



PATENTS ACT 1977

APPLICANT	John Charles Keohane
ISSUE	Whether patent application GB1913129.1 complies with sections 1(1)(a), 1(1)(b), 14(3) and 14(5) of the Patents Act 1977
HEARING OFFICER	J Pullen

DECISION

Background

- 1 Patent application GB1913129.1 entitled “3D Display” was filed on 11 September 2019 in the name of John Charles Keohane and was subsequently published as GB 2587188 A on 24 March 2021. At the time of filing, Mr Keohane requested combined search and examination of the application.
- 2 On 10 March 2020, the Office wrote to Mr Keohane to explain that a truncated search had been performed and to provide Mr Keohane with a copy of the search report in respect of his application. The letter explained to Mr Keohane that the documents found in the search would make it difficult for Mr Keohane to obtain a useful patent. The letter invited Mr Keohane to decide if he wished to either withdraw his application and receive a refund of the examination fee or if he wished to proceed with substantive examination of his application. To help Mr Keohane the letter included an Examination Opinion setting out certain major objections that would be raised should Mr Keohane decide to proceed with substantive examination. The letter explained that withdrawing his application would also prevent publication of his application, provided it was withdrawn before preparations for publication were completed and further explained that if the Office did not receive a response within one month, then it would assume that Mr Keohane wished to proceed with substantive examination of his application. The Office did not receive a response from Mr Keohane, so the application duly proceeded to substantive examination.
- 3 On 30 October 2020, the examiner issued an examination report setting out several major objections against Mr Keohane’s application. The report included objections that Mr Keohane’s invention was not new, that his claims did not define his invention clearly, and that Mr Keohane’s description of his invention was insufficient because it was not clear enough, or complete enough, for a skilled person to perform the invention.

- 4 In a letter dated 19 November 2020, Mr Keohane made detailed observations on the examination report, explaining that he did not agree with the examiner's objections.
- 5 Following a telephone conversation between the examiner and Mr Keohane, held on 17 June 2021, the examiner issued a second examination report on 18 June 2021 re-iterating the sufficiency and clarity objections while deferring re-examination with respect to novelty. Mr Keohane was also offered a hearing to decide the sufficiency and clarity objections.
- 6 On 20 July 2021, Mr Keohane wrote to the office to accept the offer of a hearing. At the same time Mr Keohane filed an amended claim.
- 7 Subsequently, on 28 July 2021, the examiner wrote to Mr Keohane to provide him with a pre-hearing report setting out the details of the sufficiency and clarity objections to be considered at the hearing.
- 8 After reviewing the prosecution of the application, I asked the examiner to write again to Mr Keohane to explain that I wished to be addressed on the novelty and inventive step of the invention at the hearing. I also asked the examiner to explain to Mr Keohane that the publication number for one of the documents listed in the search report (US 2015/0228299 A1) was incorrect and to provide Mr Keohane with the correct publication number for this document (US 2015/0228229 A1 and to apologise to Mr Keohane on behalf of the Office for this error. I also asked the examiner to confirm that Mr Keohane wished to proceed with the hearing.
- 9 In a telephone conversation with the examiner held on 7 September 2021, Mr Keohane confirmed he wished to proceed with the hearing. Accordingly, on 8 September 2021 the examiner wrote to Mr Keohane with an additional pre-hearing report setting out the details of the novelty objections against Mr Keohane's amended claim based on the documents listed in the search report.
- 10 The matters came before me at a hearing held on 4 October 2021. Mr Keohane represented himself at the hearing. Following the hearing Mr Keohane also made additional submissions by email. I confirm I have considered all documents on file, including these additional submissions, in reaching my decision.

