



(51) International Patent Classification:
A61F 2/14 (2006.01)

(21) International Application Number:
PCT/AU2013/001304

(22) International Filing Date:
12 November 2013 (12.11.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2012905040 16 November 2012 (16.11.2012) AU
61/727,187 16 November 2012 (16.11.2012) US

(71) Applicants: **THE UNIVERSITY OF MELBOURNE** [AU/AU]; Victoria 3052 (AU). **NATIONAL ICT AUSTRALIA LIMITED** [AU/AU]; Level 5, 13 Garden Street, Eveleigh, NSW 2015 (AU).

(72) Inventors: **FOX, KATE**; 16 Springhill parade, Pascoe Vale South, Victoria 3044 (AU). **GARRETT, David**; 23 Treloar Cr, Braybrook, Victoria 3019 (AU). **GANESAN,**

Kumaravelu; 77 Pindari Avenue, Mill Park, Victoria 3082 (AU). **MEFFIN, Hamish**; 4 Pearse Street, Bellfield, Victoria 3081 (AU). **PRAWER, Steven**; 410 Glen Eira Road, Caulfield, Victoria 3162 (AU).

(74) Agent: **GRIFFITH HACK**; Level 19, 109 St Georges Terrace, Perth, W.A. 6000 (AU).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: A METHOD OF POSITIONING AN INTRAOCULAR DEVICE

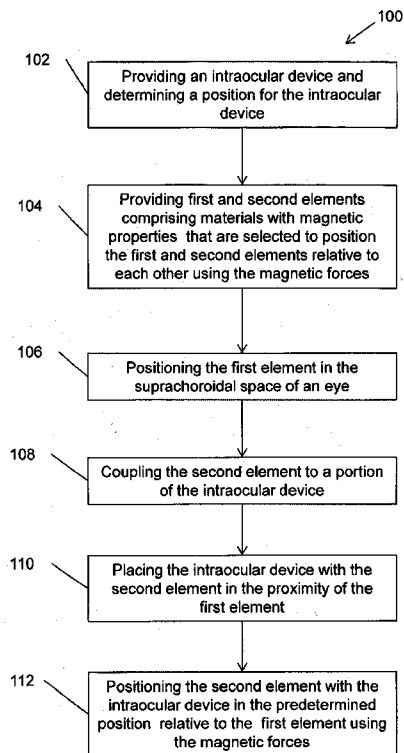


Figure 1

(57) Abstract: The present disclosure provides a method of positioning an intraocular device at an intraocular position. The method comprises the step of providing a first and a second element. The first and the second element are selected such that a magnetic force attracts the first element and the second element to each other. The method also comprises positioning the first element in a suprachoroidal space of an eye and positioning the intraocular device in an intraocular space at a portion of tissue of the eye. The method further comprises positioning the second element in the intraocular space of the eye. The first element, the second element and the intraocular device are positioned such that the portion of the tissue of the eye and at least a portion of the intraocular device are positioned between the first and second elements such that the magnetic force at least contributes to securing the intraocular device at the portion of the tissue of the eye.



GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,

SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

- 1 -

A METHOD OF POSITIONING AN INTRAOCULAR DEVICE

Field of the Invention

- 5 The present invention relates to a method of positioning an intraocular device.

Background of the Invention

- 10 A range of medical devices are frequently implanted into the human body. Such devices include pacemakers, ear implants, retinal prostheses and other types of devices.

- Damage to the retina of the eye can be caused by
15 degenerative eye conditions and retinal prostheses may be used to electrically stimulate ganglion cells in the inner layers of the retina.

- Generally, such intraocular devices are secured in a
20 desired position using tacks and the mechanical pressure provided by the vitreous humour. However, tacks cause trauma during insertion, are difficult to handle and cannot be removed without causing significant damage to the eye. Further, tacks do not provide any aid to align
25 the device into a certain position or orientation. Hence, the alignment relies entirely on the manual positioning by the surgeon.

-2-

Summary of the Invention

The present invention provides in a first aspect a method of positioning an intraocular device at an intraocular
5 position, the method comprising the steps of:

providing a first and a second element, the first and the second element being selected such that a magnetic force attracts the first element and the second element to each other;

10 positioning the first element in a suprachoroidal space of an eye;

positioning the intraocular device in an intraocular space at a portion of tissue of the eye; and

15 positioning the second element in the intraocular space of the eye;

wherein the first element, the second element and the intraocular device are positioned such that the portion of the tissue of the eye and at least a portion of the intraocular device are positioned between the first and
20 second elements such that the magnetic force at least contributes to securing the intraocular device at the portion of the tissue of the eye.

The portion of the tissue of the eye may comprise a
25 portion of the retina. The intraocular device may be a retinal prosthesis.

The second element may be coupled to the intraocular device and may be surrounded by, or embedded in, a portion
30 of the intraocular device. Alternatively, the method may comprise coupling the intraocular device to the second element.

- 3 -

The method in accordance with the first aspect of the invention has significant advantages. In particular, the step of positioning the first element in the suprachoroidal space of the eye, i.e. between the sclera and the choroid of the eye is often less complicated than positioning the first element at another suitable position. Furthermore, by positioning the first element in the suprachoroidal space a moveability of the first element is limited, which improves an anchoring function of the first element for the intraocular device.

