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(54) **SAFETY STIRRUP WITH FLEXIBLE RELEASE ARRANGEMENT**

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a safety stirrup for horseback riding.

BACKGROUND OF THE INVENTION

[0002] In horseback riding, falling off the horse may cause serious injury. A rider losing their balance and falling off the horse while their riding boot slips through and subsequently gets caught in the stirrup is even more dangerous. Riders being dragged behind bolting horses has resulted in a number of tragic injuries and casualties, and a solution which reduces the risk for such accidents is therefore needed.

[0003] Conventional solutions include safety stirrups with flexible or hinged safety release mechanisms, such as the ones disclosed in EP2438003B1 and EP3445708B1, or more complex mechanisms such as the one disclosed in EP3235779B1.

[0004] A problem with the former two solutions is that the safety stirrup may not always release as intended, leading to the user being stuck with their foot in the stirrup as they fall down. A problem with the latter solution is its complexity, with several components that may be damaged or caused to malfunction due to dirt or debris entering the mechanism.

[0005] As such, a solution which improves on the prior art is needed.

SUMMARY OF THE INVENTION

[0006] It is an object of the present invention to alleviate at least some of the mentioned drawbacks of the prior art and to provide a device that reduces the risk of injury when falling off a horse. This and other objects, which will become apparent in the following, are accomplished by a safety stirrup with a flexible release arrangement as defined in the accompanying independent claim. Advantageous embodiments of the safety stirrup according to the current invention are defined in dependent claims 2 to 6.

[0007] The term exemplary should in this application be understood as serving as an example, instance or illustration.

[0008] The present invention is at least partially based on the realisation that presently available safety stirrups run the risk of malfunctioning due to debris or dirt in the safety mechanism. Having a more simple design of a safety stirrup which more reliably performs its function is beneficial as it increases overall rider safety.

[0009] According to the present invention, a safety stirrup for use in horseback riding, as defined in claim 1, is provided. The safety stirrup comprises an open stirrup body having a tread portion and a stirrup leather connecting portion, and an opening that is defined by the space between a first end and a second end of the open stirrup body. The open stirrup body being a stirrup body that does not form a full loop around a boot of a user when in use.

[0010] The safety stirrup further comprises a flexible side piece arranged to bridge the opening between the first end and the second end of the open stirrup body. A first end of the flexible side piece and the first end of the open stirrup body are provided with a first protrusion-recess pair for releasably connecting the first end of the flexible side piece to the first end of the open stirrup body. A second end of the flexible side piece and the second end of the open stirrup body are provided with means for connecting the second end of the flexible side piece to the second end of the open stirrup body. The protrusion of the first protrusion-recess pair has a neck and a head. The head may be formed as an axial extension of the neck in a longitudinal direction of the protrusion. The recess of the first protrusion-recess pair has an opening and a cavity, wherein the cavity is shaped to house the head, and wherein the opening is shaped to allow the head to pass therethrough when the first end of the flexible side piece is in a first rotational position relative to the open stirrup body, but not when it is in a second rotational position.

[0011] The tread portion is either a portion to which a tread surface may be connected, or a tread surface integrally formed with the open stirrup body.

[0012] The stirrup leather connecting portion is the portion to which the stirrup leather is to be connected. The stirrup leather connection portion comprises, in exemplary embodiments, stirrup leather connection means in the shape of a through-hole, through which the stirrup leather is threaded. The tread portion is located opposite the stirrup leather connecting portion and in exemplary embodiments, comprises means for connecting a tread surface thereto.

[0013] An open stirrup body is a stirrup body that does not form a full loop around the boot of a user when in use. Typically, an open stirrup body is open on one side.

[0014] According to one embodiment, the opening is arranged between the tread portion and the stirrup leather connecting portion.

[0015] According to one embodiment, the opening is arranged on a lateral side of the open stirrup body.

[0016] According to one embodiment, the open stirrup body is shaped like an open loop, and wherein the flexible side piece is shaped such that it jointly defines, together with the open stirrup body, a closed loop.

[0017] According to the claimed invention, the means for connecting the second end of the flexible side piece to the second end of the open stirrup body is a second protrusion-recess pair. Alternatively, but not according to the claimed invention, the means for connecting the second end of the flexible side piece to the second end of the open stirrup body is a fixed protrusion-recess pair, in which a portion of the second end of the flexible side piece has been formed inside of the recess of the second

end of the open stirrup body. Thus, an interference fit is achieved that prevents the flexible stirrup body from disconnecting from the second end of the open stirrup body.

[0018] According to the claimed invention, the means for connecting the second end of the flexible side piece to the second end of the open stirrup body is a second protrusion-recess pair for releasably connecting the second end of the flexible side piece to the second end of the open stirrup body. The protrusion of the second protrusion-recess pair has a neck and a head and the recess of the second protrusion-recess pair has an opening and a cavity. The cavity is shaped to house the head, and the opening is shaped to allow the head to pass therethrough when the second end of the flexible side piece is in a first rotational position relative to the open stirrup body, but not when it is in a second rotational position.

