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(54) **HINGE WING WITH ELASTIC DEVICE FOR TEMPLES OF EYEGLASSES**

SCHARNIERARM MIT ELASTISCHER VORRICHTUNG FÜR BRILLENBÜGEL

PLAQUE DE CHARNIERE AVEC DISPOSITIF ELASTIQUE POUR BRANCHES DE LUNETTES

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(73) Proprietor: **Visottica Industrie S. P. A.**
31058 Susegana TV (IT)

(72) Inventor: **MONTALBAN, Rinaldo**
I-30100 Venezia (IT)

(74) Representative: **Modiano, Micaela Nadia et al**
Dr. Modiano & Associati SpA
Via Meravigli 16
20123 Milano (IT)

(56) References cited:
EP-A- 0 340 161
EP-B- 0 679 920
WO-A-97/32234
WO-A-98/43127
DE-A- 19 511 167
FR-A- 2 609 816
GB-A- 2 268 282

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Description

Technical Filed

[0001] The present invention relates to a hinge wing with elastic device for temples of eyeglasses.

Background Art

[0002] Currently, hinge wings are commonly commercially available which are each constituted by a box-like element to be fixed to a temple proximate to the end to be hinged to the front of the eyeglasses; a portion of a male hinge element is rigidly coupled inside the box-like element so that it can only slide axially and has a tip shaped like an axial pin surrounded by an elastic contrast means which acts by compression between a wider end of the tip and the box-like element.

[0003] Each one of the hinge wings is usually directly purchased by a user who, after welding the box-like element to the temple, completes the production of the frame of the eyeglasses by pivoting the part of the male element that protrudes from the box-like element to a corresponding female hinge element which is associated with the front.

[0004] The elastic articulation of the temple with respect to the front is therefore the result of the pivoting between the male element, in contrast with the elastic element, and the female element.

[0005] In this manner, each hinge wing can be welded to a plurality of temples having different technical and aesthetic characteristics, without altering the configuration of the articulation of the hinge.

[0006] In this regard, it should be noted that for the end buyer the greatest advantage that such hinge wings can ensure arises if the elastic device is already pre-assembled inside each box-like element, so that the user can simply weld the box-like element to the temple.

[0007] Unfortunately, it must be noted that the use of welding with conventional methods, by adding material and using a flame, entails an inevitable alteration of the elastic means that is pre-assembled in the box-like element.

[0008] The elastic element, being affected by the high temperatures reached during welding, is in fact annealed, so that its technical characteristics and elastic properties are altered.

[0009] For this reason, hinge wings constituted by a box-like element to be welded electrically to the temple by projection welding are becoming commercially widespread.

[0010] In this case, points of excess material in fact protrude from the face of the box-like element to be welded to the temple, and an opening is formed between said points; the male hinge element and the elastic element that constitute the elastic device can be inserted through the opening.

[0011] A weldable box-like element is known from the document EP-B1-0 679 920.

[0012] The male hinge element and the elastic element, however, do not remain locked inside the box-like element, and this entails first of all storage problems, while at the time of use it is necessary, by employing particular skill, to be able to combine the parts and keep them in the correct configuration inside the box-like element until welding to the temple is completed.

[0013] In order to facilitate the operation, devices have been devised which keep the parts assembled inside the box-like element, but a certain difficulty in assembly has still been noted for these devices, increasing production time.

SUMMARY OF THE INVENTION

[0014] The aim of the present invention is to provide a hinge wing with elastic device which is meant to be projection-welded to a temple of eyeglasses and solves the above-noted drawbacks for the assembly of the components.

[0015] Within the scope of this aim, an important object of the present invention is to provide a hinge wing which comprises a box-like element to be projection-welded and in which the elastic device is stably pre-assembled.

[0016] Another important object of the present invention is to provide a hinge wing for temples of eyeglasses having a very simple structural configuration.

[0017] Another object of the present invention is to provide, by means of the present invention, a hinge wing which allows to pre-assemble the elastic device inside it in a very simple manner.

[0018] Another important object of the present invention is to provide a hinge wing which is constituted by a box-like element comprising the elastic device, pre-assembled inside it, and in which no accidental escape of one or more components can occur.

