UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NORTH CAROLINA

Hudson Optical Corporation Plaintiff, v. On-Guard Safety Corporation Defendant.	Civil Action No. 3:01CV494-H **(Jury trial demanded)**

COMPLAINT

Plaintiff Hudson Optical Corporation hereby brings suit against Defendant On-Guard Safety Corporation and alleges as follows:

THE PARTIES

1. Plaintiff Hudson Optical Corporation is a business organized under the laws of the State of Nevada with a principal place of business at 18 TV-5 Drive, Henderson, Nevada 89014.

2. Defendant On-Guard Safety Corporation is a business, upon information and belief, organized under the laws of the nation of Canada and has a principal place of business at 2-344 North Rivermede Road, Concord, Province of Ontario, Canada L4K 3N5.

JURISDICTION AND VENUE

3. This is an action for patent infringement under the patent laws of the United States, 35 U.S.C. Sections 1 et seq., and particularly 35 U.S.C. Section 271.

4. This court has subject matter jurisdiction under 28 U.S.C. Sections 1331 and 1338(a).

5. This court has personal jurisdiction over Defendant On-Guard Safety Corporation under the North Carolina Long Arm Statute N.C.G.S. 1-75 et seq. because it transacts business within North Carolina, it has committed acts within North Carolina that caused injury to plaintiff, and it has committed acts outside North Carolina that have caused injury within North Carolina. In addition, Defendant On-Guard has offered goods, both infringing and non-infringing, for sale within North Carolina.

6. Venue is proper in the United States District Court for the Western District of North Carolina pursuant to 28 U.S.C. Sections 1391 and 1400 because Defendant On-Guard Corporation is a foreign/alien corporation.

COUNT I

INFRINGEMENT OF U.S. PATENT NO. DES. 429,753

7. On August 22, 2000, U.S. Patent No. Des. 429,753 ("D753 patent") entitled Safety Eyeglass Frame was duly and legally issued in the names of inventors Richard Hirschman and Jason Hirschman. A true and correct copy of the D753 patent

is attached to the Complaint. Pareto Corporation of Bohemia, New York, is the assignee of the entire right, title and interest in and to the D753 patent.

8. Plaintiff Hudson Optical Corporation is the owner of the right to enforce the D753 patent by bringing an action for infringement of the D753 patent. As such, Plaintiff Hudson Optical Corporation has standing to bring the instant action.

9. Upon information and belief, Defendant On-Guard Safety Corporation has been infringing the D753 patent under 35 U.S.C. 271 by making, using, selling, offering to sell without license or authority from Pareto Corporation, in this district and elsewhere in the United States, Safety Eyeglass Frames which embody the invention claimed by the D753 patent. Specifically, Specifically, Defendant On-Guard Safety Corporation has sold and offered for sale frames bearing the designation OG 315 and OG 316.

10. Upon information and belief, Defendant On-Guard Safety Corporation will continue to infringe the D753 patent unless enjoined, both preliminarily and permanently, by the court.

11. Plaintiff Hudson Optical Corporation has been damaged and will continue to be damaged by Defendant On-Guard Safety Corporation's infringement of the D753 patent, and will continue to be damaged by said infringement, unless Defendant On-Guard Safety Corporation is enjoined by this court.

12. Upon information and belief, Defendant On-Guard Safety Corporation, has actual and constructive knowledge of the D753 patent. As such, any infringement of the D753 patent is willful and deliberate.

COUNT II

INFRINGEMENT OF U.S. PATENT NO. DES. 430,191

13. On August 29, 2000, U.S. Patent No. Des. 430,191 ("D191 patent") entitled Safety Eyeglass Frame was duly and legally issued in the names of inventors Richard Hirschman and Jason Hirschman. A true and correct copy of the D191 patent is attached to the Complaint. Pareto Corporation of Bohemia, New York, is the assignee of the entire right, title and interest in and to the D191 patent.

14. Plaintiff Hudson Optical Corporation is the owner of the right to enforce the D191 patent by bringing an action for infringement of the D191 patent. As such, Plaintiff Hudson Optical Corporation has standing to bring the instant action.

15. Upon information and belief, Defendant On-Guard Safety Corporation has been infringing the D191 patent under 35 U.S.C. 271 by making, using, selling, offering to sell without license or authority from Pareto Corporation, in this district and elsewhere in the United States, Safety Eyeglass Frames which embody the invention claimed by the D191 patent. Specifically, Defendant On-Guard Safety Corporation has sold and offered for sale frames bearing the designation OG 315 and OG 316.

16. Upon information and belief, Defendant On-Guard Safety Corporation will continue to infringe the D191 patent unless enjoined, both preliminarily and permanently, by the court.

17. Plaintiff Hudson Optical Corporation has been damaged and will

continue to be damaged by Defendant On-Guard Safety Corporation's infringement of the D191 patent, and will continue to be damaged by said infringement, unless Defendant On-Guard Safety Corporation is enjoined by this court.

18. Upon information and belief, Defendant On-Guard Safety Corporation, has actual and constructive knowledge of the D191 patent. As such, any infringement of the D191 patent is willful and deliberate.

COUNT III

INFRINGEMENT OF U.S. PATENT NO. 6,099,119

19. On August 8, 2000, U.S. Patent No. 6,099,119 ("'119 patent") entitled Eyeglasses including Threading Means and Mechanically Bonded Means was duly and legally issued in the name of inventor Ji Woong Kim. A true and correct copy of the 119 patent is attached to the Complaint. Pareto Corporation of Bohemia, New York, is the assignee of the entire right, title and interest in and to the 119 patent.

20. Plaintiff Hudson Optical Corporation is the owner of the right to enforce the 119 patent by bringing an action for infringement of the 119 patent. As such, Plaintiff Hudson Optical Corporation has standing to bring the instant action.

21. Upon information and belief, Defendant On-Guard Safety Corporation has been infringing the 119 patent under 35 U.S.C. 271 by making, using, selling, offering to sell without license or authority from Pareto Corporation, in this district and elsewhere in the United States, Eyeglasses which embody the invention claimed by the 119 patent. Specifically, Defendant On-Guard Safety Corporation has sold and

offered for sale frames bearing the designation OG 315 and OG 316.

22. Upon information and belief, Defendant On-Guard Safety Corporation will continue to infringe the 119 patent unless enjoined, both preliminarily and permanently, by the court.

23. Plaintiff Hudson Optical Corporation has been damaged and will continue to be damaged by Defendant On-Guard Safety Corporation's infringement of the 119 patent, and will continue to be damaged by said infringement, unless Defendant On-Guard Safety Corporation is enjoined by this court.

24. Upon information and belief, Defendant On-Guard Safety Corporation, has actual and constructive knowledge of the 119 patent. As such, any infringement of the 119 patent is willful and deliberate.

COUNT IV

INFRINGEMENT OF U.S. PATENT NO. 6,217,169

25. On April 17, 2001, U.S. Patent No. 6,217,169 ("169 patent") entitled Rimless or Semi-Rimless Safety Eyeglasses was duly and legally issued in the names of inventors Jason Hirschman, Richard Hirschman and Ji Woong Kim. A true and correct copy of the 169 patent is attached to the Complaint. Pareto Corporation of Bohemia, New York, is the assignee of the entire right, title and interest in and to the 169 patent.

26. Plaintiff Hudson Optical Corporation is the owner of the right to enforce

the 169 patent by bringing an action for infringement of the 169 patent. As such, Plaintiff Hudson Optical Corporation has standing to bring the instant action.

27. Upon information and belief, Defendant On-Guard Safety Corporation has been infringing the 169 patent under 35 U.S.C. 271 by making, using, selling, offering to sell without license or authority from Pareto Corporation, in this district and elsewhere in the United States, Safety Eyeglass Frames which embody the invention claimed by the 169 patent. Specifically, Defendant On-Guard Safety Corporation has sold and offered for sale frames bearing the designation OG 315 and OG 316.

28. Upon information and belief, Defendant On-Guard Safety Corporation will continue to infringe the 169 patent unless enjoined, both preliminarily and permanently, by the court.

29. Plaintiff Hudson Optical Corporation has been damaged and will continue to be damaged by Defendant On-Guard Safety Corporation's infringement of the 169 patent, and will continue to be damaged by said infringement, unless Defendant On-Guard Safety Corporation is enjoined by this court.

30. Upon information and belief, Defendant On-Guard Safety Corporation, has actual and constructive knowledge of the 169 patent. As such, any infringement of the 169 patent is willful and deliberate.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Hudson Optical Corporation, prays for the following

relief:

a. That Defendant On-Guard Safety Corporation, their officers, agents, directors, servants, employees and attorneys, and all persons in active concert or participation with them be enjoined, preliminarily and permanently, from making, using, selling, offering for sale or importing into the United States any product and/or component which infringe U.S. Patent No. Design 429,753;

b. That Defendant On-Guard Safety Corporation, their officers, agents, directors, servants, employees and attorneys, and all persons in active concert or participation with them be enjoined, preliminarily and permanently, from making, using, selling, offering for sale or importing into the United States any product and/or component which infringe U.S. Patent No. Design 430,191;

c. That Defendant On-Guard Safety Corporation, their officers, agents, directors, servants, employees and attorneys, and all persons in active concert or participation with them be enjoined, preliminarily and permanently, from making, using, selling, offering for sale or importing into the United States any product and/or component which infringe U.S. Patent No. 6,099,119;

d. That Defendant On-Guard Safety Corporation, their officers, agents, directors, servants, employees and attorneys, and all persons in active concert or participation with them be enjoined, preliminarily and permanently, from making, using, selling, offering for sale or importing into the United States any product and/or component which infringe U.S. Patent No. 6,217,169;

e. That Plaintiff Hudson Optical be compensated for the damages caused

by Defendant On-Guard Safety Corporation's infringement under 35 U.S.C. Section 284, in an amount to be determined by an accounting, but not less than a reasonable royalty, (plus pre-judgment and post-judgment interest);

f. That the award of damages be trebled as provided by 35 U.S.C. Section 284 for willful infringement;

g. That Plaintiff Hudson Optical Corporation be awarded Defendant On-Guard Safety Corporation's total profits from sales of its infringing product under 35 U.S.C. Section 289; and,

h. That Plaintiff Hudson Optical Corporation be awarded such relief as this Court deems just and proper.

DEMAND FOR JURY TRIAL

Plaintiff Hudson Optical Corporation demands a jury trial on all issues so triable.

Respectfully submitted,

Malcolm E. Whittaker
Registered Patent Attorney No. 37,965
North Carolina Bar No. 18,055
P.O. Box 10615
Charlotte, North Carolina 28212
direct telephone no.: (704) 556-0007

US00D429753S

United States Patent [19]

Hirschman et al.

[11] Patent Number: Des. 429,753

[45] Date of Patent: ** Aug. 22, 2000

[54] SAFETY EYEGLASS FRAME

[75] Inventors: Richard Hirschman, Albertson; Jason Hirschman, Bohemia, both of N.Y.

[73] Assignee: Pareto Corporation, Bohemia, N.Y.

[**] Term: 14 Years

[21] Appl. No.: 29/113,789

[22] Filed: Nov. 10, 1999

[51] LOC (7) Cl. 16-06

[52] U.S. Cl. D16/315; D16/334

[58] Field of Search D16/101, 300–330, D16/334, 109, 110; 351/41, 44, 51, 52, 103, 106, 158; 2/247, 248

[56] References Cited

U.S. PATENT DOCUMENTS

D. 47,916	10/1915	Fenno	D16/317
D. 84,362	6/1931	Nerney	D16/317
1,104,034	7/1914	Chapel	D16/315
4,550,989	11/1985	Hafner	351/103
4,561,734	12/1985	Ayache	351/106

OTHER PUBLICATIONS

Back Cover Frames Catalog—Harley Davidson Eyewear, 1996.

Accessories, p. 21, Jul. 15, 1995.

Giorgio Armani, p. 19, Eyewear #702, 1995.

Primary Examiner—Raphael Barkai

Attorney, Agent, or Firm—Ostrolenk, Faber, Gerb & Soffen, LLP

[57] CLAIM

The ornamental design for a safety eyeglass frame, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of an eyeglass frame showing our new design;

FIG. 2 is a front view thereof;

FIG. 3 is a rear view thereof;

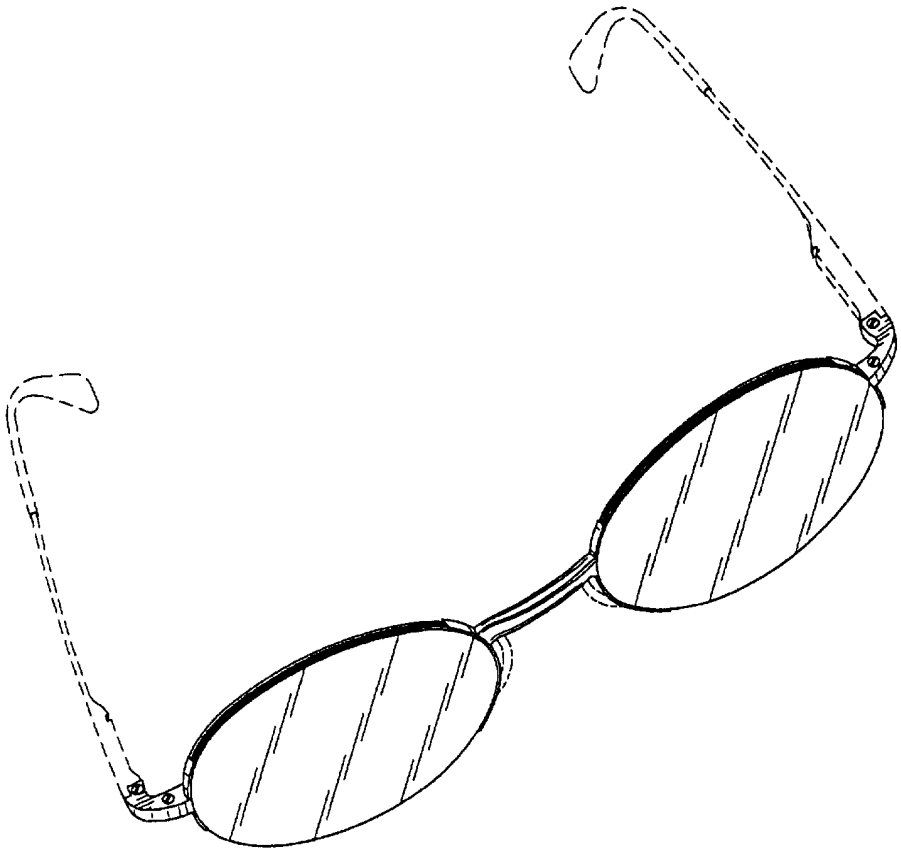
FIG. 4 is a top view thereof;

FIG. 5 is a bottom view; and,

FIG. 6 a right side view thereof (the left side view is symmetrical).

