An eye protection system including a reservoir for containing a product, the reservoir secumble to a strap of an eye protection system. A spout communicatively coupled to the reservoir, the spout for dispensing the product to a lens of the eye protection system while the reservoir is secured to the strap.
EYE PROTECTION SYSTEMS

BACKGROUND

[0001] A lens of a diving mask will fog during use, reducing visibility of a user. Anti-fog agents exist that help prevent the lens from fogging. The anti-fog agent may be contained in a relatively small applicator bottle which can become misplaced and/or lost and subsequently difficult to find when desired at a time of use of a mask.

[0002] Accordingly, there remains a need in the art for masks that are readily defogged for use when desired.

BRIEF SUMMARY

[0003] This Brief Summary is provided to introduce simplified concepts relating to eye protection systems that are readily defogged for use when desired which are further described below in the Detailed Description. This summary is not intended to identify essential features of the claimed subject matter, nor is it intended for use in determining the scope of the claimed subject matter.

[0004] This disclosure relates to eye protection systems that are configured to contain a product for dispensing to a lens of the eye protection systems. Generally, the eye protection systems include a reservoir that contains the product and is secured to a strap of the eye protection system. A spout communicatively coupled to the reservoir provides for dispensing the product to a lens of the eye protection systems while the reservoir is secured to the strap. In some embodiments, such eye protection systems are ready for use when desired.

[0005] In an embodiment, an eye protection system includes a frame, at least one lens arranged in the frame, and a strap coupled to the frame. A reservoir for containing a product is secured to the strap. A spout is communicatively coupled to the reservoir for dispensing the product to the lens while the reservoir is secured to the strap.

[0006] In an embodiment, an improvement for an eye protection system includes a strap cover configured to receive a portion of a strap. The strap cover includes a receptacle, and a reservoir for containing a product is secured in the receptacle of the strap cover. A spout is communicatively coupled to the reservoir for dispensing the product to a lens of the eye protection system while the reservoir is secured in the receptacle of the strap.

[0007] In an embodiment, an improvement for an eye protection system includes a strap coupleable to a frame of eye protection system. The strap includes a receptacle, and a reservoir for containing a product is secured in the receptacle of the strap. A spout is communicatively coupled to the reservoir for dispensing the product to a lens of the eye protection system while the reservoir is secured in the receptacle of the strap.

[0009] FIG. 1 illustrates a perspective view of an example eye protection system including a reservoir that contains a product. The reservoir is secured to a strap of the eye protection system.

[0010] FIG. 2 illustrates a perspective view of an improvement for an eye protection system. The improvement including a strap cover including a receptacle and a reservoir for containing a product. The reservoir is secured in the receptacle of the strap cover.

[0011] FIG. 3 illustrates a top view of the strap cover illustrated in FIG. 2, a top view of the reservoir illustrated in FIG. 2, and an assembly view of the improvement for the eye protection system illustrated in FIG. 2.

[0012] FIG. 4 illustrates a perspective view of another improvement for an eye protection system. The improvement including a strap having a receptacle, and a reservoir for containing a product. The reservoir secured in the receptacle of the strap.

[0013] FIG. 5 illustrates a top view of the strap illustrated in FIG. 4 and an assembly view of the improvement for the eye protection system illustrated in FIG. 4.

DETAILED DESCRIPTION

Overview

[0014] As noted above, lenses of masks fog during use, and anti-fog agents exist that help prevent the lenses from fogging, but the anti-fog agent is contained in a relatively small applicator bottle which can become misplaced and/or lost and subsequently difficult to find when desired at a time of use of the masks. This disclosure is directed to eye protection systems that are readily defogged for use when desired. The eye protection systems include a reservoir that is secured to a strap of the eye protection system, and a spout that is communicatively coupled to the reservoir that provides for dispensing a product contained in the reservoir to a lens of the eye protection systems while the reservoir is secured to the strap. For example, the eye protection systems may include an anti-fog agent stored in the reservoir that is secured to a strap of the eye protection system, and a user may manipulate the strap, aim the spout toward the lens, and squeeze the reservoir to apply the anti-fog agent to the lens while the reservoir is secured to the strap.

[0015] In this way, the eye protection systems are readily defogged for use when desired. While this application describes various embodiments of eye protection systems used in the field of swimming, this is by way of example and not limitation. For example, the eye protection systems may be used in other fields such as snow skiing applications, snowboarding applications, motorsport applications, cycling applications, etc.

