

DESCRIPTION

"Eyeglass Frame"

TECHNICAL FIELD

The invention relates in particular to an eyeglass frame which is distinguished by the fact that it
5 contains a first and second hinge, made up of a first body, rotationally linked to a semi-shell shaped
earpiece and rotationally interactive, in contrast with an elastically adaptable element, with a second
hollow body linked to a frontal piece and/or at least one lens. The first and second earpieces can close
to form a shell to temporarily hold the frontal piece and/or at least one lens.

BACKGROUND ART

10 One example of this type of glasses frame exists in the prior art: EP0723673, which reduces its
size by rotating the earpieces that are divided in two segments, one short and one long, but still must be
stored in a suitable case after use.

DISCLOSURE OF INVENTION

The subject of this invention is an eyeglass frame. The technological evolution experienced by
15 the eyeglass industry has permitted the market introduction of products able to offer users increasingly
better performance especially in recent years.

Research in this sector has been specifically focused on the introduction of highly resistant and
lightweight materials able to create extremely compact and lightweight frames in mass produced
eyeglasses.

20 At the same time, the application of new materials and advanced production technologies have
led to the development of lenses which, while guaranteeing high corrective strength or improved sun
radiation protection, have reduced weight and thickness.

Thus, more lightweight eyeglasses have been developed whose structural and functional elements, for the most part, contain less resistant sections and are preferably more flexible to better withstand the strain derived from their use, especially when the frames are manipulated to put on or take off the eyeglasses.

5 The main disadvantage of this known type of glasses is the fact that, also due to the abovementioned design objectives, they are particularly fragile when subjected to strains other than those foreseen during use such as, for example, accidental impacts or damage they can incur when not worn by the user or when being stored in their specific and distinct cases.

10 Furthermore, the lenses placed in the frame, even in the case of sunglasses, can easily be scratched or scuffed by foreign objects, even more easily when the eyeglasses are stored without adequate protection when removed.

A partial solution to this problem is the use of special eyeglass cases to be used when not worn by the user for both prescription lenses and sunglasses.

15 Known eyeglass cases may be hard or soft and are internally lined with very soft material to protect the eyeglasses from strains, that could compromise their integrity, and from foreign objects that could scratch the lenses.

The main problem of these known cases is the fact that, when separated from the eyeglasses they are designed to hold, they force the user to continually carry them around so that they are available when needed.

20 Since these known cases must be large enough to hold a pair of eyeglasses, although folded, within, they are cumbersome especially when made of a hard structure.

These known cases can be especially bulky when the user is wearing sunglasses, for example,

during a sporting event or sunbathing, situations in which carrying these known cases is extremely awkward.

US 6 530 660 discloses an eyeglass frame wherein its arms are rotationally linked to a frontal piece and are able to rotate with respect thereto so as to move from a first position, where the earpieces
5 are both orthogonal to the frontal piece, to a second position where the earpieces are about parallel to the frontal piece.

The main purpose of the subject of this invention is, therefore, to resolve the indicated technical problems, eliminating the difficulties in the mentioned known technique and therefore to disclose an eyeglass frame that can be quickly stored without requiring external elements to protect it.

10 Within the abovementioned accomplishment, another important purpose is to create an eyeglass whose operation is simple and sure.

Another important purpose is to realize an eyeglass with an aesthetically pleasing look in all operating conditions.

Also, and not least important, is to create an eyeglass that is structurally simple with limited
15 production costs.

In the construction examples that follow, single features, listed according to specific examples, can actually be exchanged with other different features that exist in other construction examples.

