US 20060032165A1

(19) **United States**
(12) **Patent Application Publication**
Griffith

(10) **Pub. No.: US 2006/0032165 A1**
(43) **Pub. Date: Feb. 16, 2006**

(54) **RETROFIT TIMBER POST BRACKET**

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(21) Appl. No.: **10/916,951**

(22) Filed: **Aug. 11, 2004**

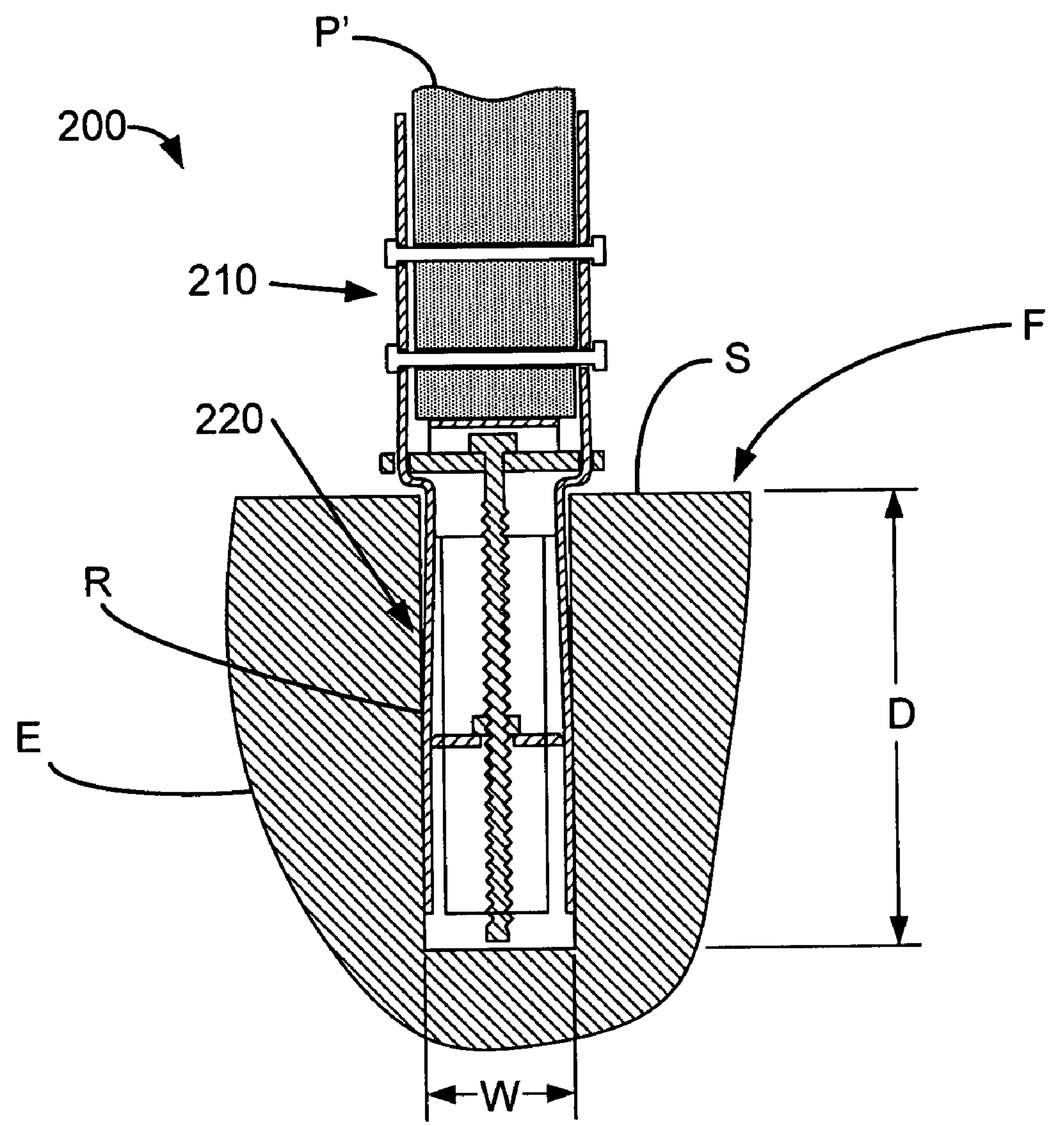
Publication Classification

(51) **Int. Cl.**
E02D 27/42 (2006.01)

(52) **U.S. Cl.** **52/298**

(57) **ABSTRACT**

The repair of foundations formed by pouring concrete about a timber post is greatly simplified by the present invention. A post bracket is provided having a first portion that can be inserted into and mechanically restrained in the recess of an existing foundation, for example a foundation wherein a rotted old post has been removed. The post bracket also has second portion to which a new post can be attached. The post bracket is used by clearing out the old post, inserting the first portion and securing the bracket, and then attaching the post. The inventive bracket and method greatly reduce the time and expense construction compared with the prior art method of replacing foundations.



