

Spectacle Frame Arrangement And Method

Field of Art

The present invention relates to an arrangement and a method of attaching a secondary frame to a primary frame of spectacles.

Prior Art

The prior art includes secondary frames that can be attached to the front-facing portion of a primary spectacle frame. Usually, the secondary frame consists of sunglasses elements, but can also consist of further lenses.

These prior art secondary frames are usually custom designed to fit a unique pair of spectacles, and therefore cannot readily be fitted precisely to different primary frames made by other manufacturers.

Moreover, the prior art systems include components that are attached to the rims of the spectacles. For instance, magnets are inserted into the rims of the spectacles, or magnets are used to attach to the metallic rims of spectacles. Thus, the prior art is not well adapted to fitting secondary frames onto rimless primary spectacles having no metallic rim to which to attach magnetically.

Some prior art systems, such as in Figure 5, include a series of hooks fixed onto the rims of the secondary frame. These hooks clasp onto the edge of the lenses of the primary frame; but the use of hooks on the rim of the lenses degrades the appearance by drawing attention to the edge of the lenses.

An object of the present invention is to provide a spectacle frame arrangement, and a method of seating a secondary frame on a primary spectacle frame, which overcome one or more problems in the prior art, or which provide an improved alternative to the prior art.

Summary of Invention

According to a first aspect of the present invention, there is provided a spectacle frame arrangement, including:

- a primary frame having two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms;

- a secondary frame having two secondary lens portions and being adapted to be attached to at least the front-facing surface of the primary frame, the secondary frame having a front and rear surface, the rear surface being adapted to fit onto the front-facing surface of the primary frame;

- wherein the front-facing surface of the primary frame is provided with a front-facing protrusion, and

wherein the rear surface of the secondary frame is provided with a groove into which the front-facing protrusion of the primary frame fits in order to seat the secondary frame on the front-facing surface of the primary frame.

According to a second aspect of the present invention, there is provided a method of seating a secondary frame on a primary spectacle frame,

wherein the primary frame has two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms; and

the secondary frame has a front and rear surfaces; of which the rear surface is adapted to fit onto the front-facing surface of the primary frame;

wherein the method includes the steps of:

providing the front-facing surface of the primary frame with a front-facing protrusion;

providing the rear surface of the secondary frame with a groove that corresponds to the front-facing protrusion;

attaching the secondary frame onto at least the front-facing surface of the primary frame; and

fitting the front-facing protrusion of the primary frame into the corresponding groove in order to seat the secondary frame on the front-facing surface of the primary frame.

According to a third aspect of the present invention, there is provided a spectacle frame arrangement, including:

a primary frame having two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms;

a secondary frame having two secondary lens portions and being adapted to be attached to at least the front-facing surface of the primary frame, the secondary frame having a front and rear surface, the rear surface being adapted to fit onto the front-facing surface of the primary frame;

wherein the secondary frame is provided with a hook-attachment means that hooks around the bridge portion of the primary frame to secure the secondary frame to the primary frame,

the hook-attachment means being made of pliable material that can be bent and shaped by the user.

According to a fourth aspect of the present invention, there is provided a secondary frame adapted to fit onto a primary frame having two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms, the front-facing surface of the primary frame being provided with a front-facing protrusion

the secondary frame having two secondary lens portions and being adapted to be attached to at least the front-facing surface of the primary frame, the secondary frame having a front and rear surface, the rear surface being adapted to fit onto the front-facing surface of the primary frame;

wherein the rear surface of the secondary frame is provided with a groove into which the front-facing protrusion of the primary frame fits in order to seat the secondary frame on the front-facing surface of the primary frame.

According to a fifth aspect of the present invention, there is provided a secondary frame adapted to fit onto a primary frame having two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms; the front-facing surface of the primary frame being provided with a front-facing protrusion,

the secondary frame having two secondary lens portions and being adapted to be attached to at least the front-facing surface of the primary frame, the secondary frame having a front and rear surface, the rear surface being adapted to fit onto the front-facing surface of the primary frame,

wherein the secondary frame is provided with a hook-attachment means that hooks around the bridge portion of the primary frame to secure the secondary frame to the primary frame,

the hook-attachment means being made of pliable material that can be bent and shaped by the user.

Drawings

In order that the invention might be more fully understood, embodiments of the invention will be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of an arrangement which includes a primary pair of spectacles and a corresponding secondary frame adapted to fit onto the primary spectacles;

Figure 2 is a side cross-sectional view of Figure 1;

Figure 3 shows a perspective view of the embodiment of Figure 1, showing the secondary frame fitted onto the primary frame;

Figure 4 illustrates a second embodiment in which a primary frame is fitted onto a rimless secondary frame; and

Figure 5 illustrates prior art system that attempts to use a series of hooks to attach to a pair of primary spectacles.