The broken line showing on the temple tips, nose pads and nose arms is for illustrative purposes only and forms no part of the claimed design.

1 Claim, 4 Drawing Sheets



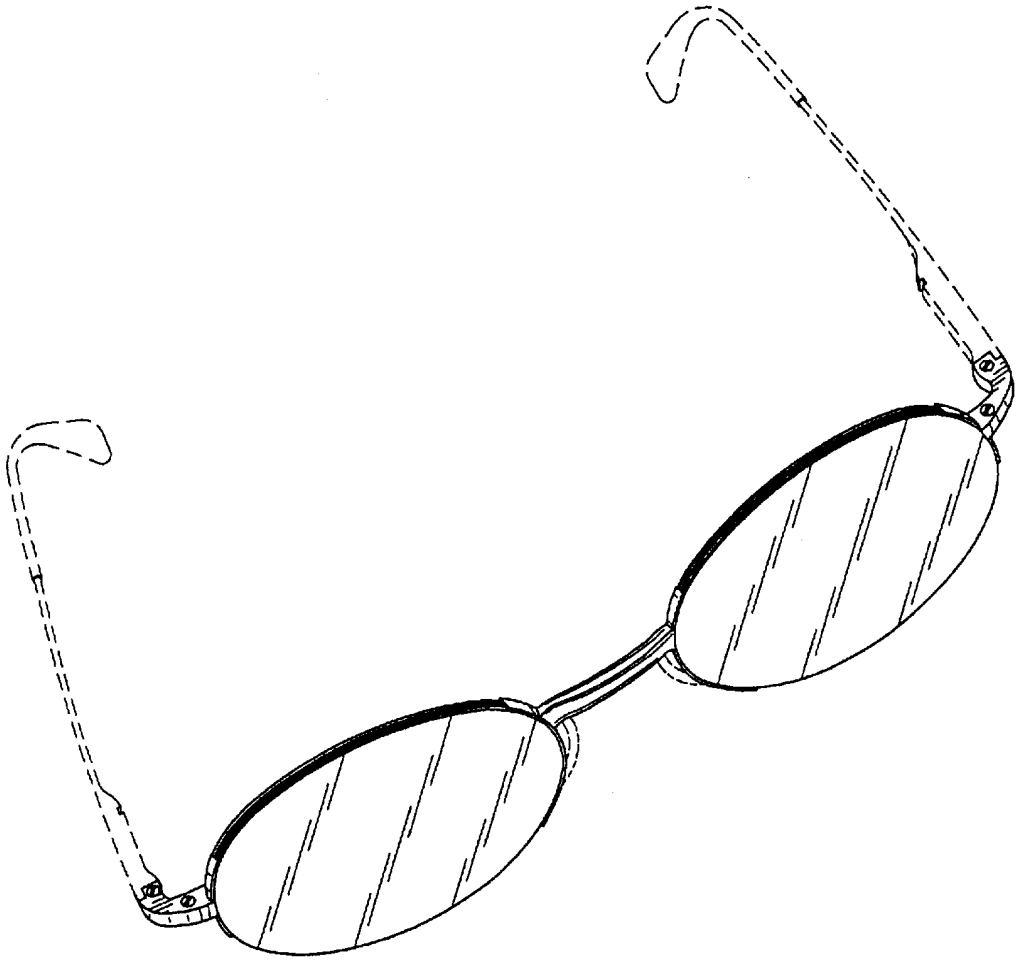


FIG. 1

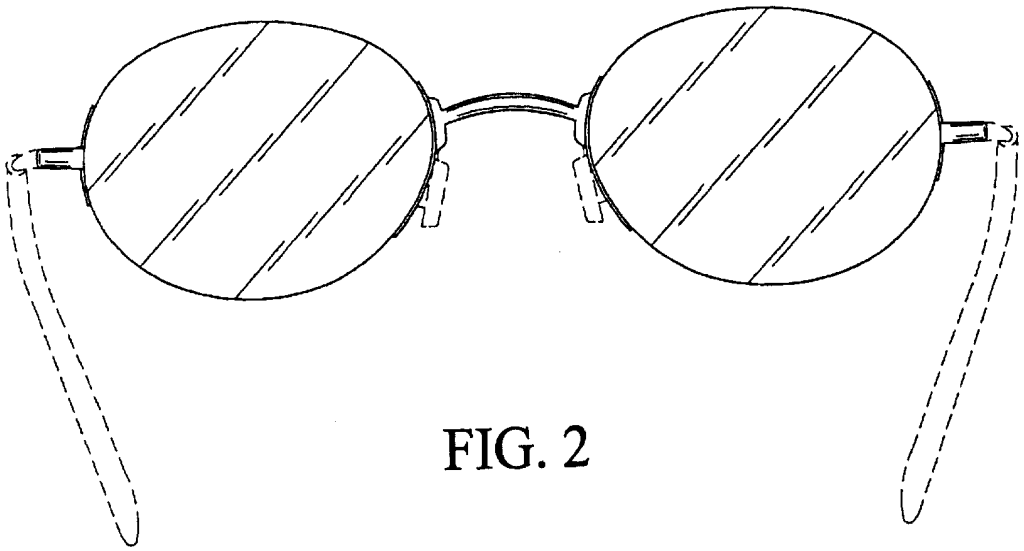


FIG. 2

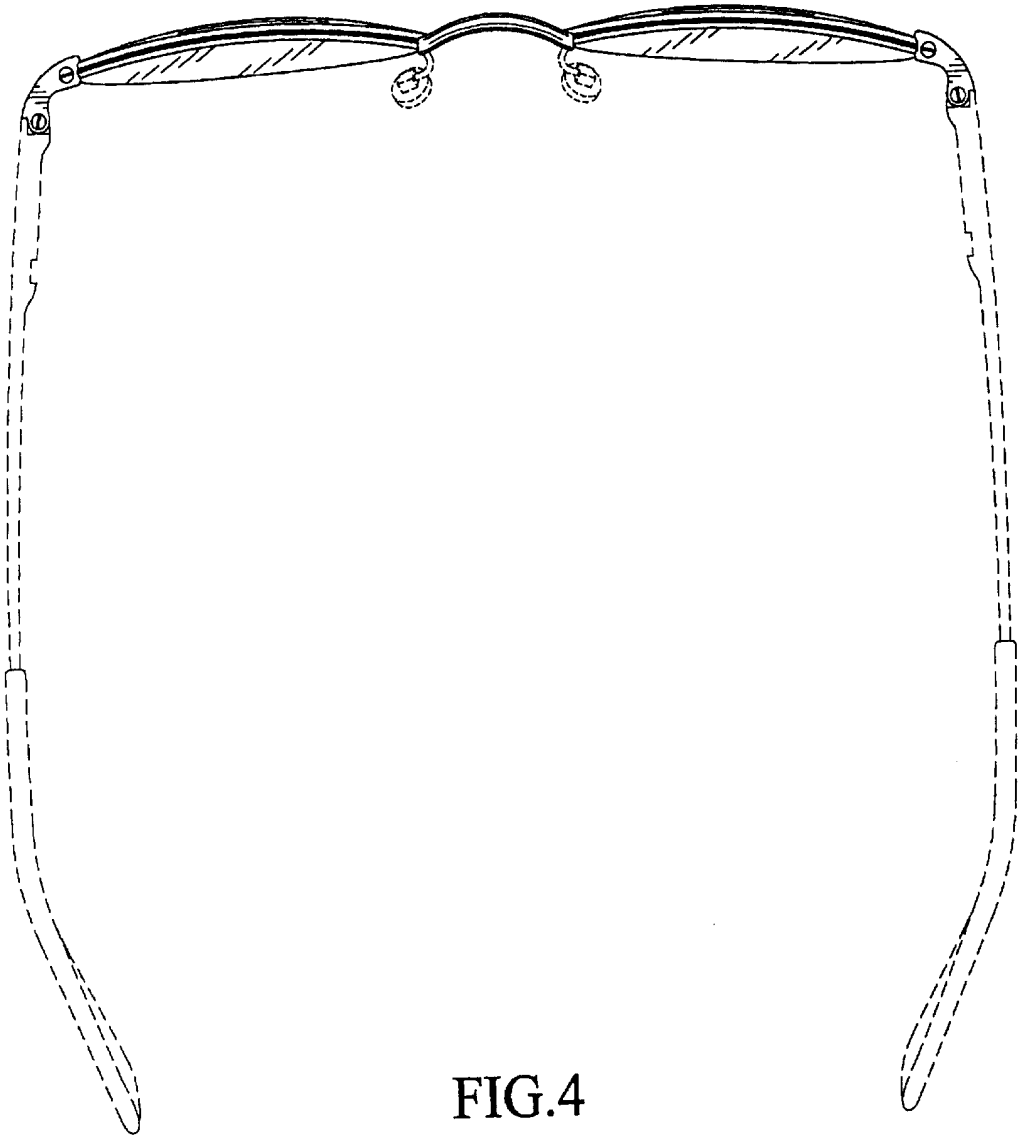


FIG.4

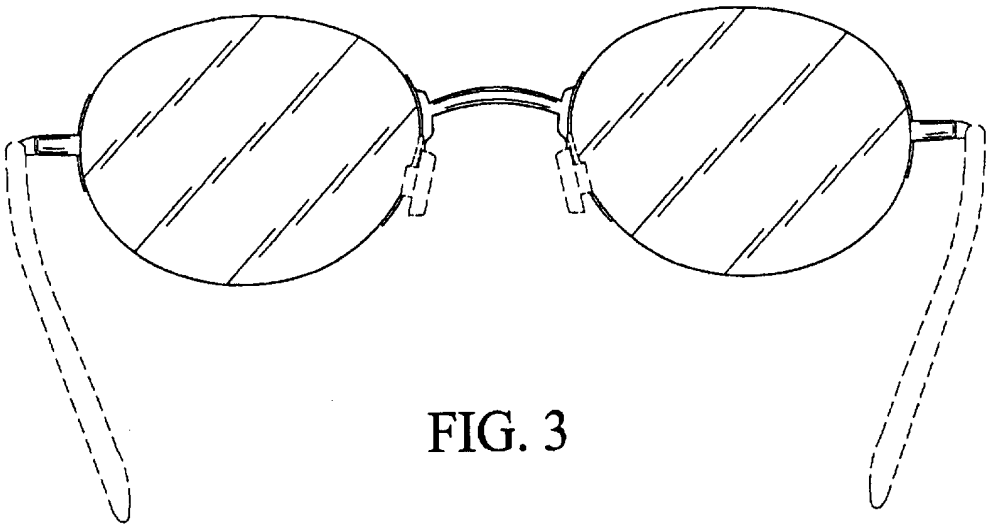


FIG. 3

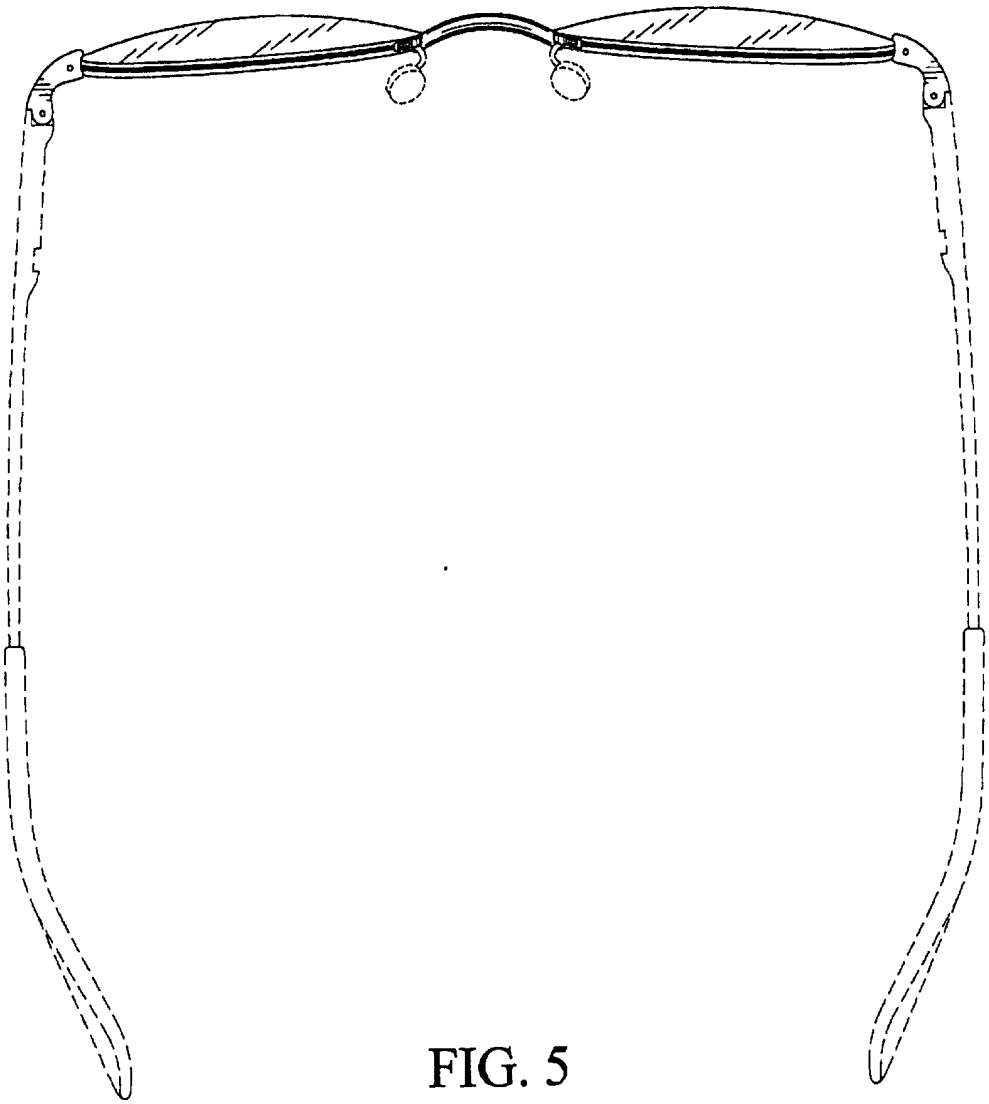


FIG. 5

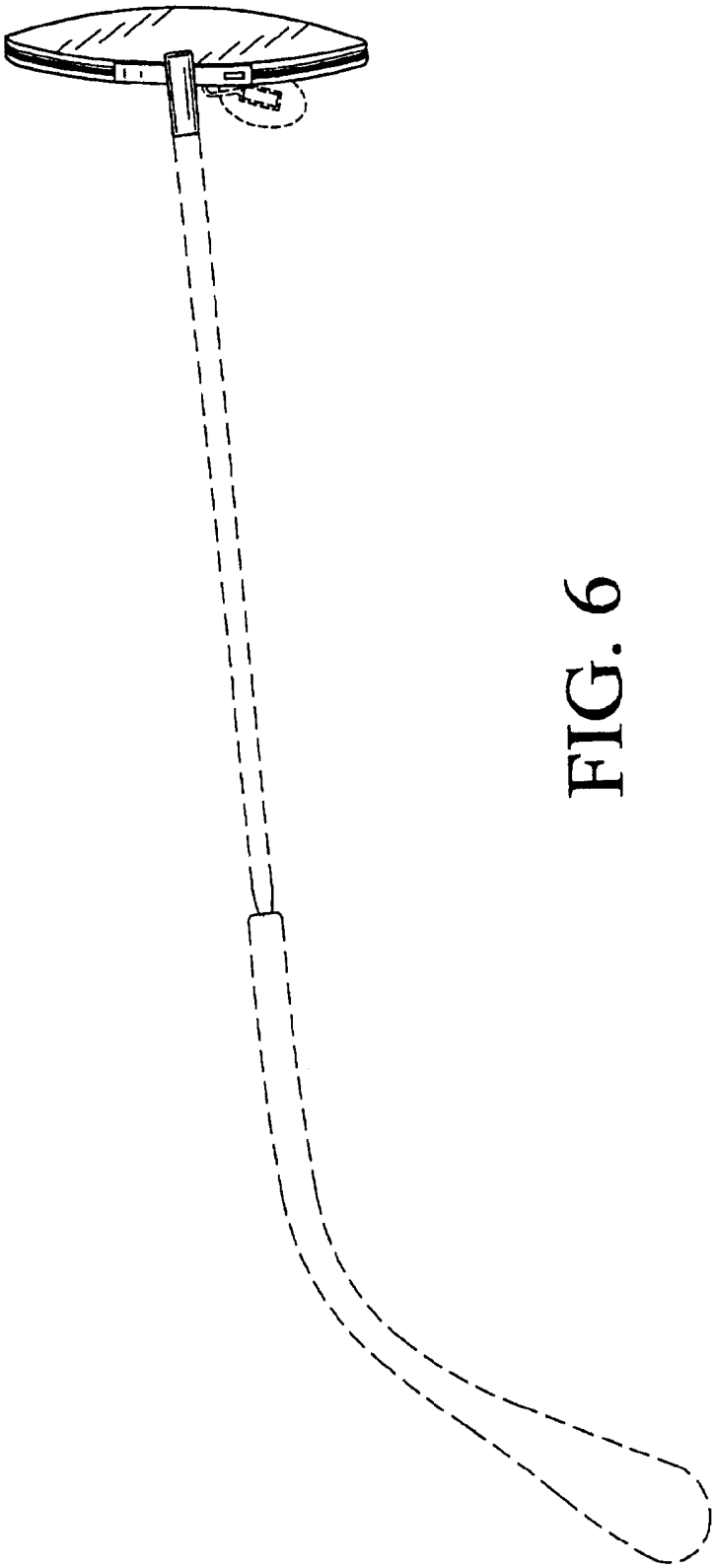


FIG. 6

US00D430191S

United States Patent [19]

Hirschman et al.

[11] Patent Number: Des. 430,191

[45] Date of Patent: ** Aug. 29, 2000

[54] SAFETY EYEGLASS FRAME

