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(54) **CIRCULAR POLARIZED CONTACT LENSES AND METHODS THEREOF**

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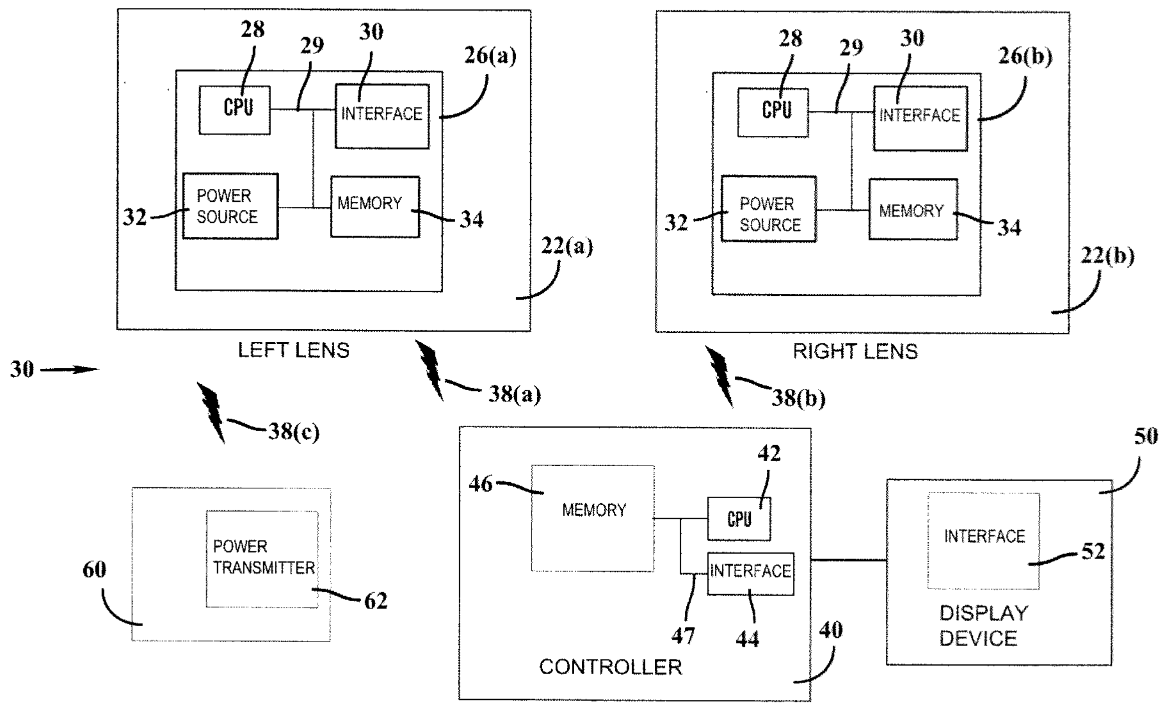
(57) **ABSTRACT**

An apparatus and method for three-dimensional viewing that includes a first contact lens and a second contact lens of a pair. The first contact lens of the pair has a circular polarization filter in a clockwise direction or counterclockwise direction. The second contact lens of the pair has a circular polarization filter in the other one of the clockwise direction or the counterclockwise direction.



