US 20160085091A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2016/0085091 A1

(43) Pub. Date: Mar. 24, 2016

CHU

(54) **EYEGLASS FRAME STRUCTURE HAVING U-SHAPED WIND PASSAGE AND EYEGLASSES HAVING THE SAME**

(71) Applicant: **T-LINK PPE LTD.**, Taipei City (TW)

(72) Inventor: **JUN-HAN CHU**, Taipei City (TW)

(21) Appl. No.: **14/495,634**

(22) Filed: **Sep. 24, 2014**

Publication Classification

(51) **Int. Cl.**

G02C 11/08 (2006.01)

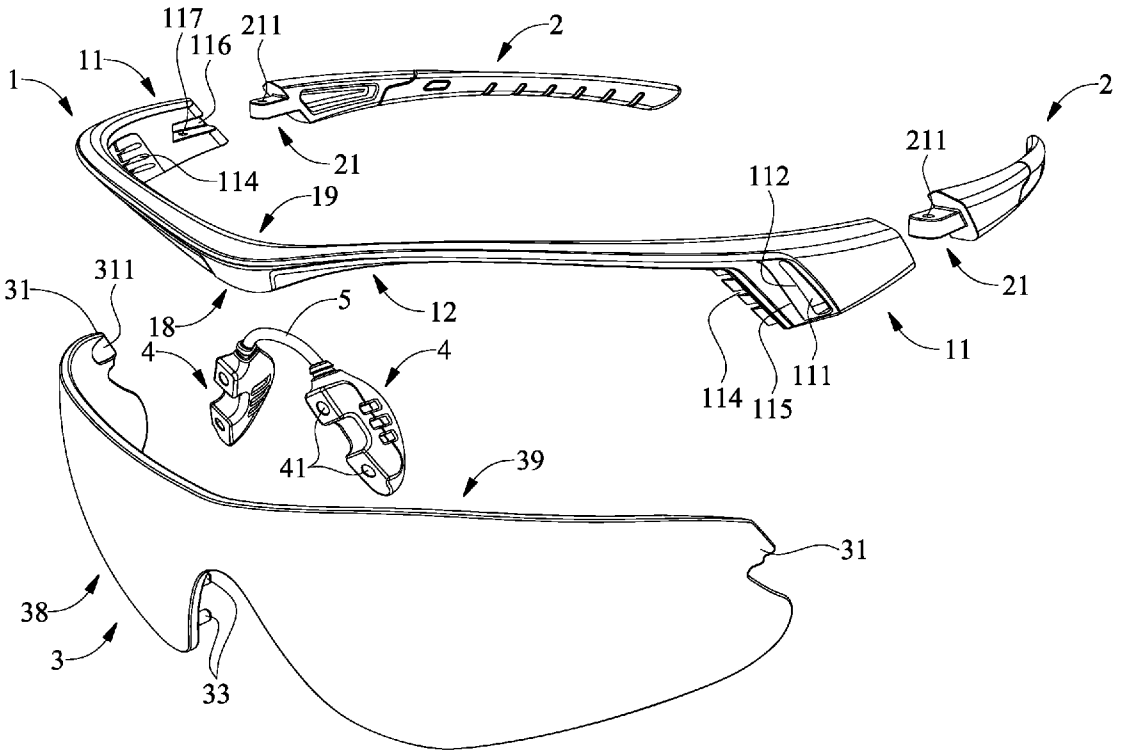
G02C 1/02 (2006.01)

(52) **U.S. Cl.**

CPC . ***G02C 11/08*** (2013.01); ***G02C 1/02*** (2013.01)

(57) **ABSTRACT**

An eyeglass frame structure includes a frame, an eyeglass arm pivoting portion disposed separately on both sides of the frame, a lens connecting portion disposed between the eyeglass arm pivoting portions, a U-shaped wind passage formed at each eyeglass arm pivoting portion and having a wind inlet on a windward side of the frame and a wind outlet on a leeward side of the frame for guiding wind transversely to the leeward side of the lens. Eyeglasses with the eyeglass frame structure including two eyeglass arms, two lenses and two nose pads guide wind transversely to the leeward side of the lens to prevent the formation of mists, return air from causing discomfort to wearer's eyes, and tiny objects from entering into the leeward side of the lens. The glasses require no hole or slot formed on the lens, so that the lens structure is not damaged.



