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(54) **Mirror unit with height-adjustable magnifying mirror incorporated**

Spiegeleinheit mit eingebautem höhenverstellbaren Vergrößerungsspiegel

Unité de miroir avec miroir grossissant à hauteur réglable intégré

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(56) References cited:
**WO-A-91/12753**
**DE-A1- 2 300 650**
**FR-A- 1 337 069**
**US-A- 2 943 536**
**US-A- 4 304 447**

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## Description

**[0001]** The present invention refers to a mirror unit which incorporates a height-adjustable magnifying mirror.

**[0002]** Mirror units of various shapes and sizes provided with an incorporated magnifying mirror have been available on the market for some time.

**[0003]** Such mirror units comprise a structure for fixing to the wall of a room, typically a bathroom, and a reflecting surface anchored to the wall fixing structure.

**[0004]** More in particular, the reflecting surface comprises a main mirror portion and a magnifying mirror portion, typically of a smaller size than the main mirror portion. The magnifying mirror portion is fixed, for example glued, at a given height in a hollow formed on the main mirror portion, for example at its periphery. Between the fixing structure and the reflecting surface it is possible to provide illuminating means, for example one or more neon lights, able to back-light the main mirror and/or the magnifying mirror.

**[0005]** Mirror units of this type make it possible to obtain, on a single reflecting surface, a non-enlarged image and a locally enlarged image, the latter allowing the user to perform more easily operations such as shaving, applying makeup and the like, which require a greater precision of execution.

**[0006]** However, mirror units provided with a magnifying mirror of the prior art present the following drawback.

**[0007]** As described above, the magnifying mirror is blocked in a fixed position on the main mirror, typically at a height corresponding to the average height of a user. As a result, it could prove awkward to use for particularly tall or particularly short people.

**[0008]** In fact, in order to see themselves in the magnifying mirror, the former could be obliged to lower themselves, for example by bending their knees, and the latter to raise themselves, for example by standing on tiptoe, thus assuming unnatural and therefore uncomfortable positions, even for prolonged periods of time, for example for the entire duration of a shaving operation.

**[0009]** DE 23 00 650 discloses a mirror unit according to the preamble of claim 1, this mirror unit having a movement system for a small-sized mirror, which allows it to be removed from a wall, and inclined or rotated with respect to its axis. In one embodiment the system is of the bellows type, in another of the telescopic type.

**[0010]** WO 91/12753 discloses a mirror unit with magnifying mirror and illuminating means suitable to vary the light emitted thereby. Means suitable to vary the inclination of the mirror with respect to the wall to which it is fixed are provided.

**[0011]** US 2 943 536 discloses a support for mirrors of various sizes, suitable to allow inclination thereof with respect to a horizontal axis.

**[0012]** FR 1 337 069 discloses a mirror which has on a wall of its rear surface a portion which can form an enlarged image.

**[0013]** Object of the present invention is to provide a mirror unit provided with a magnifying mirror, which can be adjusted in height, so as to be able to be easily used even by particularly tall and particularly short people, thus overcoming the aforementioned drawback.

**[0014]** Another object of the invention is that of providing such a mirror unit that is cheap and simple to make.

**[0015]** These objects are achieved by means of a mirror unit which has the characterizing features indicated in independent claim 1.

**[0016]** Advantageous embodiments of the invention are apparent from the dependent claims.

**[0017]** The mirror unit according to the invention comprises:

- a first body suitable for fixing to a wall;
- a second body suitable for cooperating with the first body;
- a reflecting body, carried by the second body and comprising a portion of main mirror and a portion of magnifying mirror, eccentric with respect to the portion of main mirror;
- means interposed between the first and second body, suitable to allow a rotation of the second body with respect to the first body and thus a height adjustment of the portion of magnifying mirror.

**[0018]** Further characteristics of the invention will be made clearer by the detailed description that follows, referring to a purely exemplifying and therefore non limiting embodiment thereof, illustrated in the appended drawings, wherein:

Figure 1 is a side profile view, which illustrates the three components of the mirror unit according to the invention, exploded;

Figure 2 is a top plan view of a mirror unit according to the invention, which illustrates diagrammatically the height adjustment of a portion of magnifying mirror;

Figure 3 is a perspective view of the first body for fixing to a wall of the mirror unit of Figure 2;

Figure 4 is a top plan view of the first body of Figure 3;

Figure 5 is a side profile view of the first body of Figure 3;

Figure 6 is a perspective view of the second body of the mirror unit of Figure 2;

Figure 7 is a top plan view of the second body of Figure 6;

Figure 8 is an axial sectional view taken along the plane of section VIII-VIII of Figure 7;

Figure 9 is a top plan view of the reflecting body of the mirror unit of Figure 2;

Figure 10 is a side profile view of the reflecting body of Figure 9;

Figure 11 is a top plan view of the mirror unit of Figure 2, which shows the first body and the second body assembled and the reflecting body removed from the

second body;

Figure 12 is an axial sectional view taken along the plane of section XII-XII of Figure 11; and

Figure 13 is an axial sectional view taken along the plane of section XIII-XIII of Figure 11.

**[0019]** The mirror unit with height-adjustable magnifying mirror according to the invention, indicated as a whole with reference numeral 100, will now be described with the aid of the above listed figures.

**[0020]** With reference to Figures 1 and 2, the mirror unit 100 comprises a first body 10 for fixing to a wall, typically the wall of a bathroom, a second body 20, which cooperates with the first body 10 so as to be able to rotate, in use, with respect thereto, and a reflecting body 30 carried by the second body 20 and therefore also rotatable, in use, with respect to the first body 10.

**[0021]** The first body 10, illustrated in detail in Figures 3 to 5, comprises a plate-like element, preferably a disk of sheet metal 102, having a plurality of peripheral holes 103 for passage of the respective screws 11 for fixing to the wall.

