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Goodis

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(54) **HEATED EYEWEAR**

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G02C 1/00 (2006.01)

(52) **U.S. Cl.** 351/158; 351/41

(58) **Field of Classification Search** 351/41, 351/83, 111, 158, 86; 128/828, 858; 219/201; 604/289-291, 301

See application file for complete search history.

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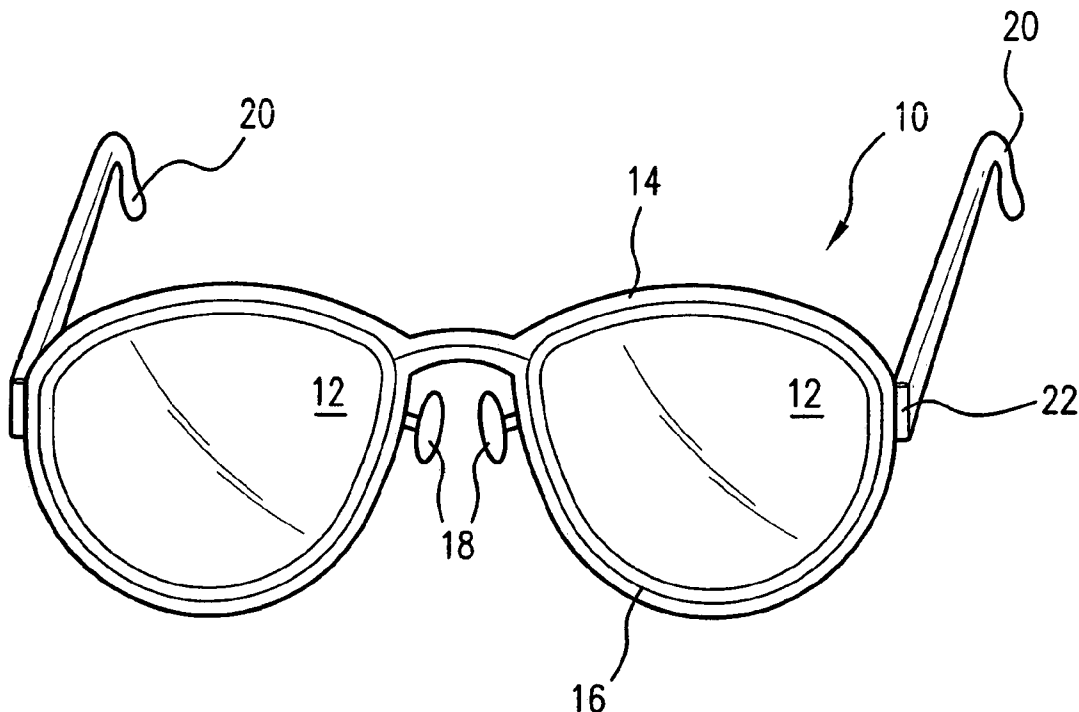
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(57) **ABSTRACT**

Eyewear, e.g., an apparatus to be worn on or adjacent to a person's eyes, which includes a heating element that is configured to provide heat. The heat provided may be sufficient to provide warmth to a wearer of the eyewear or to prevent accumulation of, e.g., snow, ice, fog or any other type of matter, whether environmental or otherwise. The eyewear may include an actuation element for actuating the heating element, the actuation element being configured to cause the heating element to generate heat either automatically or manually. Power for the heating element to generate heat may be provided by a power source, such as a battery.