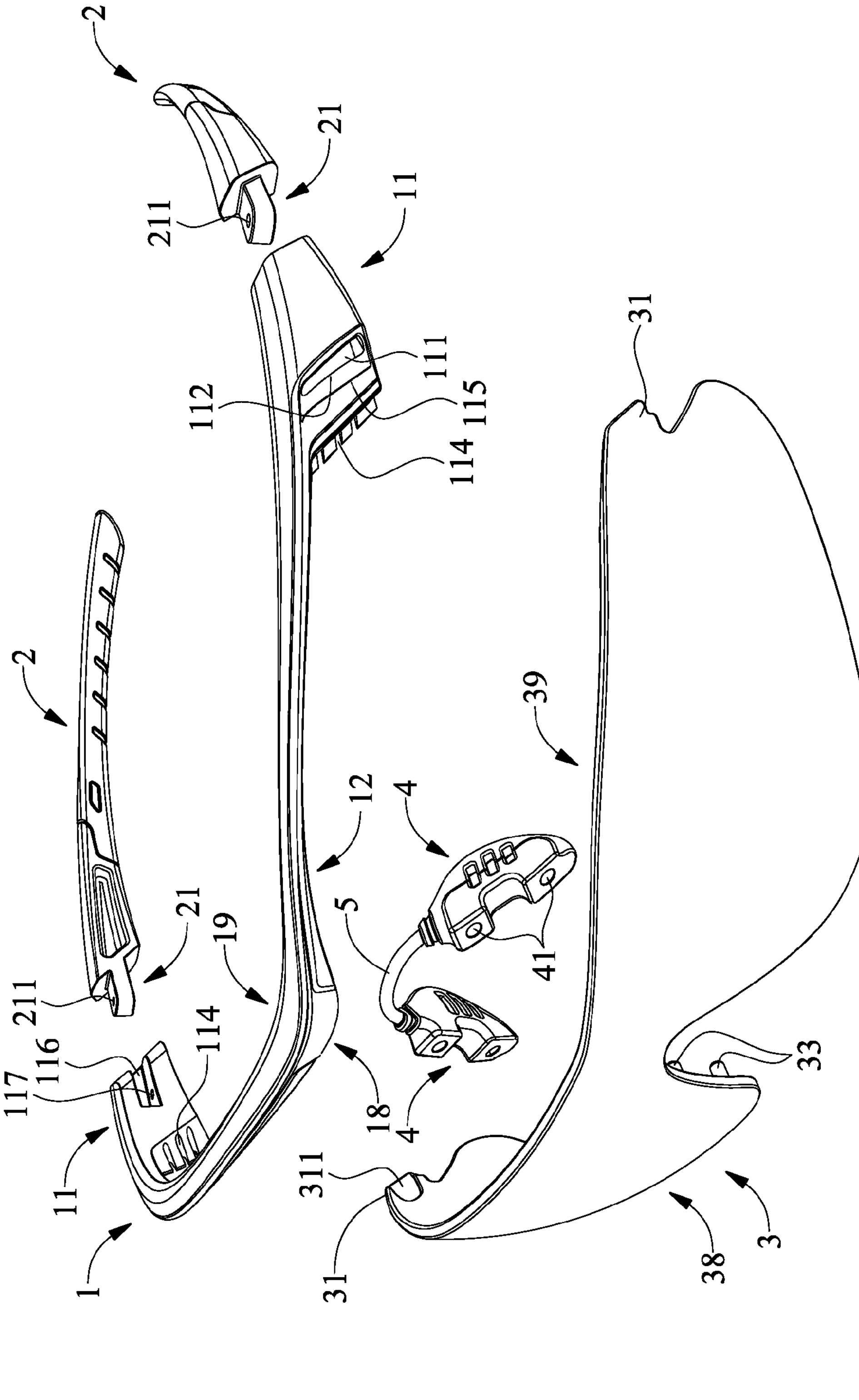

2
21
211
11
111
112
115
114
31
2
39
12
4
5
41
21
19
211
116
117
114
11
18
4
33
311
1
31
38
3

FIG. 1

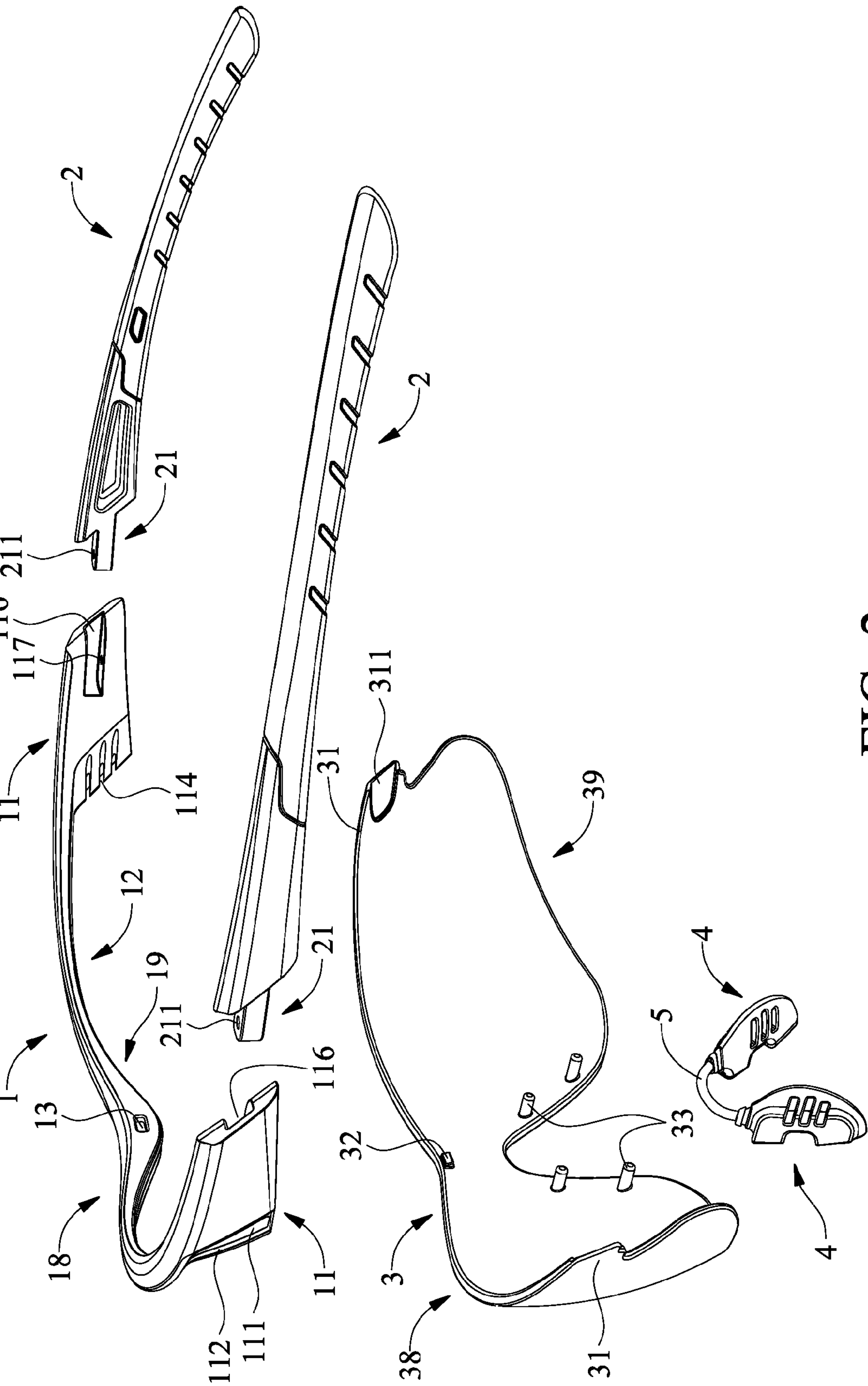

2
21
211
116
117
11
114
12
19
1
13
18
11
112
111
116
2
21
211
31
311
39
4
5
33
32
3
38
31
4

