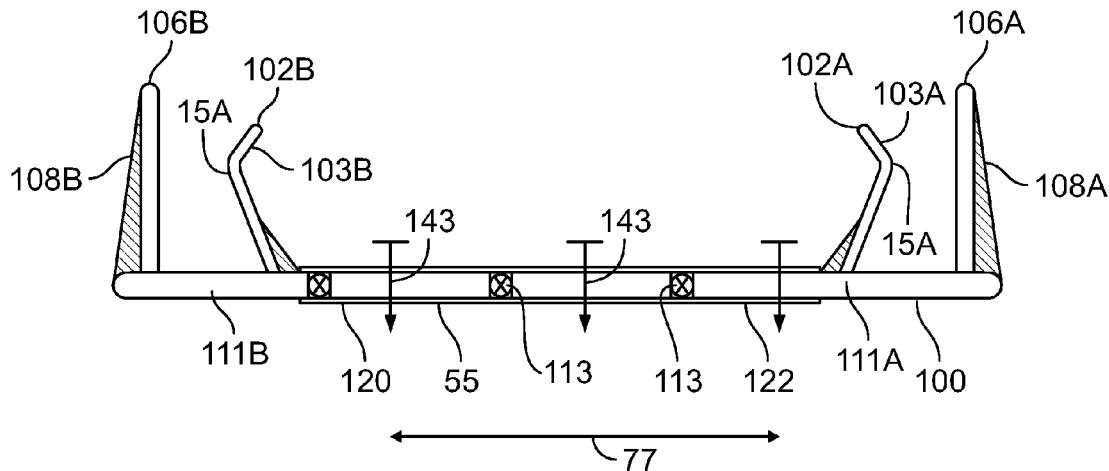




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(19) **United States**(12) **Patent Application Publication**
Hartman(10) **Pub. No.: US 2018/0127992 A1**(43) **Pub. Date: May 10, 2018**(54) **ADJUSTABLE SPREADER CLEAT**(52) **U.S. Cl.**CPC **E04G 17/12** (2013.01); **E04G 13/02**
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9, 2016.**Publication Classification**(51) **Int. Cl.**
E04G 17/12 (2006.01)(57) **ABSTRACT**

An adjustable spreader cleat includes a first spreader cleat element with a first horizontal leg, a first vertical element attached to an outside end of the first horizontal leg and a first canted retaining element. A locking mechanism is located at an insertion end of the first spreader cleat element. A second spreader cleat element has a second horizontal leg end, a second vertical element and a second canted retaining element. The second horizontal leg includes a receiving end opening to a channel for receiving the insertion end, the channel includes a set of distributed latching regions for the locking mechanism. The first horizontal leg slides into the channel and locks into the second horizontal leg to join the first spreader cleat element with the second spreader cleat element. The first and second canted retaining elements and the first and second vertical elements cooperate to retain a form.



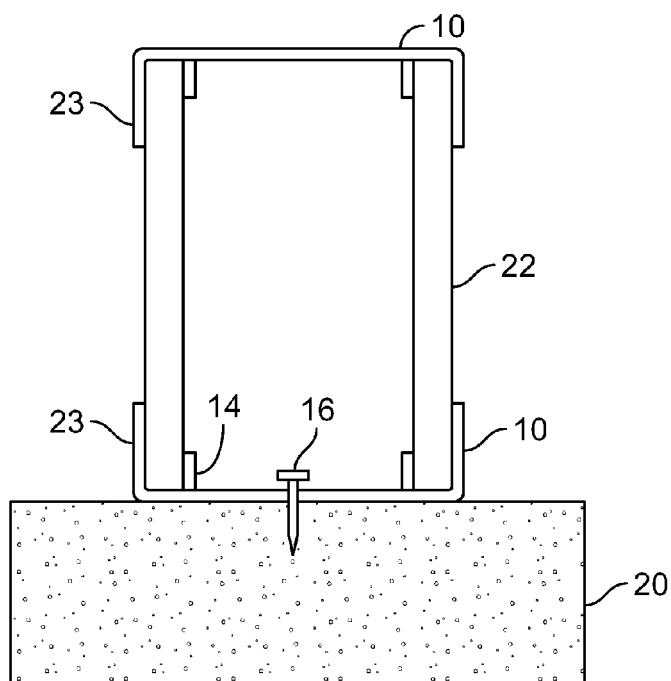


FIG. 1
(Prior Art)