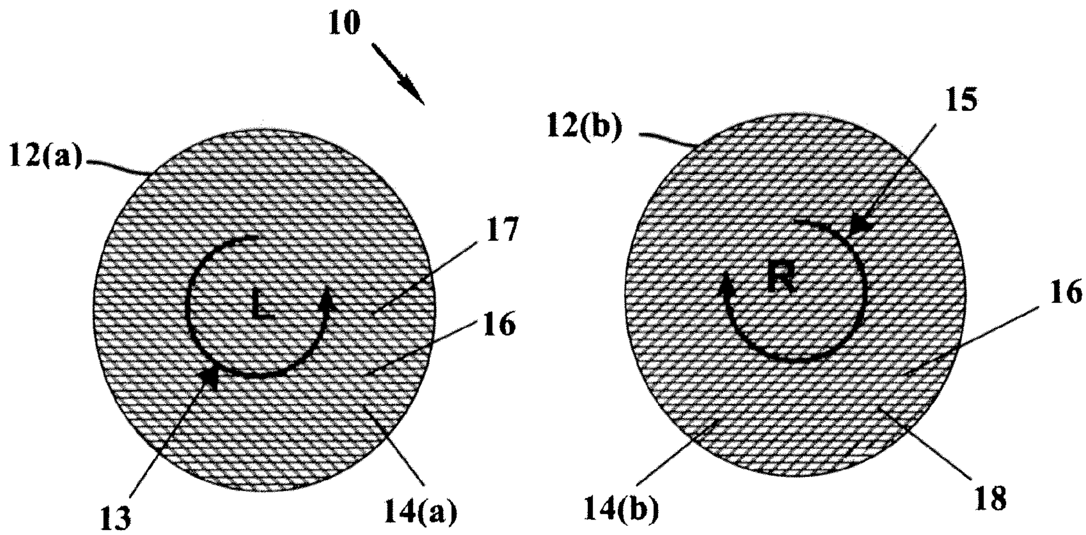

10
12(a)
17
L
16
13
14(a)
12(b)
15
R
16
14(b)
18

FIG. 1

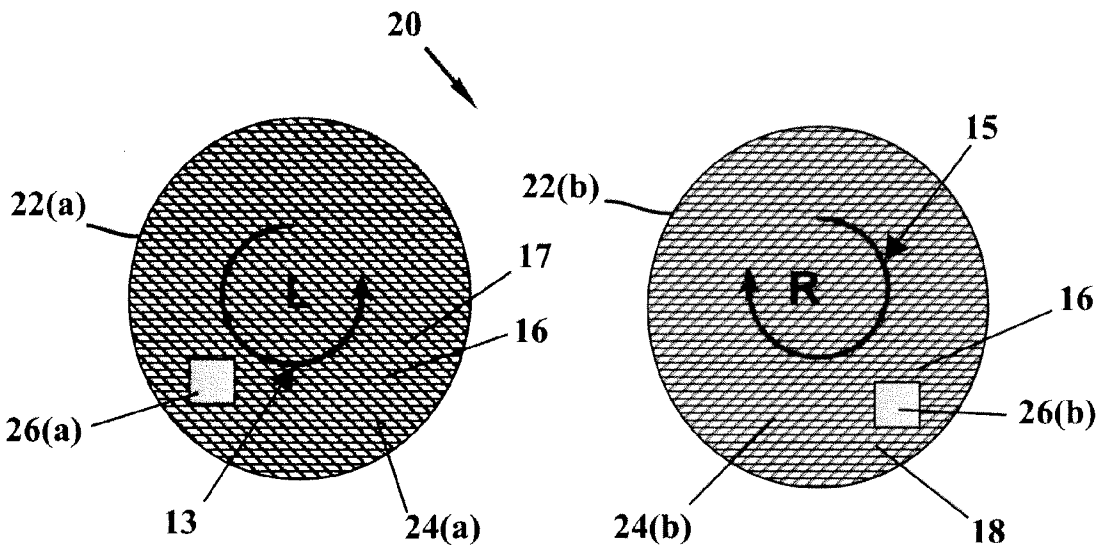
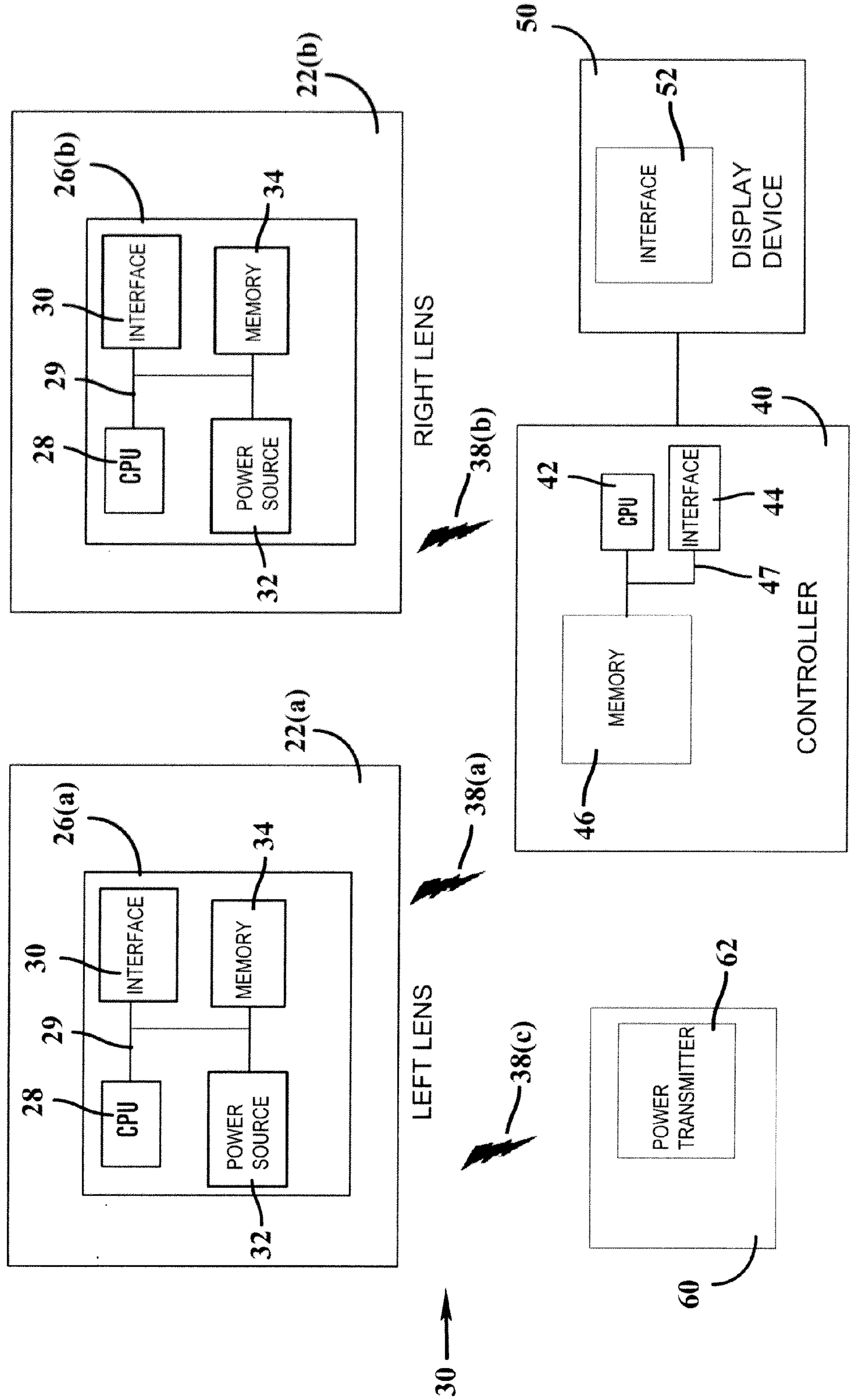