**[0022]** The disk 102 carries a pin 15 for rotation of the second body 20 with respect to the first body 10. The pin 15 comprises a head portion 151 and a thread, onto which, in use, a nut 18 is screwed so as to constrain the second body to the first body 10 in a rotatable manner.

**[0023]** The pin 15 is preferably associated with a U-bolt 14, also preferably of sheet metal, which is fixed, for example by welding or screwing, to the centre of the disk 102. The U-bolt 14 comprises an upturned U-shaped portion 141, from which extend two side wings 142 for fixing to the disk 102. On the bottom wall 143 of the upturned U-shaped portion 141 there is a central hole 144 for passage of the pin 15.

**[0024]** In use, that is, with the U-bolt 14 fixed in position on the disk 102, the pin 15 protrudes from the disk 102 and a C-shaped cavity is defined between the disk 102 and the bottom wall 143 of the upturned U-shaped portion 141, suitable to accommodate precisely the head portion 151 of the pin 15, blocking it.

**[0025]** Removable means for blocking the second body 20 on the first body 10, consisting of at least one magnet 12, are fixed, for example by welding, on the disk 102, preferably at its periphery. In the embodiment illustrated, four magnets 12 are provided, each alongside a respective peripheral hole 103 of the disk 102. Of course, the magnets 12 can be carried by the second body 20.

**[0026]** Instead of being made of sheet metal, the first body 10 can be made of any other suitable material, for example wood, moulded plastic and the like. In this case, for example during moulding of the plastic material, it is possible to form suitable seats to receive the respective magnets 12.

**[0027]** An anti-friction disk of plastic material, for example Teflon®, also provided with a central hole 161 for passage of the pin 15, is preferably provided on the surface of the bottom wall 143 of the U-bolt 14 from which the pin 15 exits.

**[0028]** Coatings of anti-friction plastic material 121 are also preferably provided to coincide with the free upper surface of each magnet 12. The function of the disk 16 and of the anti-friction coatings 121 is that of reducing to a minimum any rubbing between the second body 20 and the first body 10 of the mirror unit, thus favouring rotation of the one with respect to the other.

**[0029]** The second body 20, illustrated in detail in Figures 6 to 8, comprises a base surface 201 provided with an edge 202. The base surface 201 is preferably a disk of sheet metal with a slightly larger diameter than that of the disk 102 of the first body 10 for fixing to a wall. Holes 203 for passage of respective fixing screws of the reflecting body 30 are preferably provided on the edge 202.

**[0030]** A U-bolt 17 is fixed, for example by welding, screwing or the like, at the centre of the base surface 201. The U-bolt 17 comprises an upturned U-shaped portion 171, from which extend two side wings 172 for fixing to the base surface 201. On the bottom wall 173 of the upturned U-shaped portion there is a central hole 174 for passage of the pin 15 (Figures 3-5).

**[0031]** Instead of being made of sheet metal, the second body 20 can also be made of wood, moulded plastic and the like. In this case, metal areas suitable to cooperate with the magnets 12 associated with the first body 10 are provided on the surface of the second body 20 which faces during use towards the first body 10. Of course, the magnets 12 can be carried by the second body 20 and engage with the metal areas of the first body 10.

**[0032]** The reflecting body 30, illustrated in detail in Figures 9 and 10, comprises a mirror 300 and an edge 304.

**[0033]** The mirror 300 is preferably circular in shape and comprises a portion of main mirror 301 and a portion of magnifying mirror 302, also preferably circular in shape but considerably smaller in size than the portion of main mirror 301. The portion of magnifying mirror 302 is preferably fixed by means known to the art, for example glue, screws and the like, at a given height and eccentric with respect to the portion of main mirror 301, for example in a hollow formed at the periphery of the portion of main mirror 301.

**[0034]** Holes 305 for passage of respective fixing screws of the reflecting body 30 to the second body 20 are preferably provided on the edge 304. The edge 304 has a slightly greater height than that of the edge 202 of the second body 20 and an inner diameter greater than the outer diameter of the edge 202 of the second body 20. In this manner, when the reflecting body 30 is fitted onto the second body and fixed thereto, a housing seat S for a lighting assembly is defined between the second body 20 and the reflecting body 30.

**[0035]** The lighting assembly 40, illustrated in Figure 6, is fixed by methods known to the art onto the base surface 201 of the second body 20 and comprises first and/or second lighting means, 401 and 402, for example

neon, incandescence or halogen lamps, LED or the like, suitable to illuminate the portion of main mirror 301 and/or the portion of magnifying mirror 302 of the mirror unit 100, respectively. The lighting assembly 40 is of a known type, so it will not be described in detail herein.

**[0036]** If the lighting assembly 400 is present, apertures 104 are formed on the disk 102 of the first body 10 for passage of the respective power supply cables (not shown).

**[0037]** Figures 11 to 13 show the method of assembly of the first and second body, 10 and 20, of the mirror unit 100 according to the invention.

**[0038]** First of all, the pin 15 and U-bolt 14 assembly is fixed to the centre of the disk 102. As described earlier, at the end of this fixing operation, the head 151 of the pin 15 will be housed precisely in the cavity C defined between the disk 102 and the bottom wall 143 of the U-bolt 14, with the threaded part of the pin 15 protruding from the bottom wall 143. At this point, the first body 10 can be fixed to a wall by means of the screws 11.

**[0039]** Subsequently, the second body 20, possibly provided with the lighting assembly 40, is assembled on the first body 10, causing the pin 15 to pass through the central hole 174 of the U-bolt 17 and screwing the nut 18 onto the thread of the pin 15. The nut 18 is screwed onto the pin 15 so as to prevent the second body 20 from becoming detached from the first body 10, for example by sliding along the pin 15, at the same time allowing the second body 20 to rotate with respect to the first body 10 around the pin 15. The join between the first body 10 and the second body 20 is ensured, furthermore, by the force of attraction exerted by the magnets 12 interposed therebetween.