In some embodiments, the first element is coupled to or embedded in a flexible material portion that is shaped to facilitate insertion and/or positioning of the flexible portion with the second element in the suprachoroidal space of the eye. For example, the flexible portion may comprise a tapered end-portion that facilitates insertion of the flexible portion into the suprachoroidal space of the eye.

The method may also comprise coupling the first element to the flexible portion such that the first element is attached to the flexible portion or partially surrounded by the flexible portion. Coupling the first element to a flexible portion may also comprise embedding the first element in the flexible portion and may further comprise hermetically sealing the flexible portion.

The flexible portion typically comprises a biocompatible polymeric material that is sufficiently flexible to conform to a curvature of suprachoroidal space. In one specific embodiment, the flexible portion comprises a

- 4 -

suitable polymeric material, such as silicone that may be reinforced using for example suitable fibres.

In a first embodiment the first and second elements are
5 selected and positioned such that the intraocular device
is secured at a desired position without the need for
additional fasteners. This embodiment provides the
advantage that fasteners (such as tacks) and related
trauma may be avoided.

10

In an alternative second embodiment the first and second
elements are arranged to position the intraocular device
in a desired position and the method comprises securing
the intraocular device subsequently in the desired
15 position using suitable fasteners such as tacks. In the
second embodiment the first and second elements may be
selected such that the magnetic forces are weaker than in
the first embodiment, which provides the advantage that an
impact on tissue of the eye such as the retina and the
20 choroid by the positioned intraocular device (and caused
by the magnetic forces) is reduced.

In one embodiment the method comprises positioning the
intraocular device in a predetermined angular orientation
25 relative to the retina using the magnetic force. In this
case the first and second elements may comprise materials
that have magnetic properties that are arranged such that
the magnetic force is directed to position the first and
second elements in the predetermined angular orientation
30 relative to each other. The second element may be coupled
to a portion of the intraocular device and the first
element may be anchored in the suprachoroidal space and

- 5 -

the method may comprise positioning the second element with the intraocular device in the predetermined angular orientation relative to the retina using the magnetic force.

5

In the above-mentioned embodiment both the first and second elements may comprise permanent magnetic materials. At least one of the first and second elements may also comprise two or more magnetic materials that are

10 positioned within the respective first or second element such that the magnetic force is directed to position the first and second elements relative to each other in the predetermined angular orientation.

15 The method may comprise forming an incision through the sclera of the eye such that the first element or a flexible portion comprising the first element can be inserted into the suprachoroidal space. The method may also comprise moving the sclera and the choroid from each
20 other by inserting the flexible portion with the first element into the suprachoroidal space.

The present invention provides in a second aspect an intraocular system, comprising:

25 an intraocular device for positioning in an intraocular space of an eye;

a flexible portion arranged for locating in the suprachoroidal space of the eye;

a first element coupled to, or surrounded by, the
30 flexible portion;

a second element arranged for positioning in the intraocular space of the eye;

- 6 -

wherein the first element and the second element are arranged such that a magnetic force attracts the first element and the second element to each other, and wherein the first element, the second element and the intraocular device are arranged such that, when the intraocular device is positioned, a portion of tissue of the eye and at least a portion of the intraocular device are positioned between the first and second elements such that the magnetic force at least contributes to securing the intraocular device at the tissue of the eye.

The flexible portion typically comprises a biocompatible polymeric material that is sufficiently flexible to conform to a curvature of suprachoroidal space. In one specific embodiment, the flexible portion comprises a suitable polymeric material, such as silicone that may be reinforced using for example suitable fibres. The flexible portion may also comprise a tapered end-portion that facilitates insertion of the flexible portion into the suprachoroidal space of the eye.

In one embodiment the first element is embedded in the flexible portion.

At least one of the first and the second elements may comprise a permanent magnetic material. At least one of the first and second elements may also comprise one or more magnetic materials that may be positioned within the first and second elements such that the magnetic force positions the first and second elements in the predetermined angular orientation relative to each other.

- 7 -

The intraocular device may be a retinal prosthesis.

The invention will be more fully understood from the following description of specific embodiments of the invention. The description is provided with reference to the accompanying drawings.

Brief Description of the Drawings

Figure 1 is a flow chart illustrating an embodiment of the present invention;

Figure 2 is a schematic perspective representation of a positioned intraocular device in accordance with an embodiment of the present invention;

Figure 3 is a schematic cross-sectional representation of a positioned intraocular device in accordance with an embodiment of the present invention;

Figures 4(a) and 4(b) show a top and a side view of the flexible portion of the intraocular device of Figure 3 including the first element; and

Figures 5 (a) to 5 (c) illustrate elements having magnetic materials in accordance with embodiments of the present invention.

Detailed Description of Specific Embodiments

Embodiments of the present invention relate to a method of positioning an intraocular device within a human eye. In

- 8 -

one embodiment the intraocular device is an epiretinal device that is positioned on the inner surface of the retina of the eye. However, a person skilled in the art will appreciate that other intraocular devices are
5 envisaged.

Referring initially to Figure 1, a method 100 of positioning an intraocular device in accordance with an embodiment of the present invention is described.