33 Claims, 1 Drawing Sheet



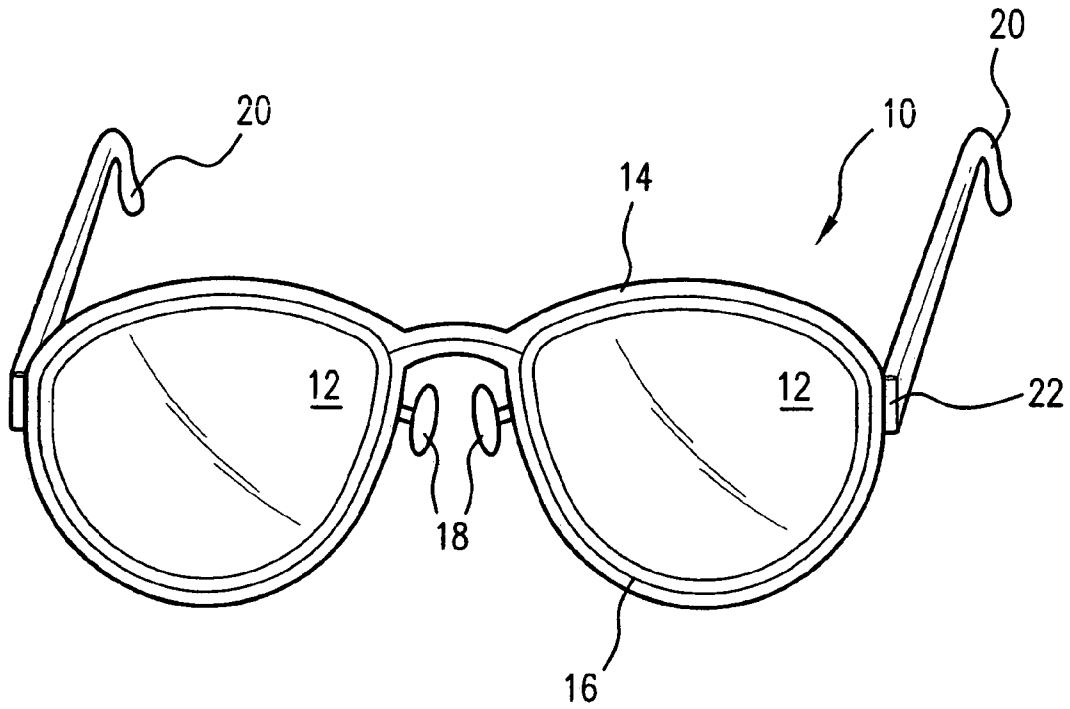


FIG. 1

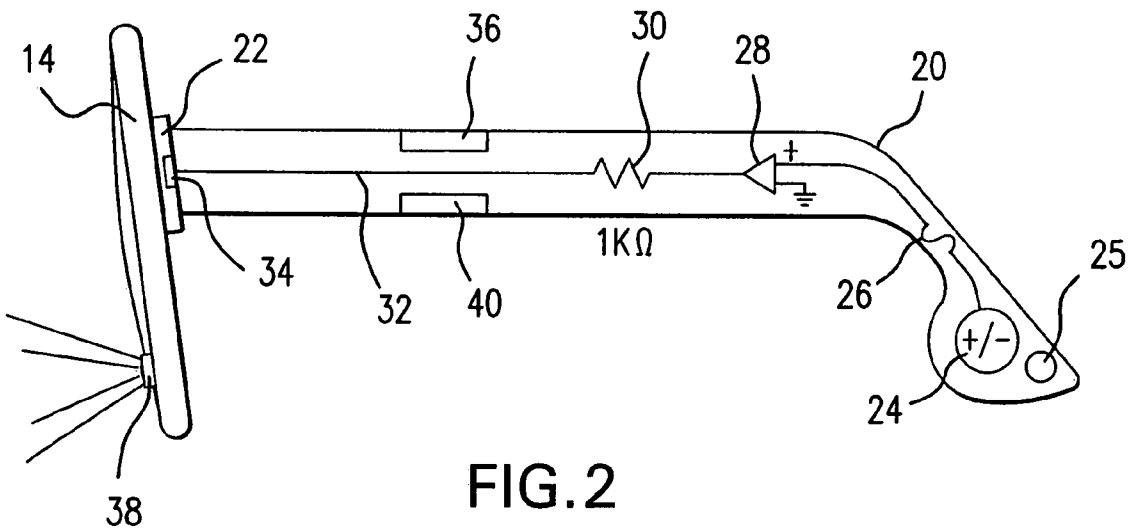


FIG. 2

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HEATED EYEWEAR

RELATED APPLICATIONS

This application is based on and claims the benefit of priority to Applicant's co-pending U.S. Provisional Patent Application Ser. No. 60/657,470, entitled "Heated Eyewear" and filed on Mar. 1, 2005, the disclosure of which is expressly incorporated herein in its entirety by reference thereto.

FIELD OF THE INVENTION

The present invention relates to eyewear and more specifically to heated eyewear.

BACKGROUND INFORMATION

There are many activities in which a person requires the provision of additional heat. While the heat for most of these activities is supplied by heat sources that introduce heat into the atmosphere in the vicinity of the person, e.g., a building heating system that employs a boiler, radiators, etc., there are some activities for which such a heating source is not available or is insufficient to provide heat in a specific desired location, such as near or adjacent to a person's face or eyes.

Thus, there is a need for an apparatus for directing heat to a specific desired location, such as near or adjacent to a person's face or eyes.

