

AUXILIARY LENSES FOR PRESCRIPTION LENSES AND METHOD FOR MANAGING MYOPIA

Field of the Invention

5 This invention relates to auxiliary lenses for prescription lenses and to a method of using such auxiliary lenses for the management of myopia.

Background to the Invention

Auxiliary, or clip-on, lenses have been used for many years. In the main they
10 are used for prescription-free sunglass lenses. However, in some instances they have been additions such as, for example, jewelers' eyepieces for enabling those who perform close work to do so without removing their glasses.

With the advent of progressive lenses for mature adults - those generally over
15 forty years of age – such auxiliary lenses no longer work as the progressive lens has two, but normally three, focal lengths. These are generally termed distance, intermediate and reading. The distance portion forms a significant part of the lens at the top of the lens, and the reading portion forms a major part of the lens at the bottom of the lens. Intermediate is normally the narrow band
20 between reading and distance.

When using computers with progressive lenses, the intermediate portion is needed. But with the incorrect angle of the head and eyes, the majority of the

monitor's display surface is in the upper portion of the lens. This can lead to blur vision at the intermediate distance such when working on a computer.

Also, myopia is a serious eye condition. Many young adults (i.e. are under forty
5 years of age) suffer from myopia. In general, they use a single vision
prescription lens as it is applicable for the majority of their time. But when
reading, using a computer, or performing other functions in the reading distance
(when reading), or intermediate distance (when working on a computer), the
eye's ciliary muscles need to use extra effort to maintain a clear, near visual
10 focus (process of accommodation) which may cause eye strain and eye fatigue.
For children, especially younger children, this may lead to a rapid increase of
myopia.

With proper management, it may be possible to reduce the rate of increase in
15 myopia, or even arrest the increase in myopia. In some cases it may be
possible to slowly reverse the myopic condition.

Summary of the Invention

In accordance with a first preferred aspect there is provided a pair of
20 prescription auxiliary lenses adapted to be releasably attached to a pair of
spectacles, the pair of spectacles comprising a pair of main lenses; each of the
main lenses being progressive, prescription lenses having an upper portion of a
first focal length for distance viewing, a central portion of a second focal length
for intermediate viewing, and a lower portion of a third focal length for reading

viewing; the pair of auxiliary lenses being for overlaying and changing the focal length of the upper portion to that of the central portion.

The auxiliary lenses may be a single prescription and may be adapted to extend
5 over but to not extend beyond the perimeter of: all of the upper portion, all of the central portion, and all of the lower portion. Alternatively, the auxiliary lenses may be of a single prescription and are adapted to extend over but to not extend beyond the perimeter of all of the upper portion; but to not extend over the central portion and the lower portion. The auxiliary lenses may be rimless.

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The auxiliary lenses may further comprise an attachment for releasably attaching the auxiliary lenses to the pair of spectacles. The auxiliary lenses may be of the same size and shape as the upper portion. Alternatively, the auxiliary lenses may be of the same size and shape as the main lenses so that the
15 auxiliary lenses are adapted to overlies and cover all of the main lenses and do not extend beyond a perimeter of the main lenses.

When the auxiliary lenses are fitted to the main lenses there may be a slight gap between the main lenses and the auxiliary lenses to prevent the lenses
20 rubbing on each other.

According to a second preferred aspect there is provided a method for managing myopia, the method comprising: determining a general prescription required for eyesight correction, determining a required prescription for

intermediate zone work, determining a change prescription for auxiliary lenses to change the general prescription to the required prescription, providing auxiliary lenses of the change prescription; the auxiliary lenses being adapted to be fitted to a pair of spectacles having lenses of the general prescription to
5 change the general prescription to the required prescription whenever work is to be conducted in an intermediate zone.

For the second aspect, the auxiliary lenses may be of a single prescription and may be adapted to extend over but to not extend beyond the perimeter of the
10 main lenses. The auxiliary lenses may be rimless. The auxiliary lenses may further comprise an attachment for releasably attaching the auxiliary lenses to the pair of spectacles. The auxiliary lenses may be of the same size and shape as the main lenses. When the auxiliary lenses are fitted to the main lenses there may be a slight gap between the main lenses and the auxiliary lenses to
15 prevent the lenses rubbing on each other.

According to a third preferred aspect there is provided a pair of auxiliary lenses for use in the above method, the auxiliary lenses being of a single prescription and being adapted to extend over but to not extend beyond the perimeter of
20 the main lenses, the main lenses being of the general prescription, the auxiliary lenses being for changing the general prescription to the required prescription. The pair of auxiliary lenses may be as described above. The pair of auxiliary lenses as described above may be for use in managing myopia. The present invention may also be in respect of the use of a pair of auxiliary lenses as

described above for the preparation of a pair of spectacles fitted with the auxiliary lenses for the managing of myopia.

Brief Description of the Drawings

- 5 In order that the present invention may be fully understood and readily put into practical effect there shall now be described by way of non-limitative example only preferred embodiments of the present invention, the description being with reference to the accompanying illustrative drawings.