[75] Inventors: **Richard Hirschman**, Albertson; **Jason Hirschman**, Bohemia, both of N.Y.

[73] Assignee: **Pareto Corporation**, Bohemia, N.Y.

[**] Term: **14 Years**

[21] Appl. No.: **29/113,788**

[22] Filed: **Nov. 10, 1999**

[51] LOC (7) Cl. **16-06**

[52] U.S. Cl. **D16/315**; D16/334

[58] Field of Search D16/101, 300–330, D16/334; D29/109, 110; 351/41, 44, 51, 52, 103, 106, 158; 2/447, 448

[56] **References Cited**

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Primary Examiner—Raphael Barkai

Attorney, Agent, or Firm—Ostrolenk, Faber, Gerb & Soffen, LLP

[57] **CLAIM**

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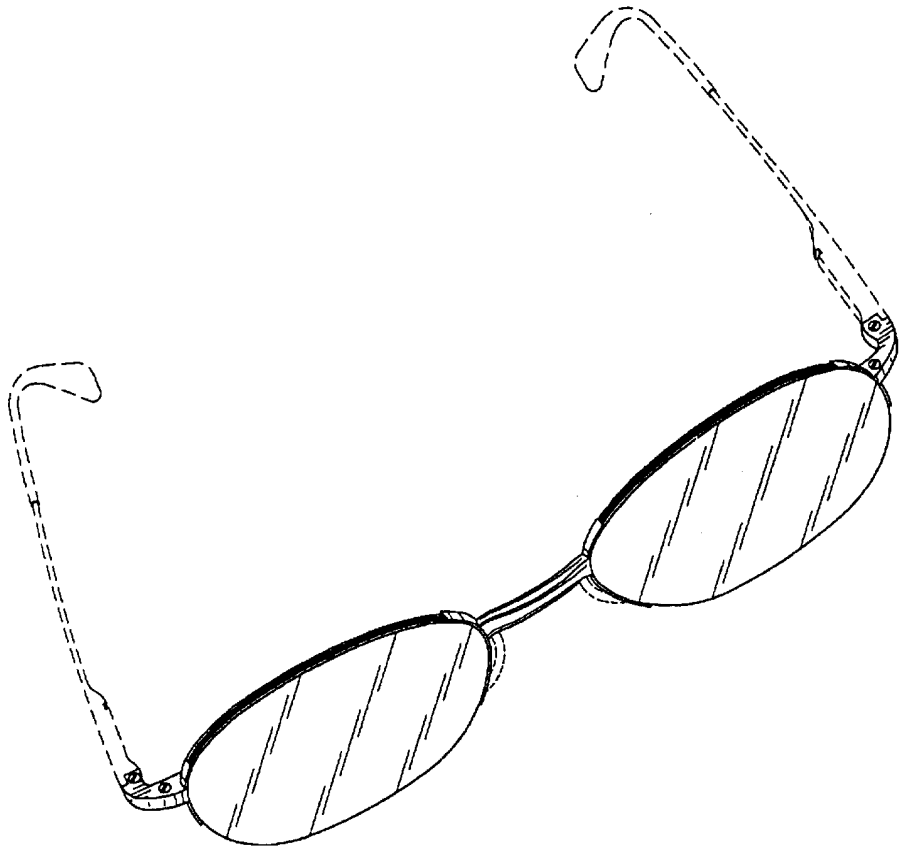