FIG. 2

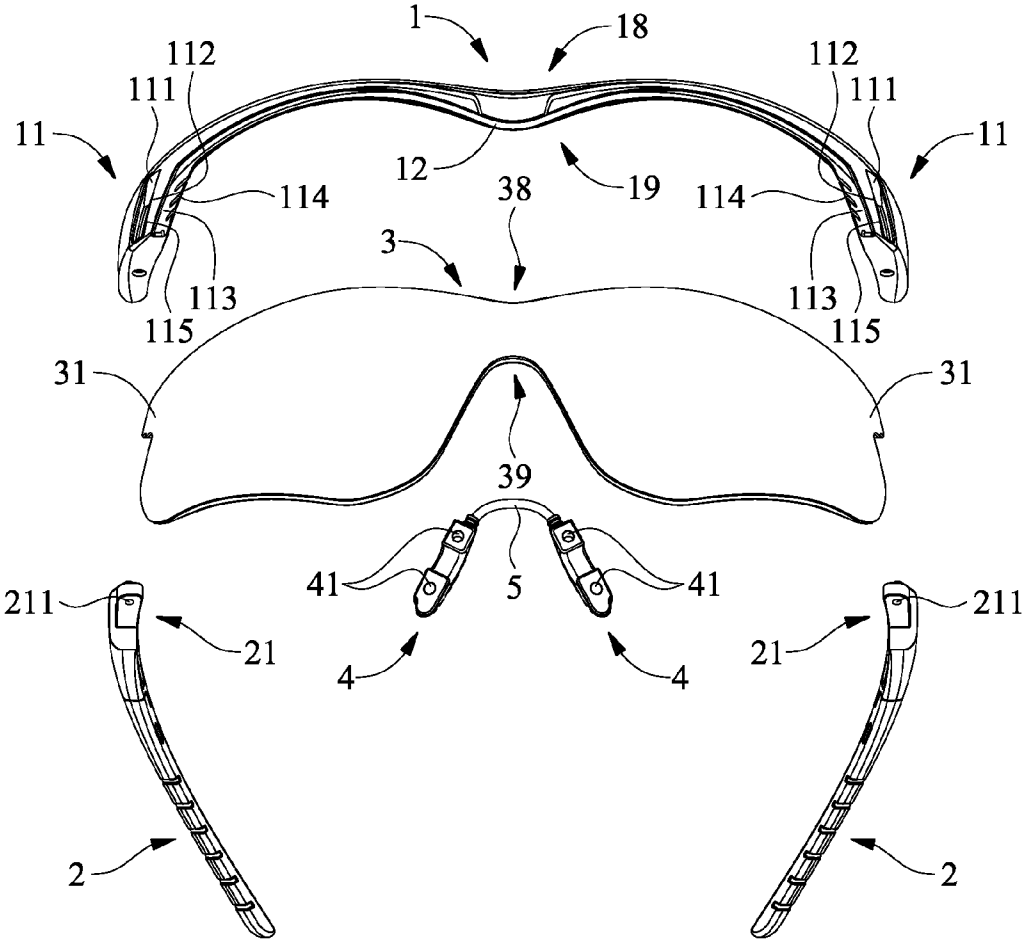


FIG. 3

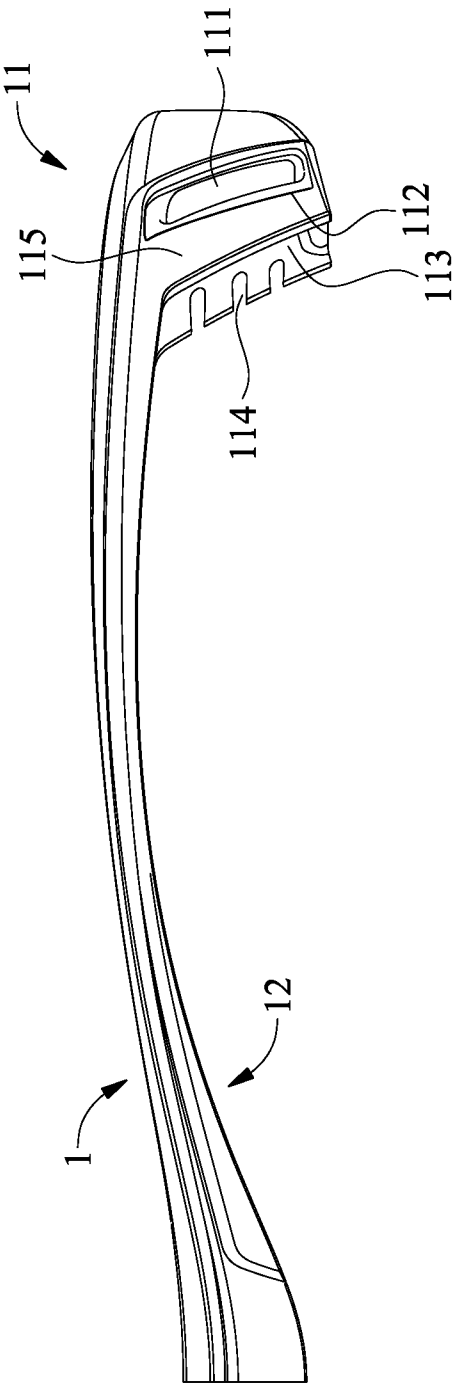


FIG. 4

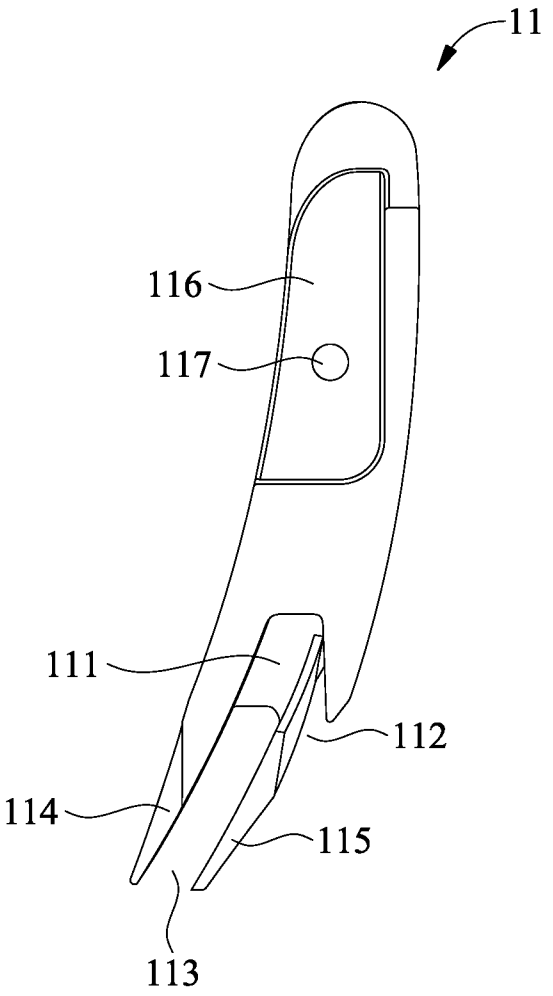


FIG. 5

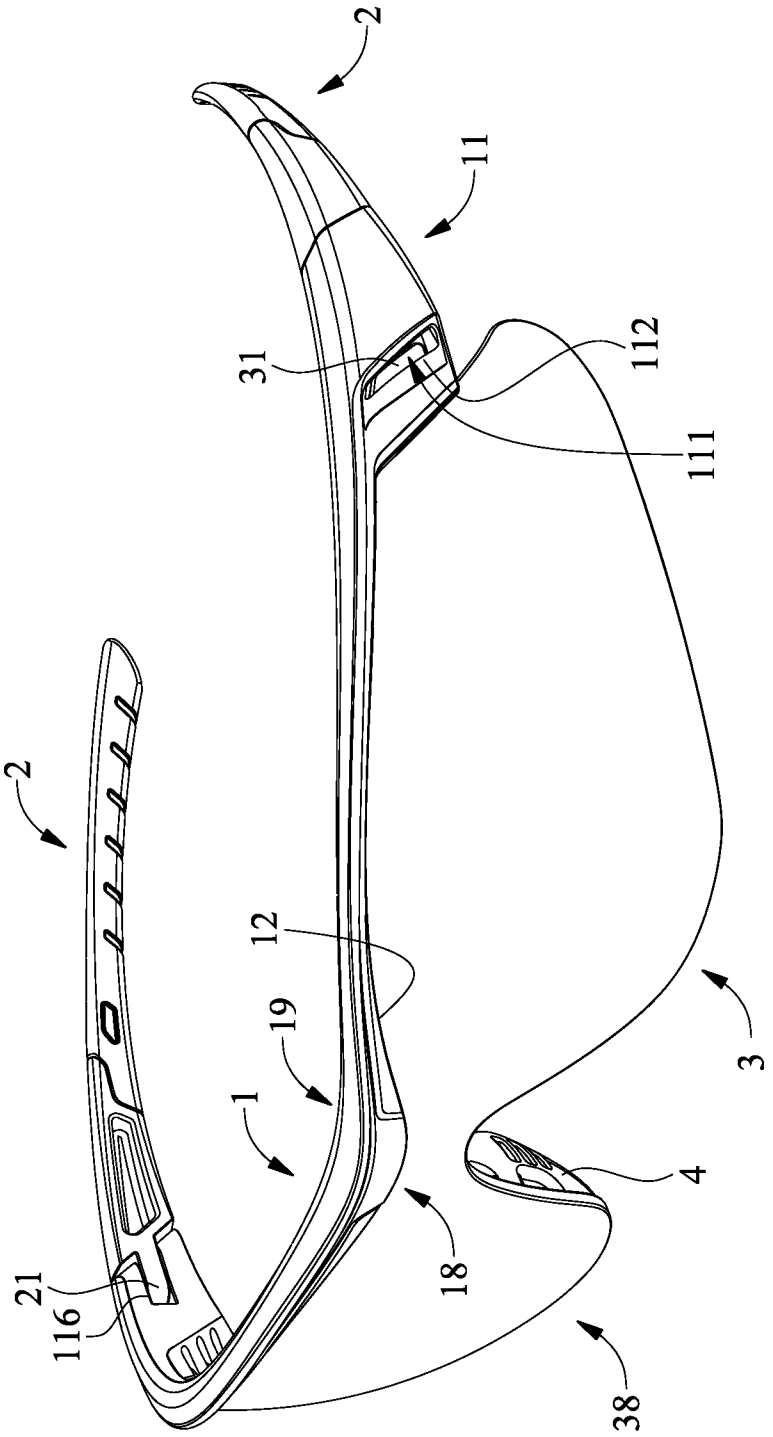


FIG. 6

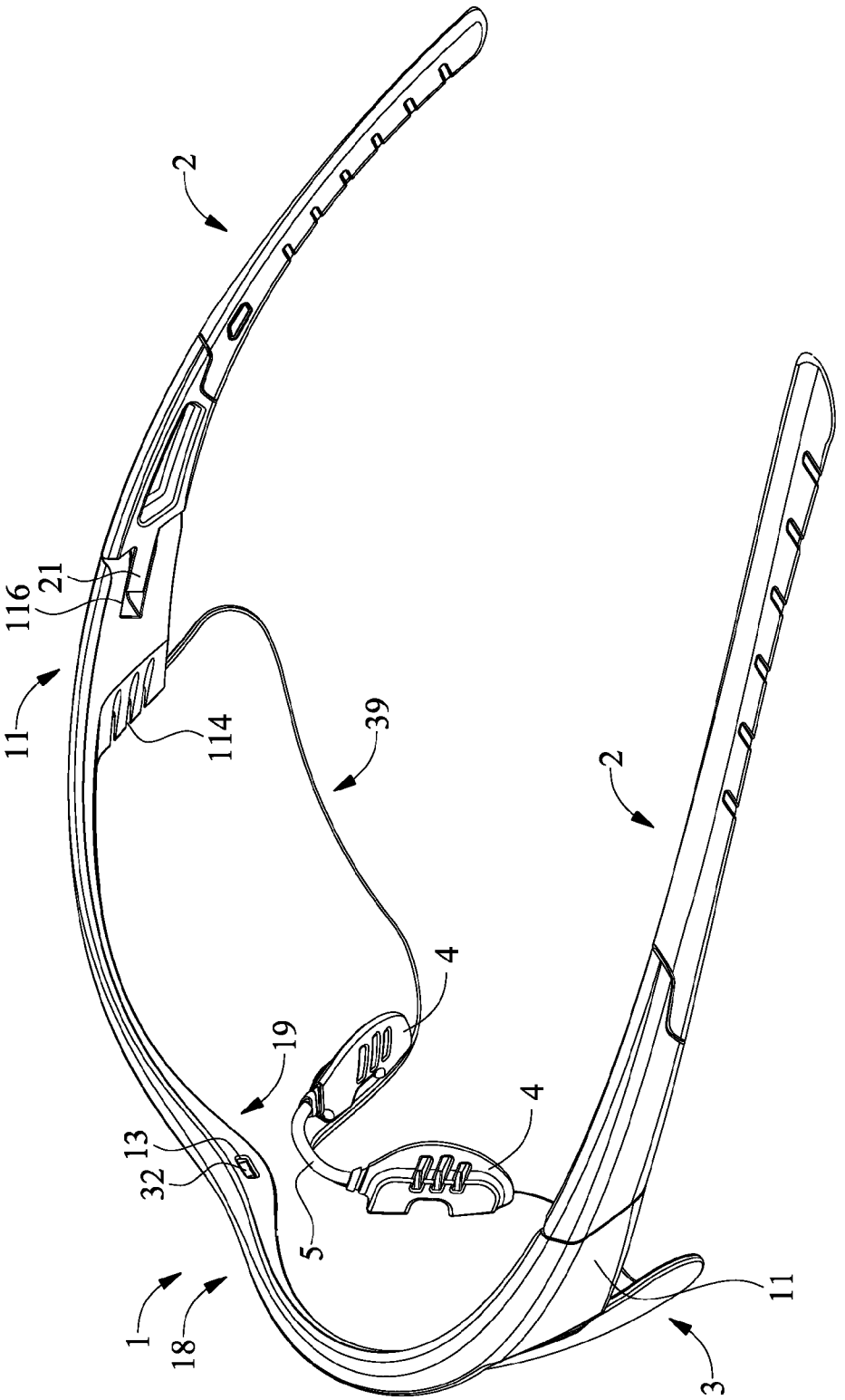


FIG. 7

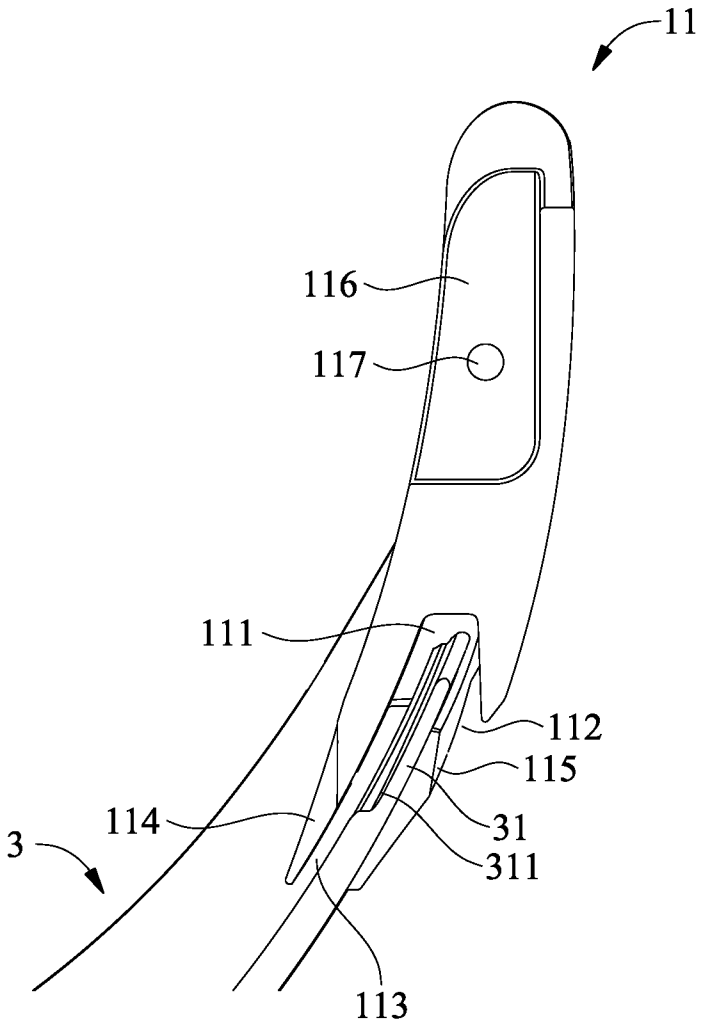


FIG. 8

EYEGLASS FRAME STRUCTURE HAVING U-SHAPED WIND PASSAGE AND EYEGLASSES HAVING THE SAME

FIELD OF THE INVENTION

[0001] The present invention relates to an eyeglass frame structure and eyeglasses having the eyeglass frame structure, in particular to the eyeglass frame structure and eyeglasses having the eyeglass frame structure capable of guiding wind in a transverse direction to a leeward side of a lens to prevent producing mists or causing discomfort to a wearer's eyes by return wind, and the eyeglasses require no hole or slot on the lens to prevent damaging the structure of the lens.

BACKGROUND OF THE INVENTION

[0002] People often wear glasses to assist their vision for looking at a far distance or a near distance, and during exercise or at work. In general, glasses are divided according to their function into nearsighted glasses, farsighted glasses, reading glasses, sunglasses, sports goggles, work goggles, etc.