The issues to be decided

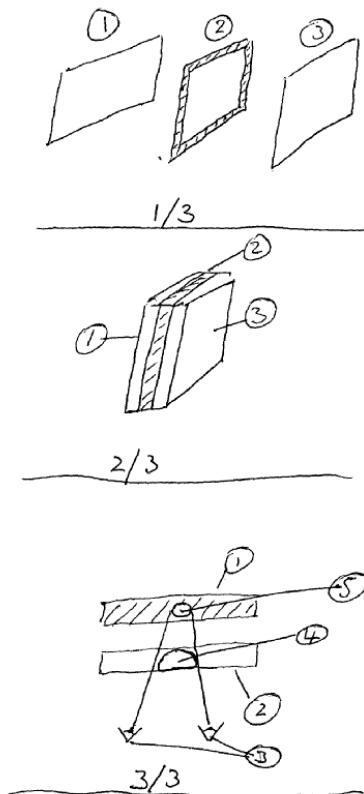
- 11 I shall begin by considering the novelty of Mr Keohane's invention. If I find that Mr Keohane's invention is new, then I shall go on to consider whether it has an inventive step and the examiner's sufficiency and clarity objections.

The invention

- 12 As filed, Mr Keohane's application includes a single page of drawings and a single page of description briefly describing the invention:

A normal tv display screen 1 (drawing 1/3) is used for background images and a transparent display screen 3 (drawing 1/3) is used for foreground images. The two display screens are held a short gap apart by a substrate 2 (drawing 1/3) . Background screen 1 (drawing 2/3) , substrate 2 (drawing 2/3) and transparent foreground screen 3 (drawing 2/3) shows the completed unit.

Content can be sent to the two screens separately but in sync with each other so that a foreground image 4 (drawing 3/3) on the transparent screen 2 (drawing 3/3) background image 5 (drawing 3/3) on the background screen 1 (drawing 3/3) can be viewed as a merged complete image. The eyes 3 (drawing 3/3) see slightly different images called a stereo pair of images, the basic requirement for any 3D system. No glasses are required to see the 3D images. Images can be moved frame by frame between screens towards or away from the viewer.



- 13 The idea at the heart of Mr Keohane's invention is straightforward to understand. A normal tv display screen is used for displaying background images. A transparent display screen, positioned in front of the normal tv display, is used for displaying foreground images. The two display screens are held a short gap apart by a spacer or some other appropriate means. Content (including a foreground image and a background image) is sent to the two screens separately, but in sync with each other, so that the foreground image shown on the transparent screen and the background image shown on the background screen can be viewed by a user as a complete (3D) image.
- 14 At the hearing, I asked Mr Keohane to confirm this is how his invention works. He agreed.

The claim

- 15 Mr Keohane confirmed that the amendment to his application means it now only has one claim. Amended claim 1 reads as follows:

1. A transparent screen is placed in front of a normal tv display screen, the background is shown on the normal screen while the foreground images are shown on the transparent screen, when viewed together a stereo pair of images are created.

- 16 Claim 1 is self-evidently consistent with the way in which Mr Keohane has described his invention works. As I understand it, claim 1 includes the essential elements of his invention. A “normal tv display screen” shows background images. A “transparent screen” shows foreground images and is placed in front of the normal tv display screen. When the foreground and background images are viewed together a user sees a stereo pair of images, implicitly creating a 3D image for the user.
- 17 None of the terms used in claim 1 require any special or unusual interpretation. The phrase “normal tv display screen” would be understood by the relevant skilled person (e.g. a designer or manufacturer of televisual display systems) to mean a display that is *suited* for displaying television signals. The in-use step of creating a “stereo pair of images” means that the eyes of the user will see slightly different images (see description, lines 12-13) so that the user perceives a 3D image.

The law

- 18 Section 1 of the Patents Act 1977 sets out that a patent may only be granted if an invention is (amongst other things) new:

1.(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say—

(a) the invention is new;

...

- 19 Section 2 of the Act sets out the law on how it is to be determined if an invention is new:

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

(2) The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.

...