SUMMARY OF THE INVENTION

The present invention, according to one example embodiment thereof, relates to eyewear, e.g., any apparatus to be worn on or adjacent to a person's eyes. The eyewear includes a heating element that is configured to provide heat. Advantageously, the heat provided is sufficient to provide at least some improvement in warmth to the wearer. In addition or alternatively, the heat provided may be sufficient to perform some other function, such as preventing the accumulation on at least a portion of the eyewear or at least a portion of the wearer's face of, e.g., snow, ice, fog or any other type of matter, whether environmental or otherwise.

The eyewear may also include an actuation element for actuating the heating element. The actuation element may operate automatically or manually. Power for the heating element to generate heat may be provided by a power source, such as a battery. A backup power source may also be employed.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of a set of eyewear, in accordance with one embodiment of the present invention;

FIG. 2 is a side view of the earpiece, according to one embodiment of the present invention.

DETAILED DESCRIPTION

FIG. 1 is a front view of a set of eyewear, in accordance with one embodiment of the present invention. It should be understood that the term "eyewear" may refer to any type of eyewear, including but not limited to: prescription or non-prescription eyeglasses; prescription or non-prescription sunglasses; goggles, visors, shields, helmets or any other type of apparatus that may be worn by a wearer for any conceivable purpose such as for skiing, skydiving, hunting, paintball or other entertainment or interactive games, safety, combat,

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infrared or night-vision, driving or riding vehicles, welding or any other type of construction work, any type of laboratory work, police work, space travel, etc.

FIG. 1 illustrates a pair of eyeglasses 10, in accordance with one embodiment of the present invention. While the present invention is described hereinbelow as a pair of eyeglasses, it should be understood that any type of eyewear as defined above may be employed. In the embodiment shown, the eyeglasses 10 include a pair of lenses 12 that are supported by a frame 14. The lenses 12 may be fabricated from any type of material, including but not limited to plastic, glass, etc., and may be water, solar, scratch, salt water and/or glare resistant and/or fire retardant. In addition, the frame 14 may be fabricated from any type of material, including but not limited to metal, plastic, glass, etc., and may also be water, solar, scratch, salt water and/or glare resistant and/or fire retardant. The lenses 12 and/or the frame 14 may be flexible or rigid, depending on the desired application. The lenses 12 may have automatic or manually-operated shading or tinting capabilities.

The frame 14 may include a heating element 16. The heating element 16 is shown in FIG. 1 as being disposed throughout the entire frame 14. However, it should be understood that the heating element 16 may be disposed in a part of, or in any portion of, the frame 14, and/or may be disposed in a part of, or in any portion of, the other components of the eyeglasses 10. In addition, it should be understood that, while the wire shown in FIG. 1 forms a single heating element 16, in various other embodiments, the frame 14 may include one or more heating elements 16 that may or may not be connected to each other and which operate either together or independently from each other.

The heating element 16 may be any material or component that is capable of providing heat. In the embodiment shown, the heating element is a heat conductive wire. The wire may be fabricated from any material that conducts heat.

The eyeglasses 10 may also include a pair of nose-pieces 18 that are employed to support the eyeglasses 10 on the nose of a wearer. The nose-pieces 18 may also include a heating element 16. Alternatively, the nose-pieces 18 may be fabricated from a heat insulating material. In this alternative embodiment, the nose-pieces 18 may operate to prevent the heating elements 16 from directly contacting the skin of the wearer. It should also be recognized that, in some embodiments, any other portion or portions of the eyeglasses 10, e.g., the ear pieces, may be fabricated from a heat insulating material so as to prevent any hot surfaces from directly contacting the skin of the wearer. Alternatively, depending on the amount of heat that is generated by the heating element 16, it may be preferable that a hot or warm surface does directly contact the skin of the wearer. Thus, depending on the application, the heat generated by the heating element 16 may be provided to the wearer either directly, e.g., by direct contact with the skin, and/or indirectly, e.g., by radiating heat towards the skin of the wearer without actually touching the skin of the wearer. In one embodiment, the heating element 16 may be heated to a temperature of between 50° to 150° F., preferably 70° F. to 110° F., more preferably 80° F. to 100° F., and most preferably about 90° F.

The eyeglasses 10 also include ear-pieces 20. The ear-pieces 20 may be attached to the frame 14 in any manner, such as by a hinge 22 or the like. The hinge 22 may operate to permit the ear-pieces 20 to be folded against the frame 14 when the eyeglasses are not in use. While FIG. 1 illustrates the general position of the ear-pieces 20, additional details of the ear-pieces 20 are illustrated in FIG. 2. Referring now to FIG. 2, there is shown one ear-piece 20, according to one embodi-

ment of the present invention. In this embodiment, the ear-piece **20** includes a power source **24**. The power source **24** may be any type of component capable of providing a sufficient amount of power to the other components of the eyeglasses **10** so as to heat the heating element **16** to a desired temperature. Advantageously, the power source **24** is a battery, e.g., a conventional watch battery or the like that provides 1 volt/0.25 amperage. Preferably, the power source **24** is replaceable when necessary, although in other embodiments the power source **24** may be integrally formed with or within the ear-piece **20**. It should be understood that the power source **24** need not be located with or within the ear-piece **20**, but may alternatively be located with or within any other part of the eyeglasses **10**.