Additional aspects and advantages of the invention are further emphasized by the detailed description of the special, but not exclusive, creation shape, illustrated in brief but not limited to the
20 enclosed drawing.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1 illustrates, in perspective, the frame according to the invention in the use position;

figure 2 illustrates, in perspective, a detail of the frame in the use position;

figure 3 illustrates, in perspective, the frame in the use position;

figure 4 illustrates, in perspective, a detail of the frame in the use position;

figure 5 illustrates, in perspective, the frame in the first partially folded position;

5 figure 6 illustrates, in perspective, a detail of the frame in the first partially folded position;

figure 7 illustrates a view according to direction VII in figure 5 partially sectioned, a detail of the frame in the first partially folded position;

figure 8 illustrates, from the rear, the frame in the second partially fold position;

figure 9 illustrates in three views, frontal, side and rear respectively, the frame in the folded
10 position;

figure 10 illustrates, in perspective, a hinge in the open position;

figure 11 illustrates, in enlarged perspective, a hinge;

figure 12 illustrates, in two side views, a hinge detail;

figure 13 illustrates, in two side views, a hinge detail;

15 figure 14 illustrates, in a view used according to the section map XIV-XIV in figure 13, a hinge detail.

With reference to the figures, number 1 indicates an eyeglass frame comprising a first hinge 2 and a second hinge 3, both the same, each made up of a first body 4 comprising a first joining leg 5, substantially cylindrical in shape from which, near its first flat end 6 a block point 7 radially protrudes,
20 also preferably cylindrical.

At the second end 8 of this first leg 5 is a second block point 9 shown in a side view as a "T" shape defining a cylindrical head with a larger diameter than leg 5 from which a first fin protrudes 10,

axially, with a parallelepiped shape.

This first fin 10 is preferably placed in diameter to the first leg 5 of the first body 4, parallel to the axis of the first block point 7 and has a first loop hole 11, cut crosswise and therefore orthogonal to the surface defined by the longitudinal axis of the first leg 5 and axis of the first block point 7.

5 The free end 12 of this first fin 10 frontally defines a first flat block surface 13, crosswise to the first leg 5 and joined by a curved segment 14 and a second block surface 13a composed of the lateral wall of the first fin facing the side from which the first block point 7 protrudes and, for example, about orthogonal to this first block surface.

Each of these first and second hinges 2 and 3 is composed of a second hollow body 15
10 comprising a second, cylindrical shaped leg 16, inside of which is a first cavity 17, also cylindrical, open, at the first end 18 of the second body 15 and coaxial with it.

On the lateral surface of this first cavity 17 is a first circumferential guide 19 composed of a groove 20, straight and looping, that extends over an arc of specific range, for example equal to about 90°, to define, at its opposite ends, a first housing 20a and a second housing 20b.

15 These first and second housings 20a and 20b, placed respectively rotated by about 90° relative to the longitudinal axis of the first cavity 17, comprise a protruding curved segment pointing from the first end 18 of the second body 15, from the straight segment that joins them.

Beneficially, this groove 20, in its central straight segment, is slightly wider than the diameter of the first block point 7 to permit it to slide.

20 The curved segment of the profile of the first and second housings 20a and 20b are also shaped to permit the selective housing of the first block point 7 inside of them.

A second fin protrudes from the second body 15 according to a chord; it therefore protrudes

from a second flat end 22 of the second leg 16 and has a circle arch sectional shape that develops along a generatrix.

This second fin 21 has a first flat side 23 that faces the longitudinal axis of the second leg 16 and is preferably parallel to the first housing 20a.

5 A bearing 24, cylindrically shaped for example, axial with which is a second hole 25, preferably threaded, protrudes orthogonally from the first face 23, pointing in the same direction as the first housing 20a.

Lastly, the first and second hinges comprise an elastically adaptable element 26, preferably made up of a cylindrical compression rotor spring that can be housed inside the first cavity 17 of the second
10 body 15 and secured, at one of its first ends, on the bottom 17a of the latter.

The first cylindrical leg 5 of the first body 4 can therefore be inserted inside this first cavity 17 so that the first block point 7 is housed inside the first guide 19 made up of groove 20 while the first end 6 of this first leg 5 comes into contact with a second end of the elastically adaptable element 26.

The first body 4 is therefore rotationally joined to this second body 15 since it can rotate along
15 the longitudinal axis of the first cavity 17 so as to selectively pass from a first position, also called the open position, where the first block point is housed inside the second housing 20a, to a second position, also called the folded position, where this first block point 7 is housed inside the second housing 20b.

