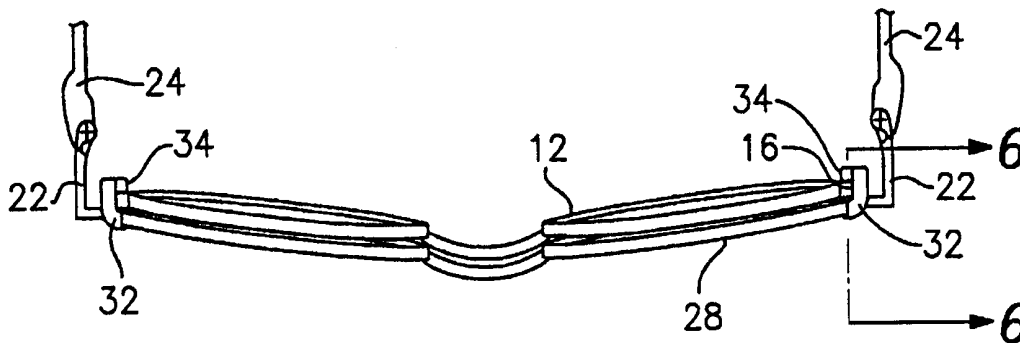




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<p>(51) International Patent Classification ⁷ : G02C 9/00, 7/08</p>	<p>A1</p>	<p>(11) International Publication Number: WO 00/62117 (43) International Publication Date: 19 October 2000 (19.10.00)</p>
<p>(21) International Application Number: PCT/US00/10025 (22) International Filing Date: 12 April 2000 (12.04.00) (30) Priority Data: 09/290,503 12 April 1999 (12.04.99) US (71)(72) Applicant and Inventor: SMITH, Greg [US/US]; 2399 Midway Road, Carrollton, TX 75006 (US). (74) Agent: MASON, Robert, M.; Mason & Petruzzi, Suite 402W, 13601 Preston Road, Dallas, TX 75240 (US).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i></p>

(54) Title: EYEGLOSS DEVICE



(57) Abstract

An eyeglass device includes a primary spectacle frame (12) for supporting primary lenses and has two side portions, each having a connecting member (16) with an inside portion attached thereto to connect the primary spectacle frame to a temple section. A pair of first magnetic members is secured to the inside portion of the connecting members respectively. An auxiliary spectacle frame (28) to support auxiliary lenses includes two side portions each having an arm (32) extending therefrom for extending over but not engaging with the connecting member of the primary spectacle frame. A pair of second magnetic members secured to the arms for engaging with the first magnetic members of the primary spectacle frame so as to secure the auxiliary spectacle frame to the primary spectacle frame. The arms do not engage with and are not supported on the connecting member of the primary spectacle frame and do not allow the auxiliary frame to be stably supported on the primary spectacle frame and does not prevent the auxiliary spectacle frame from moving downward relative to the primary spectacle frame. All magnetic members are disposed vertically and hidden from an observer looking at the persons wearing the eyeglass frame.

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TITLE OF INVENTION**Eyeglass Device****5 BACKGROUND OF THE INVENTION****TECHNICAL FIELD**

This invention relates generally to eyeglass devices and more particularly to an improved primary-auxiliary eyeglass frame attachment.

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DESCRIPTION OF RELATED ART

It has been desirable to have a removable auxiliary lens frame attached to primary eyeglass lens frames. Mechanically clipped on devices for holding auxiliary lenses are sometimes cumbersome and unattractive. More recently, attempts have
15 been made to magnetically attach an auxiliary lens frame to the primary frame.

U.S. Patent 4,070,103 to Meeker discloses a primary frame with a slidably attachable auxiliary lens. In Meeker, the primary lens is made of magnetizable material and auxiliary lenses are individually securable to the primary lenses by a magnetic band inserted in a groove on the inside surface of the auxiliary lens.

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U.S. Patent 5,416,537 to Sadler discloses a primary frame having a first magnetic member attached vertically to the front surface of the primary frame, and a second magnetic member attached in a corresponding position on the back surface on an auxiliary frame. The magnetic members are arranged for

engagement to secure the auxiliary frame to the primary frame. This design may suffer from disengagement of the auxiliary lens in the presence of the normal forces of impact and acceleration that are realized in daily activity or exercise.