[0003] In the sports and work goggles, mists are generally formed on the leeward side of the lens, which may hinder a wearer's vision, so some manufacturers drill a hole or form a slot on the lens to guide wind to the leeward side of the lens in order to reduce the formation of mists. However, the hole or slot formed on the lens generally reduces the structural strength of the lens and also causes a refraction of light from the lens. In addition, the hole or slot formed on the lens may invite tiny objects in the air to pass through and hurt the wearer's eyes. In addition, there is no guarantee that the hole or slot formed on the lens would guide the wind to land at the leeward side of the lens so that the formation of mists is reduced, and the wind generally flows from the top of the leeward side of the lens through the rear of the hole or slot, formed at the upper edge of the lens, downwards to the lower edge of the leeward side of the lens through a gap between a curved surface of the lens and a cheek bone of the wearer's face, having the return air blocked and distributed to the wearer's eyes that causes discomfort to the wearer.

[0004] Therefore, it is a main subject of the present invention to design and develop an eyeglass frame structure and eyeglasses having the eyeglass frame structure, so that wind is guided transversely to the leeward side of the lens to prevent the formation of mists, return air from causing discomfort to the wearer's eyes, and tiny objects from entering into the leeward side of the lens, the eyeglasses have no hole or slot formed on the lens, and thus the lens structure is not damaged.

SUMMARY OF THE INVENTION

[0005] In view of the aforementioned drawbacks, the inventor of the present invention based on years of experience in the related industry to conduct extensive researches and experiments, and finally developed an eyeglass frame structure and a pair of eyeglasses with the same structure in accordance with the present invention to overcome the drawbacks of the prior art.