20
22(a)
L
17
16
26(a)
13
24(a)
22(b)
15
R
16
26(b)
24(b)
18

FIG. 2



RIGHT LENS
22(b)
26(b)
30
INTERFACE
29
28
CPU
MEMORY
34
POWER SOURCE
32
38(b)
LEFT LENS
22(a)
26(a)
30
INTERFACE
29
28
CPU
MEMORY
34
POWER SOURCE
32
38(a)
38(c)
50
DISPLAY DEVICE
INTERFACE
52
40
CONTROLLER
42
CPU
INTERFACE
44
47
MEMORY
46
POWER TRANSMITTER
62
60
30

FIG. 3

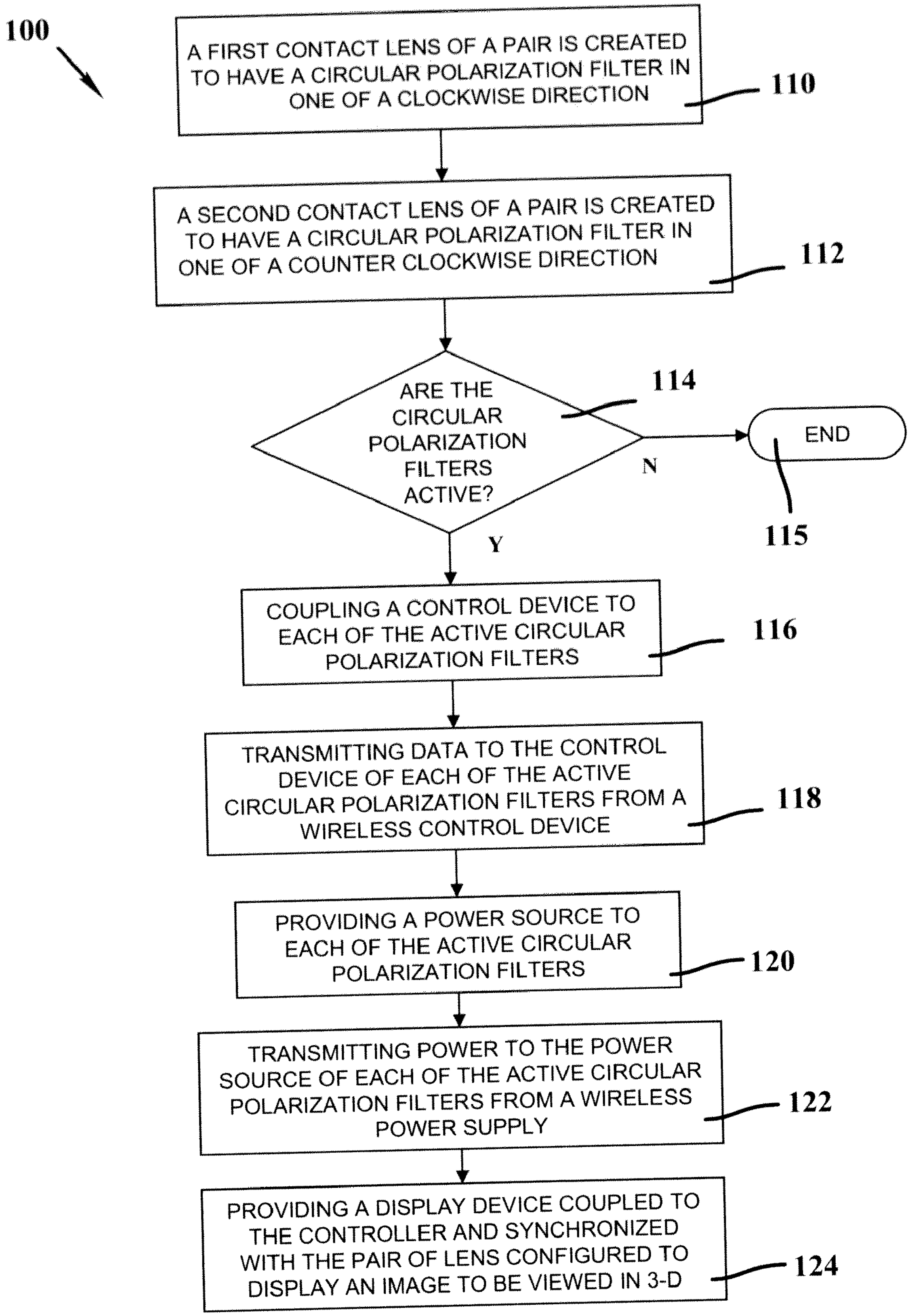

100
A FIRST CONTACT LENS OF A PAIR IS CREATED TO HAVE A CIRCULAR POLARIZATION FILTER IN ONE OF A CLOCKWISE DIRECTION
110
A SECOND CONTACT LENS OF A PAIR IS CREATED TO HAVE A CIRCULAR POLARIZATION FILTER IN ONE OF A COUNTER CLOCKWISE DIRECTION
112
ARE THE CIRCULAR POLARIZATION FILTERS ACTIVE?
114
N
END
115
Y
COUPLING A CONTROL DEVICE TO EACH OF THE ACTIVE CIRCULAR POLARIZATION FILTERS
116
TRANSMITTING DATA TO THE CONTROL DEVICE OF EACH OF THE ACTIVE CIRCULAR POLARIZATION FILTERS FROM A WIRELESS CONTROL DEVICE
118
PROVIDING A POWER SOURCE TO EACH OF THE ACTIVE CIRCULAR POLARIZATION FILTERS
120
TRANSMITTING POWER TO THE POWER SOURCE OF EACH OF THE ACTIVE CIRCULAR POLARIZATION FILTERS FROM A WIRELESS POWER SUPPLY
122
PROVIDING A DISPLAY DEVICE COUPLED TO THE CONTROLLER AND SYNCHRONIZED WITH THE PAIR OF LENS CONFIGURED TO DISPLAY AN IMAGE TO BE VIEWED IN 3-D
124

FIG. 4

CIRCULAR POLARIZED CONTACT LENSES AND METHODS THEREOF

[0001] This application claims the benefit of U.S. Provisional Patent Application Ser. No. 61/352,634, filed Jun. 8, 2010, which is hereby incorporated by reference in its entirety.

FIELD

[0002] This invention generally relates to contact lens and, more particularly, to circular polarized contact lenses for experiencing three-dimensional (3-D) environments and methods thereof.

BACKGROUND

[0003] One widely used digital stereoscopic projection technology for watching 3-D movies in theatres employs circularly polarized light to produce stereoscopic image projection. Circular polarization technology has the advantage over linear polarization methods in that viewers are able to tilt their head and look about the theater naturally without a disturbing loss of 3-D perception. With linear polarization projection, viewers are required to keep their head orientation aligned within a narrow range of tilt for effective 3-D perception; otherwise they may see double or darkened images.

[0004] The projector used for this digital stereoscopic projection technology alternately projects right-eye frames and left-eye frames 144 times per second. It circularly polarizes these frames, clockwise for the right eye and counterclockwise for the left eye. A push-pull electro-optical liquid crystal modulator called a ZScreen is placed immediately in front of the projector lens to switch polarization.

