

WATCHSTRAP CLASP

The invention relates to fasteners and more particularly to a safety clasp fastener according to the claims.

- 5 Usually, straps of wrist-watches are opened and fastened by using known fastener devices like a buckle or a clasp. The application of one of these fastener devices depends often on the material from which is made the watchstrap. For example, a watchstrap made from soft material like leather is fastened by actuating a buckle. By contrast, a watchstrap made from rigid or
10 metallic material is often fastened by snapping a clasp.

- A watchstrap having a buckle is fastened in several stages, first an end portion of the watchstrap is inserted into a first loop, then a thorn of the buckle is
15 engaged in a strap hole and finally the buckle is fixed by inserting the end portion of the watchstrap into a second loop of the buckle. The end portion is secured by sliding its end in a guide loop of the watchstrap. A watchstrap having a clasp, by contrast, is snapped in one or two stages by fixing the clasp to a stud of the watchstrap.

Hereinafter, discussion will be limited to the advantages and disadvantages of a clasp fastener of a watchstrap.

5 A clasp fastener is generally provided with an adjusted closing force. Usually, the closing force is regulated during manufacture and is adjustable by a specialist during maintenance of the watchstrap. Said force can differ in function of the watchstrap model chosen. The models "Man" or "Sport" being
10 destined for male or sporting users are activated with a closing force higher than that of a model "Women" being destined for female users. One disadvantage consists that the closing force of a watchstrap clasp cannot be regulated by users and in function of daily or leisure activities.

15 A clasp fastener which is not provided with a security device for securing a fastening procedure, can, in accordance with the strength of the closing force, open by a heavy chock, for example during a sport activity. One disadvantage consists that a watchstrap clasp having no security device, cannot prevent an unintentional fastener opening.

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Therefore the object of the invention is to provide a solution to these problems by creating a clasp fastener with general application, for example for a wrist-watch, which has a particularly compact construction and being
25 compatible with known, proven manufacturing methods.

According to the invention, this object is achieved by a clasp fastener with a completely novel conception. Said clasp fastener is made from elements,

which elements allow a positioning and a securing or safety engagement of the clasp and which elements allow an individual regulation of the closing force.

- 5 By a snapping force, in a first stage, a locking device of the clasp carries out a positioning closure, i.e., the actuation of the locking device allows its positioning against a locking projection of the clasp (first snap engagement). In a second stage, a security cover of the clasp carries out a securing closure, i.e., the clasp is fixed by the securing cover (second snap engagement)
10 increasing therefore the snapping force of the first snap engagement of the clasp with the locking projection.

- Moreover, one or more variable-diameter pins of the locking device are
15 provided, said pins having spring characteristics and/or different diameters for allowing some movement or clearance to one or more locking elements of the locking device, reducing therefore the closing force effectively exerted on the locking projection and allowing an individual regulation of the closing force.

- 20 Finally, the securing cover being mounted in a detachable manner about an axis of articulation of a hinge. One or more locking elements having straight and rigid portions constitute an resisting axis and which axis resists to the closure of the security cover in a closure plane. Said one or more locking
25 devices are adjustable with respect to the hinge, so as to be able to vary the mutual distance from the straight and rigid portions to the hinge for increasing or reducing the resisting force. Said resisting force resists to the securing closure of the security cover on the locking device, allowing thus an individual regulation of the snapping force.

The characteristics and advantages of the invention will be better understood after lecture of the description following hereinafter and relative to several preferred embodiments, said description is related to the attached drawings, wherein:

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Figs. 1a and 1b are a perspective view of a preferred embodiment of a clasp fastener.

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Fig. 2 is a perspective, exploded view of said preferred embodiment of a clasp fastener according to figs. 1a and 1b.

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Figs. 3a and 3b are a view in a longitudinal plane and in lateral profile of a first preferred embodiment of a locking device of a clasp fastener.

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Fig. 4a is a perspective, exploded view of said preferred embodiment of a locking device of a clasp fastener according to figs. 3a and 3b.