**[0040]** At this point, as shown diagrammatically in Figure 1, the reflecting body 30 is assembled on the second body 10, matching the holes 305 and 203 formed on the respective edges 304 and 202. In particular, the reflecting body 30 is fitted on the second body 20 until the bottom surface of the mirror 300 abuts against the edge 202 of the second body 20. The reflecting body 30 and the second body 20 are then fixed with screws (not shown) passing through the holes 305 and 203. In this manner, the reflecting body 30 is integral with the second body 20 in its movement of rotation with respect to the first body, around the pin 15.

**[0041]** Let us suppose that a particularly tall user wishes to use the portion of magnifying mirror 302 of the mirror unit 100. All he will have to do is to rotate the second body 20, and with it the reflecting body 30, anticlockwise with respect to the first body 10, until the magnifying portion 302 of the mirror 300 is brought to the height of his face. If, on the contrary, the mirror unit 100 is to be used by a particularly short person, he will simply have to rotate the second body 20, and with it the reflecting body 30, clockwise with respect to the first body 10, until the portion of magnifying mirror 302 of the mirror 300 is brought to the height of his face. This is shown clearly by the arrows in Figure 2.

**[0042]** Once the desired position has been determined, the second body 20-reflecting body 30 assembly will maintain this position with respect to the first body 10 thanks to the force of attraction exerted between the disk 102 of the first body 10 and the base surface 201 of the second body 20 by the magnets 12.

**[0043]** In order to limit rotation of the second body 20 with respect to the first body 10, stop means of rotation of the second body with respect to the first body, for example a rivet 19, are preferably provided. The rivet 19 is fixed in a suitable position on the surface of the base portion 201 of the second body 20, facing the first body 10 in use. The rivet 19 is destined to abut, in use, against one of the side walls, in the embodiment illustrated the right side wall 145 of the upturned U-shaped portion 141 of the U-bolt 14. Preferably, the maximum angle of rotation (both clockwise and anticlockwise) of the second body 20 with respect to the first body 10 is about 40°.

**[0044]** From the foregoing description it will be readily understood that the mirror unit according to the invention advantageously allows an adjustment in height of the portion of magnifying mirror 302 to be made, so as to allow comfortable and easy use even by particularly tall or short persons.

**[0045]** Numerous modifications and changes of detail within the reach of a person skilled in the art can be made to the present embodiment of the invention, without thereby departing from the scope of the invention as set forth in the appended claims.

**[0046]** For example, although the embodiment illustrated refers to a circular shaped mirror, it is understood that the same applies in the case of mirrors of other shapes, for example oval, polygonal, square with rounded edges and the like. Furthermore, if the lighting assembly is not provided, it is not necessary to form the housing seat S for said lighting assembly, so the second body can also be a plate-like element of any shape provided with a reflecting surface comprising the portion of main mirror and the portion of magnifying mirror.

## Claims

**1.** A mirror unit (100) comprising:

- a first body (10) suitable for being fixed to a wall;
- a second body (20) suitable for cooperating with the first body (10);
- a reflecting body (30) carried by said second body (20) and comprising a portion of main mirror (301) and a portion of magnifying mirror (302), said portion of magnifying mirror (302) being eccentric with respect to said portion of main mirror (301);
- a pin (15) centrally carried by said first body (10) and passing through said second body (20) suitable for allowing a rotation of said second body (20) with respect to said first body (10),

and thus a height adjustment of said portion of magnifying mirror (302);
- at least one removable blocking means (12) of said second body (20) with respect to said first body (10)
**characterized in that** the at least one removable blocking means (12) consists of a magnet (12) fixed to said first body (10) or said second body (20), arranged to cooperate with a respective metallic area of said second body (20) or said first body (10).

2. A mirror unit (100) according to claim 1, **characterized in that** it comprises a nut (18) suitable for being screwed onto the pin (15), thereby constraining said first (10) and second (20) bodies therebetween.

3. A mirror unit (100) according to claim 1 or 2, **characterized in that** said pin (15) is associable to a U bolt (14) fixed to said first body (10).

4. A mirror unit (100) according to any one of the previous claims, **characterized in that** it further comprises lighting means (40, 401, 402) for said portion of main mirror (301) and/or said portion of magnifying mirror (302), said lighting means (40, 401, 402) being fixed to said second body (20) and consisting of neon, incandescence, halogen lamps, LED or the like.

5. A mirror unit (100) according to any one of the previous claims, **characterized in that** stop means (19, 145) of the rotation of the second body with respect to said first body (10) are provided.

6. A mirror unit (100) according to claims 3 and 5, **characterized in that** said stop means comprise a rivet (19) provided at a base surface (201) of the second body (20) and suitable for abutting against a side wall (145) of the U bolt (14) fixed to said first body (10).

7. A mirror unit (100) according to claim 5 or 6, **characterized in that** the maximum rotational angle of the second body (20) with respect to the first body (10) is about 40°, both clockwise and counter-clockwise.

8. A mirror unit (100) according to any one of the previous claims, **characterized in that** it is circular, polygonal in shape, or the like.