[0005] To watch the movie in 3-D, audience members must wear special glasses with oppositely circularly polarized lenses to ensure each eye sees only its designated frame, even if the head is tilted. Unfortunately, these 3-D glasses often are not properly fitted to the viewer and uncomfortable to wear. Additionally, these improperly fitted 3-D glasses may cause some viewers to feel nauseated or experience a headache.

SUMMARY

[0006] A three-dimensional viewing apparatus includes a first contact lens and a second contact lens of a pair. The first contact lens of the pair has a circular polarization filter in a clockwise direction or counterclockwise direction. The second contact lens of the pair has a circular polarization filter in the other one of the clockwise direction or the counterclockwise direction.

[0007] A method for making a three-dimensional viewing apparatus includes providing a first contact lens and a second contact lens of a pair. The first contact lens of the pair has a circular polarization filter in a clockwise direction or counterclockwise direction. The second contact lens of the pair has a circular polarization filter in the other one of the clockwise direction or the counterclockwise direction.

[0008] This technology provides a number of advantages including providing circular polarized contact lenses for experiencing three-dimensional (3-D) viewing environments, such as movies and gaming. Additionally, with this technology both active polarization and passive polarization can be implemented with the pairs of contact lens to permit three dimensional viewing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. **1** is a front elevational view of an exemplary passive, three-dimensional viewing apparatus;

[0010] FIG. **2** is a front elevational view of an exemplary active, three-dimensional viewing apparatus;

[0011] FIG. **3** is a block diagram of the exemplary active, three-dimensional viewing apparatus illustrated in FIG. **2**; and

[0012] FIG. **4** is a flowchart diagram of an example of methods for making the exemplary three-dimensional viewing apparatus shown in FIGS. **1-3**.

DETAILED DESCRIPTION

[0013] This technology provides a pair of circular polarized contact lenses so consumers can experience a three-dimensional (3-D) environment, such as in a movie theater, on a 3-D television, on a 3-D computer monitor or a 3-D game console, without the need to wear 3-D glasses. Each of the contact lens comprises an optical structure, which is configured for placement on the cornea of the eye, although other types of arrangements could be used. In addition to three-dimensional viewing, these contact lenses also can be used for other purposes, such as corrective, cosmetic, or therapeutic. Each of the contact lens can be made from a variety of different types and numbers of materials, such as glass or silicone hydrogel by way of example only.