[0016] The eye protection systems may include a frame, at least one lens arranged in the frame, and a strap coupled to the frame. A reservoir for containing a product may be secured to the strap. A spout communicatively coupled to the reservoir may for dispensing the product to the lens while the reservoir is secured to the strap.

[0017] The eye protection systems may include a strap cover configured to receive a portion of a strap coupled to a frame of the eye protection system. In one example, the strap cover may include a receptacle, and a reservoir for containing a product may be secured in the receptacle of the strap cover. A spout may be communicatively coupled to the
reservoir for dispensing the product to a lens while the reservoir is secured in the receptacle of the strap cover. [0018] The eye protection systems may include a strap couplable to a frame of the eye protection system. In one example, the strap may include a receptacle, and a reservoir for containing a product may be secured in the receptacle of the strap. A spout may be communicatively coupled to the reservoir for dispensing the product to a lens while the reservoir is secured in the receptacle of the strap.

Illustrative Eye Protection Systems

[0019] FIG. 1 illustrates a back side view 100 of an example eye protection system 102, and a water environment 104 involving a diver 106 using the eye protection system 102. FIG. 1 illustrates the eye protection system 102 may include a frame 108, at least one lens 110 arranged in the frame 108, and a strap 112 coupled to the frame 108. While FIG. 1 illustrates the eye protection system 102 is a half mask (e.g., a diving or snorkeling mask covering a portion of the face of the diver 106), the eye protection system 102 may be a full-face mask, swimming goggles, a diving helmet, etc. Further, while FIG. 1 illustrates the eye protection system 102 is for use in the water environment 104, the eye protection system 102 may be used in other environments. For example, the eye protection systems 102 may be used in a snow skiing environment, a snowboarding environment, a motorsport environment, a cycling environment, etc. For example, the eye protection system 102 may be a snow skiing goggle, a motorcycle goggle, a cycling goggle, cycling glasses, sunglasses, etc.

[0020] FIG. 1 illustrates the eye protection system 102 may include a reservoir 114 that is secured to the strap 112. While FIG. 1 illustrates the reservoir 114 secured to the strap 112 via a receptacle 116 associated with the strap 112, the reservoir 114 may be secured to the strap 112 via a mechanical fastener (e.g., threaded fastener), an interference fit, a press fit, a friction fit, an adhesive, a magnet, a suction cup, a hook and loop fastener, a clip, a cam lock, etc. Further, while FIG. 1 illustrates the reservoir 114 secured to the strap 112, the reservoir 114 may be formed integrally in the strap 112. For example, the reservoir 114 and the strap 112 may be formed (e.g., molded, injection molded, cast, etc.) of one single unit of material (e.g., polymer, silicone, silicone rubber, rubber, etc.).

[0021] FIG. 1 illustrates the eye protection system 102 may include a spout 118. The spout 118 may be communicatively coupled to the reservoir 114 for dispensing the product contained in the reservoir 114 to the lens 110 of the eye protection system 102 while the reservoir 114 is secured to the strap 112. For example, the diver 106 may remove the eye protection system 102 from her face and manipulate the strap 112 to aim the spout 118 toward the lens 110, and squeeze the reservoir 114 to apply the product (e.g., anti-fog agent) to the lens 110 while the reservoir 114 is secured to the strap 112. In this way, the product contained in the reservoir 114 secured to the strap 112 of the eye protection system 102 is ready for use when desired (e.g., before, during, or after use of the eye protection system 102). Moreover, because the reservoir 114 is secured to the strap 112 of the eye protection system 102, the product contained in the reservoir 114 cannot be misplaced and/or lost, and therefore remains ready for use with the eye protection system 102 when desired. While FIG. 1 illustrates the spout 118 extending a distance from a surface of the strap 112, the spout 118 may not extend a distance from the surface of the strap 112. For example, the spout 118 may be flush with the surface of the strap 112, or the spout 118 may be recessed in the strap 112. One or more valves (discussed in more detail below) may prevent water from entering the spout 118. For example, a valve may be arranged at the end of the spout 118 to prevent water from entering the spout 118. The one or more valves may prevent the product from being dispensed from the spout 118 from a pressure applied on the reservoir 114 during use of the eye protection system 102. For example, the one or more valves may prevent the product from being dispensed from the spout 118 from a pressure applied, to the reservoir, by the head of the diver 106. In another example, the one or more valves may be selectively closed to prevent the product from being dispensed from the spout 118 and selectively unlocked to allow the product to be dispensed from the spout 118. For example, the one or more valves may be twisted, depressed, bent, folded, etc. to selectively closed the one or more valves to prevent the product from being dispensed from the spout 118, and the one or more valves may be twisted, depressed, bent, folded, etc. to selectively open the one or more valves to allow the product to be dispenses from the spout 118. Further, the product may be dispensed from the spout 118 without a user applying a pressure to the reservoir 114. For example, the reservoir 114 may be pressurized via a pressurized gas contained in the reservoir 114 for dispensing the product contained in the reservoir 114 from the spout 118.

