



Neutral Citation Number: [2024] EWCA Civ 396

Case No: CA-2023-000786

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
INTELLECTUAL PROPERTY LIST (ChD)
PATENTS COURT
Mr Justice Meade
[2023] EWHC 164 (Pat)

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 23/04/2024

Before :

LORD JUSTICE MALES
LORD JUSTICE PHILLIPS
and
LORD JUSTICE BIRSS

Between :

Supponor Limited and Another

Appellants/
Defendants

- and -

AIM Sport Development AG

Respondent
/Claimant

Brian Nicholson KC, David Ivison (instructed by **Ignition Law Ltd**) for the **Appellants**
Daniel Alexander KC, Edward Cronan (instructed by **Powell Gilbert LLP**) for the **Respondent**

Hearing dates: 13th and 14th March 2024

Approved Judgment

This judgment was handed down remotely at 10.30am on [date] by circulation to the parties or their representatives by e-mail and by release to the National Archives.

.....

Lord Justice Birss:

1. This is an appeal from a patent trial conducted by Meade J in January 2023. The case concerns EP (UK) 3 295 663 entitled “Digitally overlaying an image with another image”. The application for the patent was filed on 10 May 2016 claiming priority from 2015. The patent concerns billboards of the sort seen at sporting venues. It relates to the electronic superimposition in TV broadcasts of new advertising material different from that seen in the venue. So, for example, different advertising material could be visible in transmissions of coverage of the event in different territories.
2. I will refer to the patentee as AIM and the defendants as Supponor. They are competitors in this market.
3. At trial the only relevant claim was claim 12. A single item of prior art was relied on, an earlier patent application by Supponor published in 2013 (WO 2013/186278 A1) which was referred to as Nevatie. The judge decided that claim 12 was valid and was infringed by the Supponor system called SVB. Supponor appeal on six grounds. Grounds 1 and 2 challenge the judge’s claim construction. Ground 3 challenges the finding of infringement and is advanced in the event grounds 1 and 2 fail. Ground 4 relates to one of the two approaches to obviousness advanced by Supponor over Nevatie. They both failed below. Ground 5 relates to what was called the *Promptu* point, about the impact on claim 12 of an admission made below by AIM that claim 1 was invalid. The judge rejected Supponor’s argument on this point below but gave permission to appeal on the basis that the issue raised an important aspect of practice. Finally ground 6 relates to two sets of conditional amended claims. These had been advanced by AIM as back up to its case on the issue of construction to which ground 2 applies. The judge decided the amendments in AIM’s favour albeit that they were unnecessary. By ground 6 Supponor challenge that conclusion. Conceptually this ground sits naturally after ground 2.

Introduction to the technical case

4. As the judge explained, LED display boards are used at sporting events to show advertisements. The patent claim in its unamended form does not specify that the display board must use LEDs but for this purpose it is convenient to think of it this way. In the stadium the spectators might see an advertisement for a local product. The advertisement might be a moving picture. It was known to be possible, by processing the video feed appropriately in real time with computers, to show a different advertisement in the broadcast of an event, and for that advertisement to appear as if it was on the board in the stadium.
5. A problem arises where there is something blocking the camera’s view of the LED display board. It might be a player, the ball, or anything else. It is referred to in the patent as an occluding object. The position of the occluding object may well change rapidly and it is a challenge to process the images from the TV cameras in real time, while working out what is occluding object and what is advertisement from the LED board. If the occluding object is not taken into account then the superimposed advertisement would appear to cover the occluding object, which is obviously undesirable.

6. The Nevatie prior art addresses this issue by having boards which emit infra-red (“IR”) light and a camera which detects IR. The computer system to which the camera is linked knows where the board is and thus which pixels in the camera image relate to the board. Occluding objects block the IR light from the board. Therefore pixels which are not occluded can be distinguished from occluded pixels. Then only the non-occluded pixels are overlaid with advertising by computer processing.
7. AIM’s case here and below is that the approach of the patent is different. It says that instead of detecting light from the board, the system in the patent detects light from the occluding object, and determines that it is indeed an occluding object by studying an “image property” of it. In particular, AIM says, the patent relates to using a frequency-based filter to cut out light from the display board (which is arranged to be of known frequency), but to allow through the more varied radiation reflected by the occluding object.
8. The relevant claim, broken down into numbered features, is as follows:

12	A method of digitally overlaying an image with another image,
12.1	comprising creating a model of a real world space,
12.1.1	wherein the model includes an overlay surface to be overlaid with an overlay image,
12.1.1.1	wherein the overlay surface in the model represents a display device in the real world,
12.1.1.2	wherein the display device is configured to display a moving image on the display device in the real world by emitting radiation in one or more pre-determined frequency ranges;
12.2	identifying camera parameters, which calibrate at least one camera with respect to coordinates of the model;
12.3	capturing at least one image with respective said at least one camera substantially at the same time, said at least one captured image comprising a detection image,
12.3.1	wherein the camera used to capture the detection image is configured to detect radiation having a frequency outside all of the one or more predetermined frequency ranges and distinguish the detected radiation outside all of the one or more pre-determined frequency ranges from radiation inside the one or more pre-determined frequency ranges;
12.4	positioning the overlay surface within said at least one captured image based on the model and the camera parameters;
12.5	detecting an occluding object at least partially occluding the overlay surface in a selected captured image of said at least one captured image based on an image property of the occluding object and the detection image;
12.6	overlaying a non-occluded portion of the overlay surface in the selected captured image with the overlay image, by overlaying the moving image displayed on the display device in the real world with the overlay image in the selected captured image.