[0019] According to the claimed invention, a first and a second end of the flexible side piece and a first and a second end of the open stirrup body are each provided with a respective protrusion-recess pair for releasably connecting the ends of the flexible side piece to the ends of the open stirrup body. The protrusions of the protrusion-recess pairs each have a neck and a head. The recesses of the protrusion-recess pairs each have an opening and a cavity, wherein the cavity is shaped to house the head, and wherein the opening is shaped to allow the head to pass therethrough when the corresponding end of the flexible side piece is in a first rotational position relative to the open stirrup body, but not when it is in a second rotational position.

[0020] In the context of the present invention, the neck is shaped to allow the head to be inserted through the opening and to be housed inside the cavity. The neck does this by being longer than the depth of the opening, such that the head may be rotated to the first rotational position to allow insertion therethrough, and then rotated once again to the second rotational position when inside the cavity to lock the flexible side piece in place relative to the open stirrup body. Thus, the head is rotatable from the first rotational position to the second rotational position when housed inside the cavity. The head is rotatable relative the cavity when housed therein, around the axial extension of the neck/protrusion / the longitudinal axis of the protrusion.

[0021] Alternatively, the opening being shaped to allow the head to pass therethrough when the corresponding end of the flexible side piece is in a first rotational position relative to the open stirrup body, but not when it is in a second rotational position, may be expressed as the protrusion-recess pair being configured and/or arranged such that disengagement in a second rotational position is prevented unless a predetermined threshold force is applied thereto, causing at least a portion of the protrusion-recess pair to elastically deform causing disengagement of the flexible side piece from the open stirrup body. In each case, the opening is shaped to allow the head to pass therethrough when the corresponding end of the flexible side piece is in a first rotational position relative to the open stirrup body. Thus, the cavity may be formed as an axial extension of the opening, wherein the head is allowed to pass through the opening in a first rotational position but not in a second rotational position, wherein the head is rotatable to the first second rotational position when housed inside the cavity, thereby locking the head within the cavity. In other words, the recess may be dimensioned so that the head of the protrusion has to pass the opening prior to being housed within the cavity.

[0022] According to one embodiment, the head of each protrusion is shorter, as measured along a longitudinal direction of the protrusion, than the cavity in which it is to be housed. This, in combination with the neck being longer than the depth of the opening, allows the protrusion-recess pairs a certain degree of flexibility in longitudinal positioning. This is beneficial as the open stirrup body may flex and elastically deform due to forces it is subjected to during normal use. Having tolerance in the longitudinal direction in the protrusion-recess pairs prevents unintentional disengagement of the flexible side piece from the open stirrup body.

[0023] The referenced rotational positions are to be understood as being positions achieved by rotation of the entire flexible side member about a longitudinal axis of the protrusion-recess pair, or about a longitudinal axis of the neck of the protrusion. Alternatively, the rotational positions may refer to positions achieved by flexible twisting deformation of the flexible side piece, such that only a portion thereof rotates about the longitudinal axis. For example, the entire flexible side piece may be rotated to allow the connection of the first end of the flexible side piece to the first end of the open stirrup body, and once connected, a portion of the flexible side piece may be subjected to flexible twisting deformation so that the second end thereof may be connected to the second end of the open stirrup body.

[0024] It should be understood that in the context of the present invention, the opening being shaped to allow the head to pass therethrough when the first end of the flexible side piece is in a first rotational position relative to the open stirrup body, but not when it is in a second rotational position, should be understood as meaning that the flexible side piece is kept connected to the open stirrup body for as long as the connection therebetween is not subjected to a force exceeding a given threshold, or until the flexible side piece is moved to its first rotational position. Thus, passage of head through the opening is prevented up to a predetermined threshold force is applied to the flexible side piece. The predetermined threshold force required to disconnect the flexible side piece from the open stirrup body is chosen to be greater than the forces typically applied thereto during normal use of the safety stirrup, but less than what can be expected when a rider falls of the horse and whose foot becomes tangled in the stirrup. Thus, a safety stirrup is achieved.

[0025] Factors affecting the predetermined threshold force required to disengage the flexible side piece from the open stirrup body include the stiffness of the flexible

side piece material, the tolerances in the protrusion-recess pair arranged to connect the two, and the shape and size of the protrusion and recess.

[0026] According to one embodiment, the flexible side piece comprises at least one of the protrusions of the protrusion-recess pairs, wherein the protrusion extends from at least a first end thereof and the open stirrup body having at least one of the recesses of the protrusion-recess pairs, wherein the recess is arranged at least at the first end thereof. The at least one protrusion of the flexible side piece is arranged to be releasably connected to the at least one recess of the open stirrup body.

[0027] Alternatively, the aforementioned at least one recess may be arranged on the flexible side member and the aforementioned at least one protrusion on the open stirrup body.

[0028] According to one embodiment, the neck has a cross-sectional area that is smaller than that of the head, as seen perpendicularly to an axial direction thereof.