[0022] FIG. 2 illustrates a perspective view 200 of an improvement for an eye protection system 202. Inasmuch as FIG. 2 illustrates another eye protection system 202, while referring to the same elements and features of the eye protection system 102 illustrated in FIG. 1, the following discussion of specific features may refer interchangeably to any of FIGS. 1 and 2 except where explicitly indicated. In particular, FIG. 2 illustrates the eye protection system 202, including the frame 108 and the lens 110.

[0023] As illustrated, and in some instances, the eye protection system 202 may include a strap 204 attached to the frame 108. The strap 204 may be the same as the strap 112 illustrated in FIG. 1. FIG. 2 illustrates the improvement for the eye protection system 202 may include a strap cover 206 configured to receive a portion of the strap 204. For example, the strap cover 206 may include one or more openings 208 arranged to receive an end of the strap cover 206, and provide for positioning the strap cover 206 on the strap 204. For example, the one or more openings 208 may provide for a user (e.g., diver 106) to slidably position the strap cover 206 on the strap 204. In another example, the receptacle 210 may be a pocket arranged on an exterior surface of the strap cover 206. In another example, a first portion of the receptacle 210 may be arranged in the strap cover 206 and a second portion of the receptacle 210 may be arranged on an exterior surface of the strap cover 206. While FIG. 2 illustrates the strap cover 206 and the receptacle 210 may be formed of neoprene, at least one of the strap cover 206 or the receptacle 210 may be formed of neoprene. For example, the strap cover 206 may be formed of neoprene and the receptacle may be formed of fabric. In another example, the strap cover 206 and the receptacle 210 may be formed of fabric. In another example, a first portion (e.g., an
inner side) of the strap cover 206 may be formed of neoprene, a second portion (e.g., outer side) of the strap cover 206 may be formed of rubber, and the receptacle 210 may be formed of fabric. In another example, the strap cover 206 may be formed of neoprene and the receptacle 210 may be formed of silicone.

[0025] FIG. 2 illustrates the improvement for the eye protection system 202 may include a reservoir 212 secured in the receptacle 210. The reservoir 212 may be the same as the reservoir 114. The reservoir 212 may be shaped to occupy the space formed by the receptacle 210. The reservoir 212 may provide for containing a product (e.g., an anti-fog agent, anti-fogging agent, defog agent, etc.) that helps prevent the lens 110 from fogging. While the reservoir 212 may be dispensed from a cap that helps prevent the lens 110 from fogging, the reservoir 212 may contain other products. For example, the reservoir 212 may contain a food, a beverage, an ointment, a cream, a lotion, a gel, etc.

[0026] FIG. 2 illustrates the improvement for the eye protection system 202 may include a spout 214 communicatively coupled to the reservoir 212. The spout 214 may be the same as the spout 118. The spout 214 may provide for dispensing the product out of the reservoir 212. For example, the spout 214 may provide for dispensing the product on the lens 110. The spout 214 may provide for dispensing the product on the lens 110 while the reservoir 212 is secured in the receptacle 210 of the strap cover 206. The reservoir 212 may be flexible (e.g., pliable, supple, bendable,pliant, deformable, etc.), such that when the reservoir 212 is squeezed, the product contained in the reservoir 212 is dispulcable into the spout 214 and out of an aperture 216 of the spout 214 for application on the lens 110 while the reservoir 212 is in the receptacle 210.

[0027] FIG. 3 illustrates a top view 300 of the strap cover 206 illustrated in FIG. 2, a top view 302 of the reservoir 212 illustrated in FIG. 2, and an assembly view 304 of the improvement for the eye protection system 202 illustrated in FIG. 2.