10

The method 100 comprises the initial step 102 of providing the intraocular device and determining a position for the intraocular device within the human eye. The intraocular device is in this example a retinal prosthesis. The
15 position of the intraocular device may, for example, be a location on the inner surface of the retina of the eye or on the outer surface of the retina of the eye.

Step 104 provides first and second elements that comprise
20 permanent magnetic or magnetisable materials. The materials are configured to generate attracting magnetic forces between the first and the second element. In a specific example the first and second elements are also arranged such that the magnetic forces rotate the
25 materials relative to each other in a predetermined angular orientation. The permanent magnetic materials may for example be ferro-magnetic materials that comprise iron, nickel, cobalt, Alnico, iron oxides or rare earth-based materials such that materials that comprise
30 neodymium and samarium-cobalt. The magnetisable materials may also comprise for example iron, nickel, cobalt and rare earth materials such as neodymium and samarium-

- 9 -

cobalt. The first and/or the second elements may also be formed from more than one permanent magnetic or magnetisable material.

- 5 Step 106 comprises positioning the first element in a predetermined position within the suprachoroidal space of the human eye, i.e. between the sclera and the choroid of the human eye. For example, the first element may be positioned with a predetermined angular orientation at a
10 position within the suprachoroidal space. The first element may be secured using any suitable technique and may for example be secured using micro-tacks or glue.

- In one embodiment, the first element is at least partially
15 surrounded by a flexible portion. In this embodiment, the method comprises a further step of providing a flexible portion that is arranged for locating at a position within the suprachoroidal space of the human eye. In this example, the flexible portion comprises a silicone
20 material and is sufficiently flexible to conform to the curvature of the suprachoroidal space. Additionally, the method comprises a step of coupling the first element to the flexible portion such that the flexible portion at least partially surrounds the first element. In one
25 example, the first element is embedded in the flexible portion such as hermetically sealed within the flexible portion.

- Examples of the flexible portion will further be described
30 with reference to Figure 3.

By positioning the first element in the suprachoroidal

- 10 -

space, the first element may be secured at the predetermined position without the need for additional securing means such as micro-tacks or the like. The first element may be embedded within a flexible portion and the
5 flexible portion may be sandwiched between the choroid and the sclera and thereby sufficiently secured at that position.

Furthermore, positioning the first element in the
10 suprachoroidal space is often less complicated than positioning at another suitable position. An incision is made through the sclera so that the first element can be inserted into the suprachoroidal space. A space between the sclera and the choroid in form of a pocket is formed
15 by a suitable device or by virtue of the shape of the first element or the flexible portion comprising the first element.

Step 108 comprises coupling the second element to a
20 portion of the intraocular device. For example, the second element may be mechanically coupled to the medical device or attached using a suitable biocompatible adhesive. Alternatively, the second element may be embedded in the intraocular device. A person skilled in the art will
25 appreciate that the intraocular device may be coupled to the second element using a variety of techniques.

Step 110 comprises placing the assembly comprising the intraocular device and the second element into the
30 intraocular space and in the proximity of the first element that is positioned in the suprachoroidal space. In this embodiment the assembly comprising the intraocular

- 11 -

device and the second element is introduced into the human eye and placed in proximity of the inner surface of the retina in the proximity of the first element, such that a portion of the intraocular device and a portion of the
5 tissue of the eye is positioned between the first and second elements.

Step 112 comprises positioning the assembly comprising the intraocular device and the second element in the
10 predetermined position and in a predetermined angular orientation relative to the first element using the magnetic forces between the first and second elements.

In one embodiment of the present invention the materials
15 are selected such that the magnetic forces are sufficient to hold the medical device in position without further intervention. The flexible portion is shaped to conform to the curvature of the suprachoroidal space and is secured in the suprachoroidal space. In other words, the flexible
20 portion is sandwiched between the choroid and the sclera. In this way, there is no need for further securing means or manipulations.

In an alternative embodiment, the flexible portion is
25 coupled to the first element and is secured to a portion of the sclera and/or the choroid by virtue of securing means. Suitable securing means include micro-tacks, sutures, and adhesive. Whilst the flexible portion is secured by a suitable securing element, the second element
30 coupled to the intraocular device may be held at the position at the inner surface of the retina only by the magnetic forces between the first and second elements.

- 12 -

In a further alternative embodiment, the first and second elements are designed such that the magnetic forces are weaker and the application of further securing means (such as micro-tacks) or manipulations may be required.

Referring back to the method 100 of positioning the intraocular device, the method 100 may further comprise surgical procedure steps in relation to implanting the intraocular device in a human eye. Exemplary surgical procedure steps may include forming an incision through the sclera of the eye using a scalpel such that the flexible portion with the first element can be inserted into a space between the sclera and the choroid. The incision typically is slightly wider than a width of the flexible portion.

A space in form of a pocket within the suprachoroidal space may be formed by using the shape of the flexible portion or any other suitable device such that the flexible portion with the first element can be positioned in the formed pocket. Once the flexible portion is fully inserted and positioned within the suprachoroidal space, the incision may for example be closed using suitable sutures.