[0029] According to one embodiment, the flexible side piece is shaped (when in a relaxed position in which no elastic deformation is experienced thereby) such that it jointly defines, together with the open stirrup body, a closed loop when the flexible side piece is in the second rotational position, and such that it does not define a closed loop when the flexible side piece is in the first rotational position. The flexible side piece may refer to the first end of the flexible side piece. In other words, the curvature of the flexible side piece completes the loop partially defined by the open stirrup body only when the flexible side piece is connected thereto and is arranged in the second rotational position. When determining whether or not the flexible side piece completes the loop or not, the flexible side piece should be in its relaxed position in which no elastic deformation is experienced thereby.

[0030] According to one embodiment, a normal of an end surface of at least one of the first end and the second end of the open stirrup body is angled relative to the longitudinal extension of the portion of the protrusion-recess pair that is arranged there. In other words, the end surface is angled relative to the extension of the protrusion extending therefrom. This allows for a more reliable disconnection between the flexible side piece and the open stirrup body once the predetermined threshold force has been applied thereto.

[0031] According to one embodiment, the flexible side piece is made of an elastomer. This elastomer may for example be silicon, rubber, or another similarly flexible material.

[0032] According to one embodiment, a mid-section of the flexible side piece has a stiffness that is greater than the stiffness of the first end and second end of the flexible side piece. This increases the reliability of the safety stirrup by reducing the risk of the mid-section of the flexible side piece unintentionally deforming during normal use thereof. Instead, the varying stiffness is such that the ends of the flexible side piece are more likely to deform and release the protrusion-recess pair connection formed between the flexible side piece and the open stirrup body, and only once a certain threshold force has been applied thereto.

[0033] According to one embodiment, the head of the protrusion of each protrusion-recess pair is T-shaped, triangle shaped, or has lateral protrusions distributed about its circumference.

[0034] Generally, all terms used in the description are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc.]" are to be interpreted openly as referring to at least one instance of the element, device, component, means, step, etc., unless explicitly stated otherwise.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035] These and other features and advantages of the present invention will now be further clarified and described in more detail, with reference to the appended drawings showing different embodiments of a safety stirrup according to the present invention.

Figure 1 is a perspective view of a safety stirrup according to the present invention,

Figure 2 is a side section view of the safety stirrup and a cross-sectional view thereof,

Figure 3 is a perspective view of the open stirrup body of the safety stirrup of the present invention, along with a section view of one end of the open stirrup body.

DETAILED DESCRIPTION OF EMBODIMENTS

[0036] In the following detailed description, some embodiments of the present invention will be described. However, it is to be understood that features of the different embodiments are exchangeable between the embodiments and may be combined in different ways, unless anything else is specifically indicated. Even though in the following description, numerous specific details are set forth to provide a more thorough understanding of the present invention, it will be apparent to one skilled in the art that the present invention may be practiced without these specific details. In other instances, well known constructions or functions are not described in detail, so as not to obscure the present invention.

[0037] Figure 1 is a perspective view of a safety stirrup 1 according to the present invention. Figure 2 is a side section view of the safety stirrup 1 and two cross-sectional views A-A and B-B thereof. Figure 3 is a perspective view of the open stirrup body 10 of the safety stirrup 1, along with a section view C-C of one end of the open stirrup body 10.

[0038] The safety stirrup 1 comprises an open stirrup body 10 having a tread portion 11 and a stirrup leather

connecting portion 12, and an opening 13 that is defined by the space between a first end 14 and a second end 15 of the open stirrup body 10. The tread portion is the portion of the open stirrup body 10 that is configured such that a tread surface may be connected thereto, while the stirrup leather connecting portion is the portion of the open stirrup body 10 to which the stirrup leather is to be connected when the safety stirrup is in use in horseback riding. The stirrup leather connection portion comprises a through-hole, through which the stirrup leather is to be thread. The tread portion is located opposite the stirrup leather connecting portion, i.e. in the lower portion of the safety stirrup.

[0039] The open stirrup body 10 is shaped such that it does not itself form a full loop around the boot of a user when in use. Typically, and in the illustrated embodiment, the open stirrup body 10 is open on one side.

[0040] As explained above, the opening is arranged between the tread portion and the stirrup leather connecting portion, on a lateral side of the open stirrup body 10.

[0041] The safety stirrup 1 further comprises a flexible side piece 20 made from an elastomer, the flexible side piece 20 having a first end 24 and a second end 25 and extending in a direction between the two ends 14, 15 of the open stirrup body 10 in order to bridge the opening therebetween. While the open stirrup body 10 is shaped like an open loop, i.e. C-shaped, the flexible side piece 20 is shaped such that it jointly defines a closed loop together with the open stirrup body 10 when connected thereto. The closed loop defined by the open stirrup body 10 and the flexible side piece 20 is defined when the flexible side piece 20 is rotated such that the first end 24 thereof connects to the first end 14 of the open stirrup body 10, and such that the second end 25 thereof connects to the second end 15 of the open stirrup body 10.