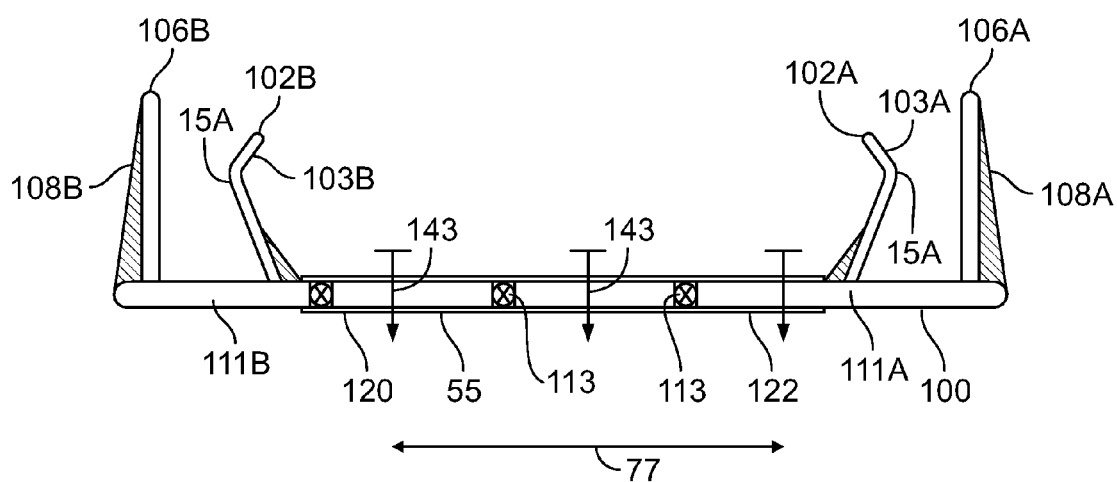


FIG. 2

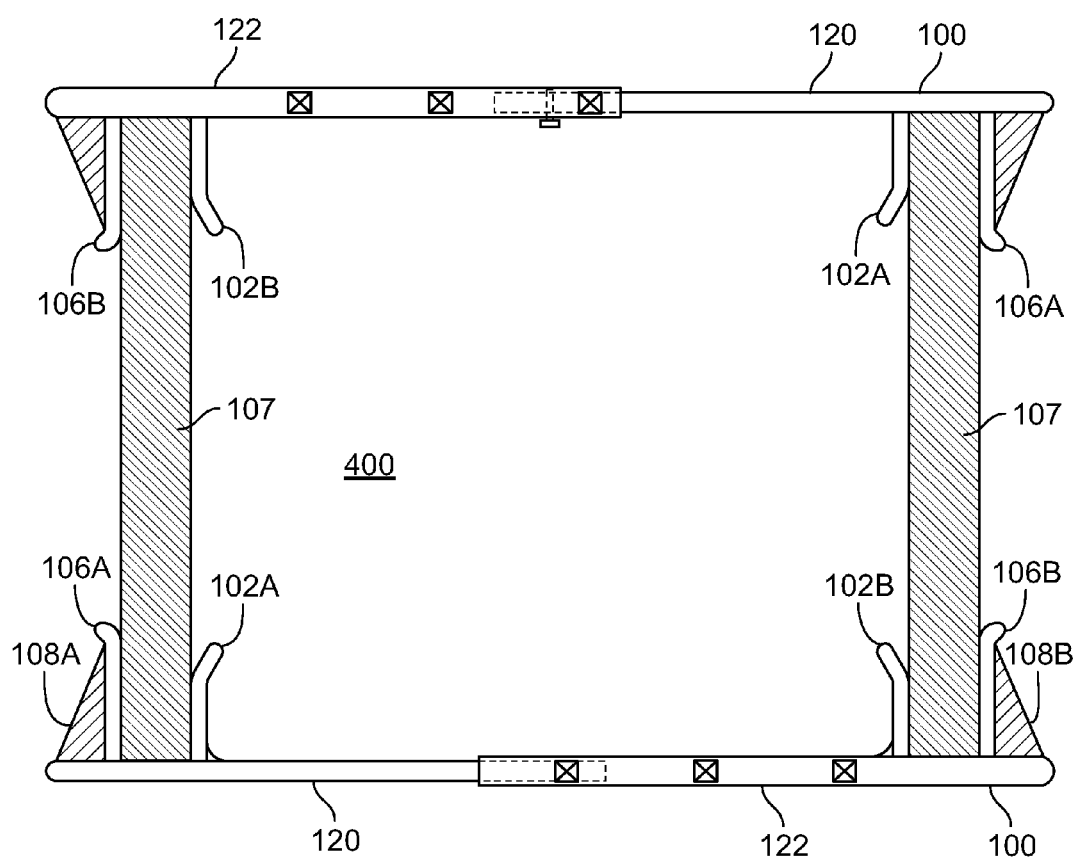


FIG. 3

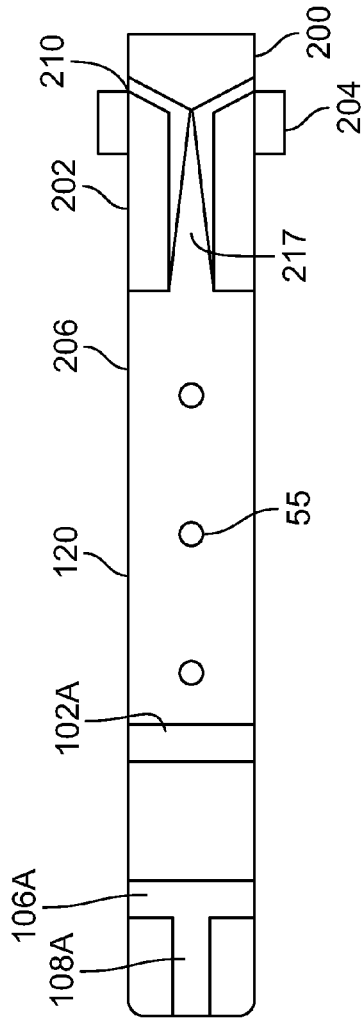


FIG. 4A

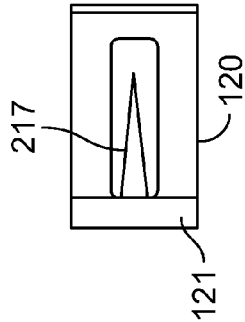


FIG. 4B

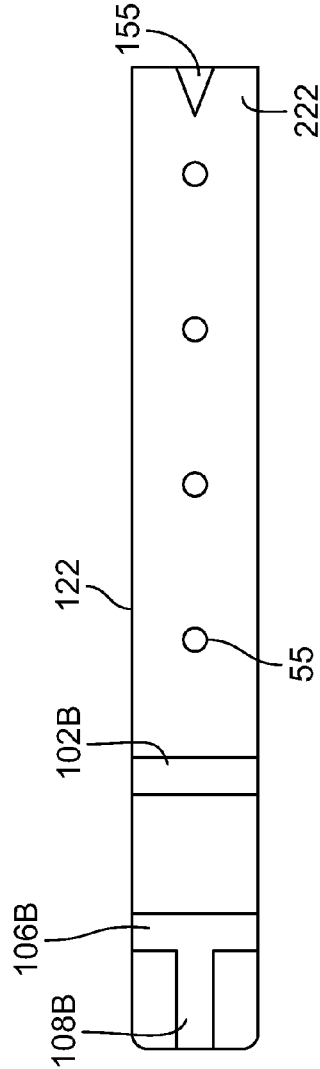


FIG. 5A

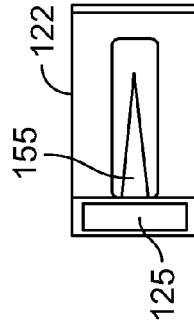


FIG. 5B

ADJUSTABLE SPREADER CLEAT

TECHNICAL FIELD

[0001] The present invention relates to concrete form braces. More particularly, the invention relates to an adjustable spreader cleat.