Figures 2 and 3 are schematic illustrations of a positioned intraocular device 200 in accordance with an embodiment of the present invention. In this specific embodiment the intraocular device 200 is placed on an inner surface of the retina of the eye and is held in position by the second element 202 and the first element

- 13 -

204 located within the suprachoroidal space of the eye between the choroid and the sclera of the eye. In this example, the first and second elements 202, 204 are positioned such that a portion of the intraocular device
5 200, a portion of the retina and a portion of the choroid are located between the first and second elements 202, 204. As a consequence of the attracting magnetic forces between the first and second elements 202, 204, the intraocular device can be positioned and secured at the
10 inner surface of the retina. The tissue on the outer surface of the eye is less delicate than the tissue on the inner surface of the eye, such as the retina of the eye.

In this particular embodiment, the first element 204 that
15 is positioned in the suprachoroidal space is embedded in a flexible portion 206 such as a silicone portion. However, the flexible portion may comprise any other suitable biocompatible polymeric materials. The flexible portion 206 is arranged to locate (and secure) the first element
20 204 in the suprachoroidal space. Specifically, the flexible portion 206 is sufficiently flexible to conform to the curvature of the sclera and the choroid thereby securing its position in the suprachoroidal space.

25 In addition, by providing a portion that is sufficiently flexible, an impact on the surrounding tissue of the eye can be reduced.

The flexible portion 206 with the first element 204 are
30 shown in further detail in Figure 4. In particular, Figure 4(a) shows a top view of the flexible portion 206 with the first element 204 and Figure 4(b) shows a side view of the

- 14 -

flexible portion 206 with the first element 204.

In this particular example, the flexible portion 206 is substantially flat and has a substantially rectangular cross-sectional shape. The rectangular shape has curved corners such that when the flexible portion 206 with the first element is positioned within the eye of a patient, surgical trauma of surrounding tissue can be minimised. A person skilled in the art will appreciate that other suitable shapes of the flexible portion 206 are envisaged.

In this example, a thickness of the flexible portion 206 tapers towards opposite ends of the flexible portion resulting in a wedge shape. The wedge shape of at least one end of the flexible portion is arranged for forming the pocket between the sclera and the choroid of the eye such that the flexible portion can be positioned in that pocket. Specifically, the tapered end is arranged to gradually open up a space between the sclera and the choroid of the eye such that a pocket is formed.

In one embodiment, the first element is located in the proximity of an edge of the flexible portion. However, other positions within the flexible portion are envisaged.

The first and the second elements 202, 204 may have one or more magnetic materials, which may have different shapes. For example, the magnetic material may have a circular cross-sectional shape, a rectangular cross-sectional shape, a ring-like cross-sectional shape, or any other shape suitable shape. The type, number and shape of the magnetic materials in the first and the second elements

- 15 -

202, 204 influences the magnetic forces between the first and second elements. The magnetic materials may have a magnetisation that is oriented transversally or longitudinally relative to the positioned intraocular
5 device.

Figures 5 (a) - (c) illustrate the first and second elements in accordance with embodiments of the present invention in further detail. Figure 5 (a) illustrates a
10 second element 400 having two magnetic materials 402, 404. A corresponding configuration of the materials is implemented on a first element 406, which comprises magnetisable materials 408, 409. The second element 400 is coupled to an intraocular device 410. In this example the
15 materials 402 and 404 are permanent magnets and the materials 408 and 409 are magnetisable materials. In a variation of the described embodiment the materials 408 and 409 may also be permanent magnets.

20 Figure 5 (b) shows an example of first and second elements 414, 412 that each comprises one permanent magnetic material 418, 416 that has a rectangular shape. The permanent magnetic materials 416 and 418 have an orientation that is perpendicular to that of the permanent
25 magnetic materials 402 and 404 shown in Figure 5 (a).

Figure 5 (c) shows an example of first and second elements 422, 420 that each comprise one a pair of permanent magnetic material 432, 430 and 424, 426 each having a
30 magnetisation that is oriented along the device 410 to which the second element 420 is coupled.

- 16 -

Figure 5 illustrates only a few possible configurations and a person skilled in the art will appreciate that various alternative configurations are possible.

Although the invention has been described with reference
5 to particular examples, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.

- 17 -

The Claims:

1. A method of positioning an intraocular device at an intraocular position, the method comprising the steps of:
 - 5 providing a first and a second element, the first and the second element being selected such that a magnetic force attracts the first element and the second element to each other;
positioning the first element in a suprachoroidal
10 space of an eye;
positioning the intraocular device in an intraocular space at a portion of tissue of the eye; and
positioning the second element in the intraocular space of the eye;
 - 15 wherein the first element, the second element and the intraocular device are positioned such that the portion of the tissue of the eye and at least a portion of the intraocular device are positioned between the first and second elements such that the magnetic force at least
20 contributes to securing the intraocular device at the portion of the tissue of the eye.
2. The method of claim 1 wherein the portion of the tissue of the eye comprises a portion of the retina and
25 wherein the intraocular device is a retinal prosthesis.
3. The method of claim 1 or 2 wherein the second element is coupled to the intraocular device and is surround by, or embedded in, a portion of the intraocular device.
30
4. The method of claim 1 or 2 comprising coupling the intraocular device and the second element to each other.