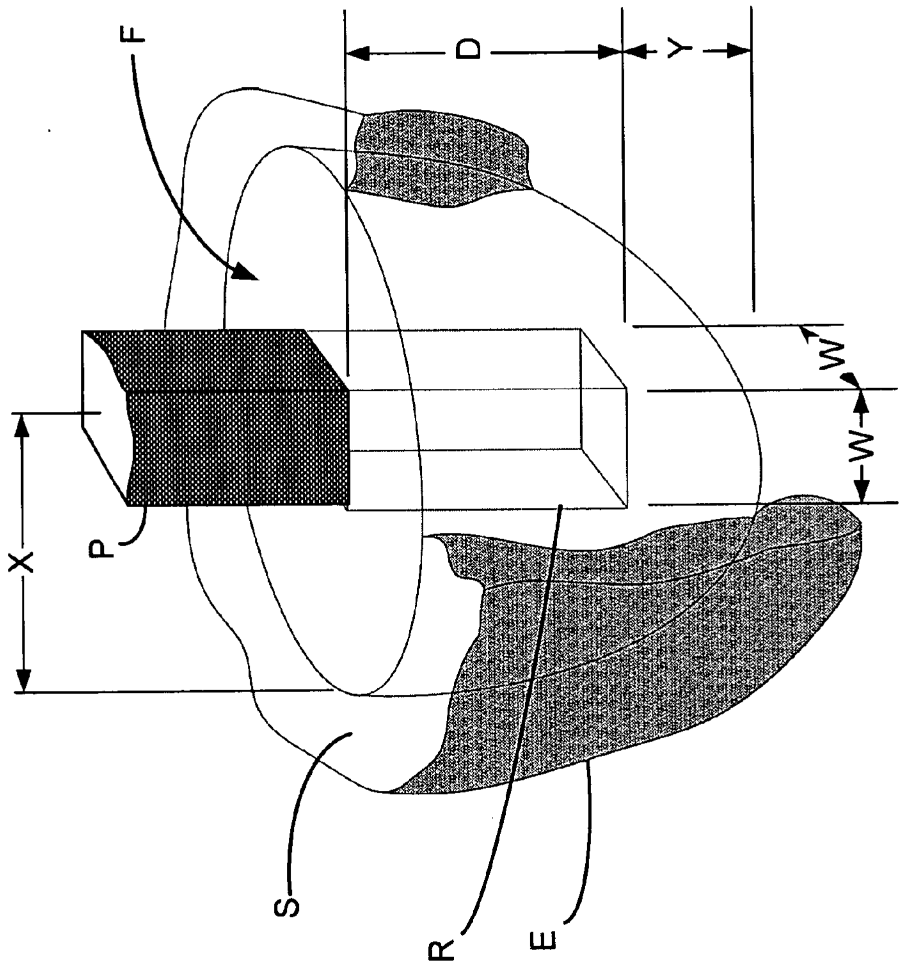


FIG. 1
(prior art)

