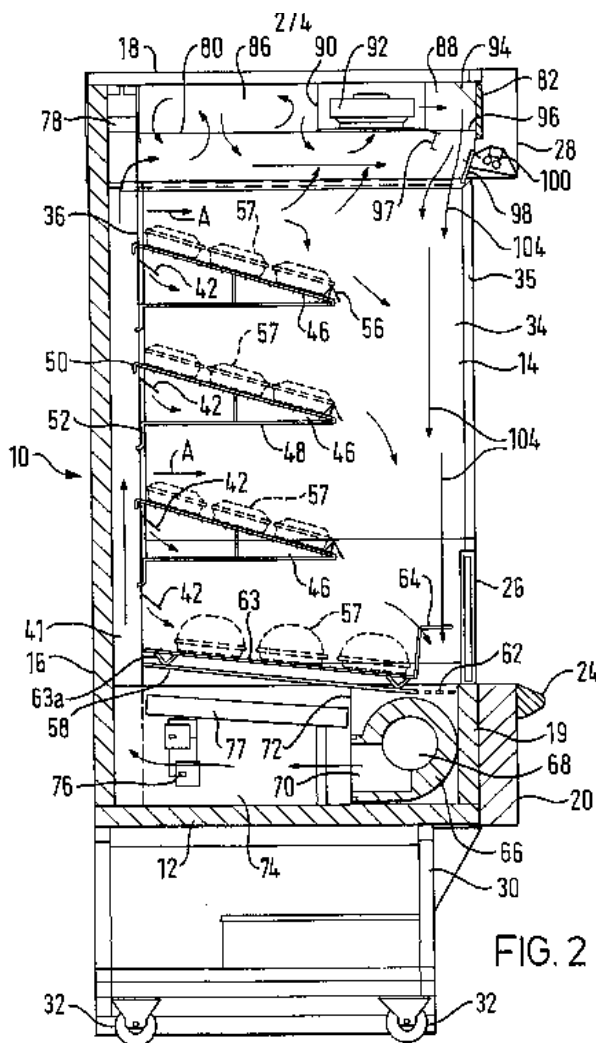
II. The Patent In Suit

What the Patent Teaches

10. The patent discloses a self-service cabinet which is best seen in Figure 2 (reproduced on the next page of this judgment).
11. The items of food **57** are laid out on shelves as shown in a main chamber **34**. The cabinet does not have a front door. Instead of a front door it has an air curtain **104** (shown by the long arrows on the right of the drawing). The customer puts his hand through the air curtain in order to pick up an item of food.
12. An air curtain is just what its name implies. It is a rising or (in this case) falling curtain of air. Here it stops the hot air inside the cabinet from leaking out and it stops cool, ambient air from getting in. Air curtains, as such, were well known in other contexts. They were used in refrigerated display cabinets instead of doors. (Next time you go into a supermarket you can probably find one in the open display cabinet where they keep the milk, yoghurt, etc. Chilled air comes out of a sort of grill at the top and is sucked in by another grill at the bottom. If you put your hand through the opening you will feel the chilled air descending.)

For that matter air curtains are sometimes used in shops instead of doors. The absence of a door is thought to attract customers and the air curtain keeps the inside warm in winter.

13. The display cabinet is equipped with two air pumps: a pump **66** at the bottom of the cabinet and a centrifugal fan **92** at the top. The pump **66** drives air over a heater **76** and the heated air then goes up a duct **41**. The duct is really a space formed between the back wall of the cabinet and a perforated metal skin **36**. Air that is going up this duct, therefore, has two possible flow-paths:-



(1) It can escape sideways through the perforations in the duct and hence into the main part of the cabinet where the food is kept, as shown by the arrows **A**. Baffles **42** help to deflect the air downwardly and so encourage flow of heated air around the food items. The air that is near the top of the main chamber is sucked upwards by the fan **92** (which helps even heating of the food items on the top shelf).

(2) Or the air can go all the way up to the top of the duct until it meets a barrier **78**, and thence into a chamber that is above the main part of the cabinet, as shown by the curved arrow.

14. The fan **92** draws in air and it blows it into a compartment **88** at the top. From there the air passes between two parallel fins **97, 98** which are inclined inwardly and downwardly. So the air travels downwards, forming the air curtain. Of course at the bottom of the air curtain the air is re-circulated by the lower pump **66**. Excess air in the main chamber will also be inducted by the air curtain.

15. At page 11 of the patent, first paragraph, the following statement occurs:-
- “It will be noted that the perforation 38 in the skin 36 extend for substantially the full length and width of the duct 41. In that way, a good supply of heated air over all the shelves 46, 63 of the cabinet 10 can be achieved keeping the food packs 57 evenly heated throughout the cabinet.”
16. It can be seen that some of the hot air in the upper region will rise by natural convection and go into the space **86**. This is described as a “collection zone” and the air that accumulates there constitutes a kind of reservoir that can feed the air curtain for a short time if the air coming from the duct **41** is interrupted (e.g. if the pump **66** is programmed to deliver the air in 10-second bursts instead of continuously).