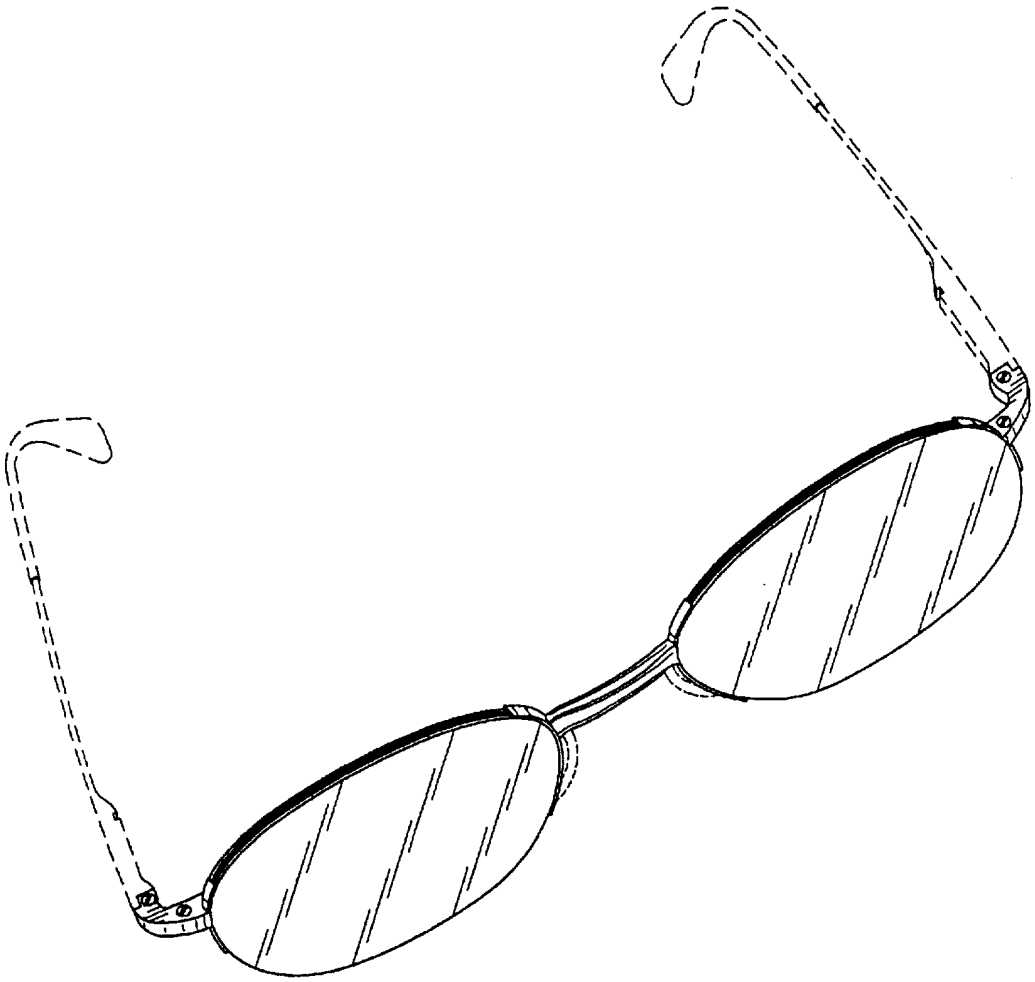


FIG. 1

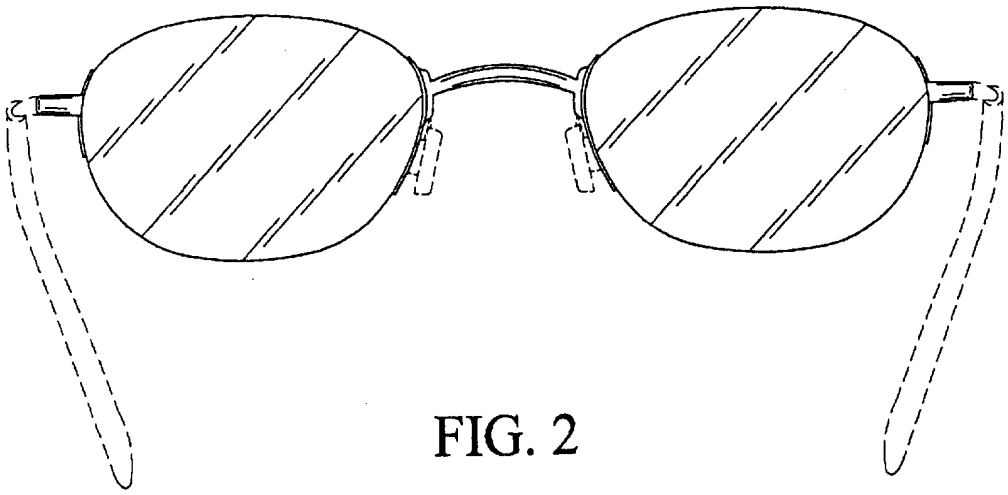


FIG. 2

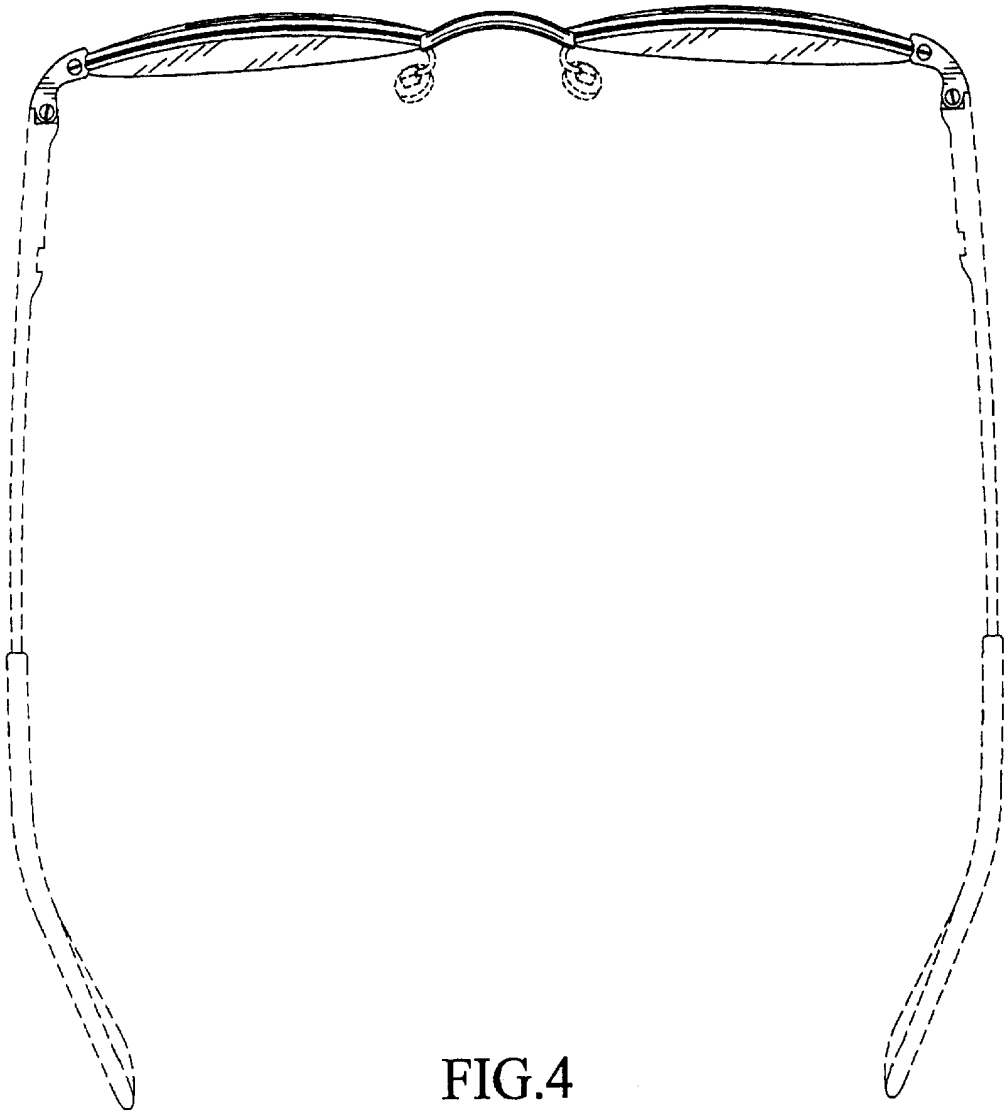


FIG.4

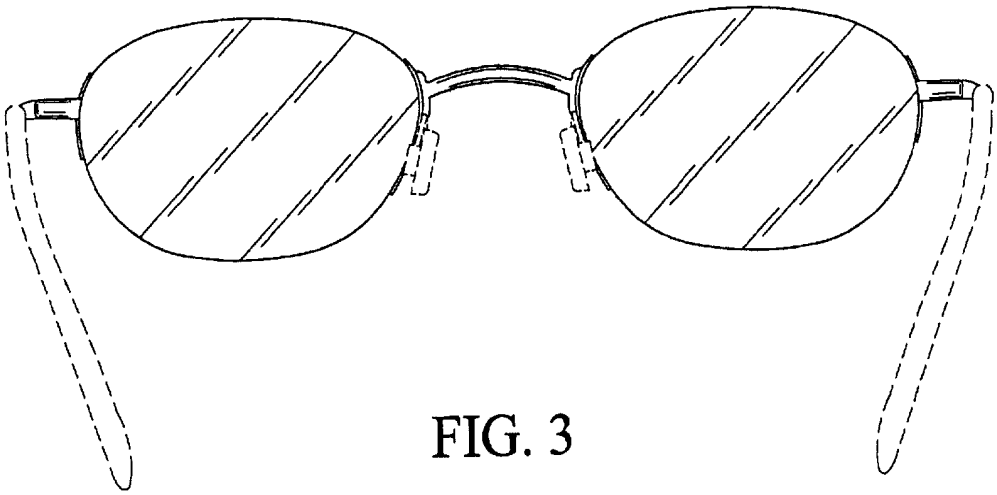
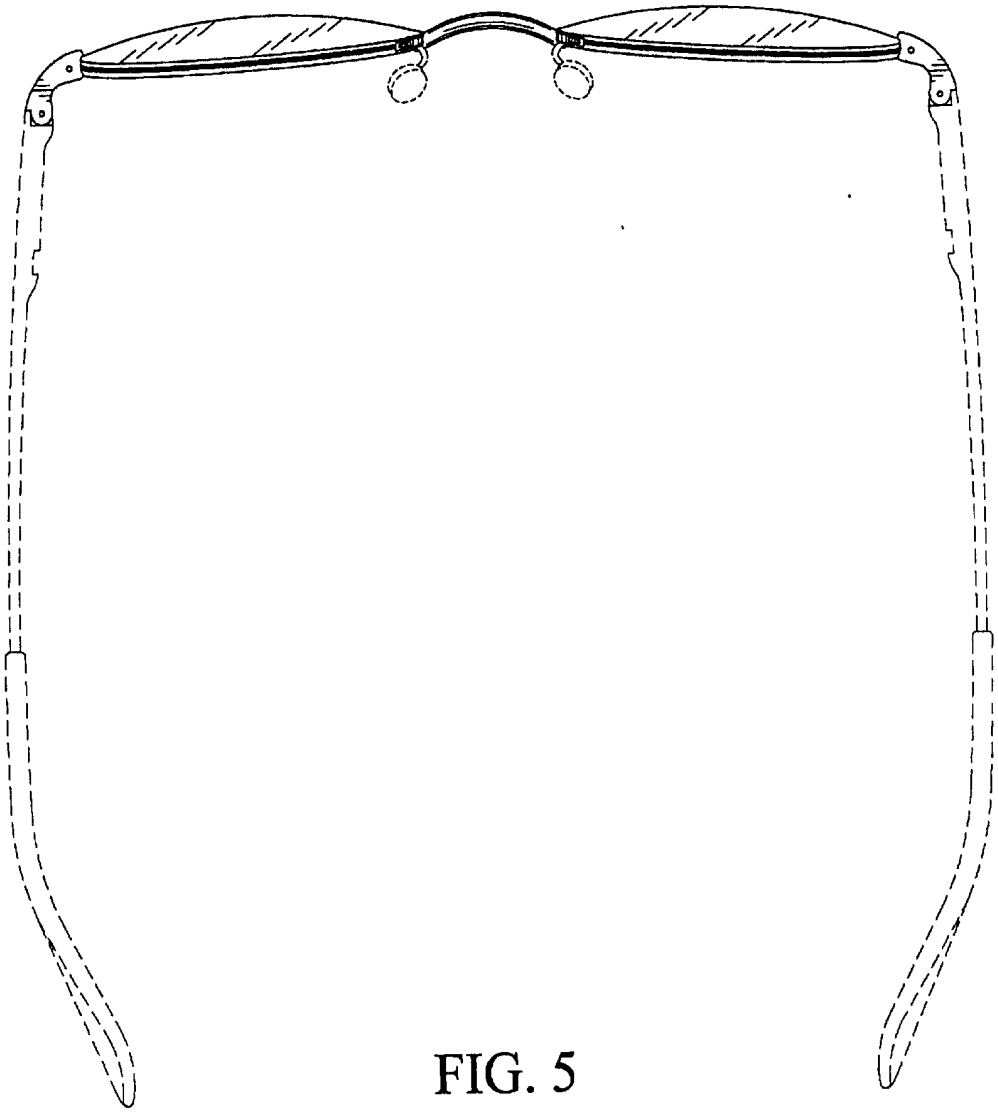


FIG. 3



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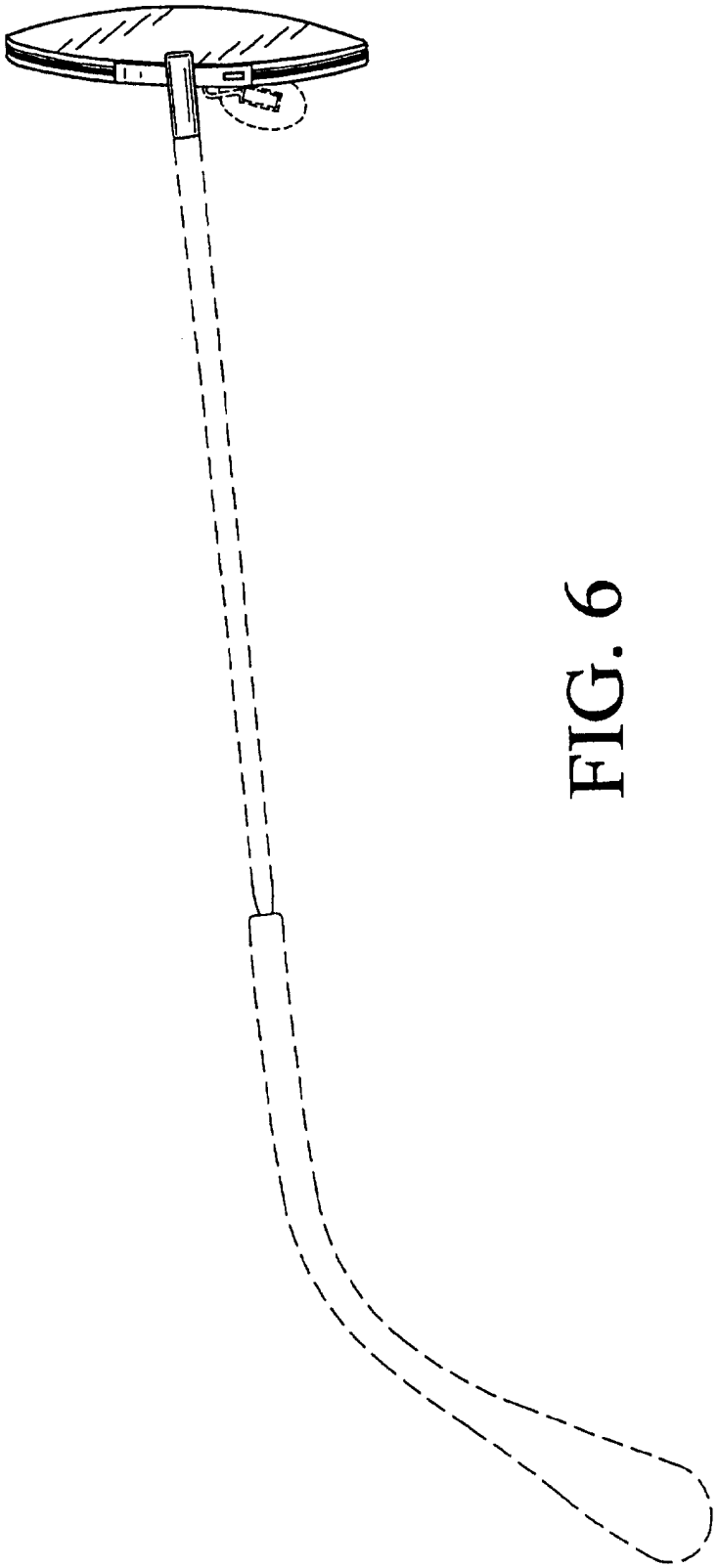


FIG. 6

US006099119A

United States Patent [19]

Kim

[11] Patent Number: 6,099,119

[45] Date of Patent: Aug. 8, 2000

[54] **EYEGLASSES INCLUDING THREADING MEANS AND MECHANICALLY BONDED MEANS**

[75] Inventor: **Ji Woong Kim**, Masan, Rep. of Korea

[73] Assignee: **Pareto Corporation**, N.Y.

[21] Appl. No.: **09/425,120**

[22] Filed: **Oct. 22, 1999**

[51] **Int. Cl.**[7] **G02C 1/04**

[52] **U.S. Cl.** **351/103**; 351/106; 351/110; 351/144

[58] **Field of Search** 351/103–110, 154, 351/140, 144

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,464,025	8/1984	Lhospice	351/106
4,527,871	7/1985	Sohyer	351/106

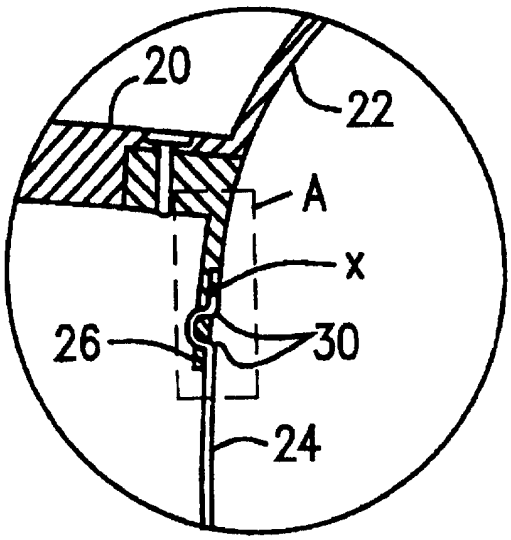
Primary Examiner—Huy Mai

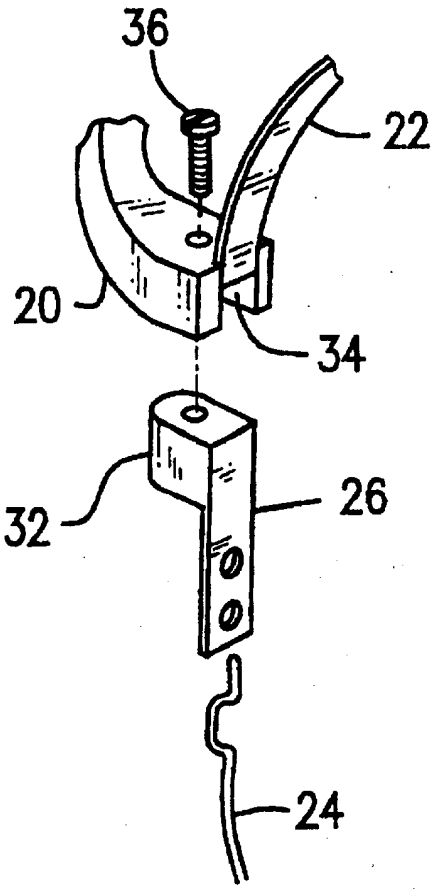
Attorney, Agent, or Firm—Ostrolenk, Faber, Gerb & Soffen, LLP

[57] **ABSTRACT**

Semi-rimless or rimless eyeglasses wherein the rimless portion comprises a flexible strand, at least one end of which is threaded through one or more holes in an anchoring plate or upper rim portion and mechanically bonded thereto, thereby securing the lens within the frame.