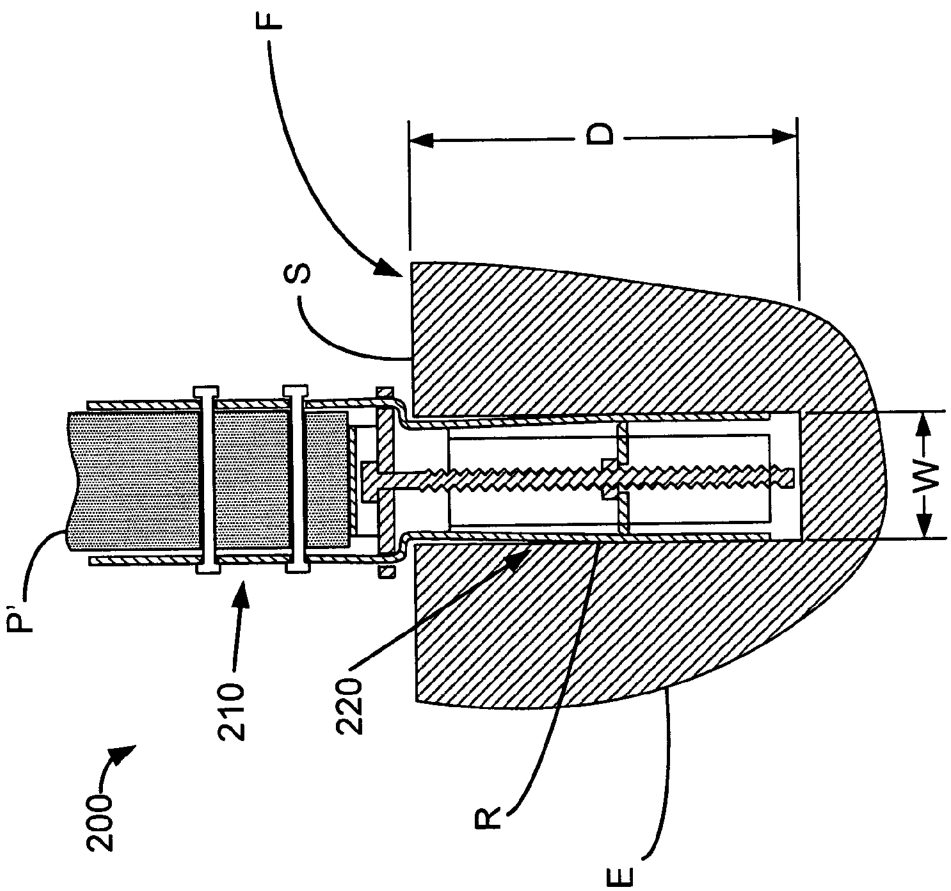


FIG. 2

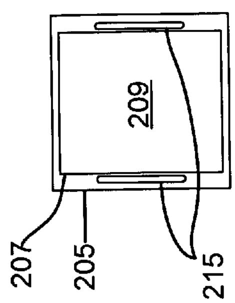


FIG. 4

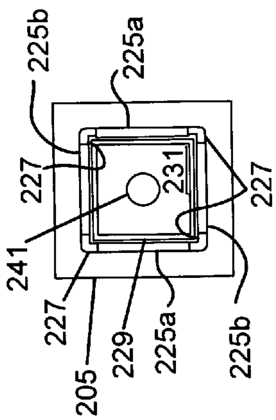


FIG. 5

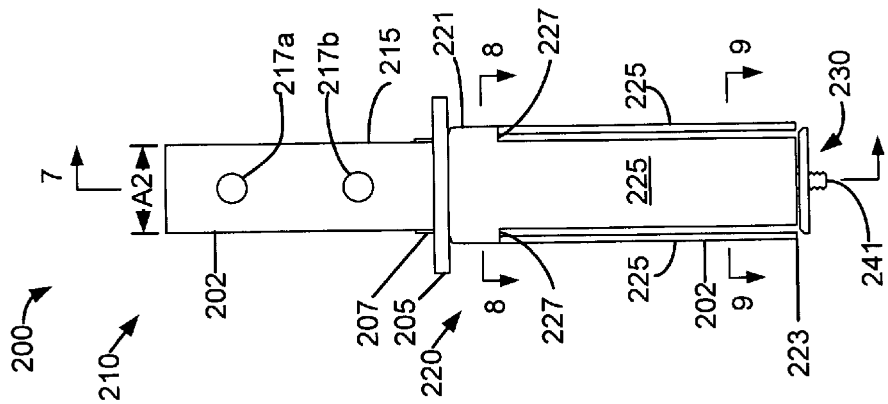


FIG. 3B

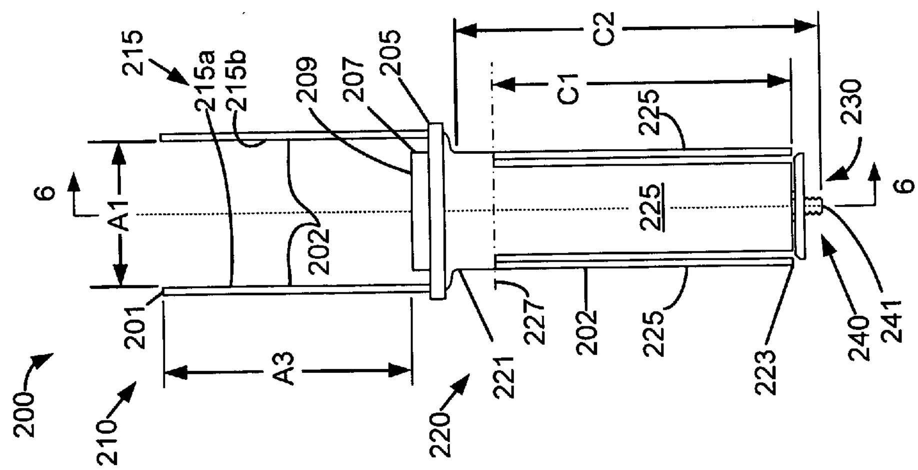


FIG. 3A

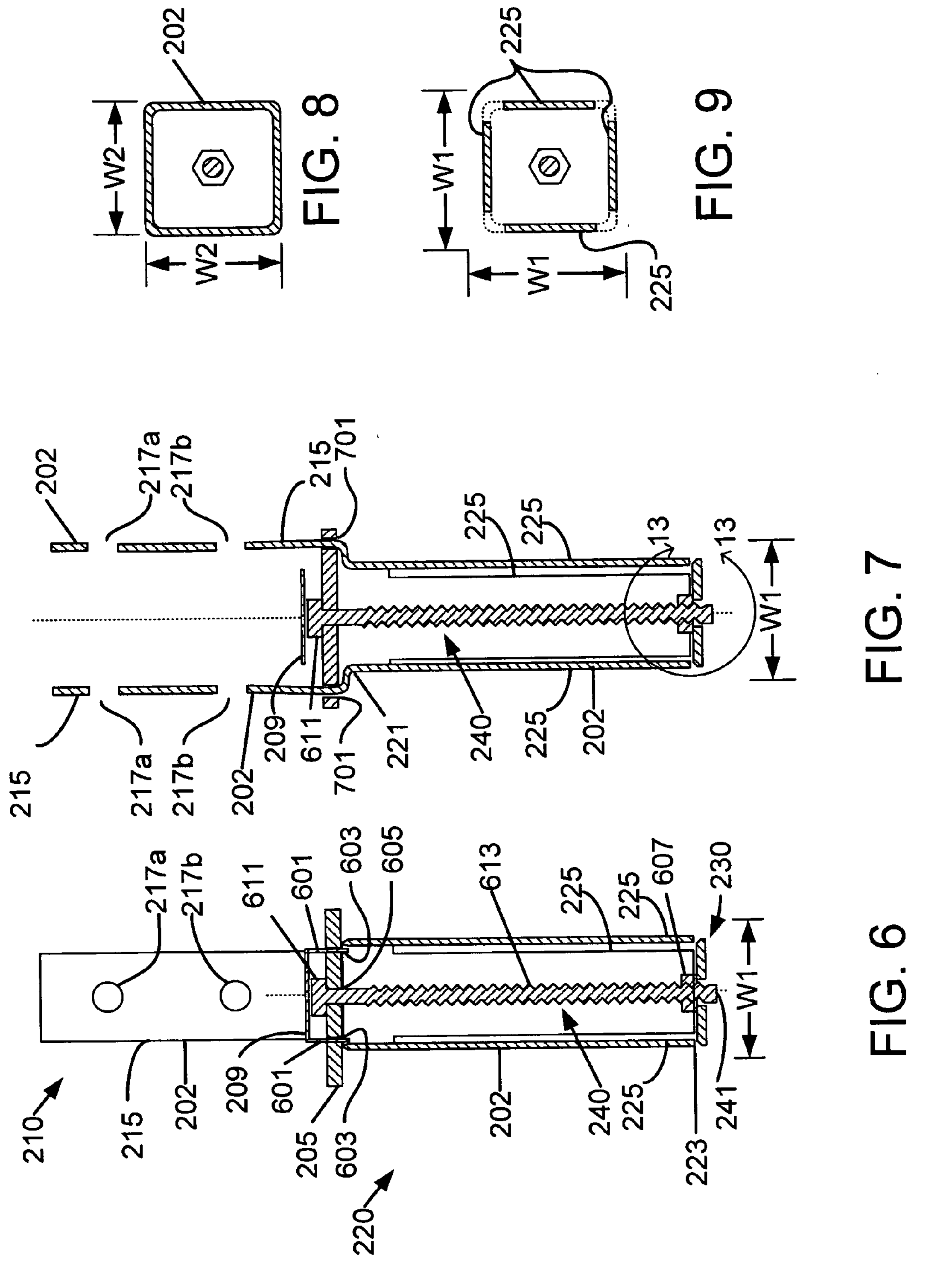


FIG. 8

FIG. 9

FIG. 7

FIG. 6

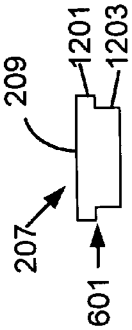


FIG. 12A

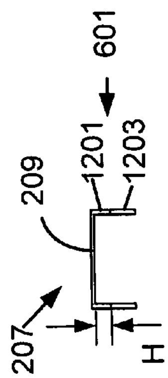


FIG. 12B

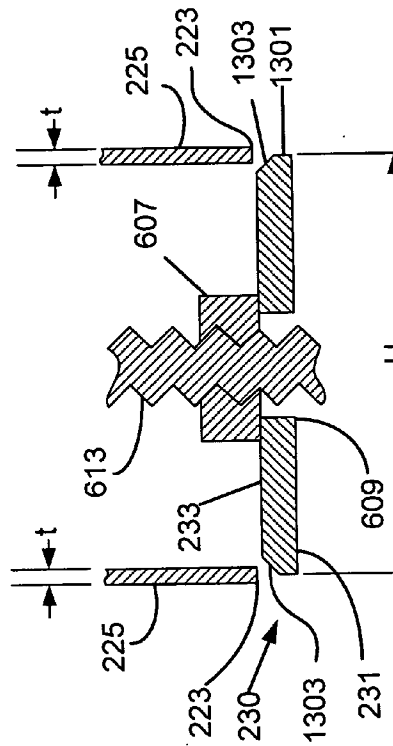


FIG. 13

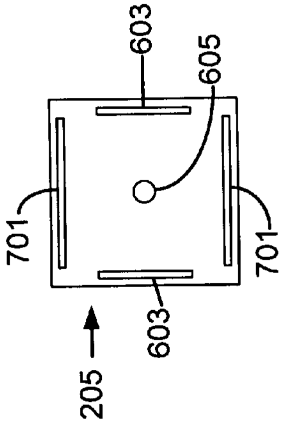


FIG. 11

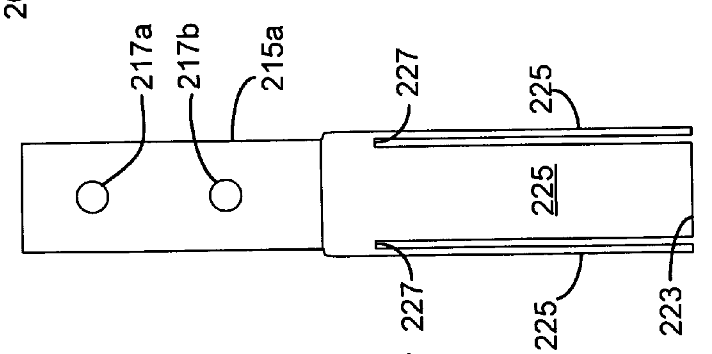


FIG. 10B

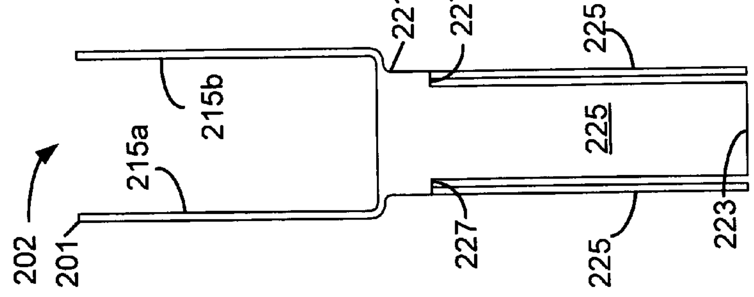


FIG. 10A

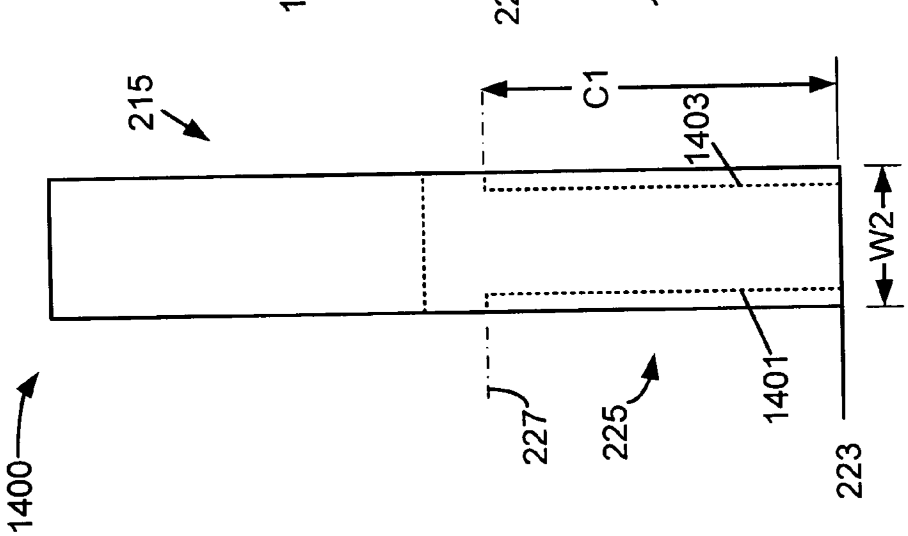


FIG. 14A