[0014] An exemplary pair **10** of passive polarization contact lenses **12**(*a*)-**12**(*b*) is illustrated in FIG. **1**. Each lens **12**(*a*)-**12**(*b*) has a circular polarization filter **14**(*a*) and **14**(*b*), respectively is constructed of a quarter-wave plate and a linear polarizing filter producing in one of both a left-handed or counterclockwise direction **13** and right-handed or clockwise direction **15**, one on each lens, to decode images so that each eye only sees that eyes intended image. Specifically, the left lens **12**(*a*) includes circular polarization filter **14**(*a*) having a quarter-wave plate **17**, as illustrated by negative angled lines **17** and linear polarizing filter **16**, as illustrated by horizontal lines **16**. The right lens **12**(*b*) includes circular polarization filter **14**(*b*) having a quarter-wave plate **18**, as illustrated by positive angled lines **18** and linear polarizing filter **16**, as illustrated by horizontal lines **16**. The circular polarization filters are configured to decode three-dimensional content. For example, a three-dimensional image or frame that is being sent to a person that has a circular polarization for the right eye in a clockwise manner and a counterclockwise for the left eye would be decoded by the contact lenses so that each eye had opposite polarization (counterclockwise and clockwise). As a result, the left eye only sees its intended image frames and the right eye only sees its intended images frames. The brain of the viewer processes and put the two images together creating the three-dimensional image.

[0015] The passive polarization contact lenses **12**(*a*)-**12**(*b*) achieve their polarization properties in a passive mode. In a passive mode (as shown in the example in FIG. **1**), the circular polarization filter in the pair **10** of contact lens **12**(*a*)-**12**(*b*) remains constant and does not change. In an alternative example, the pair **20** of active polarization contact lens **22**(*a*)-**22**(*b*) is active and changes in response to control signals.

[0016] More specifically, an alternative example of a pair **20** of active polarization contact lens **22**(*a*)-**22**(*b*) is shown in FIG. **2**. Like the passive polarization three dimensional contact lenses **12**(*a*)-**12**(*b*), each of the active polarization lens **22**(*a*)-**22**(*b*) includes a circular polarization filter **24**(*a*) and **24**(*b*), which is constructed of a quarter-wave plate and a linear polarizing filter producing in one of both a left-handed or counterclockwise direction **13** and right-handed or clockwise direction **15**, one on each lens, to decode images so that each eye only sees that eyes intended image. Specifically, the left lens **22**(*a*) includes circular polarization filter **24**(*a*) having a quarter-wave plate **17**, as illustrated by negative angled lines **17** and linear polarizing filter **16**, as illustrated by horizontal lines **16**. The right lens **22**(*b*) includes circular polarization filter **24**(*b*) having a quarter-wave plate **18**, as illustrated by positive angled lines **18** and linear polarizing filter **16**, as illustrated by horizontal lines **16**.

[0017] Each of the active polarization contact lens **22**(*a*)-**22**(*b*) also each includes one of the control devices **26**(*a*)-**26**(*b*) imbedded or otherwise respectively coupled to one of the active polarization contact lens **22**(*a*)-**22**(*b*) to control polarization therein. For example, control devices **26**(*a*)-**26**(*b*) may send voltage signals to the filters that open and close or shutter circular polarization filters **24**(*a*) and **24**(*b*), respectively. In addition, by way of example, a nanocontrol device could provide a control signal that shutter the filters in the pair of active polarization contact lens **22**(*a*)-**22**(*b*) at designated speed, although other types of control devices could be used and other combinations of passive and active filtering in a pair of contact lenses could be used.

[0018] Referring to FIG. **3**, a block diagram of a three-dimensional viewing apparatus **30** with the exemplary pair **20** of first and second active polarization contact lens **22**(*a*)-**22**(*b*) shown and described with reference to FIG. **2**, a controller **40**, and a display device **50** is illustrated, although other numbers and types of devices, and/or elements in other configurations can be used.

[0019] Referring more specifically to FIG. **3**, each lens **22**(*a*)-**22**(*b*) is at least a partially translucent substrate, i.e., translucent to visible light and each have one of the control devices **26**(*a*)-**26**(*b*), respectively coupled thereto. Each control devices **26**(*a*)-**26**(*b*) includes a CPU **28**, an interface device **30**, a power source **32**, memory **34**, and interconnects or other links **29** that couple together the various components assembled on each lens **22**(*a*)-**22**(*b*), although each control device could include other types and numbers of elements in other configurations.

[0020] The processor **28** in each of the control devices **26**(*a*)-**26**(*b*) executes a program of stored instructions one or more aspects of the present invention as described and illustrated by way of the embodiments herein, although the processor could execute other numbers and types of programmed instructions.

[0021] The interface device **30** in each of the control devices **26**(*a*)-**26**(*b*) is used to operatively couple and communicate between the control devices **26**(*a*)-**26**(*b*) and the controller **40** and the display **50** via one or more communication links. By way of example only, the interface device **30** could comprise an antenna, which can use the exemplary wireless networks **38**(*a*), and **38**(*b*) via an infrared, radio frequency, DLP-Link, Bluetooth transmitter, or the like to communicate between controller **40** and control devices **26**(*a*)-**26**(*b*). Although other types and numbers of communication links or networks can be used.