9. The claimed method is a method for digitally overlaying another new image onto an old image. The claim uses the term “overlay image” (see e.g. 12.6) to refer to the different image to be overlaid on top of the one visible in the stadium. The overall method comprises six aspects.
10. The first, at 12.1, requires a model of a real world space to be created. One might imagine the real world space is a football stadium. Features 12.1.1 and 12.1.1.1 provide that the model includes an overlay surface which represents a display billboard in the

real world. The overlay surface in the model is the place where the overlay image is going to be put. In this section (at 12.1.1.2) the claim also requires that the display board is configured to display a moving image.

11. The second aspect, at 12.2, is to identify camera parameters which calibrate the camera with respect to the model. In other words the system has to understand where in space the camera is located relative to the model. One reason why this is required is to make sure the overlay image has the correct perspective as if it was being viewed from the camera when it is overlaid.
12. The third aspect, at 12.3, involves capturing an image with the camera. The “captured image” also comprises a “detection image”. The captured image is effectively the view of the scene. The other image, i.e. the detection image, is different and I will come back to it below.
13. The fourth aspect, at 12.4, requires positioning the overlay surface within the captured image. In other words the system works out where in the captured image (which is the image which is going to be broadcast), the overlay surface needs to be, based on the model and the relative position of the camera.
14. The fifth aspect, at 12.5, is concerned with detecting an occluding object, in other words detecting an object which is at least partially occluding the overlay surface in the captured image. This detection is carried out “based on an image property of the occluding object and the detection image”. The meaning of this feature is the subject of ground 1 of the appeal and I will come back to it in that context below.
15. The sixth and final aspect, at 12.6, is the overlaying of the new image onto the captured image, on the non-occluded portion of the overlay surface. In other words the overlaying is done correctly so that the new image does not go onto places where the occluding objects appear.
16. The three further issues to deal with at this stage are the term “detection image”, the question of so called “pixel-by-pixel” processing and the distinction between “dark-on-light” and “light-on-dark”.

Detection image

17. Feature 12.3.1 together with feature 12.1.1.2 in effect require the detection image to be taken by a camera using a frequency selective filter. We were taken to a passage at [150]-[151] of the report of Dr Thomas, the expert called by AIM, where this frequency selectivity was explained. The camera that captures the detection image is equipped with a special spectral filter which only allows light within a small controlled frequency spectrum to pass through to the sensors in the camera. This small, controlled frequency spectrum is chosen so as to be outside the pre-determined frequencies emitted by the LED display board. Light from any images appearing on the board is thus excluded from the resulting detection image and the result is that the display board appears in the detection image as a monotone, uniform region. The skilled person would understand that in the detection image the pixels representing the display board would appear as a solid, uniformly dark region due to this elimination of radiation from the display board and because LED screens are typically designed to be monotone, uniform and dark when not active so that they have a “good black level”, i.e. so that they can portray

images including black or dark areas. As explained in the patent at [0034], the detection image captured by this setup will not be influenced by any changes displayed on the LED screen.

18. At this point it is worth explaining a feature of standard LED displays. One can think of this display as an array of pixels in which each pixel consists of three LEDs: a red one, a green one and a blue one. This is an “RGB” display. Even though the only light frequencies emitted by these LEDs are red, green and blue, nevertheless humans perceive a full colour image produced by such a display, owing to the way the brain interprets the signals. Therefore, as the patent explains in paragraph [0034] and depicts in figs 5a/5b, in order to filter out the frequencies emitted by this kind of LED display it may not be necessary to filter out the whole visible spectrum. At paragraph [0035] the patent also makes the point that the filter could be applied to non-visible light.

Pixel-by-pixel processing and dark-on-light vs light-on-dark

19. These two final issues are best understood in the context of the arguments over the prior art (Nevatie) and the case on infringement. Starting with Nevatie, as I have explained already, the board in Nevatie emits IR light and the occluding object will block out that IR light. In the court below AIM said that Nevatie therefore related to dark occluding objects against a light board, the latter being detected. On the other hand AIM submitted that the patent relates to light occluding objects detected against a board which (because of the filtering) is relatively dark in the relevant frequency range. At judgment [19] the judge coined the expressions light-on-dark and dark-on-light to reflect this distinction. The judge also expressly made the point that that is not the way the patent’s claims express matters and also that Supponor disputed the claim interpretation relevant to it. On construction, the judge held that the claim excluded dark-on-light methods. This is challenged by ground 2, below.
20. Supponor’s SVB System uses a board which emits IR light as in Nevatie. The system works by examining each pixel for those pixels which are expected to be within the bounds of the display board. This approach is referred to in these proceedings as working pixel-by-pixel. The judge held that the claim did include such a pixel-by-pixel approach. Supponor challenge that conclusion as ground 1 of the appeal.
21. The difference between the SVB system and the prior art Nevatie system is that the SVB system adds what is in effect a second IR camera in addition to the IR camera of Nevatie. One camera sees the IR at the frequency emitted by the board and is used for a Nevatie-style dark-on-light approach. Low brightness (relative to a threshold) indicates a pixel where there is an occluding object. Consistent with its case that the patent claim excluded dark-on-light methods, AIM did not suggest that this Nevatie-style method aspect infringes the patent.
22. The other, second, camera in the SVB system is sensitive to a different IR frequency from the one emitted by the board and visible to the first camera. In some circumstances, such as on a sunny day, there is more ambient IR radiation. In this case the system compares the ratio of the brightness of the same pixel in the two images, one from the first camera and the other from the second camera. A high ratio in brightness (i.e. a big difference) would be consistent with the pixel representing the board rather than an occluding object. That is because the board is emitting bright IR at the frequency seen by the first camera whereas, at the IR frequency visible to the second

camera, the board is not emitting. Therefore if the pixel is associated with the board, in these circumstances one would expect a relatively big difference in the brightness of these two frequencies.

