



BL O/084/07

26th March 2007

PATENTS ACT 1977

BETWEEN

Bestplate Limited

Claimant

and

Hills Numberplates Limited

Defendant

PROCEEDINGS

Application under section 72 of the Patents Act 1977
for the revocation of patent number GB 2 376 437

HEARING OFFICER

P M Marchant

DECISION

Introduction

- 1 Notice of the grant of patent no. GB 2376437, entitled "Identification plates", was published on 27 August 2003. The patent proprietor is Hills Numberplates Limited ("Hills").
- 2 An application for revocation of the patent was filed on 10 February 2004, originally by the British Numberplate Manufacturers Association ("BNMA"). Since BNMA was an unincorporated association, it was found, in a preliminary decision, that BNMA was not capable of bringing a legal action. Bestplate Limited ("Bestplate") was then substituted as the applicant for revocation, on 20 December 2005.
- 3 Further preliminary decisions dealt with the form of a guarantee on costs, the late filing of evidence, and amendment of the Statement of Case.
- 4 The substantive matter eventually came before me at a hearing from 8 to 11 January 2007. Dr Peter Colley, instructed by Messrs Dummett Copp, appeared for Bestplate, and Mr Adrian Speck, instructed by Messrs HLBB Shaw, appeared for Hills.

The patent in suit

- 5 The patent relates to identification plates, or number plates, and their manufacture. Put simply, it involves printing the registration number in reverse on a transparent film, and then adhering that film directly to a substrate which has the suitable rigidity and retro-reflective properties. The patent was filed on 17 June 2002, and the earliest of six priority dates is 15 June 2001. Both parties agreed that this earliest date was the relevant one for the purposes of this dispute – and I shall call it “the priority date”.

The law

- 6 Section 72(1)(a) of the Patents Act 1977 (“the Act”) provides for revocation of a patent on the ground that it is not a patentable invention. That is to say for present purposes that the invention must be new and must involve an inventive step.

Construction

- 7 There is little if anything between the parties on construction of the claims. The law in this area was reviewed extensively by Hoffmann LJ in *Kirin Amgen Inc v Hoechst Marion Roussel Ltd* [2004] UKHL 46. The key point made in that judgment was that the approach in construing a claim should be to establish “what a person skilled in the art would have thought the patentee was using the language of the claim to mean.” I shall follow that guidance here.
- 8 Mr Speck raised a further construction point in relation to acknowledged prior art, since in the present case the key prior disclosure is acknowledged in the specification. In *Beloit Technologies Inc. v Valmet Paper Machinery Inc.* [1995] RPC 705 at page 720, Jacob J as he then was, considered whether courts dealing with infringement should construe claims more broadly or narrowly in the light of prior art and concluded that they should not. He went on to say however that a claim may be construed purposively so as not to include within its scope the disclosure of prior art acknowledged in the patent. This is because “it can hardly have been the inventor’s purpose to cover that which he expressly recognises was old”. I accept this point but do not consider in a validity action that it can be taken to overrule the usual inquiry. If, following construction in the manner indicated in *Kirin-Amgen* and assessment of validity, it appears that an item of acknowledged prior art invalidates a claim, the point could come into consideration but one would equally consider whether the author had for example inadvertently drafted claims which included part of the prior art. In fact, in the present case, I have not needed to consider this point.

Novelty

- 9 The familiar provision in respect of novelty is in section 2 of the Act, which states that an invention shall be taken to be new if it does not form part of the state of the art. It goes on to define the state of the art as anything made available to the public before the priority date of the invention. The parties drew my attention to authorities relevant to this provision. The main principle is set out in *The General Tire and Rubber Company v The Firestone Tyre and Rubber Company Ltd* [1972] RPC 457 at pages 485-6. Here, Sachs LJ said:

"If the prior inventor's publication contains a clear description of, or clear instructions to do or make, something that would infringe the patentee's claim if carried out after the grant of the patentee's patent, the patentee's claim will have been shown to lack the necessary novelty, that is to say, it will have been anticipated."

In the following paragraph, the judgment highlighted that a prior publication which contains directions capable of being carried out in a manner which would infringe the claims but were as likely to be carried out in a way which did not do so, does not anticipate. It went on to say that the disclosure:

"must contain clear and unmistakable directions to do what the patentee claims to have invented"

and that the prior inventor:

"must be clearly shown to have planted his flag at the precise destination before the patentee".

This case was decided under earlier legislation but the principles remain valid. The same applies to other cases mentioned below.

- 10 Another principle is that in order to anticipate a claim, a disclosure must be enabling; that is, it must provide sufficient information for the skilled addressee to put the invention into effect. Mr Colley took me to *Asahi's Application* [1991] RPC 485 at page 539 where Oliver LJ said:

"I do not see how an invention can be said to have been made available to the public merely by a published statement of its existence"

and:

"for anticipation under subsection (2), published information requires to contain an enabling disclosure".

Mr Speck referred in addition to *SmithKline Beecham plc's (Paroxetine methanesulfonate) Patent* [2006] RPC 10, in which Lord Hoffman says at paragraph 19:

"there are two requirements for anticipation: prior disclosure and enablement",

and at paragraph 22 that:

“the matter relied upon as prior art must disclose subject matter which, if performed, would necessarily result in an infringement of the patent”,

reinforcing the *General Tire* approach; and at paragraph 26 that:

“enablement means that the ordinary skilled person would have been able to perform the invention which satisfies the requirement of the disclosure”.

Hoffman LJ went to great lengths in this judgment to distinguish between disclosure and enablement, which is clearly of critical importance in the production of pharmaceuticals. It may be less so in the present case which deals with straightforward mechanical elements, where a disclosure generally carries with it how the skilled person might put the invention into effect.

Inventive step

- 11 Section 3 of the Act provides that an invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter forming part of the state of the art. In assessing inventive step, the well-established approach is set out in *Windsurfing International Inc v Tabur Marine (Great Britain) Ltd* [1985] RPC 59. It involves firstly identifying the claimed inventive concept, secondly establishing the common general knowledge known to a skilled but unimaginative addressee in the art at the priority date. The third step is to identify the differences, if any, between the matters cited as being "known or used" and the alleged invention, and finally to assess "whether, viewed without any knowledge of the alleged invention, those differences constitute steps which would have been obvious to the skilled man or whether they require any degree of invention".

Collocation, parametritis, hindsight, obvious to try and “would not “could”

- 12 Mr Colley referred to the comments made by Hoffman LJ about collocations, in *Sabaf SpA v MFI Furniture Centres Ltd* [2005] RPC 10. Paragraph 24 of the judgment reads:

“before you can apply section 3 and ask whether the invention involves an inventive step, you first have to decide what the invention is. In particular, you have to decide whether you are dealing with one invention or two or more inventions. Two inventions do not become one invention because they are included in the same hardware.”

It is consequently necessary before applying the *Windsurfer* test, to assess whether the elements forming the present invention relate to one, or more than one invention. This judgment does not mean one should dispense with *Windsurfer*. The point of the *Windsurfer* test is to provide those assessing inventive step after the fact with a mechanism for doing so fairly. Specifically it is intended to prevent the use of hindsight. Whether one is assessing one among a number of inventions each forming part of a collocation, or a single invention comprising a group of improvements having synergy between them, it is necessary to apply the *Windsurfer* approach, or something very like it in

order to make a fair assessment.

- 13 Mr Colley also referred to *Raychem Corp's Patents* [1998] RPC 31. This involved inventions which were defined in terms of apparently arbitrarily selected parameters. Laddie J on page 46 said:

"The selection of a group of compositions by reference to (an essentially arbitrary) parameter does not involve any inventive step. Although it may not be obvious, in the common use of that word, to limit a claim by reference to this particular meaningless and arbitrary parameter, that has nothing to do with patentability. Patents are not given for skill in inventing technically meaningless parameters."

Mr Colley's position in the present case was that there is a wide range of different techniques which play a part in the making of number plates, all of them within the common general knowledge. Anyone can pick and choose from the techniques and combine them in different ways to produce a more or less advantageous process for making number plates that he knows will work. He says there is no invention in such a combination of known techniques.

- 14 On a related point, he referred me to the case of *Saint-Gobain PAM SA v Fusion Provida Limited and anr* [2005] EWCA Civ177 in which the question arose whether it was obvious for the skilled person at the priority date to try out the particular construction claimed. In this case, expert evidence suggested there was no particular reason to suppose the construction of the invention would be advantageous. Jacob LJ said, in paragraph 35:

"Mere possible inclusion of something within a research program on the basis you will find out more and something might turn up is not enough. If it were otherwise, there would be few inventions that were patentable. The only research which would be worthwhile (because of the prospect of protection) would be into areas totally devoid of prospect. The "obvious to try" test really only works where it is more-or-less self evident that what is being tested ought to work."