**Patentansprüche**

1. Spiegeleinheit (100), umfassend:

- einen ersten Körper (10), der zur Befestigung an einer Wand geeignet ist;
- einen zweiten Körper (20), der zum Zusammenwirken mit dem ersten Körper (10) geeignet ist;
- einen reflektierenden Körper (30), der von dem zweiten Körper (20) getragen ist und einen Hauptspiegelabschnitt (301) und einen Vergrößerungsspiegelabschnitt (302) umfasst, wobei der Vergrößerungsspiegelabschnitt (302) bezüglich des Hauptspiegelabschnitts (301) exzentrisch ist;
- einen Zapfen (15), der mittig von dem ersten Körper (10) getragen ist und den zweiten Körper (20) durchläuft und dazu geeignet ist, eine Drehung des zweiten Körpers (20) bezüglich des ersten Körpers (10) und **dadurch** eine Höhenverstellung des Vergrößerungsspiegelabschnitts (302) zu ermöglichen;
- zumindest ein abnehmbares Sperrmittel (12) des zweiten Körpers (20) bezüglich des ersten Körpers (10), **dadurch gekennzeichnet, dass** das zumindest eine abnehmbare Sperrmittel (12) aus einem Magneten (12) besteht, der an dem ersten Körper (10) oder dem zweiten Körper (20) befestigt ist und zum Zusammenwirken mit einem jeweiligen Metallbereich des zweiten Körpers (20) oder des ersten Körpers (10) angeordnet ist.

2. Spiegeleinheit (100) nach Anspruch 1, **dadurch gekennzeichnet, dass** sie eine Mutter (18) umfasst, die zum Aufschrauben auf den Zapfen (15) geeignet ist, wodurch sie den ersten (10) und zweiten (20) Körper dazwischen einspannt,

3. Spiegeleinheit (100) nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass** der Zapfen (15) mit einem U-Bolzen (14) verbindbar ist, der an dem ersten Körper (10) befestigt ist.

4. Spiegeleinheit (100) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie ferner Beleuchtungsmittel (40, 401, 402) für den Hauptspiegelabschnitt (301) und/oder den Vergrößerungsspiegelabschnitt (302) umfasst, wobei die Beleuchtungsmittel (40, 401, 402) an dem zweiten Körper (20) befestigt sind und aus Leuchtstoff-, Glüh-, Halogenleuchten, LED oder dergleichen bestehen.

5. Spiegeleinheit (100) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Anschlagmittel (19, 145) der Drehung des zweiten Körpers bezüglich des ersten Körpers (10) vorgesehen sind.

6. Spiegeleinheit (100) nach Anspruch 3 und 5, **dadurch gekennzeichnet, dass** die Anschlagmittel eine Niete (19) umfassen, die an einer Grundfläche

(201) des zweiten Körpers (20) vorgesehen sind und zum Anstoßen an eine Seitenwand (145) des U-Bolzens (14) geeignet sind, der an dem ersten Körper (10) befestigt ist.

7. Spiegeleinheit (100) nach einem der Ansprüche 5 oder 6, **dadurch gekennzeichnet, dass** der maximale Drehwinkel des zweiten Körpers (20) bezüglich des ersten Körpers 10) ungefähr 40° beträgt, sowohl im Uhrzeigersinn als auch gegen den Uhrzeigersinn.

8. Spiegeleinheit (100) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er in der Form kreisförmig, vieleckig und dergleichen ist.

**Revendications**

1. Unité de miroir (100) comprenant:

   - un premier corps (10) adapté pour être fixé à un mur;
   - un deuxième corps (20) adapté pour coopérer avec le premier corps (10);
   - un corps réfléchissant (30) supporté par ledit deuxième corps (20) et comprenant une portion de miroir principal (301) et une portion de miroir grossissant (302), ladite portion de miroir grossissant (302) étant excentrée par rapport à ladite portion de miroir principal (301);
   - un axe (15) supporté de façon centrale par ledit premier corps (10) et passant à travers ledit deuxième corps (20), adapté pour permettre une rotation dudit deuxième corps (20) par rapport audit premier corps (10) et donc un réglage de la hauteur de ladite portion de miroir grossissant (302);
   - au moins un moyen de blocage amovible (12) dudit deuxième corps (20) par rapport audit premier corps (10),

   **caractérisée en ce que** l'au moins un moyen de blocage amovible (12) consiste en un aimant (12) fixé audit premier corps (10) ou audit deuxième corps (20), conçu pour coopérer avec une région métallique respective dudit deuxième corps (20) et dudit premier corps (10).

2. Unité de miroir (100) selon la revendication 1, **caractérisée en ce qu'**elle comprend un écrou (18) adapté pour être vissé sur l'axe (15), de manière à retenir lesdits premier (10) et deuxième (20) corps entre ceux-ci.

3. Unité de miroir (100) selon la revendication 1 ou 2, **caractérisée en ce que** ledit axe (15) peut être associé à un boulon en U (14) fixé audit premier corps (10).

4. Unité de miroir (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**elle comprend en outre un moyen d'éclairage (40, 401, 402) pour ladite portion de miroir principal (301) et/ou ladite portion de miroir grossissant (302), ledit moyen d'éclairage (40, 401, 402) étant fixé audit deuxième corps (20) et consistant en un néon, une ampoule à incandescence, une lampe halogène, une DEL ou autre.

5. Unité de miroir (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**il est prévu des moyens d'arrêt (19, 145) de la rotation du deuxième corps par rapport au premier corps (10).

6. Unité de miroir (100) selon les revendications 3 et 5, **caractérisée en ce que** ledit moyen d'arrêt comprend un rivet (19) prévu sur une surface de base (201) du deuxième corps (20) et adapté pour buter contre une paroi latérale (145) du boulon en U (14) fixé audit premier corps (10).

7. Unité de miroir (100) selon la revendication 5 ou 6, **caractérisée en ce que** l'angle de rotation maximum du deuxième corps (20) par rapport au premier corps (10) est d'environ 40°, à la fois dans le sens des aiguilles d'une montre et dans le sens inverse.

8. Unité de miroir (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**elle présente une forme circulaire, polygonale ou autre.