The Claims of the Patent

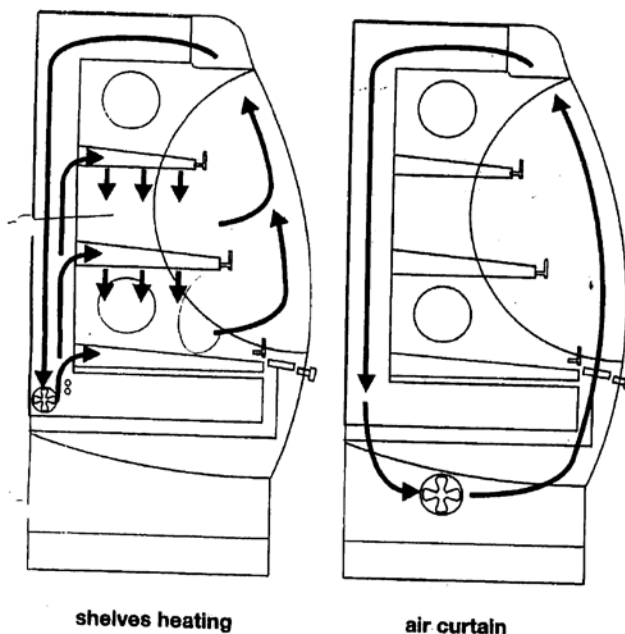
17. At the trial attention was concentrated on two claims only, namely Claims 1 and 3. The other claims are either not alleged to be infringed or, if so alleged, are not relied on by the Claimants as being independently inventive.
18. Claim 1, conveniently broken up into integers, reads as follows:
- (1) A heated food storage and display cabinet comprising an open fronted chamber in which packs of food can be stored,
 - (2) an upwardly extending enclosed air duct having a plurality of outlets over a substantial length of the duct leading from the duct to the chamber,
 - (3) a first flow inducing means for directing air upwardly through the duct
 - (4) and a second flow inducing means for producing a curtain of air which is directed across the open front of the chamber,
 - (5) and heater means,
 - (6) the first flow inducing means causing the air to pass over the heater means, through the duct passing through the outlets and into the chamber
 - (7) and the second flow inducing means being arranged to draw air from the upper end of the chamber and use it in the formation of an air curtain across the open front of the chamber.
19. Claim 3 reads:

A heated food cabinet according to claim 1 or 2 in which an air collection zone is provided at the upper end of the chamber.

20. I shall have to construe those claims, but first I shall describe the product that is alleged to infringe them. (That will help to draw attention to the relevance of some of the construction points in issue.)

III. The Defendants' Product

21. The Fri-Jado Multi-Deck Mark 2 cabinet is depicted in certain drawings annexed to the Defendants' skeleton argument, which were eventually agreed. The cabinet has an air curtain instead of a front door. In this instance the air curtain moves upwards, not downwards. This is shown in the right-hand diagram, below. It can be seen that the air is driven by a fan in the lower part of the cabinet. After reaching the top of the air curtain, the air is drawn down through ducts provided for the purpose and is sucked in by the fan.



22. The diagram on the left shows how hot air is admitted into the main chamber of the cabinet. (Please note that the duct shown in the left-hand diagram is *not* the same duct as the one shown in the right-hand diagram: this is more apparent from some of the other agreed drawings, which I do not reproduce here.)
23. It can be seen that air is driven by a second fan and is caused to flow up a duct and hence into the shelves, which are hollow. The shelves are provided with

holes and so the air is driven into the main chamber as shown. Excess air in the main chamber will be inducted by the air curtain, and hence removed.

24. It can also be seen that the air that emerges from the hollow shelves is driven downwards, and hence onto the food items underneath.

IV. The Expert Witnesses

25. Mr Stephen James gave expert evidence for the Claimants, and Mr Andrew Gigiel for the Defendants. Mr James is the Director of the Food Refrigeration and Process Engineering Research Centre at the University of Bristol. Mr Gigiel was, formerly, its Deputy Director.

26. Each side criticised the other's expert and contended that he had little or no practical experience in heated display cabinets. In my judgment there is not much in that because, rather as in *Tickner v. Honda Motor Co Ltd* [2002] EWHC 8 (Pat) at §4, "the technology with which this case is concerned is not at a level where detailed knowledge of such work is required"; and these witnesses were "qualified enough at the level of generality called for in this case".

27. It is worth recalling what is the proper function of expert witnesses in a patent case. It is not to act as a latter-day Sir Bernard Spilsbury. Their true function, and what makes their evidence cogent or not, was explained by Jacob LJ in *SmithKline Beecham Plc v. Apotex Europe Ltd* [2004] EWCA Civ 1568.

"[51] Before I go further, however, it is as well to remember what the key function of an expert witness in a patent action is – as I said in *Rockwater* (para. 12):

'Their primary function is to educate the court in the technology – they come as teachers, as makers of the mantle [i.e. of the person skilled in the art] for the court to don. For that purpose it does not matter whether they do or do not approximate to the skilled man. What matters is how good they are at explaining things.'

[52] To that I would add this: although it is inevitable that when an expert is asked what he would understand from a prior document's teaching he will give an answer as an individual, that answer is not as such all that helpful. What matters is what the notional skilled man would understand from the

document. So it is not so much the expert's personal view but his reasons for that view – these the court can examine against the standard of the notional unimaginative skilled man. There is an analogy here with the well-known *Bolam* test for professional negligence – what matters is not what the individual expert witness says he personally would have done, but whether the conduct said to be negligent falls short of what a reasonable professional would have done.

[53] Thus in weighing the views of rival experts as to what is taught or what is obvious from what is taught, a judge should be careful to distinguish his views on the experts as to whether they are good witnesses or good teachers – good at answering the questions asked and not others, not argumentative and so on, from the more fundamental reasons for their opinions. Ultimately it is the latter which matter – are they reasons which would be perceived by the skilled man?

28. While I am touching on the topic of expert testimony, it is worth completing the quotation from the *Rockwater* case, although strictly speaking it is mainly about obviousness, a topic I shall come later. In *Rockwater Ltd v. Technip France SA* [2004] EWCA Civ 381 Jacob LJ continued thus:-

[13] But it also is permissible for an expert witness to opine on an "ultimate question" which is not one of law. I so held in *Routestone v Minorities Finance* [1997] BCC 180 and see s.3 of the Civil Evidence Act 1972. As regards obviousness of a patent Sir Donald Nicholls V-C giving the judgment of the Court of Appeal in *Mölnlycke v Proctor & Gamble* [1994] RPC 49 at p. 113 was explicit on the point:

"In applying the statutory criterion [i.e. as to whether an alleged inventive step was obvious] and making these findings [i.e. as to obviousness] the court will almost invariably require the assistance of expert evidence. The primary evidence will be that of properly qualified expert witnesses who will say whether or not in their opinions the relevant step would have been obvious to a skilled man having regard to the state of the art."