Figs. 4b and 4c are a sectional view of a preferred embodiment of a securing cover of a clasp fastener according to figs. 1a, 1b and 2.

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Figs. 5a to 5c are a sectional view of a preferred embodiment of a clasp fastener according to figs. 3a, 3b and 4 showing different stages of the closure mechanism.

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Figs. 6a and 6b are a longitudinal view and sectional view of a second preferred embodiment of a clasp fastener.

Fig. 7 is a transverse view of a second preferred embodiment of a clasp fastener according to figs. 6a and 6b.

5 Figs. 1a and 1b show a preferred embodiment of a clasp fastener, for example for a wrist-watch in a perspective view with a watchstrap in a closed state (fig. 1a) and in an open state (fig. 1b). Fig. 2 is a perspective, exploded view of different elements of the clasp fastener. The watchstrap and the visible elements of the clasp fastener are preferably made from metal, they are for example constructions made from stainless steel and/or gold. The partial view
10 according to figs. 1a, 1b and 2 essentially show a clasp fastener, final links 2,2' of the strap, a lower strip 3 of the clasp, a locking projection 6 mounted, for example by welding, on the lower strip 3 of the clasp, a joining piece 7 exerts as terminal connection element of the clasp, an upper strip 11 of the clasp 1
15 and a locking device 4 provided with a securing cover 5 of the clasp 1. With the knowledge of the present invention, a person skilled in the art can implement other variants of embodiments of a clasp fastener.

20 The clasp 1 is mounted in a detachable manner about three articulation axes of three rods of hinges 8,9,10. A first rod of a hinge 8 allows an articulation of the upper strip 11 of the clasp 1 with respect to a final link 2' of the watchstrap. A second rod of a hinge 9 allows an articulation of the locking device 4 with respect to a bushing 9.0 having a guiding function and being
25 fixed to the upper strip 11 of the clasp 1. A third rod of a hinge 10 allows an articulation of the securing cover 5 with respect to the locking device 4. The clasp 1 can be snapped by successive snap engagements of the locking device 4 and the securing cover 5 with the locking projection 6. In order to complete the description of the visible elements, a forth rod of a hinge 13 allows an
30 articulation of the joining piece 7 with respect to a final link 2 of the

watchstrap. The axis of the rods of the hinges 8,9,10 and 13 are oriented more or less perpendicularly to the general plane of the watchstrap and to the opening and closure planes of the clasp 1. With the knowledge of the present invention, a person skilled in the art can implement other arrangements of
5 axis of a clasp fastener.

According to one characteristic of the invention, the snapping mechanism of the clasp fastener for watchstrap opens by means of articulation elements
10 being activated in two engagement stages in a closure plane of the clasp 1. In a first stage, by keeping the clasp 1, for example by an end portion of the securing cover 5, the upper strip 11 of the clasp 1 is pivoted with respect to the final link 2' until the upper strip 11 contacts against the lower strip 3 of the clasp. At the same time, the locking device 4 is pressed against the lower
15 strip 3 of the clasp until the locking device 4 contacts through an opening of the upper strip 11 of the clasp 1 against the locking projection 6 of the lower strip 3 of the clasp. The locking device 4 is positioned by a first snap engagement against the locking projection 6. In a second stage, the securing cover 5 is pivoted with respect to the locking device 4 and pressed against the
20 locking device 4. The securing cover 5 is kept on the locking device 4 by a second snap engagement. This second snap engagement increases the snapping force of the first snap engagement of the clasp 1 with the locking projection 6. The clasp 1 according to the invention is, therefore, engaged in a secured closure state. Details concerning these engagements are described in
25 the description of figs. 5a to 5c, 6a, 6b and 7.

The securing cover 5 is a closure device of the clasp fastener and an adornment piece. The aim is to hide the locking device 4 under the securing
30 cover 5. In the closed state of the clasp, the securing cover 5 covers and hides

the locking device 4 more or less integrally. The closed clasp 1 with an engaged securing cover 5 has a similar aspect as the joining piece 7 and increases the appearance. The presence of a crown on the external wall of the securing cover 5 leads to a further increase of the very particularly
5 appearance of the clasp 1.