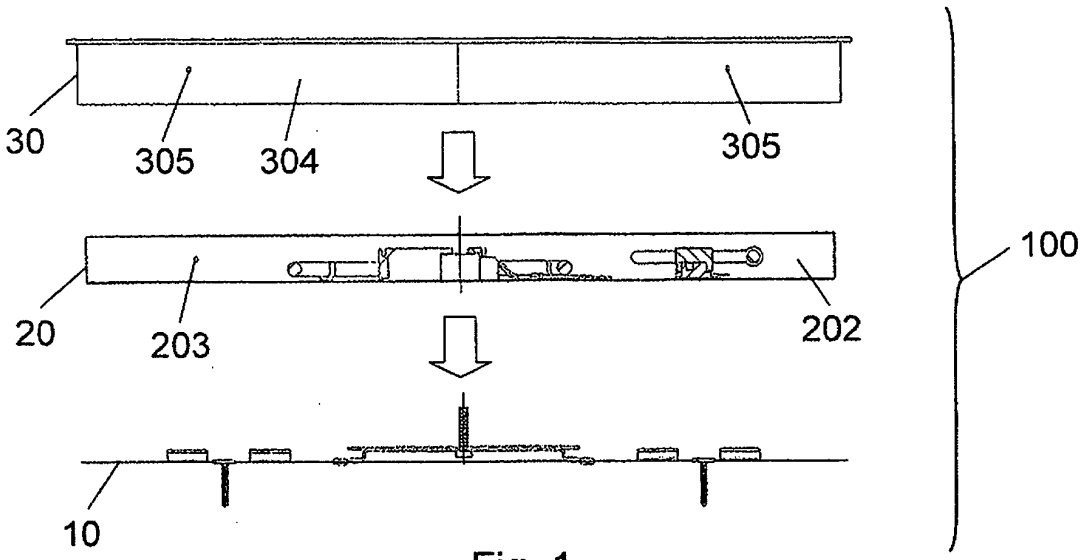



Fig. 1

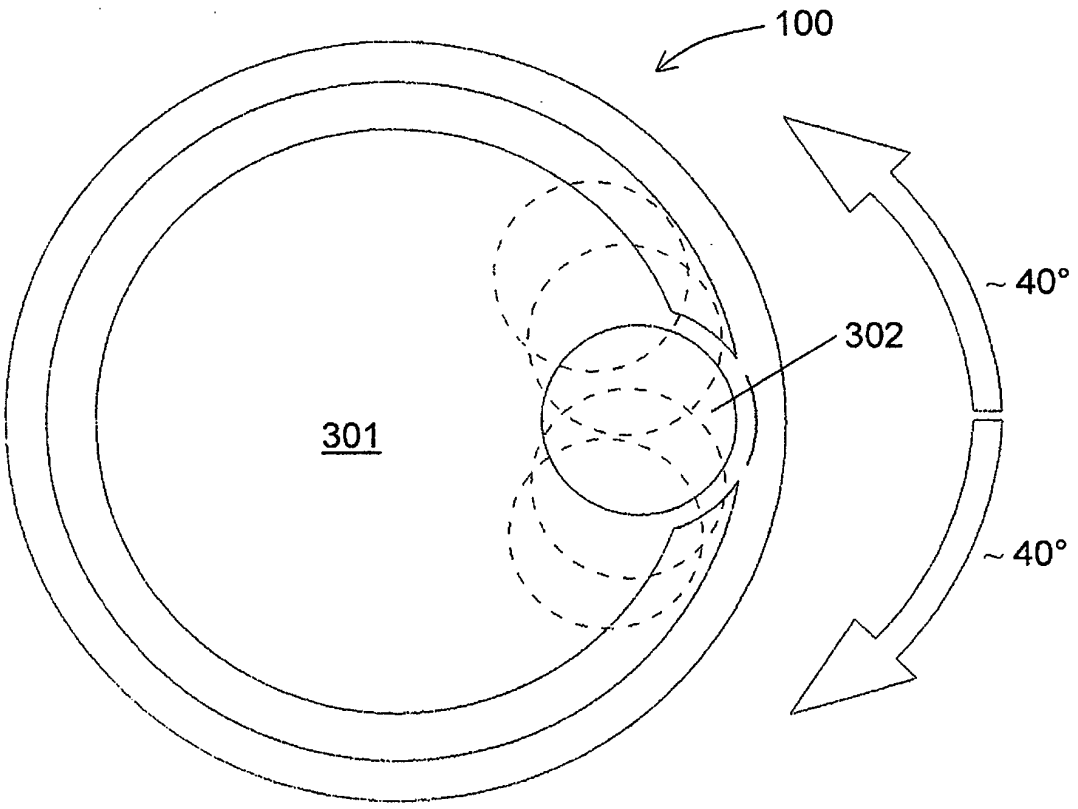



Fig. 2

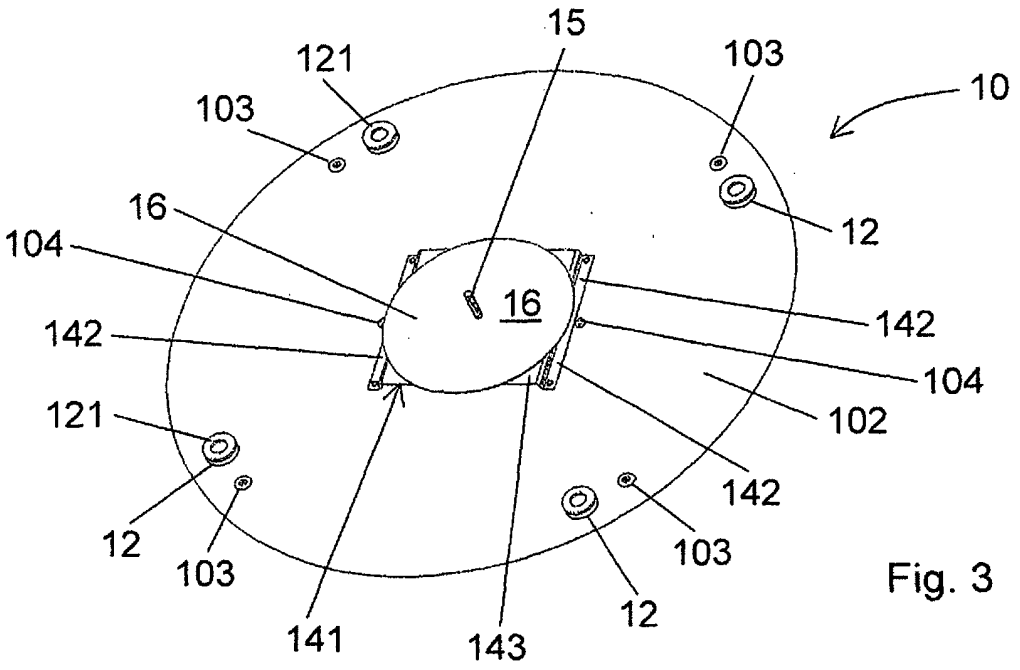



Fig. 3

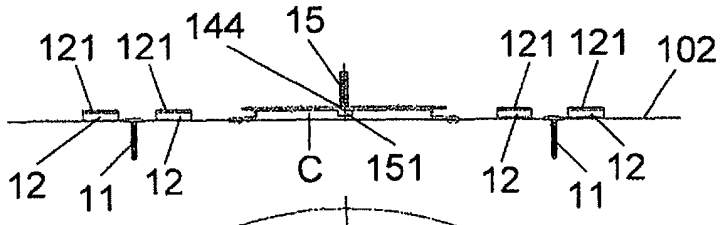