In the respective embodiments of Figures 1 and 4, like numerals are used to refer to similar parts merely for ease of understanding the description.

Description of Embodiments

Referring to the drawings, Figure 1 illustrates a perspective view of a spectacle frame arrangement which includes a secondary frame 20 and a primary frame 30. The secondary frame 20 is adapted to fit onto the primary frame 30.

The primary frame 30 has two lens portions 32 which each include an optical lens. In Figure 1, the lens portions 32 are supported by lens frames 31. In other words, the spectacles are rimmed.

The lens portions 32 are connected to each other by a bridge 35. Two rearwardly extendible frame arms 37 are connected to the lens portions to enable a user to wear the primary spectacle frame.

In Figure 2, the primary frame 30 has a front-facing surface 33 and a rear-facing surface 34.

In Figure 1, the secondary frame 20 is shaped in a complimentary manner to the primary frame 30, such that the secondary frame 20 fits onto the front-facing surface 33 of the primary frame 30.

The secondary frame 20 has lens portions 22. Typically, the lens portions 22 of the secondary frame 20 may be made of sunglasses material, or may also consist of other types of optical lenses.

In Figure 1, the lens portion 22 of the secondary frame is provided with a supporting frame 21.

In the secondary frame, the lens portions 22 are also connected to each other by a bridge 25. This secondary bridge 25 is made of pliable material which can be bent and shaped by the user. Hence, by bending and shaping the secondary bridge 25, the secondary lenses can be made closer or further away from each other, so as to adapt to different widths of different primary lenses.

In Figure 2, the secondary frame 20 has a front surface 23 and a rear surface 24. The shape of the rear surface 24 is adapted to precisely conform to the front-facing surface 33 of the primary frame 30. In use, the rear surface 24 of the secondary frame fits onto the front-facing surface 33 of the primary frame. Typically, an end-user attaches the secondary frame 20 when he or she needs glare protection which would be provided by the sunglasses material of the lenses 22 of the secondary frame 20.

In order to ensure precise alignment of the secondary and primary frames 20, 30, the front-facing surface 33 of the secondary frame 30 is provided with a front-facing protrusion 36. The rear surface 24 of the secondary frame 20 is provided with a groove 26 into which the front-facing protrusion 36 fits. This enables the secondary and primary frames 20, 30 to be seated and aligned with each other precisely.

An advantage of using one or more grooves and projections on the respective front and rear surfaces of the frames, is that, in use, the grooves and projections are not located on an outermost surface of the spectacle frame arrangement. Instead, the groove 26 and projection 36 are sandwiched between the primary and secondary frames. Thus, the groove and projection do not form part of the outermost surface features of the overall spectacle frame arrangement. This is in contrast to the prior art where the components, used to join the frames, become part of the outermost surface features of the spectacle arrangement, which tend to draw attention to themselves, thus detracting from the aesthetics of the product.

In Figure 1, the secondary frame 20 is provided with a hook-attachment means in the form of hooks 28. The hooks 28 are adapted to fit over the bridge 35 of the primary frame 30. In the embodiment, the hooks 28 are made of malleable or pliable material. This enables the user to bend or shape the hooks 28 into an appropriate form that enables the secondary frame 20 to be hooked to the bridge 35 of the primary frame.

The hooks 28 can be supplied to the user in the form of straight pins which are bendable. In use, the user can bend the pins into their hook shape in a shape that is specific to the particular primary spectacles.

The hooks 28 may be covered with a semi-elastic plastic resin. The resin provides a degree of friction which enhances the grip of the hooks on the bridge 35 of the primary frame. In other embodiments, the hooks can be covered by other materials that provide similar friction or grip. Preferably, the material is a thick semi elastic plastic resin cover that is around 1 mm in thickness.

Figure 4 shows a second embodiment of a spectacle frame arrangement. Here, the lens portions 32 of the primary frame 30 are not provided with lens frames 31 (known as "rimless spectacles"). Instead, the lenses 32 are connected directly to each other by a bridge 35. The frame arms 37 are also connected directly to the lenses 32 rather than to a rim.

In Figure 4, the grooves 26 and the protrusions 36 are formed directly on the lenses 22, 32 themselves, rather than on rims or frame portions. Other than that, the manner of fitting the primary and secondary frames together is similar to the first embodiment in Figure 1. Thus, in an embodiment of the invention, the use of grooves and projections, together with the hooks, enables secondary frames of the embodiment to be attached to rimless spectacles. This is in contrast to prior art systems which depend on joining systems that are incorporated into the rims or frames of the primary frame. In other words, in contrast to the prior art, the present embodiment is well suited to attaching secondary frames to primary frames that are rimless.