[0042] The first 24 and a second end 25 of the flexible side piece 20 and the first 14 and a second end 15 of the open stirrup body 10 are each provided with a respective protrusion-recess pair 30, 40 for releasably connecting the ends 24, 25 of the flexible side piece 20 to the ends 14, 15 of the open stirrup body 10. The protrusions 31, 41 of the protrusion-recess pairs 30, 40 each have a neck 32, 42 and a head 33, 43. The recesses 34, 44 of the protrusion-recess pairs 30, 40 each have an opening 35, 45 and a cavity 36, 46, wherein the cavity 36, 46 is shaped to house the head 33, 43, and wherein the opening 35, 45 is shaped to allow the head 33, 43 to pass therethrough when the corresponding end 24, 25 of the flexible side piece 20 is in a first rotational position relative to the open stirrup body 10, but not when it is in a second rotational position. The head 33, 43 of the protrusion 31, 41 of each protrusion-recess pair 30, 40 is T-shaped, having lateral protrusions extending from opposite sides thereof. Thus, a 90° turn of the flexible side piece 20 corresponds to a move between the first and the second rotational position.

[0043] The neck 32, 42 of either protrusion 31, 41 is shaped to allow the head 31, 41 to be inserted through the opening 35, 45 and to be housed inside the cavity 36, 46. The neck 32, 42 does this by being longer than the depth of the opening 35, 45, such that the head 33, 43 may be rotated to the first rotational position to allow insertion therethrough, and then rotated once again to the second rotational position when inside the cavity 36, 46 to lock the flexible side piece 20 in place relative to the open stirrup body 10. The head 33, 43 of each protrusion 31, 41 is shorter, as measured along a longitudinal direction of the protrusion, than the cavity 36, 46 in which it is to be housed. This, in combination with the neck 32, 42 being longer than the depth of the opening 35, 45, allows the protrusion-recess pairs 30, 40 a certain degree of flexibility in longitudinal positioning. This is beneficial as the open stirrup body 10 may flex and elastically deform due to forces it is subjected to during normal use of the safety stirrup 1. Having tolerance in the longitudinal direction in the protrusion-recess pairs 30, 40 prevents unintentional disengagement of the flexible side piece 20 from the open stirrup body 10.

[0044] Finally, a normal of an end surface of at least one of the first end 14 and the second end 15 of the open stirrup body 10 and the corresponding end 24, 25 of the flexible side piece 20 is angled at an angle α relative to the longitudinal extension of the portion of the protrusion-recess pair 30, 40 that is arranged there. The angle α is offset by at least 10°, preferably by at least 20°, and most preferably by at least 30° from perpendicularity with of the end surface and the longitudinal extension of the portion of the protrusion-recess pair 30, 40 that is arranged there.

[0045] The person skilled in the art realizes that the present invention by no means is limited to the embodiments described above. The features of the described embodiments may be combined in different ways, and many modifications and variations are possible within the scope of the appended claims. In the claims, any reference signs placed between parentheses shall not be construed as limiting to the claim. The word "comprising" does not exclude the presence of other elements or steps than those listed in the claim. The word "a" or "an" preceding an element does not exclude the presence of a plurality of such elements.

Claims

1. A safety stirrup (1) for use in horseback riding, comprising

   an open stirrup body (10) having a tread portion (11) and a stirrup leather connecting portion (12), and an opening (13) that is defined by the space between a first end (14) and a second end (15) of the open stirrup body (10), said open stirrup body (10) being a stirrup body that does not form a full loop around a boot of a user when

in use,
a flexible side piece (20) arranged to bridge the opening between the first end (14) and the second end (15) of the open stirrup body (10),
wherein a first end (24) of the flexible side piece (20) and the first end (14) of the open stirrup body (10) are provided with a first protrusion-recess pair (30) for releasably connecting the first end (24) of the flexible side piece (20) to the first end (14) of the open stirrup body (10),
and wherein a second end (25) of the flexible side piece (20) and the second end (15) of the open stirrup body (10) are provided with means (40) for connecting the second end (25) of the flexible side piece (20) to the second end (15) of the open stirrup body (10),
wherein the protrusion (31) of the first protrusion-recess pair (30) has a neck (32) and a head (33) and the recess (34) of the first protrusion-recess pair (30) has an opening (35) and a cavity (36), wherein the cavity (36) is shaped to house the head (33), and wherein the opening (35) is shaped to allow the head (33) to pass therethrough when the first end (24) of the flexible side piece (20) is in a first rotational position relative to the open stirrup body (10), but not when it is in a second rotational position,
wherein the means (40) for connecting the second end (25) of the flexible side piece (20) to the second end (15) of the open stirrup body (10) is a second protrusion-recess pair (40') for releasably connecting the second end (25) of the flexible side piece (20) to the second end (15) of the open stirrup body (10),
wherein the protrusion (41) of the second protrusion-recess pair (40') has a neck (42) and a head (43) and the recess (44) of the second protrusion-recess pair (40) has an opening (45) and a cavity (46), wherein the cavity (46) is shaped to house the head (43), and wherein the opening (45) is shaped to allow the head (43) to pass therethrough when the second end (25) of the flexible side piece (20) is in a first rotational position relative to the open stirrup body (10), but not when it is in a second rotational position
wherein said flexible side piece and said open stirrup body are configured to be kept connected for as long as a connection therebetween is not subjected to a force exceeding a given threshold, or until the flexible side piece is moved to said first rotational position.

