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Viewing device for polarised images

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ABSTRACT

The invention relates to a viewing device (1) including dual filters (2,3) allowing selective viewing of both a first image of a first polarity and a second image of a second polarity, respectively. The invention also relates to a related processor (13) and method for displaying simultaneous images and to a game play system (20).

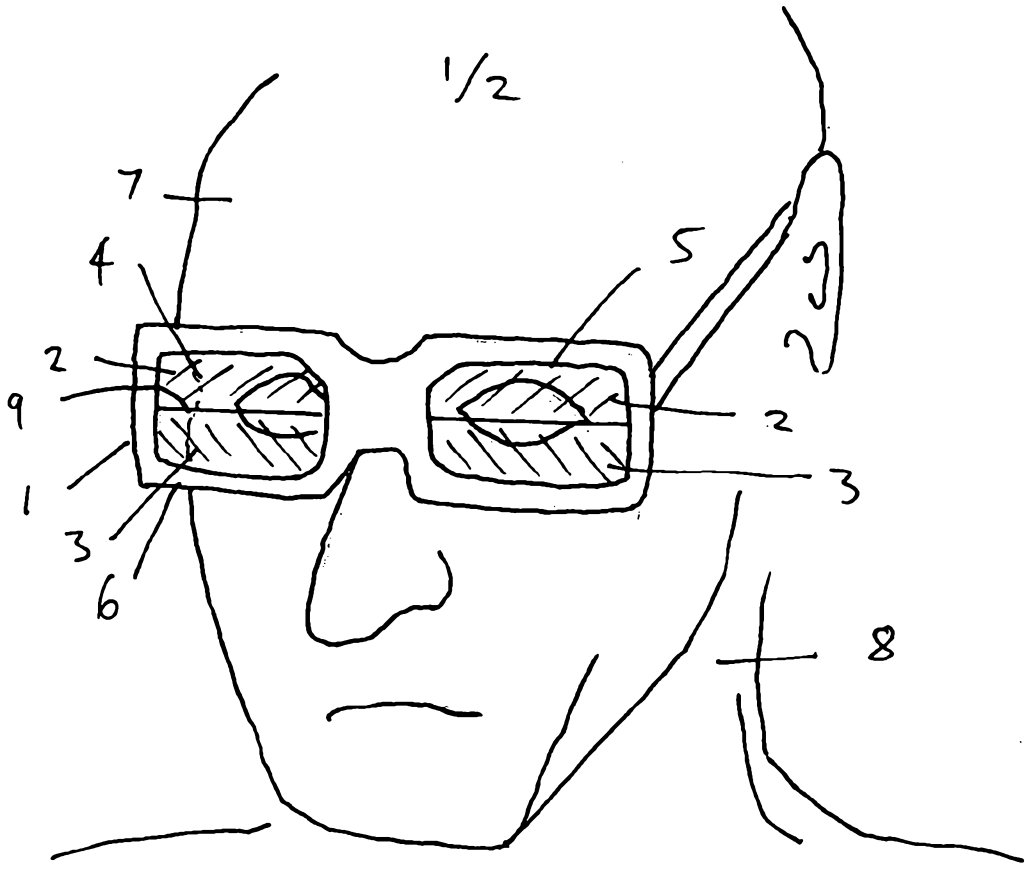


FIG 1

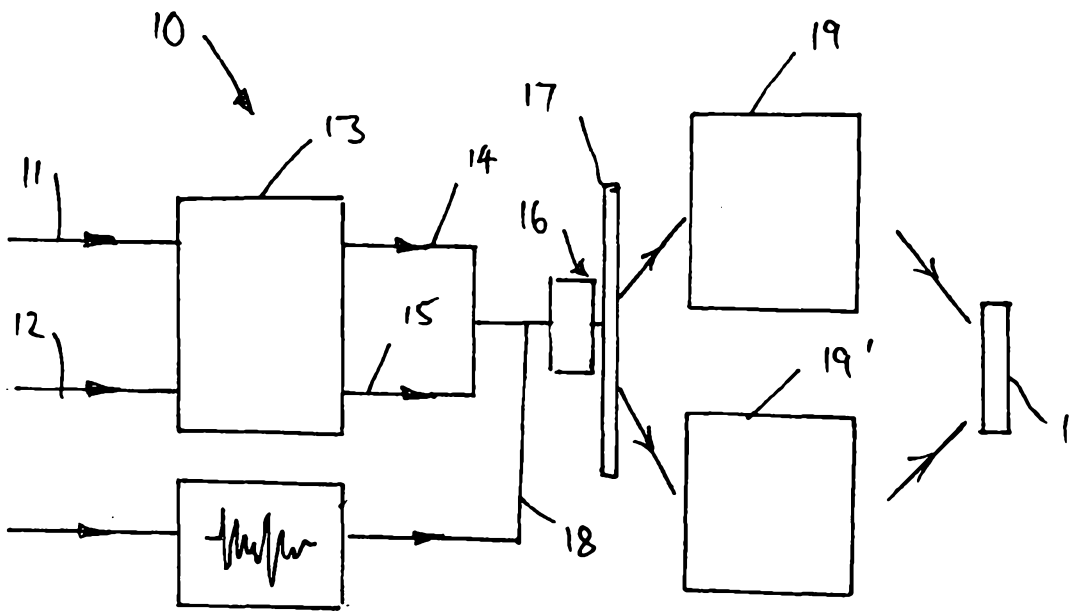


FIG 2

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Regulation 3:2

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**ORIGINAL
COMPLETE SPECIFICATION
INNOVATION PATENT**

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Invention Title: **VIEWING DEVICE FOR POLARISED IMAGES**

The following statement is a full description of this invention, including the best method of performing it known to me:-

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VIEWING DEVICE FOR POLARISED IMAGES

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Field of the Invention

The present invention relates to a viewing device for polarised images.

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Background of the Invention

Standard stereoscopic projection (3D) works by interlacing two video streams and projecting them simultaneously on to one screen using a method called "circular polarisation". One stream is left polarised and the other stream is right polarised.

The two video streams are almost identical, in that both streams have been shot at the same time with two cameras, these two cameras are usually offset by approximately 2.5 inches (6cm), resulting in a slightly different image.

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Once each video stream has been polarised and projected, the consumer in the cinema must wear a special pair of "3D" glasses. These glasses have two lenses, one has been left polarised, the other right polarised. The left polarised lens will only allow light which has been left polarised to pass through and the right lens will only allow right polarised light to pass through. Therefore, each eye is actually viewing a separate image.

The way the video is shot (two separate cameras a short distance apart) is what causes the 3D effect. The viewer's brain sees two separate images, which provides a stereoscopic or 3D effect.

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Object of the Invention

The invention seeks to provide an alternative approach to utilising polarisation of images.

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Summary of the Invention

In accordance with the invention, there is provided a viewing device including dual filters allowing selective viewing of both a first image of a first polarity and a second image of a second polarity, respectively.

