

(21) Application No: 1304001.9
 (22) Date of Filing: 06.03.2013

(51) INT CL:
 G02B 7/02 (2006.01) G02B 7/14 (2006.01)

(71) Applicant(s):
Sumiya Neki
 28 Headfield Road, Saville Town, DEWSBURY,
 West Yorkshire, WF12 9JE, United Kingdom

(56) Documents Cited:
 GB 1392702 A US 5986823 A
 US 4796756 A US 4662717 A
 US 3958867 A US 20080158696 A1
 US 20060139774 A1

(72) Inventor(s):
Sumiya Neki

(58) Field of Search:
 INT CL G02B
 Other: Online: EPODOC, Internet, TXTUS0, TXTUS1,
 TXTUS2, TXTUS3, TXTUS4, TXTEP1, TXTGB1,
 TXTWO1, WPI

(74) Agent and/or Address for Service:
Sumiya Neki
 28 Headfield Road, Saville Town, DEWSBURY,
 West Yorkshire, WF12 9JE, United Kingdom

(54) Title of the Invention: **Holding device**
 Abstract Title: **Holding device for use with lens and which may use a snap-fit connector**

(57) The holding device can be freely rotated around an axis without objects such as lenses falling out. The holding device can be stacked to allow a multiple number of lenses to be held securely at the same time. The holding device expands when objects are held in place but returns to its original setting once the item is removed without the use of springs. Lenses may be placed in a groove of the holding device and a snap fit connector with base (figure 9) and insert (figure 8) may be used to secure the lenses.