BACKGROUND

[0002] There are many types of cleats, brackets, forms, clamps and the like used for attempting to hold forms (e.g. typically wood forms) in place while pouring concrete into the form during the construction. FIG. 1 shows a commercially available spreader cleat that is used to form footers or grade beams.

[0003] Referring now to FIG. 1, a pair of spreader cleats **10** secure a wood form **22**, for example a plywood panel. The spreader cleats **10** include an inside vertical support **14** which bears against the inside of the form **22** and an outside vertical support **23** which bears against the outside surface of the form **22**. A nail **16** is typically used to secure the bottom spreader cleat to a green footing **20**. Note that there is no mechanism for expanding or contracting either of the spreader cleats should a different width for the concrete structure be needed.

[0004] Olsen in U.S. Pat. No. 7,182,309, teaches a cleat device for forming concrete curbing that jointly retains a back board form and a front board form with a spreader spaced apart between the forms. The cleat device consists of three basic elements first a right angle shaped cleat back having a top end leg configured to intimately engage and retain the back board form. Second, a cleat arm that includes a top arm and an acute angled downwardly depending member is attached to the cleat back top forming an inverted channel. The third element is a cleat leg that is attached to the downwardly depending member allowing the cleat leg to be adjusted vertically or at an acute angle. The disclosed adjustment method utilizes a plurality of round holes in the cleat leg that mate with similar square holes in the cleat arm downwardly depending member and carriage head cap screws with wing nuts are positioned within these holes.

[0005] In a striking improvement over conventionally available spreader cleats, the present invention for the first time provides an adjustable spreader cleat that will adjust to varying widths to accommodate different design needs with the same parts. In addition, the improved spreader cleat disclosed herein, in one example, can service customer demand for width adjustment by requiring a substantially reduced number of parts. Further, for many applications, the adjustable spreader cleat disclosed herein is essentially the only product needed to set form spacing to exact specifications, stop spreading, and securely hold forms at the appropriate height and width.

BRIEF SUMMARY OF THE DISCLOSURE

[0006] This summary is provided to introduce, in a simplified form, a selection of concepts that are further described below in the Detailed Description. This summary is not intended to identify key features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

[0007] Disclosed herein is an adjustable spreader cleat that includes a first spreader cleat element with a first horizontal leg, a first vertical element attached to an outside end of the

first horizontal leg, and a first canted retaining element. A locking mechanism is located at an insertion end of the first spreader cleat element. A second spreader cleat element has a second horizontal leg, a second vertical element and a second canted retaining element. The second horizontal leg includes a receiving end opening to a channel for receiving the insertion end, the channel includes a set of distributed latching regions for the locking mechanism. The first horizontal leg slides into the channel and locks into the second horizontal leg to join the first spreader cleat element with the second spreader cleat element. The first and second canted retaining elements and the first and second vertical elements cooperate to retain a form.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] While the novel features of the invention are set forth with particularity in the appended claims, the invention, both as to organization and content, will be better understood and appreciated, along with other objects and features thereof, from the following detailed description taken in conjunction with the drawings, in which:

[0009] FIG. 1 schematically shows a commercially available spreader cleat that is used to form footers or grade beams.

[0010] FIG. 2 schematically shows an overall conceptual view of an adjustable spreader cleat.

[0011] FIG. 3 schematically shows an overall conceptual view of a pair of cooperating adjustable spreader cleats securing a pair of forms in place.

[0012] FIG. 4A schematically shows a first spreader cleat element having a cross section sized to be inserted into the channel of a second spreader cleat element.

[0013] FIG. 4B schematically shows a more detailed end view of a cross-section of the spreader cleat element of FIG. 4A.

[0014] FIG. 5A schematically shows a more detailed end view of a second spreader cleat element having an open channel for accepting the first spreader cleat element.