2. The safety stirrup of claim 1, wherein the flexible side piece is shaped such that it jointly defines, together with the open stirrup body, a closed loop when the flexible side piece is in the second rotational position, and such that it does not define a closed loop when the flexible side piece is in the first rotational position.

3. The safety stirrup of any one of the preceding claims, wherein a normal of an end surface of at least one of the first end and the second end of the open stirrup body is angled relative to the longitudinal extension of the portion of the protrusion-recess pair that is arranged there.

4. The safety stirrup of any one of the preceding claims, wherein the flexible side piece is made of an elastomer.

5. The safety stirrup of any one of the preceding claims, wherein a mid-section of the flexible side piece has a stiffness that is greater than the stiffness of the first end and second end of the flexible side piece.

6. The safety stirrup of any one of the preceding claims, wherein the head of the protrusion of each protrusion-recess pair is T-shaped, triangle shaped, or has lateral protrusions distributed about its circumference.

Patentansprüche

1. Sicherheitssteigbügel (1) zum Verwenden beim Reiten auf Pferden, umfassend:

einen offenen Steigbügelkörper (10), der einen Tretabschnitt (11) und einen Steigbügelriemenverbindungsabschnitt (12) aufweist, und eine Öffnung (13), die durch den Raum zwischen einem ersten Ende (14) und einem zweiten Ende (15) des offenen Steigbügelkörpers (10) definiert wird, wobei der offene Steigbügelkörper (10) ein Steigbügelkörper ist, der während der Verwendung keine vollständige Schlaufe um einen Stiefel eines Benutzers bildet,
ein flexibles Seitenstück (20), das dazu angeordnet ist, die Öffnung zwischen dem ersten Ende (14) und dem zweiten Ende (15) des offenen Steigbügelkörpers (10) zu überbrücken,
wobei ein erstes Ende (24) des flexiblen Seitenstücks (20) und das erste Ende (14) des offenen Steigbügelkörpers (10) mit einem ersten Vorsprung-Vertiefungspaar (30) zum lösbaren Verbinden des ersten Endes (24) des flexiblen Seitenstücks (20) mit dem ersten Ende (14) des offenen Steigbügelkörpers (10) bereitgestellt sind,
und wobei ein zweites Ende (25) des flexiblen Seitenstücks (20) und das zweite Ende (15) des offenen Steigbügelkörpers (10) mit Mitteln (40) zum Verbinden des zweiten Endes (25) des flexiblen Seitenstücks (20) mit dem zweiten Ende (15) des offenen Steigbügelkörpers (10) bereitgestellt sind,
wobei der Vorsprung (31) des ersten Vorsprung-

Vertiefungspaars (30) einen Hals (32) und einen Kopf (33) aufweist und die Vertiefung (34) des ersten Vorsprung-Vertiefungspaars (30) eine Öffnung (35) und einen Hohlraum (36) aufweist, wobei der Hohlraum dazu geformt ist, den Kopf (33) aufzunehmen, und wobei die Öffnung (35) dazu geformt ist, es dem Kopf (33) zu ermöglichen, dahindurch zu verlaufen, wenn sich das erste Ende (24) des flexiblen Seitenstücks (20) in einer ersten Drehstellung in Bezug auf den offenen Steigbügelkörper (10) befindet, jedoch nicht, wenn es sich in einer zweiten Drehstellung befindet,
wobei die Mittel (40) zum Verbinden des zweiten Endes (25) des flexiblen Seitenstücks (20) mit dem zweiten Ende (15) des offenen Steigbügelkörpers (10) ein zweites Vorsprung-Vertiefungspaar (40') zum lösbaren Verbinden des zweiten Endes (25) des flexiblen Seitenstücks (20) mit dem zweiten Ende (15) des offenen Steigbügelkörpers (10) sind,
wobei der Vorsprung (41) des zweiten Vorsprung-Vertiefungspaars (40') einen Hals (42) und einen Kopf (43) aufweist und die Vertiefung (44) des zweiten Vorsprung-Vertiefungspaars (40) eine Öffnung (45) und einen Hohlraum (46) aufweist, wobei der Hohlraum (46) dazu geformt ist, den Kopf (43) aufzunehmen, und wobei die Öffnung (45) dazu geformt ist, es dem Kopf (43) zu ermöglichen, dahindurch zu verlaufen, wenn sich das zweite Ende (25) des flexiblen Seitenstücks (20) in einer ersten Drehstellung in Bezug auf den offenen Steigbügelkörper (10) befindet, jedoch nicht, wenn es sich in einer zweiten Drehstellung befindet,
wobei das flexible Seitenstück und der offene Steigbügelkörper dazu konfiguriert sind, verbunden gehalten zu werden, solange eine Verbindung dazwischen keiner Kraft ausgesetzt wird, die einen gegebenen Schwellenwert übersteigt, oder bis das flexible Seitenstück in die erste Drehstellung bewegt wird.

2. Sicherheitssteigbügel nach Anspruch 1, wobei das flexible Seitenstück derart geformt ist, dass es zusammen mit dem offenen Steigbügelkörper eine geschlossene Schlaufe definiert, wenn sich das flexible Seitenstück in der zweiten Drehstellung befindet, und derart geformt ist, dass es keine geschlossene Schlaufe definiert, wenn sich das flexible Seitenstück in der ersten Drehstellung befindet.