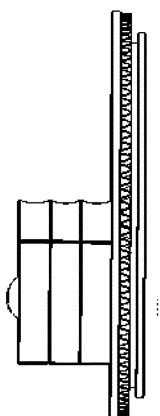


figure 22

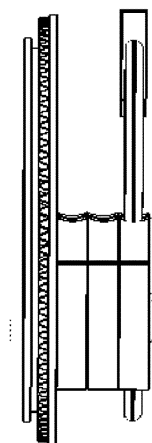


figure 23

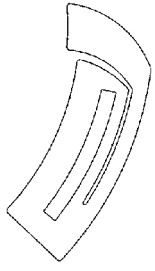


figure 1

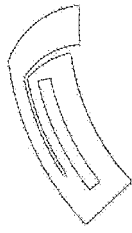


figure 2



figure 3



figure 4



figure 5

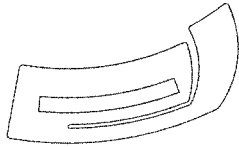


figure 6

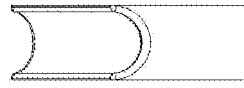


figure 7

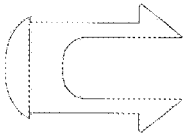


figure 8

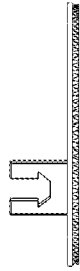


figure 9

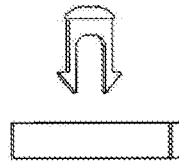


figure 10

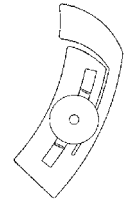


figure 11

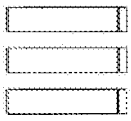


figure 12

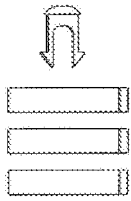


figure 13

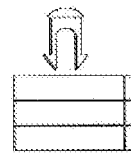


figure 14

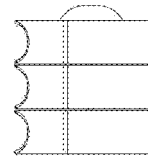


figure 15

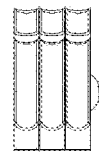


figure 16

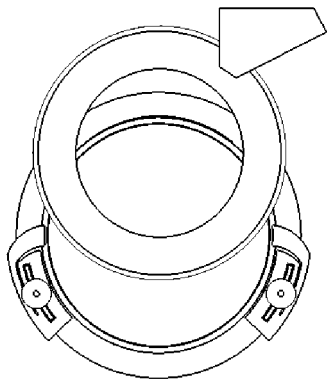


figure 17

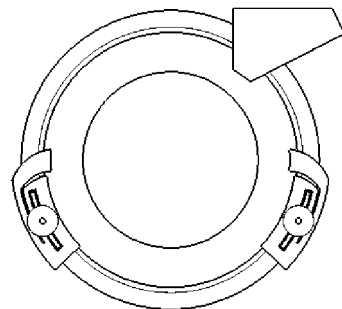


figure 18

04 06 13

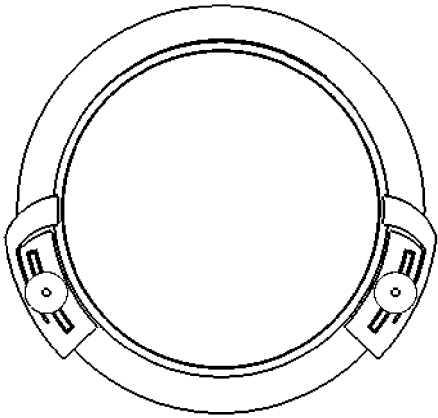


figure 19

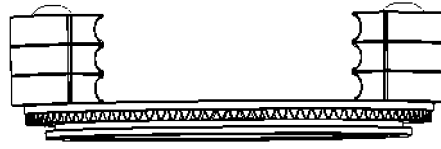


figure 20

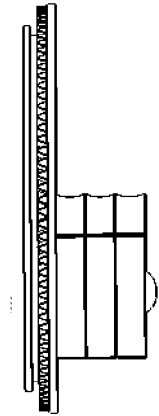


figure 21

04 06 13

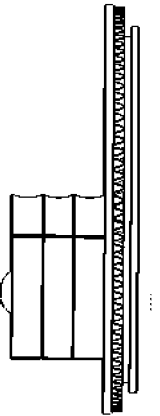


figure 22

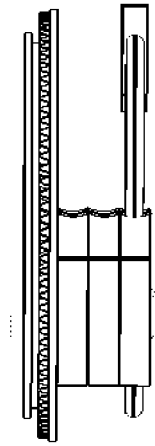


figure 23

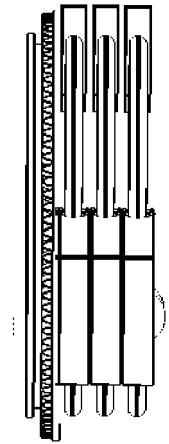


figure 24

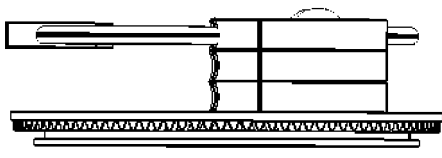


figure 25

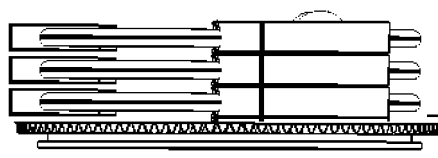


figure 26

Full description

Holding device

A holding device, that holds spherical objects in place securely. The device can be used as a 2 component system that allows hold from 2 opposing sides of a sphere. Each side when placed in a manner to hold a lens forms a design almost like a claw. The holding device has been designed to be used with lenses which identify optical clarity for example for refractive purposes.

The current optical lens holders designed for a similar purpose are of the following 3 designs:

Current design 1: The most commonly seen clips are steel spring clips which are punched out of a sheet of spring steel - these are functional yet very clumsy to use at times. Sometimes the optical lenses will slip through the gaps between the lens holders. Also the spring steel over time loses its springy function and can easily be bent or twisted out of shape. The edges on the spring steel can be sharp and sometimes dangerous when handled incorrectly.

Current design 2: Small plastic components, fixing steel pins and spring pins are connected to create an optical lens holding device. This is very difficult to assemble and consists of many components to enable it to work. This can only house 3 optical lenses and is more costly compared to our new design. Also if one component of the arrangement was to fail or fall apart, the whole arrangement is not functional.

Current design 3: This is a very simple design that is very primitive. A groove is designed to hold an optical lens in place. This is not very secure as the lenses can and do easily fall out. This is just purely a holding / resting device and will not secure a lens in place.

The new holding device can be composed to form a layered design dependent upon the device or instrumentation they are used in. For example an optical trial frame can have 3 clips layered together to hold 3 trial lenses. Each device is manufactured individually but 2 individual devices are placed on either side of a sphere to make a 1 piece system. For example due to the design lenses fit comfortably in to the device securely to hold x3 optical trial lenses, these can be rotated through 360° degrees, without the lenses falling out. These holding device can be layered together to hold anything between 1 and more (possible 10+) optical lenses. They are very easy to assemble and install on a range of items that require a similar function. The holding device can be fixed in place with a base lock and fixing pin.