The opening mechanism of the closed watchstrap clasp is identical to the closure mechanism, the above described two stages simply must be inverted.
10 The opening occurs by actuating the locking device 4. According to a preferred embodiment, the securing cover 5 is lifted by placing a thumb or an index finger in a groove 12 of the external wall of the joining piece 7 and next to a crown on the external wall of the securing cover 5. With the knowledge of the present invention, a person skilled in the art can implement other
15 arrangements of this kind of clasp fasteners.

Figs. 3a and 3b show a first preferred embodiment of a locking device 4 of a clasp fastener in a view according a longitudinal plane (fig. 3a) and in a view according to a lateral profile (fig. 3b). Fig. 4a is a corresponding perspective,
20 exploded view. According to said partial views, the locking device 4 comprises a case 4.0 with a central notch 16. The case 4.0 is pierced with holes 14.0,14.0' being bushings aligned to each other and having a guidance function for keeping two locking elements 14,14' along their axis. Moreover, the case 4.0 is
25 pierced with aligned holes 10.0,10.0' for keeping along their axis a rod of a hinge 10 (see the description of the figs. 1a, 1b and 2). According to a preferred embodiment, two guiding bushings 15,15' support a rod of a hinge 9 in a guiding bushing 9.0 welded on the upper strip 11 of the clasp 1 (see the description of figs. 1a, 1b and 2). With the knowledge of the present
30 invention, a person skilled in the art can implement other arrangements of

elements of a clasp fastener. For example, it is possible to realize a clasp fastener having only one locking element.

5 According to the first preferred embodiment of a clasp fastener, the two locking elements 14,14' are elongated contact bolts having contacts exerting along an axes AA'. The locking elements are for example springs. The contacting force of these locking elements 14,14' is defined by the chosen dimensions (length, diameter, etc.) and by the materials chosen. Each locking
10 element 14,14' comprises a top bolt 14.1,14.1' and a bottom bolt 14.2,14.2'. The top bolts 14.1,14.1' are provided with a rounded and convex portion for contact purposes and with an elongated portion for sliding and pivot purposes. The bottom bolts 14.2,14.2' are provided with a rounded and convex portion for contact purposes. These top bolts 14.1,14.1' and bottom bolts 14.2,14.2' are
15 joint in a way to resist forces along their contact axis AA'. After mounting in the case 4.0 of the locking device 4, the locking elements 14,14' are guided by the holes 14.0,14.0' having a guidance function and being able to support external pressure exerting on the top bolts 14.1,14.1' and on bottom bolts 14.2,14.2'. The locking elements 14,14' are mounted in a detachable manner
20 and with some movement or clearance along their contact axis AA'. The top bolts 14.1,14.1' are protruding two external walls of the case 4.0, while the bottom bolts 14.2,14.2' are protruding two internal walls of the case 4.0. Thus, end portions of the locking elements 14,14' are protruding two external walls of the locking device 4 on the side of contact with the securing cover 5, while
25 end portions of the locking elements 14,14' are protruding two internal walls of the locking device 4 on the side of contact with the locking projection 6. Once the locking device 4 is engaged with the locking projection 6, the latter is within the central notch 16 in engaged contact with the locking elements 14,14'. After engagement of the securing cover 5 with the locking device 4,
30 walls 22,22' and recesses 20,20' of the securing cover 5 are in engaged contact

with the locking elements 14,14'. A preferred embodiment of a securing cover 5 is shown in two views according to figs. 5a to 5c. Details concerning the functioning of the locking elements 14,14' are described in the description of figs. 5a to 5c.

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The stages of the closure and opening mechanism in a closure and opening plane of a first preferred embodiment of the locking device 4 of a clasp fastener are shown in three different states according to figs. 5a to 5c. Figs. 5a to 5c are a sectional view showing partly a locking projection 6, showing partly a locking device 4 comprising two locking elements 14,14' mounted in two holes 140,14.0' having a guidance function for keeping two locking elements 14,14' along their axis, which locking elements 14,14' comprise two top bolt 14.1,14.1' and bottom bolt 14.2,14.2' and showing partly a securing cover 5.