Mr Colley raised this as a counter-example to the present case, where he says that it is obvious to put the elements of the claimed invention together.

- 15 Mr Speck said that even if it was accepted that each element of an invention was part of the common general knowledge, there could nevertheless be invention in the way they were combined and it was necessary, in order to demonstrate a lack of inventive step, to show that there is a reason for combining them in the particular way which gave rise to the invention, and to provide an explanation as to why it would be obvious to do that. He drew my attention to the particular dangers of hindsight when assessing inventive step in relation to relatively straightforward technology or when the invention appears on its face to be a simple one. In *Technograph Printed Circuits Ltd v Mills and Rockley (Electronics) Limited* [1972] RPC at 362, Diplock LJ considered that it was often possible to show by a series of steps, each of which could be characterised as obvious, how the inventor could have arrived at the invention starting from something that was already known. He said

however that this was an impermissible use of a *posteriori* reasoning based on the prior knowledge of the inventive subject matter of the invention. Of other cases to which Mr Speck directed me, the most pithy summary of this point is I think found in *Haberman v Jackel International Limited* [1999] FSR 683, where at page 698 Laddie J said:

“The simpler the solution, the easier it is to explain. The easier it is to explain, the more obvious it can appear. This is not always fair to inventors.”

- 16 Mr Speck also referred to the earlier judgment in *Technograph Printed Circuits Ltd v Mills and Rockley (Electronics) Limited* [1969] RPC 395 in the Court of Appeal. Harman LJ said that the question whether a particular disclosure renders the invention obvious, is determined by asking “would” and not “could” the skilled man have derived the invention from that disclosure. I felt that Mr Speck put the point very well himself when he said:

*“I do not think the learned Lord Justice is saying “would” in the sense of **General Tire** novelty. If he is, that is not my submission. What he is doing is distinguishing between something which “could” in the sense that it is conceivable, against “would” in the sense that it is likely because there is a reason to do it”.*

That appears to me to be the correct approach.

- 17 I think there is a danger, in following Mr Colley’s approach, of making a prior judgment that inventions are unlikely to involve an inventive step on the strength of factors such as simple technology and claims involving combinations of arguably known elements. Even though an invention may appear on the face of it to involve known techniques, and to be the sort of thing that once having been told about it, any skilled person would say could have been done with what was known, it is necessary in every case to approach the question using the sort of analysis proposed in *Windsurfer*, and where collocation may be an issue, *Sabaf*.. If properly applied, this should avoid error of the sort Mr Speck counsels against and stand the best chance of arriving at an assessment of the invention which is fair both to the patentee and to third parties affected by the patent, in accordance with the law as it has developed.

Mosaicing

- 18 Mr Speck also addressed me on the degree to which it is right or wrong to mosaic disclosures from different pieces of prior art in order to demonstrate a lack of inventive step. In this respect *Lilly Icos LLC v Pfizer Limited* [2000] EWHC Patents 49, [2001] FSR 16 suggests the proper approach at paragraph 66:

“[The skilled man] will consider the disclosure in the light of the common general knowledge and it may be that in some cases he will also think it obvious to supplement the disclosure by consulting other readily accessible publicly available information. This will be particularly likely where the pleaded prior art encourages him to do so because it

expressly cross-refers to other material. However, I do not think it is limited to cases where there is an express cross-reference.”

I take from this that it is permissible to mosaic different disclosures in order to demonstrate obviousness, but only where it can be shown that the skilled person would have had a reason for reading the separate disclosures together.

Common general knowledge

- 19 In *General Tire* at page 482, Sachs LJ explained what is meant by common general knowledge, by distinguishing it from public knowledge which he said was knowledge available to the public ... :

“... however unlikely to be looked at and in whatever language written”.

On the other hand, he said:

*“**common general** knowledge is a different concept derived from a commonsense approach to the practical question of what would in fact be known to an appropriately skilled addressee – the sort of man, good at his job, that could be found in real life.”*

Sachs LJ went on to quote from an earlier case in relation to scientific papers but which I consider could equally be applied to other technical literature:

“A piece of particular knowledge as disclosed in a scientific paper does not become common general knowledge merely because it is widely read, and still less because it is widely circulated. Such a piece of knowledge only becomes common general knowledge when it is generally known and accepted without question by the bulk of those who are engaged in that particular art;”

- 20 Mr Colley drew my attention again to *Raychem* on this point, and in particular at page 40, where it is stated:

“The common general knowledge is the technical background of the notional man in the art against which the prior art must be considered. This is not limited to material he has memorised and has at the front of his mind. It includes all that material in the field he is working in, which he knows exists, which he would refer to as a matter of course if he cannot remember it and which he understands is generally regarded as sufficiently reliable to use as a foundation for further work or to help understand the pleaded prior art. This does not mean that everything on the shelf which is capable of being referred to without difficulty is common general knowledge nor does it mean that every word in a common text book is either.”

- 21 Mr Speck referred me to the judgment in *Beloit Technologies Inc. v Valmet Paper Machinery Inc.* [1997] RPC 489 at pages 494-495, where Aldous LJ introduces something of a caveat which arises with modern technology:

“It has never been easy to differentiate between common general

knowledge and that which is known by some. It has become particularly difficult with the modern ability to circulate and retrieve information. Employees of some companies, with the use of libraries and patent departments, will become aware of information soon after it is published in a whole variety of documents; whereas others without such advantages may never do so until that information is accepted generally and put into practice. The notional skilled addressee is the ordinary man who may not have the advantages that some employees of large companies may have. The information in a patent specification is addressed to such a man."

- 22 Mr Colley also referred me to *Panduit Corp v Band-It Co* [2003] FSR 8 in which Aldous LJ held that commonly agreed reasons why a trade has adopted a particular practice form part of the mantle of the skilled person.
- 23 I take from these authorities that the common general knowledge is that body of information relevant to the art in question which is generally known to all those working in the art, including the background knowledge as to why the trade has adopted particular practices. It can include material that the skilled person may need to look up in reference books or tables, but in that case, he must be aware of the nature of the information that he is referring to, its usefulness and where he can go to look it up, and his reference to it is to refresh his memory or find detail. By extrapolation of this guidance I would consider that it does not include material which the skilled person is aware exists but of which he has no independent knowledge.

The invention

- 24 As described generally in the specification, the invention concerns printing registration number indicia in reverse onto a transparent film. This film is thin and has on the non-printed side an opaque protective layer, which is removed at the end of the manufacturing process or on installation of the number plate. The film is advanced automatically to a printing station and is optically sensed. This allows computer control of the printing process.
- 25 The printing process may involve printing just the registration number, or also printing other secondary details (such as the name of a car dealership). Alternatively, if numerous plates are to be printed with standard secondary details, these can be added to the roll of transparent film, in the correct places, prior to printing the registration number indicia. The printing process may involve applying colour to the entire piece of transparent film forming the number plate. This allows, for example, a national flag or country code to be added to the number plate and for yellow number plates to be produced using white retro-reflective stock, by applying yellow colour over areas of the surface that do not have indicia or secondary information.
- 26 Once printed, the film is attached to the retro-reflective substrate, by virtue of a layer of adhesive applied either to the printed side of the film or to the retro-reflective side of the substrate. The printed surface of the film is in contact with

the retro-reflective surface. By way of explanation, a retro-reflective surface is one which always reflects light back along the same direction in which it arrives. The substrate is made by moulding a plastic substance with retro-reflective particles contained in it – either uniformly distributed throughout or graded towards the surface – or by moulding the substrate together with a piece of retro-reflective sheet or by adhering a retro-reflective film to a suitable blank substrate.

27 Finally, the substrate may be moulded with a cavity in its rear surface to house a transponder or other similar device; or it may be moulded with lines of weakness in the rear surface, so that the number plate breaks on attempted removal.

28 There are six independent claims, as follows:

Claim 1

A method of manufacture of an identification plate, the method comprising:

advancing a transparent sheet material having an opaque material in contact with a first major surface thereof to a printing station;

printing indicia in reverse on to a second major surface of the sheet material;

securing the printed sheet material to a rigid plastics substrate having a retro-reflective surface such that the printed surface is in contact with, or at least adjacent to, the retro-reflective surface.