Fig. 5

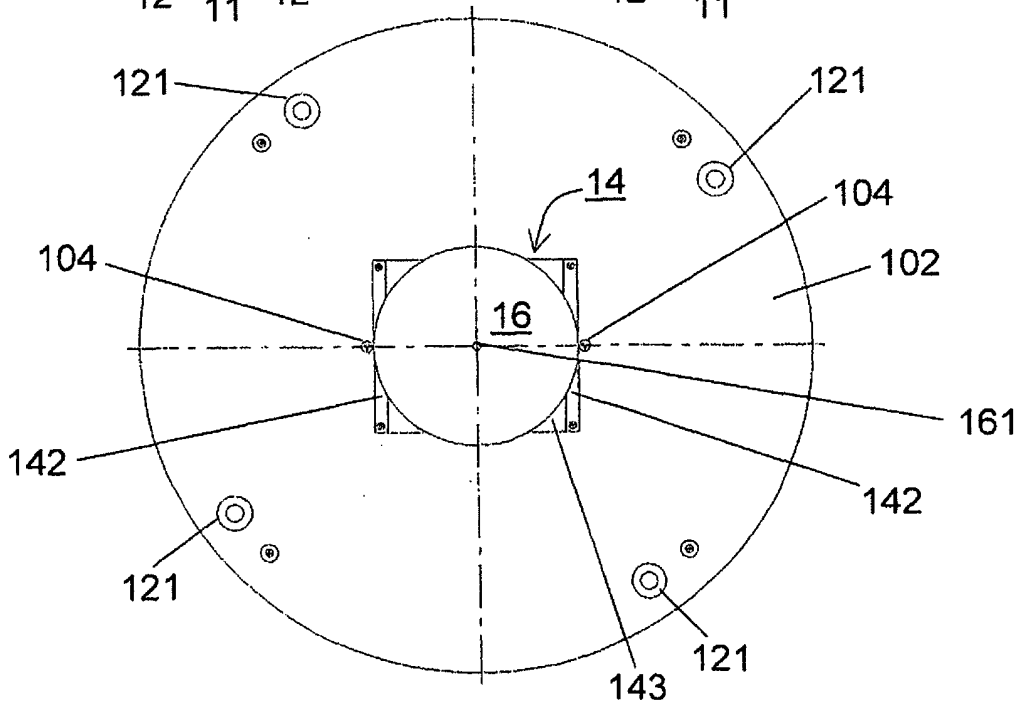



Fig. 4

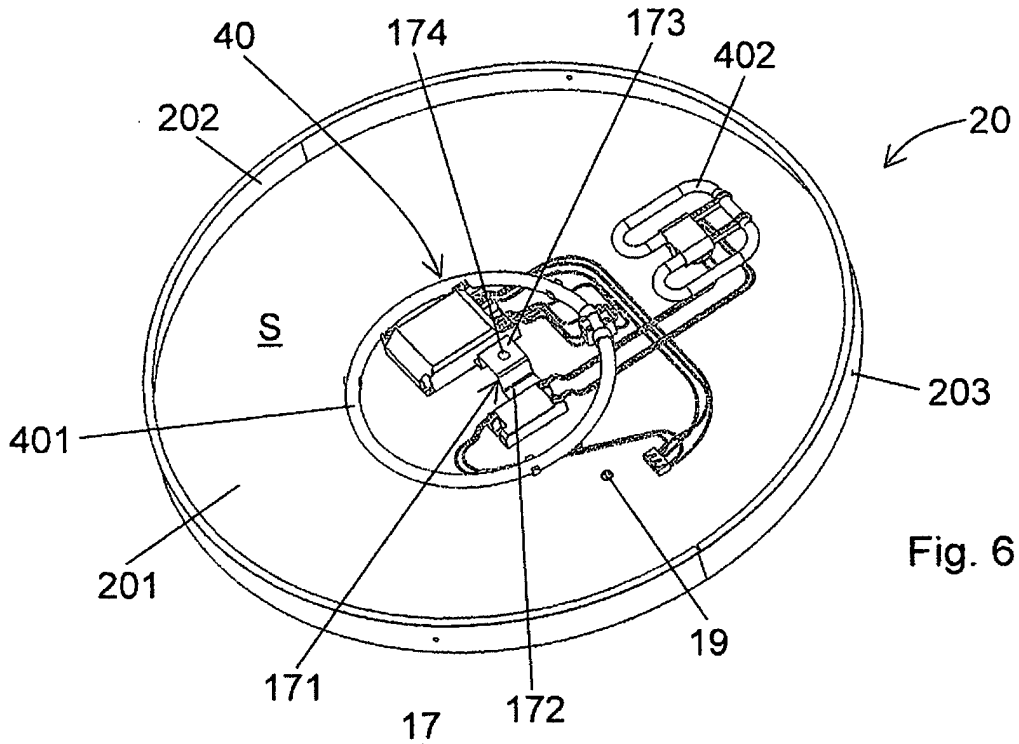



Fig. 6

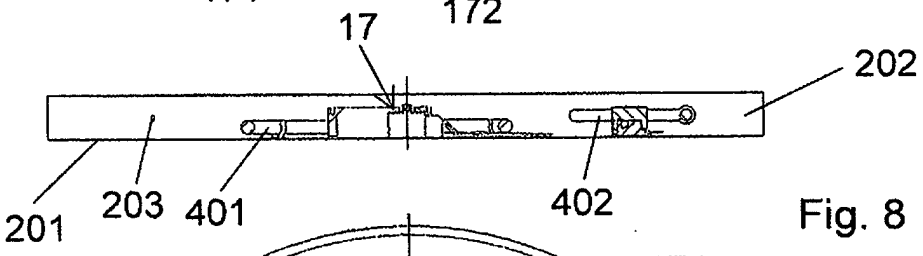



Fig. 8

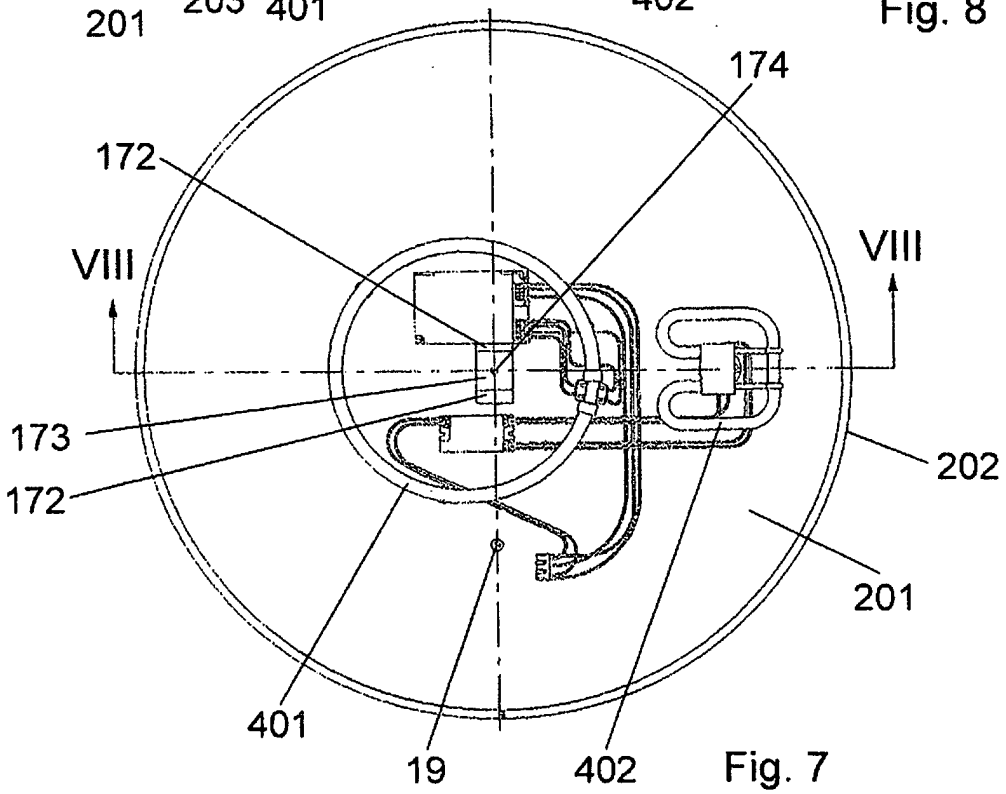