[0022] The power source **32** is adapted to power the control devices **26**(*a*)-**26**(*b*) and any other components needing power in each of the active polarization contact lens **22**(*a*)-**22**(*b*) using stored energy, e.g., a battery. By way of example, the power source **32** could be a rechargeable battery. Although other types and numbers of energy sources with other types and numbers of connections and configurations can be used. By way of example, the power source **32** could be a solar energy power source. Alternatively, in another illustrative example power source **32** could be configured to receive power via a wireless signal **38**(*c*), for powering the components of each active polarization contact lens **22**(*a*)-**22**(*b*). In this example, power supply **60** generates a wireless power signal and transmits the signal through power transmitter **62** to power source **32** that is integrally disposed within each active polarization contact lens **22**(*a*)-**22**(*b*) to power the active elements on each lens. In addition, power supply **60** may be configured to recharge the power source **32** wirelessly. In this example, the power supply **60** may conveniently be worn by the user (for example, attached to a belt, integrated into the user's cloths, etc.) to keep the power supply **60** in close proximity to each active polarization contact lens **22**(*a*)-**22**(*b*).

[0023] The memory **34** in control devices **26**(*a*)-**26**(*b*) stores these programmed instructions for one or more aspects of the present invention as described and illustrated herein, although some or all of the programmed instructions could be stored and/or executed elsewhere. A variety of different types of memory storage devices, such as a random access memory (RAM) or a read only memory (ROM) that is coupled to the processor **28** can be used for the memory **34** in control devices **26**(*a*)-**26**(*b*).

[0024] In this example, controller **40** includes CPU **42**, interface device **44**, and memory **46**, which are coupled together by one or more interconnects or other links **47**, although the controller can include other types and numbers of elements in other configurations. Controller **40** is configured to provide control instructions to coordinate active polarization of each active polarization contact lens **22**(*a*)-**22**(*b*) with three-dimensional content being shown on display **50**; although other types of function could be performed with other exchanges of data in either direction could be conducted.

[0025] The processor **42** in the controller **40** executes a program of stored instructions one or more aspects of the present invention as described and illustrated by way of the embodiments herein, although the processor could execute other numbers and types of programmed instructions.

[0026] Interface device **44** is used to operatively couple and communicate with interface **30** of the control devices **26**(*a*)-**26**(*b*) and interface device **52** of the display over a communication link, although other types and numbers of communication links with other types and numbers of connections and configurations can be used. By way of example only, the communication link can use a wireless network **38**(*a*) and **38**(*b*) via an infrared, radio frequency, DLP-Link, Bluetooth transmitter, or the like to communicate between interface device **44** of the controller **40** and interface device **30** of the control devices **26**(*a*)-**26**(*b*). In addition, by way of example, controller **40** may be constructed separate from or integral with the power supply **60**. In addition, power transmitter **62** may also be utilized for transmitting and/or receiving data for the CPU **42**. Alternatively, transmitter **62** may be used by the controller **40** for exchanging data and power with each active polarization contact lens **22**(*a*)-**22**(*b*). Optionally, interface device **44** may include an antenna (not shown), which may be configured to couple with and communicate to an antenna coupled to each control devices **26**(*a*)-**26**(*b*) for detecting and transmitting data/signals wirelessly.

[0027] The memory **46** in the controller **40** stores these programmed instructions for one or more aspects of the present invention as described and illustrated herein, although some or all of the programmed instructions could be stored and/or executed elsewhere. A variety of different types of memory storage devices, such as a random access memory (RAM) or a read only memory (ROM) in the system or a floppy disk, hard disk, CD ROM, DVD ROM, or other computer readable medium which is read from and/or written to by a magnetic, optical, or other reading and/or writing system that is coupled to the processor **42**, can be used for the memory **46** in the controller **40**.

[0028] The display **50** is used in conjunction with each active polarization contact lens **22**(*a*)-**22**(*b*) to provide the display of the three-dimensional image, such as a three-dimensional movie or a three-dimensional interactive video game by way of example. In this example, the active polarization contact lens **22**(*a*)-**22**(*b*) are controlled by a wireless signal generated from controller **40**. For instance, a timing signal can be transmitted to the control devices **26**(*a*)-**26**(*b*) from controller **40** that allows the circular polarizing filters to alternately darken over one eye, and then the other, in synchronization with the refresh rate of the display **50**. As a result, the display **50** by way of example alternately displays different perspectives for each eye, using a technique called alternate-frame sequencing, which achieves the desired effect of each eye seeing only the image intended for it. In another example, the combination of stereoscopic measurement and the optical flow between two consecutive images leads in addition to the temporal change of the spatial position, which results in 6D-vision. 6D-vision is also applied for perception of gestures, the motion of human limbs, without modeling the shape of persons with just using a passive stereo camera.

[0029] In this example, the display **50** can be any type of display that is capable of displaying stereoscopy technology. For example, a Liquid Crystal Display, computer display, plasma screen, a movie theater screen, a 3-D television, a 3-D computer monitor, a 3-D game console, or the like although other types and numbers of displays could be used.

[0030] Interface device **52** is used to operatively couple and communicate with interface **30** of the control devices **26**(*a*)-**26**(*b*) and interface device **44** of the controller over a communication link, although other types and numbers of communication links with other types and numbers of connections and configurations can be used.

[0031] Alternatively, lens **22**(*a*)-**22**(*b*) may include a sensor (not shown), disposed on the surface of the lens **22**(*a*)-**22**(*b*). The sensors may be configured to sample and analyze the 3-D viewer's level of eye fluid, eye irritation, heart rate, or the like. Data received from the sensors are relayed back to the controller **40**, which may be used to monitor chronic discomforts caused by 3-D viewing. Such as for example, eye fatigue from 3-D viewing, headaches, blurred vision, nausea, dizziness or the like.