32 Claims, 4 Drawing Sheets





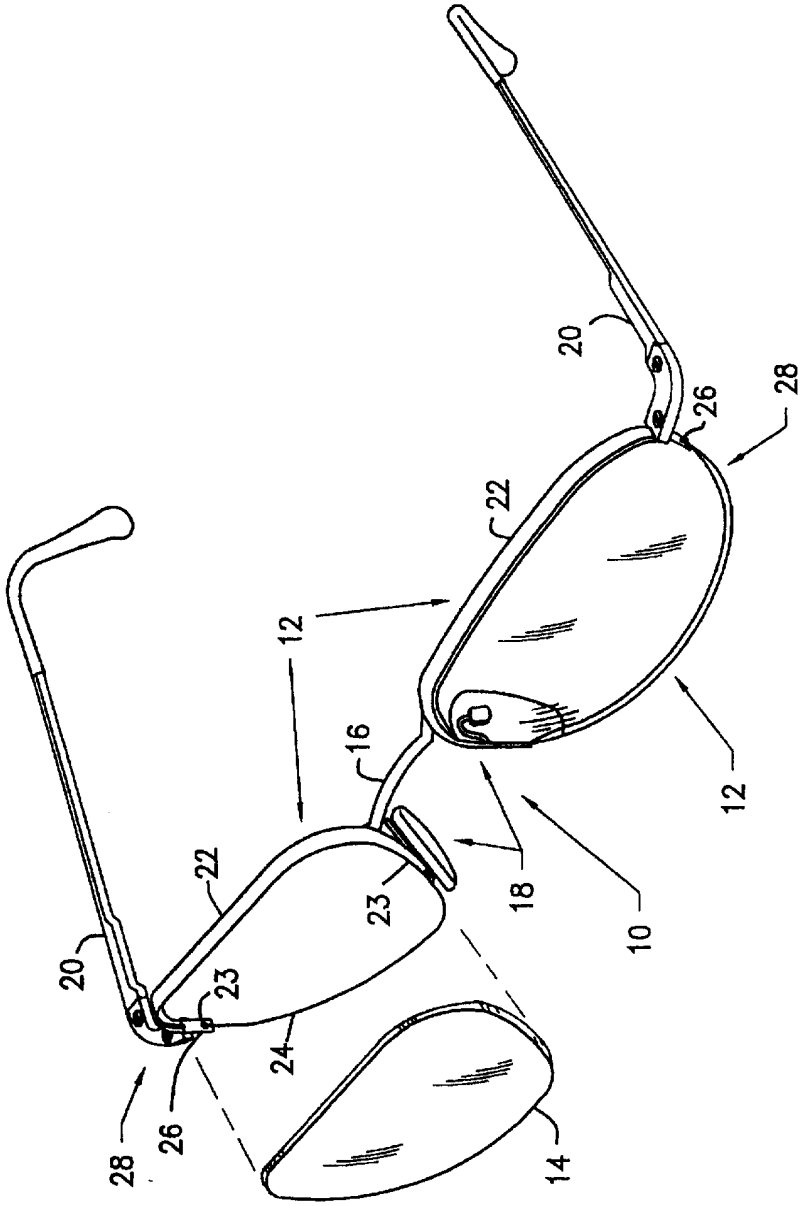


FIG. 1

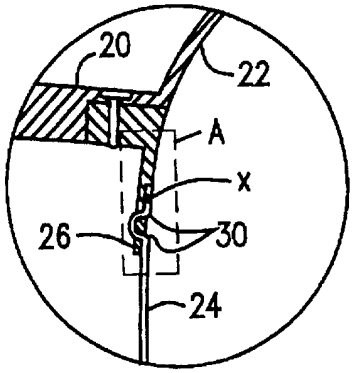


FIG. 2

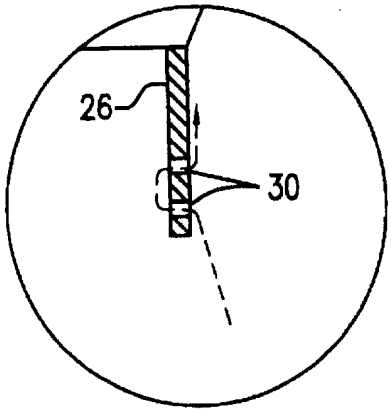


FIG. 3

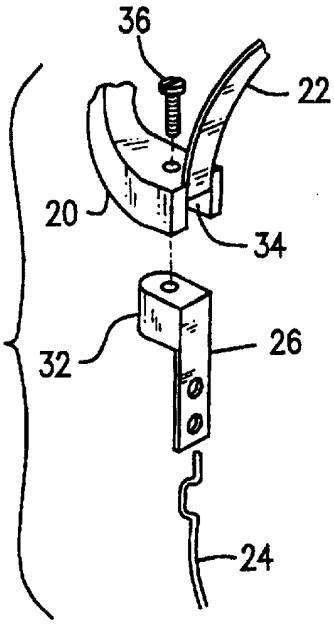


FIG. 4

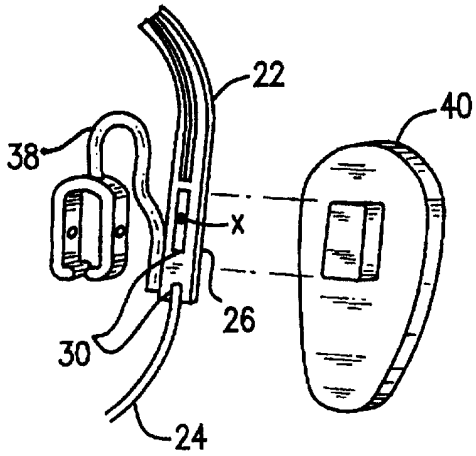


FIG. 5

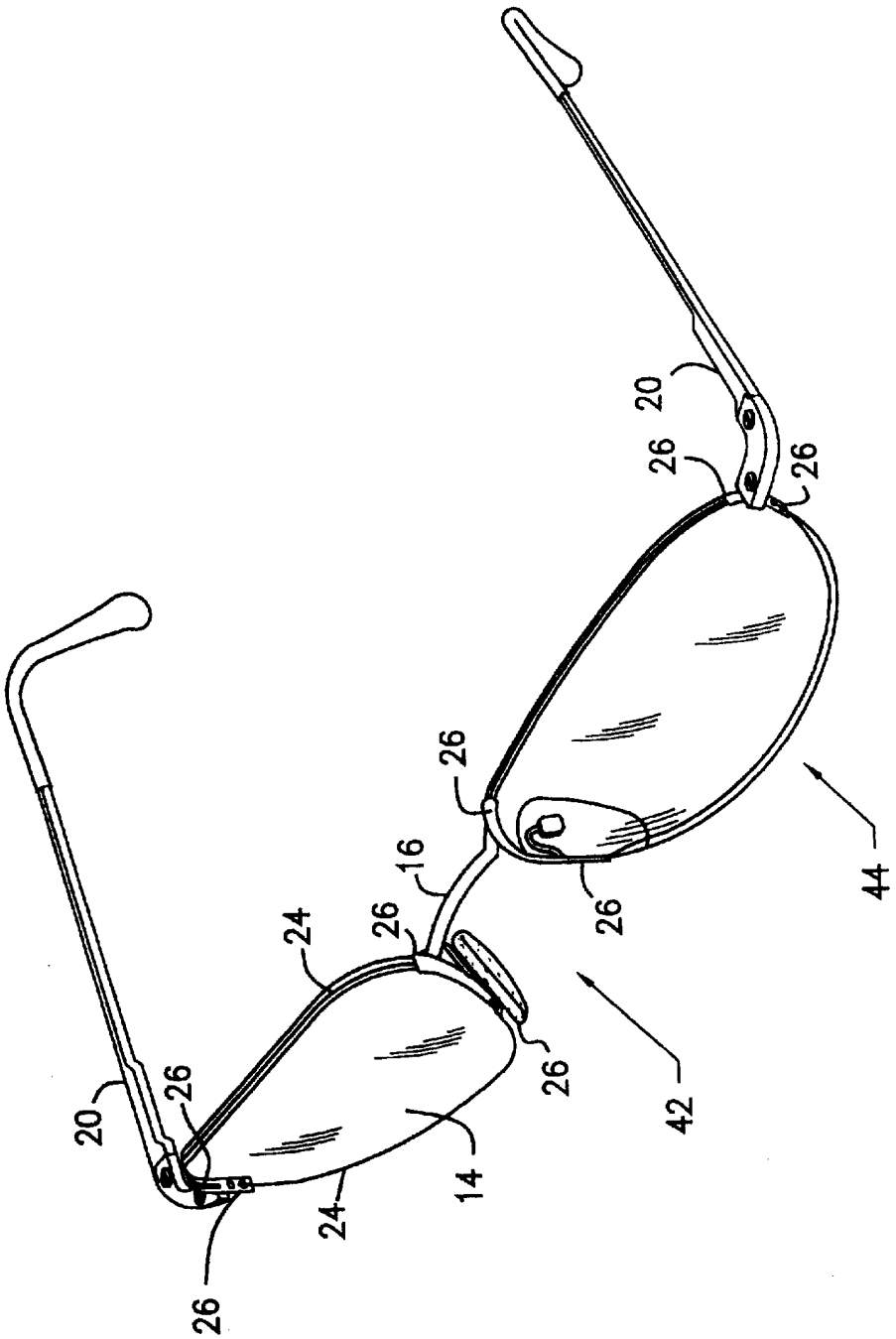


FIG. 6

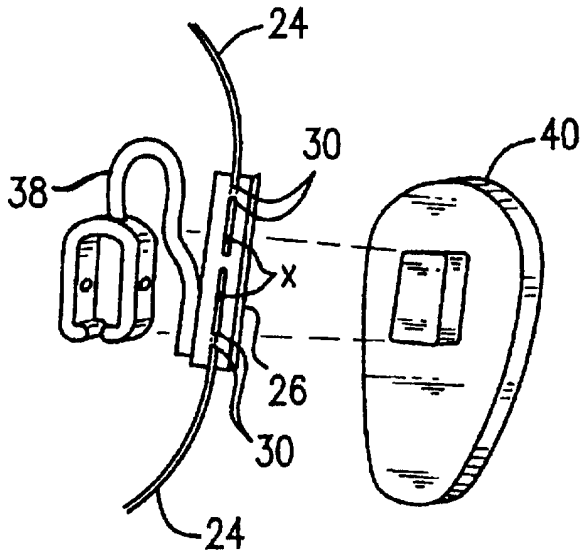


FIG. 7

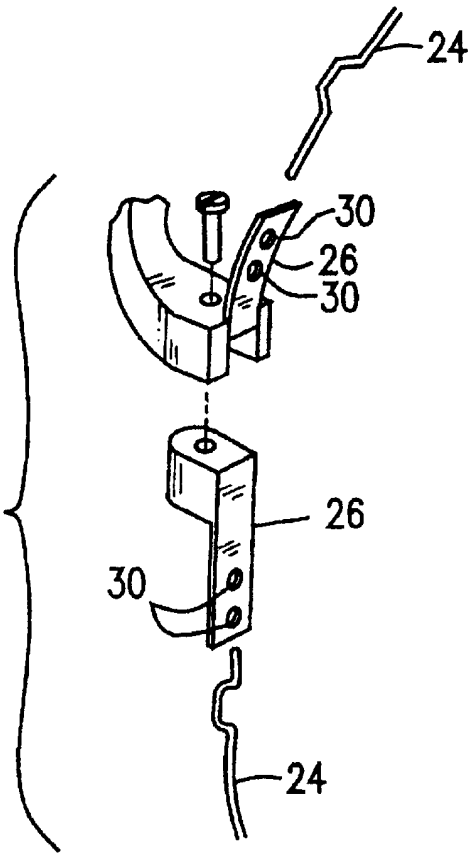


FIG. 8

EYEGLASSES INCLUDING THREADING MEANS AND MECHANICALLY BONDED MEANS

BACKGROUND OF THE INVENTION

The present invention relates to an improvement in eyeglasses, and more particularly, to eyeglasses used for protective eyewear purposes (safety eyeglasses).

Eyeglasses were primarily developed and intended to correct human vision. However, they also need to be fashionable and comfortable. To meet these demands, various kinds of eyeglasses are produced which are lightweight, provide a wide range of vision, a fashionable style, a stylish appearance, and the least amount of obstruction as possible to the wearer's facial features. Semi-rimless and rimless eyeglasses are very popular because they meet these requirements. Particularly, semi-rimless and rimless eyeglasses provide the least amount of obstruction or distraction to the facial features of the wearer and do not disturb the wearer's vision.

Rimless and semi-rimless eyeglasses are well known in the art. A "rim" of an eyeglass frame is a relatively rigid piece that holds a lens in place along all or part of the lens' edge. In a semi-rimless frame, there is a rim on the upper half of the frame but not on the lower half of the frame. The lower half of the frame, instead, secures the lens to the frame by using a flexible wire or cord. In a rimless frame, neither the upper or lower half of the frame uses a rim. A flexible wire or cord secures the lens on both the top and bottom.

While rimless and semi-rimless frames are known per se, they have not been used for safety eyeglasses. Safety eyeglasses require that the eyeglass frames, once the lenses are inserted, meet government approved standards for eye protection, specifically impact tests prescribed by the American National Standards Institute (ANSI) Z-87 Standard for Eye and Face Protection. Because of these requirements, prior art safety eyeglasses have utilized full (and often thick) rims (both top and bottom) to hold the lenses securely in place.

The prior art rimless and semi-rimless frames do not pass government approved eye protection standards and impact tests mainly because the construction and materials used are not strong enough to meet the ANSI tests as described below. Thus, they cannot be used as safety eyeglasses. Those required to wear safety eyeglasses are, therefore, forced to sacrifice the appearance, style and comfort that semi-rimless and rimless frames provide. The present invention makes it possible to make a semi-rimless and rimless safety eyeglass that will pass the required impact tests.

Prior art rimless and semi-rimless frames are generally constructed using nylon cord or metal wire. In nylon semi-rimless and rimless frames, a nylon cord surrounds the lower portion of the lens and a rim (in a semi-rimless style) or a wire (in a rimless style) comprises the upper portion of the frame. The nylon cord supports the lower portion of the lens by fitting within a groove in the edge of the lens which runs along its circumference. Each end of the nylon cord is secured to the upper portion of the frame by being snaked or looped through very small holes in each end of the rim (in a semi-rimless style) or in anchoring plates attached to the temple on one side and the bridge on the other (in a rimless style).

Prior art rimless and semi-rimless frames utilize the nylon cord system because the resulting frames will not block or impede the wearer's vision, because the nylon cord is inexpensive, and because the nylon cord is flexible and

therefore allows for easy insertion of the lens into the eyeglass frame.