23. On the other hand a relatively low ratio of the two brightness levels would be consistent with the pixel being associated with an occluding object. That is because, at the IR frequency of the first camera, the bright IR emitted by the board is occluded by the object; while on a sunny day the object may be reflecting some IR at the frequencies of both cameras from the bright sunlight. Therefore the two brightness levels seen by the two cameras may be relatively similar to one another and the ratio is therefore lower.
24. AIM submitted and the judge held that the SVB system infringes by using the method involving the identification of an occluding object for a pixel by means of the low ratio using both cameras' results.

The grounds

25. The first issue is whether feature 12.5 of claim 12 covers this sort of pixel-by-pixel analysis at all. Supponor argues that it does not and that the claim requires "higher order" processing, in effect examining what the occluding object "actually looks like". For present purposes one can regard higher order processing as requiring consideration of multiple pixels together in order to classify something as an occluding object. If that construction is right then, it is common ground, there is no infringement. The judge rejected Supponor's case, holding that claim 12 does include pixel by pixel processing. Ground 1 of the appeal challenges that conclusion.
26. The next issue is the dark-on-light / light-on-dark distinction. Putting the case in terms of the judge's characterisation, Nevatie and the first camera in the SVB process take a dark-on-light approach, whereas the second camera in the SVB system could be thought of as light-on-dark. Supponor's case below was that if the claim was so broad as to cover the SVB system then it must include both light-on-dark and dark-on-light. On that basis the claim would be invalid over Nevatie. In the court below this invalidity argument was purely one of construction, because if Supponor's construction was accepted then the only other difference over Nevatie was that while the claim requires moving images to be displayed (feature 12.1.1.2), Nevatie did not do that. However to display moving images was accepted to be obvious.
27. The judge held that the unamended claim excluded the dark-on-light approach. In effect it was limited to light-on-dark. Therefore the claim covered the SVB system and was not invalid over Nevatie. Ground 2 of the appeal challenges the conclusion that the unamended claim excluded dark-on-light. AIM supports the judge but as a fall back (as they did below) AIM relies on the proposed amendments. The judge held that these amendments would limit the claim to exclude dark-on-light and were allowable but were unnecessary. However if ground 2 succeeds then they will be necessary, subject to ground 6.
28. The first proposed amendment (Revised Amendment 1) makes two changes to claim 12. The first change amends feature 12.1.1.2 to limit the display device to an LED board. There is no live objection to that. The second change is to insert a new feature 12.7 as follows:

“wherein the LED screen has a uniform, monotone distribution as if it was not active on the captured detection image.”

29. The issue is the meaning of the expression “as if it was not active”. The judge held at [228] that this would exclude dark-on-light even if unamended claim 12 did not. This will be addressed in ground 6 below.
30. Ground 3 seeks to challenge the finding of infringement by the SVB system in the event its case on grounds 1 and 2 (and 6) fail. It is a short point which will be addressed in context.
31. As mentioned already Supponor had obviousness arguments designed to attack claim 12 construed in the way the judge did, which excluded dark-on-light but which the SVB system infringed. The main argument was called Nevatie Plus and was an attempt to run a form of *Gillette* defence on the basis that it was obvious over Nevatie to add the approach of using the second camera which the SVB system has in addition to Nevatie. The judge rejected that approach and there is no appeal.
32. The second argument was called Nevatie-OD. The submission was that it would be obvious over Nevatie to perform higher order processing on radiation from the occluding object. The judge understood that this argument only worked in circumstances which did not affect the overall result as between the parties. He nevertheless considered and rejected it on its merits. Like the judge, I do not see how this argument can affect the outcome because it only works if the claim does not exclude Nevatie’s general dark-on-light method. If that was the case then, as I understand it, it is common ground that the claim would be invalid over Nevatie anyway because the only difference would be the obvious step of displaying a moving image. Nevertheless this argument is advanced as ground 4.
33. That concludes my introduction to the technical case. The only other issue is ground 5 and the *Promptu* point, addressed below.

Construction – a point of principle

34. The law relating to the construction of patent claims was not in dispute either below or before this court. Nevertheless given some of the appellant’s submissions, there is an aspect which is worth mentioning before turning to the specific grounds. Patents are construed through the eyes of the person skilled in the art, imbued with the common general knowledge. If matter is not set out in the patent and is not part of the common general knowledge then it is not relevant to construction. So for example in this case the Nevatie prior art was neither common general knowledge nor was it cited in the patent specification and therefore played no role in construction, as the judge rightly held at [27].
35. However many of the submissions made by counsel for Supponor in this court related to hypothetical examples and on what were said to be the consequences if a given construction was adopted. One example in particular was to posit an LED board consisting of red LEDs against a white background which background, it was suggested, would reflect light (and/or IR). The submission was that the method would be impractical in that example but that there was no reason to construe claim 12 to exclude such a thing. However despite the evidence references in Supponor’s appeal

skeleton, which included citations from Dr Steed's evidence, and references to the Where's Wally books, no attempt was made to show that this red LED white background example relied on in the submissions was common general knowledge, or that the case advanced might have represented the thinking of the skilled person by reference to any expert evidence. We were not shown any evidence references about this example at all. Notably, as counsel for AIM pointed out, the evidence of Dr Thomas (cited above) was that LED boards had visually dark backgrounds. Without a proper basis, it is not fruitful to examine consequential arguments based on asking whether hypothetical examples are inside or outside the claim and how practical the skilled person might think the claimed method would be in such a context.

36. There were other examples from which a consequential argument was advanced, such as a white display board at an ice hockey match along with speculative points about the IR properties of black trousers worn by the referee in the picture. I am not satisfied that that reasoning would represent the thinking of the skilled person either.