[14] But just because the opinion is admissible:

"it by no means follows that the court must follow it. On its own (unless uncontested) it would be "a mere bit of empty rhetoric" Wigmore, *Evidence* (Chadbourn rev) para. 1920. What really matters

in most cases is the reasons given for the opinion. As a practical matter a well-constructed expert's report containing opinion evidence sets out the opinion and the reasons for it. If the reasons stand up the opinion does, if not, not. A rule of evidence which excludes this opinion evidence serves no practical purpose. What happens if the evidence is regarded as inadmissible is that experts' reports simply try to creep up to the opinion without openly giving it. They insinuate rather than explicate" (*Minorities* at p. 188)

[15] Because the expert's conclusion (e.g. obvious or not), as such, although admissible, is of little value it does not really matter what the actual attributes of the real expert witness are. What matters are the reasons for his or her opinion. And those reasons do not depend on how closely the expert approximates to the skilled man.

29. In weighing the evidence in this case I have made allowances for the personal attributes and prejudices which these witnesses – like all of us – inevitably have. Mr James thought that the person skilled in this art would have been “an engineering draftsman or sheet metal worker” (his Report, §28). I find it hard to accept that the task of designing a heated display cabinet of this sort would be assigned to an unimaginative sheet metal worker – a metal basher.
30. Mr Gigiel suffered from the opposite fault. For him, the art in question was “temperature controlled storage”, a speciality which I believe is too abstract and general to exist in real life. He thought that the person skilled in the art would be familiar with the American Society of Heating, Refrigerating and Air-Conditioning Engineers Guides (ASHRAE Guides). It may sound plausible if you go just by the title, but “Heating” there refers to the heating of buildings. Those Guides comprise a voluminous body of literature but, with one limited exception (see below), nothing therein was drawn to my attention which had to do with this case. There is an email from ASHRAE themselves that suggests that those Guides provide little or no guidance to designing a heated food display cabinet, save perhaps at a high level of abstraction. Mr Gigiel accepted in cross-examination that there is no reference in the ASHRAE Guides to heated display cabinets.

31. As a witness Mr Gigiel was inclined to be too argumentative. I am inclined to attribute that to stress under witness-box conditions. He also stated, wrongly, that he had no current or past connection with either of the parties. I do not believe he was trying to mislead the court: I attribute that to lack of care.

V. The Person Skilled in the Art

32. There was a profound cleavage of opinion about who constituted the typical person skilled in the art. For the Defendants it was said that this person would be familiar not only with heated display cabinets but with refrigerated display cabinets also. It was also said that the technical principles were the same. The Defendants thought that it was to their interest to espouse this line because, of the three items of prior art that remain in this case, two are refrigerated display cabinets. For the Claimants it was said that the person skilled in that art would have no knowledge of refrigeration technology and that the technical principles were different. Having regard to what I really have to decide, I think this controversy is rather sterile, as will become apparent later in this judgment.
33. It has often been pointed out that that the man skilled in the art in patent law is not a real person (see e.g. *Nichia Corporation v. Argos Ltd* [2007] EWCA Civ 741 §§10 and 11). Like his brother, the reasonable man of the common law, he is a notional benchmark – a legal creation who is supposed to offer an objective test of whether a particular development can be protected by a patent.
34. In my judgment the person skilled in the art for the purposes of this case is an engineer, perhaps employed by the design department of a company that manufactures display cabinets for hot food, alternatively a consultant who might be engaged by such a company. He has the technical knowledge to understand the contents of the patent in suit at both a practical and a principled level and the ability to construct such a device. Being an engineer, he is interested in mechanical contraptions and has been since he was a boy (in this industry it is probably a he, but that is neither here nor there). Like the rest of us he goes to supermarkets and he will have noticed, and been interested in, the commonplace chilled display cabinet I have mentioned in paragraph 12 above. He is not a person capable of real lateral thinking. He never misses the obvious and he is taken to read the cited prior art with care and attention (see *Windsurfing*

International Inc v. Tabur Marine (G.B.) Ltd [1985] RPC 59 at 74. That includes the cited prior art in this case that has to do with refrigerated display cabinets.

VI. Construction

Principles

35. In *Kirin-Amgen Inc v. Hoechst Marion Roussel Ltd* [2004] UKHL 46 at §32 Lord Hoffmann said at §34:-

The question is always what the person skilled in the art would have understood the patentee to be using the language of the claim to mean. And for this purpose, the language he has chosen is usually of critical importance.

36. In *Halliburton Energy Services Inc v. Smith International (North Sea) Ltd* [2005] EWHC 1623 (Pat), Pumfrey J said:-

“[68] The principles to be applied are set out in Lord Hoffmann's speech in *Kirin- Amgen v TKT* [2004] UKHL 46, paragraphs 30-35. Given the approval that is given in that speech to the observations of Jacob LJ in *Rockwater Ltd v Technip France SA* [2004] EWCA Civ 381 I shall set out that useful list of applicable principles. I take the responsibility for modifying principles (e) and (f) slightly to take account of the single criticism that Lord Hoffmann makes of this list.

(a) The first, overarching principle, is that contained in Art 69 itself. Sometimes I wonder whether people spend more time on the gloss to Art 69, the Protocol, than to the Article itself, even though it is the Article which is the main governing provision.

(b) Art 69 says that the extent of protection is determined by the terms of the claims. It goes on to say that the description and drawings shall be used to interpret the claims. In short the claims are to be construed in context.

(c) It follows that the claims are to be construed purposively – the inventor's purpose being ascertained from the description and drawings.