3. Sicherheitssteigbügel nach einem der vorhergehenden Ansprüche, wobei eine Normale einer Endfläche mindestens eines des ersten Endes und des zweiten Endes des offenen Steigbügelkörpers in Bezug auf die Längserstreckung des Abschnitts des Vorsprung-Vertiefungspaars, das ebenda angeordnet ist, angewinkelt ist.

4. Sicherheitssteigbügel nach einem der vorhergehenden Ansprüche, wobei das flexible Seitenstück aus einem Elastomer hergestellt ist.

5. Sicherheitssteigbügel nach einem der vorhergehenden Ansprüche, wobei ein Mittelabschnitt des flexiblen Seitenstücks eine Steifigkeit aufweist, die größer als die Steifigkeit des ersten Endes und des zweiten Endes des flexiblen Seitenstücks ist.

6. Sicherheitssteigbügel nach einem der vorhergehenden Ansprüche, wobei der Kopf des Vorsprungs jedes Vorsprung-Vertiefungspaars T-förmig oder dreieckförmig ist oder seitliche Vorsprünge aufweist, die um seinen Umfang verteilt sind.

Revendications

1. Étrier de sécurité (1) destiné à être utilisé en équitation, comprenant

un corps d'étrier ouvert (10) comportant une partie de bande de roulement (11) et une partie de liaison en cuir d'étrier (12), et une ouverture (13) qui est définie par l'espace entre une première extrémité (14) et une seconde extrémité (15) du corps d'étrier ouvert (10), ledit corps d'étrier ouvert (10) étant un corps d'étrier qui ne forme pas une boucle complète autour d'une botte d'un utilisateur lors de l'utilisation,
une pièce latérale flexible (20) agencée pour combler l'ouverture entre la première extrémité (14) et la seconde extrémité (15) du corps d'étrier ouvert (10),
dans lequel une première extrémité (24) de la pièce latérale flexible (20) et la première extrémité (14) du corps d'étrier ouvert (10) sont pourvues d'une première paire saillie-évidement (30) pour relier de manière amovible la première extrémité (24) de la pièce latérale flexible (20) à la première extrémité (14) du corps d'étrier ouvert (10),
et dans lequel une seconde extrémité (25) de la pièce latérale flexible (20) et la seconde extrémité (15) du corps d'étrier ouvert (10) sont pourvues de moyens (40) pour relier la seconde extrémité (25) de la pièce latérale flexible (20) à la seconde extrémité (15) du corps d'étrier ouvert (10),
dans lequel la saillie (31) de la première paire saillie-évidement (30) comporte un col (32) et une tête (33) et l'évidement (34) de la première paire saillie-évidement (30) comporte une ouverture (35) et une cavité (36), dans lequel la cavité (36) est formée pour loger la tête (33), et

dans lequel l'ouverture (35) est formée pour permettre à la tête (33) de passer à travers elle lorsque la première extrémité (24) de la pièce latérale flexible (20) est dans une première position de rotation par rapport au corps d'étrier ouvert (10), mais pas lorsqu'elle est dans une seconde position de rotation,
dans lequel le moyen (40) pour relier la seconde extrémité (25) de la pièce latérale flexible (20) à la seconde extrémité (15) du corps d'étrier ouvert (10) est une seconde paire saillie-évidement (40') pour relier de manière amovible la seconde extrémité (25) de la pièce latérale flexible (20) à la seconde extrémité (15) du corps d'étrier ouvert (10),
dans lequel la saillie (41) de la seconde paire saillie-évidement (40') présente un col (42) et une tête (43) et l'évidement (44) de la seconde paire saillie-évidement (40) présente une ouverture (45) et une cavité (46), dans lequel la cavité (46) est formée pour loger la tête (43), et dans lequel l'ouverture (45) est formée pour permettre à la tête (43) de passer à travers elle lorsque la seconde extrémité (25) de la pièce latérale flexible (20) est dans une première position de rotation par rapport au corps d'étrier ouvert (10), mais pas lorsqu'elle est dans une seconde position de rotation
dans lequel ladite pièce latérale flexible et ledit corps d'étrier ouvert sont configurés pour être maintenus reliés aussi longtemps qu'une liaison entre eux n'est pas soumise à une force dépassant un seuil donné, ou jusqu'à ce que la pièce latérale flexible soit déplacée vers ladite première position de rotation.

2. Étrier de sécurité selon la revendication 1, dans lequel la pièce latérale flexible est formée de sorte qu'elle définit conjointement, avec le corps d'étrier ouvert, une boucle fermée lorsque la pièce latérale flexible est dans la seconde position de rotation, et de sorte qu'elle ne définit pas de boucle fermée lorsque la pièce latérale flexible est dans la première position de rotation.

3. Étrier de sécurité selon l'une quelconque des revendications précédentes, dans lequel une normale d'une surface d'extrémité d'au moins l'une de la première extrémité et de la seconde extrémité du corps d'étrier ouvert est inclinée par rapport à l'extension longitudinale de la partie de la paire saillie-évidement qui y est disposée.

