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An attachment device for an eyewear frame arrangement

Field of invention

- 5 This invention relates to an eyewear attachment method and device, such as clip-on eyewear, and more particularly relates to a secondary eyewear for attaching secondary sunglass lenses to conventional primary eyewear.

10 Background of the invention

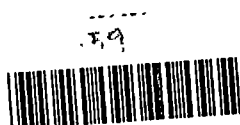
- Secondary eyewear to convert conventional primary eyeglasses to sunglasses is very popular. They allow the user to usually avoid the need for two separate prescription glasses. They can be used, but less frequently, to attach secondary eyewear that can
15 change the prescription of the lenses. The more common use, however, is to add tinted lenses to conventional primary eyewear. This option is useful in sunny climates, where this type of spectacle arrangement can reduce sun glare. Further, it is especially useful for users who may wish to avoid the use of contact lenses when requiring glare reduction, as conventional sunglasses usually do not come with prescription, or the use of two separate
20 prescription glasses. Certain users may have adverse reaction to the wearing of contact lenses, or may face discomfort or fatigue when using such lenses, especially after long periods of time.

- It is to be understood that use of the terms eyewear and eyeglasses refer to conventional
25 spectacles, lens, or lens frame assemblies.

There are many known methods to attach the secondary lens or lens frame to conventional primary lens or lens frame.

30 Mechanical clips or hooks

- This method involves securing a secondary lens or lens frame assembly onto conventional primary eyewear and involves the use of clips or hooks, usually provided on the secondary lens or lens frame. Engagement of the secondary eyewear to the primary eyewear is usually at 3 contact areas; the bridge portion of the primary eyewear, and at the peripheral
35 rims located near the lateral temple bars on both sides of the primary eyewear. To effect the engagement between the secondary eyewear onto the primary eyewear, a user would



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need to manipulate the secondary eyewear so that it can form an engagement at the 3 connecting points.

5 Although simple to use, this method of attachment does not achieve the aesthetic appeal that users will usually want to be associated when using a pair of eyeglasses. The use of mechanical clips or hooks may degrade the appearance of the overall eyewear arrangement as they draw attention to the edge of the entire eyewear attachment.

10 Further, repeated use will deform the secondary eyewear arrangement, as mounting and dismounting the secondary eyewear usually requires the user to manipulate the secondary eyewear. In the long run, it will be difficult to ensure stable fitting and orientation, and may eventually degrade the user's vision due to inevitable misalignment of the lenses after prolonged manipulation. The high number of mechanical clips or hooks required to attach the secondary eyewear to the conventional primary eyewear will cause unsightly scratches
15 to the secondary and primary eyewear during mounting and dismounting. In an extreme scenario, this may even cause breakage of the secondary eyewear.

Magnetic material

20 This is a newer version of attaching secondary eyewear to a conventional primary eyewear involving the use of magnetic portions.

25 Commonly, a magnetic material is embedded in an extension socket mounted in the secondary eyewear. Magnets of opposing polarities would then be positioned on the temple regions of the conventional primary eyewear.

This method of attachment is cumbersome, as a user would have to perfectly align the magnetic regions of the primary and secondary eyewear before they can be magnetically attached. Further, magnetic attachment means are not known to form a strong bond, and may not withstand the wearer's strenuous activity. In such a case, the secondary eyewear
30 may detach itself from the primary eyewear after some time or due to some physical activity of the wearer.

A common drawback of these two kinds of attachments is that the primary eyewear is susceptible to scratches. To alleviate this problem to a certain extent, frame manufacturers
35 have resorted to creating a greater allowance between the primary and secondary eyewear and lenses. However, this increase in allowance may cause an effect known as the

ghosting effect, which causes the wearer to see double vision. This again, may eventually degrade the vision of the user.

Groove and protrusion

- 5 This method of attachment is the subject of Singapore application no. 200105419-6. This system allows a user-produced groove on the secondary eyewear, to be fitted on the protrusion provided on the primary eyewear. Though this system allows the allowance between the primary and secondary lenses to be minimized, thus reducing the ghosting effect, a user needs to accurately align the protrusion to the groove to cause the
- 10 attachment. This may be cumbersome, and to some extent, a tedious task.

It is an object of the present invention to alleviate the problems highlighted above.

Summary of invention

- 15 According to the present invention, there is provided an attachment device adaptable to be positioned between a primary eyewear and a secondary eyewear including a protective pad for preventing the forward facing surface of the primary lens and the rearward facing
- 20 surface of the secondary lens from being in direct contact, an engagement means for attaching said protective pad to the forward facing surface of the primary or the rearward facing surface of the secondary lens or lens frame, wherein the protective pad creates a frictional resistance between the primary lens and secondary lens or lens frame.

- 25 In a preferred embodiment, the secondary eyewear has at least a hook to attach the rear surface of the secondary eyewear to the front surface of the primary eyewear.