[0015] FIG. 5B schematically shows a more detailed end view of a cross-section of the spreader cleat element of FIG. 5A.

[0016] In the drawings, identical reference numbers call out similar elements or components. The sizes and relative positions of elements in the drawings are not necessarily drawn to scale. For example, the shapes of various elements and angles are not drawn to scale, and some of these elements are arbitrarily enlarged and positioned to improve drawing legibility. Further, the particular shapes of the elements as drawn, are not necessarily intended to convey any information regarding the actual shape of the particular elements, and have been solely selected for ease of recognition in the drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] The following disclosure describes an adjustable concrete form brace. Several features of methods and systems in accordance with example embodiments are set forth and described in the figures. It will be appreciated that methods and systems in accordance with other example embodiments can include additional procedures or features different than those shown in the figures. Example embodiments are described herein with respect to an adjustable

spreader cleat for use in retaining concrete forms. However, it will be understood that these examples are for the purpose of illustrating the principles, and that the invention is not so limited.

Definitions

[0018] Generally, as used herein, the following terms have the following meanings, unless the use in context dictates otherwise:

[0019] The use of the word “a” or “an” when used in conjunction with the term “comprising” in the claims or the specification means one or more than one, unless the context dictates otherwise. The term “about” means the stated value plus or minus the margin of error of measurement or plus or minus 10% if no method of measurement is indicated. The use of the term “or” in the claims is used to mean “and/or” unless explicitly indicated to refer to alternatives only or if the alternatives are mutually exclusive. The terms “comprise”, “have”, “include” and “contain” (and their variants) are open-ended linking verbs and allow the addition of other elements when used in a claim.

[0020] Reference throughout this specification to “one example” or “an example embodiment,” “one embodiment,” “an embodiment” or combinations and/or variations of these terms means that a feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the present disclosure. Thus, the appearances of the phrases “in one embodiment” or “in an embodiment” in various places throughout this specification are not necessarily all referring to the same embodiment. Furthermore, the features, structures, or characteristics may be combined in any suitable manner in one or more embodiments.

[0021] As used herein, “plurality” or “set” are understood to mean more than one. For example, a plurality or set refer to at least two, three, four, five, ten, 25, 50, 75, 100, 1,000, 10,000 or more.

DETAILED DESCRIPTION OF THE FIGURES

[0022] Referring now to FIG. 2, an overall conceptual view of an adjustable spreader cleat is schematically shown. An adjustable spreader cleat **100** includes a first spreader cleat element **120** and a second spreader cleat element **122**. Each of the first and second spreader cleat elements include a canted vertical retaining element **102A**, **102B**. Each of the canted vertical retaining elements **102A**, **102B** are inclined toward the inside surface of an outer vertical retaining element **106A**, **106B**. Each of the canted vertical retaining elements **102A**, **102B** are spring biased toward the outer vertical retaining elements. In one example, an inwardly curved tip **103A**, **103B** may be formed at a top end of each of the canted vertical retaining elements. Each of the first and second canted vertical retaining elements include a pinch point **15A**, **15B**.

[0023] As explained in more detail below, the first and second spreader cleat elements mate with each other. Locking mechanisms are included to enable width adjustments to be locked into place. The first and second spreader cleat elements will slidingly adjust horizontally as indicated by double arrow **77**.

[0024] Each spreader cleat element includes a horizontal leg **111A**, **111B** each of which is separately attached to one of the vertical elements **106A**, **106B** respectively.

[0025] Support webbing **108A**, **108B** may advantageously be formed between the horizontal elements and the base elements. A plurality of latching regions **113** are formed in the second spreader cleat element **122**. This is explained in more detail below. When in use, one or more nails **143** may be used to drive through a plurality of nail holes **55** in each of the first and second spreader cleat elements.

[0026] Referring now to FIG. 3, an overall conceptual view of a pair of cooperating adjustable spreader cleats securing a pair of forms in place. Top and bottom adjustable spreader cleats **100** cooperate to retain left and right forms **107**. In use, the canted vertical retaining elements **102A**, **102B** and the spreader cleat vertical elements **106A**, **106B** cooperate to tightly retain the forms **107** in place. The webbing **108A**, **108B** substantially prevents spreading and holds the form in the appropriate position when concrete is poured into the opening **400** between the forms **107**.