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Fig. 5a shows a first state of the closure stages. According to one characteristic of the invention, the locking projection 6 welded on the lower strip 3 of the clasp is provided with two fixing recesses 6.0,6.0' having concave surfaces. The fixing recesses 6.0,6.0' are serving to the snap engagement of the rounded and convex portions of the bottom bolts 14.2,14.2'. Preferably, the concave surfaces of the fixing recesses 6.0,6.0' and the convex surfaces of the bottom bolts 14.2,14.2' are adapted to each other, having for example the same radius allowing an optimized contact due to a maximal contact surface between these two elements. With the knowledge of the present invention, a person skilled in the art can implement other embodiments of locking projections.

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Fig. 5b shows a second state of the closure stages wherein the locking device 4 is positioned by a first snap engagement with a locking projection 6 (first closure stage). The locking device 4 comprises, with reference to fig. 4, a central notch 16 and bottom bolts 14.2,14.2' are protruding internal walls formed by said central notch 16. Under external pressures, the locking elements 14,14' are mobile with clearance along their common axes AA'. They are engaged with clearance in holes 14.0,14.0' serving as guiding bushing. The locking elements 14,14' are kept correctly centered along the contact axes AA' and in the holes 14.0,14.0' by means of elastic rings 21,21',21'',21'''. These elastic rings 21,21',21'',21''' are for example open spires made from spring steel. In order to position the locking device 4 against a locking projection 6, a first force or pressure is necessary for sliding the bottom bolts 14.2,14.2' onto the outer borders of the fixing recesses 6.0,6.0'. This first force pushes the locking elements 14,14' slightly to the exterior of the case 4.0 and compresses the elastic rings 21',21'' situated next to the bottom bolts 14.2,14.2'. After having passed the outer borders of the fixing recesses 6.0,6.0', the elastic rings 21',21'' expand and the bottom bolts 14.2,14.2' are locking weakly the locking projection 6. The clasp fastener is engaged and positioned. This first closing force or closure pressure can be regulated by different means. According to the preferred embodiments, a strip 400 of the locking device 4 contacts a contact element, for example the lower strip 3 of the clasp. This force can be varied by using variable-diameter pins. The actuation of the locking device 4 against the locking projection 6 and the variation of actuation forces of the clasp will be described in detail by the description of the second preferred embodiment of a clasp fastener according to figs. 6a, 6b and 7.

Fig. 5c shows a third closure state wherein the securing cover 5 kept by a second snap engagement on the locking device 4 (second closure stage). With reference to figs. 1a, 1b and 2 and to the representations according to figs. 3a,

3b and 4a, 4b and 4c, the securing cover 5 comprises two retaining recesses 20,20' and it comprises walls 22,22' for an engagement with top bolts 14.1,14.1' protruding of external walls of the case 4.0 of the locking device 4. When the securing cover 5 is closed over the locking device 4, the walls 22,22' slide over
5 the top bolts 14.1,14.1' and push the locking elements 14,14' slightly towards the interior of the case 4.0. This second force is chosen stronger than the resisting force of the elastic rings 21,21',21'',21'''. Fig. 5c shows that two elastic rings 21,21''' situated next to the top bolts 14.1,14.1' are compressed and that the elastic rings 21',21'' situated next to the bottom bolts 14.2,14.2' are
10 extended. The bottom bolts 14.2,14.2' lock the fixing recesses 6.0,6.0' of the locking projection 6. After locking of the top bolts 14.1,14.1' by the retaining recesses 20,20', the elastic rings 21,21',21'',21''' expand weakly. This second force or pressure increases the snapping force of the clasp and allows a safety fastening. With the knowledge of the present invention, a person skilled in the
15 art can implement other embodiments of recess surfaces for successive engagements of a clasp.