However, the nylon cord system is not suitable for safety eyeglasses mainly because of its flexibility and lack of strength. The nylon cord may stretch and, therefore, loosen its hold on the lens. Under stress or impact, the nylon cord may, in fact, break. Additionally, the method by which the nylon cord secures the lens, i.e., by threading through small holes in the rim or in anchoring plates, renders the lenses prone to falling out of the frames under impact because the nylon may "unthread", pop or pull out of the small holes under stress. Thus, frames using the nylon cord system will not pass the ANSI tests and cannot be used as safety eyeglasses.

As an alternative to nylon cord, prior art semi-rimless and rimless frames use a very thin metal wire along the lower portion of the frame in order to secure the lens. Rather than looping or threading as is done with the nylon cord system, each end of the metal wire is soldered to the same area of the frame where the nylon cord would have been threaded or looped.

The metal wire soldering method is useful because the metal wire is much stronger and less elastic than nylon cord. However, soldering is not sufficient to meet the ANSI impact tests. The metal wire may pop out or break at the solder location under stress.

Thus, the prior art has not disclosed a rimless or semi-rimless frame that will pass the ANSI federal safety standards and impact requirements. The prior art rimless and semi-rimless frames, therefore, cannot be used as safety eyeglasses.

SUMMARY OF THE INVENTION

It is an object of the present invention to overcome the explained problems above and the disadvantages of the prior art semi-rimless and rimless eyeglasses. The present invention provides for rimless and/or semi-rimless eyeglasses utilizing a threaded and bonded flexible strand, preferably a metal wire, for securing lenses to the eyeglass frames.

It is an object of the present invention to provide rimless and/or semi-rimless eyeglasses that will meet or exceed federal safety standards and pass impact tests for safety eyeglasses.

It is also an object of the present invention to provide rimless or semi-rimless eyeglasses and a method for constructing the frame and securing lenses thereto that combines the advantages of nylon cord with the advantages of soldered metal wire. Additionally, the aforementioned frames and the method of constructing and securing lenses thereto are intended to provide aesthetically pleasing eyeglasses with the lightness of a nylon cord design while also meeting the stringent federal safety and impact standards for safety eyeglasses.

Other objects, features and advantages of the present invention will become apparent from the following description of the invention which refers to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

For the purpose of illustrating the invention, there is shown in the drawings several forms which are presently preferred, it being understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown.

FIG. **1** is a perspective view of semi-rimless eyeglasses showing an embodiment of the present invention.

FIG. 2 is an enlarged view in cross-section of one of the temple sides of the eyeglasses of FIG. 1.

FIG. 3 is an enlarged view of the area designated "A" in FIG. 2.

FIG. 4 is an enlarged and exploded view of the assembly on the temple side shown in FIG. 2.

FIG. 5 is an enlarged view of the assembly on the nasal side of the lens frame shown in the eyeglasses of FIG. 1.

FIG. 6 is a perspective view of rimless eyeglasses showing a second embodiment of the present invention.

FIG. 7 is an enlarged view of the assembly on one of the nasal sides of the rimless eyeglasses shown in FIG. 6.

FIG. 8 is an enlarged and exploded view of the assembly on one of the temple sides of the rimless eyeglasses shown in FIG. 6.

DETAILED DESCRIPTION OF THE INVENTION

The preferred embodiment of the present invention is now described referring to the drawings, wherein like numerals indicate like elements.

There is shown in FIG. 1, a pair of eyeglasses **10** comprising two lens frames **12** for conventional or safety lenses **14**, a bridge **16** coupling the lens frames **12** on the nasal side **18** of each lens **14**, and a pair of temple support pieces **20**, each attached to one of the lens frames **12** on the temple side **28** of the lens frame **12**. The lens frame **12** is comprised of a rigid upper support portion **22**, also referred to as a rigid upper frame portion, that forms the upper half of the lens frame **12**, a flexible lower support portion **24** that forms the lower half of the lens frame **12**, and two rigid lateral support portions **26** that connect the rigid upper support portion **22** and the flexible lower support portion **24**. The rigid lateral support portions **26**, also denoted as anchoring plates, are for supporting the upper and lower halves of the lens frame **12**. In the preferred embodiment, the rigid upper support portion **22** is comprised of metal and the flexible lower support portion **24** is comprised of a flexible strand preferably of metal wire.

When flexible strand **24** is comprised of metal wire, it is further preferred that the wire be between 0.4 and 0.7 mm in diameter to maximize the advantages of the invention. Other diameter wire may be utilized; however, certain aesthetic advantages may be sacrificed with wire of a diameter greater than 0.7–0.8 mm.

FIG. 2 is an enlarged view in cross-section of one of the temple sides **28** of the eyeglasses in FIG. 1 showing the connection between the flexible strand **24** and the rigid upper support portion **22**. The connection includes a threading of the flexible strand **24** through holes **30** in anchoring plate **26** and a mechanical bonding of the flexible strand **24** to anchoring plate **26**, preferably by soldering.

FIG. 3 shows an enlarged, cross-sectional view of the area designated as "A" in the temple side **28** view shown in FIG. 2. As shown therein, anchoring plate **26** is preferably a flat, elongated metal piece which protrudes downwardly from (and is preferably integral with) rigid upper support portion **22**.

As best shown in FIGS. 2 and 3, flexible strand **24** is threaded through holes **30** formed in anchoring plate **26** so that there are several locations at which the flexible strand **24** abuts against sharp comers of the holes **30**. This forms strong frictional adhesion between the flexible strand **24** and the holes **30** which resists any attempt to remove the flexible strand **24** from the holes **30**. Flexible strand **24** is also mechanically bonded, preferably by soldering, to a portion of anchoring plate **26**. Other bonding techniques, such as welding or gluing can also be used.

As shown in FIG. 2, flexible strand **24** is bonded to anchoring plate **26** at point "x" on the flexible strand **24** after it has been threaded through holes **30** as shown in FIG. 3. The flexible strand **24** can be bonded to anchoring plate **26** at any point along anchoring plate **26** after the flexible strand **24** has been threaded through holes **30**. While two holes are shown, other numbers of holes (**1**, **3**, **4**, etc.) can be used.

FIG. 4 is an exploded view of the temple side **28** of the eyeglasses shown in FIG. 1. Anchoring plate **26** is connected to, or alternatively is a part of, lug **32** which is preferably housed within a recess **34** of temple support piece **20**. Lug **32** is secured within recess **34** of temple support piece **20** by, for example, a screw **36**. Flexible strand **24** is threaded through holes **30** in anchoring plate **26** as previously shown in FIG. 3 and bonded to anchoring plate **26**, such as by soldering. Rigid upper support portion **22** is coupled to temple piece **20**.

FIG. 5 shows an enlarged view of the assembly on the nasal side **18** of lens frame **12** shown in FIG. 1. As shown therein, anchoring plate **26** is preferably flat and elongated and protrudes downwardly from rigid upper support portion **22**. The invention contemplates anchoring plate **26** of other shapes as well. For example, anchoring plate **26** need not be flat, but may be the same shape and dimensions as rigid upper support portion **22**. Anchoring plate **26** can be formed as a separate piece bonded to rigid upper support portion **22** or as part of rigid upper support portion **22**. Anchoring plate **26** is shown in FIG. 5 as part of rigid upper support portion **22**. Anchoring plate **26** comprises that part of rigid upper support portion **22** where the threading and bonding of flexible strand occur.

In FIG. 5, nose pad arm **38** is shown affixed to the anchoring plate **26** on the rear edge of anchoring plate **26**. Alternatively, nose pad arm **38** may be affixed elsewhere such as further up on the nasal side of rigid upper support portion **22**. Nose pad **40** fits within the corresponding recess in nose pad arm **38**.

The eyeglasses shown in FIGS. **1–5** are "semi-rimless" eyeglasses. The eyeglasses of FIGS. **1–5** can also be constructed as a "rimless" frame as depicted in FIG. **6**. In this second embodiment, as shown in FIG. **6**, eyeglasses **42** comprises elements identical to those of eyeglasses **10** of FIG. **1** with the exception that flexible strand **24** is used in place of the rigid upper support portion **22**.

In the second embodiment of FIG. **6**, the anchoring plates **26** may be constructed as one unitary anchoring plate with a set of holes **30** on the upward protrusion of anchoring plate **26** and another set of holes **30** on the downward protrusion of anchoring plate **26** as shown on the nasal side **18** of rimless lens frame **44** in FIG. **7**. Alternatively, anchoring plates **26** may be constructed as two pieces that are coupled together, either removably or fixedly, with a set of holes on the upper piece and a set of holes on the lower piece. FIG. **8** shows this "two-piece" anchoring plate **26** with two sets of holes **30**, removably coupled together on the temple side **28** of rimless lens frame **44**. In a further alternative embodiment, anchoring plates **26** may be constructed as a unitary piece with only one set of holes or as a "two-piece" anchoring plate with only one set of holes.

FIG. **7** shows an enlarged view of the interface on one of the nasal sides **18** of rimless eyeglasses **42** shown in FIG. **6**. In FIG. **7**, the interface is shown as comprised of one unitary anchoring plate **26** with two sets of holes **30**, as described

above. Anchoring plate **26** is preferably flat and elongated, but the invention contemplates anchoring plate **26** of other shapes as well. For example, anchoring plate **26** need not be flat, but may be the same shape and dimensions as the bridge **16**. On the nasal side **18** of rimless lens frames **44**, anchoring plate **26** can be formed as part of, or an extension of, bridge **16**.

Two flexible strands **24** are shown in FIG. **7**, one forming the lower portion of rimless lens frame **44** and one forming the upper portion of rimless lens frame **44**. The ends of each flexible strand **24** are threaded through holes **30** in anchoring plate **26** and bonded to anchoring plate **26** at points "x". Flexible strand **24** is threaded through holes **30** and bonded in the same manner as is shown in FIG. **3** and described above with regard to the first embodiment.

FIG. **8** shows an exploded view of the assembly on one of the temple sides **28** of rimless eyeglasses **42** shown in FIG. **6**. FIG. **8** is the same as that shown in FIG. **4** of the first embodiment except that rigid upper support portion **22** in FIG. **4** is replaced by anchoring plate **26** with holes **30** and flexible strand **24** which is threaded through holes **30** and bonded to anchoring plate **26** as described above.

As another alternative embodiment of the present invention for semi-rimless eyeglasses, lens frames **12** can be comprised of flexible strand **24** that is constructed as a unitary piece with anchoring plate **26** on one side of the lens while flexible strand **24** is both threaded and bonded to anchoring plate **26** on the opposite side of lens frames **12** as shown in FIGS. **2–4**. Another alternative embodiment of the present invention for rimless eyeglasses comprises rimless lens frames **44** comprised of flexible strands **24** on the upper and lower half of the lens frames **44** which are constructed as a unitary piece with the anchoring plate or plates on the nasal side of the frames, while flexible strands **24** are both threaded and bonded on the temple side of the frames as shown in FIG. **8**.

Although the invention has been described in its preferred form with a certain degree of particularity, it should be understood that the present disclosure of the preferred form may be changed in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

What is claimed is:

1. A lens frame, comprising:

an upper frame portion operable to receive a lens;

an anchoring plate coupled to the upper frame portion, said anchoring plate having at least one hole formed therein; and

a flexible strand defining a lower frame portion, said flexible strand being coupled to said anchoring plate by threading said flexible strand through said at least one hole and mechanically bonding said strand to said anchoring plate.

2. The lens frame of claim **1**, wherein said upper frame portion is rigid.

3. The lens frame of claim **1**, wherein said strand is mechanically bonded to said anchoring plate at a location above said at least one hole.

4. A lens frame, comprising:

a rigid upper frame portion;

an anchoring plate coupled to said upper frame portion, said anchoring plate having at least one hole formed therein; and

a lower frame portion coupled to said rigid upper frame portion, said lower frame portion comprising a flexible strand, said flexible strand being coupled to said anchoring plate by threading said flexible strand through said at least one hole and mechanically bonding said strand to said anchoring plate.

5. The lens frame of claim **4**, wherein said strand is mechanically bonded to said anchoring plate at a location above said at least one hole.

6. The lens frame of claim **4**, wherein said anchoring plate is integral with said rigid upper frame portion.

7. The lens frame of claim **4**, wherein said anchoring plate is removeably coupled to said rigid upper frame portion.

8. The lens frame of claim **4**, wherein said flexible strand is threaded through said at least one hole in such a manner that it abuts sharp edges of said at least one hole to form a frictional adhesion between said sharp edges and said flexible strand.

9. The lens frame of claim **4**, wherein said flexible strand is mechanically bonded to said anchoring plate by soldering.

10. The lens frame of claim **4**, wherein said flexible strand comprises a metal wire.

11. The lens frame of claim **10**, wherein said metal wire is 0.7 mm or less in diameter.

12. The lens frame of claim **4**, wherein

said rigid upper frame portion has first and second opposite ends, said anchoring plate is a first anchoring plate permanently coupled to said rigid upper frame portion at said first end thereof, said lens frame further comprising:

a second anchoring plate removably coupled to said second end of said rigid upper frame portion, said second anchoring plate having at least one hole formed therein;

wherein said flexible strand has first and second opposite ends, said second end of said flexible strand being coupled to said second anchoring plate by threading said second end of said flexible strand through said at least one hole of said second anchoring plate and being mechanically bonded to said second anchoring plate at a location above said at least one hole of said second anchoring plate.

13. A rimless lens frame, comprising:

first and second rigid lateral support portions, one of said rigid lateral support portions having at least one hole formed therein; and

upper and lower flexible strands coupled to said first and second lateral support portions to define a lens holding frame;

wherein one end of one of said flexible strands is threaded through said at least one hole in said one rigid lateral support portion and wherein said one end is mechanically bonded to said one rigid lateral support portion.

14. The rimless lens frame of claim **13**, wherein said one flexible strand is mechanically bonded at a position between said at least one hole and said one end of said one flexible strand.

15. The rimless lens frame of claim **13**, further comprising an anchoring plate integrally formed with said one rigid lateral support.

16. The rimless lens frame of claim **13**, further comprising an anchoring plate removeably coupled to said one rigid lateral support.

17. The rimless lens frame of claim **13**, wherein said flexible strand is threaded through said at least one hole in such a manner that it abuts sharp edges of said at least one hole to form a frictional adhesion between said sharp edges and said flexible strand.