Ground 1 –pixel-by-pixel

37. The reasoning in the judgment relating to the pixel-by-pixel point is paragraphs [121] to [140]. Supponor's case here and below can be understood as a submission that the "image property" referred to in 12.5 of claim 12 necessarily involves consideration of the neighbourhood of a pixel. That consideration is the so called higher order processing which Supponor contend is required. The result would be that the property of a single pixel on its own cannot be an image property and so pixel-by-pixel processing is not within the claim.
38. Supponor's best point is that the specific examples given in the patent in which an image property of the occluding object is determined all involve some kind of higher order processing which takes the neighbourhood into account. The examples include using stereo images or by using a "descriptor" of the neighbourhood of a pixel given by an approach known as spatial frequency analysis. The judge had this well in mind but nevertheless rejected Supponor's case concisely at paragraphs [134]-[136]. The point is that image property is a broad term and the skilled person's first impression reading the patent would be that it was very general. The skilled person reading the patent would see from what was described in the specification that a higher order processing approach could be used, however, as the judge put it "that is not at all the same thing as the skilled person thinking that spatial frequency analysis/descriptors or higher order processing *must* be used" [*judge's emphasis*]. The relevant paragraphs of the description in the patent were either expressly permissive (paragraph [0013]) or were capable of being understood that way. So the fact that in one context (paragraph [0016]) the image property would indeed concern the neighbourhood of the pixel is simply informative of what would be going on in that example. Finally at [139] the judge concluded that the term "image property" just means the property of an image.
39. I agree with the judge. Supponor's argument is an example of a familiar wrong approach to the construction of patent claims. Limitations which are not present in the claim language are not to be read in by reference to examples which appear in the specification. The skilled person reading a patent understands that the examples are simply that. If the claim language is broad – as the term "image property" clearly is – then the claim is correspondingly broad, for good or ill. The fact that the result will be that the claim therefore covers other approaches, different from those in the examples,

is not on its own a reason to read the claim in a limited way. In some cases the consequences of different possible constructions e.g. for validity, might be relevant but only if those consequences would be part of the skilled person's thinking based on the patent and the common general knowledge. As I have already explained, there is no basis for such arguments here.

40. At this point it is convenient to refer to another aspect of Supponor's case on appeal. This was the submission that the judge erred in arriving at a construction which was inconsistent with the inventive concept disclosed in the patent. In my judgment the argument adds nothing. It is in effect an attempt to run the same argument I have just rejected. Supponor first pointed to the examples in the specification noting that there was no example of pixel-by-pixel processing based on the brightness of a pixel (nor of pixel-by-pixel processing generally), then highlighted that the examples all in effect used forms of higher order processing, and so asserted that these things taken together show that the construction of the claim which covered the SVB system must be broader than and therefore inconsistent with the inventive concept to be derived from the patent in this fashion.
41. Attractive though it sounds to say that the construction of the claim ought to be consistent with the inventive concept, there is a risk of error here. Patents are read as a whole, but nevertheless the scope and definition of the invention is determined by the claims, properly construed in accordance with the Protocol on the Interpretation of Art 69 EPC. It is often useful to identify what the inventive concept is, because claims can be wordy and it may be helpful or necessary to draw out the essence or core ideas underpinning the invention, e.g. when considering obviousness or equivalence. However the task is usually something which can only be done properly after construing the claims. In other words really it is the inventive concept which ought to be consistent with and follow from the properly construed claims.
42. Put shortly, the claim properly construed is not limited to higher order processing, and neither is the inventive concept. I would dismiss ground 1.

Ground 2 – excluding dark-on-light

43. The judge's reasons why the claim excluded a dark-on-light approach are set out in paragraph [141], as follows:

“[141] So I reach the conclusion that “image property” is broad, as AIM contends. I move on to consider the dark-on-light aspect. Not without some hesitation, I have concluded that AIM is correct on this too. My main reasons are as follows:

- (i) It is not relevant that rejecting AIM's argument would run into Nevatie. The skilled person would not have that in mind.
- (ii) It is a point against AIM that its drive on the first aspect of feature 12.5 was that a broad meaning was intended.
- (iii) However, both sides agreed that the teaching of the Patent was about processing radiation from the occluding object. That is a consistent thrust of its teaching, common to the fairly general

discussion at [0013] to [0021] and the three more specific sections from [0033].

(iv) Conversely, there is no teaching about using the absence of radiation from the occluding object.

(v) Although I have said that “image property” has a broad meaning, the context also includes “detecting” an occluding object. I do not think it would be a natural use of language to say that something is being “detected” when it cannot be seen at all.

(vi) This is fortified by the way that feature 12.3.1 is written concerning the camera. It is to detect radiation outside the one or more predetermined frequency ranges, i.e. not radiation in the range emitted by the display device.

(vii) In a dark-on-light situation one would naturally say that the presence of the occluding object was inferred but one would not say that it was detected. This is perhaps just another way of looking at the points above.”

44. Sub-paragraphs (i) and (ii) are unchallenged by either party but are relatively minor. The first point was that AIM could not pray in aid a consequential construction argument that the claim might cover Nevatie and risk invalidity if it did not exclude dark-on-light any more than Supponor could have prayed in aid a consequential construction argument that the claim might cover Nevatie if it included pixel-by-pixel processing. The second is a small point against AIM arising from the fact “image property” would be understood broadly. In a very general sense that might militate against a narrow approach to dark-on-light but in the end this sort of factor is unlikely to be determinative.
45. Sub-paragraphs (iii) and (iv) go together. The point being made is that the thrust of the patent is about processing radiation which is from the occluding object whereas the patent does not describe using an absence of radiation from the occluding object. On appeal Supponor denied that they made the concession identified in (iii) and in any event criticised these paragraphs. It is not necessary to examine whether Supponor did or did not agree with the way the point is put in (iii) because in my judgment the judge’s conclusions about the patent’s teaching is correct in any event. The passages cited in (iii) would be understood by the skilled person to refer to processing light (visible or not) from the occluding object. A simple example of a characteristic described in paragraph [0013] is the colour of a player (see col 4, line 16). Nor, as is held at (iv), is there any description in the patent of a process which draws conclusions from an absence of radiation from the occluding object or otherwise uses such an absence.
46. However on its own this point would not be sufficient to justify the conclusion on construction because it is really the same kind of point I have just rejected on ground 1. The fact the examples work in a particular way is not on its own a sufficient reason to read a limitation into a claim which does not arise from the claim language itself.
47. At (v) and (vii) the issue is whether it would be a natural use of language to say that something can be detected (in feature 12.5 of the claim) when it cannot be seen at all.