[0006] Therefore, it is a primary objective of the invention to provide an eyeglass frame structure and eyeglasses having the eyeglass frame structure, in hope of achieving the effects of guiding wind transversely to the leeward side of the lens to prevent the formation of mists, return air from causing discomfort to the wearer's eyes, and tiny objects from entering into the leeward side of the lens and having no hole or slot formed on the lens, so that the lens structure is not damaged.

[0007] To achieve the aforementioned and other objectives, the present invention provides an eyeglass frame structure of a first preferred embodiment, comprising: a frame, an eyeglass arm pivoting portion disposed separately on both left and right sides of the frame, a lens connecting portion disposed between the eyeglass arm pivoting portions of the frame, a U-shaped wind passage formed at each of the eyeglass arm pivoting portions and having a wind inlet formed at a windward side of the frame and a wind outlet formed at a leeward side of the frame, and the wind outlets being provided for guiding wind transversely to the leeward side of the lens.

[0008] In the eyeglass frame structure, the frame is substantially in U-shaped, and an outwardly convex side of the frame is the windward side, and an inwardly concave side of the frame is the leeward side, and the lens connecting portion is an embedded slot disposed at a lower edge of the frame for embedding into an upper edge of the lens.

[0009] In the eyeglass frame structure, the frame includes a snap hole interconnected to the lens connecting portion and provided for snapping to a snap member of the lens, or the frame includes a snap member disposed in the lens connecting portion for snapping to the snap hole of the lens.

[0010] In the eyeglass frame structure, the wind outlets are provided for installing and containing snap plates installed on both left and right sides of the lens respectively.

[0011] In the eyeglass frame structure, the left and right sides of the leeward side of the frame have at least one wind guide slot formed at the wind outlets.

[0012] In the eyeglass frame structure, each of the eyeglass arm pivoting portions has a pivot slot for pivotally coupling a pivot pin of the eyeglass arm, or each of the eyeglass arm pivoting portions has a pivot pin for pivotally coupling the eyeglass arm.

[0013] The present invention further provides a pair of eyeglasses in accordance with a second embodiment, and the glasses comprise: an eyeglass frame structure of the first embodiment; two eyeglass arms, respectively and pivotally coupled to the eyeglass arm pivoting portions; a lens, installed to each of the lens connecting portions; and two nose pads, installed to a leeward side of the lens or a leeward side of the frame.

[0014] In the foregoing glasses, the frame is substantially U-shaped, and an outwardly convex side of the frame is the windward side, and an inwardly concave side of the frame is the leeward side, and the lens connecting portion is an embedded slot formed at a lower edge of the frame for embedding into an upper edge of the lens.

[0015] In the foregoing glasses, the frame includes a snap hole interconnected to the lens connecting portion for snapping a snap member to the lens, or the frame includes a snap member installed in the lens connecting portion for snapping to a snap hole of the lens.

[0016] In the foregoing glasses, the wind outlets are provided for installing and containing snap plates installed on both left and right sides of the lens respectively.

[0017] In the foregoing glasses, each of the snap plates has a thin plate section.

[0018] In the foregoing glasses, the left and right sides of the leeward side of the frame have at least one wind guide slot formed at the wind outlets.

[0019] In the foregoing glasses, each of the eyeglass arm pivoting portions has a pivot slot for pivotally coupling a pivot

pin of the eyeglass arm, or each of the eyeglass arm pivoting portions has a pivot pin for pivotally coupling a pivot slot of the eyeglass arm.

[0020] In the foregoing glasses, the nose pads are coupled by an elastic rod.

[0021] Therefore, the eyeglass frame structure and eyeglasses having the eyeglass frame structure of the present invention can guide wind transversely to the leeward side of the lens to prevent the formation of mists, return air from causing discomfort to the wearer's eyes, and tiny objects from entering into the leeward side of the lens, and has no hole or slot formed on the lens, so that the lens structure is not damaged.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] FIG. **1** is a first exploded view of a preferred embodiment of the present invention;

[0023] FIG. **2** is a second exploded view of a preferred embodiment of the present invention;

[0024] FIG. **3** is a third exploded view of a preferred embodiment of the present invention;

[0025] FIG. **4** is a schematic view of an eyeglass arm pivoting portion of a preferred embodiment of the present invention;

[0026] FIG. **5** is a cross-sectional view of an eyeglass arm pivoting portion of a preferred embodiment of the present invention;

[0027] FIG. **6** is a first perspective view of a preferred embodiment of the present invention;

[0028] FIG. **7** is a second perspective view of a preferred embodiment of the present invention; and

[0029] FIG. **8** is a cross-sectional view of an eyeglass arm pivoting portion and a snap plate of a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0030] The objects, characteristics and effects of the present invention will become apparent with the detailed description of the preferred embodiments and the illustration of related drawings as follows.

[0031] With reference to FIGS. **1** to **8** for an eyeglass frame structure in accordance with a first embodiment of the present invention, the eyeglass frame structure comprises: a frame **1** made of plastic or metal, and having an eyeglass arm pivoting portion **11** disposed separately on both left and right sides of the frame **1** for pivotally coupling an eyeglass arm **2**, and a lens connecting portion **12** disposed between the eyeglass arm pivoting portions **11** for coupling a lens **3**, wherein the lens **3** may be in any shape and made of plastic or glass, and the lens **3** comes with a parameter or a light filtering function, and each of the eyeglass arm pivoting portions **11** includes a U-shaped wind passage **111**, and each of the U-shaped wind passages **111** has a wind inlet **112** formed on a windward side **18** of the frame **1** and a wind outlet **113** formed on a leeward side **19** of the frame **1**, and a partition plate **115** is formed between the wind inlet **112** and the wind outlet **113**, and the wind outlets **113** are provided for guiding wind transversely to the leeward side **39** of the lens **3**, so that the wind flows transversely through the leeward side **39** of the lens **3**.