- 20 Section 2 of the Act means that Mr Keohane’s invention cannot be taken to be new if it has already been disclosed in any document published before the priority date of his invention. The priority date of Mr Keohane’s invention is the same as the filing date of his application, 11 September 2019.
- 21 I was careful to emphasise to Mr Keohane that I am bound to follow this law. I must apply it to his application to decide whether his invention is novel.

Novelty

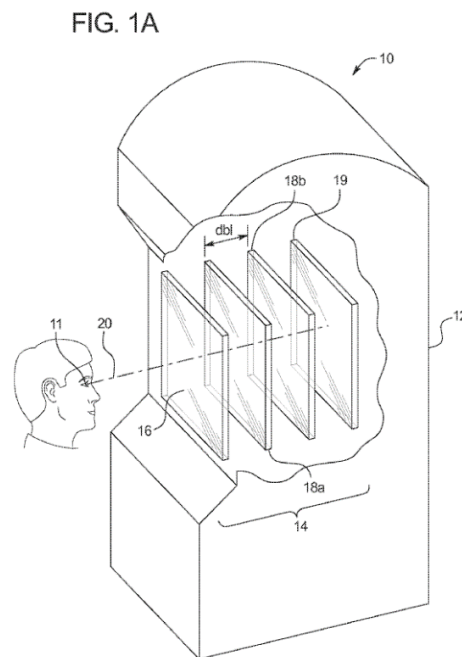
- 22 The examiner has cited six documents in support of their objection that amended claim 1 is not new. Only three of the documents were discussed at the hearing.

EP 2670149 A2 (SAMSUNG)

- 23 The first document discussed was EP 2670149 A2 (SAMSUNG). Mr Keohane explained that he did not think EP '149 was relevant to claim 1 because it does not show two screens. He argued it shows a device that follows eye movements and shows virtual 3D images on a single screen. I agree. EP '149 does not teach the two screens required by claim 1. Claim 1 is novel over EP '149.

US 2013/0217486 A1 (SCHLOTTMANN et al.)

- 24 The second document discussed was US 2013/0217486 A1 (SCHLOTTMANN et al.). It is entitled, "Gaming system having reduced appearance of parallax artifacts on display devices including multiple display screens" and was published on 22 August 2013. I drew Mr Keohane's attention to the disclosure in US '486 of figure 1A and paragraphs [0052]-[0054]:



[0051] In various embodiments, such as the embodiment illustrated in FIG. 1A, the exterior display screen and the interior display screen are positioned in different, parallel planes. It should be appreciated, however, that the exterior display screen and the interior display screen may be positioned in planes that are not parallel to one another. In certain embodiments, such as the embodiment illustrated in FIG. 1A, the exterior display screen and the interior display screen are of the same or substantially the same size, though it should be appreciated that, in other embodiments, the interior and exterior display screens are of different sizes. In various embodiments, such as the embodiment illustrated in FIG. 1A, the exterior display screen and the interior display screen are substantially flat, though it

should be appreciated that the exterior display screen and the interior display screen may have any suitable shape, such as a concave shape, a convex shape, or another non-uniform shape.

[0052] In various embodiments, the exterior display screen is translucent or transparent, or alternatively has the capacity to become translucent or transparent under the control of the processor. In certain embodiments, the interior display screen is translucent or transparent, or alternatively has the capacity to become translucent or transparent under the control of the processor. In embodiments in which the exterior display screen is transparent or translucent, a player can view any images displayed on the interior display screen by looking through the transparent exterior display screen.

[0053] In various embodiments, the display device is configured to display an image in three dimensions by displaying that image on each of the display screens such that, for each portion of the image: (a) that portion of the image is displayed on the exterior display screen at a distance from the first reference plane and a distance from the second reference plane, and (b) that same portion of the image is displayed on the interior display screen at that same distance from the first reference plane and that same distance from the second reference plane. The corresponding images displayed on the display screens co-act to display a resultant image that has three actual dimensions based on the predetermined distance between the display surfaces of the exterior display screen and the interior display screen.