[0019] Another object of the present invention is to provide a hinge wing which is meant to be projection-welded to temples of eyeglasses and can be obtained by means of processes and machines of a type per se known in the field.

[0020] Another object of the present invention is to provide a hinge wing with elastic device which can be obtained, in practice, with low costs.

[0021] This aim, these objects and others which will become better apparent hereinafter are achieved by a hinge wing with elastic device for temples of eyeglasses, according to the invention, that has the features set forth in claim comprising a box-like element, to be projection-welded to a temple, inside which a portion of a male hinge element is rigidly coupled so that it can only slide axially. In particular, said male hinge element has a tip which is shaped like an axial pin surrounded by an elastic contrast means which acts by compression between a wider end of said tip and said box-like element, a portion of the male element protruding from the front of the box-like element for pivoting to a corresponding female element so as to

form the articulation, said box-like element having, on the face to be welded to the temple, an opening for accessing its interior through which it is possible to insert, in a pre-assembled configuration, said elastic means and said portion of said male hinge element. The male element is stably retained, with its corresponding portion, inside the box-like element exclusively by means of a radially deformable open elastic ring which is interposed, on said tip, between said elastic means and said portion of said male element that is coupled by side-fit mating to said box-like element, said ring being inserted in an adapted slot of said box-like element whose perimetric dimensions are smaller than the dimensions of said ring at rest, said ring being retained axially in said slot by its outer edge and radially by said ring being inserted in an adapted slot of said box-like element whose perimetric dimensions are smaller than the dimensions of said ring at rest, said ring being retained axially in said slot by its outer edge and radially by the pressure applied by its deformation produced by insertion.

Brief Description of the Drawings

[0022] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of some embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a perspective exploded view of a hinge wing with elastic device according to the invention;
Figure 2 is a sectional view, taken along a longitudinal plane, of the hinge wing of Figure 1, in an assembled condition;
Figure 3 is a sectional view, taken along the line III-III of Figure 2.

Ways of carrying out the Invention

[0023] With reference to Figures 1 to 3, a hinge wing with elastic device for temples of eyeglasses is generally designated by the reference numeral 10 and comprises an elongated box-like element 11 which is substantially shaped like a parallelepiped and is adapted to be projection-welded at one face, as clarified hereinafter, to a temple 12 of a pair of eyeglasses, not shown in the above figures for the sake of simplicity.

[0024] In particular, the box-like element 11 has, on a side directed toward the end of the temple 12 to be articulated to the remaining part of the frame, a flat front 13.

[0025] In this case, the face of the box-like element 11 to be welded to the temple is the lower face 14, from which a point 15 of excess material protrudes at each corner region.

[0026] A portion 16 of a male hinge element 17 is rigidly coupled inside the box-like element 11, so that it can only slide axially due to side-fit mating, and has a tip 18 shaped like an axial pin surrounded by an elastic contrast means, which in this case is constituted by a helical spring 19.

[0027] The spring 19 acts by compression between a wider end 20 of the tip 18 and the box-like element 11.

[0028] The tip 18 is formed by a screw which is screwed into a corresponding hole 16a of the portion 16, and the wider end 20 is the head of the screw.

[0029] Another portion 21 of the male element 17 protrudes from an opening 22 of the front 13 of the box-like element 11 for pivoting to a corresponding female element, shown in dashed lines and designated by the reference numeral 23, so as to form the articulation.

[0030] As shown in Figure 2, the portion 21 does not rest on the front 13 of the box-like element 11 neither when it is at rest nor in the active condition; a gap, measuring for example $1/10^{th}$ of a millimeter, is instead conveniently left between portion 21 and the front 13.

[0031] The box-like element 11 has, on the face 14 to be welded to the temple 12, an opening 24 for accessing its interior; the spring 19 and the portion 16 of the male hinge element 17 can be inserted through the opening in a pre-assembled condition.

[0032] In this case, the inside 25 of the box-like element 11 forms a longitudinally elongated space which is obtained for example by milling, particularly by using a cylindrical milling tool.