[0032] As described above, the eyeglass frame structure of the present invention requires no hole or slot formed on the lens, so that the lens structure is not damaged, and no refraction occurs at the lens. In addition, the eyeglass frame structure of the present invention comes with a U-shaped wind passage for inhibiting tiny objects in the air from entering the leeward side of the lens directly, so as to protect the wearer's eyes from being damaged by the tiny objects. In addition, the wind outlet of the U-shaped wind passage of the eyeglass frame structure of the present invention guides wind transversely to the leeward side of the lens, so that the wind flows smoothly along the leeward side of the lens to dissipate heat and prevent the formation of mists. Since the eyeglass frame structure of the present invention drives the wind to flow transversely through the leeward side of the lens rather than flowing through a gap between a curved surface at the lower edge of the leeward side of the lens and a wearer's check bone, so as to further prevent blocking or distributing the return air that causes discomfort to the wearer's eyes.

[0033] With reference to FIGS. **1** to **3** for the eyeglass frame structure of the present invention, the frame **1** is substantially U-shaped, and an outwardly convex side of the frame **1** is a windward side **18**, and an inwardly concave side of the frame **1** is a leeward side **19**, and the lens connecting portion **12** is an embedded slot disposed at the lower edge of the frame **1** for embedding into the upper edge of the lens **3**, and the wind outlet **113** of the eyeglass arm pivoting portions **11** is formed separately on both left and right sides of the lens **3**. Therefore, the lens **3** of the present invention can be installed to the frame **1** easily, and drives the wind to flow from the left and right sides of the lens **3** transversely through the leeward side **39** of the lens **3**.

[0034] In the eyeglass frame structure as shown in FIGS. **2** and **7**, a snap hole **13** is formed at the middle of the leeward side **19** of the frame **1** and interconnected to the lens connecting portion **12** for snapping to a snap member **32** disposed at the middle of the leeward side **39** of the lens **3** (or snapping a snap member installed at the middle of the leeward side **19** of the frame **1** and in the lens connecting portion **12** into a snap hole formed at the middle of the leeward side **39** of the lens **3**), and the quantity and installation position of the snap holes **13** and the snap members **32** may be increased as required. Therefore, the lenses **3** may be installed to the frame **1** of the present invention easily.

[0035] In the eyeglass frame structure as shown in FIGS. **1** to **3**, **6** and **8**, the wind outlets **113** are provided for installing and containing a snap plate **31** disposed separately on both left and right sides of the lens **3**, and the snap plates **31** lean on the partition plates **115** respectively. Therefore, the lens **3** can be installed to or moved from the frame **1** easily.

[0036] In the eyeglass frame structure as shown in FIGS. **1** to **5**, **7** and **8**, both left and right sides of the leeward side **19** of the frame **1** have at least one wind guide slot **114** formed at the wind outlets **113** for diffusing the wind guided by the wind outlets **113**.

[0037] In the eyeglass frame structure as shown in FIGS. **1** to **8**, each of the eyeglass arm pivoting portions **11** has a pivot slot **116** for pivotally coupling a pivot pin **21** of an eyeglass arm **2** (a pivot pin formed separately at the eyeglass arm pivoting portions **11** for pivotally coupling a pivot slot of an eyeglass arm **2**). In addition, a pivot (not shown in the figure) is installed between the pivot slot **116** and the pivot pin **21** and passed through a pivot hole **117** of the pivot slot **116** and a pivot hole **211** of the pivot pin **21** to achieve the pivotal connection effect. In FIGS. **2** and **5**, the pivot slot **116** of the eyeglass arm pivoting portion **11** is not interconnected to the U-shaped wind passage **111**, but the pivot slot **116** of the

eyeglass arm pivoting portion **11** may be concavely disposed at and interconnected to a turning position of the U-shaped wind passage **111**, and then the pivot pin **21** of the eyeglass arm **2** may be extended, so that an end of the pivot pin **21** blocks the interconnected position of the pivot slot **116** and the U-shaped wind passage **111** to achieve the same wind guiding effect.

[0038] With reference to FIGS. **1** to **8** for the second preferred embodiment of eyeglasses of the present invention, the eyeglasses comprise an eyeglass frame structure, two eyeglass arms **2**, two lenses **3** and two nose pads **4**. Wherein, the eyeglass arms **2** are respectively and pivotally coupled to the eyeglass arm pivoting portions **11**, and the lens **3** is installed to the lens connecting portion **12**, wherein the lens **3** may be in any form, and made of plastic or glass, and the lens **3** may come with a parameter or a light filtering function. The nose pads **4** may be installed on a leeward side **39** of the lens **3** (or a leeward side **19** of the frame **1**), and the nose pad **4** may have at least one connecting slot **41**, and the leeward side **39** of the lens **3** may have at least one connecting column **33** installed in the connecting slot **41** for installing the nose pad **4** on the leeward side **39** of the lens **3**. In addition, the leeward side **19** of the frame **1** may have at least one connecting column installed in the connecting slot **41** for installing the nose pad **4** on the leeward side **19** of the frame **1**.

[0039] As described above, the eyeglasses of the present invention require no hole or slot formed on the lens, so that the lens structure is not damaged, and no refraction occurs at the lens. In addition, the wind passage of the eyeglasses of the present invention is substantially U-shaped for preventing tiny objects in the air from entering into the leeward side of lens directly, so as to protect the wearer's eyes from being hurt by the tiny objects. In addition, the wind outlet of the U-shaped wind passage of the eyeglasses of the present invention guides wind transversely to the leeward side of the lens, so that the wind flows smoothly through the leeward side of the lens to dissipate heat effectively and prevent the formation of mists. In addition, the eyeglasses of the present invention drives the wind to flow transversely through the leeward side of the lens and does not pass through a gap between a curved surface of a lower edge of the leeward side of the lens and a wearer's cheek bone, so as to prevent blocking or distributing the return air that causes discomfort to the wearer's eyes.

[0040] In the foregoing glasses as shown in FIGS. **1** to **3**, the frame **1** is substantially U-shaped, and an outwardly convex surface of the frame **1** is the windward side **18**, and an inwardly concave side of the frame **1** is the leeward side **19**, and the lens connecting portion **12** may be an embedded slot formed at the lower edge of the frame **1** for embedding into the upper edge of the lens **3**, and the wind outlet **113** of the eyeglass arm pivoting portions **11** is formed separately on both left and right sides of the lens **3**. Therefore, the lens **3** of the present invention may be installed to the frame **1** easily, and the wind is driven to flow transversely from both left and right sides of the lens **3** through the leeward side **39** of the lens **3**.