4. Étrier de sécurité selon l'une quelconque des revendications précédentes, dans lequel la pièce latérale flexible est constituée d'un élastomère.

5. Étrier de sécurité selon l'une quelconque des revendications précédentes, dans lequel une section médiane de la pièce latérale flexible a une rigidité qui est supérieure à la rigidité de la première extrémité et de la seconde extrémité de la pièce latérale flexible.

6. Étrier de sécurité selon l'une quelconque des revendications précédentes, dans lequel la tête de la saillie de chaque paire saillie-évidement est en forme de T, en forme de triangle ou présente des saillies latérales réparties autour de sa circonférence.

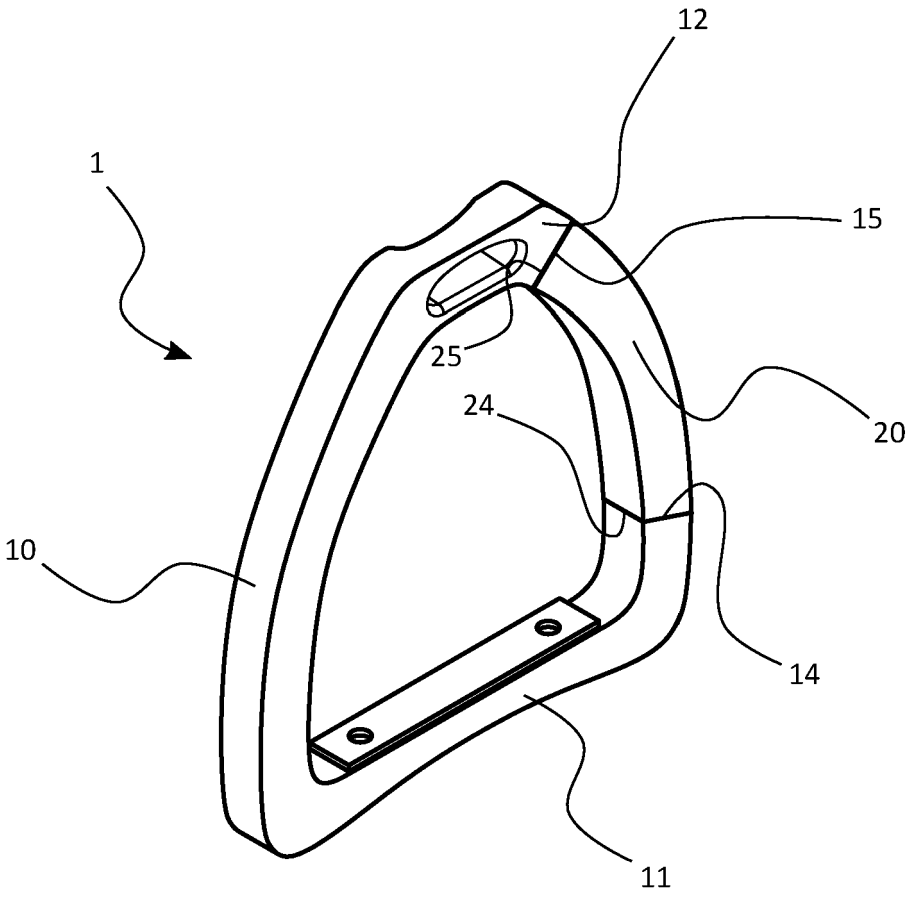


Fig. 1

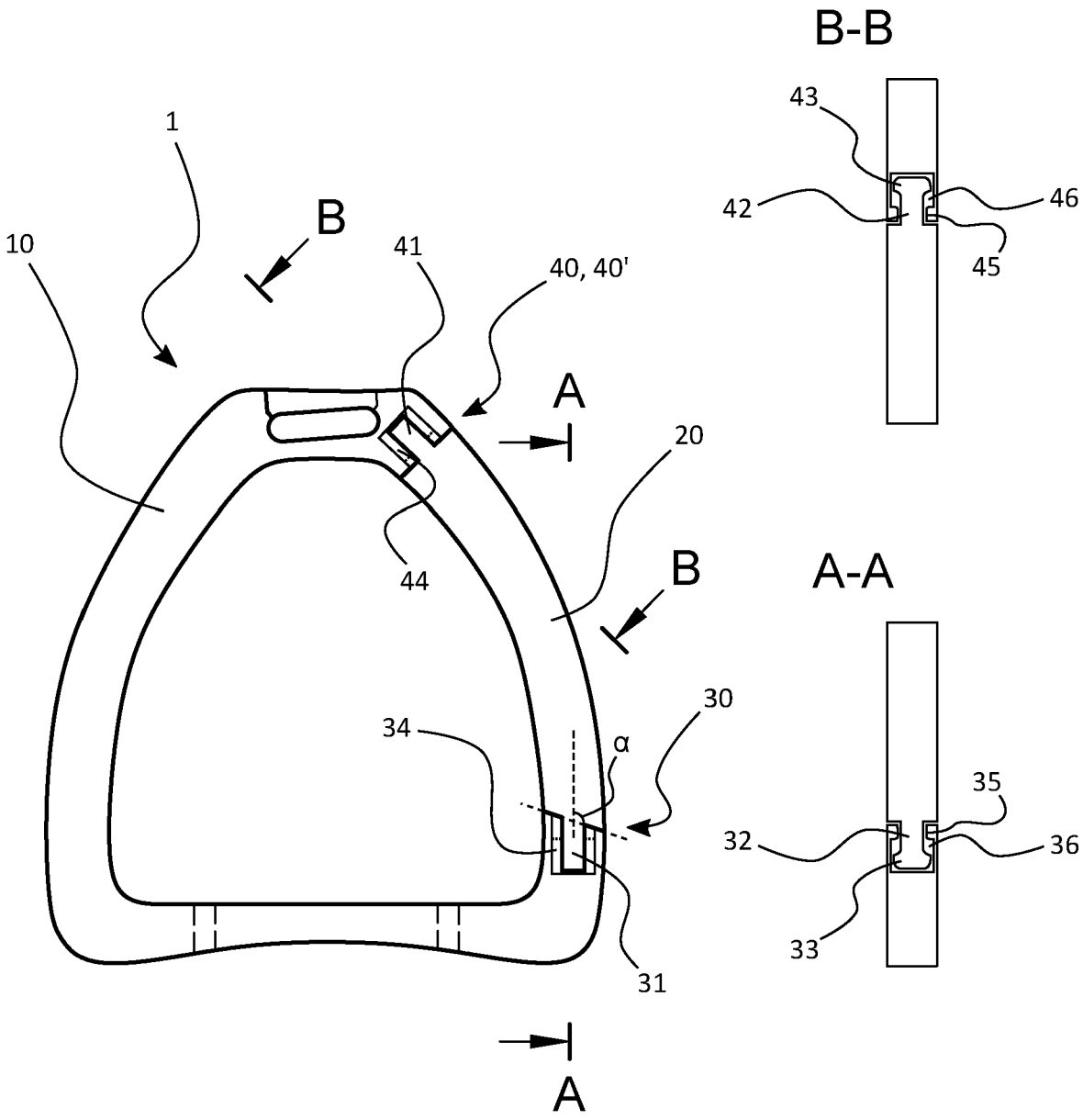


Fig. 2

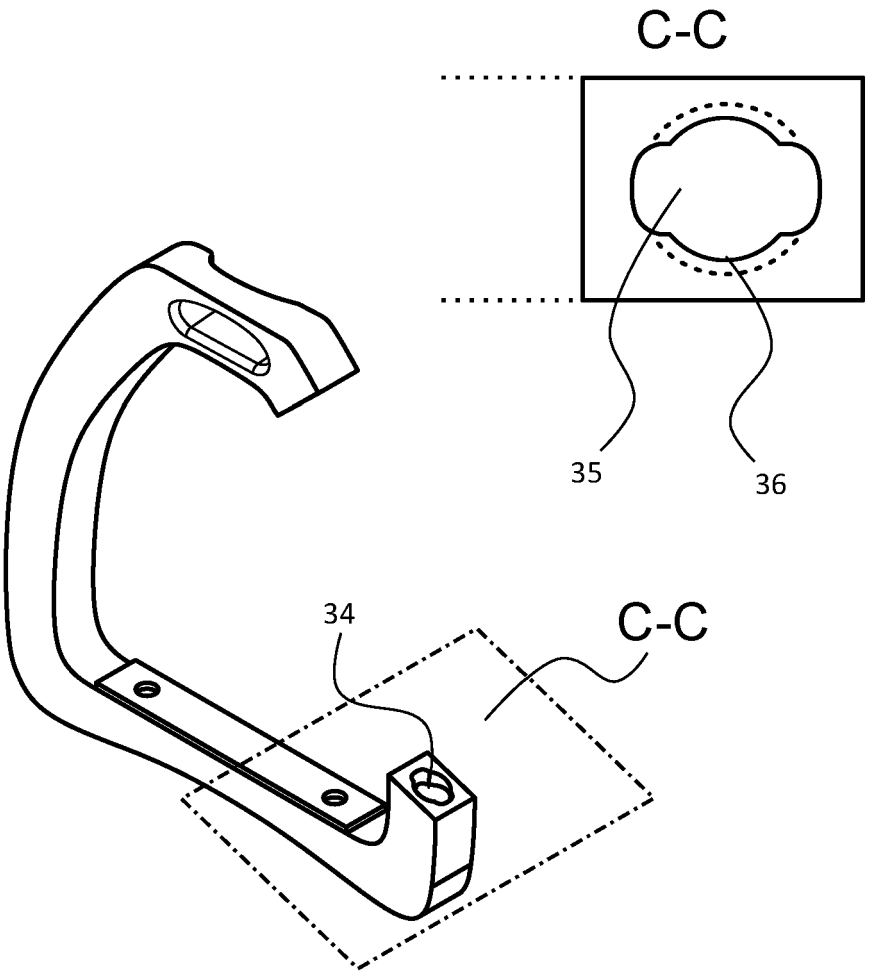


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- EP 3445708 B1 **[0003]**
- EP 3235779 B1 **[0003]**