[0033] According to the invention, the male element 17 is stably retained, by means of its corresponding portion 16, inside the box-like element 11 exclusively by means of an open elastic ring 26 which is radially deformable and is interposed, on the tip 18, between the spring 19 (which rests thereon on the opposite side with respect to said wider end 20) and the portion 16.

[0034] The ring 26 is in fact inserted in an appropriately provided slot 27 of the box-like element 11, whose perimetric dimensions are smaller than the dimensions at rest of the ring, and is retained therein axially by means of its outer edge and radially by the pressure applied by its deformation produced by insertion. In its slot 27, the ring 26 remains in a compressed state and is forced to assume a diameter which is smaller than its diameter at rest.

[0035] The action of the spring 19 on the box-like element 11 therefore occurs by means of the contact of both with the ring 26.

[0036] The ring, as well as the corresponding slot 27, can of course be circular, as shown in the figures, or have another adapted shape.

[0037] As regards assembly, the tip is inserted in succession in the spring 19 and in the ring 26, and is then screwed to the male element 17, so that the spring 19 is pre-loaded and therefore applies pressure to the ring 26.

[0038] The assembly is then stably inserted in the box-like element 11, arranging the ring 26 in the slot 27 and constricting it diametrically.

[0039] The only component of the assembly that is subjected to deformation during insertion in the box-like element 11 is the ring 26; however, the deformation is not in the expansion direction, but in the compression

direction, inside the slot 27.

[0040] The hinge wing is therefore ready to be directly welded to a temple 12 or sold as a component for assembly.

[0041] In practice it has been observed that the present invention amply achieves the aim and all the objects.

[0042] In particular, a first aspect worth noting is linked to the fact that the described hinge wing can be projection-welded to temples of any kind very easily and practically, since the elastic device, whose parts have been stably assembled outside the box-like element, has already been stably pre-assembled inside the hinge wing.

[0043] Another aspect worth noting is related to the fact that the hinge wing according to the present invention has a very simple constructive structure which can be easily obtained by resorting to processes and machines which are conventional in the field.

[0044] The hinge wing described with the present invention is adapted to be projection-welded to temples of any kind, size, structure and quality.

[0045] The present invention is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0046] All the details may be replaced with other technically equivalent elements.

[0047] The materials used, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to requirements.

[0048] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A hinge wing with elastic device for temples of eyeglasses, comprising a box-like element (11), to be projection-welded to a temple(12), inside which a portion (16) of a male hinge element (17) is rigidly coupled so that it can only slide axially, said male hinge element (17) having a tip (18) which is shaped like an axial pin surrounded by an elastic contrast means (19) which acts by compression between a wider end (20) of said tip (18) and said box-like element (11), a portion (21) of the male element (17) protruding from the front (13) of the box-like element (11) for pivoting to a corresponding female element (23) so as to form the articulation, said box-like element (11) having, on the face (14) to be welded to the temple (12), an opening (24) for accessing Its interior through which it is possible to insert, said elastic means (19) and said portion (16) of said male hinge element (17), **characterized in that** it further comprises a radially deformable open elastic ring (26) which is interposed, on said tip (18), between said elastic means (19) and said portion (16) of said male element (17) so as to form a pre-assembled configuration that is coupled by side-fit mating to said box-like element (11) with said ring (26) being inserted in an adapted slot (27) of said box-like element (11), the perimetric dimensions of said slot (27) being smaller than the dimensions of said ring (26) at rest, said ring (26) being adapted to be retained axially In said slot (27) by its outer edge and being in a radially compressed state within said slot (27) due to the pressure applied by its deformation within the adapted slot (27) produced by insertion from said opening (24).

2. The hinge wing according to claim 1, **characterized in that** said box-like element (11) is longitudinally elongated and substantially shaped like a parallelepiped and has, on the side directed toward the end of the temple (12) to be articulated to the remaining part of the frame, a flat front (13) from which said male element (17) protrudes.

3. The hinge wing according to claim 2, **characterized in that** the face (14) of said box-like element (11) to be welded to the temple (12) is perpendicular to said flat front (13), a point of excess material (15) protruding from said face (14) at each corner region.