Supponor criticise this conclusion, making the point that in a system operating on a pixel-by-pixel basis, whether an object is made up of “dark” or “bright” pixels in an image, it can be detected by the computer algorithm drawing inferences from the properties of a pixel. Therefore attributing to the machine the human concept of sight is inapt. I agree with Supponor on this. Particularly bearing in mind the context, it does not seem to me that the use of the word “detecting” alone in claim 12 at 12.5 is apt to distinguish between a computer system which detects something by its being in effect a silhouette against a bright background as opposed to its being a bright object against a dark background.

48. Turning to point (vi), I agree with the judge. The filtering aspect in the claim at 12.3.1 is directed to detect radiation outside the one or more predetermined frequency ranges, i.e. not radiation in the range emitted by the display device. Supponor’s argument on appeal on this point drew a distinction between radiation emitted by the display board LEDs and other radiation which might be reflected from the display device; and advanced what was characterised as a “thought experiment” (appeal skeleton 33) intended to lead to consequences which would drive the construction away from that arrived at by the judge. However this argument is yet another example of consequentialist reasoning without a basis from which to infer that it would play any part in the skilled person’s thinking, which I have rejected above.
49. Addressing the question of whether the claim is limited to a light-on-dark method, thereby excluding a dark-on-light approach, is in effect a proxy for the question whether the claim excludes Nevatie. Given the way the arguments developed on appeal, it seems to me that the question should be posed in a more direct way. Does claim 12, properly construed, cover the relevant aspects of the Nevatie approach. I pose the question this way for two reasons. The first reason is that another aspect of Supponor’s case on appeal, based on arguments about consistency with the inventive concept, seemed to me to be aimed not at the claim language as such but at the dark-on-light / light-on-dark distinction. By focussing on the claim language itself it is not necessary to examine those submissions. The second reason is because on appeal Supponor made a point which the judgment does not appear to address. The submission was that the light which unamended claim 12 itself requires to be filtered out is visible light, because at 12.1.1.2 the claim expressly states that the board is configured to display a moving image “by emitting radiation in one or more pre-determined frequency ranges”, and it is those pre-determined frequency ranges which are filtered out in 12.3.1. I can see that the claim may be limited to a kind of light-on-dark approach when one is talking only about visible light emitted by the LEDs on the board, which does have to be filtered out at 12.3.1. However I think Supponor’s point here is that the dark referred to in the term light-on-dark in this context must at most only refer to filtering at the frequencies of visible light emitted by the board’s LEDs and not to filtering out the bright IR emitted by the board in Nevatie. In other words given Supponor’s case on appeal, drawing a simple distinction between dark-on-light and light-on-dark methods may not work as a technique for distinguishing Nevatie.
50. AIM did make the point that the specification clearly contemplates extending the method described to apply the filter in the range of non-visible light (patent [0035]) but AIM did not, so far as I am aware, provide an answer to the submission about what frequencies the words of claim 12 required to be filtered out. However in any case, in my judgment, Supponor’s submission is correct as it applies to the unamended claim.

The frequencies of radiation which the language of the claim requires to be filtered out are those which are emitted by the display board in order to display a moving image. Accordingly the camera in Nevatie, which is an IR camera designed to see the bright IR emitted by the display board, does satisfy the claim since it detects the bright IR and not visible light. The fact that it does not filter out bright IR emitted by the display board does not matter.

51. Nevatie describes a method which involves examining the image captured by an IR camera on a pixel-by-pixel basis and detecting an occluding object by examining the brightness of each pixel, attributing a bright pixel to the display board and a dark pixel to the occluding object. This amounts to detecting an occluding object by means of an image property of the occluding object, which is the brightness of the pixel associated with that object. I would hold that this is within claim 12 (subject to the irrelevant issue about moving images).
52. Therefore I would allow the appeal on ground 2.
53. The next issue therefore is ground 6, which relates to the amended claims. The key wording is the new feature 12.7 which is set out above. The issue is what the requirement for the LED screen to have a uniform, monotone distribution “as if it was not active” on the captured detection image means.
54. Supponor’s argument to the contrary was put on two bases. The first basis was that “active” in this context referred to the fact the image in the display was moving. However that is wrong. In the specification it is clear that the word “active” refers to the capability of a board to provide a display by actively emitting light such as from the LEDs. Such an active board can be configured to show different adverts over time. At any given moment they are capable of displaying moving or static images. When the patent requires moving images to be displayed (such as at 12.1.1.2) it says so. The specification also uses the term “dynamic” to refer to moving images. The contrast is drawn with the conventional “static” display board such as a wooden board. These distinctions are clear from paragraph [0002] of the patent and also the introduction to paragraph [0034] as follows:

“In a lot of high value sports events, like soccer, one does typically not want to use static or wooden advertisement boards, but dynamic active boards that can display multiple advertisements over time in order to increase advertisement revenue. These boards, typically LED boards, are able to display static images as well as moving videos.”
55. Supponor’s second argument was similar to the point addressed already about unamended claim 12, that the words only referred to visible light emitted by the LED board (see also feature 12.1.1.2) and did not exclude the possibility of the board emitting non-visible IR light. However the judge expressly rejected this, holding as follows:

“However, the words [*of feature 12.7*] do not deal with visible and non-visible light separately. They say that in the captured detection image the LED screen looks like it is not active, i.e. is not doing anything. In a system such as Nevatie (dark-on-light)

the captured detection image will show that the LED screen is highly active, emitting IR”

56. I agree with the judge. The patent clearly contemplates filtering out IR at paragraph [0035], mentioned above, and so there is nothing surprising about this conclusion. Moreover, as the judge is also holding in this paragraph, claim 12 as amended to include this feature 12.7 will not cover Nevatie because in that system the captured IR detection image will show that the LED screen is highly active.
57. Therefore I would dismiss ground 6 of the appeal.