Claim 3

A method of manufacture of an identification plate, the method comprising:

conveying a relatively thin transparent sheet material toward printing means;

optically sensing the passage of the transparent sheet as it is conveyed toward said printing means;

actuating printing means in response to said passage of the transparent sheet material to print indicia in reverse on a second major surface of the transparent sheet material; and

securing the printed sheet material to a relatively thick rigid plastics substrate having a retro-reflective surface such that the printed second major surface is in contact with, or at least adjacent to, the retro-reflective surface.

Claim 13

A vehicle identification plate comprising a relatively thick, rigid plastics supporting substrate having an entire retro-reflective major surface and a relatively thin transparent sheet material having indicia printed thereon, which indicia are indicative of the vehicle to which the plate is to be attached, the transparent sheet material being adhered to the retro-reflective major surface such that the indicia are located in contact with, or at least adjacent to, the retro-reflective major surface.

Claim 14

An identification plate comprising a rigid supporting substrate having a retro-reflective major surface and a transparent sheet material an entire major surface of which having marking material applied thereto, the marking material being arranged to comprise parts to provide indicia, the transparent sheet material being adhered to the retro-reflective major surface such that the marking material is in contact with, or at least adjacent to, the retro-reflective major surface.

Claim 17

An identification plate comprising a laminate of a relatively thick, rigid plastics supporting substrate and a relatively thin transparent sheet material having indicia printed on a surface thereof, the substrate consisting of a matrix material in which is retained a plurality of reflective particles, wherein the indicia are in contact with, or are at least adjacent to, a major surface of the substrate and the transparent sheet material provides a lens for the reflective particles at that major surface, thereby providing the plate with a retro-reflective character.

Claim 30

A method of manufacture for an identification plate, the method comprising the steps of:

providing a relatively thick, rigid support have reflective particles distributed in a plastics matrix, wherein the particles are at least present at a first surface of the support;

printing indicia, in reverse, on a surface of a relatively thin transparent sheet material;

adhering the sheet material to the first surface of the support so that the indicia are sandwiched therebetween;

whereby the sheet material acts as a lens for the particles, imparting a retro-reflective character to the plate.

- 29 On a point of construction, some claims refer to “transparent sheet material” which is printed (or has “marking material”) upon it. This is what is described throughout the specification and in other claims as “thin transparent film”. It is clear from the description in relation to all the embodiments that the sheet material in the claims whether or not explicitly stated, is equivalent to the film material in the description, and must be relatively thin.
- 30 On another construction point, the independent claims, apart from claim 30, require the printed surface of the film to be “in contact with, or at least adjacent to” the retro-reflective surface of the substrate. There was, in the end, no dispute between the parties as to the fact that this phrase allows for the presence of an adhesive layer between the printed side of the film and the retro-reflective surface. It was agreed that the phrase was intended to make clear that the printed side of the film must not face away from the retro-reflective surface of the substrate. I am in agreement with the parties in this interpretation, the effect of which is that nothing turns on the presence or absence of adhesive between reverse printed film and retro-reflective substrate in prior art disclosures. I also observe however that in all claims the printed film must be adhered or otherwise secured to the retro-reflective surface so the claims do not include constructions with a printed film element spaced from the retro-reflective surface.
- 31 The claims refer to an “identification plate”. I generally use the term “number plate” here for convenience, interchangeably with “identification plate”, and I intend no distinction between them.

Bestplate’s case

- 32 Bestplate set out their case for lack of novelty and inventive step on the basis of a number of prior publications. Arguments relating to novelty and inventive step are made in the pleadings or in the expert witness statement, or in both, in respect of claims 1, 3, 13 and 14, and relating only to inventive step in respect of claims 17, and 30. I shall address the arguments accordingly. The most important prior art is the PCT patent application WO 94/19769 A2, in the name of the Minnesota Mining and Manufacturing Company, or 3M as they are now called, which during the hearing became referred to as “Look”, after the first named inventor. This document was published on 1 September 1994. Look is concerned with a transportable and modular printing and lamination system for producing printed films or sheeting, which may be retro-reflective. It discloses a number of different ways in which the system may be used, one being for the manufacture of number plates. Amongst its disclosures are reverse-printing onto a transparent film, and attachment of the film to retro-reflective sheeting.
- 33 Other documents relied upon include the Instruction Manual for a commonly-used printer in the number-plate industry (the Astro-Med QLS4100), which

shows the ability to reverse-print and the presence of a “transmissive” sensor. Some further published patent applications relating to number plate manufacture or number plate products are also referred to, in respect of specific features.

- 34 Bestplate argue that, by taking the disclosure of Look either on its own or in combination with other pieces of prior art or the common general knowledge, the claims lack novelty or inventive step. One allegation is that the invention is no more than a collocation of known features from various prior art number plate manufacturing techniques. Other subsidiary arguments are advanced in relation to some claims on the basis of other prior art.
- 35 They further argue that, at the priority date, the impending new British Standard for number plates (BS AU 145d) would have given the skilled person a reason to revisit known number plate products or manufacturing techniques and combine them with the available printing technology to produce a number plate in accordance with the claims. The prior art “Escort” number plate, which comprises a thin transparent film on top of a rigid retro-reflective backing with transfer indicia between, is a key part of this argument.

Hills’ case

- 36 Hills’ case is, firstly, that no prior art document discloses all the features of the claimed invention, and so all claims are novel. They argue in particular that the various embodiments in Look do not disclose a number plate manufacturing method as claimed, nor the number plate product as claimed. They also contend that, in arguing lack of novelty, Bestplate have strayed into combining disclosures and so are really arguing a lack of inventive step.
- 37 Hills further argue, however, that all the claims, apart from claim 13, involve an inventive step, and that Bestplate’s arguments on this point use hindsight to select the necessary steps or features from many in the common general knowledge and disclosed in the prior art, in order to arrive at the claimed invention. Hills conceded at the start of the hearing that claim 13 lacks inventive step over the disclosure in Look. I make no independent finding on that but accept Hills view, will treat the claim as invalid and exclude it from consideration.

The evidence and the witnesses

- 38 Bestplate’s evidence comprises 7 witness statements, including an expert report from Mr Philip Callan and a further statement from him in reply to some of Hills’ evidence. Hills’ evidence comprises 3 witness statements, including an expert report from Mr Brian Bate.
- 39 With the exception of Mr Derick Gray, all of those who filed witness statements appeared at the hearing and were cross-examined. For Bestplate, Mr Michael

Davies, Mr Tony McNamee and Mr Timothy Sanders were in the stand for short periods of time. For Hills, Mr Steven Entwistle gave evidence by video-link, also for a short period. To my mind, all of these witnesses were honest, clear and helpful in their answers.

- 40 For Hills, Mr Michael Cordell was in the stand for somewhat longer. He came across as knowledgeable, and he was prepared to say when he did not know the answer to a question. He tended to go beyond answering questions put to him, to pre-empt questions and to spar with Mr Colley. This gave the impression of an over-eagerness to put Hills' case rather than simply give evidence as to the facts.
- 41 The expert witnesses, Mr Callan and Mr Bate, were both cross-examined at length. Mr Callan was knowledgeable and his witness statements were clear and well-written. That said, the length of time since he was actively involved in the number plate industry raises questions about the reliability of his evidence, in particular in relation to common general knowledge and the skilled person's thinking at the priority date. Some gaps in his expertise were apparent, and his uncertainty over when British Standard AU 145d came into force and his assertion that 145c was in force at the relevant date, when in fact it appears never to have taken effect, was one illustration of this. At times he appeared to lack confidence in his own position, and was obliged to retract certain opinions that he had put forward in his written evidence. For example, in his evidence in chief he reported that Look disclosed printable film with a liner as required by claim 1 of the invention when in fact it was a different element, the retro-reflective sheet, that was shown with a liner. He also misunderstood or misrepresented the teaching of figure 27 of Look, indicating that indicia are printed in reverse on the rear of the transparent front film whereas they are actually printed normally on the front of the retro-reflective sheet. This did not inspire confidence in his evidence as an independent expert, and the impression was that he was concerned with advancing Bestplate's case, even at points by misrepresenting the teaching of documents, instead of providing an informed expert view to assist me.
- 42 Mr Bate was highly knowledgeable in respect of the history and manufacture of number plates. There is little doubt that he knows much more than the notional skilled person. He is retained as an occasional consultant by Hills but his evidence was authoritative and credible, and came across as largely impartial. On cross-examination there were times when his unfamiliarity with concepts around patent law led to a misunderstanding of the line of questioning, and prevented Mr Colley getting clear answers. In particular, he did not always seem able or willing to consider what the skilled man would have made of the document or reference in question, because he was too keen to stick to the letter of his report or to the strict wording of the document in front of him. I think this was partly out of caution and uncertainty, and partly from a desire to lean slightly in Hills' favour. It would certainly have been more helpful to have heard his straightforward views on these matters. I consider that such guarded remarks may not truly reflect the views of the skilled person and will treat them accordingly
- 43 Mr Bate was unfortunately taken ill and admitted to hospital between the third