[0028] Top view 302 of the reservoir illustrates the reservoir 212 may include a valve 306 arranged with the spout 214 and/or a valve 308 arranged with the reservoir 212. The valves 306 and 308 may be check valves. The valve 306 may be arranged proximate to the opening 216 of the spout 214, and the valve 308 may be arranged in the reservoir 212. When a threshold amount of pressure is applied to the reservoir 212, the valves 306 and 308 may open for dispensing the product out of the opening 216 of the spout 214. The valves 306 and 308 may prevent fluid from entering the spout 118 and/or the reservoir 212. The valves 306 and 308 may prevent the product contained in the reservoir 212 from being dispensed from a cap that helps prevent the lens 110 during use of the eye protection system. For example, at least one of the valves 306 or 308 may prevent the product from being dispensed from the spout 214 as a result of a pressure applied, to the reservoir, by the head of the diver 106. The reservoir 212 may be sized to contain about ½ fluid ounces of the product. While FIG. 3 illustrates the reservoir 212 is sized to contain about ½ fluid ounces of the product, the reservoir 212 may be sized to contain other amounts of the product. For example, the reservoir 212 may be sized to contain about 3 fluid ounces of the product. In an embodiment, the reservoir 212 may be refillable. For example, a user may communicatively couple a bottle containing a supply of the product to the spout 214 and refill the reservoir 212 with the product. In another example, the reservoir 212 may include a fill port, and a user may communicatively couple a bottle containing a supply of the product to the fill port and refill the reservoir 212 with the product. In another embodiment, the reservoir 212 may not be refillable. For example, the reservoir 212 may be a cartridge that provides for being removed and replaced with another cartridge full of product. For example, a user may remove a depleted cartridge type reservoir and replace the depleted cartridge type reservoir with a new cartridge type reservoir full of product.

[0029] While FIG. 3 illustrates the spout 214 exiting from the opening 208 at an end of the strap cover 206. The spout 214 may exit from other portions of the strap cover 206. For example, the spout 214 may exit from a back portion, a front portion, a top portion, a bottom portion, or a side portion of the strap cover 206.

[0030] While FIG. 3 illustrates the reservoir 212 secured in the receptacle 210 of the strap cover 206, the reservoir 212 may be formed integrally in the strap cover 206. For example, the reservoir 212 may be overmolded to the strap cover 206. For example, the strap cover 206 may include a first layer formed of neoprene and a second layer formed of plastic (e.g., polyethylene, polypropylene, polyvinyl chloride, etc.), and the reservoir 212 may be molded, overmolded, injection molded, cast, etc. to the second layer of the strap cover 206.

[0031] FIG. 4 illustrates a perspective view 400 of another improvement for an eye protection system 402. Inasmuch as FIG. 4 illustrates another eye protection system 402, while referring to the same elements and features of the eye protection systems 102 and 202 illustrated in FIGS. 1 and 2 the following discussion of specific features may refer interchangeably to any of FIGS. 1, 2, and 3 except where explicitly indicated. In particular, FIG. 3 illustrates the eye protection system 402 including the frame 108 and the lens 110.

[0032] FIG. 4 illustrates the improvement for the eye protection system 402 may include a strap 404 having a receptacle 406. The strap 404 may be the same as the strap 112 illustrated in FIG. 1. For example, the strap 404 may be coupleable to the frame 108. FIG. 4 illustrates the reservoir 212 secured in the receptacle 406 of the strap 404, and the spout 214 communicatively coupled to the reservoir 212 for dispensing the product to the lens while the reservoir 212 is secured in the receptacle 406 of the strap 404.

[0033] While FIG. 4 illustrates the spout 214 exiting from a back portion of the strap 404. The spout 214 may exit from other portions of the strap 404. For example, the spout 214 may exit from a front portion, a top portion, a bottom portion, a side portion of the strap cover 206.

[0034] While FIG. 4 illustrates the reservoir 212 secured in the receptacle 406 of the strap 404, the reservoir 212 may be formed integrally in the strap 404. For example, the reservoir 212 and the strap 404 may be formed (e.g., molded, injection molded, cast, etc.) of one single unit of material (e.g., polymer, silicone, silicone rubber, rubber, etc.).

