LENSES INSERTS FOR CAGE MASKS

Abstract

Disclosed are lens assemblies for insertion into cage masks and cage helmets. The lens assembly has a lens mounted into at least one compression member, said compression member substantially conforming to the inner contour of the facepiece or helmet edges and sized and dimensioned to provide sufficient circumferential and arcuate compression with the facepiece or helmet so as to effectively hold the lens assembly in place behind the cage.
(Prior Art)

Figure 1
LENS INSERTS FOR CAGE MASKS

BACKGROUND OF THE DISCLOSURE

[0001] 1. Field of the Disclosure
[0002] This disclosure relates to replaceable lens inserts for protective cage masks and helmets.
[0003] 2. Discussion of the Related Art
[0004] It is known in the protective sports mask art to provide removable lenses, such as Cyr, US 2006/000234, published May 4, 2006, but such lenses are not known in the cage mask art and further require that the helmet or mask be specially manufactured to mount with the lens.

BRIEF DESCRIPTION OF THE DISCLOSURE

[0005] Disclosed are lens assemblies for insertion into cage masks and cage helmets. The lens assembly has a lens mounted into at least one compression member, said compression member substantially conforming to the inner contour of the facepiece or helmet edges and sized and dimensioned to provide sufficient circumferential and arcuate compression with the facepiece or helmet so as to effectively hold the lens assembly in place behind the cage.

[0006] The lens may be of any combination of plain clear, UV-blocking, full or partially tinted, colored, polarized, photochromic, or other desired type of lens.

[0007] The invention allows for rapid lens replacement without need to modify commercially available masks and helmets.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a perspective view of a typical lacrosse mask.
[0009] FIG. 2a is a front plan view of the facepiece of the mask of FIG. 1.
[0010] FIG. 2b is a front plan view of a lens assembly of the disclosure.
[0011] FIG. 3 is a front plan view of the lens assembly of FIG. 2b mounted into the facepiece of FIG. 2a.
[0012] FIG. 4 is a top plan cross-sectional view of a lens assembly mounted into a facepiece.
[0013] FIG. 5a is a side perspective view of a typical lacrosse helmet.
[0014] FIG. 5b is a side perspective view of a helmet embodiment of a lens assembly of the disclosure.
[0015] FIG. 6 is a side view of the lens assembly of FIG. 5b mounted into the helmet of FIG. 5a, with shaded portions of the lens assembly corresponding to the shaded portions of FIG. 5a.

DETAILED DESCRIPTION OF THE DISCLOSURE

[0016] The present disclosure is that of a lens assembly that can be removable inserted into pre-existing commercially available cage masks or cage helmets. By “cage” mask or helmet is meant that type of protective headgear that utilizes a cage to protect the face, built of a plurality of (usually) metal bars, generally of steel, aluminum, or titanium, that protects the player’s face, such as used in lacrosse and football helmets, lacrosse masks, and baseball catcher’s masks.

[0017] The lens of the disclosure is provided in the form of a lens assembly that permits for easy and rapid removal and replacement. The protective helmet depicted in this disclosure is that for lacrosse, but this is for illustration only as the invention may be adapted to most or all protective sports helmets.

[0018] The advantages of providing a lens to a cage mask or cage helmet include a number of benefits. One problem players face is being blinded by the sun when looking up at a ball. Providing tinted, partially tinted, polarized, prescription or photochromic lenses will reduce this problem significantly. Another problem with cage-type facemasks is that, in cold conditions, cold winds blowing into the player’s eyes will cause the eyes to tear almost immediately and blind the player instantly. Another is that a player may require corrective eyeglass lenses and may find standard eyeglasses uncomfortable and distracting because of the pressure of the helmet exerted upon the eyeglass temples.

[0019] Yet another advantage of providing lenses to cage masks and helmets is to increase visual acuity. For example, amber lenses allow players to see a white ball more clearly by filtering out blue light.

[0020] Yet another advantage of providing lenses to cage masks and helmets is to provide a means of providing protection from short wave ultraviolet solar radiation by providing UV blocking agents in the lens material. Players of outdoor sports that involve the throwing or casting of balls in the air are at risk of UV corneal damage because of the many hours spent exposed to sunlight and the frequent need to look upward to see the ball.

[0021] The lenses of this disclosure will preferably be impact resistant, usually plastic polymer, such as a polycarbonate.

[0022] Another advantage of the apparatus disclosed herein permits sports teams with high overtum, such as educational institutions whose players change year-by-year, to provide their players with generic protective helmets or masks, any of which a player in need of a specific type of lens may immediately customize to meet his or her lens needs.

[0023] Referring now to FIG. 1 there is shown a typical women’s lacrosse cage mask as is commonly available on the market. Upon a facepiece 10 is mounted a cage 12, usually of metal. A head strap 14 holds the cage mask on the player’s face. The facepiece 10 is made of a resilient material, such as rubber, silicon rubber, or resilient polymer and is curved to match the shape of the player’s face.

[0024] The facepiece 10 defines an inner contour 16, into which the lens assembly of this disclosure will be mounted.

[0025] Referring now to FIG. 2a, there is shown the facepiece 10 of FIG. 1 with the cage removed for purposes of clarity in the drawings.

[0026] Referring to FIG. 2b, there is shown an embodiment of the lens assembly 20 of the disclosure having a lens 22 mounted within a compression member 24. The compression member 24 will have a groove for receiving the lens 22 (see FIG. 4) and will define an outer contour 26 that substantially conforms to the inner contour 16 of the facepiece, but will be slightly larger so as to permit a snug fit between the compression member 24 and the inner contour 16 of the facepiece.