Ground 3

58. By this ground Supponor seeks to challenge the finding of infringement by the SVB system in the event its case on grounds 1 and 2 (and 6) fail. Since that case has failed, this ground is engaged. However the argument Supponor advanced on this ground was a narrow one which related to the same argument advanced on ground 2 about the meaning of the term “detecting” in claim 12. Essentially Supponor’s point was that if the claim excluded a method of inferring the presence of an occluding object by observing bright pixels, identifying them as being from the display board, and thereby inferring that the dark pixels are from an occluding object, then it follows that there is no infringement, because that is also how the SVB system works. There are a number of problems with this submission, not least that it is not an accurate characterisation of how the SVB system works. However the short answer to it on this appeal is that I have held that “detecting” in claim 12 does not have the narrow meaning identified in the judgment at [139] (v) and (vii) and so this point does not arise.
59. Standing back I can find no error in the judge’s approach to infringement and I would dismiss ground 3.

Ground 4 – obviousness on the Nevatie-OD argument

60. As grounds 1, 2 and 6 have turned out this ground of appeal does not arise. The reason is because the argument is that it would be obvious over Nevatie to perform higher order processing on radiation from the occluding object. However even if that was so, the resulting system would still have a single IR camera tuned to the bright IR being emitted by the board. Therefore the board would still appear active in the detected image and the resulting system would be excluded from the claim by feature 12.7.

Ground 5 – the Promptu point

61. In October 2022, about a month before the trial in November of that year, AIM’s solicitors wrote a letter to Supponor’s solicitors seeking to narrow the issues. In the letter AIM’s solicitors said:

“Our client no longer contends in these UK proceedings that claim 1 of EP(UK) 3 295 663 B1 as granted is valid. Claim 12 is therefore the only granted claim which falls to be considered at trial.”

62. Still before trial and after at least one other letter, Supponor’s solicitors responded advancing an argument that the consequence of AIM’s position was that the whole

patent had to be revoked. Excluding an aspect of the argument which was important below relating to claim 13 but is no longer relevant, in summary Supponor's point was that there is no real difference between claim 12 and claim 1 and so if claim 1 is invalid it must follow that claim 12 is also invalid, and so since the only claim being defended in the patent was claim 12, the patent must be revoked. Supponor's letter also contended that this conclusion was supported by an earlier decision of Meade J in *Promptu v Sky* [2021] EWHC 2021 (Pat) at [118]-[124]. That is why this issue came to be called the *Promptu* point.

63. AIM did not agree that Supponor was right but, following a challenge from Supponor, AIM also made a contingent application for permission to withdraw the admission in the event AIM was wrong. The matter came before Joanna Smith J about a week before the trial, leading to a consent order holding the ring and allowing both sides to make their cases at trial. At trial Meade J rejected Supponor's case and so did not need to consider the withdrawal issue. The judge's reasons on this point are at [248]-[273]. Among other things the judge held that *Promptu* itself did not decide an issue of principle relevant to this application. I agree and neither side argued to the contrary. Therefore there is no need to examine *Promptu* itself.
64. In the evidence filed on the application and noted by the trial judge at [257] Mr Laakonen, part of AIM's legal team at Powell Gilbert, challenged Supponor's advisers to say that Supponor had thought that AIM's concession on claim 1 also affected claim 12. As the trial judge pointed out, this challenge was not taken up.
65. The judge's reasons for rejecting Supponor's case can be summarised as follows. He held (at [269]) that AIM never admitted that claim 12 was invalid. AIM had always defended it, and in its letter dropping claim 1 it made clear that claim 12 required resolution. At [267] he held that it was not legitimate to combine admissions and matters said logically to flow from admissions to reach a result which was expressly not accepted by the party making admissions. At [269] he stated that he did not believe that a reasonable person in the position of Supponor would have interpreted AIM's conduct as admitting by implication that claim 12 was invalid, nor did he believe that Supponor in fact thought that. The judge characterised Supponor's conduct as opportunistic and a distraction. Finally at [270] the judge held, stepping back, that it would be extremely unjust to prevent AIM from relying on claim 12. He thought the concession on claim 1 was no doubt necessitated by realising that its form as a product claim made it too vulnerable, and more vulnerable than claim 12. There was no reason for AIM to think about any knock on effect on claim 12 and he did not believe it did so.
66. Finally the judge said this:

“[271] I would also say that it would be unfortunate to discourage patentees in this sort of situation from making sensible admissions about claims other than the main ones for fear of an unforeseen consequence.
67. The judge also noted at [272] that it was not necessary to consider the possible withdrawal of AIM's admission, observing also that it was rather hard to identify what admission it would have to apply to withdraw.