25 I put it to Mr Keohane that US '486 shows his invention is not new because it discloses all the technical features of claim 1. Mr Keohane responded by arguing that US '486 relates to "a gaming system" not a "3D television" so his invention is new over US '486. I note that Mr Keohane's application does not explicitly disclose that his invention is specifically a "3D television". Nonetheless, I understood Mr Keohane to be arguing that the displays disclosed in US '486 are not displays *suitable for* showing television, as required by claim 1, so US '486 cannot disclose (to use Mr Keohane's words) a "3D television".

26 While I agree with Mr Keohane that the main embodiments disclosed in US '486 relate to gaming machines, I note that paragraph [0138] of US '486 explicitly discloses other embodiments using television displays:

[0138] In various embodiments, the display devices include, without limitation: a monitor, a television display, a plasma display, a liquid crystal display (LCD), a display based on light emitting diodes (LEDs), a display based on a plurality of organic light-emitting diodes (OLEDs), a display based on polymer light-emitting diodes (PLEDs), a display based on a plurality of surface-conduction electron-emitters (SEDs), a display including a projected and/or reflected image, or any other suitable electronic device or display mechanism. In certain embodiments, as described above, the display device includes a touch-screen with an associated touch-screen controller. It should be appreciated that the display devices may be of any suitable sizes, shapes, and configurations.

27 I believe that the skilled person would understand that paragraph [0138] of US '486 discloses that the displays of fig. 1A may be television screens, i.e. the screens used in Fig. 1A are *suitable for* displaying television signals. In my view US '486 necessarily discloses (to use Mr Keohane's words) a "3D television" so I cannot accept his argument.

28 Mr Keohane also sought to argue repeatedly that the only type of transparent screen suitable for his invention is *an OLED transparent screen*. He argued that US '486 does not disclose an OLED transparent screen, so his invention is new. I explained to Mr Keohane that he cannot rely on the idea of using an OLED transparent screen to distinguish his invention from US '486 because he has not disclosed (either explicitly or implicitly) the idea of using an OLED transparent screen in his application. Whether US '486 discloses an OLED transparent screen is not relevant to the novelty of Mr Keohane's invention.

29 I can only conclude that claim 1 is not new over US '486.

US 9581962 B1 (DUFFY)

30 The third and final document discussed at the hearing was US 9581962 B1 (DUFFY). It is entitled, "Methods and systems for generating and using simulated 3D images" and was published on 28 February 2017. I drew Mr Keohane's attention to figs. 2 and 3 and column 15, lines 60 – column 16, lines 24:

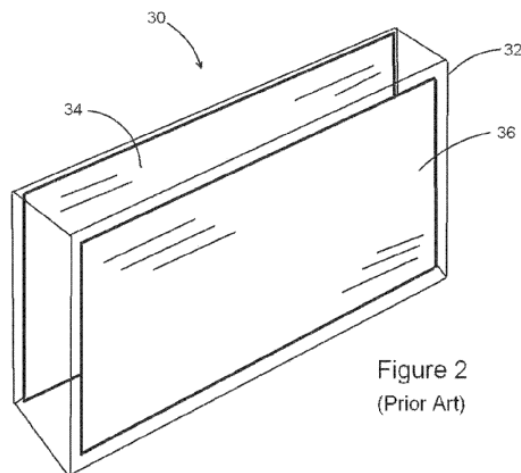


Figure 2
(Prior Art)

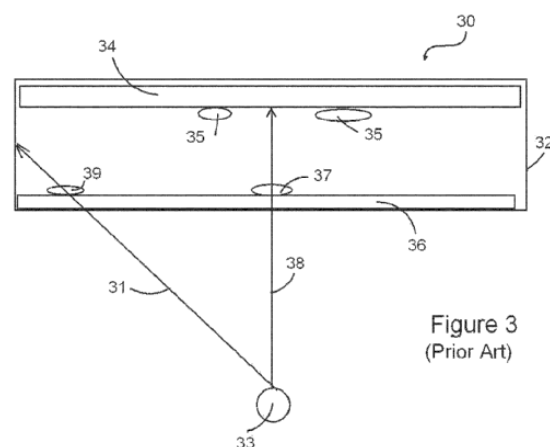


Figure 3
(Prior Art)

The present system is a variation of the Pepper's Ghost illusion wherein a front image is provided on a transparent front display, and can be made to be interrelated to images appearing on a background display unit. This creates parallax in the system, which provides a simulated 3D effect.