(d) It further follows that the claims must not be construed as if they stood alone – the drawings and description only being used to resolve any ambiguity. The Protocol expressly eschews such a method of construction but to my mind that would be so without the Protocol. Purpose is vital to the construction of claims.

(e) When ascertaining the inventor's purpose, it must be remembered that he may have several purposes depending on the level of generality of his invention. Typically, for instance, an inventor may have one, generally more than one, specific embodiment as well as a generalised concept. But there is no presumption that the patentee necessarily intended the widest possible meaning consistent with his purpose be given to the words that he used: purpose and meaning are different.

(f) Thus purpose is not the be-all and end-all. One is still at the end of the day concerned with the meaning of the language used. Hence the other extreme of the Protocol – a mere guideline – is also ruled out by Art 69 itself. It is the terms of the claims which delineate the patentee's territory.

(g) It follows that if the patentee has included what is obviously a deliberate limitation in his claims, it must have a meaning. One cannot disregard obviously intentional elements. Hoffmann LJ put it this way in *STEP v Empson* [1993] RPC at 522:

"The well known principle that patent claims are given a purposive construction does not mean that an integer can be treated as struck out if it does not appear to make any difference to the inventive concept. It may have some other purpose buried in the prior art and even if this is not discernible, the patentee may have had some reason of his own for introducing it."

(h) It also follows that where a patentee has used a word or phrase which, acontextually, might have a particular meaning (narrow or wide) it does not necessarily have that meaning in context. A good example of this is the *Catnic* case itself – "vertical" in context did not mean "geometrically vertical", it meant "vertical enough to do the job" (of supporting the upper horizontal plate). The so-called "Protocol questions" (those formulated by Hoffmann J in *Improver v Remington* [1990] FSR 181 at p.189) are of particular value when considering the difference of meaning between a word or phrase out of context and that word or phrase in context. At that point the first two Protocol questions come into play. But once one focuses on the word in context, the Protocol question approach does not resolve the ultimate question – what does the word or phrase actually mean, when construed purposively? That can only be done on the language used, read in context.

(i) It further follows that there is no general "doctrine of equivalents." Any student of patent law knows that various legal systems allow for such a

concept, but that none of them can agree what it is or should be. Here is not the place to set forth the myriad versions of such a doctrine. For my part I do not think that Art. 69 itself allows for such a concept – it says the extent of protection shall be determined by the terms of the claims. And so far as I can understand, the French and German versions mean the same thing. Nor can I see how the Protocol can create any such doctrine.

(j) On the other hand purposive construction can lead to the conclusion that a technically trivial or minor difference between an element of a claim and the corresponding element of the alleged infringement nonetheless falls within the meaning of the element when read purposively. This is not because there is a doctrine of equivalents: it is because that is the fair way to read the claim in context.

(k) Finally purposive construction leads one to eschew what Lord Diplock in *Catnic* called (at p.243):

"the kind of meticulous verbal analysis which lawyers are too often tempted by their training to indulge."

Pedantry and patents are incompatible. In *Catnic* the rejected "meticulous verbal analysis" was the argument that because the word "horizontal" was qualified by "substantially" whereas "vertical" was not, the latter must mean "geometrically vertical."

Claim 1

37. There are two integers of Claim 1 the meaning of which is in contention.

Integer (2)

38. Claim 1 calls for "an upwardly extending enclosed air duct having a plurality of outlets over a substantial length of the duct leading from the duct to the chamber".

39. According to the Defendants this means that the length of the duct which has these outlets is sufficient to ensure that there will be a flow of heated air over all the food items on the shelves. They draw attention to the passage I have quoted at paragraph 15 above. Their Mark 2 cabinet, they say, does not possess this feature because there is no outlet that directs air over the food items that lie on its top shelf.

40. It is true that the purpose of having outlets over a substantial length of the duct is to promote the even distribution of heated air over the food items on display. But in my judgment, on the proper construction of Claim 1 there is no requirement that that be the sole means by which that object is to be achieved. The Claim does not say so and it would be going beyond purposive construction to imply it. See the above quotation from the *Halliburton* case at paragraphs (e) and (f). We have seen that in the description of the apparatus according to Figure 2 of the patent it is stated that, as regards the food on the top shelf (in respect of which there are no baffles to direct the incoming hot air onto that food), that object is also achieved by having the fan **92** drawing some of the air near the top of the chamber upwards. As for the passage in the patent I have quoted in paragraph 15 above, that does state that the perforations extend for the full length of the duct. But that is a description of a specific embodiment of the invention, whereas the function of a claim is to provide a measure of generalisation. Imagine a display cabinet where the outlets in the duct covered 75% of its height and, in order to promote air flow over the food on the topmost shelf, some alternative means was provided e.g. a little auxiliary fan. That would still be a cabinet with an upwardly extending enclosed air duct having a plurality of outlets over a substantial length of the duct. It is also fair to point out the contrast with Claim 28, which refers to “outlets provided over substantially the *full* length of the duct” [my emphasis].
41. The Defendants also contend that their Mark 2 cabinet does not satisfy the requirements of Integer (2) because the openings that conduct the air into the cabinet are not in the duct itself, but in the underside of its hollow shelves (see the left-hand diagram in paragraph 21 of the judgment). I do not accept this. There are nevertheless a plurality of outlets leading from the duct to the chamber.

Integer (7)

42. Claim 1 requires the presence of a second flow inducing means for producing a curtain of air which is directed across the open front of the chamber, and according to Integer (7) “the second flow inducing means being arranged to draw air from the upper end of the chamber and use it in the formation of an air curtain across the open front of the chamber”.

43. The Defendants' opening skeleton argument said this at paragraph 92:-

The only sensible construction of Integer 7 is that the arrangement in mind is that the second flow inducing means must be at the top of the chamber directly upstream of the downward air curtain and air at the upper part of the chamber must be able to flow directly to the second flow inducing means other than via the air curtain inlets/outlets.