In these positions, the elastically adaptable element acts against the first end 6 of the first body
20 4, to force the first block point 7 against the wall of the first or second housing to keep it in the selected position.

These first and second hinges, thus assembled, are associated with a frontal piece 27,

respectively at a first side end 28, and a second side end 29 of the latter by means of a bearing 24, each, for example, that can restrain a different lens 30, defined on or supported by this frontal piece by a fastening screw in the thread made inside the second hole 25.

Suitably, the second flat end 22 of the second leg 16 of the second body 15 can act as a block
5 for the side wall 31 of lens 30 preventing any rotation of the first and second hinges 2 and 3 around the bearing 24.

In these conditions, the first housing 20a of each hinge faces rearward compared to the frontal piece and is about orthogonal to it consequent to the fact that the bearing faces in the same direction as this first housing 20a.

10 Beneficially, the shape of the first and second hinges 2 and 3, the same, makes sure that the first hinge 2, linked to the frontal piece 27 at its first end 28, presents the second housing 20b facing up while the second hinge 3, linked to the frontal piece 27 at its second end 29 presents the second housing 20b facing down.

15 Connected to frontal piece 27, in its central area, is a removable elastic nose piece 41, made, for example, of rubber or other elastic material, to rest this frontal piece on the user's nose; in this way the nose piece is easily interchangeable if worn or dirty. The frame 1 also comprises a first earpiece 32 and a second earpiece 33, the same, semi-shell shaped.

20 The width of these earpieces is beneficially wider than the thickness of the frontal piece 27 and slightly thinner, at least in their central area, than the thickness of nose piece 41, while their length is slightly longer than the distance between the opposite ends of the first and second hinges protruding laterally from the frontal piece.

Each of these first and second earpieces has a front surface 34 with an internal convex profile

and rear surface 35 with a concave internal profile, counter-shaped to front surface 34 so that these earpieces, if longitudinally overlapped, reciprocally match to create a housing.

These first and second earpieces 32 and 33 have, at one of their front ends 36, a third housing 37, open and slightly thicker than the thickness of the first fin 10 of the first body 4 to permit insertion.

5 This third housing is equipped with a pair of first pins 38, facing each other and protruding from the lower and upper bases of this third housing 37 towards the interior of the latter.

These first pins 38, cylindrical for example, have a diameter slightly smaller than that of the first hole 11 in the first fin 10 so they can be inserted once that the latter is housed inside the third housing 37, creating a rotating connection between the first earpiece and the first hinge and between the second
10 earpiece and the second hinge respectively.

The third housing 37 is also equipped with a bottom 39, preferably flat, against which the first block surface 13 can be selectively blocked. The first block surface 13 is frontally defined on each first fin 10 and the second block surface 13a is orthogonal to said first block surface 13.

Thanks to the presence of the curved segment 14 which joins these first and second block
15 surfaces, the first and second earpieces can rotate, relative to the first and second hinge respectively, around the first pins 18 so as to move from a first position, where they are orthogonal to the frontal piece 27, to a second position where they are about parallel to the latter.

The function of the eyeglass frame according to the invention foresees that, in order to permit user utility, it assumes a shape also called the utility shape, where the first and second earpieces are
20 positioned parallel to each other and protrude to the rear about orthogonal to the frontal piece, as illustrated in figures 1 to 4.

In this condition, the first block of each hinge is housed inside the first housing 20a, on the

second body of each hinge.

Starting from this configuration, the frame can change, by rotating the first body of each hinge around the axis of its relevant second body, to a first intermediate position, illustrated in figure 5, where the first and second earpieces are almost parallel to each other and to the frontal piece, protruding from the latter in opposite directions, one up and the other down.

In fact, during this rotation, the first block 7 of each hinge moves from the first housing 20a to the second housing 20b; thanks to the beneficial location of the first and second hinges, the same, one of these second housings 20b is facing up and the other facing down, also forcing the above respective positions on the earpieces that they support.