- 18 -

5. The method of any one of the preceding claims wherein the first element is coupled to or embedded in a flexible portion that is shaped to facilitate insertion and
5 positioning of the flexible portion with the second element in the suprachoroidal space of the eye.

6. The method of any one of claims 1 to 4 comprising coupling the first element to a flexible portion such that
10 the first element is attached to the flexible portion or partially surrounded by the flexible portion, the flexible portion being shaped to facilitate insertion and positioning of the flexible portion with the second element in the suprachoroidal space of the eye.

15

7. The method of claim 6 comprising embedding the first element in the flexible portion.

8. The method of any one of claims 5 to 8 wherein the
20 flexible portion comprises a tapered end-portion that facilitates insertion of the flexible portion into the suprachoroidal space of the eye.

9. The method of any one of claims 5 to 8 wherein the
25 flexible portion comprises a biocompatible polymeric material that is sufficiently flexible to adapt conform to a curvature of suprachoroidal space.

10. The method of any one of the preceding claims wherein
30 the first and second elements are selected and positioned such that the intraocular device is secured at a desired position without the need for additional fasteners.

- 19 -

11. The method of any one of claims 1 to 9 wherein the first and second elements are arranged to position the intraocular device in a desired position and the method
5 comprises securing the intraocular device subsequently in the desired position using suitable fasteners such as tacks.

12. The method of any one of the preceding claims
10 comprising positioning the intraocular device in a predetermined angular orientation relative to the retina using the magnetic force.

13. The method of claim 11 wherein the first and second
15 elements comprise materials that have magnetic properties that are arranged such that the magnetic force is directed to position the first and second elements in the predetermined angular orientation relative to each other.

20 14. The method of any one of the preceding claims comprising forming an incision through the sclera of the eye such that the first element or a flexible portion comprising the first element can be inserted into the suprachoroidal space.

25 15. The method of any one of the preceding claims comprising moving the sclera and the choroid from each other by inserting the flexible portion with the first element into the suprachoroidal space.

30 16. An intraocular system, comprising:

- 20 -

an intraocular device for positioning in an intraocular space of an eye;

a flexible portion arranged for locating in the suprachoroidal space of the eye;

5 a first element coupled to, or surrounded by, the flexible portion;

a second element arranged for positioning in the intraocular space of the eye;

wherein the first element and the second element are
10 arranged such that a magnetic force attracts the first element and the second element to each other, and wherein the first element, the second element and the intraocular device are arranged such that, when the intraocular device is positioned, a portion of tissue of the eye and at least
15 a portion of the intraocular device are positioned between the first and second elements such that the magnetic force at least contributes to securing the intraocular device at the tissue of the eye.

20 17. The intraocular system of claim 16 wherein the flexible portion comprises a biocompatible polymeric material that is sufficiently flexible to conform to a curvature of suprachoroidal space.

25 18. The intraocular system of claim 17 wherein the flexible portion comprises a tapered end-portion that facilitates insertion of the flexible portion into the suprachoroidal space of the eye.

30 19. The intraocular system of claim any one of claims 16 to 18 wherein the first element is embedded in the flexible portion.