An introduction to the drawings

Figures 1-7 shows the basic clip design from all angles. A groove can be seen in figure 4, 5 and 7; this allows comfortable seating of the lenses.

Figures 8-11 show how the clips can be assembled to a base using a split pin locking system.

Figures 12-16 show in more detail how the clips can be stacked to allow for more than 1 item to be held at the same time.

Usually for a spherical lens; clips are assembled along a 360° axis as shown in figure 17 and 18, for example a lens placed in the groove will be held firmly in place by the clips on either side due to the clip design. The clip design allows a secure and firm hold with the flexibility of layering additional items.

Figure 22 shows how the clips look when they are fixed to a base.

Figure 1 shows what a single clip looks like on its own. Due to the design of the clip it has a springing effect which gives the clips a unique mode of action. When a trial lens is placed in the clips a springing action holds the lens in place. To hold more than one lens several of these can be combined by stacking the clips together this can be seen in figure 12 and 13.

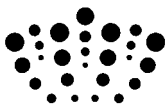
A split pin figure 8 is used to attach/fix the clips to the base. The pin works by springing in to place for a secure hold. Figure 9 shows the lock the pin falls in to. This allows a strong bond that would need considerable force to detach. The split pin enters through the middle of the clips as seen in figure 10 and 11, the head places tension on the clips to keep in place. Figure 14, 15 and 16 show how the clips are attached when the clips are stacked. The length of pin can be altered if needed.

Figures 17 and 18 show an example of the clips in use, the clips are shown holding a trial lens in this example but the clips can hold anything that requires a firm hold in this manner. The clips would be positioned accordingly to suit the diameter of the items they are required to hold.

Figures 19 to 26 - show the clips in use on a 360° base, the figures show how a 3 lens rack would be created when the clips are stacked. The 3 lenses would be held firmly in place without falling out on rotation. The drawings also show the locking pins in place locking the 3 layered clips in place. The circular items in the drawings represent lenses from an optical trial lens.

Claims

1. A holding device that encompasses spherical objects in a secure manner to prevent them from being dislodged during use, storage and when the object is turned freely around an axis, by the process of tension without the use of springs.
2. The holding device according to claim 1, is a single piece mechanism.
3. The holding device according to claim 1, can be made from various materials to increase its holding tension.
4. The holding device according to claim 1, can be layered to hold more than 1 object at a time.
5. The holding device according to claim 1 is stacked and secured by means of a base locking device and complementary insert.
6. The holding device according to claim 1, can be set according to the size and diameter required around a freely rotating axis.
7. The holding device according to claim 1, can expand depending on the diameter of object inserted but can also return to its original shape.



Application No: GB1304001.9
Claims searched: 1-7

Examiner: Mr Conal Clynych
Date of search: 15 March 2013

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-3 & 6-7	US2006/139774 A1 (FINISAR CORP) see figure 2 and paragraph 26 especially
X	1-3 & 5-7	US2008/158696 A1 (YIP GIN FAI) see figure 2 and paragraphs 28-29 especially
X	1 & 3-6	US4796756 A (SILOR OPTICAL OF FLORIDA INC) see figure 2 & column 5, lines 11-18 especially
X	1, 3 & 5	GB1392702 A (ISCO OPTISCHE WERKE GMBH) see figure 1 especially
X	1 & 4-5	US4662717 A (OLYMPUS OPTICAL CO) see figures 17-22 & claim 1 especially
X	1 & 5	US3958867 A (MORGAN J ROBERT) see figure 4 especially
Y	5	US5986823 A (YANG JR PETER S) see figures 7-11 especially

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

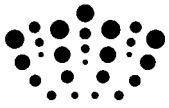
Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

Worldwide search of patent documents classified in the following areas of the IPC

G02B

The following online and other databases have been used in the preparation of this search report



Online: EPODOC, Internet, TXTUS0, TXTUS1, TXTUS2, TXTUS3, TXTUS4, TXTEP1, TXTGB1, TXTWO1, WPI

International Classification:

Subclass	Subgroup	Valid From
G02B	0007/02	01/01/2006
G02B	0007/14	01/01/2006