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Preferably, the dual filters are associated with each eye of a viewer. Preferably, the dual filters are each provided in the form of a lens in a glasses frame.

15 Preferably, the filters are horizontally separated so that a viewer can switch between images by looking through either the top filters or the bottom filters.

In another aspect, there is provided a method including:
processing first and second images of different scenes to have first and second polarity,
20 respectively, for simultaneous display.

20

Preferably, the method includes displaying the images simultaneously.

25 Preferably, the method further includes viewing the images through a viewing device with dual filters, wherein each of the dual filters allow transmission of one or the other of the displayed first and second images and wherein the viewer selects which of the filters to look through in order to switch between the images.

25

Preferably, the images are processed to sync with a common audio stream.

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In another aspect, there is provided a game play system, including:

a processor for producing a first video image of a first polarity and a second video image of a second polarity;

a display for presenting the first and second images simultaneously;

5 a viewing device to allow a player to switch between the video images.

In another aspect, there is provided a processor configured to produce the polarised images used in the above described method.

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Brief Description of the Drawings

The invention is described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

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Figure 1 is a schematic diagram illustrating a viewing device;

Figure 2 is a schematic diagram illustrating an image processing method; and

20 Figure 3 is a schematic illustration representing a game play.

Detailed Description

25 A viewing device 1 is shown in Figure 1 as including dual filters 2, 3 forming lenses 4,5 of glasses 6, which a positioned on a head 7 of a viewer 8.

The filters 2, 3 are separated along a horizontal line 9, although other possible arrangements may be used. The arrangement of the filters 2, 3 in one lens 4 is identical to
30 the arrangement of filters 2, 3 in the other lens 5 so that one type of filter 2, for example a left polarise filter, is at the top of each lens 4, 5 and the other type of filter 3, a right

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polarised filter, is at the bottom.

The top filters 2 are arranged to transmit an image of a first polarity while the bottom filters 3 transmit a second image of a different polarity, to the exclusion of the first image.

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As such, by looking through the top filters 2, the viewer 8 can see a first image and by looking through the other filters 3, the viewer can switch to a second image, which may of a completely different scene. The viewer 8 can tilt the glasses 6 or head 7 to assist with switching between images.