Fig. 7

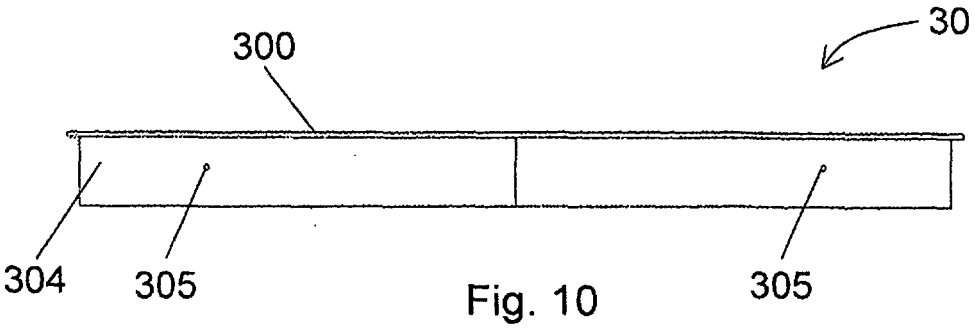



Fig. 10

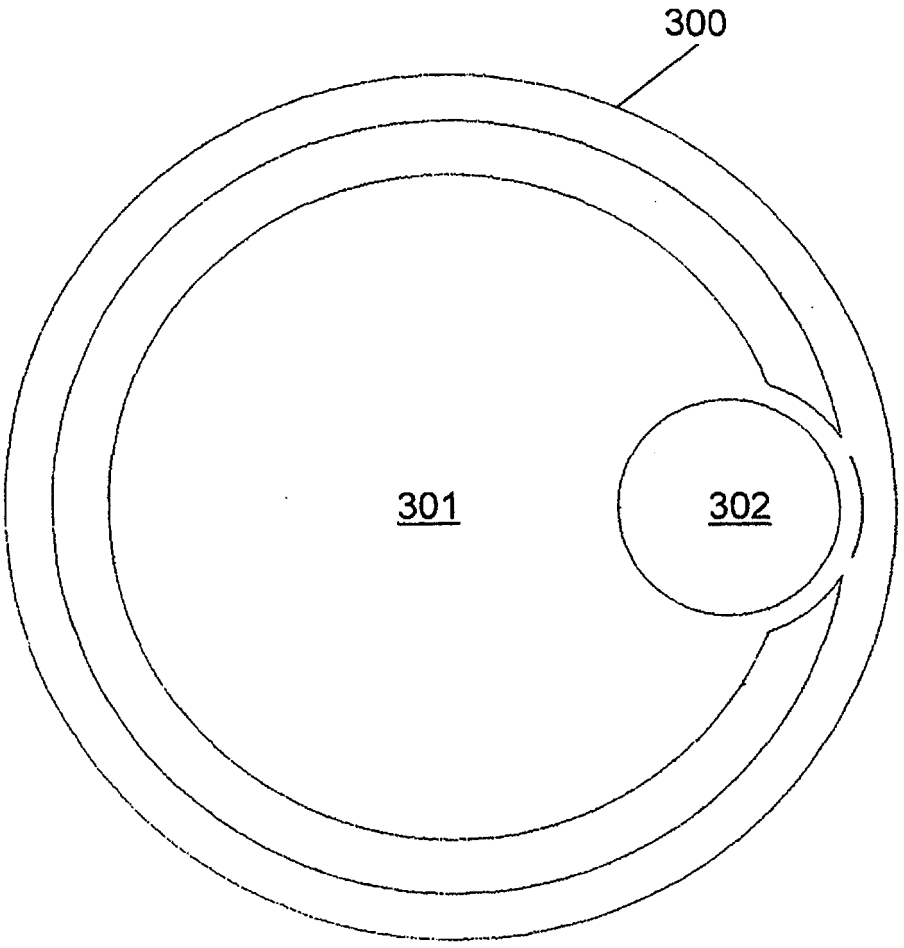



Fig. 9

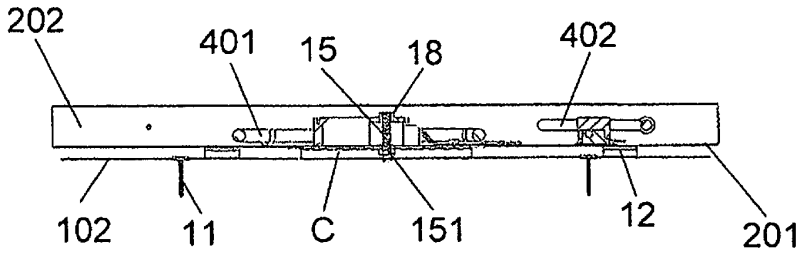



Fig. 12