44. The submission was made, of course, because the Defendants' Mark 2 cabinet has a fan at the bottom of the cabinet that draws air from the top of the chamber through purpose-provided ducts in the back of the cabinet. The right-hand diagram I have reproduced at paragraph 21 above is a side-view, and it shows one of those ducts.

45. The submission was supported by some reasoning in the expert report of Mr Gigiel which was, however, defective. He said that the drawing power of a fan falls off with the square of the distance and so if the second fan was at the bottom of the chamber – as in the Defendants' Mark 2 cabinet – no air curtain would be formed unless it was connected via a duct: yet no duct of that sort was mentioned in the patent. The defect in this reasoning is that the patent does not have to mention such a duct. What it requires is that the second fan be arranged to draw air from the upper end of the chamber and use it in the formation of the air curtain; and there is no limitation in Claim 1 as to how you achieve it. You could have the fan at the top; or you could have the fan at the bottom connected to the top via a special duct; and perhaps there could be yet other ways of doing it.

46. A less ambitious and more persuasive argument was foreshadowed on Day 2 of the trial (see the transcript at page 18). Set forth explicitly, it would contain the following steps of reasoning:

- a) The expression “the chamber” must refer to the open fronted chamber where packs of food can be stored.
- b) It is therefore not enough that the second fan draws air from a *different* chamber lying above “the chamber” (as in the Defendants' Mark 2 cabinet, see the right-hand diagram at paragraph 21 above).

- c) The expression “the upper end of the chamber” must be given a purposive construction. Any air curtain will draw in some air from a cabinet (and therefore from, amongst other places, the upper end of the chamber) therefore something more is surely being required. Otherwise the words “being arranged to draw air from the upper end of the chamber” would otherwise be mere surplusage i.e. pointless.
- d) The purpose of this integer can be ascertained from the context of the patent. It is as follows. The air is drawn from the upper end of the chamber in order to promote convection heating of the uppermost food items. This can be seen from the following passages in the specification:
- “One object of the present invention is to provide a heated food storage cabinet which enables air to flow over the packs of food” (page 1).
 - In describing the defects of one of the items of prior art, US-A-2,993,349 (which is, incidentally, cited in this case by the Defendants on obviousness and has been referred to throughout as Detwiler) it is said: “Moreover, a flow path to the second blower does not encourage the air to flow over food at the upper end of the cabinet” (page 2).
 - On page 3 of the specification it says: “Also, as the second flow inducing means draws air at least partly from the upper end of the cabinet, the air moving towards the second flow inducing means will tend to flow over food packs at the upper end which leads to efficient use of the heated air”.
 - In the specific description of the mode of operation of the embodiment according to Figure 2 (page 10) it says: “The operation of the fan 92 draws some of the air near the top of the chamber 34 upwards (thereby encouraging air flow at the top of the chamber beneficial for maintaining the temperature of food packs 57 on the top shelf ...” (Recall that there are no baffles to drive the hot air over the food in the topmost shelf.)

47. The Defendants also rely on certain answers that Mr James gave in cross-examination. At Day 2 page 80:-

MR. TRITTON: We have two parts to Claim 1, Mr. James. The first part is a second flow inducing means for producing a curtain of air directed across the open front of the chamber. Can I say that that is the first role of the second flow inducing means – to produce a curtain of air. Do you understand that? A. Yeah. The primary role is that.

Q Then there is another role for the second flow inducing means, and that is for the purposes of, by its arrangement, drawing air from the upper end of the chamber, and use it in the formation of an air curtain across the open fronts. I am going to call that second role one of drawing air from the upper end of the chamber. A. It's picking up the hot air.

Q That is its second role. Otherwise, if it does not have two roles, it seems to me that this second part adds nothing to the first part. A. Because it is picking up the hot air, it's a rather nice feature.

Q Now, would you accept from me that that second role cannot be referring to the inherent effect of an air curtain to draw – or, as you call it, entrap air from the interior of the chamber because that is an inherent effect of the first role? It must be referring to something more than just that. A. Certainly the way it is expressed here it's actually taking out from that area there, yes, at the top.

Q So, would you agree with me on that? A. Yes.

At page 83:

MR. TRITTON: Can I put up this, Mr. James: What we see in this patent description – in particular the passage I have taken you to – informs us that the secondary purpose of the top fan is to draw air over the food on the top shelf. Do you agree with that? A. Yes.

Q Therefore, it would be reasonable to assume in these circumstances that by the upper part of the chamber we are concerned with the area between the top shelf and the top part of the cabinet. That is correct, is it not? A. Yes.

And at page 84:-

Q The secondary purpose of the fan is to draw air from the outlets to the front of the rear duct, over the food packs and upward into the second flow inducing means. A. Yes.

Q That is effectively what Integer 7 (as I can call it) is aimed at. A. It has a secondary advantage that does that, yes.

48. I accept that the purpose of this integer (7) is to draw air from the upper end of the chamber – the chamber where the food items can be stored – with the effect of promoting the flow of heated air over the uppermost food items. There is no limitation concerning how it is done. Claim 1 should be construed accordingly.

Claim 3

49. Claim 3 reads:

A heated food cabinet according to claim 1 or 2 in which an air collection zone is provided at the upper end of the chamber.

50. “Air collection zone” is not a term of art, just an ordinary English phrase. It surely cannot mean just any zone where some air can collect, otherwise almost any chamber according to Claim 1 would be bound to have it because hot air tends to rise. To find out its meaning we need to look at the context of the patent. I have already described it in paragraph 16 above (the concept of having a sort of reservoir of hot air). I hold that “air collection zone” in the context of this patent means a dedicated zone in which stagnant hot air may accumulate and be a buffer that can be drawn upon when required.

VII. Infringement

51. With the exception of integers (2) and (7), it is not in dispute that the Defendants’ Mark 2 cabinet has all of the integers of Claim 1. Infringement of Claim 3 is denied.