Figs. 6a and 6b show a second preferred embodiment of a locking device 4 of
20 a clasp fastener in a longitudinal view (fig. 6a) and in a sectional view (fig. 6b). Fig. 7 is a transverse view. Said locking device 4 comprises essentially a case 4.0 with a central notch 16. The case 4.0 is pierced with holes 17.0,18.0 being bore holes aligned to each other and having a guidance function for keeping two variable-diameter pins 17,18 along their axis. Moreover, the case
25 4.0 is pierced with aligned holes 10.0,10.0' for keeping along their axis a rod of a hinge 10 (see the description of the figs. 1a, 1b and 2). According to a preferred embodiment, two guiding bushings 15,15' support a rod of a hinge 9 in a guiding bushing 9.0 welded on the upper strip 11 of the clasp 1 (see the description of figs. 1a, 1b and 2). Two locking elements 14,14' have the shape
30 of elastic, auto-centered clips occupying a space 23 within the locking device

4. The space 23 is adapted for keeping the locking elements 14,14'. Once the locking device 4 is engaged with the locking projection 6, the latter is within the central notch 16 in engaged contact with the locking elements 14,14'. After engagement of the securing cover 5 with the locking device 4, the walls of the securing cover 5 are in engaged contact with the locking elements 14,14'. With the knowledge of the present invention, a person skilled in the art can implement other embodiments of elements of a clasp fastener. For example, it is possible to realize a clasp fastener having only one locking element.

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According to the second embodiment, two locking elements 14,14' having the shape of elastic, auto-centered clips are curved supports, supporting along a contact axis AA' and being provided with curved and more flexible portions 14.3,14.3' and with straight and more rigid portions 14.4,14.4'. These supports have rounded surfaces. The locking elements 14,14' are for example springs. The contacting force of these locking elements 14,14' is defined by the chosen dimensions (length, diameter, etc.) and by the materials chosen. Preferably, the spring-like locking elements 14,14' have no tension in its uncompressed position. After mounting in the case 4.0 of the locking device 4, the locking elements 14,14' are guided in an adjustable manner by the walls delimiting the space 23. The walls of the case 4.0 being next to straight portions 14.4,14.4' of locking elements 14,14' are for example guiding. Under the influence of external pressures, the locking elements 14,14' are compressible/extendible along their contact axis AA'. End portions of the locking elements 14,14' are protruding two external walls of the locking device 4 on the side of contact with the securing cover 5, while end portions of the locking elements 14,14' are protruding two internal walls of the locking device 4 on the side of contact with the locking projection 6. With the knowledge of the present invention, a

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person skilled in the art can implement other locking elements having similar locking characteristics.

5 The mechanism of closure and opening of the second embodiment of a locking device 4 differ slightly with respect to the first embodiment with two locking elements 14,14' according to the description of figs. 5a to 5c. Fig. 7 shows a locking projection 6 screwed on the lower strip 3 of the clasp and having two fixing recesses 6.0,6.0', being i.e. concave surfaces of the outer wall
10 of the locking projection 6. The fixing recesses 6.0,6.0' are serving to the snap engagement of the rounded and convex portions of the locking elements 14,14' having the shape of elastic, auto-centered clips. Preferably, the concave surfaces of the fixing recesses 6.0,6.0' and the convex surfaces of the locking elements 14,14' are adapted to each other, having for example the same
15 radius allowing an optimized contact due to a maximal contact surface between these two elements. When the locking device 4 is positioned against the locking projection 6, a first force or pressure is necessary for pushing the locking elements 14,14' against the recesses 6.0,6.0'. The clasp 1 is engaged after this first closure stage. The safety closure occurs during a second closure
20 stage, i.e. during a second snap engagement of the securing cover 5 with the locking device 4. With reference to the representation according to figs. 1a, 1b and 2 and to the representation according to figs. 3a, 3b and 4a, 4b and 4c, the securing cover 5 is engaged with locking elements 14,14' of the shape of elastic, auto-centered clips and which locking elements 14,14' are protruding
25 external walls of the case 4.0 and are compressed. This second force is chosen stronger than the resisting force of the locking elements 14,14' for, therefore, increasing the pressure against the locking projection 6 and allowing a safety closure. The totality of these forces or pressures is controllable and variable.