U.S. Patent 5,568,207 to Chao also discloses a magnetically adhered
5 auxiliary lens frame. In Chao, the primary lens frame has horizontally disposed magnets attached to the rear and side portions that mate with horizontally disposed magnets in the arms of the auxiliary frame. The arms of the auxiliary frame engage with and are stably supported by upper side portions of the primary frame. This design however, still suffers from the potential disengagement of the auxiliary
10 lenses when other than relative downward movement occurs, and also relies of contact between the primary upper side portion and auxiliary arm to stabilize the relationship between the primary and auxiliary frames.

BRIEF SUMMARY OF THE INVENTION

A primary advantage of the present invention is that it eliminates the contact
5 and wear that occurs between the primary frame and auxiliary frame elements.

Another advantage of the present invention is that it increases the stability of
the auxiliary lens frame and resistance to disengagement in the presence of the
forces of impact and acceleration that are realized in daily activity or exercise.

Another advantage of the present invention is that it provides increased
10 resistance to disengagement in a larger number of coordinate directions than past
designs.

Another advantage of the present invention is that it increases stability of the
attachment of the primary and auxiliary lens frames without adding inconvenience
to the application and removal of the auxiliary lens frame.

15 In accordance with a preferred embodiment of the invention, an eyeglass
device comprises a primary spectacle frame for supporting primary lenses therein,
said primary spectacle frame including two side portions, each having a connecting
member with an inside portion attached thereto to connect the primary spectacle
frame to temple pieces; a pair of first magnetic members secured to the inside
20 portion of the connecting members respectively; an auxiliary spectacle frame for
supporting auxiliary lenses therein, said auxiliary spectacle frame including two side
portions each having an arm extending therefrom for extending over but not
engaging with said connecting member of said primary spectacle frame; and a pair

of second magnetic members secured to said arms respectively for engaging with said first magnetic members of said primary spectacle frame so as to secure said auxiliary spectacle frame to said primary spectacle frame, said arms do not engage with and are not supported on said connecting members of said primary spectacle
5 frame and do not stably support said auxiliary frame or said primary spectacle frame and does not prevent said auxiliary spectacle frame from moving downward relative to said primary spectacle frame.

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BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

Other objects and advantages of the present invention will become apparent from the following descriptions, taken in connection with the accompanying
5 drawings, wherein, by way of illustration and example, an embodiment of the present invention is disclosed.

FIGURE 1 is a front view of the primary spectacle frame in accordance with a preferred embodiment of the present invention.

FIGURE 2 is a top, overhead view of the primary spectacle frame in
10 accordance with a preferred embodiment of the present invention.

FIGURE 3 is a front view of the auxiliary spectacle frame in accordance with a preferred embodiment of the present invention.

FIGURE 4 is a top, overhead view of the auxiliary spectacle frame in
accordance with a preferred embodiment of the present invention.

15 FIGURE 5 is a top, overhead view of the eyeglass device according to a preferred embodiment of the present invention showing engagement between the primary frame and auxiliary frame.

FIGURE 6 is a cross-sectional view of Figure 5 along line 6-6 showing the auxiliary-primary frame attachment.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Detailed descriptions of the preferred embodiments are provided herein. It is to be understood, however, that the present invention may be embodied in various forms. Therefore, specific details disclosed herein are not to be interpreted as limiting, but rather as a basis for the claims and as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure or manner.

Referring to the drawings, and initially to Figures 1 and 2, an eyeglass device in accordance with the present invention comprises a primary spectacle frame 12 for supporting primary lenses 14 therein. Primary spectacle frame 12 includes two side portions each having a connecting member 16 for pivotally coupling temple pieces 24 thereto. Connecting member 16 may be as in the illustrated embodiment a separate piece attached by welding or otherwise to primary spectacle frame 12 at the side portions, or may be integral with the primary spectacle frame 12.