- In a further preferred embodiment, the attachment device is to be attached to the forward facing surface of the primary lens of the primary eyewear.

- 30 In a still further preferred embodiment of the present invention, the attachment device is to be attached to the rearward facing surface of the secondary lens of the secondary eyewear.

- 35 In yet another preferred embodiment, the protective pad is patterned or ribbed to enhance the frictional resistance between the primary lens and the secondary lens.

In a further preferred embodiment, the protective pad is made of a resilient material so that it can withstand a wearer's strenuous activity, and will retain its original shape and thickness once it is released from its contact with either the primary eyewear or secondary eyewear. Thus, a minimum allowance between the rearward facing surface of the secondary lens of the secondary eyewear and the forward facing surface of the primary lens of the primary eyewear can still be maintained after sustained usage. In use, the protective pad of the attachment device spreads out upon contact with the primary or secondary lens or lens frame, and increases the surface area, and thus increases frictional resistance between the primary and secondary lens or lens frame.

Preferably, the resilient material of the protective pad is silicone or any silicone substitute or any other material or polymer of the art, which can impart resilience to the protective pad of the present invention.

In a still further preferred embodiment, the engagement means can be manually fitted to the primary or secondary lens of the user and allows the user to adopt the present arrangement of the present invention to a conventional primary and secondary eyewear arrangement without having to purchase another set of eyewear, or wait for a manufacturer fitted eyewear incorporated with the attachment device.

In a further preferred embodiment, the engagement means is a screw to allow the user ease of adopting existing tools for attaching the attachment device to the forward facing portion of the primary or the rearward facing portion of the secondary eyewear. It is to be understood that this invention does not limit the engagement means to be a screw, and further extends the interpretation of the engagement means to pins, tacks, fasteners, or any mechanical equivalent of the screw. These substitutes or combinations of any substitutes can easily replace the engagement means as preferred in the present invention without departing from the spirit of the invention. Further, the engagement means can be of conventional adhesives, which can affix the attachment device to either the forward facing surface of the primary lens or the rearward facing surface of the secondary lens of conventional spectacle frame arrangements.

In a still further preferred embodiment, the protective pad will at least contact the forward facing surface of the primary lens and the rearward facing surface of the secondary lens to allow this contact to provide a frictional resistance, and to create a durable grasp or hold

between the primary and secondary lenses. This further minimizes the occurrence of scratches on the lenses after prolonged use. It should be understood that the attachment device may be engaged on either the forward facing surface of the primary lens or the rearward facing surface of the secondary lens, as long as the attachment device is
5 between the primary and the secondary lens.

In a preferred embodiment, the hook of the secondary eyewear is made of a pliable or malleable material so that a user may adjust the length of extension of the hook to adjust the allowance between the primary lens and the secondary lens.

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In a further preferred embodiment, the hook further includes a protective sleeve to enhance the frictional resistance between the hook and the primary eyewear. This protective sleeve has the added advantage in that it serves to prevent scratches that may be caused by the hook during the mounting and dismounting of the secondary eyewear from the primary
15 eyewear.

In a still further preferred embodiment, the sleeve is made of a resilient material to withstand the repeated mounting and dismounting of the hook to the primary eyewear when a user needs to attach a secondary eyewear to a primary eyewear.

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In yet another preferred embodiment, the sleeve is of a bulbous shape. It is preferred that the rounded portion of the sleeve extends below the primary bridge, to allow the bulbous shape to better engage the hook to the primary eyewear.

25 In another preferred embodiment, the hook when in use, allows the sleeve to at least contact the secondary eyewear when forming an engagement between the primary eyewear and the secondary eyewear.

Preferably, the attachment device is positioned such that when in use, the attachment
30 device is hidden from the view on the forward facing side of the secondary lens. For example, in Singapore application number 200105419-6, the attachment device is preferable engaged on the rearward facing portion of the secondary bridge portion of the secondary eyewear, or in other conventional secondary eyewear in the market, on the opposed side of a design detail of the secondary eyewear.

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It is known in the art for secondary bridge portions to be attached to secondary lenses or lens frames using a bridge screw plug. In a preferred embodiment, the attachment device is engaged through the bridge screw plug, to effect a stronger engagement with the secondary lens.

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According to another aspect of the invention, there is provided an engagement means to engage the attachment device onto either the forward facing portion of the primary lens or the rearward facing portion of the secondary lens of the primary or secondary eyewear, to be used in the present invention.

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In a preferred embodiment, the protective pad is incorporated onto the engagement means.

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According to another aspect of the invention, there is provided a method of attaching an attachment device according to the invention including the steps of attaching a protective pad onto an engagement means, and affixing the engagement means onto the primary or secondary lens.