4. The hinge wing according to any of the preceding claims, **characterized in that** said male element (17), said ring (26), said elastic means (19) and said tip (18) are adapted to be mutually, stably pre-assembled, separately from said box-like element (11).

5. The hinge wing according to claims 1 or 4, **characterized in that** said male element (17), said ring (26), said elastic means (19) and said tip (18) form an assembly, stably pre-assembled separately from said box-like element (11) through a pre-loading of said elastic means (19) so a to apply pressure to the ring (26).

6. The hinge wing according to any of the preceding claims, **characterized in that** said tip (18) is shaped as an axial screw pin that is adapted to be screwed in a hole (16a) of said portion (16) of the male element (17) so as to provide the pre-assembly of said male element (17), said ring (26), said elastic means (19) and said tip (18).

7. The hinge wing according to claim 1, **characterized in that** the male element (17) is stably retained in said box-like element (11) by way of said elastic ring (26) inserted in said slot (27) with said portion (21) of the male element (17) protruding from said front (13) of the box-like element (11) so as to form a gap therewith.

Patentansprüche

1. Scharnierarm mit elastischer Vorrichtung für Brillenbügel umfassend ein kastenartiges Element (11), das durch Buckelschweißen an einem Bügel (12) angebracht wird, in dem ein Teil (16) eines männlichen Scharnierelements (17) starr gekoppelt ist, so dass es nur axial verschiebbar ist, wobei das männliche Scharnierelement (17) eine Spitze (18) aufweist, die wie ein Achsstift geformt ist, umgeben von einem elastischen Gegenkraftmittel (19), das durch Kompression zwischen einem breiteren Ende (20) der Spitze (18) und dem kastenartigen Element (11) wirkt, wobei ein Teil (21) des männlichen Elements (17) von der Stirnseite (13) des kastenartigen Elements (11) hervorsteht, so dass es zu einem entsprechenden weiblichen Element (23) schwenkt, so dass die Gelenkverbindung ausgebildet wird, wobei das kastenartige Element (11) auf der Seite (14), die mit dem Bügel (12) verschweißt werden soll, eine Öffnung (24) zum Zugang ins Innere aufweist, durch die es möglich ist, das elastische Mittel (19) und den Teil (16) des männlichen Scharnierelements (17) einzusetzen, **dadurch gekennzeichnet, dass** er ferner einen radial verformbaren offenen elastischen Ring (26) umfasst, der auf der Spitze (18) zwischen dem elastischen Mittel (19) und dem Teil (16) des männlichen Elements (17) eingesetzt ist, so dass eine vorgefertigte Konfiguration gebildet ist, die durch Seitenpassung mit dem kastenartigen Element (11) gekoppelt ist, wobei der Ring (26) in einen geeigneten Schlitz (27) des kastenartigen Elements (11) eingesetzt ist, wobei die Umfangsabmessungen des Schlitzes (27) kleiner sind als die Abmessungen des Rings (26) in Ruhelage, wobei der Ring (26) geeignet ist, dass er durch seine Außenkante axial in dem Schlitz (27) gehalten wird und aufgrund des Drucks, der durch seine Verformung in dem geeigneten Schlitz (27), der durch Einsetzen von der Öffnung (24) erzeugt ist, in dem Schlitz (27) in einem radial komprimierten Zustand gehalten wird.

2. Scharnierarm nach Anspruch 1, **dadurch gekennzeichnet, dass** das kastenartige Element (11) in Längsrichtung langgestreckt und im Wesentlichen wie ein Parallelepiped geformt ist, und auf der Seite, die zu dem Ende des Bügels (12) gerichtet ist, das mit dem übrigen Teil des Gestells gelenkig verbunden werden soll, eine flache Stirnseite (13) aufweist, von der das männliche Element (17) hervorsteht.

3. Scharnierarm nach Anspruch 2, **dadurch gekennzeichnet, dass** die Seite (14) des kastenartigen Elements (11), das an den Bügel (12) angeschweißt werden soll, zur flachen Stirnseite (13) senkrecht ist, wobei ein Punkt von überschüssigem Material (15) von der Seite (14) an jedem Eckbereich hervorsteht.