18. The rimless lens frame of claim **13**, wherein said one flexible strand is bonded to said one rigid lateral support portion by soldering.

19. The rimless lens frame of claim 13, wherein said one flexible strand comprises a metal wire.

20. The rimless lens frame of claim 19, wherein said metal wire is 0.7 mm or less in diameter.

21. Eyeglasses, comprising:

first and second lenses, each of said lenses having respective grooves formed therein;

first and second lens frames respectively supporting said first and second lenses;

a bridge located between said first and second lens frames;

first and second temple support pieces located on opposite outer sides of said first and second lens frames so that said first and second temple support pieces are respectively associated with said first and second lens frames;

each of said lens frames comprising:

a rigid upper support portion having two ends, one end of said rigid upper support portion being coupled to said bridge, said other end being coupled to its associated temple support piece;

a lower support portion comprising a flexible strand, said flexible strand being disposed in said groove of said associated lens, said flexible strand having two ends, one end of said flexible strand being coupled to said bridge, said other end of said flexible strand being coupled to its associated temple support piece; and

an anchoring plate coupled to either said bridge or its associated said temple support piece, said anchoring plate having at least one hole formed therein, wherein at least one end of one of said flexible strand is coupled to said anchoring plate, said end of said flexible strand being threaded through said at least one hole and being mechanically bonded to said anchoring plate.

22. The eyeglasses of claim 21, wherein said flexible strand is mechanically bonded to said anchoring plate at a position between said at least one hole and said end of said flexible strand.

23. The eyeglasses of claim 21, wherein said flexible strand is threaded through said at least one hole in such a manner that it abuts sharp edges of said at least one hole to form a frictional adhesion between said sharp edges and said flexible strand.

24. The eyeglasses of claim 21, wherein said flexible strand is mechanically bonded to said anchoring plate by soldering.

25. The eyeglasses of claim 21, wherein said flexible strand comprises a metal wire.

26. The eyeglasses of claim 25, wherein said metal wire is 0.7 mm or less in diameter.

27. Rimless eyeglasses, comprising:

first and second lenses, each of said lenses having respective grooves formed therein;

first and second rimless lens frames respectively supporting said first and second lenses, each of said first and second rimless lens frames having an outer side;

a bridge located between said first and second rimless lens frames;

a first temple support piece located on said outer side of said first rimless lens frame;

a second temple support piece located on said outer side of said second rimless lens frame;

each of said rimless lens frames comprising:

first and second rigid lateral support portions;

upper and lower flexible strands coupled to said first and second lateral support portions; and

an anchoring plate coupled to one of said first and second rigid lateral support portions, said anchoring plate having at least one hole formed therein, wherein at least one end of one of said flexible strands is coupled to said anchoring plate, and wherein said one end of said one flexible strand is threaded through said at least one hole and is mechanically bonded to said anchoring plate.

28. The rimless eyeglasses of claim 27, wherein said one flexible strand is mechanically bonded to said anchoring plate at a position between said at least one hole and said one end of said flexible strand.

29. The rimless eyeglasses of claim 27, wherein said one flexible strand is threaded through said at least one hole in such a manner that it abuts sharp edges of said at least one hole to form a frictional adhesion between said sharp edges and said one flexible strand.

30. The rimless eyeglasses of claim 27, wherein said one flexible strand is mechanically bonded to said anchoring plate by soldering.

31. The eyeglasses of claim 27, wherein said one flexible strand comprises a metal wire.

32. The eyeglasses of claim 31, wherein said metal wire is 0.7 mm or less in diameter.

* * * * *

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Hirschman et al.

(10) **Patent No.: US 6,217,169 B1**
(45) **Date of Patent: Apr. 17, 2001**

(54) **RIMLESS OR SEMI-RIMLESS SAFETY EYEGLASSES**

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(73) Assignee: **Pareto Corporation**, Bohemia, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(22) Filed: **May 17, 2000**

(51) **Int. Cl.**[7] **G02C 1/08**
(52) **U.S. Cl.** **351/106**; 351/103; 351/110
(58) **Field of Search** 351/111, 110, 351/103, 106, 108, 109

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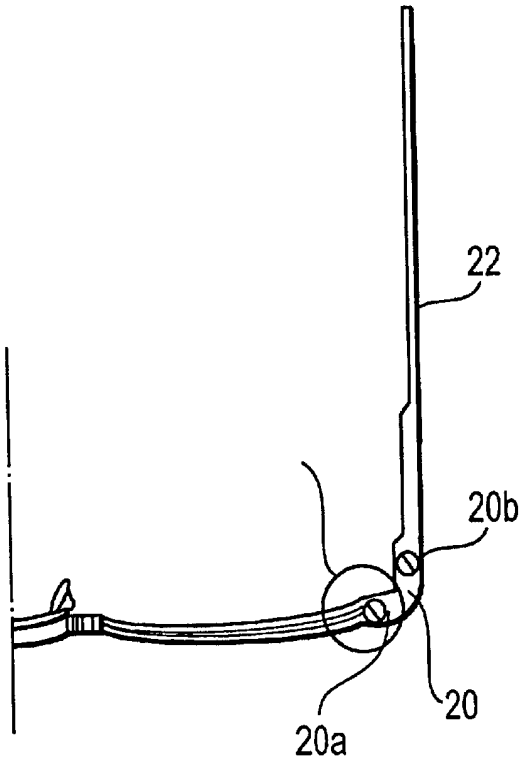
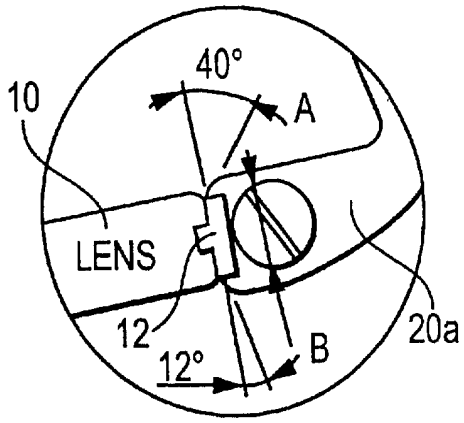
Primary Examiner—Hung Xuan Dang
(74) *Attorney, Agent, or Firm*—Ostrolenk, Faber, Gerb & Soffen, LLP

(57) **ABSTRACT**

An eyeglass assembly including an endpiece which is adapted to engage a flexible strand for holding a lens, the endpiece having an inner surface which is disposed adjacent to the lens when the lens is present; the inner surface of the endpiece having a front edge and a back edge for being located adjacent to front and back sides of the lens; the front edge being chamfered to define a chamfer angle of substantially 8° to 65° with respect to the lens; and the back edge being chamfered to define a chamfer angle of substantially 8° to 50° with respect to the lens. The chamfering of the edges of the endpiece is effective to reduce the risk of chipping the lens when the endpiece is adjusted to fit the wearer's head. Also disclosed is an elastic cushioning ring disposed between the lens and the frame and/or the flexible lens supporting strand in a rimless or semi-rimless frame.

26 Claims, 2 Drawing Sheets





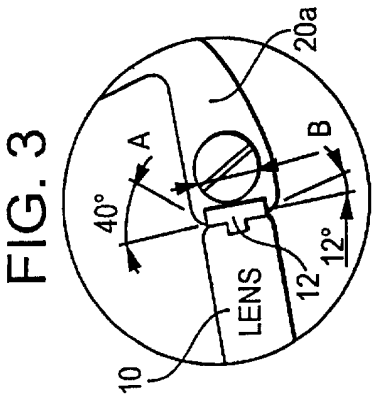


FIG. 3

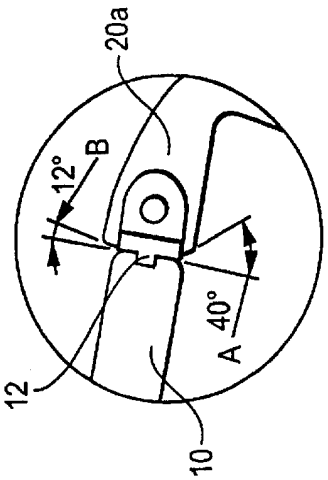


FIG. 4

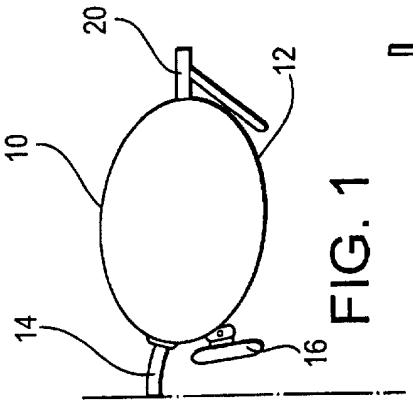


FIG. 1

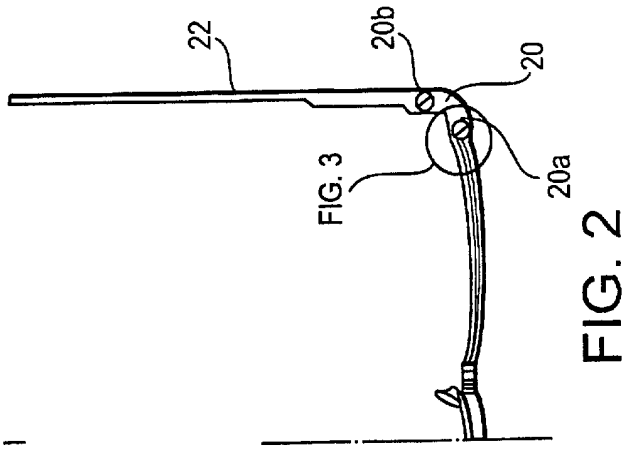


FIG. 2

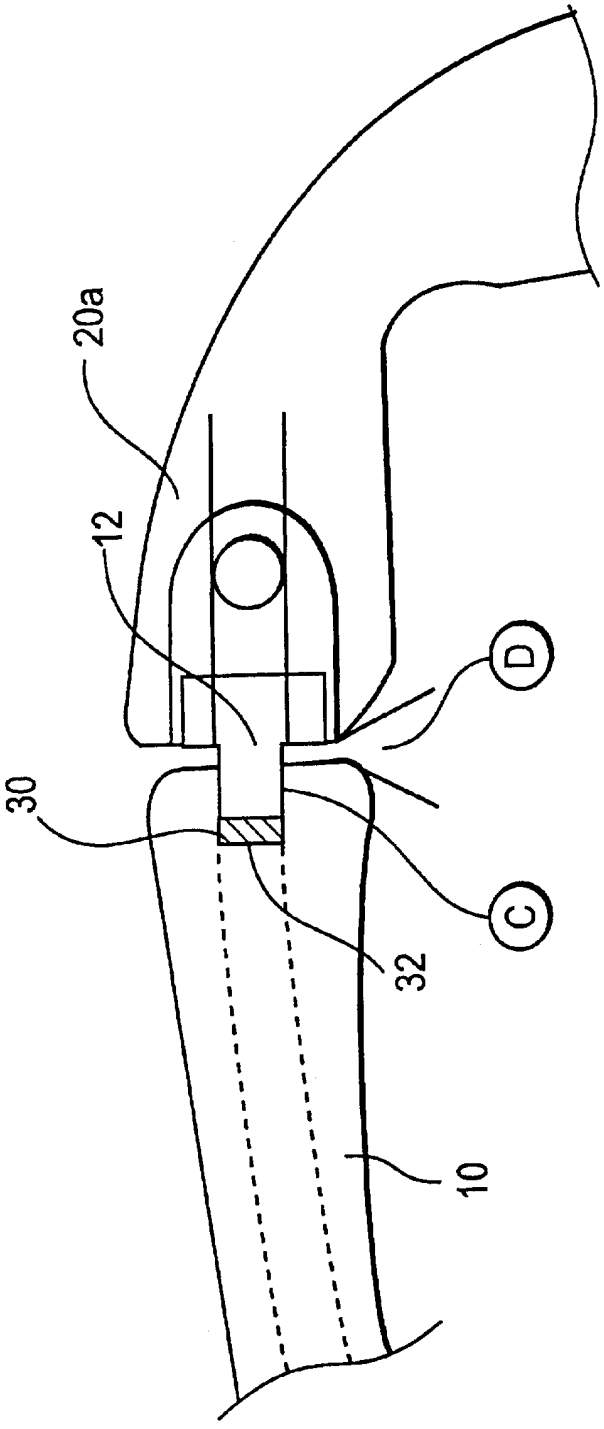


FIG. 5

RIMLESS OR SEMI-RIMLESS SAFETY EYEGLASSES

BACKGROUND OF THE INVENTION

The invention relates to an improved rimless or semi-rimless safety eyeglass frame, and more particularly to an improved endpiece and a cushioning ring for such a frame.

SUMMARY OF THE INVENTION

The invention relates to improvements in a rimless or semi-rimless safety eyeglass frame.

The corner of the eyeglass frame, where the screws are located for attaching the frame to the temple, is called the endpiece. Relative movement between the endpiece and the lens at the corners of the endpiece can cause chipping of certain types of plastic lenses. This chipping occurs most often when an optician needs to adjust the endpieces inwardly, to fit a person whose head is more narrow than the standard fit for which the eyeglass frame was built. This adjustment is accomplished by bending each endpiece inward, toward the user's head, with pliers, thereby narrowing the angle defined by the temples and the front of the eyeglass frame. It is during this inward bending that pressure is exerted on the plastic lens, and often causes the lens to chip or crack. Chipping can also occur when the optician must bend the endpieces outward, to accommodate a wearer with a wide head.

This problem is more acute in a rimless or semi-rimless frame in which the lens is secured with a metal wire as opposed to a nylon filament, and particularly, when the lens is made of plastic. The problem is especially acute with extremely thin lenses, and with plastic safety lenses, which are required to be relatively thick according to current safety standards, i.e., not less than 3 millimeters thick. The thickness can be even greater if needed for a particular prescription.

For present purposes, "safety" eyeglasses are defined as protective eyewear that conforms to the American National Standard Institute's (ANSI) Z-87 "Practice for Occupational and Educational Eye and Face Protection." The present standard is designated as ANSI Z-87.1-1989. The present standard requires prescription lenses to be 3 mm thick for most prescriptions (2.5 mm is allowed for a limited number of prescriptive powers). It is believed that an upcoming revision of the ANSI standard may be based not on this "design" requirement but rather on a "performance" requirement, and may allow 2 mm lenses.