[0027] Referring now to FIG. 4A, a first spreader cleat element having a cross section sized to be inserted into a channel of a second spreader cleat element is schematically shown. The first spreader cleat element **120** includes a plurality of nail holes **55**, a canted vertical retaining element **102A**, vertical element **106A** and support webbing **108A**. An insertion end **200** includes a spring clip mechanism **202**. The spring clip mechanism **202** may include opposing cantilevered spring clips **204** which are biased in a locked position protruding outwardly from the surface **206** of spreader cleat element **120**. When adjusting, the cantilevered spring clips **204** are compressed inwardly into open recesses **210**. A triangular guide **217** may be advantageously included to aid in aligning and inserting the first spreader cleat element into the second spreader cleat element. Upon reaching a desired width, the cantilevered spring clips snap outwardly into latching regions **113** in the second spreader cleat element **122**, as described in more detail below with reference to FIG. 5A.

[0028] In one example, the cantilever spring clips may be offset on opposing sides of the spreader cleat element, such as, for example on the top and bottom. Of course, other equivalent configurations and mechanisms may be used such as spring biased detent balls or the like. In operation, the cantilever spring clips **204** engage the latching regions **113** in the second spreader cleat element when the first element is inserted into the second element. When a selected latching region **113** is reached the components “snap” into place to lock the spreader cleat elements together at a selected width. Note that in some examples, extension elements may be sized to allow the width of the adjustable spreader cleat **100** to be 6 inches to 24 inches wide.

[0029] Referring now to FIG. 4B, a more detailed end view of a cross-section of the first spreader cleat element of FIG. 4A is schematically shown. The cross section of the first spreader cleat element **120** has a tab **121** and a triangular guide **217** both of which are advantageously sized to fit snugly within a horizontal channel and a notch **155** (as best shown in FIG. 5B) in the second spreader cleat element.

[0030] Referring now to FIG. 5A, a more detailed end view of a second spreader cleat element having an open channel for accepting the first spreader cleat element is schematically shown. The second spreader cleat element **122** is made substantially the same as the first spreader cleat element, with the exception that, instead of a spring clip, at a receiving end **222**, a notch **155** is formed to accept the triangular guide **217**.

[0031] Referring now to FIG. 5B, a more detailed end view of a cross-section of the second spreader cleat element of FIG. 5A is schematically shown. A channel 125 is advantageously sized to accept tab 121 from the first spreader cleat element 120.

[0032] Having described the configuration of the example embodiments, it will now be useful to the understanding of the invention to describe how the various components are manufactured. The devices can be constructed from any material having properties that make the material satisfactory for use with concrete and provide sufficient strength to support the form side walls against deformation under hydrostatic pressure. For example, the spreader cleat elements may preferably be fabricated using techniques such as casting or injection molding, and fabricated from a variety of materials, such as metal, plastic or the like.

[0033] The invention has been described herein in considerable detail to comply with the Patent Statutes and to provide those skilled in the art with the information needed to apply the novel principles of the present invention, and to construct and use such exemplary and specialized components as are required. However, it is to be understood that the invention may be carried out by different equipment, and devices, and that various modifications, both as to the equipment details and operating procedures, may be accomplished without departing from the true spirit and scope of the present invention.