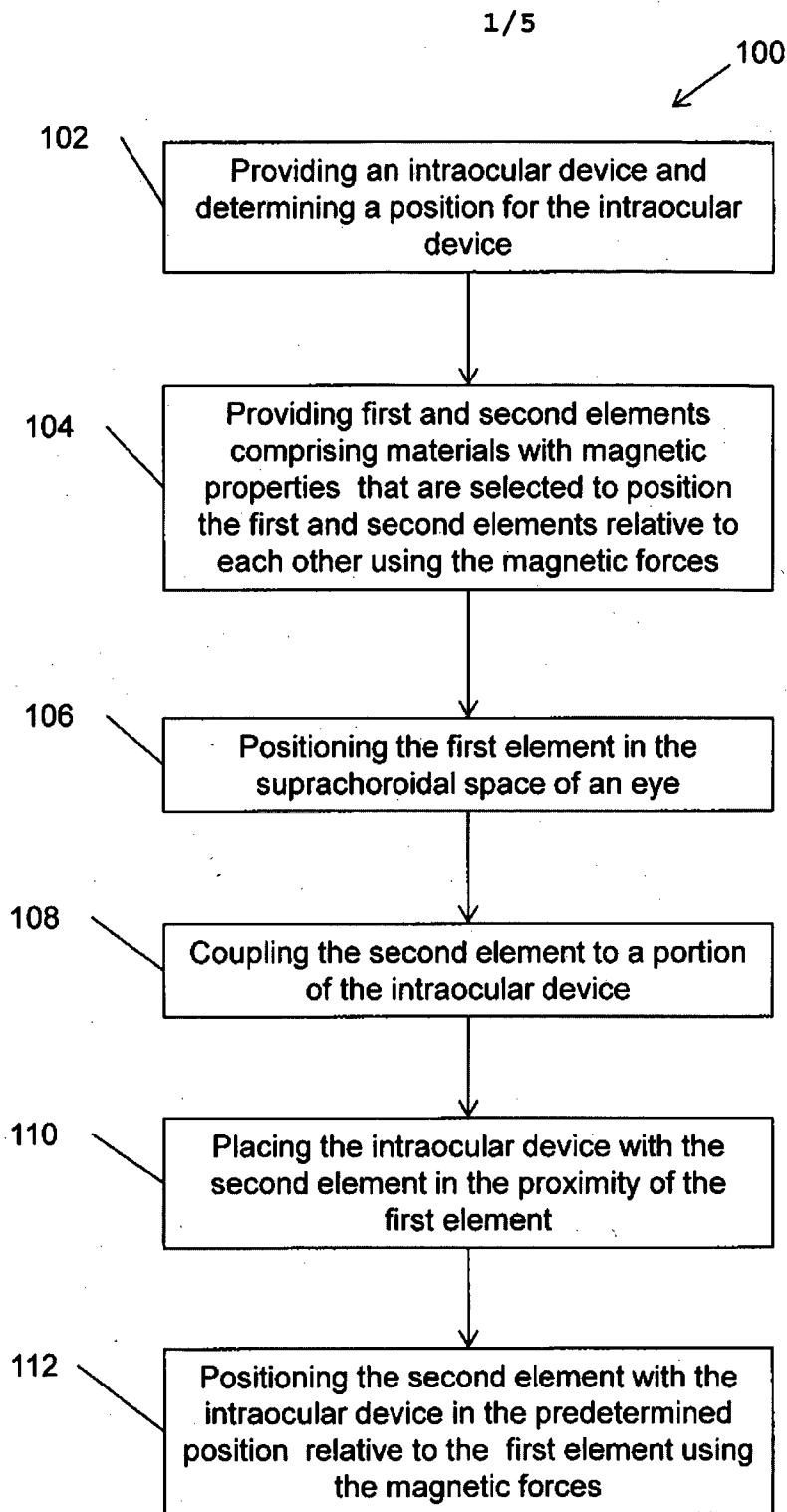
- 21 -

20. The intraocular system of any one of claims 16 to 19 wherein at least one of the first and the second elements comprises a permanent magnetic material.

5

21. The intraocular system of any one of claims 16 to 20 wherein at least one of the first and second elements comprises one or more magnetic materials that are positioned within the first and second elements such that
10 the magnetic force positions the first and second elements in the predetermined angular orientation relative to each other.