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A method 10 for creating the images is illustrated in Figure 2. The method 10 includes receiving video streams 11, 12, processing the video streams in a processor 13 to generate a first signal 14 which represents a first 2D image for display in a first polarity and a second signal 15 which represents a second 2D image for display in a second polarity. The first and second images are preferably of entirely different scenes, as opposed to the same scene shot from a slightly different angle, as produced for normal 3D viewing.

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At step 16 the images 19, 19' are displayed simultaneously on a screen 17 for viewing though the viewing device. By "simultaneously" is meant the visual impression is simultaneous. The image signals 14, 15 can, of course, be displayed either at the same time or rapidly alternating so as to be simultaneous to the eye, depending on the polarisation and display technique used.

20

Both images are also processed to sync with a single audio stream 18 as well so the separate images match a common audio theme, albeit from different visual perspectives.

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In either case, it will be appreciated a viewer 8 looking through the device 1 will have full screen viewing with accompanying audio for either 2D image, depending on which one of the filters 2, 3 the screen is viewed through.

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Accordingly, rather than use the polarisation technique to display a single 3D image on the screen, the invention uses the same technology to display two separate 2D images. Two completely separate 2D video streams 11, 12 are polarised, similar to the way 3D video is polarised, although the video must go through a different grading and concurrent overlapping motion matching process in order to remove "bleed" or "ghosting" of images.

An application of the invention is illustrated in Figure 3, where two players 21, 22 are involved in game play on a game play system 20, which includes a processor 23, a display 24 and gaming consoles 25, 26.

Each player 21, 22 is wearing a set of glasses 6 and viewing the same display 24. The player 21 on the left is looking through the top filters 2 in the glasses 6 so that the image seen is a first image 24. The second player 22 is looking through the bottom filters 3 to see a second image 28, on the same display 24.

Each of the players 21, 22 can interact with scenes 29, 30 shown in their own particular image 27, 28, such as via the gaming consoles 25, 26.

If the second player 22 wishes to quickly check the game of the first player 21, they can quickly look through the other filters 2 to reveal the image 27 for the first player 21. This could have particular advantage if the game is a team combat game where the players 21, 22 have different tasks and video feed but a common objective such that they may benefit from knowing the position or situation of the other player.

In that arrangement, it is also possible the players could be provided with individual audio feed to match the separate images 27, 28, instead of sharing a common audio feed.

Other applications of the technology could be more in the field of marketing or cinematography. For example, consumers could be given glasses which contain either two left polarised lenses or two right polarised lenses such that half the audience could be watching Film A while the other half was watching Film B. With a cleverly crafted piece

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of film, this could be used to present a thought provoking film on topics such as racism, sexism, politics or violence.

5 The invention has been described by way of example only and many modification and variations may be made thereto without departing from the spirit and scope of the invention described.

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List of Parts

1. Viewing device
2. Filter
3. Filter
4. Lens
5. Lens
6. Glasses
7. Head
8. Viewer
9. Horizontal line
10. Method
11. Video stream
12. Video stream
13. Processor
14. First signal
15. Second signal
16. Step
17. Screen
18. Audio stream
19. Image
- 19'.Image
20. Game play system
21. First player
22. Second player
23. Processor
24. Display
25. Gaming console
26. Gaming console
27. First image
28. Second image

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The Claims Defining the Invention are as Follows:

1. A viewing device including dual filters allowing selective viewing of both a first image of a first polarity and a second image of a second polarity, respectively.
2. The viewing device of claim 1, wherein the dual filters are associated with each eye of a viewer.
3. The viewing device of claim 2, wherein the dual filters are each provided in the form of a lens in a glasses frame.
4. The viewing device of claim 1, wherein the filters are horizontally separated so that a viewer can switch between images by looking through either the top filters or the bottom filters.
5. A method including:
 - processing first and second images of different scenes to have first and second polarity,
 - respectively, for simultaneous display.
6. The method of claim 5, including displaying the images simultaneously.
7. The method of claim 6, further including viewing the images through a viewing device with dual filters, wherein each of the dual filters allow transmission of one or the other of the displayed first and second images and wherein the viewer selects which of the filters to look through in order to switch between the images.
8. The method of claim 5, wherein the images are processed to sync with a common audio stream.

9. A processor configured to produce the polarised images used in the method of claim 5.
10. A game play system, including:
a processor for producing a first video image of a first polarity and a second video image of a second polarity;
a display for presenting the first and second images simultaneously;
a viewing device to allow a player to switch between the video images.