68. On appeal Supponor's argument was that the admission that claim 1 was invalid in the light of Nevatie had the result that claim 12, which it was common ground was materially identical in terms of its technical subject matter, should also be held to be invalid. Supponor contended that the judge's rejection of this argument was an error of law. In response AIM supported the judge.
69. Supponor's oral submissions on appeal ranged quite widely, mentioning s72 and s74 of the Patents Act 1977 and drawing an analogy with the law of limitation. However the analogy does not matter and the references to the provisions of the Patents Act do not assist. The point on the Act was to suggest that for the court to have made an order revoking claim 1 of the patent and declaring that claim to be invalid, as it did after trial and by consent, the court must have made a positive finding of fact that claim 1 was invalid in order to comply with those sections of the Act. However the fact that those sections limit the circumstances in which validity can be challenged, and the grounds on which such a challenge can be made, does not preclude a court from making an order for revocation by consent. A consent order made that way does not involve the court making any findings of fact at all, and therefore Supponor's case is not improved by the terms of the consent order.
70. Turning to the issue itself, I start from the original letter from AIM's solicitors, quoted above. The letter is clear that AIM is saying it no longer contends in the UK proceedings that claim 1 is valid and, in the same breath, it is saying that it is maintaining its case that claim 12 is valid. I am doubtful that this is really an admission of any fact at all. Rather it is a pragmatic proposal about case management, that AIM will not seek to defend claim 1 but will defend claim 12. It does I think carry with it a statement that AIM will not oppose any relief granted on the footing that claim 1 is invalid, but that is a different thing from an admission of a fact. The difference would not normally matter but given the point raised by Supponor it does matter. An admission that claim 1 is invalid is the foundation for Supponor's case but there was no such thing.
71. Even assuming what took place amounted to an admission, it cannot be summarised simply as an admission that claim 1 is invalid because it is clearly bound up with a statement that claim 12 is not. This I think is what the judge was referring to at [272] when he doubted what exactly the admission which would need to be withdrawn was. Therefore again, in my judgment the foundation for Supponor's point is lacking. Supponor might be right (although it would need proof) that there is an inconsistency between a conclusion that claim 12 is valid over Nevatie and a conclusion that claim 1 is invalid over the same prior art. However even if that was established, and to be clear there is no such evidence in this case to which I have had my attention drawn, it would just mean that AIM did not need to concede that claim 1 was invalid. It does not mean that having done what it did, AIM must necessarily lose claim 12.
72. Even if what AIM did is to be interpreted as an admission of the kind alleged by Supponor – i.e. a simple unqualified one that claim 1 is invalid – then again I do not accept Supponor's case. Claims 1 and 12 are not identical. The judge noted at [270] that claim 1 is a product claim whereas claim 12 is a method claim. It is basic patent law that a claim to a product characterised by its suitability for performing a method may well lack novelty in circumstances in which a claim to the method itself does not. So the method claim will be novel even though a product claim in almost identical terms

will not be. In other words the conclusion pressed by Supponor does not follow from the premise without some further proof, but as I have said there is none here.

73. Yet further, the fact the admission is said to be that claim 1 “is invalid” is another obstacle in Supponor’s way. There is no admission as to the ground on which the claim is invalid. Since this was a pragmatic case management concession the ground did not matter and was not stated, but an argument of the kind pressed by Supponor here is impossible unless one knows on what ground the claim is invalid.
74. The points I have made are technical in nature but that is because this is advanced as a technical point. Counsel for Supponor noted that the judge thought it would be extremely unjust to prevent AIM from relying on claim 12 but argued that, just or not, the conclusion was a necessary and inevitable consequence of a step which AIM had taken. I agree with the judge that such a conclusion would be extremely unjust but as I have also sought to show in answer to counsel’s technical submission, such a technical approach is not right.
75. The real point is that what happened in this case was not an admission of the usual sort. Admissions in patent cases are no different from admissions in any other sort of civil action. If a party admits a particular fact then that fact can be taken as being the case and any consequential findings may be made taking that fact as a given. If AIM had admitted, without qualification, that every element of claim 1 was to be found within the disclosure of Nevatie (no doubt with the consequence that claim 1 lacked novelty over Nevatie) then those admissions could form the basis of an invalidity attack on claim 12, albeit that that attack would still have to be established taking those admitted facts into account. Such an attack might or might not be successful, but it would still have to be proved. What Supponor is trying to do here is suggest that this is what has happened in the present case, but it simply is not.
76. I conclude on this ground by expressing my agreement with what the judge said at [271] albeit in slightly different language and subject to one qualification. It would be unfortunate to discourage patentees in this sort of situation from making sensible case management proposals about what claims are in issue other than the main ones for fear of an unforeseen consequence.
77. Nevertheless, this case is also an object lesson in making sure that the precise basis and extent of a concession is made clear. In this case the proposal was not worded carefully enough to preclude a debate that the concession on claim 1 logically extended to claim 12. Looking at the words of the original letter, set out above at paragraph 61, to use the word “therefore” in the second sentence left that possibility open. A simple statement that the claimant made no concession about claim 12 at all, but would not contend claim 1 was valid, would have avoided this problem.
78. I would dismiss the appeal on ground 5.

Conclusion

79. Although I would allow ground 2, I would dismiss all the other grounds with the consequence that I would dismiss the appeal.

80. The order will need to reflect the amendment to claim 12. There was a suggestion by Supponor that this result was not open to the court because there was no Respondent's Notice. I do not believe that is correct because the judge expressly held that if the amendment had been necessary he would have allowed it and, crucially, Supponor appealed on that particular point. Supponor having raised the issue in this appeal, the issue needed to be decided and the outcome has not taken Supponor by surprise. Supponor did not need notice from the respondent on this point. In a different case, if an appellant in Supponor's position had not taken the point then a prudent respondent might be wise to file a Respondent's Notice but that is not what happened.