Claim 1, Integer (2)

52. It follows from my interpretation of integer (2) that the Defendants’ Mark 2 cabinet satisfies that particular requirement. As can be seen from the left-hand diagram (paragraph 21 above) that the duct has indeed a plurality of outlets over a substantial length thereof; those outlets lead from the duct to the chamber.

Claim 1, Integer (7)

53. This issue is not as easy as it might have been because of a problem in the evidence. Because there is a point of procedural fairness I shall first describe how it arose.

54. It will be recalled that there is no Product and Process Description, as there should have been. The defendant in a patent case will prepare such a description, and the claimant will then usually agree it. Thus the court is left in no doubt about the construction and mode of operation of the allegedly infringing apparatus. If the PPD cannot be agreed that itself serves to alert the parties to the points that are really in issue, and they can prepare their evidence accordingly.
55. When I asked Mr Tritton (who appeared for the Defendants) why there was not a product and process description, he told me (Day 2, page 16) that it was “essentially in the witness statements of fact and in the drawings, or schematics”, by which he meant the materials emanating from his own clients.
56. It will also be recalled that at the beginning of the trial it became apparent that the parties were not even agreed as to the actual mechanical construction of the alleged infringing cabinet. Eventually a sort of deal was struck. Mr Fernando (who appeared for the Claimants) accepted that the drawings annexed to Mr Tritton’s skeleton argument were a fair and accurate description of this apparatus and (having regard to certain rulings I made or other concessions that were made, which I need not detail here) Mr Tritton did not call any witnesses of fact.
57. However, when it came to closing speeches Mr Tritton took the point that his drawings do not explain the behaviour of the air above the top shelf in the cabinet. Thus (he said) there was no evidence that air is drawn from the upper end of the chamber with the effect of promoting the flow of heated air over the food items on that top shelf. He added that it was not for the court to speculate.
58. I am not impressed by those submissions. The materials in Mr Tritton’s witness statements are nevertheless admissions against interest, insofar as they support Mr Fernando’s case. At any rate, where the witness statement is made by the employee of the Defendants who designed the cabinet and is backed by a statement of truth. Mr Tritton’s decision to call no witnesses of fact was very sensible and saved much time; but it did not cause the admissions to vanish into thin air.

59. Having looked at the witness statements, I seems to me that the Fri-Jado Multi-Deck Mark 2 cabinet was designed to achieve optimal temperature distribution within the cabinet so as to satisfy the customer's requirements that it hold the product (e.g. chickens) at the specified temperature (65 degrees Celsius) for the specified period of time (4 hours). The inference must be that the Defendants succeeded, and that would achieve an even temperature distribution. See especially the witness statement of Mr van Dorst, paragraph 10 and following.
60. It must follow that the food items on the top shelf are heated uniformly to the requisite temperature, and that must be by hot air convection. At any rate, and in all the circumstances, I am certainly prepared to infer it on the balance of probabilities. If they were heated by mere heat conduction from the topmost shelf itself (which would then be a sort of hot plate) we would be back in the problem that the underside of those food items would tend to dry out or the topside of those food items would not adequately be heated.
61. How does the hot air get into the top of the compartment, i.e. in the space above the top shelf? It does so because hot air rises. See the evidence of Mr James at Day 2 pages 37-39. And how does the hot air get out of that space? As shown in his drawing³ X/1. In essence, it is entrained by the top of the rising air curtain, which at this point is being sucked in through a narrow gap into a further chamber above. And why is air being sucked in? Because there are ducts connecting the chamber above to the second fan – the one that forms the air curtain.
62. I would add that Mr James' expert report asserted that the Mark 2 cabinet had this feature. True, the averment was terse to say the least and was not supported by any reasoning. Had it been put to him in cross-examination that hot air is simply not drawn out of the top of the compartment by the second fan, and had he been unable to offer any reasoning in support of that factual proposition, his evidence would have had no value. But what cannot be right is that that proposition should not be put to him in cross-examination at all followed by what amounts to a submission of no case to answer.
63. In sum, then, the second flow inducing means is arranged to draw air from the upper end of the chamber and use it in the formation of an air curtain. Claim 1

does not require that the air curtain be formed *entirely*, or even *in major part*, from the air in the upper end of the chamber.

64. I therefore hold that Claim 1, if valid, is infringed by the Defendants' Mark 2 cabinet.

Claim 3

65. I am not satisfied that the Defendants' Mark 2 cabinet has an air collection zone in the sense that I have interpreted that expression. I can find no place where stagnant air collects to form a buffer of hot air that can be called upon when required.
66. I should say at once that no effective attack was mounted on Claim 3 as thus construed, and so I shall not consider its validity further in this judgment. But if I am wrong in my interpretation and Claim 3 covers just any zone where air can collect, I would hold that it adds nothing inventive over Claim 1.

VIII. Insufficiency

67. The argument here is that the Defendants' Mark 2 cabinet is very different from the cabinets disclosed in the patent in suit, so much so that if Claim 1 of that patent nevertheless covers the Mark 2 then the patent is bad for insufficiency. There are not sufficient directions to enable a person of ordinary skill in the art to make something like the Mark 2. The Defendants cited *Biogen Inc v. Medeva plc* [1997] RPC 1, H.L. – what we used to call 'not fairly based'.
68. I wonder whether that argument is available nowadays having regard to the recent decision of the Court of Appeal in *Lundbeck A/S v. Generics (UK) Ltd* [2008] EWCA Civ 311. Be that as it may, I reject it.
69. A patent does not have to teach the skilled reader how to make all possible artefacts that could fall within its claims. If that were the law no patent for a mechanical device could be valid. Indeed section 48A(1)(b)(i) of the Patents Act 1977 contemplates that in certain circumstances the owner of a second patent for 'an important technical advance' in relation to a first patent may secure a compulsory licence under that first patent. But the technical advance could not have been made by one of ordinary skill in the art, just by reading the

first patent – it was not obvious. Or to put it tersely, the first patent covers, but does not enable, the second invention, yet it is not invalid for insufficiency.