and fourth days of the hearing. This meant that Mr Colley was unable to complete his cross-examination of Mr Bate, in particular on paragraphs 93 to 102 of his witness statement (dealing with his view of the disclosure of the patent in suit), on his assessment of most of the dependent claims, on Mr Bate's reasons for saying claim 13 was obvious, and on points about repeating patterns in relation to the "polystickers" system and added stiffness created by use of liners. Mr Speck was unable to re-examine Mr Bate. As far as the untested part of Mr Bate's evidence goes, I have not disregarded it, but I consider it is necessary to assess its weight appropriately, taking into account the other evidence and Mr Bate's performance generally during cross-examination. As it turns out, I do not rely on any of the points made in Mr Bate's paragraphs 93 to 102; indeed, my finding in relation to opaque liners which he refers to in this section is contrary to his evidence. And as a result of my finding on validity of the independent claims it has not been necessary to assess the dependent claims. Also I have not found the evidence in relation to polystickers to be of great significance. In these respects, I do not feel that Mr Bate's absence prevented me assessing the issues properly. Nevertheless in any instance where it has been necessary to weigh his evidence, I have kept this in mind.

The disclosure in Look

- 44 Look is pertinent to both novelty and inventive step, and is worth analysing to assess its teaching in a generalised sense before considering it in relation to the claims. It discloses a modular and transportable system for printing indicia onto either thin film or thin retro-reflective sheeting. It is concerned both with the apparatus and its modular construction, and with using the system to manufacture retro-reflective number plates, road signs and vehicle validation stickers. I understand that validation stickers are used in the United States to validate vehicle identity. Such stickers apparently include the vehicle registration number and are usually stuck to the inside of vehicle windows and perhaps to licence plates themselves. It is an advantage if they are constructed in such a way that an attempt to remove them results in damage – that is to say they are "tamper evident" stickers. This feature is disclosed in Look.
- 45 The principle features of the system are illustrated in figures 1, 3a and 3b. Printable film is wound off a reel, printed upon, and then laminated to adhesive retro-reflective sheeting. The retro-reflective sheeting has a liner protecting its adhesive layer which is reeled off prior to lamination. The film may have pre-printed indicia applied prior to the main printing. The laminated product may be cut into desired lengths or rolled. Products can be formed using normal printing or reverse printing, and notwithstanding the title and introduction to the patent, may or may not use retro-reflective sheeting. Figure 2 and page 19 make clear that the laminated product can comprise "license plate sheeting" – that is, the printed film in combination with a retro-reflective backing of the type required to make a number plate. It appears that in disclosing various types of product including one with reverse printing on clear film subsequently adhered to retro-reflective sheeting, and providing a number plate as an example of the

type of product to which the invention is applied, the specification effectively discloses making a number plate component by this method. It does not at this point disclose a completed number plate, because there is no reference to providing support for the flexible product, either for example by means of a rigid substrate to which it can be fixed, or a rigid transparent blank applied on top of it or other supporting structure.

- 46 Also disclosed (in figure 12 and pages 16-17) is use of the system in which pre-printed labels are removed from a liner and adhered to the film – which is subsequently printed upon. A “gap sensor” detects the gap between successive labels, and a “mark sensor” detects a mark or other indicia on the film – in order to control the tension in the liner feed and liner rewind. This arrangement controls the process of adhering the pre-printed labels correctly to the printable film.
- 47 The description then moves on to disclose, in figures 16 to 25, the use of the system to produce labels which cannot be removed without destroying the printed indicia. In some of these, the system prints onto retro-reflective film, (figures 19, 20 and pages 20-21). In some (figures 21, 22, 23 and pages 21-22), indicia are printed in reverse onto clear film so that in use the printing will be viewed from the opposite side of the film, and in figures 22 and 23 partial retro-reflective material is applied to highlight certain parts of the label.
- 48 Figure 24 discloses a “remote scannable security information sticker” for vehicles, with some pre-printed indicia, various regions printed in different colours using the system, and a retro-reflective backing sheet. Its use is for remote verification of vehicle identity, for example at toll points on motorways and vehicle check stations, to provide increased automation in verifying vehicle content, weight or registration.
- 49 There was considerable debate over figure 25. I note first of all that the description in relation to all of the figures 16 to 25 concerns different variations of the same product, namely a printed label which can be stuck on a window and which is impossible to remove without distorting the printing. This feature is explained in terms in relation to the figure 16-18 embodiment in lines 2-3 page 20 and repeated in relation to figure 19 in lines 19 to 28 on page 20. The descriptions of figures 20, 21 and 23 refer to “secure” information products at line 29 page 20, line 6 page 21 and line 3 page 22 respectively, and the addressee would interpret figure 22 to be included in this group. Lines 14 – 21 page 22 then confirm these are all further examples of tamper evident labels. Lines 22 – 28 on page 22 explain that figure 24 is a particular example of a label using the principles described in these embodiments, and figure 25 is provided, apparently as an example of reverse printing in the context of the figure 24 product.
- 50 What is one to make of the disclosure in relation to Figure 25? It looks a lot like a reverse-printed number plate. It has the right shape and refers to BS AU 145a, but it bears the main legend “DAVE” and in smaller writing “LITES UP THE ROAD”. While personalised number plates may have many different forms, “DAVE” seems a long way from any likely real UK registration. (And a UK registration would be expected in view of the British Standard number.)

The words “Lites Up The Road” where one would expect the name of the car dealer or number plate manufacturer doesn’t improve its credentials. The fact that it is described in the context of a tamper evident validation sticker also leads away from its interpretation as a number plate.

- 51 The only other mention of figure 25 is at line 30 on page 23 where it is said that the product “may be retro-reflective as shown in the embodiments discussed above”. I take this to mean that the reverse printed and retro-reflective embodiments in figures 22 and 23 could be applied to the figure 25 embodiment. The figure 22 and 23 arrangements both require the retro-reflective sheet to be discontinuous so that the adhesive is effective to attach the reverse printed layer to the substrate. The implication is that the retro-reflective areas constitute only a small proportion of the area of the entire sticker (and I would assume must not extend to the periphery to any great extent). While this arrangement is appropriate to the label type stickers disclosed in figures 22 and 23, it is not appropriate to number plate manufacture.
- 52 Summarising this, I do not think the skilled addressee would have a clear idea on reading the specification what the author intended by figure 25. I believe the most likely interpretation would be that it demonstrates the possibility of using reverse printing both in the figure 16 to 24 embodiments and as part of a number plate, but that it does not disclose any particular method of number plate construction. In the end, figure 25 does not amount to a great deal, and does not in my view provide any disclosure more relevant to the validity of the present patent than is already apparent in relation to figure 2, as I have discussed above.
- 53 Finally, in figures 26 and 27, complete number plates are described. Figure 26 refers to prior art involving cut out (not printed) letters so is not relevant to the present case. The number plate in figure 27 is produced by using the system to print onto retro-reflective sheeting, which is then attached to a rigid substrate. A thin transparent film is adhered to the top of the printed retro-reflective sheeting. This appears to be what is claimed in claims 10 to 13. To some extent, this leads away from the interpretation that I have made above that number plates can be produced using different combinations of film, printing and retro-reflective, but I do not think entirely negates it. Look does not disclose attachment of a printed film to a retro-reflective surface of a rigid substrate, as is required by the “method of manufacture” claims of the present invention.

Novelty

Claim 1

- 54 Bestplate, in their statement, and Mr Callan in his witness statement, started from the position that claim 1 lacks novelty in the light of Look’s disclosure of (amongst other things) a liner material. However, Mr Callan conceded prior to cross-examination that he was mistaken. Claim 1 requires that the

“transparent sheet material” which is to be reverse-printed upon has an opaque material in contact with it. Look discloses reverse printing onto transparent film, but there is no liner or other material attached to the film. A liner material is disclosed in Look but this is attached to the retro-reflective sheeting.

- 55 In addition, Look does not disclose securing the printed film to a rigid substrate. As noted above, the disclosure of Look teaches reverse printing onto a transparent film and attachment of that film to retro-reflective sheeting. The flexible number plate component described in relation to figure 2 has printed transparent sheet material applied to flexible retro-reflective sheeting, but makes no mention of attaching printed film to a rigid substrate. Conversely, the number plate which is disclosed in figure 27 has no printed clear film. Instead, the printing is applied to the retro-reflective surface. I conclude that Look does not demonstrate lack of novelty in claim 1.