[0032] As discussed earlier, the polarized contact lenses also could incorporate the viewer's eye prescription into the contact lens optical structure giving them a personalized three-dimensional viewing devise. With this example, the viewer would have corrected vision along with the existing capability to view a 3-D environment.

[0033] Referring to FIG. **4**, an alternative embodiment of this technology is described. In this embodiment, an exemplary method for making the three-dimensional viewing apparatus comprising a first contact lens and a second contact lens of a pair is described using flowchart **100** with reference back to FIGS. **1**-**3**.

[0034] In step **110**, a first contact lens **12**(*a*) of a pair is created to have a circular polarization filter **14**(*a*) in a left-handed or counterclockwise direction **13**, although a right-handed o clockwise direction could be used. As further illustrated in FIG. **1**, each circular polarization filter **14**(*a*) and **14**(*b*) is constructed of a quarter-wave plate and a linear polarizing filter. For example, the left lens **12**(*a*) is formed to include a circular polarization filter **14**(*a*) having a quarter-wave plate **17**, as illustrated by negative angled lines **17**. The quarter-wave plate **17** is configured to receive and transform left-handed circularly polarized light into linearly polarized light, which has its direction of polarization along the transmission axis of the linear polarizing filter. In this example, the linear polarizing filter **16**, as illustrated by horizontal lines **16**, transmits the vertical components of the polarized light while the horizontal components are absorbed. As a result, light that is right-circularly polarized is blocked by the left-handed filter.

[0035] In step **112**, a second contact lens **12**(*b*) of a pair is created to have a circular polarization filter **14**(*b*) in a right-handed or clockwise direction **15**, although a left-handed or counterclockwise direction could be used. In contrast to the left lens **12**(*a*), right-handed circularly polarized light is formed to have linearly polarized light by the right lens **12**(*b*), which includes circular polarization filter **14**(*b*) having a quarter-wave plate **18**, as illustrated by negative angled lines **18**. The quarter-wave plate **18** is formed to receive and transform right-handed circularly polarized light, into linearly polarized light, which has its direction of polarization along the transmission axis of the linear polarizing filter, i.e., blocks horizontal light. In this example, the linear polarizing filter **16** is formed, as illustrated by horizontal lines **16**, to transmit the vertical components of the polarized light while the horizontal components are absorbed. As a result, left-circularly polarized light is blocked by the right-handed filter.

[0036] Each of the pairs **10** and **20** of contact lens **12**(*a*)-**12**(*b*) and **22**(*a*)-**22**(*b*) can be made from a variety of different types and numbers of materials, such as glass or silicone hydrogel by way of example only. Each of the pairs **10** and **20** of contact lens **12**(*a*)-**12**(*b*) and **22**(*a*)-**22**(*b*) are at least partially translucent to visible light, although the lenses could be constructed with other types of parameters.

[0037] In step **114**, a determination is made whether a pair **20** of active polarization contact lens **22**(*a*)-**22**(*b*) is being made. In a passive polarization mode, the circular polarization filter in the pair of contact lens **12**(*a*)-**12**(*b*) remains constant and does not change. In an active polarization mode, the circular polarization filters in the pair **20** of contact lens **22**(*a*)-**22**(*b*) is active and changes in response to control signals. If a pair **10** of passive polarization contact lens **12**(*a*)-**12**(*b*) for three-dimensional viewing is being made, then the No branch is taken to step **115** where this method ends. If a pair **20** of active polarization contact lens **22**(*a*)-**22**(*b*) for three-dimensional viewing is being made, then the Yes branch is taken to step **116**. Although in this example steps **110** and **112** are shown as being the same for making the passive pair

10 and active pair 20, these steps for making the active pair 20 may differ so that the contact lens 22(*a*)-22(*b*) can provide active polarization for three-dimensional viewing.

[0038] In step **116**, a control devices **26**(*a*)-**26**(*b*) is coupled to each of the active circular polarization filters **24**(*a*) and **24**(*b*), respectively, wherein each of the control device receives control data for shuttering each of the active circular polarization filters in at least one of the first contact lens **22**(*a*) and the second contact lens **22**(*b*). By way of example, each of the active circular polarization filters **24**(*a*) and **24**(*b*) in lens **22**(*a*)-**22**(*b*) may contain a liquid crystal layer, which has the property of becoming dark when voltage is applied while otherwise being transparent. As a result, the active circular polarization filters **24**(*a*) and **24**(*b*) alternately open and shut each **22**(*a*)-**22**(*b*) to show each eye a different image. In the present example, control devices **26**(*a*)-**26**(*b*) are impregnated or otherwise connected to each of the lens **22**(*a*)-**22**(*b*) in such a manner that provides comfort for the user.

[0039] In step **118**, a controller **40** is provided to transmit data to each of the control devices of each active circular polarization filter **24**(*a*) and **24**(*b*). By way of example, the data transmission can be via a wireless network. The wireless transmission can be via an infrared, radio frequency, DLP-Link, Bluetooth transmitter, or the like. The data exchanged between each active polarization contact lens **22**(*a*)-**22**(*b*) and the controller **40** may include, for example, control signals that shutter the circular polarization filters in the pair of contact lens at designated speeds, sync data to the display **50**, signals to refresh pixels in the display **50** to display the desired visual information, or the like.