70. Mr Tritton argued that it was different where the second invention works on a different “principle”. That raises the question: what is a “different principle”? And it raises a second question: who gets to decide this, and according to what known judicial criteria? I do not want to decide those questions in the abstract because I believe they do not arise in this case. I suppose that if you want a thumbnail sketch of the principle that is taught by the patent in suit, it could be said to be “A hot air display cabinet with two fans, one for driving hot air over food items via openings in a duct, the other for forming an air curtain across an open front and for drawing air from the top part of the compartment where the food is stored”. If so, the Defendants have used that principle – even if it be the case that no person of ordinary skill in the art would have been led from the patent drawings to the Defendants’ drawings of their Mark 2.

IX. Obviousness

71. The Defendants contend that the invention defined by Claim 1 of the patent was obvious to a person skilled in the art in December 1998 having regard to (a) US Patent No. 4,089,322 (Guibert); (b) US Patent No. 2,993,349 (Detwiler); (c) common general knowledge.

Principles

72. The structured approach to considering obviousness was recently re-stated by Jacob LJ in *Pozzoli Spa v. BDMO SA* [2007] EWCA Civ 588 at §23:

(1)

(a) Identify the notional "person skilled in the art"

(b) Identify the relevant common general knowledge of that person;

(2) Identify the inventive concept of the claim or if that cannot readily be done, construe it;

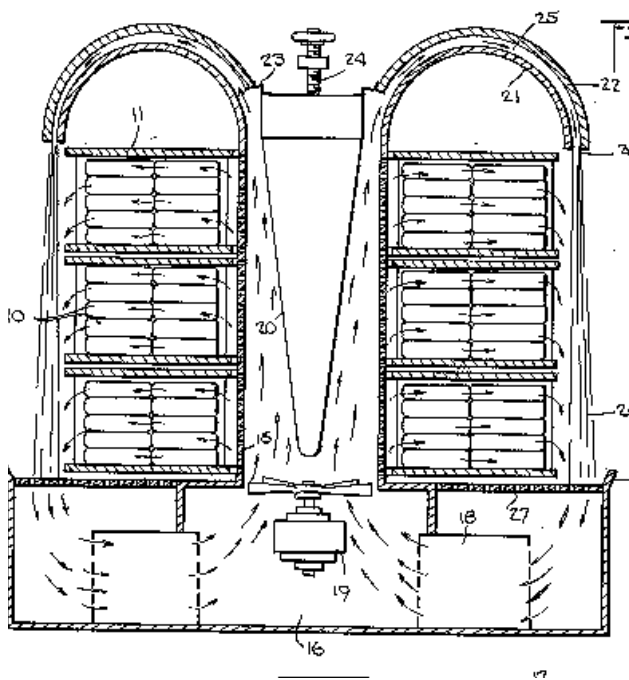
(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;

(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

73. I have already identified the person skilled in the art. He would know how to design or build a display cabinet for hot food. He would know about air curtains, albeit not in connection with display cabinets for hot food.

Guibert

74. This patent was published in 1978. It discloses a heated display cabinet with an air curtain. It has a circular geometry when viewed in plan (i.e. customers can approach it from all directions to help themselves to the food).



Heated air is driven upwards by a fan and hence into a tapered annular gap defined by a perforated cylinder 15 and an adjustable cone device 20. Thus some of the air passes under pressure through the perforations, to heat the food items 10 that are displayed on the shelves as shown in the drawing. The rest of the air passes up into a gap 25 between two hemispherical domes 21, 22 and hence downwards to form the air curtain.

75. Mr Fernando was at pains to show that the apparatus as disclosed in this patent was wholly impracticable. It may be so if you are trying to achieve Sr. Guibert’s original objective of 1978, which was to heat up food items from nearly frozen to about 80 degrees, while packing in the food items pretty tightly. A huge amount of energy would be required implying a very large airflow and it might be very difficult if not impossible to control such an apparatus without breaching the air curtain or burning the customers’ hands. But the skilled reader of Guibert in 1998 would not be compelled to be so ambitious. He might be

looking for an apparatus that would merely keep food warm. He might not need to pack his food items at all tightly (as indeed Guibert himself teaches in his Figure 3). See *Gillette Safety Razor Co v. Anglo-American Trading Co Ltd* (1913) 30 RPC 465 – the less well-known passage on page 481.