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According to a still further aspect of the invention, there is provided a spectacle frame arrangement including a primary frame enclosing two lens portions, a secondary frame enclosing two further lens portions and an attachment device to be fitted between the primary and secondary frame.

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In another aspect of the invention, the bridge portion of the secondary eyewear is made of a malleable material.

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In yet another aspect of the invention, the bridge portion of the secondary eyewear can be shaped to match the contours of the bridge portion of the primary eyewear. This is so that the overall outlook of the spectacle frame arrangement will still be pleasing to the eye.

Drawings

- 5 Embodiments of the invention will be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows the perspective view of a prior art spectacle frame attachment with a mechanical hook attached to the bridge portion of the secondary eyewear

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Figure 2 shows the top view of the spectacle frame arrangement, with the attachment device positioned between the rearward facing portion of the secondary lens of the secondary eyewear, and the forward facing portion of the primary lens of the primary eyewear.

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Figure 3 shows a top view of the secondary eyewear, where the attachment device is attached to the rearward facing portion of the secondary lens of the secondary eyewear.

Figure 4 shows the side elevation of the attachment device attached to the rearward facing portion of the secondary lens of the secondary eyewear, with the hook attached to the rearward facing portion of the secondary eyewear.

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Figure 5 shows the top view of the attachment device before manually fitted to the rearward facing portion of the secondary lens of the secondary eyewear

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Figure 6 shows the side elevation of the attachment device.

Figure 7 shows the side elevation of the hook of the secondary eyewear further including a sleeve of a bulbous shape.

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Figure 8 shows the method of attaching an attachment device to either the rearward facing portion of the secondary lens or the forward facing portion of the primary lens according to the present invention.

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Detailed description of the invention

In describing preferred embodiments of the present invention illustrated in the drawings,
5 specific terminology is employed for the sake of clarity. However, the invention is not intended to be limited to the specific terminology so selected, and it is to be understood that each specific element includes all technical equivalents which operate in a similar manner to accomplish a similar purpose.

10 Figure 1 shows the prior art spectacle frame arrangement 100 whereby the secondary eyewear 20 is hooked onto the primary eyewear 10 using mechanical hooks 40 integral to the secondary bridge portion 24, and positioned on the primary bridge portion 14 of the primary eyewear 10. It is to be understood, however, that this invention does not limit itself to secondary eyewear with mechanical hooks to be positioned at the secondary bridge
15 portion. The mechanical hooks 40, can, for example, be positioned at the extreme ends of the secondary spectacle frame.

The spectacle frame arrangement of the present invention 200 includes an attachment device 30 positioned between the rearward facing portion 22 of the secondary eyewear 20,
20 and the forward facing portion 12 of the primary eyewear 10. The attachment device is seen to have a 'stopper effect' and stops the primary and secondary eyewear from being in direct contact, and to prevent the secondary lens or lens frame from moving about when a user is in motion. This spectacle arrangement further includes a mechanical hook 40 integral to the secondary bridge portion 24 of the secondary eyewear 20, and adapted to
25 be fit onto the primary bridge portion 14 of the primary eyewear 10. This is illustrated in Figure 2.

Figure 3 illustrates the top view of the secondary eyewear 20 of the preferred embodiment of the present invention, where the attachment device 30 is attached to the rearward facing
30 portion 22 of the secondary lens 21. This secondary eyewear 20 further includes a mechanical hook 40 to better engage the secondary eyewear 20 to the primary eyewear 10. It is preferred that the attachment device 30 is positioned at the opposed side of the secondary bridge 24, that extends onto the secondary lens 21. In a preferred embodiment, as illustrated in Figure 3, the position of the attachment device 30 is such that it engages
35 onto a bridge screw plug 50 offered by the secondary bridge 24 of the secondary eyewear 20. In this preferred position, another person will not detect the presence of the attachment

device 30 when looking at the forward facing portion of the spectacle frame arrangement 200. Thus, the spectacle frame arrangement 200 of the present invention offers a high aesthetic appeal.

- 5 Figure 4 shows the spectacle frame arrangement 200 of the present invention, where the side view of both the primary eyewear 10 and the secondary eyewear 20 are seen. The attachment device 30 is attached onto the rearward facing portion 22 of the secondary lens 21. The primary eyewear 10, is seen to be readily accepting of the secondary eyewear 20.
- 10 Figure 5 shows the top view of the secondary eyewear 20 before the attachment device 30 is attached to the rearward facing portion 22 of the secondary lens 21. The attachment device 31 can be seen with the protective pad 31, and the engagement means 32. In this preferred embodiment, the engagement means 32 is a screw, which a user can manually twist onto the rearward facing portion 22 of the secondary lens 21. In a preferred
- 15 embodiment, the attachment means is attached onto the secondary lens through the bridge screw plug 50. In this preferred position, the engagement means 32 sits in the bridge screw plug 50, and the attachment device 30 is not seen from the forward facing portion of the secondary lens.
- 20 Figure 6 shows the attachment device 30 in a preferred embodiment of the present invention with the protective pad 31 incorporated onto the engagement means 32.