Claim 3

- 56 Claim 3 requires the step of optically sensing the passage of the transparent sheet material as it is conveyed toward the printing means, actuating the printing means in response to the passage of the transparent sheet material, and securing the printed sheet material to a rigid plastics substrate.
- 57 In relation to the optical sensor required by the claim, Mr Callan says in his witness statement that: “It is not explicitly stated [in Look] whether or not these sensors are optical sensors, but I would expect at least the mark sensor to be an optical sensor”. He concludes by saying that Look renders claim 3 invalid. I do not see that the disclosure in Look amounts to “clear and unmistakable directions” or disclosure of “subject matter which, if performed, would necessarily result in an infringement of the patent”.
- 58 Nor can I find any disclosure of controlling the printer as a result of the sensing step. Neither Bestplate’s statement nor Mr Callan’s report deals with this particular point in respect of novelty, but as noted above, the sensing disclosed in Look is carried out in order to control the release of label sheets from the liner, not to “actuate the printing means”.
- 59 Furthermore as pointed out above, Look does not disclose securing the printed film to a rigid substrate. I therefore find that Look does not show lack of novelty in claim 3.

Claim 14

- 60 Claim 14 is directed to a number plate which comprises a rigid supporting substrate with a retro-reflective surface, and a transparent sheet material attached. The claim also requires that the transparent sheet material has an entire surface applied with “marking material”. That surface is the one which contacts the retro-reflective surface of the substrate. Bestplate did not contend in their pleadings that this feature can be found in Look, but Mr Callan in his witness statement argued that figure 25 of Look showed a printed border and printed information at the periphery of the film and so the Look system was

“implicitly able to cover the entire surface”.

- 61 Mr Colley had a point on the proper construction of “entire” in this claim. He argued that a skilled person would construe the claim to mean the ability to print anywhere on the surface of the film. He cited the known technique of adding borders to number plates, and that figure 24 of Look showed printing over a large proportion of the area of the label. While that may be true, it is not what is claimed in claim 14. Interpreting the claim in light of the description, it is clear that the point of printing over the entire surface is to produce a number plate with an overall colour. One example given is a yellow number plate for use on the rear of vehicles in the UK. This enables both white and yellow number plates to be produced using a single colour, white, retro-reflective stock. What is clearly required by the claim is printing continuously over the surface of the film so that anywhere which is not printed black with indicia markings, or with other marking such as a country flag, is printed yellow to produce a continuous yellow background.
- 62 The idea of printing over the entire surface in this way is not disclosed in Look.
- 63 Again, Look does not disclose securing (still less adhering, as is required by claim 14) the printed film to a rigid substrate. For these reasons, I conclude that claim 14 has not been shown to lack novelty by Look.

Inventive step

The skilled person and the common general knowledge

- 64 I think the parties were in reasonable agreement about the identity of the skilled person. Although Mr Bate’s starting point in his witness statement was that the skilled person was a “production engineer in a number plate manufacturing company”, on cross-examination he conceded that different addressees would have a spread of capabilities, some with technical training and some without; it could be anyone from a production engineer in a larger company to a “jack of all trades” in a small one. Mr Callan simply said that it would be someone in a number plate company “who knew how to make number plates and would look for different ways of manufacturing them”. I agree broadly with these descriptions. Number plate manufacture is evidently a very practical undertaking and the skilled person would have a practical involvement in the business. If he does not have formal technical training, he must have an equivalent appreciation of the techniques of number plate manufacture and the surrounding technologies. I would also expect him to be aware of the history of the development of number plate manufacture and of the pressures in the industry described by the expert witnesses.
- 65 Mr Bate set out in paragraph 91 of his witness statement the technologies with which he considered the person skilled in the art would be familiar. This referred back to an explanation of the development of the art he had produced in paragraphs 50 to 75, and identified those paragraphs which he considered would also be known to the skilled person. Although it was clear in cross-

examination that Mr Bate was unfamiliar with the concept of common general knowledge in patent law, his definition of the knowledge of the skilled person came to much the same thing. He was obliged to modify his view in some respects under cross-examination, in particular omitting from the common general knowledge some details, such as the particular manufacturers responsible for different construction methods and including others by reference to paragraphs in this section he had not previously identified and to information which Mr Callan had said was common general knowledge.

- 66 Mr Callan produced a similar explanation of the development of the art on pages 6 to 15 of his first witness statement. Much of this parallels Mr Bate's evidence and much of it was accepted as forming part of the common general knowledge by Mr Bate in cross examination. However, Mr Callan's initial characterisation of two shot moulding as lying within the common general knowledge of the skilled person in the number plate art, was later revised, and was exposed by Mr Speck in cross-examination not to be credible. Mr Callan accepted that this was the sort of thing that the skilled person would know about but would not know how to do themselves. In my view Mr Callan either did not have a clear idea what was meant by the common general knowledge or was including in it things that he did not believe would actually have been known to the skilled person. Accordingly I do not consider I can take his testimony at face value in this respect. However, as I have said, much of what Mr Callan said in his witness statement as forming the common general knowledge was corroborated by Mr Bate, so I think it is possible to form a good idea of what would have been included and what excluded and what follows is my assessment of that distilled from the evidence in chief and in cross examination of the experts.
- 67 From Mr Bate's witness statement, the skilled person would know about production line techniques, especially of number plates. He would be familiar with the different materials used in number plate manufacture such as aluminium, acrylic and retro-reflective sheeting. He would know about different ways of forming indicia including use of transfers, loose letters, kiss-cut technique and printing, including thermal and screen printing, but not ink-jet printing. Mr Callan said ink-jet printing was within the common general knowledge but I prefer Mr Bate's view. The skilled person would also be aware of the standards that are in force specifying performance criteria for number plates.
- 68 He would be familiar with different types of number plate construction. The first method Mr Bate referred to which used plastics as opposed to aluminium construction in the 1970's, involved indicia formed as transfers which were applied to dry (ie having no pre-applied adhesive) retro-reflective sheeting. This assembly was laminated to a thick clear acrylic front plate with optical quality adhesive on its rear face. The indicia in this construction were "right-way-round" or "B" type. An alternative construction was to apply laterally reversed indicia to the back of the front face before lamination. Such reversed transfers are referred to as "A" type. Such a construction, using "A" type transfers adhered to the rear of the front component was used with wet faced retro-reflective sheeting.

- 69 The use of acrylic plates made it possible to encapsulate other information such as garage name and vehicle logos in the plate, and larger plates, 4.5 inches in height instead of 4 inches were used to provide room for the extra information. Various different methods were used for producing and applying these logos: rub-down transfer lettering, pre-printed “polystickers”, hot-foil stamping and use of proprietary lettering machines such as the “P-Touch”. (P-Touch is a registered trade mark of Brother Kogyo KK.)
- 70 Acrylic was expensive, which provided an impetus for the development of other constructions avoiding use of an acrylic front component. Manufacturers tried using a rigid back plate with a retro-reflective front surface, applying transfer characters to the surface, and laminating a thin transparent film of adhesive coated PET or other plastics over it to form the front face of the number plate. The rigid back plate could be formed from aluminium, or from cut or moulded plastics such as ABS. This construction suffered from problems in attaching the thin front film smoothly, as it tended to crease during application. These were not a success in the industry. One development of this construction involved supply of a kit with one end to the adhesive film already stuck down to the reflective surface. The end user applied indicia transfers and completed the lamination.
- 71 The next development, as described by Mr Bate, was the use of thermal printing onto retro-reflective material. This suffered from poor quality of ink transfer onto the top coating placed over the reflective beads of the retro-reflective layer. The company 3M brought out an improved system, under the name “RAPS”, which made use of a newly developed “open-bead” retro-reflective omitting the problematical top layer. Smaller machines using thermal printing onto retro-reflective were also in use. According to Mr Bate, thermal printing onto retro-reflective sheeting was the main method of manufacturing number plates by 2001. I understand that the RAPS system is what is described in the Look patent.
- 72 Mr Callan discusses a number of construction methods not covered by Mr Bate. After his main explanation of the acrylic front faced type of number plate, he says that special one-off plates having extra graphics, intended for use in car showrooms for example, could be produced by printing in reverse on the front sheet or film. Also, that number plates could be produced by printing over the whole surface of the transparent sheet. Mr Bate considered that the existence of these types of plates fell within the common general knowledge, but not the method of construction, and I accept his view of that.
- 73 Where number plates were constructed using rigid back plates, Mr Callan said that there were alternative methods of indicia formation including “kiss-cutting” by laser, or reverse printing onto polyester film, then attaching the printed film onto a rigid substrate to form the front face of the number plate. Another variation involved cutting right through the retro-reflective surface followed by lamination with a black rear material, and finally, drawing with a flatbed plotter. Mr Bate said in cross-examination that these techniques are not ones that would have been known generally to the notional skilled person and I accept that view.