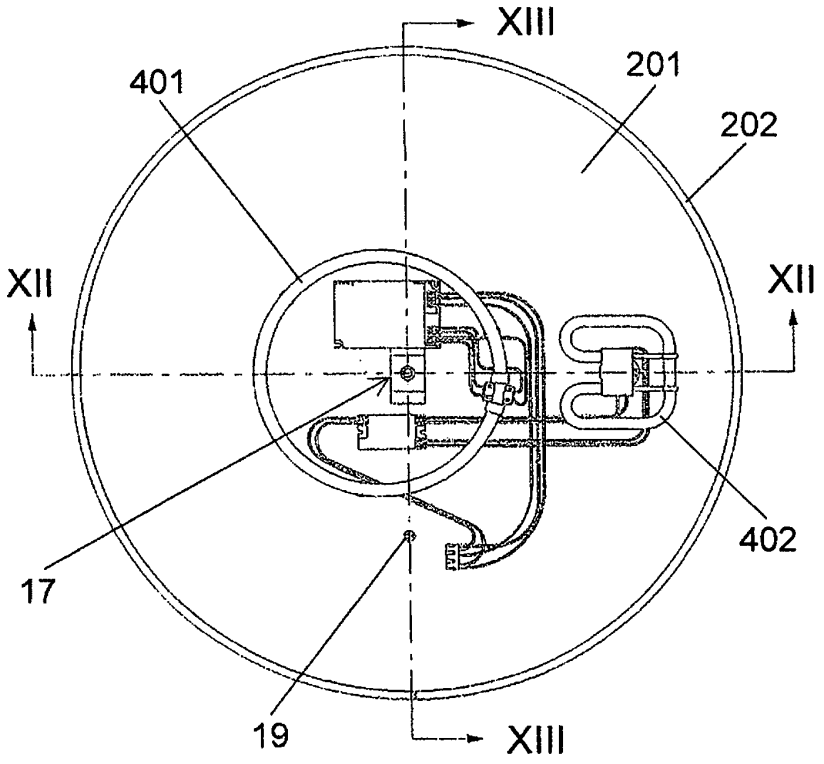



Fig. 11

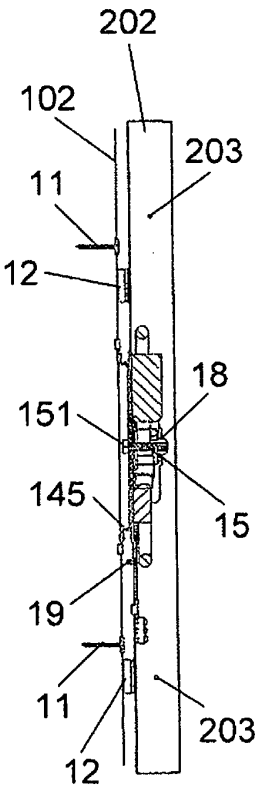



Fig. 13

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


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