Turning now to FIGS. 2 and 3, an illustration of a prior art display system apparatus 30 is shown. Apparatus 30 consists of a case 32, in which a background display screen (namely a flat panel LCD television) 34 is shown at the back of case 30. At the front of case 30 is a front transparent LCD display 36.

Case 32 can have any suitable width, height or depth, as required for the environment where apparatus 30 is used. By way of example, for a

display item, case 32 could have a width of 2 meters, a height of 1.5 meters, and a depth of 1 meter. Obviously, the height, width and depth relationships can be modified as required or as needed.

As best seen in FIG. 3, when viewed in the direction shown by arrow 38, a viewer 33 will see the image, which is represented by reference numeral 37, shown on front display 36, against an image represented by reference numerals 35 on the background display 34, when the viewer 33 views the images from directly in front of case 32.

As such, the two program material images are interrelated. The programming and the nature of the computers employed to interrelate the images, and their synchronization, are beyond the scope of the present invention. Similarly, the brightness and luminosity of the images on the front display 36 and/or background display 34 can also be controlled, and thus, are also edited or synchronized so as to be interrelated, one to the other.

- 31 I would add that similar arrangements are shown in figs. 4 and 5 of US '962, albeit that the size of the front transparent display appears to be smaller than the rear display.

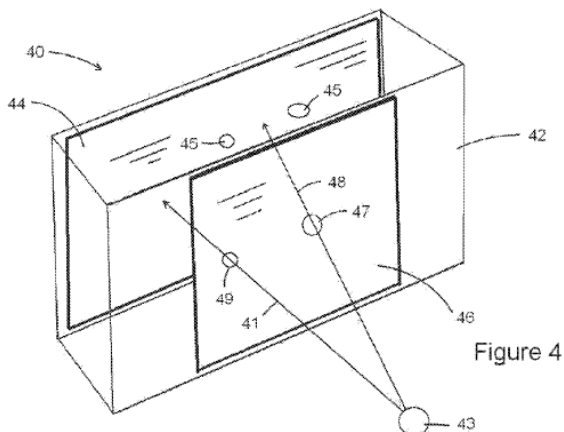


Figure 4

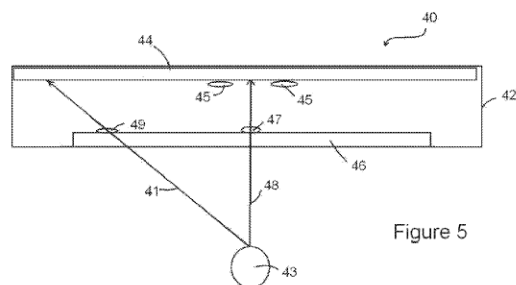


Figure 5

- 32 I put it to Mr Keohane that US '962 discloses all the features of claim 1 so his invention cannot be novel over US '962. Mr Keohane responded by arguing that US '962 does not say it is "specifically a 3D television" so his invention is new. I am not persuaded by this argument. The passage from US '962 I have quoted above explicitly discloses that the rear screen may be a "flat panel LCD television", i.e. it has the "normal tv display screen" required by claim 1. In addition, column 8, lines 27-41 explicitly discloses that the device of US '962 is specifically a "3D television":

The simulated 3D display device of the present invention is scalable, so that overall size of the projected images can vary depending on their desired application. As such, the display device of the present invention is practical in small scale devices including computer monitors, smart phone displays, and the like, but can also be scaled upwards to include screens of up to 3 meters or more in height and/or width, for larger displays, such as those in theatres, display booths, or the like. More preferably, the screen size is established by the size of the display devices, and thus, the screen size is typically between 1 and 2 meters, in height and/or width. This would be suitable for use in

commercial establishments, or in mall display boxes, but would also be suitable for home use, as a low profile, simulated 3D television device.