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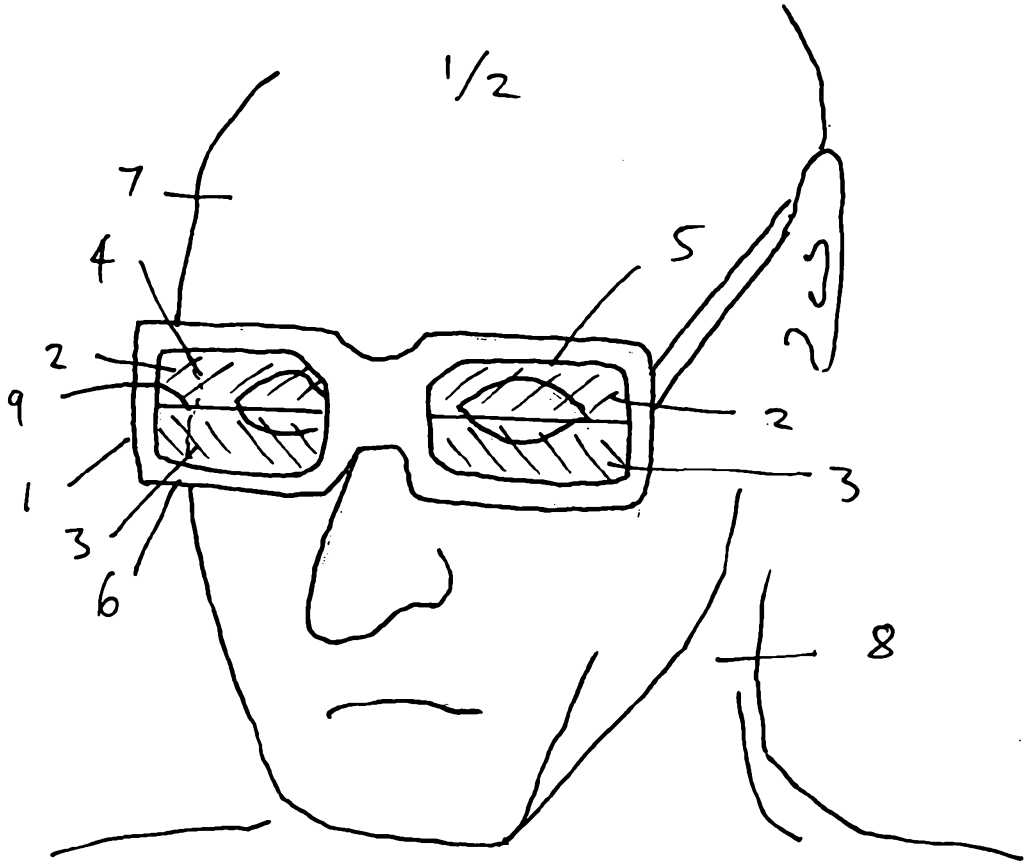