4. Scharnierarm nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das männliche Element (17), der Ring (26), das elastische Mittel (19) und die Spitze (18) geeignet sind, dass sie getrennt vom kastenartigen Element (11) miteinander, stabil vorgefertigt werden.

5. Scharnierarm nach Anspruch 1 oder 4, **dadurch gekennzeichnet, dass** das männliche Element (17), der Ring (26), das elastische Mittel (19) und die Spitze (18) eine Anordnung bilden, die getrennt vom kastenartigen Element (11) durch eine Vorbelastung des elastischen Mittels (19), so dass auf den Ring (26) Druck ausgeübt wird, stabil vorgefertigt wird.

6. Scharnierarm nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Spitze (18) als Achsschraubstift gestaltet ist, der zum Einschrauben in eine Bohrung (16a) des Teils (16) des männlichen Elements (17) geeignet ist, so dass die Vorfertigung des männlichen Elements (17), des Rings (26), des elastischen Mittels (19) und der Spitze (18) erreicht wird.

7. Scharnierarm nach Anspruch 1, **dadurch gekennzeichnet, dass** das männliche Element (17) in dem kastenartigen Element (11) durch den elastischen Ring (26), der in den Schlitz (27) eingesetzt ist, stabil gehalten ist, wobei der Teil (21) des männlichen Elements (17) so von der Stirnseite (13) des kastenartigen Elements (11) hervorsteht, dass ein Spalt dazwischen ausgebildet ist.

Revendications

1. Plaque de charnière munie d'un dispositif élastique pour branches de lunettes, comprenant un élément en forme de boîtier (11), devant être soudé par projection à une branche (12), à l'intérieur de laquelle une partie (16) d'un élément de charnière mâle (17) est couplé de façon rigide de sorte à pouvoir seulement coulisser axialement, ledit élément de charnière mâle (17) présentant une pointe (18) qui est conformée comme une goupille axiale entourée par un moyen élastique de contraste (19) qui agit par compression entre une extrémité plus large (20) de ladite pointe (18) et ledit élément en forme de boîtier (11), une partie (21) de l'élément mâle (17) faisant saillie depuis la face avant (13) de l'élément en forme de boîtier (11) pour pivoter avec un élément correspondant femelle (23) de façon à former l'articulation, ledit élément en forme de boîtier (11) présentant, sur la face (14) devant être soudée à la branche (12), une ouverture (24) pour accéder à l'intérieur de celui-ci à travers laquelle il est possible d'insérer, ledit moyen élastique de contraste (19) et ladite partie (16) dudit élément de charnière mâle (17), **caracté-**

risée en ce qu'elle comprend en outre un anneau élastique ouvert radialement déformable (26) qui est interposée, sur ladite pointe (18), entre ledit moyen élastique (19) et ladite partie (16) dudit élément mâle (17) de sorte à former une configuration pré-assemblée qui est couplée par accouplement prismatique audit élément en forme de boîtier (11) avec ledit anneau (26) étant inséré dans une fente (27) appropriée dudit élément en forme de boîtier (11), les dimensions périmétriques de ladite fente (27) étant plus petites que les dimensions dudit anneau (26) au repos, ledit anneau (26) étant adapté pour être retenu axialement dans ladite fente (27) par son bord externe et étant dans un état comprimé radialement dans ladite fente (27) dû à la pression appliquée par sa déformation dans ladite fente (27) appropriée produite par l'insertion depuis ladite ouverture (24).

2. Plaque de charnière selon la revendication 1, **caractérisée en ce que** ledit élément en forme de boîtier (11) est allongé longitudinalement et conformé sensiblement comme un parallélépipède et présente, sur le côté dirigé vers l'extrémité de la branche (12) devant être articulée à la partie restante de la monture, une face avant plate (13) depuis laquelle ledit élément mâle (17) fait saillie.