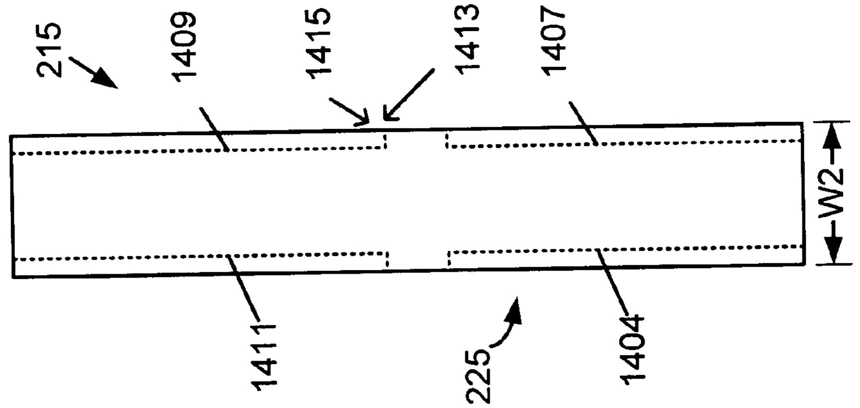


FIG. 14B

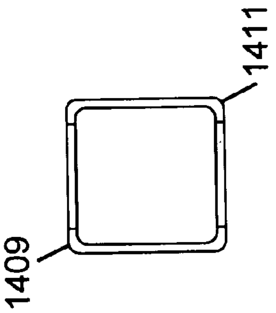


FIG. 14C

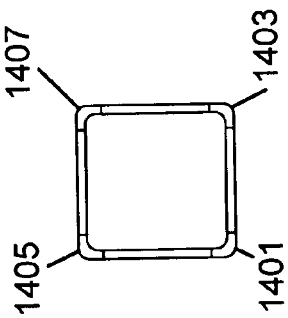


FIG. 14D

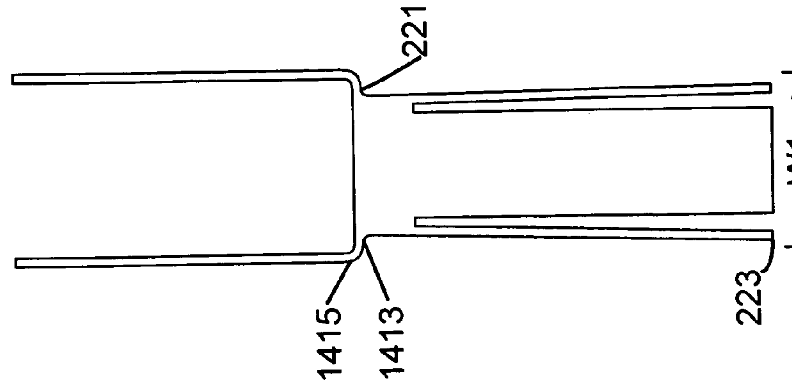


FIG. 14E

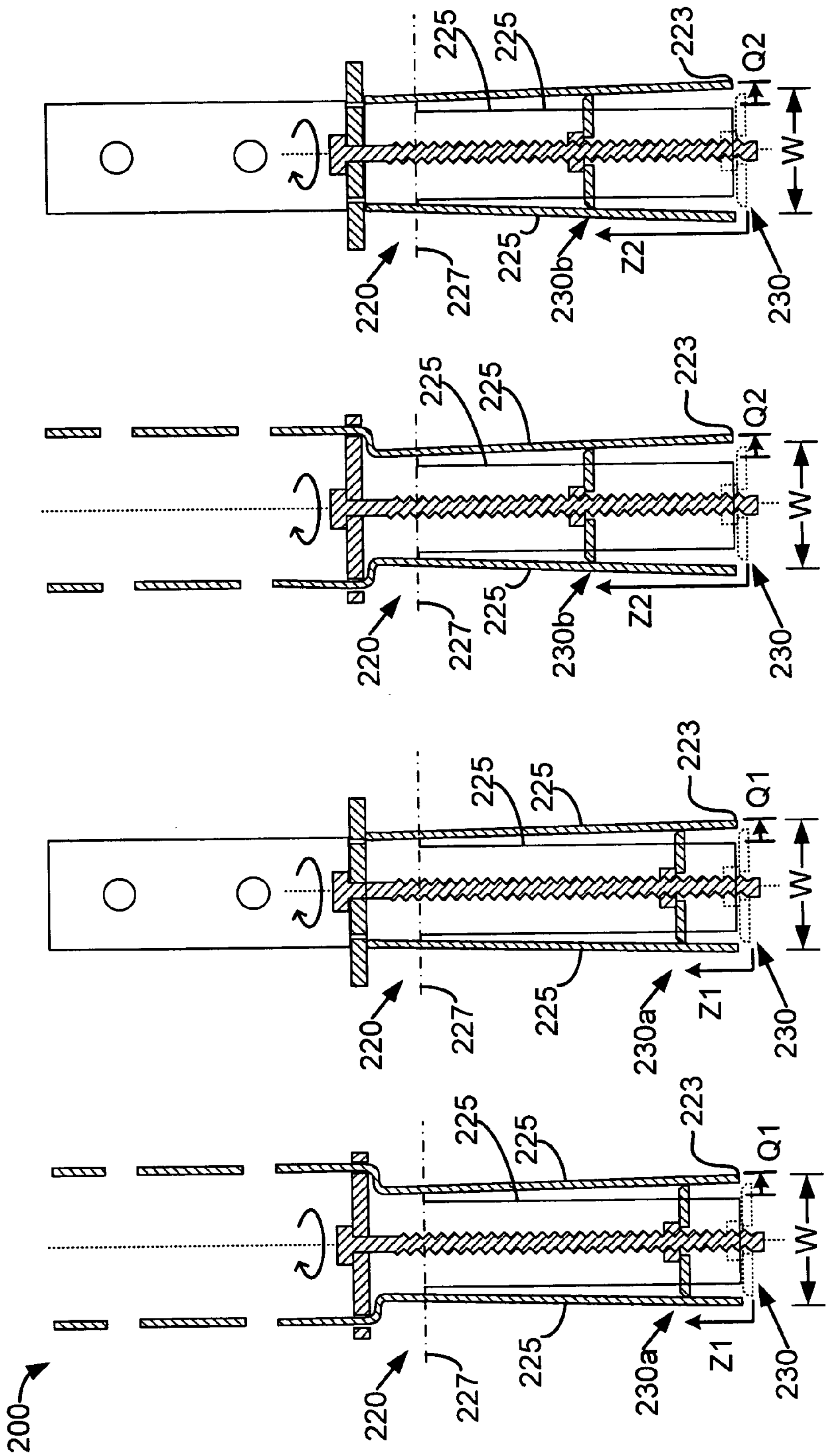


FIG. 15A

FIG. 15B

FIG. 16A

FIG 16B

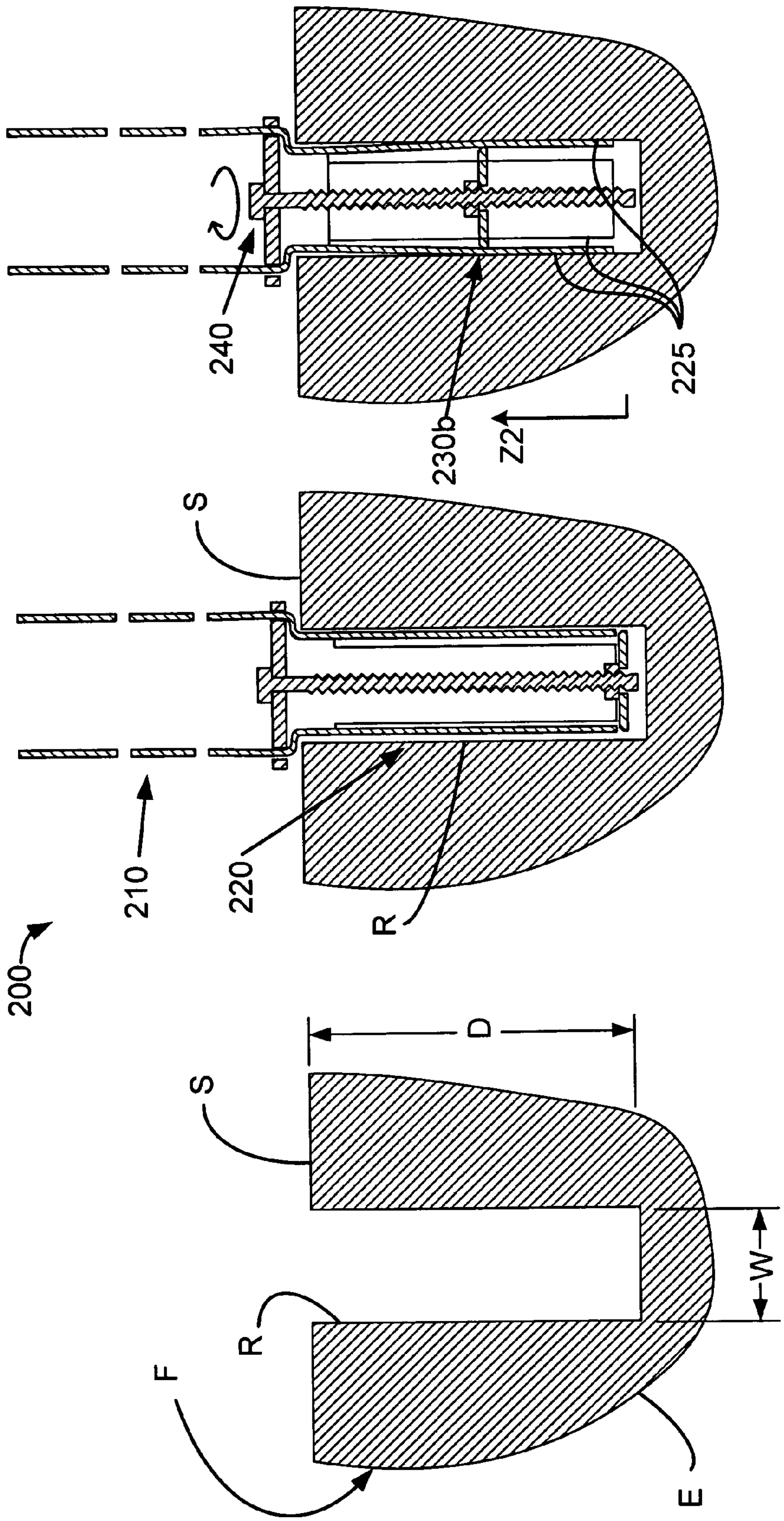


FIG. 17A

FIG. 17B

FIG. 17C

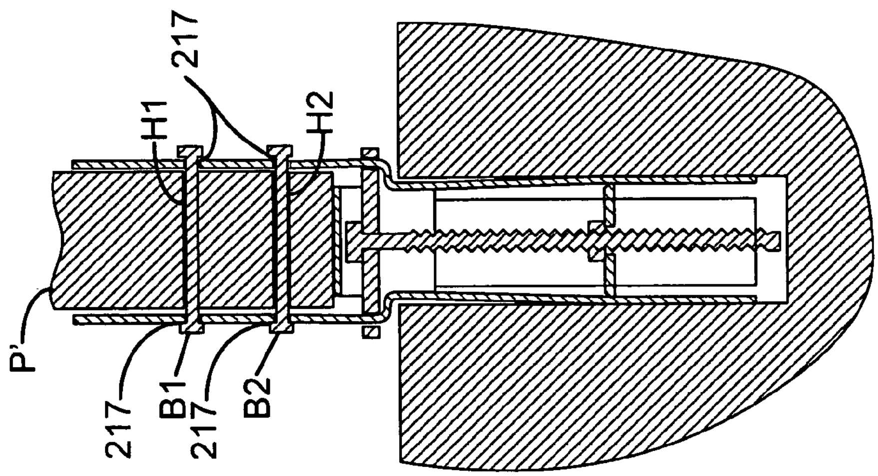


FIG. 17F

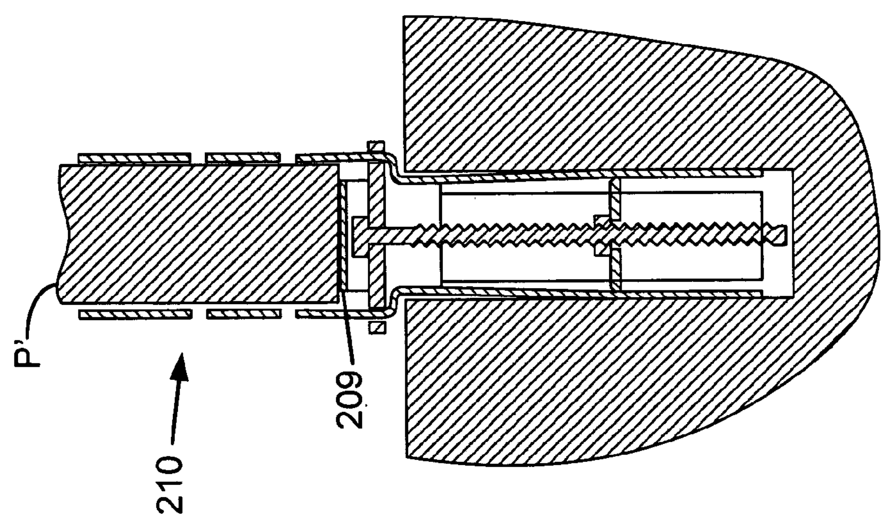


FIG. 17E

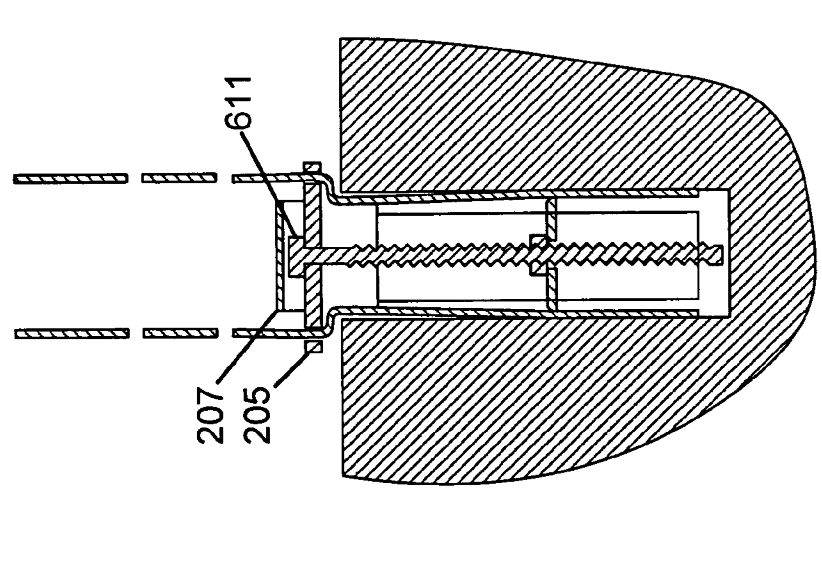


FIG. 17D

RETROFIT TIMBER POST BRACKET

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention generally relates to securing a post to a foundation, and more particularly to a method and device to secure a timber post in an existing concrete foundation.