[0035] FIG. 5 illustrates a top view 500 of the strap 404 illustrated in FIG. 4 and an assembly view 502 of the improvement for the eye protection system 402 illustrated in FIG. 4. The top view 500 of the strap 404 illustrates the receptacle 406 formed in the strap 404. The assembly view 502 illustrates the reservoir 212 secured in the receptacle 406 of the strap 404.
[0036] FIG. 5 illustrates the strap 404 may include an opening 504 arranged in a back portion of the strap 404. FIG. 5 illustrates the opening 504 may provide for the spout 214 to exit from the back portion of the strap 404. While FIG. 5 illustrates the spout 214 exiting from the opening 504 arranged in the back portion of the strap 404, the spout 214 may exit from other portions of the strap 404. For example, the spout 214 may exit from a front portion, a top portion, a bottom portion, or a side portion of the strap 404.

Conclusion

[0037] Although the invention has been described in language specific to structural features and/or methodological acts, it is to be understood that the invention is not necessarily limited to the specific features or acts described. Rather, the specific features and acts are disclosed as illustrative forms of implementing the invention. For example, while embodiments are described having certain shapes, sizes, and configurations, these shapes, sizes, and configurations are merely illustrative.

What is claimed is:

1. An eye protection system, comprising:
   a frame;
   at least one lens arranged in the frame;
   a strap coupled to the frame;
   a reservoir for containing a product, the reservoir secured to the strap; and
   a spout communicatively coupled to the reservoir, the spout for dispensing the product to the lens while the reservoir is secured to the strap.

2. The eye protection system of claim 1, wherein the strap includes a strap cover, the strap cover having a receptacle, and wherein the reservoir is secured in the receptacle of the strap cover.

3. The eye protection system of claim 2, wherein at least one of the strap cover or the receptacle of the strap cover is formed of neoprene.

4. The eye protection system of claim 1, wherein the strap includes a receptacle, and wherein the reservoir is secured in the receptacle of the strap.

5. The eye protection system of claim 1, wherein the reservoir is a flexible reservoir, and when the flexible reservoir is squeezed, the product is dispensible into the spout and out of an aperture of the spout for application on the at least one lens while the flexible reservoir is secured to the strap.

6. The eye protection system of claim 1, further comprising a valve arranged with the reservoir or the spout, wherein when a threshold amount of pressure is applied to the reservoir, the valve opens for dispensing the product to the at least one lens.

7. The eye protection system of claim 1, wherein the reservoir is refillable.

8. The eye protection system of claim 1, wherein the reservoir is sized to contain about ½ fluid ounces of the product.

9. The eye protection system of claim 1, wherein the product is an anti-fog agent to prevent the at least one lens from fogging.

10. An improvement for an eye protection system including a strap and a lens, the improvement for the eye protection system comprising:
    a strap cover including a receptacle, the strap cover configured to receive a portion of the strap;
    a reservoir for containing a product, the reservoir secured in the receptacle of the strap cover; and
    a spout communicatively coupled to the reservoir, the spout for dispensing the product to the lens while the reservoir is secured in the receptacle of the strap cover.

11. The improvement for the eye protection system of claim 10, wherein the reservoir is a flexible reservoir, and wherein when the flexible reservoir is squeezed, the product is dispensible into the spout and out of an aperture of the spout for application on the lens while the flexible reservoir is secured in the receptacle of the strap cover.

12. The improvement for the eye protection system of claim 10, further comprising a valve arranged with the reservoir or the spout, wherein when a threshold amount of pressure is applied to the reservoir, the valve opens for dispensing the product.

13. The improvement for the eye protection system of claim 10, wherein the reservoir is refillable.

14. The improvement for the eye protection system of claim 10, wherein the reservoir is sized to contain about ½ fluid ounces of the product.

15. The improvement for the eye protection system of claim 10, wherein the product is an anti-fog agent.

16. The improvement for the eye protection system of claim 10, wherein at least one of the strap cover or the receptacle of the strap cover is formed of neoprene.

17. An improvement for an eye protection system including a frame and a lens, the improvement for the eye protection system comprising:
    a strap including a receptacle, the strap coupleable to the frame;
    a reservoir for containing a product, the reservoir secured in the receptacle of the strap; and
    a spout communicatively coupled to the reservoir, the spout for dispensing the product to the lens while the reservoir is secured in the receptacle of the strap.

18. The improvement for the eye protection system of claim 17, wherein the reservoir is a flexible reservoir, and wherein when the flexible reservoir is squeezed, the product is dispensible into the spout and out of an aperture of the spout for application on the lens while the flexible reservoir is secured in the receptacle of the strap.

19. The improvement for the eye protection system of claim 17, wherein the reservoir is refillable.

20. The improvement for the eye protection system of claim 17, wherein the reservoir is sized to contain about ½ fluid ounces of the product.

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