What is claimed is:

1. An adjustable spreader cleat comprising:
 - a first spreader cleat element having a first horizontal leg, a first vertical element attached to an outside end of the first horizontal leg and a first canted retaining element substantially parallel to, and displaced inwardly from, the first vertical element;
 - a locking mechanism at an insertion end of the first spreader cleat element;
 - a second spreader cleat element having a second horizontal leg end, a second vertical element attached to an outside end of the second horizontal leg and second canted retaining element substantially parallel to, and displaced inwardly from, the second vertical element;
 - wherein the second horizontal leg includes a receiving end opening to an elongated channel in the second horizontal leg for receiving the insertion end, and wherein the channel includes a set of distributed latching regions for securing the locking mechanism; and
 - wherein the first horizontal leg is adapted to slide into the channel and lock into the second horizontal leg at one of the set of distributed latching regions, thereby joining the first spreader cleat element with the second spreader cleat element, and wherein the first and second canted retaining elements and the first and second vertical elements are adapted to cooperate in pairs to retain a form.
2. The adjustable spreader cleat of claim 1 further comprising first support webbing formed between the first horizontal leg and first vertical element, and second support webbing formed between the second horizontal leg and the second vertical element.
3. The adjustable spreader cleat of claim 1 wherein each of the first and second canted retaining elements include a pinch point.

4. The adjustable spreader cleat of claim 1 wherein each of the first and second horizontal leg elements include a plurality of nail holes.

5. The adjustable spreader cleat of claim 1 wherein the locking mechanism includes a spring clip mechanism.

6. The adjustable spreader cleat of claim 5 wherein the spring clip mechanism includes opposing cantilevered clips biased in a locked position protruding outwardly from a surface of the first horizontal leg.

7. The adjustable spreader cleat of claim 1 wherein the first horizontal leg further includes a guide affixed at the insertion end.

8. The adjustable spreader cleat of claim 7 wherein the guide is a triangular guide.

9. The adjustable spreader cleat of claim 8 wherein the second horizontal leg includes a notch for receiving the triangular guide.

10. The adjustable spreader cleat of claim 1 wherein all of the elements comprise material selected from the group consisting of plastic, nylon, metal, and carbon fiber.

11. The adjustable spreader cleat of claim 1 wherein the locking mechanism comprises devices selected from the group consisting of spring clips, cantilevered spring clips, opposing spring clips, and offset spring clips.

12. The adjustable spreader cleat of claim 1 wherein the width of the first and second horizontal elements is adjustable in a range from 6 inches to 24 inches.

13. A kit for an adjustable spreader cleat comprising:

a first spreader cleat element having a first horizontal leg end, a first vertical element attached to an outside end of the first horizontal leg and a first canted retaining element substantially parallel to, and displaced inwardly from, the first vertical element by a predetermined length;

a locking mechanism at an insertion end of the first spreader cleat element;

a second spreader cleat element having a second horizontal leg end, a second vertical element attached to an outside end of the second horizontal leg and second canted retaining element substantially parallel to, and displaced inwardly from, the second vertical element by a predetermined length;

wherein the second horizontal leg includes a receiving end opening to an elongated channel in the second horizontal leg for receiving the insertion end, and wherein the channel includes a set of distributed latching regions for securing the locking mechanism; and

wherein the first horizontal leg is adapted to slide into the channel and lock into the second horizontal leg at one of the set of distributed latching regions.

14. The kit for an adjustable spreader cleat of claim 13 further comprising first support webbing formed between the first horizontal leg and first vertical element, and second support webbing formed between the second horizontal leg and the second vertical element.

15. The kit for an adjustable spreader cleat of claim 13 wherein each of the first and second canted retaining elements include a pinch point.

16. The kit for an adjustable spreader cleat of claim 13 wherein each of the first and second horizontal leg elements include a plurality of nail holes.

17. The kit for an adjustable spreader cleat of claim 13 wherein the locking mechanism includes a spring clip mechanism.

18. The kit for an adjustable spreader cleat of claim **17** wherein the spring clip mechanism includes opposing cantilevered clips biased in a locked position protruding outwardly from a surface of the first horizontal leg.

19. The kit for an adjustable spreader cleat of claim **13** wherein the first horizontal leg further includes a guide affixed at the insertion end.

20. The kit for an adjustable spreader cleat of claim **19** wherein the guide is a triangular guide.

21. The kit for an adjustable spreader cleat of claim **20** wherein the second horizontal leg includes a notch for receiving the triangular guide.

22. The kit for an adjustable spreader cleat of claim **13** wherein all of the elements comprise material selected from the group consisting of plastic, nylon, metal, and carbon fiber.

* * * * *