22. The intraocular system of any one of claims 16 to 21
15 wherein the intraocular device is a retinal prosthesis.

**Figure 1**

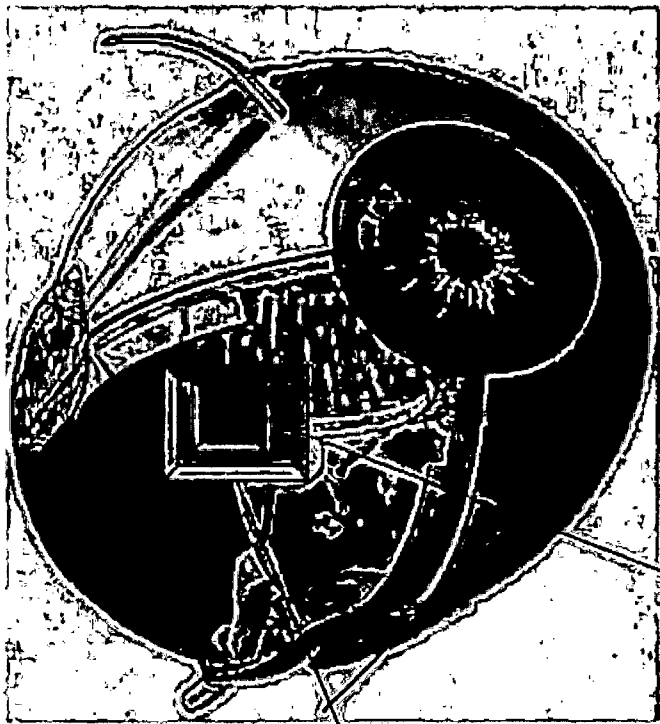


Figure 2

202

200

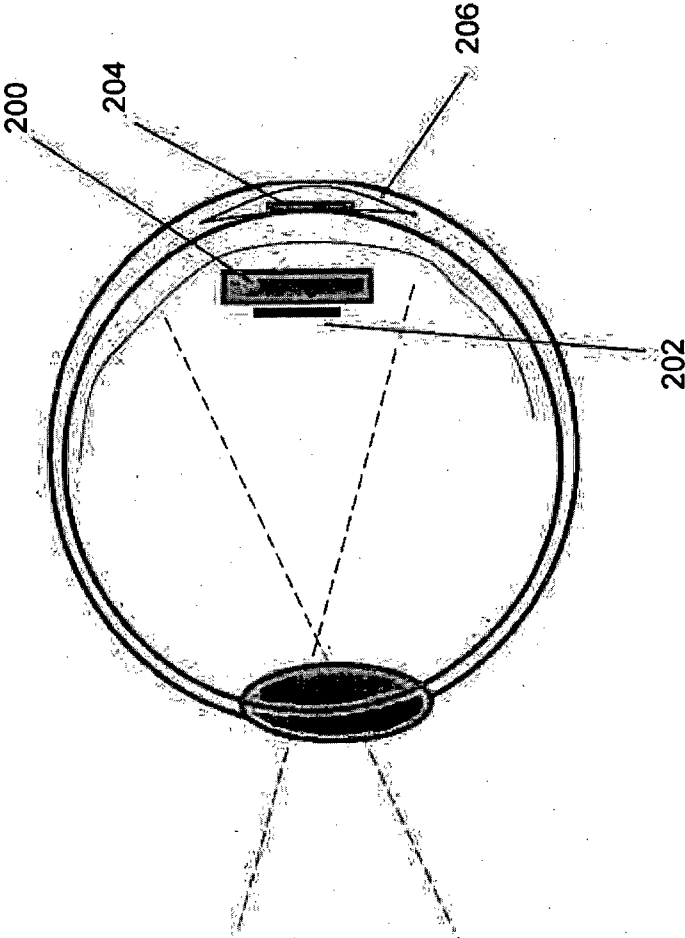


Figure 3

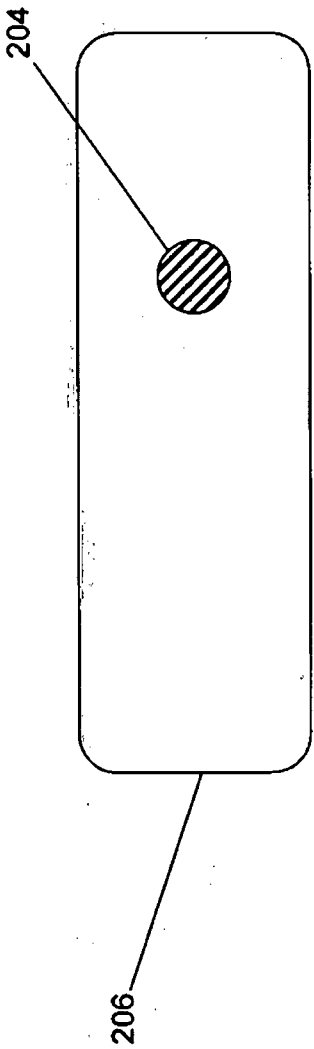


Figure 4a

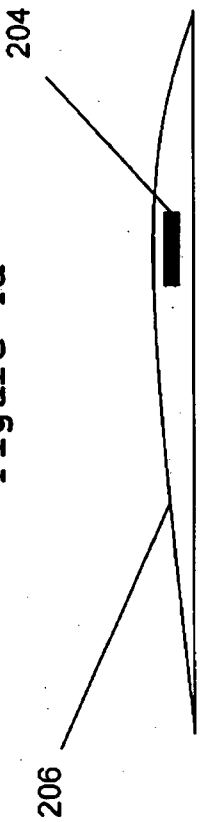
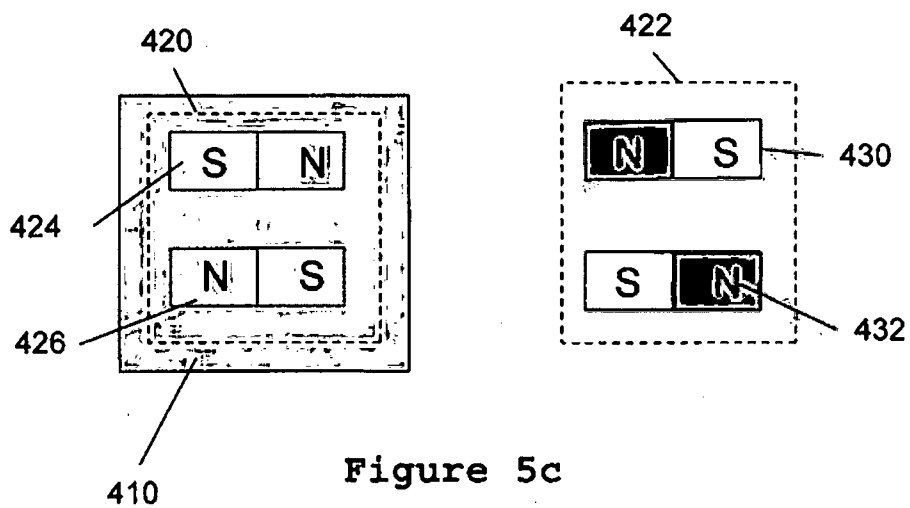
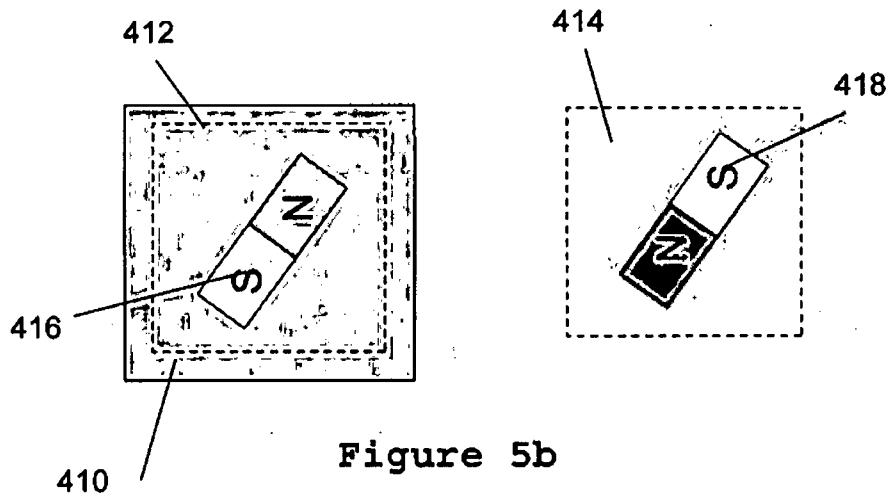
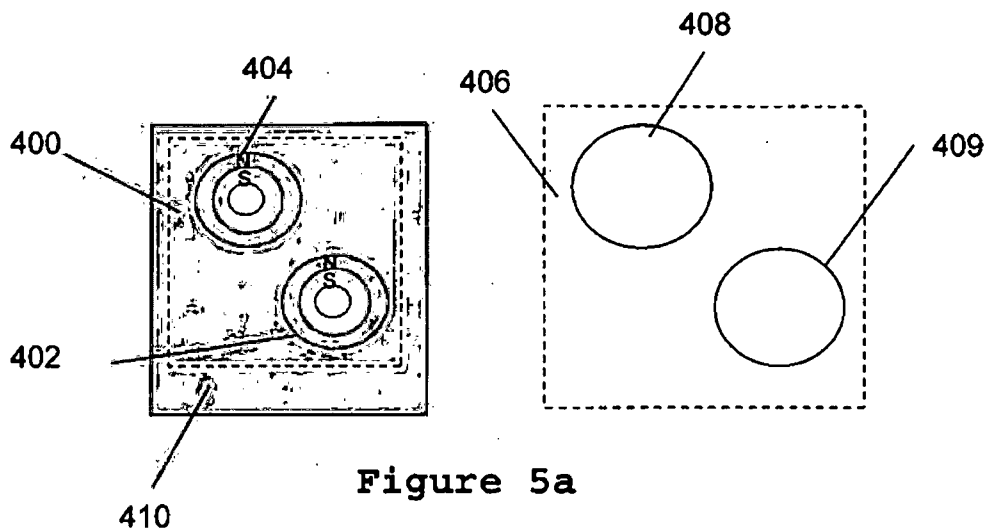