- 74 Mr Callan referred to different types of retro-reflective sheeting used during the latter part of the 1980s, one type tough and the other brittle but easier to trim. The tough sheeting was precut to size, and a jig was used to align components. The brittle type allowed production of a continuous stream of plates from a roll of the sheeting, the individual number plates later being separated by snapping them apart. High intensity sheeting was also introduced by 3M. A pattern of hexagons could be created on the face of the number plate, either as a result of the internal structure of the retro-reflective sheeting or by overprinting. Mr Bate accepted in cross-examination that this information formed part of the common general knowledge.
- 75 On page 15 Mr Callan describes the “proof-press” method of printing onto wet faced retro-reflective. This had the advantage of not having to apply adhesive after printing, but there was a drawback in that the number plate components had to be aligned accurately for lamination. When Mr Colley cross-examined Mr Bate on a paragraph of Mr Callan’s which included this among other information, Mr Bate appeared to accept that it would have been well known to the skilled person, apart from disagreeing with Mr Callan’s view that wet-faced retro-reflective was no more expensive than dry. However, earlier, when directed specifically to the proof-press method of printing, he had stated in terms that that method would not have been known to the skilled person. I think this earlier evidence, where Mr Bate was focused specifically on the technology at hand must be more reliable.
- 76 Finally, Mr Callan in his statement said that the advent of computer controlled printing onto continuous web led to economies of scale in the 1990’s, bringing about larger centralised operations and a reduction in the numbers of smaller producers. Mr Bate accepted this to be part of the common general knowledge.
- 77 Mr Colley cross-examined Mr Bate on whether the Look patent formed part of the common general knowledge at the priority date. I understood Mr Bate to say that it became progressively known in the industry, as 3M commercialised the RAPS system first with the larger manufacturers, and with other manufacturers becoming aware of it over a period of time. He said that it would have been widely known at the priority date of the present invention. I take that to mean that the RAPS system and the fact that there was a patent covering it would have been widely known – not the detailed content of the patent which I consider does not form part of the common general knowledge.
- 78 I have covered the common general knowledge at length, although still incompletely, as is clear from my deliberations in relation to particular claims below. I have done so not only to inform the assessment of inventive step but to address Mr Colley’s contention that the invention in the present patent involves no more than putting known elements together. Having done so, I am of the view that there is nothing unusual about the number plate manufacturing art. It involves a wide range of different production techniques, but that is often the case in closely worked technologies, particularly in simple mechanical arts. It does not mean that in developing a combination of features into a new production method it is not possible to make an invention. On the contrary it is common experience that advantageous inventions continue to be made in

such areas. Mr Colley's contention as I understand it rested partly on this perception of the technology and partly on what is claimed in the present patent. I remain of the view that I have expressed above, that it is not proper to pre-judge the claims in this way, but that the correct approach is to consider the invention using the *Sabaf* and *Windsurfer* analysis, which I shall proceed to do.

Claim 1

- 79 The inventive concept of claim 1 is a method of constructing a number plate by printing in reverse on one side of a transparent film, the other side of which has opaque material attached, and subsequently securing the printed side of the film to the retro-reflective surface of a rigid plastics substrate. This differs from Look in that there is no disclosure in Look either of an opaque material attached to the printable transparent film or of securing the printed film to a rigid plastics substrate. Look does disclose adhering reverse printed film to retro-reflective sheeting.
- 80 Since there are two features which distinguish the claimed invention from the Look disclosure, I need to determine whether there is any synergy between them. I conclude that there is none, because they operate independently of one another. The purpose of securing the printed film to a rigid substrate is a step in the production of the number plate which involves bringing the printed part together with the substrate, having the retro-reflective quality and also the required stiffness and robustness. The purpose of the opaque material is to allow the use of an optical sensor. In the embodiments, the opaque material has other advantages in terms of handling the printable sheet material, but none of these turn upon it being opaque and I do not interpret the opaque material of claim 1 as having any other characteristic than opacity. I consider these to be separate features, and following *Sabaf*, it is appropriate to assess the inventiveness of each of them separately.
- 81 There was some discussion at the hearing about what was meant by "opaque". I don't think there was in fact any difference between the witnesses or the parties' positions on this. It is sufficient for the purpose of this inquiry to understand that as far as this claim is concerned, the opaque material blocks the passage of light sufficiently to allow an optical sensor to do its work.
- 82 Bestplate argued that use of an opaque liner was common general knowledge and Mr Callan said in his report (at page 19) that it was "well-known to manufacturers, not only of number plates but also of signs and glazing panels", to attach opaque liners in order to protect the finished product and (because of a liner's opacity) to prompt its removal on completion of installation of the product. I understood from the evidence of Mr McNamee and Mr Callan that this applied to the thick-fronted prior art number plates, in which the acrylic blanks would come with a protective layer attached. Mr Entwistle also stated in cross examination that opaque liners and transparent liners were used in this way on thick transparent blank material. Mr Bate agreed that liners were used to protect the currently used extruded acrylic blanks but that those liners

were translucent blue. Paper liners, he said, had been used a long time ago on cast acrylic, but he thought that particular application would not have been well known. I find on the weight of evidence from the other witnesses that opaque liners were used on acrylic blanks, in some circumstances at least. Liners were also used to protect adhesive on thin film prior to assembly. Evidence was given of this by Mr Bate in relation to the construction of the "Consort" number plates using PET film, and also, although of less relevance, by Mr Davies in relation to polystickers, and by Mr Sanders in relation to production of car window stickers.

- 83 However, bearing in mind, as I established above, that the sheet material in claim 1 is in the form of a thin film, liners were not used on the front face of thin film in the prior art. Mr Callan in cross-examination said he agreed with this when taken to the comments in Mr Bate's witness statement to the effect that to do so would be unnecessary and was therefore contradictory as it would increase cost. Would it have been obvious for the skilled person to take the printable film in Look and add a liner, whether opaque or not, to its front face? I can see no reason for him to do so. The purpose of the liner in the invention is not for the protection of the surface. The prior art use of liners for this purpose has no connection with the invention and would not prompt the skilled person to make this development. The prior use of liners to protect adhesive similarly has no connection to the idea in the claim. There is also the point that it would increase cost. Mr Callan said the skilled person would be aware of the use of liners in relation to overhead transparencies and would adapt that to the present situation. I do not agree. The overhead transparencies art is a very long way from making number plates and I can see no reason for the skilled person to consider it.
- 84 I consequently find that there is an inventive step in providing an opaque material on the front face of the transparent sheet material in the arrangement of claim 1.
- 85 On the matter of adhering the printed film to the rigid substrate, the skilled person is taught how to produce "license plate sheeting" by Look; that is, a flexible product comprising film laminated with a retro-reflective backing sheet, with either a reverse-printed front film or normally printed retro-reflective. He would certainly have appreciated the need for number plates to be rigid and I do not think it would require inventive ingenuity to attach licence plate sheeting to a rigid back plate. But claim 1 involves securing a reverse printed front component directly to a rigid plastics substrate (having a retro-reflective surface). The method of the claim requires fewer steps than are required to make sheeting by the Look method and then attach it to a back plate. It allows different methods of constructing the back plate and may involve fewer components to make it depending on its construction. The back plate and retro-reflective surface can indeed be moulded as one, as is described on pages 17 and 18 of the present specification. There will also be different considerations in relation to such things as alignment of components during manufacture, and if the process is automated, handling the attachment of film to rigid substrate instead of to flexible sheeting. In short it is a quite different method of making a number plate. I do not see anything in Look when

considered in the light of the common general knowledge that would lead the skilled person to arrive at this aspect of claim 1. I consequently consider that this element too involves an inventive step and that claim 1 as a result does not lack inventive step in the light of the Look disclosure.