3. Plaque de charnière selon la revendication 2, **caractérisée en ce que** la face (14) dudit élément en forme de boîtier (11) devant être soudée à la branche (12) est perpendiculaire à ladite face avant plate (13), un point de matériau en excès (15) faisant saillie de ladite face (14) au niveau de chaque région d'angle.

4. Plaque de charnière selon une ou plusieurs des revendications précédentes, **caractérisée en ce que** ledit élément mâle (17), ledit anneau (26), ledit moyen élastique (19) et ladite pointe (18) sont adaptés pour être mutuellement, pré-assemblés de façon stable, séparément dudit élément en forme de boîtier (11).

5. Plaque de charnière selon les revendications 1 ou 4, **caractérisée en ce que** ledit élément mâle (17), ledit anneau (26), ledit moyen élastique (19) et ladite pointe (18) forment un ensemble, pré-assemblé de façon stable séparément dudit élément en forme de boîtier (11) à travers un pré-chargement dudit moyen élastique (19) afin d'appliquer une pression audit anneau (26).

6. Plaque de charnière selon une ou plusieurs des revendications précédentes, **caractérisée en ce que** ladite pointe (18) est conformée comme une cheville à vis axiale qui est adaptée pour être vissée dans un trou (16a) de ladite partie (16) de l'élément mâle (17) afin de prévoir le pré-assemblage dudit élément mâle (17), dudit anneau (26), dudit moyen élastique (19) et de ladite pointe (18).

7. Plaque de charnière selon la revendication 1, **caractérisée en ce que** l'élément mâle (17) est retenu de façon stable dans ledit élément en forme de boitier (11) au moyen dudit anneau élastique (26) inséré dans ladite fente (27) avec ladite partie (21) de l'élément mâle (17) faisant saillie de ladite face avant (13) dudit élément en forme de boîtier (11) afin de former un espace avec celle-ci.