By rotating each earpiece around the first pins 18, through which they are rotationally linked to the first body of each hinge, the frame can be brought, passing through a second intermediate position, illustrated as an example in figure 8; to a folded position illustrated in figure 9 where these earpieces match longitudinally to create shell 40.

Since the width of these earpieces is greater than the thickness of frontal piece 27 and their length greater than the distance between the opposite ends of the two hinges that laterally protrude from the latter, shell 40 can hold the frontal piece 27 and hinges 2 and 3.

Furthermore, since the width of these earpieces is, at least in their central area, not as thick as the elastic nose piece 41, once moved to the folded position they slightly deform the latter to guarantee a secure closing of shell 40.

Additionally, the elastic nose piece is a guard for the frontal piece it is linked to.

This shell, with opportune resistance and rigidity, is a protection for the eyeglasses and entire frame which therefore does not need to be placed inside a separate case, offering optimal convenience

and practicality.

If the user wishes to wear the frame, the reverse procedure of the one illustrated above for folding leads to the complete opening of the same and the frame is comfortably wearable.

This is proof as to how the invention has achieved its set claim and purposes, having disclosed
5 an eyeglass frame that permits the quick creation of its housing without requiring the use of external elements for its protection and that safeguards the frontal piece it supports.

Another important purpose achieved by the invention is to guarantee simple and safe operation, while aesthetically pleasing in all operating conditions.

Naturally the materials used as well as the sizes of the single components can be more pertinent
10 according to the specific needs.

The different ways to perform certain different functions should not certainly coexist only in the illustrated creation shape but can be individually present in different creation shapes, even not illustrated.

The aspects indicated as advantageous, opportune or similar can also be missing or replaced by
15 equivalents.

CLAIMS

1) Eyeglass frame (1) comprising

- a frontal piece (27);

- two earpieces (32, 33) rotationally linked to the frontal piece (27) by means of a first (2) and second (3) hinge respectively,

said first and second hinges (2, 3) each comprising

- a first body (4) and

- a second body (15), wherein the first body (4) is rotationally linked to the earpiece (32, 33) and is able to rotate about the axis of the second body (15), so that each earpiece (32, 33) can rotate with respect to the frontal piece (27) so as to move from a first position, where the earpieces (32, 33) are both orthogonal to the frontal piece (27), to a second position where the earpiece (32, 33) are about parallel to the frontal piece (27),

characterized in that

the earpieces (32, 33) are semi-shell shaped, and in that

the first body (4) is able to rotate about the axis of the second body (15) so that each earpiece (32, 33) can

- rotate with respect to the frontal piece (27) to a first intermediate position where it is almost parallel to the other earpiece, both earpieces (32, 33) thus protruding from the frontal piece in opposite directions, and

- be brought, passing through a second intermediate position, to a folded position wherein one earpiece (32, 33) lays on top of the frontal piece (27) and the

other earpiece (32, 33) lays on the bottom, the earpieces (32, 33) matching longitudinally to create a shell (40) to temporarily hold the frontal piece (27).

2) Eyeglass frame (1) according to Claim 1, wherein said second body (15) is a hollow body linked to said frontal piece (27) and said first body (4) is rotationally movable within said second hollow body (15).

3) Eyeglass frame (1) according to Claim 2, wherein an elastically adaptable element (26), preferably made up of a cylindrical compression rotor spring, is housed inside a first cavity (17) of the second hollow body (15), secured thereto and mounted in contact with the first body (4) to keep it in a selected position of said first or second positions.

4) Eyeglass frame (1) according to Claim 3, wherein said first body (4) comprises a first joining leg (5), substantially cylindrical in shape from which, near its first flat end (6), a first block point (7), preferably cylindrical, radially protrudes, said first joining leg (5) being housed in a cavity (17) which coaxially opens at a first end of a second cylindrically shaped leg (16) in said second hollow body (15).

5) Eyeglass frame (1) according to Claim 4, wherein the lateral surface of said first cavity (17) has a first circumferential guide (19) composed of a straight and looping groove (20) that extends over an arch of specific range to define, at its opposite ends, a first (20a) and second (20b) housing.