In the embodiment shown, the power source **24** is electrically connected to a voltage protection element **26**, such as a fuse. The voltage protection element **26** is in turn electrically connected to an output amplifier **28**. The output amplifier **28** is in turn electrically connected to a thermistor **30**. The thermistor **30** may function to regulate the amount of heat generated by the heating element **16**. The thermistor **30** is electrically connected to the heating element **16** in the frame **14** by a connecting wire **32**. According to one embodiment, the connecting wire **32** is permanently connected to the heating element **16** in the frame, while in an alternative embodiment, the hinge **22** is configured to selectively connect the connecting wire **32** to the heating element **16**. For instance, in one such embodiment, the connecting wire **32** may be connected to the heating element **16** when the ear-piece **20** is moved to the open position, e.g., the position at which the eyeglasses **10** are worn, while the connecting wire **32** may be disconnected from the heating element **16** when the ear-piece **20** is moved to the closed position, e.g., the position at which the eyeglasses **10** are stored.

The eyeglasses **10** may also include an actuation element **34**. In the embodiment shown, the actuation element **34** may be a switch that is located at or within the hinge **22**. The actuation element **34** may be connected to the other electrical components of the eyeglasses **10** and may operate in the manner describe above whereby the heating element **16** is caused to be heated upon the opening of the eyeglasses **10** into the open position. Various other actuation elements **34** may be employed. For instance, the actuation element **34** may be a level-actuatable switch such that the heating element **16** is caused to be heated when the eyeglasses **10** are positioned in a substantially vertical alignment as would be the case when the eyeglasses **10** are worn by a person that is standing upright. Of course, such a level-actuatable switch may operate to heat the heating element **16** at any conceivable position.

Another actuation element **34** may be a manually operated switch, located anywhere on the eyeglasses **10**, that is moveable by a wearer in order to selectively turn on, turn off, and/or adjust the heat generated by, the heating element **16**. Still another actuation element **34** may be an automatic mechanism that turns on, turns off, and/or adjusts the heat generated by, the heating element **16** in response to an environmental factor, e.g., including but not limited to temperature, wind speed, barometric pressure, etc. Referring to one example embodiment in which the temperature is the environmental factor, the actuation element **34** may include a temperature sensor that turns on the heating element **16** when the temperature experienced by the wearer is below a pre-determined level, e.g., below freezing, and that automatically causes the heating element **16** to provide additional heat when the temperature is reduced still further below the pre-determined level. Still another actuation element **34** may be a voice-activation mechanism by which a wearer may turn on, turn off

or adjust the heat generated by the heating element **16** by speaking a command or by making a particular sound. Still another actuation element **34** may be a remote control mechanism, e.g., a wireless transmitter and receiver arrangement, by which a wearer may turn on, turn off or adjust the heat generated by, the heating element **16**.

It should be recognized that the specific components described hereinabove for generating and conveying heat to the heating element or elements **16** are merely one possible arrangement for performing these functions. It should be understood that the components described herein above may be located in or on any portion of the eyeglasses **10** (and where the eyewear is not eyeglasses, the components may be located in or on any portion of the eyewear apparatus), either integrally, permanently or temporarily. Furthermore, any other components that are capable of generating and conveying heat may be used. For instance, the heating element **16** may be electrically powered by different electrical components than those described hereinabove. Additionally, or alternatively, the types of power that may be employed by the heating element **16** may include, without being limited by, solar power, chemical power, electromechanical power, e.g., such as by shaking, hydrogen power, lunar power, nuclear power, or any combination of types of power. In addition, the eyeglasses **10** may include a back-up power source **25** in the event that the primary power source **24** fails to function. Still further, it should be recognized that any of these power types may be employed as the primary power source **24**, and any of these power types may be employed as the back-up or secondary power source **25**.