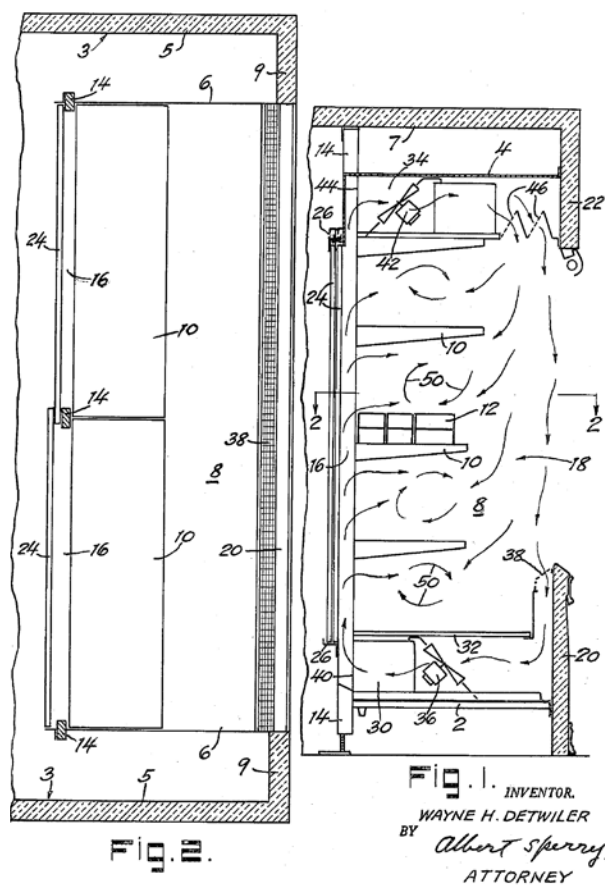
76. I return to the *Pozzoli* criteria. The inventive concept is, as I have said, “A hot air display cabinet with two fans, one for driving hot air over the food items via openings in a duct, the other for forming an air curtain across an open front and for taking air from the top part of the compartment where the food is stored”. The differences between Guibert and that concept is that Guibert uses a single fan. I therefore ask myself whether the notional, unimaginative but competent person skilled in the art would come up with the difference.
77. I agree with Mr Tritton that merely thinking of using two fans instead of one, as such, would not be inventive. For the man skilled in the art might prefer to use two smaller fans instead of one large fan – like hitching two horses to a cart instead of one. But that is trivial, and not the main point of difference. The real point of difference is that it did not occur to Guibert to use one fan for controlling the air curtain circuit and another fan to control the food-warming circuit.
78. What advantage is there in having two such fans? There was a considerable difference of opinion between Mr James and Mr Gigiel. Mr James thought that without two such fans it would be difficult or impossible to control the airflows, with the result that either not enough hot air was driven over the food, or too much was – with the consequence that it would rush out and breach the air curtain. It might even flip from the one condition to the other depending on how much food was stacked on the shelves. Mr Gigiel thought that adequate airflow control could be achieved by a proper selection of the size and frequency of the holes in the vertical internal cylinder **15**.
79. To resolve that controversy it would have been necessary for the experts to perform fluid dynamics calculations or experiments. Mercifully that was not done and so the conflict is unresolved, but it does not matter. I hold that there is nevertheless a distinct advantage in having the above-described two-fan arrangement. It would be easier to design the apparatus by adjusting the speeds

of the fans, instead of experimenting laboriously with the holes in the cylinders. The fan speeds could easily be adjusted by using rheostats, and once a good solution had been found it would be easy to transfer it to a production model with appropriate fixed resistors. If anyone wants to make a display cabinet using Guibert's one-fan idea, he is free try it. The patent in suit does not foreclose it.

80. I hold that it would not be obvious to the skilled person in 1998 to change to the two-fan arrangement. The very structure of Guibert's machine with its hemispherical domes at the top would put him off arriving at the idea. Where would he put the second fan?

Detwiler

81. This patent was published in 1961. It discloses a refrigerated display cabinet. As best seen in Figure 1, it is open at the front so that customers can access the food products through an air curtain. It has a door **24** at the back which can be opened so that staff can insert food items. In order to stop the cold air blowing out when the door is opened there is a second air curtain at the back.



82. The air curtains are driven by fans **36** and **42**. When the back door of the cabinet is closed air passes up the back of the cabinet through a pair of vertical flues **16**, also shown in section in Figure 2. When the back door is opened this air continues to rise, acting as an air curtain. The flues **16** are in open and direct communication with the spaces between the shelves **10** of the cabinet.

83. The patent says at column 3 that:

“This not only permits free access to the shelves from the rear of the case when the door **24** is open, but also causes a portion of the air from the rear air curtain to flow upwardly and forwardly from the flues **16** into contact with the lower surfaces of the shelves **10**. At the same time a portion of the air from the front air curtain flows inwardly and downwardly into contact with the articles **12** supported on the upper surfaces of the shelves **10**. The portions of the air from the oppositely flowing air curtains thus cooperate to set up independently rotating currents of air **50** ... These currents create increased turbulence in the air which actually contacts the articles”,

which is said to promote heat transfer.

84. I will assume that the person skilled in the art who read Detwiler in 1998 was interested in designing a display cabinet for keeping food hot. He might then wonder whether Detwiler would answer his purpose if it had heating elements for the air instead of cooling coils. Perhaps it would, but he would not have arrived within Claim 1 of the patent in suit. It would lack the duct with a plurality of outlets over a substantial length thereof leading from the duct to the chamber where packs of food are stored. For promotion of heat transfer in relation to the food items Detwiler has a different arrangement in mind. It is that the two air curtains flow in opposite directions and hence set up rotating air vortices **50**, creating turbulence. I do not know if that would be effective. Be that as it may, in my judgment the duct concept would not be suggested to the ordinary, unimaginative skilled man who read Detwiler.

Common General Knowledge

85. What is being relied on here is the standard refrigerated display cabinet with an air curtain. An exemplar was published in the ASHRAE Guide 1983 Equipment Volume. I have already mentioned this concept in paragraph 12 of this judgment. This apparatus has a cooling unit in its base with a single fan. In my judgment it would not lead the person of ordinary skill in the art to the concept claimed in the patent in suit. My finding on this point is corroborated by history. Such display cabinets were well known for many years – indeed they were common general knowledge – but until Nutall came along nobody produced a heated display cabinet according to the patented concept.

X. Conclusion

86. The attack on the patent fails. The Defendants have infringed Claim 1 of the patent.

¹ “Every invention we have made and patented (and some have created almost a revolution in the trade) has been the invention of overlookers, or ordinary working men, or skilled working mechanics, in every instance”: evidence of Mr Mundella to the House of Lords Select Committee on Letters Patent, 1851; cited in C. MacLeod, ‘Negotiating the Rewards of Invention: The Shopfloor Inventor in Victorian England’, *Business History*, 1999: 41:17-36.

² In fairness to the Claimants, part of their case was that the Defendants had failed to come up with the invention despite having knowledge of one of their own display cabinets, the HT120SB, which they had cited in support of their case on obviousness. As explained in the next paragraph, the Defendants dropped that citation and so the point became otiose.

³ It is true that this was directed to showing that there was a “collection zone” as called for by Claim 3, which I have rejected; but the technical facts are so all the same.