Claim 3

- 86 Claim 3 relates to a method of constructing a number plate by optically sensing the passage of a relatively thin transparent sheet material, actuating, in response to this, the printing in reverse on one side of that material (the claim calls this “a second major surface” without having mentioned a first major surface, but nothing hinges on that), and securing the printed side of the sheet material to the retro-reflective surface of a rigid plastics substrate. The differences between this and Look are that there is no disclosure in Look of optically sensing the passage of the material to be printed upon, of actuating printing as a result of that sensing, or of securing the printed film to a rigid plastics substrate.
- 87 Sensing passage of the material and actuating printing are clearly linked and in light of *Sabaf* need to be considered together when assessing inventive step. Securing the film to the rigid substrate has no synergy with either sensing or actuating, for similar reasons to those I gave in relation to claim 1. I will therefore assess the inventiveness of the securing step separately from the sensing and actuating steps. I can say immediately that my analysis of claim 1 which is in equivalent terms has already led me to conclude that the securing step is inventive in the light of Look.
- 88 On the other features, Mr Callan says in his witness statement that “optical sensing of marks or interruptions on continuously fed webs was common general knowledge known to number plate manufacturers” at the priority date, as well as being known in other industries. He also says that activating printing means in response to the sensor was common general knowledge “within the printing industry as demonstrated by many computer printers available in advance of the earliest priority date, and as such would be familiar to anyone seeking to use a similar process for printing number plates”.
- 89 The specific evidence cited to support this is the Astro-Med QLS 4100 printer manual. The evidence is that this printer was commonly known about and used in the number plate industry prior to the priority date. The patent in suit refers to it as one that is “eminently suitable” for this purpose. There was discussion at the hearing over the disclosure in the QLS manual of a “transmissive sensor” for controlling the printing process, and whether the skilled man could or would have understood at the priority date that this was an optical sensor. However, it transpired during the hearing that the version of the QLS manual exhibited to Mr Sanders’ statement was produced at some unspecified point in 2001 – not, as had been asserted, in 2000. This appeared to have happened because Mr Sanders’ company bought QLS printers both in 2000 and afterwards. His evidence on cross-examination was that he had asked his staff for, and had intended to exhibit, the manual which accompanied the 2000 printer – but had in fact erroneously been given a manual from 2001.

- 90 As a result of this, Mr Colley invited me to adopt a “common sense” approach which amounts, I think, to an invitation either to assume that the 2001 manual was published before the priority date in mid-2001 or to proceed on the basis that the 2001 manual was evidence as to the disclosure of a 2000 manual. I cannot do either of these things. There is no evidence that the 2001 manual was published on or before the priority date. And I can make no inference about the disclosure in earlier versions of the manual. This means I can gain no assistance from the disclosure of a “transmissive sensor” in the 2001 manual, and the debate about whether this may include or suggest an optical sensor is nugatory.
- 91 I could go on and weigh up the witness evidence for the assertion that optical sensing was common general knowledge to skilled persons in the number plate industry. That is what Mr Callan said in his evidence and what Mr Colley sought to demonstrate. On the other side, Mr Bate declined to provide clear answers to Mr Colley on the subject in cross-examination. But I don’t need to do that because I can accept without further inquiry that it was, at least at a broad level of generality. I don’t think there can be any real doubt that skilled persons in the number-plate industry as in many other manufacturing technologies would be aware in a general way of optical sensors and their use to detect presence or absence of opaque materials, work pieces and many other things. I think had Mr Bate given a straightforward answer to this inquiry we would have heard that from him.
- 92 Claim 3 requires sensing of the thin sheet material to be printed on, and then actuating the printing means in response to the sensed passage of the material. The claim is silent about what aspect of the sheet material is sensed or in what respect the actuation responds to the sensing, and the claim does not tell us the purpose of the sensing and actuation step in the method of the claim as a whole. The feature is quite unspecific. It is known in Look to convey thin material and print on it. If it is the case, as I believe, that optical sensors were known and used generally for sensing and control purposes, in addition to which there is an example of, probably optical, sensing and control in figure 12 of Look, the question arises; does it require invention to develop the particular feature of sensing and actuation claimed? I think on balance it does not. Although it could be argued that there is no motivation for the skilled person to make this development, it is also the case that it is somewhat trivial, comprising simply the use of an optical sensor to actuate printing means in a way and for a purpose that is unspecified. I consequently find that this aspect of the claim does not involve an inventive step.
- 93 I nevertheless conclude, since I have found the feature requiring the printed sheet material to be secured to the rigid plastics substrate, to involve an inventive step, that the claim as a whole is not invalidated by Look.

Claim 14

- 94 Claim 14 relates to an identification plate or number plate as such rather than a method of constructing one, as in the previous claims. The construction is generally such as would arise as a result of following the method of claim 1 or claim 3. That is, a front face comprising a transparent sheet material which is

printed on the reverse, and the printed surface of which is adhered to the retro-reflective surface of a rigid supporting substrate. The inventive feature is that the entire surface of the sheet material has marking material applied to it. I have already said that I construe this to mean that printing occurs everywhere on the surface, not simply that it may occur anywhere on the surface.

- 95 There is no disclosure in Look of printing indicia and other material over the entire surface of the film. The question is therefore whether the skilled person would, at the priority date, have been able to extend the prior art method in Look of applying marking material in some areas, to applying it over the entire surface of the film, without exercising any inventive ingenuity, or would otherwise have arrived at the invention from what was available in the prior art.
- 96 Mr Callan gave evidence that figure 25 of Look showed a printed border and printed information at the periphery of the film and that the Look system was consequently “implicitly able to cover the entire surface”. Or, as he put it in cross-examination: “The machinery is capable of doing it. The ability is there”. He also gave evidence as to why it was well-known that printing could be done over an entire major surface; for example the production of number plates made for advertising or promotional reasons such as the “RTB 1” number plate produced for the Round Table of Britain and Ireland in around 1989, and the “Rover 800” number plate shown in the Serck Marston brochure. As he said in his witness statement about the RTB 1 plate: “This comprised not only registration indicia but also the badge of the organization together with a border around the periphery of the licence plate.”
- 97 Both experts accepted that it was common general knowledge that some designs of number plate had printed patterns across the surface of the retro-reflective material (such as hexagons or lines). Mr Bate’s witness statement referred to a diamond pattern printed by Star Motor Components Limited, and horizontal lines printed on the Signam “Hi-Line” number plate. However, I did not understand this printing to cover the entire surface, as I have construed the claim to require. On the contrary it would appear that such patterns would involve marking where the elements of the pattern were to be present and no marking elsewhere. In addition there was no suggestion that printing of such patterns comprised parts to provide indicia, as is required by the claim. Furthermore, again as I understand it, such printing was onto the surface of the retro-reflective, not to the reverse of the front component.
- 98 Bestplate also argued in their pleadings on the basis of prior patent application WO96/03285. This refers to constructions of “graphics articles” from retro-reflective films having different arrangements of retro-reflective material and cover sheeting with one or more colour layers, which in some cases can be “continuous”. Although this disclosure is not particularly clear on the manner of construction, being more concerned with the material and properties of the colour layers, it appears to disclose at various points; marking on the reverse of a front sheet, a continuous colour layer, and the construction of vehicle number plates. However there is no disclosure of the marking material comprising parts to provide indicia or of an entire marked surface in contact with a retro-reflective surface of a rigid substrate, or indeed of a rigid substrate at all.

99 I accept that number plates were produced with marking material applied in areas beyond the indicia and that the arrangement described in Look may have been capable of printing over the entire surface as required by the claim, but there is no suggestion in the evidence that anyone had previously thought of doing so. There are real advantages to this procedure which are explained in the Hills specification and in the evidence. The main ones are that both white and yellow number plates can be produced using white retro-reflective stock and that other markings such as country flags, can be printed in a translucent colour, whereas with yellow stock such additional markings had to be printed in solid colour, blocking the retro-reflective effect. This is a wholly different conception from the idea that markings might be made on different areas of the number plate as in prior designs. Making the invention required the author to appreciate the benefits of working with a single colour of stock, including reduced cost and eliminating the problems of manufacturing with two lines or alternating white and yellow stock on a single line. In my view this conception involved an inventive step. I conclude that claim 14 is not invalidated by the prior art and the arguments advanced here.

Claim 17

- 100 Claim 17 again relates to a number plate as such. The construction is generally such as would arise from following the method of claim 1 or claim 3. That is, a front face comprising a transparent sheet material which is printed on the reverse, and the printed surface of which is adhered to the surface of a reflective rigid supporting substrate. The claim requires the substrate to consist of a matrix material containing reflective particles and the transparent sheet material to provide a lens effect so that together they provide the plate with a retro-reflective character. I take the inventive concept to be the combination of three elements in a number plate assembly; first, a method of constructing a rigid substrate with reflective particles, second, providing the assembly with a retro-reflective character by laminating a transparent front sheet over the substrate, and third, the provision of indicia, necessarily reverse printed, on the back of the front sheet.
- 101 There is no disclosure in Look of a reverse-printed film adhered to a relatively thick rigid substrate, nor of such a substrate comprising a matrix retaining reflective particles. Neither does Look disclose producing a retro-reflective characteristic by laminating the film to the substrate. I have already found in relation to claim 1 that there is an inventive step in a construction method in which a reverse printed front sheet is secured to a rigid retro-reflective substrate. Since the rigid substrate in claim 17 is necessarily a single piece construction, the claim must, like claim 1, involve securing the front film directly to the rigid substrate and I consequently consider that this aspect of claim 17 involves an inventive step. Claim 17 also involves preparing the rigid substrate in a particular way which is not disclosed or suggested in Look.
- 102 I discuss above the exchanges as to whether the techniques involved in moulding a substrate of the sort required by claim 17 would have been within the common general knowledge of the skilled person in the number plate field. It seems as Mr Bate said, that the skilled person would know of end products made by moulding, but “would not have any specific knowledge of the design

of moulds and the expertise of those skilled in the art of injection moulding”.