A pair of first magnetic members 18 are shown in Figure 2, one attached to each connecting member 16. As shown in the exemplary embodiment of Figure 2, each magnetic member 18 is also attached to primary spectacle frame 12, but not need be so attached. Indeed, magnetic members 18 may be not attached to primary spectacle frame 12, but only to connecting member 16, or may be attached to primary spectacle frame 12, but not to connecting member 16. Further, magnetic members 18 may be attached directly to connecting member 16 and/or primary

spectacle frame 12 or indirectly. An example of an indirect attachment includes a metallic holder welded directly to connecting member 16 and/or primary spectacle frame 12, with magnetic member 18 held in the metallic holder. Magnetic members 18 are oriented in the same general plane as primary lenses 14.

5 As illustrated in Figures 3 and 4, an auxiliary spectacle frame 28 is provided for supporting auxiliary lenses 30 therein includes two side portions each having an arm 32. Arms 32 may be integral to auxiliary spectacle frame 28 or be separate pieces attached to auxiliary spectacle frame 28. As will be understood from the description below, arms 32 do not engage with the primary spectacle frame 12.

10 The auxiliary spectacle frame 28 also includes two magnetic members 34 as shown in Figure 4 secured to bridge members or arms 32 thereof for engaging with the magnetic members 18 of the primary spectacle frame 12 such that the auxiliary spectacle frame 28 may be held in close relation to the primary spectacle frame 12, best shown in Figure 5 and 6. Magnetic members 34 are oriented in the same

15 general plane as auxiliary lenses 30 and polarized for magnetic engagement with magnetic members 18.

 It is to be noted that the arms 32 are not engaged with and are not supported on any portion of the primary spectacle frame 12 and that the auxiliary spectacle frame 28 is not stably supported or secured to the primary spectacle

20 frame 12. As shown in Figure 6, magnetic members 18 attach with magnetic members 34 and arm 32 of auxiliary spectacle frame is above without engaging connecting member 16 of primary spectacle frame 12 or any other portion of primary spectacle frame 12. The auxiliary spectacle frame 28 will not move forward

relative to the primary spectacle frame 12 and will not be easily disengaged from the primary spectacle frame. The magnetic members 18, 34 may be embedded in the frames 10, 20 such that the frames 10, 20 are required to be formed with cavities therein.

5 Accordingly, the eyeglass device in accordance with a preferred embodiment of the present invention includes an auxiliary spectacle frame that may be secured to the primary spectacle frame and will not move forward relative to the primary spectacle frame and will not be easily disengaged from the primary spectacle frame.

10 While the invention has been described in connection with a preferred embodiment, it is not intended to limit the scope of the invention to the particular form set forth, but on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

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CLAIMS

I claim:

5 **1. An eyeglass device comprising:**

 a primary spectacle frame for supporting primary lenses therein, said primary spectacle frame including two side portions, each having a connecting member with an inside portion attached thereto to connect the primary spectacle frame to temple pieces;

10 a pair of first magnetic members secured to the inside portion of the connecting members respectively;

 an auxiliary spectacle frame for supporting auxiliary lenses therein, said auxiliary spectacle frame including two side portions each having an arm extending therefrom for extending over but not engaging with said connecting member of said primary spectacle frame; and

15 a pair of second magnetic members secured to said arms representively for engaging with said first magnetic members of said primary spectacle frame so as to secure said auxiliary spectacle frame to said primary spectacle frame,

 said arms do not engage with and are not supported on said connecting members of said primary spectacle frame and do not allow said auxiliary frame to be stably supported on said primary spectacle frame and does not prevent said auxiliary spectacle frame from moving downward relative to said primary spectacle frame.