In Figure 7, the side view of the present invention is seen, with the preferred embodiment of the mechanical hook 40 with a sleeve 41 of a bulbous shape. It is seen in this preferred

25 arrangement that the rounded portion of the sleeve 41 extends below the primary bridge 14. This allows the protrusion of the sleeve 41 to create a further engagement to the primary bridge 14.

The method of attaching the attachment device 30 onto either the rearward facing portion

30 22 of the secondary eyewear 20 onto either the rearward facing portion 22 of the secondary eyewear 20 or the forward facing portion 12 of the primary eyewear 10 is shown in Figure 8. A protective pad 31 is first affixed onto the engagement means 32, after which the engagement means 32 is engaged to either the rearward facing portion 22 of the secondary eyewear 20 or the forward facing portion 12 of the primary eyewear 10. It is

35 envisioned that for an attachment device 30 already provided with a protective pad 31, integral to the engagement means 32, a user need only to affix the attachment device 30

onto the lens. In the preferred embodiment where the engagement means 32 is a screw, a user needs only to twist the attachment device 30 onto the lens.

5 Modifications and variations of the above-described embodiments of the present invention are possible, as appreciated by those skilled in the art in the light of the above teachings, without departing from the spirit of the present invention.

Claims

1. An attachment device adaptable to be positioned between a primary and a secondary eyewear including
 - 5 a protective pad for preventing the rearward facing surface of the primary and forward facing surface of the secondary lens from being in direct contact and thus creating a stopper effect between said forward facing surface of the primary lens and rearward facing surface of the secondary lens;
 - an engagement means for attaching said protective pad to the forward facing surface of the
 - 10 primary or the rearward facing surface of the secondary lens or lens frame;
 - wherein the protective pad creates a frictional resistance between the primary and secondary lens or lens frame.
2. An attachment device adaptable to be positioned between a primary and a
15 secondary eyewear according to claim 1 wherein the secondary eyewear has at least a hook adaptable to provide an attachment of the secondary eyewear to the primary eyewear.
3. An attachment device adaptable to be positioned between a primary and a
20 secondary eyewear according to any one of the preceding claims wherein the protective pad is attached to a primary lens of the primary eyewear.
4. An attachment device adaptable to be positioned between a primary and a
25 secondary eyewear according to any one of the preceding claims wherein the protective pad is attached to a secondary lens of the secondary eyewear.
5. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claim 1 wherein the protective pad is patterned or ribbed to enhance the frictional resistance between the primary and secondary lens.
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6. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claim 1 wherein the protective pad is made of a resilient material.

7. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claim 6 wherein the protective pad is made of silicon or a silicon substitute.
- 5 8. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claim 1 wherein the engagement means can be manually attached to the forward facing surface of the primary lens or the rearward facing surface of the secondary lens by a user.
- 10 9. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claims 1 or 8 wherein the engagement means is a screw.
10. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claims 1, 3, 4, 5 or 6 wherein in use, the protective
15 pad is at least in contact with the primary and secondary lens.
11. A spectacle frame arrangement including
a primary frame enclosing two primary lens portions;
a secondary frame enclosing two secondary lens portions;
20 a bridge portion of the primary lens;
a bridge portion of the secondary lens; and
an attachment device
12. A spectacle frame arrangement according to claim 11 wherein the bridge portion of the
25 secondary frame is made of a malleable material.
13. A spectacle frame arrangement according to claims 11 and 12 wherein a user is able to shape the bridge portion of the secondary frame to match the bridge portion of the primary frame.
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14. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claim 2 wherein the hook is made of a pliable material.
15. An attachment device adaptable to be positioned between a primary and a secondary
35 eyewear according to claims 2 and 14 wherein the hook further includes a protective sleeve to enhance the frictional resistance between the hook and the primary eyewear.

16. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claims 2, 14 and 15 wherein the sleeve is made of a resilient material.
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17. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claims 2, 14, 15 and 16 wherein the sleeve is of a bulbous shape.
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18. An attachment device adaptable to be positioned between a primary and a secondary eyewear according to claims 2, 14, 15, 16 and 17 where in use, the silicon sleeve will contact the secondary eyewear when forming an engagement between the primary eyewear and the secondary eyewear.
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19. An engagement means, adapted to be used in an attachment device according to any one of the preceding claims.
20. An engagement means according to claim 19, wherein the protective pad is incorporated onto the engagement means.
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21. A method of attaching an attachment device according to any one of the preceding claims including :
- attaching a protective pad onto the engagement means; and
- engaging said engagement means onto the forward facing portion of the primary lens or the rearward facing portion of the secondary lens.
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