In Figure 4, the bridge 25 of the secondary frame is made of pliable or malleable material, so that the bridge 25 can be shaped to bring the two lenses 22 either closer or further away from each other. This ability to vary the width of the bridge 25 enables the secondary frame 20 to be used on a wide variety of primary frames, provided that the primary frame has a protrusion 36 that matches the groove 26 on the secondary frame.

In the embodiments, one or more protrusions 36 may be incorporated into the primary spectacle frames as stylistic features that would not appear to the user to have a functional purpose. In other embodiments, the protrusions 36 can actually be parts of frames made by other manufacturers. In such cases, the optometrist or technician creates one or more grooves in the rear surface of the secondary frame that match the surface protrusions 36 of the primary frame made by the other manufacturer. Thus, the secondary frame 20 can be adapted to precisely fit primary frames produced by other manufacturers, simply by creating one or more grooves in the rear surface 24 that correspond to the surface protrusions 36 that already exist on the front-facing surfaces of primary spectacle frames produced by other manufacturers.

The lenses can be made of glass, plastic or other known reflective materials.

In a further modification of the embodiment of Figure 4, the bridge 25 may be used in a manner which is inverted (not illustrated). However, in such a case, the hooks are still bent or shaped to point downwards.

In Figures 1 and 4, the hooks are L-shaped. In other modifications, the hooks can be curved into other shapes that have a hook-like function of hooking the secondary frame to the bridge 35 of the primary frame. In the embodiment, the hooks are attached to the secondary bridge, but in other embodiments the

hooks can be merely proximate the secondary bridge with a distance that enables the hooks to engage the secondary bridge.

In Figure 4, the bridge 25 is W-shaped. The width of the bridge 25 can be modified by increasing or decreasing the angles included within the V-shaped portion of the W-shaped structure. The overall effect of modifying the angles is to increase or decrease the overall width and height of the bridge 25.

An advantage of using grooves and projections in accordance with the invention is that it achieves a level of inconspicuousness that is not found in the prior art. This is because, when the secondary frame is attached to the primary frame, the grooves and projections 26, 36, are hidden from view, or at least are positioned away from the outermost surfaces. In Figures 1 and 4, the grooves and projections are sandwiched between the fitted frames. This ensures that the mechanism, which connects the frames, does not affect the overall shape of the spectacle frame arrangement.

Moreover, the present invention may be adapted for use with a wide range of primary frames produced by other manufacturers, since the user—an optometrist or technician—can create grooves in the secondary frames corresponding to the topography of the other manufacturer's primary frame. The user can also modify the width of the bridge 25 of the secondary frame to cater for varying widths of primary frames.

The grooves, created in the rear surface 24 of the secondary frame, can be of a wide variety of shapes and sizes. For instance, if a particular primary frame has a protruding screw, then the user creates a groove which is shaped as a circular indentation that corresponds to the protruding screw. In other words, in the present specification, the word "groove" should not be limited to elongated channels, but should be construed broadly to cover any indentation which corresponds to the shape of the protrusion on the front-facing surface of the primary frame, whatever shape that may be.

Another advantage of the present embodiments is that, through the use of one or more grooves on the rear surface 24 of the secondary frame to accommodate surface projections, a very precise fit can be achieved between the primary and secondary frames. This ensures that there is a greater level of stability when using the secondary frame. By creating any number of grooves 26 to cater for various surface projections 36 on the primary frame, the second frame can be made to fit very closely to the primary frame with very little distance or space separating the two frames. This further contributes to greater stability of attachment.

The secondary frame is adapted to fit at least the front-facing surface of the primary frame, but can also extend around to touch the sides and even the rear of the primary frame.

In other embodiments, the bridge 25 need not be W-shaped but may be formed of another shape that connects the secondary lens portions.

The embodiments have been advanced by way of example only, and modifications are possible within the scope of the invention as defined by the appended claims.

Claims:

1. A spectacle frame arrangement, including:
 a primary frame having two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms;
 a secondary frame having two secondary lens portions and being adapted to be attached to at least the front-facing surface of the primary frame, the secondary frame having a front and rear surface, the rear surface being adapted to fit onto the front-facing surface of the primary frame;
 wherein the front-facing surface of the primary frame is provided with a front-facing protrusion, and
 wherein the rear surface of the secondary frame is provided with a groove into which the front-facing protrusion of the primary frame fits in order to seat the secondary frame on the front-facing surface of the primary frame.
2. An arrangement of claim 1 wherein the primary frame is provided with a plurality of front-facing protrusions, and the rear surface of the secondary frame is provided with a corresponding plurality of grooves.
3. An arrangement of either claim 1 or 2 wherein the lens portions of the secondary frame are connected by a secondary bridge portion which is made of pliable material that can be bent and shaped by the user to alter the width of the secondary frame.
4. An arrangement of claim 3 wherein the secondary frame is provided with a hook-attachment means that hooks around the bridge portion of the primary frame to secure the secondary frame to the primary frame.
5. An arrangement of claim 4 wherein the hook-attachment means of the secondary frame is made of pliable material that can be bent and shaped by the user.
6. An arrangement of claim 5 wherein the hook-attachment means of the secondary frame is attached to the secondary frame proximate the secondary bridge portion.
7. An arrangement of claim 5 wherein the hook-attachment means of the secondary frame is attached to the secondary bridge portion.
8. An arrangement of any one of claims 3 to 7 wherein the secondary bridge portion is W-shaped.



9. An arrangement of any one of claims 4 to 8 wherein hook-attachment means is covered by a material that provides a degree of friction when the hook-attachment hooks around the bridge portion.
10. An arrangement of claim 9 wherein the material is a semi-elastic plastic resin.
11. A method of seating a secondary frame on a primary spectacle frame, wherein the primary frame has two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms; and the secondary frame has a front and rear surfaces, of which the rear surface is adapted to fit onto the front-facing surface of the primary frame; wherein the method includes the steps of:
 - providing the front-facing surface of the primary frame with a front-facing protrusion;
 - providing the rear surface of the secondary frame with a groove that corresponds to the front-facing protrusion;
 - attaching the secondary frame onto at least the front-facing surface of the primary frame; and
 - fitting the front-facing protrusion of the primary frame into the corresponding groove in order to seat the secondary frame on the front-facing surface of the primary frame.
12. A spectacle frame arrangement, including:
 - a primary frame having two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms;
 - a secondary frame having two secondary lens portions and being adapted to be attached to at least the front-facing surface of the primary frame, the secondary frame having a front and rear surface, the rear surface being adapted to fit onto the front-facing surface of the primary frame;
 - wherein the secondary frame is provided with a hook-attachment means that hooks around the bridge portion of the primary frame to secure the secondary frame to the primary frame,
 - the hook-attachment means being made of pliable material that can be bent and shaped by the user.
13. An arrangement of claim 11 wherein the lens portions of the secondary frame being connected by a secondary bridge portion which is made of pliable material that can be bent and shaped by the user to alter the width of the secondary frame.
14. An arrangement of claim 12 or 13 wherein the front-facing surface of the primary frame is provided with a front-facing protrusion, and wherein the rear surface of the secondary frame is provided with a groove into which the front-facing protrusion of the primary frame fits in order to seat the secondary frame on the front-facing surface of the primary frame.



15. An arrangement of any one of claims 12 to 14 wherein the hook-attachment means of the secondary frame is attached to the secondary frame proximate the secondary bridge portion.
16. An arrangement of any one of claims 12 to 14 wherein the hook-attachment means of the secondary frame is attached to the secondary bridge portion.
17. An arrangement of any one of claims 12 to 16 wherein the secondary bridge portion of the secondary frame is W-shaped.
18. A secondary frame adapted to fit onto a primary frame having two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms, the front-facing surface of the primary frame being provided with a front-facing protrusion
the secondary frame having two secondary lens portions and being adapted to be attached to at least the front-facing surface of the primary frame, the secondary frame having a front and rear surface, the rear surface being adapted to fit onto the front-facing surface of the primary frame;
wherein the rear surface of the secondary frame is provided with a groove into which the front-facing protrusion of the primary frame fits in order to seat the secondary frame on the front-facing surface of the primary frame.
19. A secondary frame adapted to fit onto a primary frame having two lens portions, a bridge portion connecting the two lens portions, a front-facing surface, a rear-facing surface, and two rearwardly extendible frame arms, the front-facing surface of the primary frame being provided with a front-facing protrusion,
the secondary frame having two secondary lens portions and being adapted to be attached to at least the front-facing surface of the primary frame, the secondary frame having a front and rear surface, the rear surface being adapted to fit onto the front-facing surface of the primary frame,
wherein the secondary frame is provided with a hook-attachment means that hooks around the bridge portion of the primary frame to secure the secondary frame to the primary frame,
the hook-attachment means being made of pliable material that can be bent and shaped by the user.
20. A secondary frame of claim 19 wherein the lens portions of the secondary frame being connected by a secondary bridge portion which is made of pliable material that can be bent and shaped by the user to alter the width of the secondary frame.
21. A secondary frame of claim 20 wherein the rear surface of the secondary frame is provided with a groove into which the front-facing protrusion of the primary frame fits in order to seat the secondary frame on the front-facing surface of the primary frame.