This problem of damage to the lenses of safety eyeglasses has not been solved up to now. In particular, it has been believed impossible to provide plastic rimless or semi-rimless prescription safety eyeglass frames, because it has been impossible to meet the stringent impact requirements necessary to meet government standards for safety eyewear. Only recently have the present applicants developed an effective semi-rimless safety eyeglass frame, disclosed in Ser. No. 09/425,120 filed Oct. 22, 1999 now U.S. Pat. No. 6,099,119, incorporated by reference.

With the greater use of polycarbonate (available from General Electric under the trademark Lexan) and CR-39 plastic for ophthalmic lenses, rimless eyewear has become more popular. Plastic lenses, regardless of the material, can be easily cut to accommodate the rimless-type bevel. However, a problem with CR-39 plastic is that it can chip or flake under certain types of stress. Though it is shatter-resistant, it readily breaks and can chip as well. The endpiece

(corner) area of the frame is a primary area where stress is likely to be induced due to the flitting adjustments performed by the optician. If the endpiece is bent beyond a very limited range, and if the endpiece is not chamfered, the endpiece can contact the edge of the CR-39 plastic lens and chip it, making it unusable.

The inventors have observed that this chipping or flaking of plastic safety lenses can be avoided by providing the endpiece, particularly on the interior side but also advantageously on the exterior side, with a chamfer defining a relief angle between the endpiece and the lens. The relief angle may be varied according to the nature of the particular lens and endpiece and their specifications. The chamfer provides enough relief so that the endpiece will not exert pressure on the edge of a prescription lens, causing sufficient stress to chip or flake the plastic lens material, when the eyeglass temples are bent inward to be fitted to the user's head. Instead the endpiece will twist inward without bearing upon and damaging the lens.

The range of the rear edge chamfer angle is about 8° to 50°, for example about 40° as shown in the drawings. The range of the front edge chamfer angle is about 8° to 65°, for example about 12° as shown in the drawings. A front edge chamfer angle of up to 65° may be useful, for example, for a wearer with a large head. The rear edge chamfer angle probably does not have to be so large, unless the wearer has an exceptionally narrow head.

The specific chamfer angles can be chosen by those having the ordinary degree of skill in this art, depending on the design of the frame, for example the configurations of the front and back surfaces of the frame. The illustrated angles have been found to be useful average values for the general marketplace. However, with other frame configurations than those illustrated, the 40° and 12° angles may not be optimal.

Other chamfer angles, even those not within the combination of ranges described above, may be appropriate for a frame with an unusual configuration. It is sufficient for the purposes of the invention if the chamfer angles chosen are effective to reduce lens chipping when the frame is adjusted to fit the wearer's head.

Although the above invention has general applicability to other types of eyeglasses, the invention finds specific utility in prescriptive safety eyewear utilizing plastic lenses because of the requirements mandated by government standards, and the difficulties associated with rimless or semi-rimless eyeglass frames. It is probably for these reasons that no rimless or semi-rimless frames exist on the prescription side of the safety eyewear market.

A second problem of known safety eyeglasses concerns the potential stresses on the lens that can be caused by the movement of the lens in a different direction from the reverse groove in the metal eyewire. This too can cause chipping of certain types of plastic lenses.

In addition, all eyeglass frames are bent to a common base curve (known as a 6-Base lens curve). However, there are many prescription lenses that must be made for either a flatter or more curved base curve—and consequently, the frame must be bent to match the lens curvatures.

To overcome the potential chipping (or flaking) of some types of plastic lenses, a cushioning ring of an elastic material is inserted so as to prevent the metal frame from exerting stress on the plastic lens. By adding an elastic ring or band (which may be made for example of silicone material or synthetic rubber), an air space is created between the plastic lens and the metal eyerim. This air space prevents

the metal eyerim from having direct contact with the plastic lens. Further, it provides more space for the angling of the endpiece during adjustment to help keep the stress off the lens itself.

Furthermore, it does this around the entire circumference of the lens. Some areas of the lens are more apt to be stress-sensitive (namely, any corner area and the endpiece area). The cushioning ring by nesting inside the lens groove enables the lens to avoid stresses anywhere there is contact between the lens and the eyerim or rimless wires.

Another benefit of the cushioning ring is to effectively allow for greater tolerance when grooving the lens. If a rimless lens is grooved too deep, then it will be too loose to fit properly inside the frame. The cushioning ring allows the optical laboratory to have greater latitude in the cutting of the groove. This can be helpful as grooving cutters wear and settings are changed. As lenses are expensive, it enables the laboratory to reduce their spoilage.

The cushioning ring can be made of any stretchable or compressible material. For example, it can be rubber, synthetic rubber, silicone, or any similar type of material. The color of the cushioning ring material can be clear or of any color that is suitable from a cosmetic standpoint. As styles change, likewise will color preferences. Similarly, the thickness of the cushioning ring material can vary. The deeper the lens groove, the greater the thickness of the cushioning ring material.

The cushioning ring has the following functions:

a) provides an air space between the metal frame materials (the eyerim, endpiece, eyewires, etc.) and the plastic lens as cartilage functions between bones.

b) provides a cushion-effect so that the male eyerim groove and the base of the female lens groove are precluded from having direct contact.

Besides the use of the cushioning ring as described above, these functions can be accomplished in various other ways, such as:

1) coating the metal eyerim (shaped like a "T") with an elastic coating;

2) fusing an elastic material to the metal eyerim; and

3) coating and/or fusing elastic materials on specified areas only (not around the entire eyerim); for example, just coating or fusing elastic on the side of the endpiece or just part of the T-grooved eyerim, or just on the very thin metal rimless wires at the bottom of the semi-rimless frames.

Other features and advantages of the present invention will become apparent from the following description of embodiment of the invention which refers to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front view of part of an eyeglass frame showing the lens, endpiece and temple.

FIG. **2** is a top view corresponding to FIG. **1**.

FIG. **3** is a top detail view corresponding to a portion of FIG. **2**, showing the lens and endpiece of the eyeglass frame on a larger scale.

FIG. **4** is a bottom detail view of the lens and endpiece corresponding to FIG. **3**.

FIG. **5** is a view similar to FIG. **4** showing a lens and endpiece together with an elastic cushioning ring.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Referring to FIG. **1**, there is shown an eyeglass frame according to an embodiment of the invention. FIG. **2** is a top view corresponding to FIG. **1**. FIG. **3** is a top detail view corresponding to a portion of FIG. **2**, showing the lens and endpiece of the eyeglass frame on a larger scale. FIG. **4** is a bottom detail view of the lens and endpiece corresponding to FIG. **3**.

The eyeglass frame includes a lens **10**, a semi-rimless frame **12**, a bridge **14**, a nose pad **16** and an endpiece **20**. The endpiece **20** is generally L-shaped and at a first end **20***a* is attached to the frame **12**, and at a second end **20***b* is attached to a temple **22**.

At a rear edge of the end **20***a* of the endpiece **20**, a chamfer angle A is formed, which is in the range of approximately 8° to 50° and preferably about 40°. As described above, it has been found that a chamfer angle of about 40° is effective to prevent chipping and flaking of the lens as described above, when the endpiece and/or the temple is bent inward, i.e., toward the left in FIG. **2**, to be adjusted to the head of the user.

At the front edge of the end **20***a* of the endpiece **20** is a second chamfer angle B which is in a range of approximately 8° to 65°, and preferably about 12°. This range of the front angle B has been found to be effective to avoid damage to the lens due to minor forward movements of the endpiece with respect to the lens which may occur during use or during the adjustment process.

The chamfer angles A and B are advantageously formed over the entire vertical extent of the endpiece.

For an eyeglass frame having an unusual configuration, the skilled individual may select other chamfer angles, even if not within the combination of ranges described above, as long as the angles chosen are effective to reduce lens chipping when the frame is adjusted to fit the wearer's head.

FIG. **5** is a view similar to FIG. **4** showing a lens and endpiece together with an elastic cushioning ring according to a second embodiment of the invention. For simplicity, elements and parts like those in the first embodiment are referred to by the same references and redundant description is omitted.

In FIG. **5** an elastic band **30** is placed around the lens **10** so as to separate the frame **12** and the bottom of the lens groove **32**. As shown, the presence of the elastic band **30** creates an air space between the frame **12** and the lens **10**, the air space comprising a portion designated C between the frame **12** and the sides of the groove **32**, and a portion designated D between the frame **12** and the outer circumference of the lens **10**.

In rimless and semi-rimless eyeglasses, all or part of the lens is surrounded or supported by a metal wire or plastic filament as described above, in addition to a frame and/or endpiece as shown in FIG. **5**. At those portions of the lens, the elastic band **30** may be disposed between the wire or filament and the bottom of the lens groove **32**.

In general, regardless of the specific type of frame, metal wire, or plastic filament in a given pair of eyeglasses, and regardless of the presence or absence of a groove in a given portion of a lens, the elastic band **30** is advantageously used to cushion and protect the edge of the lens.

Although the present invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses will become apparent to those skilled in the art. Therefore, the present invention is not limited by the specific disclosure herein.

What is claimed is:

1. A safety eyeglass assembly, comprising:

a plastic safety lens having a front side and a back side for being located remote from and close to a wearer, respectively;

a flexible strand at least partly surrounding and supporting the lens;

an endpiece for supporting the flexible strand, said endpiece having an inner surface disposed adjacent to the lens;

said inner surface of said endpiece having a front edge and a back edge which are located adjacent to said front and back sides of said lens, respectively;

said front edge being chamfered to define a chamfer angle of substantially 8° to 65° with respect to said lens;

said back edge being chamfered to define a chamfer angle of substantially 8° to 50° with respect to said lens.

2. A safety eyeglass assembly as claimed in claim **1**, wherein said chamfer angle of said back edge is substantially 40°.

3. A safety eyeglass assembly as claimed in claim **2**, wherein said chamfer angle of said front edge is substantially 12°.

4. A safety eyeglass assembly as claimed in claim **1**, wherein said chamfer angle of said front edge is substantially 12°.

5. A safety eyeglass assembly as claimed in claim **1**, further comprising an upper frame portion, said upper frame portion being secured to said endpiece, said flexible strand being secured to said upper frame portion and defining a lower frame portion whereby said upper and lower frame portions coact to surround and support the lens.

6. A safety eyeglass assembly as claimed in claim **5**, further comprising an elastic material disposed at the outside of said lens and inside at least one of said upper and lower frame portions.

7. A safety eyeglass assembly as claimed in claim **6**, wherein said elastic material is disposed in a groove formed at the outside of the lens.

8. A safety eyeglass assembly as claimed in claim **1**, further comprising an elastic material disposed at the outside of the lens and inside said flexible strand.

9. A safety eyeglass assembly as claimed in claim **8**, wherein said elastic material is disposed in a groove formed at the outside of the lens.

10. A safety eyeglass assembly as claimed in claim **1**, wherein said lens is at least 2 mm in thickness.

11. A safety eyeglass assembly as claimed in claim **1**, wherein said lens is at least 3 mm in thickness.

12. A safety eyeglass assembly as claimed in claim **11**, wherein said lens is made of Lexan polycarbonate.

13. A safety eyeglass assembly as claimed in claim **11**, wherein said lens is made of C-39 plastic.

14. An eyeglass assembly, comprising:

an endpiece which is adapted to engage a flexible strand for holding a lens, said endpiece having an inner surface which will be disposed adjacent to the lens when the flexible strand and lens are present;

said inner surface of said endpiece having a front edge and a back edge for being located adjacent to front and back sides of the lens, respectively;

said front edge being chamfered to define a chamfer angle of substantially 8° to 65° with respect to the lens;

said back edge being chamfered to define a chamfer angle of substantially 8° to 50° with respect to the lens.

15. An eyeglass assembly as claimed in claim **14**, further comprising an upper frame portion, said upper frame portion being secured to said endpiece, whereby when said flexible strand and lens are present, said flexible strand will define a lower frame portion, and said upper and lower frame portions will coact to surround and support the lens.

16. An eyeglass assembly as claimed in claim **15**, further comprising a flexible strand attached to said endpiece.

17. An eyeglass assembly as claimed in claim **16**, further comprising a plastic safety lens held by said flexible strand and said upper frame portion.

18. An eyeglass assembly as claimed in claim **17**, further comprising an elastic material disposed at an outside edge of said lens.

19. An eyeglass assembly as claimed in claim **14**, further comprising a flexible strand attached to said endpiece.

20. An eyeglass assembly as claimed in claim **19**, further comprising a plastic safety lens held by said flexible strand.

21. An eyeglass assembly as claimed in claim **20**, further comprising an elastic material disposed at an outside edge of said lens.

22. An eyeglass assembly which is adapted to reduce the risk of chipping of said lens when said eyeglass assembly is adjusted to fit the head of the wearer, comprising:

an endpiece which is adapted to engage a flexible strand for holding a lens, said endpiece having an inner surface which will be disposed adjacent to the lens when the flexible strand and lens are present;

said inner surface of said endpiece having a front edge and a back edge for being located adjacent to front and back sides of the lens, respectively;

said front edge and said rear edge of said inner surface of said endpiece being chamfered so as to reduce the risk of chipping of said lens when said eyeglass assembly is adjusted to fit the head of the wearer.

23. A method of reducing the risk of chipping of a lens when an eyeglass assembly for holding the lens is adjusted to fit the head of a wearer,

said eyeglass assembly comprising:

an endpiece which is adapted to engage a flexible strand for holding a lens, said endpiece having an inner surface which will be disposed adjacent to the lens when the flexible strand and lens are present;

said inner surface of said endpiece having a front edge and a back edge for being located adjacent to front and back sides of the lens, respectively;

said method comprising the step of chamfering the front edge and rear edge of the inner surface of the endpiece so as to reduce the risk of chipping of the lens when the eyeglass assembly is adjusted to fit the head of the wearer.

24. The method of claim **23**, further comprising the step of chamfering the front edge of the endpiece at an angle of substantially 8–65° with respect to the lens.

25. The method of claim **23**, further comprising the step of chamfering said back edge of the endpiece at an angle of substantially 8–50° with respect to the lens.

26. The method of claim **23**, further comprising the step of disposing an elastic material adjacent to said inner surface of said endpiece for spacing the endpiece from the lens when the lens is present.

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