Figure 4b

5/5



INTERNATIONAL SEARCH REPORT

 International application No.
PCT/AU2013/001304

A. CLASSIFICATION OF SUBJECT MATTER

A61F 2/14 (2006.01)

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)

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

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

EPODOC; WPI: Class marks A61F 2/14, A61F 2/16 with keywords such as iol, intra-ocular, retinal prosthesis, position, location, align, attach, attract, adjust, magnetic and similar terms.

Google Patents: Various combinations of above mentioned keywords and other terms and keywords.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	



Further documents are listed in the continuation of Box C



See patent family annex

* "A"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 11 December 2013		Date of mailing of the international search report 11 December 2013	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaustalia.gov.au Facsimile No.: +61 2 6283 7999		Authorised officer Serinel Samuel AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. 0262832382	

INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		PCT/AU2013/001304
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5935155 A (HUMAYUN et al.) 10 August 1999 Abstract; col. 4, line 63-col. 5, line 12; col. 7, line 28; col. 8, lines 4-33; figs. 5, 6, 8, 9, 10; claim 7.	1- 22
Y	US 4298996 A (BARNET) 10 November 1981 Figs. 1, 2; Abstract; col. 3, lines 45-47.	3, 4, 10, 12, 13, 20, 21
Y	WO 2012/090188 A1 (STMICROELECTRONICS S.R.L.) 05 July 2012 Abstract; page 1, lines 12-28; page 25, lines 16-34; page, 27, line 21-page 28, line 12.	1-22

Form PCT/ISA/210 (fifth sheet) (July 2009)

INTERNATIONAL SEARCH REPORT		International application No.	
Information on patent family members		PCT/AU2013/001304	
This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.			
Patent Document/s Cited in Search Report		Patent Family Member/s	
Publication Number	Publication Date	Publication Number	Publication Date
US 5935155 A	10 Aug 1999	AU 751995 B2	05 Sep 2002
		CA 2323550 A1	16 Sep 1999
		CA 2621123 A1	16 Sep 1999
		EP 1061874 A1	27 Dec 2000
		EP 1061874 B1	07 Jun 2006
		EP 1061874 B2	26 Jun 2013
		EP 1625874 A1	15 Feb 2006
		EP 1702645 A1	20 Sep 2006
		EP 1702646 A1	20 Sep 2006
		EP 1702647 A1	20 Sep 2006
		EP 1723984 A1	22 Nov 2006
		EP 2298411 A1	23 Mar 2011
		JP 2002505910 A	26 Feb 2002
		JP 3926564 B2	06 Jun 2007
		US 5935155 A	10 Aug 1999
		WO 9945870 A1	16 Sep 1999
US 4298996 A	10 Nov 1981	JP S6051906 B2	16 Nov 1985
		US 4298996 A	10 Nov 1981
WO 2012/090188 A1	05 Jul 2012	EP 2658490 A1	06 Nov 2013
		IT TO20101095 A1	01 Jul 2012
		IT TO20110078 A1	01 Jul 2012
		US 2013282119 A1	24 Oct 2013
		WO 2012090188 A1	05 Jul 2012
End of Annex			
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.			