33 Mr Keohane also sought to argue that US '962 does not disclose an OLED transparent screen so his invention must be novel. As I have already explained this argument is irrelevant. Mr Keohane's application does not disclose the idea of using an OLED transparent screen so he cannot rely on it to distinguish his invention from US '962.

34 I must conclude that claim 1 is not new over the disclosure of US '962.

The other three cited documents

35 At the hearing Mr Keohane chose not to discuss the other cited documents, US 2015/0177527 A1 (PARK et al.), US 2015/0228229 A1 (PRIEDE), and US 2005/0146787 A1 (LUKYANITSA). Since I have already found that claim 1 is not new, I do not believe it is necessary for me to consider these three documents here.

Other matters raised by Mr Keohane at the hearing

36 Mr Keohane raised several other matters at the hearing. Firstly, Mr Keohane complained that the examiner had not provided him with the corrected publication number for US 2015/0228229 A1 (PRIEDE). I am satisfied that the examiner drew Mr Keohane's attention to this error and provided the correct publication number to Mr Keohane in the second pre-hearing report dated 8 September 2021. In any case, I note that it has not been necessary for me to consider the disclosure of US 2015/0228229 A1 (PRIEDE) to decide that Mr Keohane's invention is not new.

37 Secondly, Mr Keohane complained that the Office changed the abstract he filed with his specification and that the Office did not tell him about the changes nor seek his consent for the changes to be made. I explained to Mr Keohane that the Office has the power to reframe abstracts¹ and that the Office does not require the permission of applicants to do so. I explained that the Office relies on the contents of published abstracts when searching patent applications. Accordingly, the office may reframe an abstract prior to publication of an application to ensure the abstract adequately fulfils its purpose as a search tool.

38 Thirdly, Mr Keohane complained that he did not realise that his application would be published along with a search report. Mr Keohane said that, had he realised this, then he would have said to the office that he did not want his application to be published. I am satisfied that the official letter (dated 10 March 2020) that accompanied the search report gave Mr Keohane every opportunity to withdraw his application and prevent its publication if that was his wish. However, as I pointed out to Mr Keohane at the hearing, it is not possible to obtain a granted patent *without* the step of publishing the application as filed. Mr Keohane appeared to accept that if it was his wish to have a patent granted in respect of the present application then it was necessarily for it to be published with a search report.

Mr Keohane's submissions made by email on 4 October 2021

¹ See section 14(7) of the Act

- 39 In a first email dated 4 October 2021 Mr Keohane set out further arguments regarding novelty:

The obstacle to my patent was a number of published patents that also used a transparent screen and a background screen so the officer could see nothing novel in my idea that had not been disclosed. As it happens my patent is specific on one point, my 3D produces a merged image in 3D this is only possible if the screen is thin enough and is not backlit. None of the patents cited claim a merged 3D image and none claim a transparent screen that is thin enough, lights single pixels and remains transparent when switched off...a skilled person would know these factors that only a screen with all the attributes mentioned can make the merged 3D image which implies the viewer seeing a single screen not two separate screens...as none of the cited patents claim a merged 3D image that should make my patent novel.