The heating element **16** may also be used in conjunction with other features, such as, without limitation, ground position sensor **36** ("GPS") technology, a lighting element **38** of any kind, a compass, a clock, and/or a microprocessor electronic memory unit or data unit **40** for the storage, transfer or display of any type of data, including but not limited to service data, directional data, academic or educational data, DVD or other video display data, etc. In one embodiment, the microprocessor electronic memory unit **40** is configured to adjust the temperature range of the heating element **16**. In one embodiment, these additional features of the eyeglasses **10** are powered by the same power source **24** (and/or the same back-up power source **25**) as is employed by the heating element **16**. Alternatively, other power sources may be provided for these purposes.

Thus, the several aforementioned objects and advantages of the present invention are most effectively attained. Those skilled in the art will appreciate that numerous modifications of the exemplary example embodiments described hereinabove may be made without departing from the spirit and scope of the invention. Although various exemplary example embodiments of the present invention have been described and disclosed in detail herein, it should be understood that this invention is in no sense limited thereby and that its scope is to be determined by that of the appended claims.

What is claimed is:

1. An apparatus to be worn on or adjacent to a person's eyes, the apparatus comprising:
 - a frame;
 - an integral heating element that is disposed in and throughout the frame and is configured to provide heat directly or indirectly to provide warmth to the skin of a wearer; and
 - a thermistor to regulate the amount of heat generated by the integral heating element and to keep the frame at an approximately constant temperature.

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2. The apparatus of claim 1, wherein the apparatus is one of prescription or non-prescription eyeglasses, prescription or non-prescription sunglasses, goggles, a visor, a shield and a helmet.

3. The apparatus of claim 1, wherein the apparatus is suitable to be worn by the person for at least one of skiing, skydiving, hunting, paintball or other entertainment or interactive games, safety, combat, infrared or night-vision, driving or riding vehicles, welding or any other type of construction work, any type of laboratory work, police work and space travel.

4. The apparatus of claim 1, wherein the heat provided is sufficient to prevent accumulation on at least a portion of the apparatus or on at least a portion of the wearer's face of at least one of snow, ice and fog.

5. The apparatus of claim 1, further comprising an actuation element for actuating the heating element.

6. The apparatus of claim 5, wherein the actuation element operates at least one of automatically and manually.

7. The apparatus of claim 5, wherein the actuation element is a switch.

8. The apparatus of claim 7, wherein actuation element is a manually operated switch.

9. The apparatus of claim 7, wherein the switch is located at or within a hinge connected to an earpiece.

10. The apparatus of claim 9, wherein the switch is configured such that the heating element is caused to be heated upon the earpiece being opened into a position suitable to be worn by the person.

11. The apparatus of claim 7, wherein the switch is a level-actuatable switch.

12. The apparatus of claim 11, wherein the level-actuatable switch is configured such that the heating element is caused to be heated when the apparatus is positioned in a substantially vertical alignment.

13. The apparatus of claim 5, wherein the actuation element is automatic.

14. The apparatus of claim 13, wherein the actuation element actuates the heating element in response to an environmental factor.

15. The apparatus of claim 14, wherein environmental factor is at least one of a temperature, a wind speed, and a barometric pressure.

16. The apparatus of claim 5, wherein actuation element is a voice-activation mechanism.

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17. The apparatus of claim 5, wherein the actuation element is a remote control mechanism.

18. The apparatus of claim 1, further comprising a power source.

19. The apparatus of claim 18, wherein the power source is a battery.

20. The apparatus of claim 18, wherein the power source employs at least one of solar power, chemical power, electro-mechanical power, hydrogen power, lunar power, and nuclear power.

21. The apparatus of claim 1, wherein the apparatus includes a ground position sensor.

22. The apparatus of claim 1, wherein the apparatus includes a lighting element.

23. The apparatus of claim 1, wherein the apparatus includes a compass.

24. The apparatus of claim 1, wherein the apparatus includes a clock.

25. The apparatus of claim 1, wherein the apparatus includes one of a microprocessor electronic memory unit and a data unit.

26. The apparatus of claim 25, wherein the one of a microprocessor electronic memory unit and data unit is configured to at least one of store, transfer and display data.

27. The apparatus of claim 26, wherein the data includes at least one of service data, directional data, academic or educational data, DVD or other video display data.

28. The apparatus of claim 1, further comprising at least one component that is fabricated from a heat insulating material.

29. The apparatus of claim 28, wherein the at least one component is one of a nose-piece and an earpiece.

30. The apparatus of claim 1, wherein the heating element is heated to a temperature of between about 50° to about 150° F.

31. The apparatus of claim 30, wherein the heating element is heated to a temperature of between about 70° F. to about 110° F.

32. The apparatus of claim 31, wherein the heating element is heated to a temperature of between about 80° F. to about 100° F.

33. The apparatus of claim 32, wherein the heating element is heated to a temperature of about 90° F.

* * * * *