These forces or pressures can be regulated by different means. According to an actually preferred embodiment, the case 4.0 contacts a contact element, for example the lower strip 3 of the clasp. The closing force can be varied by means of variable-diameter pins 17,18. According to one characteristic of the invention, these variable-diameter pins are adjustable by the choice of the used material, by the choice of the pin diameter, by the outer surface geometry, etc.. These pins are for example soft or they have different diameters. Fig. 7 illustrates an example of two variable-diameter pins 17,18, whereby the central diameter of variable-diameter pin 17 is smaller than the central diameter of variable-diameter pin 18. The locking element 14 is in a contact with clearance with central diameter of variable-diameter pin 17, the locking element 14' is in contact with few or no clearance with central diameter of variable-diameter pin 18. By a closing force, the diameter of variable-diameter pin 17 allows, therefore, a clearance to the locking element 14, while the constant diameter of variable-diameter pin 18 allows no or few clearance to the locking element 14'. Such a variation reduces the closing force effectively exerting on the locking projection 6. With the knowledge of the present invention, a person skilled in the art can provide one or more locking elements having an equal closing force for the clasp.

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As a result, the closing force of the clasp 1 being for example provided with a pair of variable-diameter pins 17 (allowing a high variation) is lower than the closing force of a clasp 1 being provided with a pair of variable-diameter pins 18 (allowing a low variation). By using pins 18 with a lower variation it is therefore possible to obtain models "Man" or "Sport" being destined for male or sporting users are activated having a closing force higher than that of a model "Women" being destined for female users and which are realized by using pins 17 with a reduced central diameter for a higher variation. The provision of one or more variable-diameter pins 17,18 is not restricted to a

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clasp 1 according to the second embodiment of a locking device 4. This kind of application of variable-diameter pins is also and without any problems possible for a clasp 1 according to the first embodiment of a locking device 4.

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The closing forces or pressures cannot only be varied by using variable-diameter pins 17,18 but they can also varied by using other variation means. Another variation mean represents the resisting force of the locking elements 14,14' exerting on the securing cover 5 during a safety closure in a closure plane over a locking device 4. According another characteristic of the invention, the orientation of the locking elements 14,14' in the space 23 of the second embodiment of a locking device 4 is adjustable. Locking elements 14,14' can, for example, be rotated by 180° in the space 23. The latter must be designed in a symmetric manner in the locking device 4. Such a 180° rotation allows therefore a variation of the mutual distances in between straight portions 14.4,14.4' of the locking elements 14,14' and the hinge 10. These straight and rigid portions 14.4,14.4' of the locking elements 14,14' constitute a resisting axis being oriented more or less perpendicular to the closure plane of the securing cover 5. The resisting force of the rigid portions 14.4,14.4' exerting on the securing cover 5 is increased or reduced as a function of the size of the distance between the hinge 10 and the resisting axis. By rotating the locking elements 14,14' in the space 23, it is therefore possible to vary, i.e. to increase or to reduce the resisting force exerting on the safety closure of the securing cover 5. A change in orientation of the locking elements 14,14' in the space 23 according to fig. 6a allows, therefore, a variation of the second snap engagement made by the securing cover 5. The first snap engagement made by the locking device 4 remains unchanged. The user can therefore adjust the safety force of the clasp 1 in a free and rapid manner without consultation of a specialist, i.e. according daily or leisure activities.

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The visible elements of the clasp are preferentially made from metal, they are made for example made from stainless steel and/or gold. According to one characteristic of the invention, and with reference to the description according to figs. 1a, 1b, 2, 6b and 7, the locking projection 6 is mounted on the lower strip 3 of the claps preferentially by welding or screwing. Other connection methods are naturally possible. Taking into account the high precision which is required for allowing an easy going and repeated operation of the clasp, and taking into account the difficulties resulting from the treatment of the chosen materials (reduced hardening after welding, asymmetric deformation after welding), preferentially, a welding is used for fixing a locking projection 6 made from gold on a lower strip 3 made from gold and screwing is used for fixing a locking projection 6 made from stainless steel on a lower strip 3 made from stainless steel. With the knowledge of the present invention, a person skilled in the art can provide fixation means for other base materials for example thermofusion for synthetic thermofusible materials.