- 40 I understand Mr Keohane to be making two points. Firstly, Mr Keohane argues that the reference to the “merged” image in his description implies his “transparent screen” has a certain thickness, lights single pixels, is not backlit, and remains transparent when switched off. I am afraid I do not agree with Mr Keohane. All that his application discloses is that a “transparent screen” should be used. In my view, the skilled person would understand that this is a general disclosure meaning that any suitable “transparent screen” may be used. This general disclosure does not necessarily imply anything specific about the dimensions of the screen, whether it is backlit, whether it lights single pixels, nor whether it remains transparent when switched off.
- 41 Secondly, Mr Keohane argues that a “merged” 3D image is not disclosed in the cited prior art. Again, I must disagree with Mr Keohane. For example, paragraph [0053] of US ‘486 discloses that: “The corresponding images displayed on the display screens co-act to display **a resultant image** that has three actual dimensions”. I believe the skilled person would understand that the “resultant image” of US ‘486 is the same as the “merged” image disclosed in Mr Keohane’s application. Similarly, in US ‘962, column 16, lines 10-17 teaches that: “As best seen in FIG. 3, when viewed in the direction shown by arrow 38, **a viewer 33 will see the image, which is represented by reference numeral 37, shown on front display 36, against an image represented by reference numerals 35 on the background display 34, when the viewer 33 views the images from directly in front of case 32. As such, the two program material images are interrelated.**” I believe the skilled person would understand from this passage that the foreground image is viewed *against* the background image and that the two images are *interrelated*, i.e. that two images are viewed together to produce a 3D effect. In my view, they would understand that this is the same as the “merged” image disclosed in Mr Keohane’s application.

Mr Keohane’s submissions made by email on 5 October 2021

- 42 In a second email, dated 5 October 2021, Mr Keohane made several additional arguments concerning the novelty of his invention. Firstly, Mr Keohane cites the case of “Edison v Swan”:

I cite the case of Edison v Swan where Swan invented a glass light bulb, creating a vacuum, and a filament powered by electricity...Edison created a

light bulb, creating a vacuum, and a filament powered by electricity. Using the officer's logic Edison would not have had a patent granted for his light bulb!

The point is Edison's bulb did something that the Other bulb could not, that is it lasted a lot longer.

43 In my view, Mr Keohane's reference to the alleged facts of "Edison v Swan" cannot help him show his invention is new. I am bound to apply the law of novelty as it is set out in the Patents Act 1977, and this is what I have done.

44 Secondly, Mr Keohane argues the use of an OLED transparent screen is implicitly disclosed in his application and that this makes his invention new:

My patent uses an Oled transparent screen that can do something that no other transparent screen can do in any of the patents cited. I did not have to specify that only the Oled transparent screen could be used to create a merged 3D tv as anyone with the skill and knowledge would know this. In order to merge the two screens the transparent screen has to be very thin or two seperate screens would be seen, this screen is only 3mm thick. The transparent screen cannot be backlit only the Oled screen light single pixels and only the Oled screen remains transparent when switched Off.

45 I am unable to accept this argument. I do not see anything in Mr Keohane's application that necessarily implies the use of an OLED transparent screen. Mr Keohane's application simply refers to a "transparent screen". The skilled person would understand this is a general teaching and it does not necessarily imply anything else about the construction of the screen beyond the requirement that it is "transparent". In my view, Mr Keohane has not implicitly disclosed that the "transparent screen" is an OLED screen. Nor is there any implicit disclosure about the lighting of pixels, backlighting arrangements, nor whether the screen remains transparent when it is switched off.

46 Thirdly, Mr Keohane reiterates his argument that his invention is new because, in use, a user sees a merged image:

Mt patent allows the two screens to be combined to create a single screen when seen by the viewer and no other transparent screen can do this. So the novelty in my patent is the creation of an apparent single screen and to show a merged 3D image.

47 As I explained above, I believe a merged image is disclosed in US '486 and in US '962 so this feature does not distinguish the present invention from either US '486 or US '962.

Decision

48 I have decided that claim 1 is not new over US '486 and in US '962. It is, therefore, not necessary for me to consider whether the invention involves an inventive step or to consider the examiner's sufficiency and clarity objections.

49 I am unable to identify any amendment that would result in the grant of a valid patent. I refuse this application under section 18(3) of the Act.

Appeal

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

J Pullen

Deputy Director, acting for the Comptroller