[0040] In step **120**, a power source **32** is coupled to each of the active circular polarization filters **24**(*a*) and **24**(*b*) of the active circular polarization contact lenses **22**(*a*)-**22**(*b*).

[0041] In step **122**, in this example a wireless power supply **60** and transmitter **62** is provided to transmit power to the power source **32** of each of the active circular polarization filters **24**(*a*) and **24**(*b*) of the active circular polarization contact lenses **22**(*a*)-**22**(*b*), although manners for providing power, such as a local power source on each of the lens **22**(*a*)-**22**(*b*) could be used. Additionally, other types and numbers of wireless and non-wireless energy transfer devices as well as other manners for supply power could be used.

[0042] In step **124**, a display **50** is coupled to the controller, synchronized with the pair of lens, and configured to display an image to be viewed in 3-D.

[0043] Accordingly, as illustrated and described herein this technology provides a number of advantages including providing circular polarized contact lenses for experiencing three-dimensional (3-D) viewing environments, such as movies and gaming. Additionally, with this technology both active polarization and passive polarization can be implemented with the pairs of contact lens to permit three dimensional viewing.

[0044] Having thus described the basic concept of the invention, it will be rather apparent to those skilled in the art that the foregoing detailed disclosure is intended to be presented by way of example only, and is not limiting. Various alterations, improvements, and modifications will occur and are intended to those skilled in the art, though not expressly stated herein. These alterations, improvements, and modifications are intended to be suggested hereby, and are within the spirit and scope of the invention. Additionally, the recited order of processing elements or sequences, or the use of numbers, letters, or other designations therefore, is not intended to limit the claimed processes to any order except as may be specified in the claims. Accordingly, the invention is limited only by the following claims and equivalents thereto.

What is claimed is:

1. A three-dimensional viewing apparatus comprising:

a first contact lens of a pair having a circular polarization filter in a clockwise direction or counterclockwise direction; and

a second contact lens of the pair having a circular polarization filter in the other one of the clockwise direction or counterclockwise direction.

2. The apparatus as set forth in claim **1** wherein at least one of the circular polarization filter in the first contact lens and the second contact lens and is a passive circular polarization filter.

3. The apparatus as set forth in claim **1** wherein at least one of the circular polarization filter in the first contact lens and the second contact lens and is an active circular polarization filter.

4. The apparatus as set forth in claim **3** further comprising a control device coupled to each of the active circular polarization filters, wherein the control device processes data for shuttering of each of the active circular polarization filters in at least one of the first contact lens and the second contact lens.

5. The apparatus as set forth in claim **1** wherein at least one of the first contact lens and the second contact lens is configured to correct vision.

6. The apparatus as set forth in claim **4** further comprising a controller device configured to transmit data to and receive data from the control device of at least one of the circular polarization filter in the first contact lens and the second contact lens.

7. The apparatus as set forth in claim **3** further comprising a power source coupled to each of the active circular polarization filters.

8. The apparatus as set forth in claim **7** further comprising a power supply configured to transmit power wirelessly to the power source of each of the circular polarization filters in the first contact lens and the second contact lens.

9. The apparatus as set forth in claim **3** further comprising a sensor coupled to each of the active circular polarization filters configured to transmit data regarding a user's discomforts caused by 3-D viewing.

10. The apparatus as set forth in claim **3** further comprising a display device coupled to the controller device and synchronized with the pair of lens configured to display an image to be viewed in 3-D.

11. The apparatus as set forth in claim **7** wherein the power source is a stored energy power source.

12. The apparatus as set forth in claim **7** wherein the power source is a solar energy power source.

13. A method for making a three-dimensional viewing apparatus, the method comprising:

providing a first contact lens of a pair having a circular polarization filter in one of a clockwise direction or a counterclockwise direction; and

providing a second contact lens of the pair having a circular polarization filter in the other one of the clockwise direction or the counterclockwise direction.

14. The method as set forth in claim **13** wherein at least one of the circular polarization filter in the first contact lens and the second contact lens and is a passive circular polarization filter.

15. The method as set forth in claim **13** wherein at least one of the circular polarization filter in the first contact lens and the second contact lens and is an active circular polarization filter.

16. The method as set forth in claim **15** further coupling a control device to each of the active circular polarization filters, wherein the control device controls shuttering of the active circular polarization filter in at least one of the first contact lens and the second contact lens.

17. The method as set forth in claim **13** wherein at least one of the first contact lens and the second contact lens is configured to correct vision.

18. The method as set forth in claim **15** further comprising transmitting data to the control device of at least one of the circular polarization filter in the first contact lens and the second contact lens from a wireless control device.

19. The method as set forth in claim **15** providing a power source to each of the active circular polarization filters.

20. The method as set forth in claim **19** further comprising transmitting power to the power source of at least one of the circular polarization filter in the first contact lens and the second contact lens from a wireless power supply.

21. The method as set forth in claim **15** coupling a sensor to each of the active circular polarization filters, wherein the sensors are configured to transmit data regarding a user's discomforts caused by 3-D viewing.

22. The method as set forth in claim **15** providing a display device coupled to the controller and synchronized with the pair of lens configured to display an image to be viewed in 3-D.

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