BUCKLE

BACKGROUND

[0001] One method of coupling of two straps or webbings together is with the use of a buckle and catch arrangement. In this arrangement, a buckle coupled to a first webbing is designed to selectively retain the catch that is attached to a second webbing. The use of the buckle and catch arrangement to selectively couple webbings together is commonly used in safety harnesses such as fall protection harnesses. One common method of attaching an end of a webbing to a buckle is with the use of a knurl bar and a webbing retaining member. A knurl bar can more generally be referred to as a slide. Movement of a safety harness in use tends to loosen the webbing with this slide attaching arrangement. Hence, the webbing must be tightened periodically during use. The loosening and the required subsequent tightening of the webbing in the slide attaching arrangement are inconvenient and cause the webbing to wear. Reduction of wear on webbing of a fall protection harness is critical for the harnesses long term performance and proper fit to maximize safety.

[0002] For the reasons stated above and for other reasons stated below which will become apparent to those skilled in the art upon reading and understanding the present specification, there is a need in the art for a method of maintaining proper fit and reducing wear of webbing that is engaged with a slide of a buckle.

SUMMARY OF INVENTION

[0003] The above-mentioned problems of current systems are addressed by embodiments of the present invention and will be understood by reading and studying the following specification. The following summary is made by way of example and not by way of limitation. It is merely provided to aid the reader in understanding some of the aspects of the invention.

[0004] ~~In one embodiment, a buckle is provided. The buckle includes a connecting portion, a slide and locking member. The connecting portion is configured to selectively engage an engaging portion of a first webbing. The slide of the buckle is configured to engage a second webbing and the locking member is configured to selectively press the second webbing on the slide.~~According to a first aspect of the present invention, there is provided a buckle comprising: a connecting portion configured to selectively engage an engaging portion of a first webbing; a slide configured to engage a second webbing; a locking member configured to selectively press the second webbing on the slide, the locking member having generally an oval passage; and a cam knob, the cam knob having generally an oval portion configured to be received in the oval passage of the locking member, wherein rotation of the cam knob rotates the oval portion in the oval passage of the locking member thereby causing of the locking member to selectively press the second webbing on the slide.

[0004a] According to a second aspect of the present invention, there is provided a coupling system comprising: a first plate having a first opening; a second plate having a second opening, the first plate being coupled to the second plate; a slide coupled between the first and second plates such that a mid portion of the slide is positioned in the first opening of the first plate and the second opening of the second plate, the mid portion of the slide configured to engage a webbing; a locking member being slidably engaged with the first plate, the locking member configured to selectively engage the webbing on the mid portion of the of slide to selectively secure the webbing to the slide, the locking member having generally an oval passage; and a cam knob, the cam knob having generally an oval portion configured to be received in the oval passage of the locking member, wherein rotation of the cam knob rotates the oval portion in the oval passage of the locking member thereby causing of the locking member to selectively press the second webbing on the slide.

[0004b] According to a third aspect of the present invention, there is provided a safety harness comprising: webbing configured to engage portions of a user's body; and at least one buckle system configured to connect select webbing together to secure the user in the harness, the at least one buckle system including, a catch, the catch having a shoulder section, the catch coupled to an associated first webbing, and a buckle the buckle including, a first plate having a first opening; a second plate having a second opening, the first plate being coupled to the second plate, a slide coupled between the first and second plates such that a mid portion of the slide is positioned in the first opening of the first plate and the second opening of the second plate, the mid portion of the slide configured to engage an associated second webbing, a locking member being slidably engaged with the first plate, the locking member configured to selectively engage the associated second webbing on the mid portion of the of slide, the locking member having generally an oval passage; and a cam knob, the cam knob having generally an oval portion configured to be received in the oval passage of the locking member, wherein rotation of the cam knob rotates the oval portion in the oval passage of the locking member thereby causing of the locking member to selectively press the second webbing on the mid-portion of the slide.

7. The buckle of claim 6, further comprising:

the first portion of the locking member having the generally oval passage;

the generally oval activation portion of the cam knob received in the oval passage of the first portion of the locking member, wherein rotation of the cam knob rotates the generally oval activation portion in the oval passage of the first portion of the locking member thereby causing movement of the locking member.

8. The buckle of claim 7, further comprising:

the first plate having a connecting aperture;

the cam knob further having a connecting portion extending from the generally oval activation portion, the connecting portion extending through the connecting aperture of the first plate; and

a fastener coupled to the connection portion of the cam knob to pivotally couple the cam knob to the first plate.

9. A coupling system comprising:

a first plate having a first opening;

a second plate having a second opening, the first plate being coupled to the second plate;

a slide coupled between the first and second plates such that a mid portion of the slide is positioned in the first opening of the first plate and the second opening of the second plate, the mid portion of the slide configured to engage a webbing;

a locking member being slidably~~sideably~~ engaged with the first plate, the locking member configured to selectively engage the webbing on the mid portion of the of slide to selectively secure the webbing to the slide, the locking member having generally an oval passage; and

a cam knob, the cam knob having generally an oval portion configured to be received in the oval passage of the locking member, wherein rotation of the cam knob rotates the oval portion in the oval passage of the locking member thereby causing of the locking member to selectively press the second webbing on the slide.

a second plate having a second opening, the first plate being coupled to the second plate,

a slide coupled between the first and second plates such that a mid portion of the slide is positioned in the first opening of the first plate and the second opening of the second plate, the mid portion of the slide configured to engage an associated second webbing,

a locking member being slidablysideably engaged with the first plate, the locking member configured to selectively engage the associated second webbing on the mid portion of the of slide, the locking member having generally an oval passage; and

a cam knob, the cam knob having generally an oval portion configured to be received in the oval passage of the locking member, wherein rotation of the cam knob rotates the oval portion in the oval passage of the locking member thereby causing of the locking member to selectively press the second webbing on the mid-portion of the slide.

16. The safety harness of claim 15, wherein the buckle of the at least one harness system further comprises:

At least one pawl pivotally coupled between the first and second plates, the at least one pawl configured to selectively retain the catch within the first and second plates by engaging a shoulder section of the catch.

17. The safety harness of claim 16, further comprising:

At least one biasing member, the at least one biasing member positioned between the at least one pawl and a portion of the first plate to bias each pawl to retain the catch.

18. The safety harness of claim 15, wherein the locking member is L-shaped having a first portion and a second portion, the first portion slidably engaged with the first plate, the second portion received in the first opening of the first plate, the second portion further selectively engaging the associated second webbing on the mid portion of the slide.