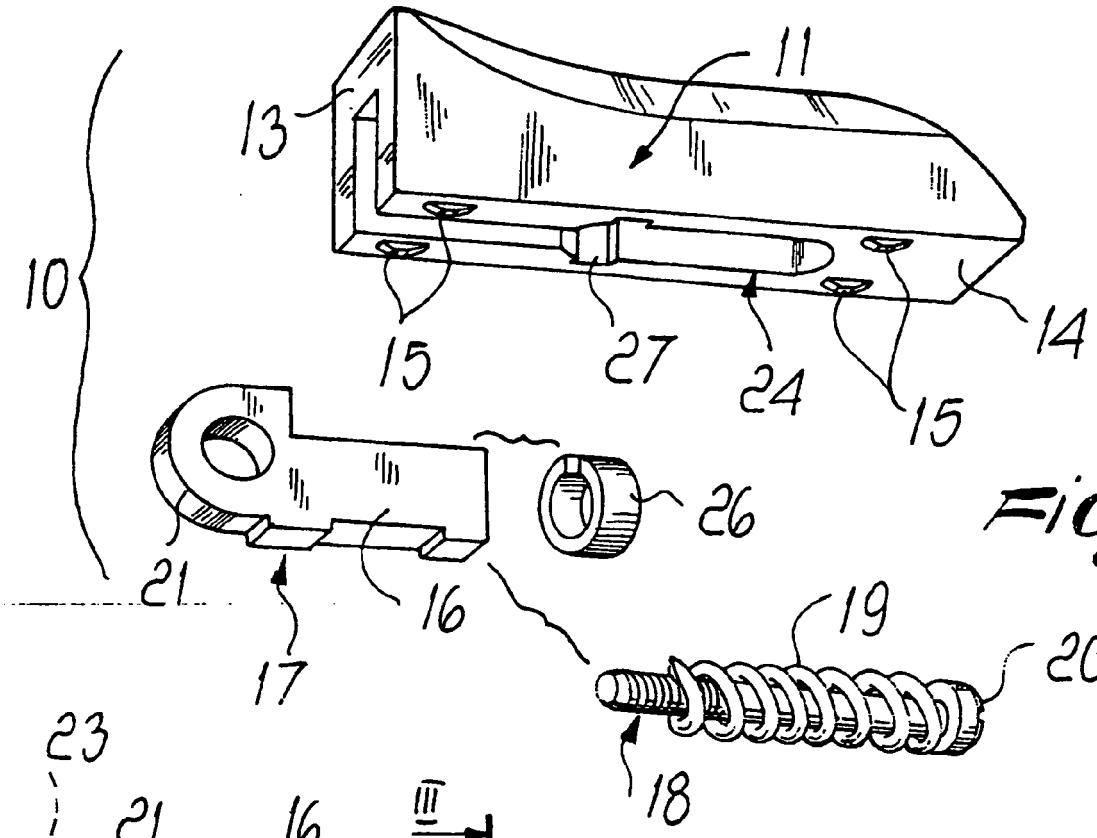
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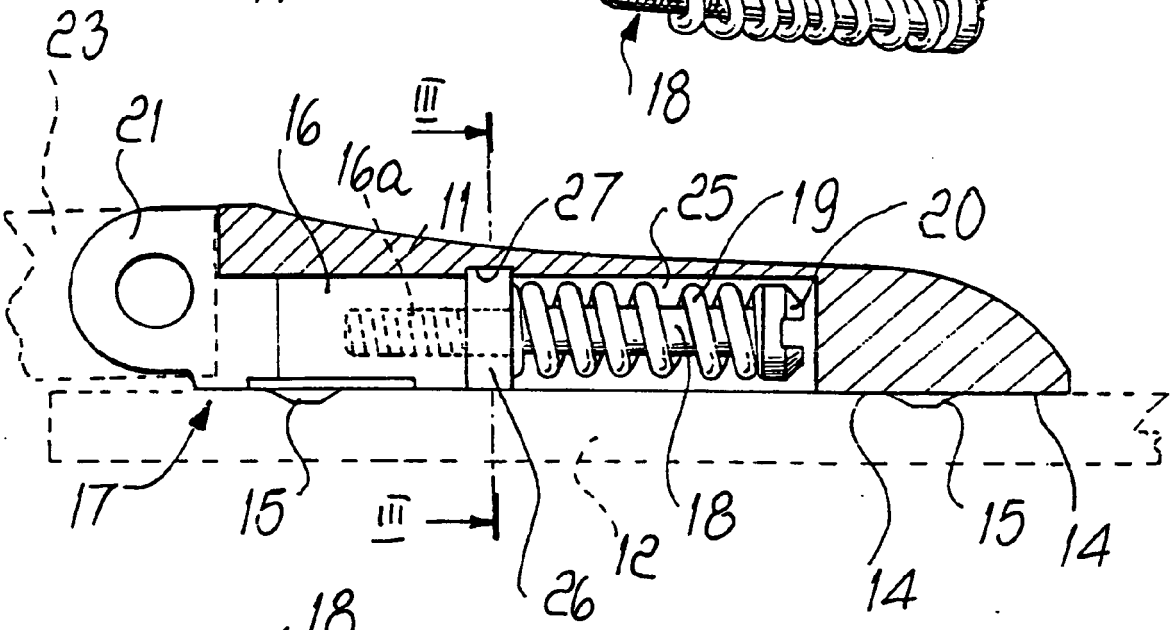
Fig. 1


16
16a
17
17
18
19
20
21
23
25
26
27
III
III
Fig. 2

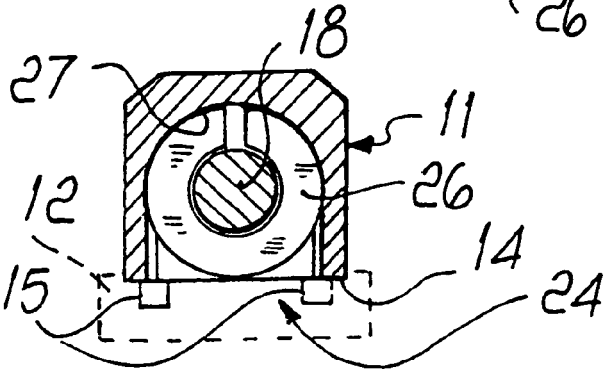

11
12
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Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 0679920 B1 **[0011]**