Postscript

81. When the draft judgment was circulated, the parties identified a number of minor typographical errors. They have been dealt with. However two further matters arose, which I will address below.
82. The starting point is to reiterate the function of the practice of circulating a judgment in draft. Lord Judge CJ explained this at [5] of R (Mohamed) v Foreign Secretary (No 2) [2010] EWCA Civ 158, [2010] 3 WLR 554:

“The primary purpose of this practice is to enable any typographical or similar errors in the judgments to be notified to the court. The circulation of the draft judgment in this way is not intended to provide an opportunity to any party (and in particular the unsuccessful party) to reopen or reargue the case, or to repeat submissions made at the hearing, or to deploy fresh ones. However on rare occasions, and in exceptional circumstances, the court may properly be invited to reconsider part of the terms of its draft. (see for example [In the matter of L and B [2013] UKSC 8]). For example, a judgment may contain detrimental observations about an individual or indeed his lawyers, which on the face of it are not necessary to the judgment of the court and appear to be based on a misunderstanding of the evidence, or a concession, or indeed a submission. As we emphasise, an invitation to go beyond the correction of typographical errors and the like, is always exceptional, and when such a course is proposed it is a fundamental requirement that the other party or parties should immediately be informed, so as to enable them to make objections to the proposal if there are any.”

[In this passage I have added in square brackets the reference to the later Supreme Court judgment of In the matter of L and B, as a substitute for the earlier cases cited.]

83. In the same vein Smith LJ put it this way at [50] in Egan v Motor Services [2007] EWCA Civ 1002:

“The purpose of the judge providing a draft of the judgment before hand down is to enable the parties to spot typographical, spelling and minor factual errors which have escaped the judge's

eye. [...] Circulation of the draft is not intended to provide counsel with an opportunity to re-argue the issues in the case.”

84. Regrettably neither party adhered to this clear guidance.
85. AIM’s list of corrections provided on 18 April 2024 included some proposals, described as clarifications, which were fairly transparent attempts to adjust the wording of the draft judgment for its own purposes. Nevertheless, understandably those proposals led Supponor to write an urgent detailed six page letter, on the same day, objecting to them. I have not made any of those changes proposed by AIM.
86. Also on 18 April, along with its list of corrections, Supponor filed written submissions inviting this court to reconsider ground 6 of the appeal which relates to the claim amendment. The submissions asked the court either to revise the judgment and allow ground 6 of the appeal, or remit consideration of aspects of the claim amendment to the High Court. Supponor did this without notifying AIM in advance, leading AIM to send in objections in a detailed email in the evening of 18 April.
87. Supponor’s written submissions advance three arguments. The first two (submissions paragraphs 5-20) start with a contention that my paragraph 54 above misunderstands the case in appeal because, as the submissions put it, Supponor “did not argue ... that ‘active’ in the context of integer 12.7 referred to the fact that the image in the display was moving ...”. However that was indeed the argument put in the oral submissions. The transcript of the appeal hearing records counsel for Supponor submitting, by reference to the patent, that an active screen “is one which has got these moving image displays” (day 1/115). Therefore the judgment does not proceed on a misunderstanding of a party’s submission. The answer to counsel’s argument, as explained in paragraph 54, is that that is not what “active” means. The term “active” in the patent and in feature 12.7, refers to the capability of the board to actively emit light.
88. The remainder of the first two arguments then goes on to reargue the other aspect of Supponor’s case which failed in the court below and which I rejected above. One of the points taken in the written submissions is a suggestion that my reasoning above at paragraph 54 involves a finding that “active” must refer to the emission of visible light. However that is to read too much into the reasoning, which is not directed to that question. What paragraph 54 is directed to is the conclusion that the term “active” refers to the capability of the board to actively emit light. Simply that. It is of course true, as the paragraph explains, that a board which provides a display of images using LEDs which emit visible light will be an example of an active system. However the judge’s conclusion, which I have agreed with above at paragraphs 55/56, is that amended claim 12 will not cover Nevatie because in that system the LED screen is highly active emitting infra-red light. The fact that the light being emitted is infra-red and therefore invisible does not mean the board is not active. Nothing in these new written submissions justifies a revision to the judgment rejecting ground 6 of the appeal.
89. The third argument in the written submissions (paragraphs 21-29) seeks to re-open issues which were decided against Supponor below and which it did not appeal. In the court below AIM advanced the claim amendments as a precaution in case light-on-dark was not a requirement of claim 12 (judgment [219]). Supponor objected to the amendments on three grounds, as the judge explained at [222]:

“222. Supponor objects to the amendments on the grounds that:

- i) They make no difference and do not validate claim 12 if it is obvious over Nevatie.
- ii) Lack of clarity.
- iii) Added matter.”

90. The judge rejected all three. On this appeal the appellant challenged the first one but not the other two. That was ground 6 and has been rejected above. Supponor now contends that this court is required to address the other two points now or to remit them (or at least the third one) to be considered by the Patents Court. The ostensible reason advanced for this is because, it is said, Supponor has not had the opportunity to make submissions about the added matter point in the light of a conclusion in the appellant’s own favour on ground 2 of the appeal.
91. This is wrong. By raising ground 6 of the appeal, the appellant took the point it wanted to raise in this court in objection to the amendment. There is no procedural difference between the point which the appellant did take under ground 6 and the issue of added matter. Both points, if taken, would arise if Supponor’s case on ground 2 succeeded. However it chose only to advance ground 6.
92. I am not satisfied there is any justification for reconsidering the judgment based on the arguments in the appellant’s written submissions of 18 April 2024.

Lord Justice Phillips:

93. I agree.

Lord Justice Males:

94. I agree that the appeal should be dismissed for the reasons given by Lord Justice Birss. I would particularly endorse what he has said at para 76 above. Litigants generally, and not just in patent litigation, should be encouraged to streamline the case proposed to be advanced at trial, so that the trial can focus on what really matters, rather than fighting every point to the death. If a pragmatic decision to abandon some points were to lead to arguments about the knock-on effect of that decision on the remaining points, litigants would be deterred from adopting a sensible approach and trials would take longer, which would be contrary to the interests of justice.