FIG 1

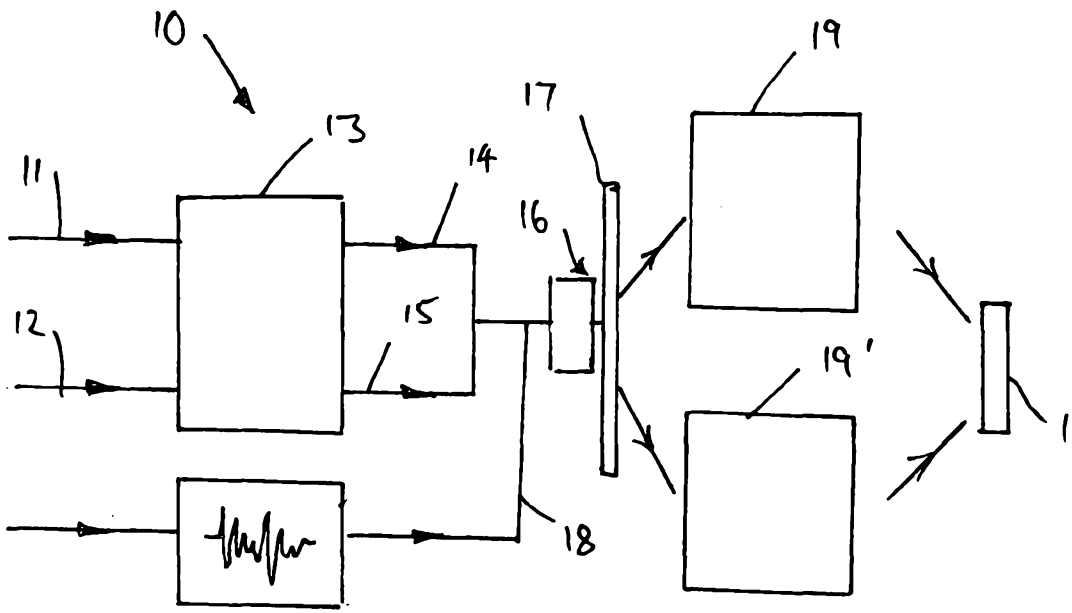


FIG 2

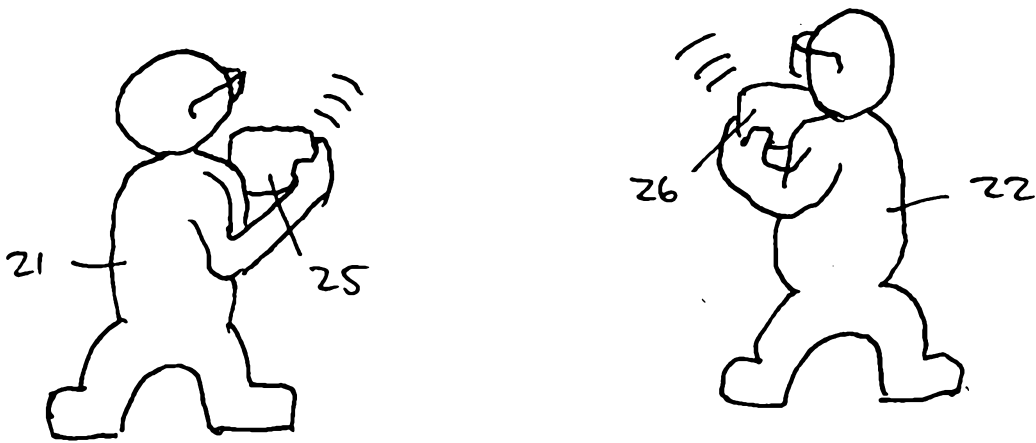
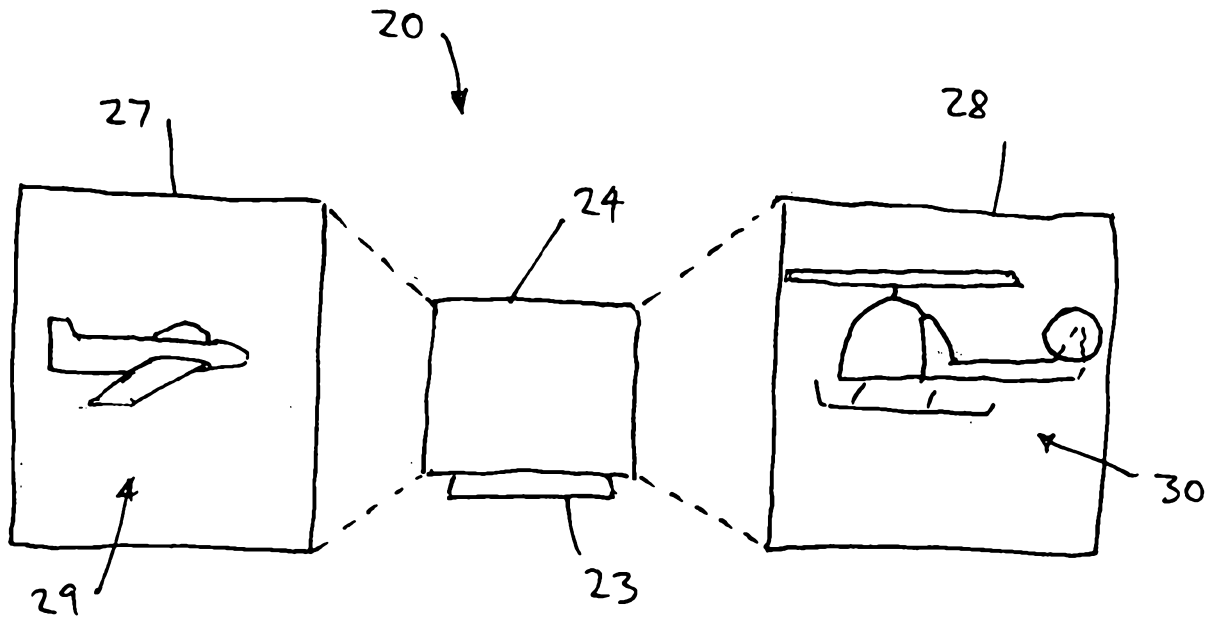


FIG 3