[0027] The compression member 24 will also define two arc base portions 24b, the function of which will be explained with regard to FIG. 4 below.

[0028] Referring now to FIG. 3, it can be seen how the lens assembly 22, 24 is inserted through the back of the mask into the inner contour of the facepiece 10 for a snug tight fit. The compression member 24 substantially conforms to the shape of the inner contour and thereby provides circumferential
compression between the lens 22 and the facepiece 10 so as to effectively hold the lens 22 in place behind the cage (again, not shown for clarity) by friction. The compression member may also comprise a resilient material comparable to that of the facepiece 10 or, alternatively, may be of a hard material (e.g., stiff plastic) effective in compressing the resilient material of the facepiece 10.

[0029] Referring to FIG. 4, it can be seen that the lens 22 is also held in place utilizing arc compression. Because the lens is curved, the arc bases 24b of the compression member form the bases of an arc where they come into compressive contact with the inner contour 16 of the facepiece. This also serves to prevent the lens from popping out of position.

[0030] It can be seen that, by a combination of circumferential and arcuate compression, a lens assembly may be provided that may be effectively mounted within a pre-existing cage mask without any need to modify the structure of the cage mask itself. It is simply a matter of providing lens assemblies of varying outer contours as needed to substantially conform to the inner contours of varying makes and models of cage masks already on the market.

[0031] Referring to FIGS. 5a and 5b, there is shown a cage-helmet embodiment of the invention. FIG. 5a shows a typical lacrosse helmet 50 with a cage 12 as is commonly found on the market. The shape and design of the helmet 50 defines helmet edges 52 at the face opening of the helmet.

[0032] Referring to FIG. 5b, there is shown an embodiment of the lens assembly 20 of the disclosure that is adapted for use with a cage helmet. Again, a curved lens 22 is provided with a compression member 24 having arc bases 24 and shaped to substantially conform to the helmet edges 52. Note that in the drawing, however, we do not go around the entire circumference of the helmet, but only the top and a portion of the side edges. This is desirable because, unlike a mask, the player’s mouth is within the helmet. To avoid fogging up the lens 22, it is desirable to keep the lens short enough 22 so it will not be exhaled upon.

[0033] Because the compression member 24 does not extend across the bottom of the lens, other means are needed to maintain circumferential compression. Here we mount one or more cage compression members 54 along the bottom edge of the lens 22, which will engage with a metal bar of the cage 12 and keep the upper surface of the compression member 24 pressed firmly against upper helmet edges 52. These cage compression members 54 may be of any shape or form effective in engaging with the cage, such as, for example tabs, hooks, and the like. Here we show tabs for illustration.

[0034] Referring to FIG. 6, there is shown the lens assembly 20 of FIG. 5b mounted within the cage helmet of FIG. 5a. It can be seen how the arc base portions 24b of the compression member 24 provide arcuate compression while the cage compression members 54 aid in providing circumferential compression, thereby firmly holding the lens 22 in place. For purposes of clarity, shaded elements in this drawing correspond to those shaded in FIG. 5b.

[0035] While various values, scalar and otherwise, may be disclosed herein, it is to be understood that these are not exact values, but rather to be interpreted as “about” such values, unless explicitly stated otherwise. Further, the use of a modifier such as “about” or “approximately” in this specification with respect to any value is not to imply that the absence of such a modifier with respect to another value indicates that other value to be exact.

[0036] Changes and modifications can be made by those skilled in the art to the embodiments as disclosed herein and such examples, illustrations, and theories are for explanatory purposes and are not intended to limit the scope of the claims. In addition, the Abstract is intended as an aid to search and identify the general field of the invention and is in no way intended to limit the scope of the claims.

What is claimed is:
1. A lens assembly for insertion into a cage mask having a facepiece defining an inner contour and a cage, said lens assembly comprising:
   - a lens mounted into a compression member, said compression member substantially conforming to the inner contour of the facepiece and sized and dimensioned to provide sufficient circumferential and arcuate compression with the facepiece so as to effectively hold the lens assembly in place within the inner contour of the facepiece, behind the cage.
2. The apparatus of claim 1 wherein the lens is effective in substantially blocking ultraviolet light.
3. The apparatus of claim 1 wherein the lens is at least partially tinted.
4. The apparatus of claim 3 wherein the lens is tinted amber.
5. The apparatus of claim 1 wherein the lens is polarized.
6. The apparatus of claim 1 wherein the lens is photochromic.
7. The apparatus of claim 1 wherein the lens is a prescription lens.
8. A lens assembly for insertion into a cage helmet having a helmet defining an inner contour and a cage, said lens assembly comprising:
   - a lens mounted into a compression member,
   - said compression member substantially conforming to the inner contour of the helmet edges and sized and dimensioned to provide sufficient circumferential compression in conjunction with one or more compression member mounted along the bottom of the lens and adapted to engage with the cage; and
   - said compression member having arc base portions effective in providing arcuate compression with the helmet and cage; and
   - wherein said arcuate and circumferential compression is effective to hold the lens assembly in place behind the cage.
9. The apparatus of claim 8 wherein the lens is effective in substantially blocking ultraviolet light.
10. The apparatus of claim 8 wherein the lens is at least partially tinted.
11. The apparatus of claim 10 wherein the lens is at least partially tinted.
12. The apparatus of claim 8 wherein the lens is tinted amber.
13. The apparatus of claim 8 wherein the lens is polarized.
14. The apparatus of claim 8 wherein the lens is photochromic.
15. The apparatus of claim 8 wherein the lens is a prescription lens.

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