2. An eyeglass device as claimed in claim 1 wherein the first magnetic members are disposed vertically.

5 3. An auxiliary eyeglass lenses frame comprising:

a primary eyeglasses frame for support of a pair of primary eyeglass lenses, the primary frame having a pair of opposite outside surfaces;

a pair of brackets, each bracket attached to an opposite outside surface of the primary frame, each bracket having a first magnetic member attached;

10 a pair of extensions, each extension attached to the front side of a bracket;

a pair of arms, each arm pivotally connected to an extension;

an auxiliary frame for support of a pair of auxiliary eyeglass lenses, the auxiliary frame having a pair of opposite outside surfaces;

15 a pair of bridge members, each bridge attached to an opposite outside surface of the auxiliary frame, each bridge having a second magnetic member attached for magnetically attractive engagement of a first magnetic member at the back side of the bracket.

4. The auxiliary eyeglass lenses frame according to claim 3, further comprising:

20 an adjustable retaining means attached to each bracket for securing a primary lens within the primary frame.

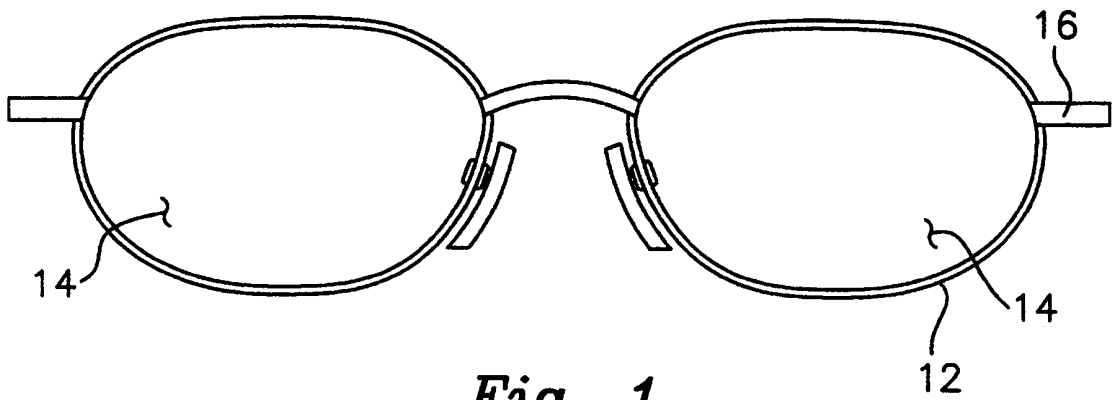


Fig. 1

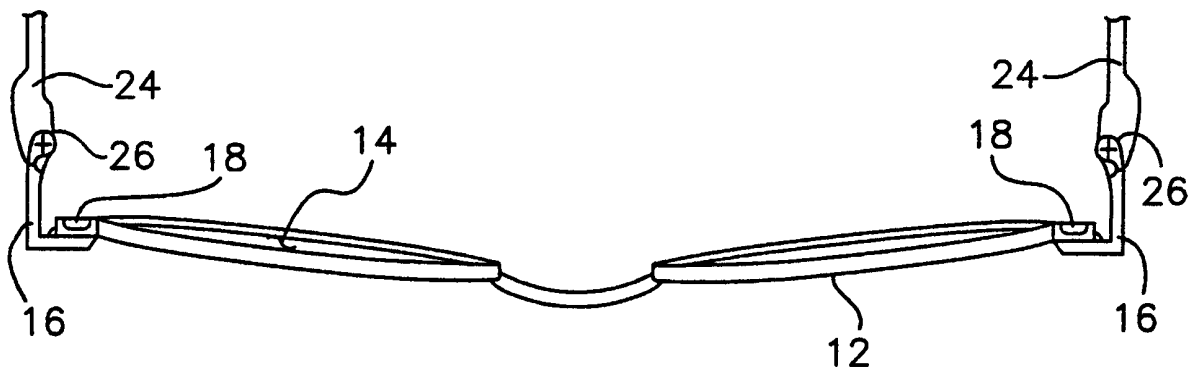
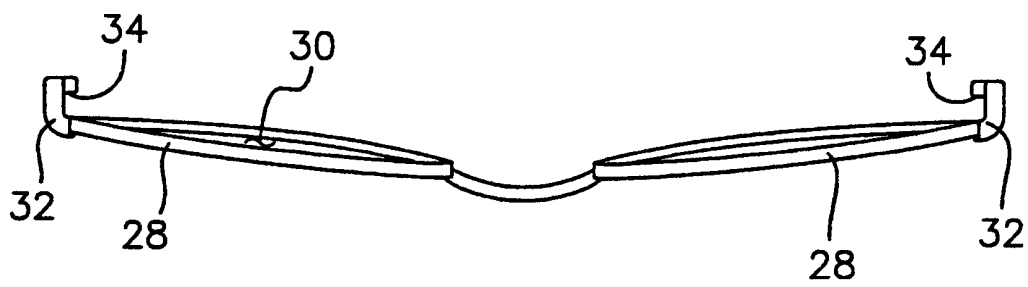
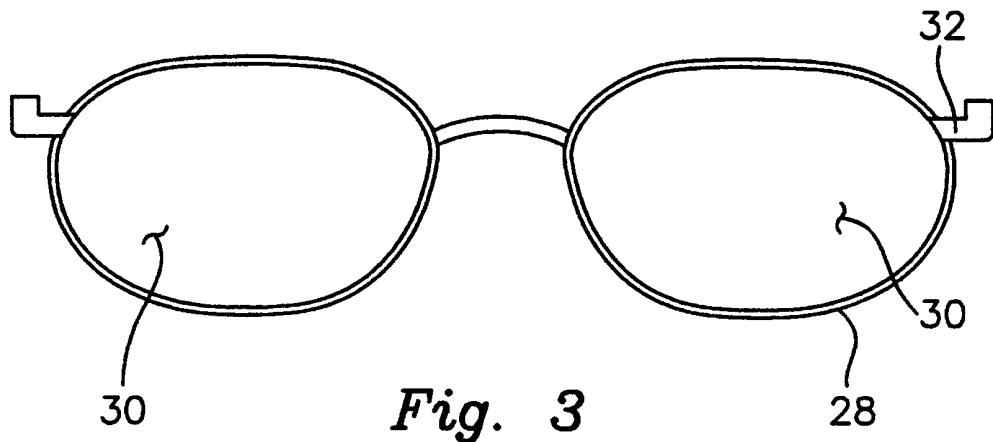


Fig. 2



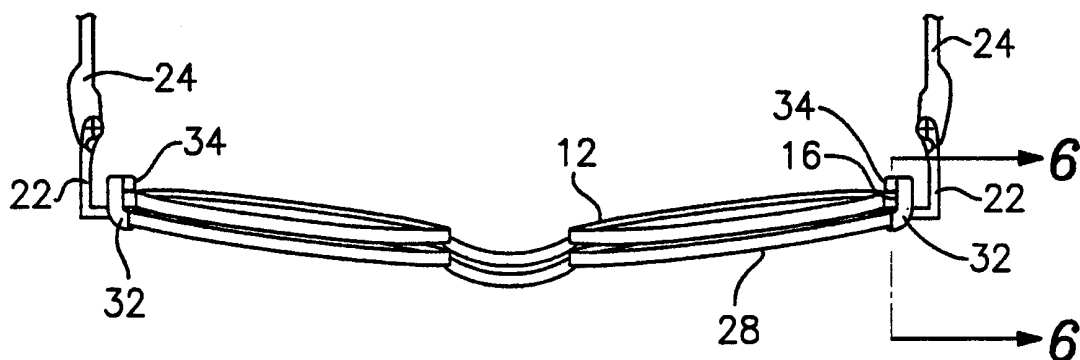


Fig. 5

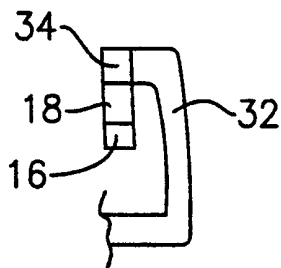


Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/10025

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :G02C 9/00, 7/08

US CL :351/47, 57, 48, 57, 41, 44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 351/47, 57, 48, 57, 41, 44

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

none

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	US 5,975,691 (Ku) 02 November 1999 (02/11/99), see entire reference.	1-4

Further documents are listed in the continuation of Box C.

See patent family annex.

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