In the drawings:

- 10 Figure 1 is a front perspective view of a pair of spectacles with progressive prescription lenses;
- Figure 2 is a rear perspective view of a first embodiment of a pair of prescription auxiliary lenses;
- Figure 3 is a top view of the auxiliary lenses of Figure 2;
- 15 Figure 4 is a front perspective view of the auxiliary lenses of Figures 2 and 3 fitted to the spectacles of Figure 1, the auxiliary lenses being shown in relief;
- Figure 5 is a view corresponding top Figure 2 of a second embodiment of a pair of prescription auxiliary lenses;
- Figure 6 is a front perspective view of the auxiliary lenses of Figure 5 fitted to
- 20 the spectacles of Figure 1, the auxiliary lenses being shown in relief;
- Figure 7 is a front perspective view of a pair of spectacles with single prescription lenses;
- Figure 8 is a rear perspective view of a third embodiment of auxiliary lenses;
- and

Figure 9 is a top view of the auxiliary lenses of Figure 7 fitted to the spectacles of Figure 8.

Detailed Description of the Preferred Embodiments

5 To refer to Figure 1 there is shown a pair of spectacles 10 with temples 12, bridge 14 and two lenses 16. There may be a rim (not shown) if required or desired.

The lenses 16 are prescription lenses. They are also progressive lenses and
10 have an upper portion 18 that is for distance viewing, a lower portion 20 that is for reading, and a central portion that is for intermediate viewing. The upper portion 18 and the lower portion 20 are both more substantial than the central portion 22 in terms of the area of the lens they occupy.

15 As shown in Figures 2 and 3, there is a pair of auxiliary lenses 216 with a bridge 214 and an attachment device 224 for releasably attaching the auxiliary lenses 216 to the spectacles 10. The attachment device 224 may be one or more hooks (as shown), magnets, or the like, at may be at the bridge (as shown) and/or another location such as, for example, the temples 12.

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The lenses 216 are prescription lenses. For example, the lenses 16 may have focal lengths of: distance +1.00, intermediate +2.00, and reading +3.00. The auxiliary lenses may be +1.00. Therefore, when auxiliary lenses 216 are fitted to the spectacles 10 and over lenses 16, the focal length of the lenses 16 become:

distance +2.00, intermediate +3.00, and reading +4.00. The top or distance portion 18 therefore has its prescription, or focal length, changed to that of the central or intermediate portion 22 and thus can be used for computer work. With its much larger area than the central, intermediate portion 22, this is of
5 considerable advantage. It enables a more appropriate posture, and reduces eye strain. The change to the bottom or reading portion 20 from +3.00 to +4.00 makes it ideal for very close work such as repairing small objects, reading very small or fine print, and so forth.

10 The auxiliary lenses 216 must overlie and cover at least the entire distance portion 18. Preferably, they are of the same size and shape as the lenses 16 so that the auxiliary lenses overlie and cover substantially all of the lenses 16, but preferable do not extend beyond the perimeter of lenses 16. In this way the
15 frontal appearance of the spectacles 10 is almost unchanged when fitted with the auxiliary lenses 216. If required or desired, there may be a slight gap between the auxiliary lenses 216 and the lenses 16 to prevent one lens 216 from rubbing against a lens 16 and causing damage to either or both of them.

A further embodiment is shown in Figures 5 and 6. Here, the auxiliary lenses
20 216 are of the one prescription and overlie and change the focal length of only the distance portion 18 of the main lenses 16. They are therefore of the same size and shape as the upper or distance portion 18 and do not extend beyond the perimeter of the distance portion. Therefore, they do not overlie the intermediate portion 22 or the reading portion 20 of the main lenses 16. As such,

there is no change to the focal distance of the intermediate portion 22 or the reading portion 20. and gives an enlarged intermediate portion comprising the distance portion 18 and the intermediate portion 22.

- 5 It is preferred for the auxiliary lenses 216 to be rimless to reduce weight, and to reduce the impact on the appearance of the spectacles 10 when they are fitted.

To now refer to Figures 7 to 9, there is shown a third embodiment where the spectacles 310 with temples 312, bridge 314 and two lenses 316. There may be
10 a rim (not shown) if required or desired. The lenses 316 are prescription lenses of a single prescription for a person suffering from myopia. As such the lenses 316 will be for a person with eyesight of, for example, -5.00 dioptries. The lenses 316 are suitable for many distances, but for near or intermediate work such as computer work, or close work such as reading, the eye's ciliary muscles must
15 accommodate the shorter focal distance in order to maintain clear focus as for such work the eyes actually need a lens of a prescription of -3.5 dioptries. Doing so for long hours will cause eye strain and tired eyes. This can accelerate the rate of the myopic condition.

- 20 By placing auxiliary lenses 416 of a prescription +1.50 dioptries over the lenses 316 the prescription of the lenses 316 is changed to -3.5 dioptries, the figure required. This reduces the strain on the ciliary muscles, reduces eye strain, reduces the incidence of eye strain, and reduces the extent of tired eyes. This

assists in slowing the progression of myopia, especially for children. It may assist in improving eyesight, and may help to reduce the prescription required.