[0041] In the foregoing glasses as shown in FIGS. **2** and **7**, a snap hole **13** is formed at the middle of the leeward side **19** of the frame **1** and interconnected to the lens connecting portion **12** for snapping a snap member **32** installed at the middle of the leeward side **39** of the lens **3** (or snapping a snap member installed at the middle of the leeward side **19** of the frame **1** to a snap hole formed in the lens connecting portion **12** and at the middle of the leeward side **39** of the lens **3**), wherein the quantity and installation position of the snap holes **13** and the snap members **32** may be increased as required. Therefore, the lens **3** can be installed to or removed from the frame **1** easily.

[0042] In the foregoing glasses as shown in FIGS. **1** to **3**, **6** to **8**, the wind outlets **113** are provided for installing and containing a snap plate **31** installed separately on both left and right sides of the lens **3**, and the snap plates **31** lean against the partition plates **115** respectively. Therefore, the lens **3** can be installed to or removed from the frame **1** easily.

[0043] In the foregoing glasses as shown in FIGS. **1**, **2** and **8**, an end of each of the snap plates **31** has a thin plate section **311**, so that when the snap plates **31** are installed in the wind outlets **113** respectively, the thin plate sections **311** increase the flowing area. If the ends of the snap plates **31** do not have the thin plate sections **311**, and the snap plates **31** are installed into the wind outlets **113**, the snap plates **31** will reduce the flowing area. In FIG. **8**, the flowing area of the U-shaped wind passages **111** may be adjusted by the depth of the snap plates **31** penetrating into the U-shaped wind passages **111**. The deeper the snap plates **31** penetrating into the U-shaped wind passages **111**, the smaller the flowing area of the U-shaped wind passages **111**, and vice versa.

[0044] In the foregoing glasses as shown in FIGS. **1** to **5**, **7** and **8**, both left and right sides of the leeward side **19** of the frame **1** have at least one wind guide slot **114** disposed at the wind outlets **113** for diffusing the wind guided by the wind outlets **113**.

[0045] In the foregoing glasses as shown in FIGS. **1** to **8**, each of the eyeglass arm pivoting portions **11** has a pivot slot **116** for pivotally coupling a pivot pin **21** of the eyeglass arm **2** (or each of the eyeglass arm pivoting portions **11** has a pivot pin for pivotally coupling a pivot slot of the eyeglass arm **2**). In addition, a pivot (not shown in the figure) installed between the pivot slot **116** and the pivot pin **21** is passed through a gap between a pivot hole **117** of the pivot slot **116** and a pivot hole **211** of the pivot pin **21** to achieve the pivotal connection effect. In FIGS. **2** and **8**, the pivot slot **116** of the eyeglass arm pivoting portion **11** is not interconnected to the U-shaped wind passage **111**, but the pivot slot **116** of the eyeglass arm pivoting portion **11** is concavely formed at a turning position where the U-shaped wind passages **111** are interconnected, and then the pivot pin **21** of the eyeglass arm **2** is extended, so that an end of the pivot pin **21** blocks the interconnected position of the pivot slot **116** and the U-shaped wind passage **111** to achieve the wind guiding effect.

[0046] In the foregoing glasses as shown in FIGS. **1** to **3** and **7**, the nose pads **4** are coupled by an elastic rod **5**. Therefore, the nose pads **4** are coupled integrally and will not be missing or lost easily.

[0047] While the invention has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope and spirit of the invention set forth in the claims.

What is claimed is:

1. An eyeglass frame structure, comprising a frame, an eyeglass arm pivoting portion disposed separately on both left and right sides of the frame, a lens connecting portion disposed between the eyeglass arm pivoting portions of the frame, a U-shaped wind passage formed at each of the eyeglass arm pivoting portions and having a wind inlet formed at a windward side of the frame and a wind outlet formed at a leeward side of the frame, and the wind outlets being provided

for guiding wind transversely to the leeward side of the lens, wherein the frame is substantially in U-shaped, and an outwardly convex side of the frame is the windward side, and an inwardly concave side of the frame is the leeward side.

2. The eyeglass frame structure of claim **1**, wherein the lens connecting portion is an embedded slot disposed at a lower edge of the frame for embedding into an upper edge of the lens.

3. The eyeglass frame structure of claim **2**, wherein the frame includes a snap hole interconnected to the lens connecting portion and provided for snapping to a snap member of the lens, or the frame includes a snap member disposed in the lens connecting portion for snapping to the snap hole of the lens.

4. The eyeglass frame structure of claim **3**, wherein the wind outlets are provided for installing and containing snap plates installed on both left and right sides of the lens respectively.

5. The eyeglass frame structure of claim **1**, wherein the left and right sides of the leeward side of the frame have at least one wind guide slot formed at the wind outlets.

6. The eyeglass frame structure of claim **1**, wherein each of the eyeglass arm pivoting portions has a pivot slot for pivotally coupling a pivot pin of the eyeglass arm, or each of the eyeglass arm pivoting portions has a pivot pin for pivotally coupling the eyeglass arm.

7. A pair of eyeglasses, comprising; an eyeglass frame structure according to claim **1**; two eyeglass arms, respectively and pivotally coupled to the eyeglass arm pivoting portions; a lens, installed at the lens connecting portion; and two nose pads, installed on the leeward side of the lens or the leeward side of the frame.

8. The eyeglasses of claim **7**, wherein the frame is substantially U-shaped, and an outwardly convex side of the frame is the windward side, and an inwardly concave side of the frame is the leeward side, and the lens connecting portion is an embedded slot formed at a lower edge of the frame for embedding into an upper edge of the lens.

9. The eyeglasses of claim **8**, wherein the frame includes a snap hole interconnected to the lens connecting portion for snapping a snap member to the lens, or the frame includes a snap member installed in the lens connecting portion for snapping to a snap hole of the lens.

10. The eyeglasses of claim **9**, wherein the wind outlets are provided for installing and containing snap plates installed on both left and right sides of the lens respectively.

11. The eyeglasses of claim **10**, wherein each of the snap plates has a thin plate section.

12. The eyeglasses of claim **7**, wherein the left and right sides of the leeward side of the frame have at least one wind guide slot formed at the wind outlets.

13. The eyeglasses of claim **7**, wherein each of the eyeglass arm pivoting portions has a pivot slot for pivotally coupling a pivot pin of the eyeglass arm, or each of the eyeglass arm pivoting portions has a pivot pin for pivotally coupling a pivot slot of the eyeglass arm.

14. The eyeglasses of claim **7**, wherein the nose pads are coupled by an elastic rod.

* * * * *