C L A I M S

1. Clasp fastener, having a clasp (1) designed to be snapped into engagement by exerting a closing force, whereby a locking device (4) of the clasp (1) is placed by the closing force in an engaged position in which it is in a first snap engagement with a locking projection (6), and a securing cover (5) of the clasp (1) is fixed by the closing force in a safety position in which it is in a second snap engagement with the locking device (4), increasing thereby the snapping force of the first engagement of the clasp (1) with the locking projection (6). 5
2. Clasp fastener according to claim 1, whereby a locking device (4) having at least one locking pin (14,14') being mobile with clearance along an axis (AA') exerts by the closing force on the locking projection (6). 10
3. Clasp fastener according to claim 1, whereby a locking device (4) having at least one locking element (14,14') of the shape of elastic, auto-centered clips being compressible/extendible along a contact axis (AA') by the closing force exerting with a snapping force on the locking projection (6). 15 20
4. Clasp fastener according to claim 1, whereby at least one variable-diameter pin (17,18) that is flexible and/or has different diameters 25



allows some movement of at least one locking element (14,14') of the locking device (4), reducing the effective closing force exerted on the locking projection (6).

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5. Clasp fastener according to claim 2, whereby top bolts (14.1,14.1') of the locking elements (14,14') are protruding walls of a case (4.0) of the locking device (4) on two external walls on the side of contact with the securing cover (5), while bottom bolts (14.2,14.2') of the locking elements (14,14') are protruding walls of a case (4.0) of the locking device (4) on two internal walls on the side of contact with the locking projection (6). 10
6. Clasp fastener according to claim 5, whereby elastic rings (21,21',21'', 21''') keep locking elements (14,14') centered along a contact axis (AA') and in holes (14.0,14.0') of the case (4.0) serving as guidance support and the elastic rings (21,21',21'',21''') are compressible/extendible allowing to position locking elements (14, 14') in front and in recesses (6.0,6.0') of the locking projection (6). 20
7. Clasp fastener according to claim 5, whereby locking elements (14,14') are pushed by the closing force and by walls (22,22') of the securing cover (5) towards the interior of the case (4.0) engaging the locking elements (14,14') in a safety position in recesses (6.0,6.0') of the locking projection (6) and in recesses (20,20') of the securing cover (5). 25

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8. Clasp fastener according to claim 3, whereby the locking elements (14,14') having the shape of elastic, auto-centered clips with curved support characteristics are guided by the walls of a space (23) in the locking device (4), straight and rigid portions (14.4,14.4') of the locking elements (14,14') constitute a resisting axis resisting to the closure plane of the securing cover (5), the locking elements (14,14') protruding walls of a case (4.0) of the locking device (4) on two external walls on the side of contact with the securing cover (5), while the locking elements (14,14') protruding walls of a case (4.0) of the locking device (4) on two internal walls on the side of contact with the locking projection (6). 5 10
9. Clasp fastener according to claim 8, whereby by the closing force and by walls (22,22') of the securing cover (5) the locking elements (14,14') are pushed, compressed and engaged in a safety position in recesses (6.0,6.0') of the locking projection (6) and in recesses (20,20') of the securing cover (5). 15
10. Clasp fastener according to claim 8, whereby by the securing cover (5) pivots around an articulation axis of a hinge (10) and that the mutual distance in between straight and rigid portions (14.4,14.4') and the hinge (10) is adjustable by rotating the locking elements (14,14') in the space (23) for increasing or reducing the resisting force resisting to a safety closure of the securing cover (5) over the locking device (4) allowing a variation of the closing force. 20 25



11. Clasp fastener according to one of the claims 1 to 10, whereby it is used for closing a clasp fastener of a wrist-watch having a watchstrap essentially made from gold and/or stainless steel.

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12. Clasp fastener according to one of the claims 1 to 11, whereby the locking projection (6) is mounted on a lower strip (3) by welding or screwing.