6) Eyeglass frame (1) according to Claim 5, wherein said first and second housings are positioned rotated about 90° to the longitudinal axis of said first cavity (17).

7) Eyeglass frame (1) according to Claim 6, wherein the width of said groove (20), at a central straight segment of its joining said first (20a) and second (20b) housings, is slightly greater than the diameter of said first block point (7) to permit the sliding of the latter therein, such that when said first body (4) is rotationally joined to said second body (15) it is able to rotate about the longitudinal axis of the first cavity (17), so as to selectively pass from a first position, where the first block point (7) is housed inside the first housing (20a), to a second position, where the first block point (7) is housed inside the second housing (20b), said first and second housings (20a, 20b) being shaped to permit the selective housing of said first block point (7) inside them.

8) Eyeglass frame (1) according to any of Claims 6 to 8, wherein at the second end of said first joining leg (5) there is provided a second block point (9) having a "T" configuration and defining a cylindrical head which has a greater diameter than said first joining leg (5) and from which a first axial fin (10) protrudes.

9) Eyeglass frame (1) according to Claim 8, wherein said first axial fin (10) is positioned at a diameter of said first leg (5) and has a first loop hole (11), crosswise on it and orthogonal to a surface defined by the longitudinal axis of said first leg (5) and the axis of said first block point (7).

10) Eyeglass frame (1) according to any of Claims 4 to 9, wherein the free end of said first fin (10) frontally defines a first flat block surface (13), crosswise to said first leg (5) and joined by a curved segment (14) to a second block surface (13a), made up of the lateral wall of said first fin (10) facing from the side from which said

first block point (7) protrudes.

11) Eyeglass frame (1) according to any of Claims 6 to 10, wherein a second fin (21) protrudes from a second flat end (22) of said second leg (16) according to a chord and has a circle arch sectional shape that develops along a generatrix.

12) Eyeglass frame (1) according to Claim 11, wherein said second fin (21) has a first flat side (23) that faces the longitudinal axis of said second leg (16).

13) Eyeglass frame (1) according to Claim 12, wherein a bearing (24), preferably cylindrically shaped, axial with which a second hole (25) is made, preferably threaded, protrudes orthogonally from said first flat side (23), facing in the same direction as said first housing (20a).

14) Eyeglass frame (1) according to any of Claims 5 to 13, wherein said first housing (20a) of each of said hinges (32, 33) faces rearward from said frontal piece (27) and is orthogonal to it.

15) Eyeglass frame (1) according to any Claims 7 to 14, wherein said first hinge (2) has its second housing (20b) facing up with respect to the frontal piece (27), while said second hinge (3) has its second housing (20b) facing down.

16) Eyeglass frame (1) according to any of the preceding claims, wherein each of said earpieces (32, 33) has a front surface (34) with an internal convex profile and rear surface (35) with a concave internal profile, counter-shaped to said front surface so that said earpieces (32, 33), if longitudinally overlapped, reciprocally match to create a housing for the frontal piece (27).

17) Eyeglass frame (1) according to any of the preceding claims, wherein said

first and second earpieces (32, 33) have, at one of their front ends (36), a third housing (37), open and slightly thicker than the thickness of said first fin (10) of said first body (4) to permit reciprocal insertion.

18) Eyeglass frame (1) according to claim 17, wherein said third housing (37) is equipped with a pair of first pins (38) that face each other and protrude from the lower and upper bases of said third housing (37) towards the interior of the latter.

19) Eyeglass frame (1) according to claim 18, wherein said first pins (38) are preferably cylindrical and have a diameter slightly smaller than that of said first hole (11) in said first fin (10), so that they can be inserted once that the latter is housed inside said third housing (37), creating a rotating connection between said earpieces (32, 33) and said hinges (2, 3).

20) Eyeglass frame (1) according to any of claims 17 to 19, wherein said third housing (37) is equipped with a bottom against which said first block surface (13) can be selectively blocked, and wherein said first block surface (13) is frontally defined on each first fin (10) and said second block surface (13a) is orthogonal to said first block surface (13).