Therefore, by determining the general prescription required by a person with myopia, determining the prescription required for intermediate work such as working on a computer, the change prescription for the auxiliary lenses can be determined. The auxiliary lenses, when fitted to the spectacles, change the general prescription to the prescription required for intermediate work. The use of those auxiliary lenses may provide some or all of the advantages given above.

The pair of auxiliary lenses 416 are of a single prescription and are adapted to extend over but to not extend beyond the perimeter of the main lenses 316, the main lenses 316 being of the general prescription, the auxiliary lenses being for changing the general prescription to the required prescription.

By having auxiliary lenses 216, 416 of a suitable prescription, they can continue to be used even though the prescription of the spectacle lenses 16, 316 may change. Also, auxiliary lenses 216, 416 are normally lower in cost than a second pair of spectacles. They are easier to carry, and are easily used.

Whilst there has been described in the foregoing description preferred embodiments of the present invention, it will be understood by those skilled in the technology concerned that many variations or modifications in details of

design, construction or operation may be made without departing from the present invention.

The Claims:

1. A pair of prescription auxiliary lenses adapted to be releasably attached to a pair of spectacles, the pair of spectacles comprising a pair of main lenses; each of the main lenses being progressive, prescription lenses having an
5 upper portion of a first focal length for distance viewing, a central portion of a second focal length for intermediate viewing, and a lower portion of a third focal length for reading viewing; the pair of auxiliary lenses being for overlaying and changing the focal length of the upper portion to that of the central portion.
- 10 2. A pair of auxiliary lenses as claimed in claim 1, wherein the auxiliary lenses are of a single prescription and are adapted to extend over but to not extend beyond the perimeter of: all of the upper portion, all of the central portion, and all of the lower portion.
3. A pair of auxiliary lenses as claimed in claim 1, wherein the auxiliary lenses
15 are of a single prescription and are adapted to extend over but to not extend beyond the perimeter of all of the upper portion; but to not extend over the central portion and the lower portion.
4. A pair of auxiliary lenses as claimed in any one of claims 1 to 3, wherein the auxiliary lenses are rimless.
- 20 5. A pair of auxiliary lenses as claimed in any one of claims 1 to 4, wherein the auxiliary lenses further comprise an attachment for releasably attaching the auxiliary lenses to the pair of spectacles.
6. A pair of auxiliary lenses as claimed in claim 3, wherein the auxiliary lenses are of the same size and shape as the upper portion.

7. A pair of auxiliary lenses as claimed in any one of claims 1, 2, 4 5 or 6,
wherein the auxiliary lenses are of the same size and shape as the main
lenses so that the auxiliary lenses are adapted to overlie and cover all of
the main lenses and do not extend beyond a perimeter of the main lenses.
- 5 8. A pair of auxiliary lenses as claimed in any one of claims 1 to 7, wherein
when the auxiliary lenses are fitted to the main lenses there is a slight gap
between the main lenses and the auxiliary lenses to prevent the lenses
rubbing on each other.
9. A method for managing myopia, the method comprising: determining a
10 general prescription required for eyesight correction, determining a required
prescription for intermediate zone work, determining a change prescription
for auxiliary lenses to change the general prescription to the required
prescription, providing auxiliary lenses of the change prescription; the
auxiliary lenses being adapted to be fitted to a pair of spectacles having
15 lenses of the general prescription to change the general prescription to the
required prescription whenever work is to be conducted in an intermediate
zone.
10. A method as claimed in claim 9, wherein the auxiliary lenses are of a single
prescription and are adapted to extend over but to not extend beyond the
20 perimeter of the main lenses.
11. A method as claimed in claim 9 or claim 10, wherein the auxiliary lenses
are rimless.

12. A method as claimed in any one of claims 9 to 11, wherein the auxiliary lenses further comprise an attachment for releasably attaching the auxiliary lenses to the pair of spectacles.
13. A method as claimed in any one of claims 9 to 12, wherein the auxiliary
5 lenses are of the same size and shape as the main lenses.
14. A method as claimed in any one of claims 9 to 13, wherein when the auxiliary lenses are fitted to the main lenses there is a slight gap between the main lenses and the auxiliary lenses to prevent the lenses rubbing on each other.
- 10 15. A pair of auxiliary lenses for use in the method of any one of claims 9 to 14, the auxiliary lenses being of a single prescription and being adapted to extend over but to not extend beyond the perimeter of the main lenses, the main lenses being of the general prescription, the auxiliary lenses being for changing the general prescription to the required prescription.
- 15 16. A pair of auxiliary lenses as claimed in claim 15, wherein the pair of auxiliary lenses is as claimed in any one of claims 1 to 8.
17. A pair of auxiliary lenses as claimed in any one of claims 1 to 8 for use in managing myopia.
18. Use of a pair of auxiliary lenses as claimed in any one of claims 1 to 8 for
20 the preparation of a pair of spectacles fitted with the auxiliary lenses for the managing of myopia.