- 103 Mr Callan and Mr Bate agreed that it was known to add a substance to a polymer to alter the characteristics, for example improving impact strength of clear acrylic by adding rubber. Mr Callan said it was known to do this using rubber particles but Mr Bate said he did not know how the rubber would be added. Mr Callan’s witness statement went on to say “hence it may be regarded as implicit in common general knowledge to add reflective particles”. I do not see that adding reflective particles follows, and Mr Callan said nothing to explain why it should. Adding rubber particles affects the physical characteristics of the material while adding retro-reflective particles creates a new type of material with particular optical properties. It is overly simplistic to say that the one follows from the other. There are two departures that the skilled person is being asked to make, and the invention requires both to be made at the same time. The first is to realise that the retro-reflective backing and the rigid substrate can be made together as a single piece, and the other is to understand that it is possible to do so by including retro-reflective particles in the plastics material used to make the substrate. I do not see that the prior addition of rubber particles to alter the strength of acrylic provides any lead in this direction. In my view this development undoubtedly involves an inventive step.
- 104 Bestplate also point to disclosures in WO96/03285 A1 (page 8 line 29 onwards) and in US 5 066 098 as demonstrating that such substrates are well-known. Hills counter that the retro-reflective material in these disclosures is not rigid. WO 96/03285, as I have already noted in relation to claim 14, is concerned with “graphic articles” comprising a transparent top film which has printing upon it and a colour layer included within it or upon a surface. The “graphic article” is made by adhering the film to one of a variety of types of retro-reflective or reflective sheeting. It is later stated that the graphic article may comprise number plate sheeting: “e.g. which can be adhered to a substrate such as conventional aluminium license plate blank or a clear polycarbonate front face.” In other words, this document discloses sheeting which comprises reflective particles, which may be adhered to a standard rigid number plate substrate. It does not disclose or suggest making a unitary rigid substrate which itself comprises reflective particles in a matrix.
- 105 US 5 066 098 is also concerned with improved retro-reflective sheeting comprising encapsulated microspheres and a flexible transparent cover sheet. It does not disclose or suggest production of a unitary rigid substrate which comprises reflective or retro-reflective particles in a matrix.
- 106 I have been unable to find anything in these prior art disclosures that would suggest the invention of claim 17 to the skilled person when they are considered in the light of the common general knowledge. I therefore conclude that claim 17 involves an inventive step over this prior art.

Claim 30

- 107 Claim 30 is a method of manufacturing an identification plate (or number plate) corresponding generally to the number plate as such claimed in claim 17. It

involves providing a relatively thick, rigid support containing reflective particles distributed in a plastics matrix, so that the particles are present at at least one surface, printing indicia in reverse onto one surface of a thin transparent sheet and adhering the printed side of that sheet to the reflective surface of the substrate, the sheet material acting as a lens in order to provide the retro-reflective characteristic to the plate.

108 The same features which distinguish claim 17 from the prior art also distinguish claim 30. Bestplate advanced the same arguments for invalidity of claim 30 as they did for claim 17, and I have already found claim 17 to be inventive. It follows that I find claim 30 also involves an inventive step over this prior art.

Bestplate's alternative obviousness argument

109 During the hearing, Bestplate's case focused mainly on Look and where it would lead the skilled person in the light of the common general knowledge. They did run some subsidiary arguments however, some of which I have mentioned in relation to particular claims above. One further argument was based on the introduction of the new British Standard AU 145d on 1 September 2001, and the contention that this provided an impetus to develop new methods of making number plates. Mr Bate agreed that manufacturers would "unless they were stupid" have turned their minds in 2000 to the impending new Standard in 2001.

110 For prior art number plates consisting of a thick acrylic front to meet strength requirements of the new Standard, thicker and therefore more expensive acrylic was needed. This fact would, Bestplate say, have motivated the skilled person, in advance of that date, to consider whether other known number plate constructions could be adapted less expensively to meet the Standard. Mr McNamee gave evidence supporting this view in his witness statement.

111 The argument is that the skilled person would have reconsidered making thin film-fronted number plates such as the Bestplate "Escort" design, but he would have done so in light of his knowledge of contemporary printing techniques. Mr Colley started by saying that the Escort plate itself was made by printing but in fact as was clear from both Mr Bate's and Mr Callan's evidence it used transfer type indicia. It would have been obvious, the argument continues, that such number plates could have been made by substituting printing for transfer formed indicia; printing onto retro-reflective sheeting or printing in reverse onto the back of the thin film, before adhering it to the retro-reflective material.

112 As already discussed, the QLS printer was commonly known about and used in the number plate industry at the priority date, and Mr Callan's evidence was that the skilled person would keep an eye on printer technology, in particular the QLS, in order to make number plate manufacturing more efficient and thus more profitable. Mr Cordell agreed on cross-examination that he had been aware that the QLS printer was capable of reverse-printing.

113 I discussed above the different approaches to the "obvious to try" point with simple technology, which Mr Colley raised in relation to the *Saint Gobain* case. Mr Speck's position was that Bestplate's argument fell into the trap of

assessing obviousness using hindsight. I am satisfied that Mr Speck is right on this point. It is clear from the history of number plate development explained by Mr Callan and Mr Bate that there was a wide range of different ways of making number plates. There were variations in materials, material thicknesses, and creation of indicia; in the case of printed plates, the types of printing and printing machinery; the manner of assembly, how adhesive was introduced, requirements for alignment, machines for assembling, ways of providing rigidity and other aspects. Many of these interact with one another. It is not a credible argument to say that a skilled person would consider this prior body of knowledge in the light of the new Standard and would as a result arrive at the invention as it is set out in the various claims of the present patent. No doubt workers in the field did try out different methods of construction, and it is apparent from the history provided in the evidence, it is clear that has been a continuous endeavour in the industry. However, I reject Mr Colley's argument that it would be obvious to try various combinations leading to the invention. On the contrary, as I have found when considering the disclosures in Look and the other prior art in the light of the common general knowledge and applying the *Windsurfer* test, I consider an inventive step to have been made in developing the inventions in each of the claims.

Dependant claims

- 114 Since independent claims 13 is conceded to be invalid for lack of inventive step, I need to consider whether there are any claims dependant on it that also stand to be invalidated. Claims 15, 16, 21 and 23 to 29 are dependant on claim 13, and to the extent that they are so dependant they may also potentially be invalidated, depending on an assessment of content. However each of these claims is also dependant on at least one other valid independent claim and consequently may be validated if the claims are amended as discussed below. Consequently I do not need to inquire separately into their validity.

Conclusions and opportunity for amendment

- 115 I have found independent claims 1, 3, 14, 17 and 30 to be novel and to involve an inventive step in the light of the prior art and the arguments adduced in this action. Claim 13 has been conceded to lack inventive step by Hills.
- 116 Hills did not explicitly request an opportunity to amend the patent to remove invalid claims, but I presume that this is their position, given that they defended the patent despite conceding claim 13's invalidity. Accordingly, Hills, should they wish to do so, may within two months from the date of this decision, file amendments under section 75 of the Act deleting claim 13 and adjusting the dependencies of dependant claims accordingly. If amendments are filed, I will require them to be advertised and will then give any directions that are necessary for the subsequent procedure. If no amendments are filed within that time, I will revoke the patent.

Costs

- 117 I order that each side bear its own costs. In the present hearing, neither party has wholly succeeded: Hills have conceded claim 13 to be invalid but Bestplate have not succeeded in showing that the other claims lack validity. Costs have already been dealt with in a number of earlier preliminary hearings and the issues which led to the postponement of the hearing previously set down for October 2006 arose on both sides. I have considered Mr Colley's submission in relation to the preparation of new bundles at a very inconvenient time, but I do not consider it of sufficient weight, within the overall conduct of the proceedings, to depart from this.

Appeal

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

P M MERCHANT

Deputy Director acting for the Comptroller