[0003] 2. Discussion of the Background

[0004] Wood structures are commonly secured to the ground by connecting posts to the ground through a concrete foundation. Thus, for example, one method of securing fence posts is by a poured concrete foundation that sets the post in concrete. Poured concrete foundations are formed by digging a hole in the ground that is roughly three times the diameter of the post and one-third of the post length, filling the hole with several inches of gravel, positioning and restraining the post in the ground in the desired final position, pouring concrete into the hole, and then removing the post restraints after the concrete has dried. Poured concrete foundations improve the structural integrity of the structure and, in the case of timber posts, provide protection of the post and wood structure from earth dwelling insects or fungi.

[0005] Even with the added protection of a concrete foundation, the integrity of posts degrades over time, for example as the result of termites or dry rot. Thus, for example, a fence may require replacement due to dry rot. If the existing foundation cannot be reused, prior art techniques call for the entire fence to be dismantled and rebuilt with the piers located at different locations. Alternatively the piers are removed, disposed of, and re-poured to allow fence panels to be reused.

[0006] An example of a post needing replacement is illustrated in **FIG. 1**, which shows a cut-way of a prior art post and poured concrete foundation. Post P typically has a square cross section W on a side. Fence posts, for example, are typically constructed using 4"×4" posts, which have an actual cross-section that measures W=3½ inches on a side. Post P extends above a surface S above ground G, and is embedded a depth D below the surface in a recess R of a concrete foundation F. The support of foundation F is provided by the extension of the foundation by a depth Y below the bottom of post P, and has a radius X at surface S that is several times the width W. When post P is damaged, there are several prior art options for providing a foundation for a new structure. If the damage to post P is sufficiently far above surface S, it may be possible to remove damaged portions of the wood from the post and splice an extension to the post remaining in the foundation. If the damage is close to or below surface S, or if it is not desirable or possible to splice an extension to the post, then post P and foundation remaining F are typically removed, and a new foundation is poured about a new support post.

[0007] While the demolition and replacement of a foundation is effective, there are several problems with this method. First, the process is time consuming. The replacement of the foundation requires time to remove and dispose of the old foundation, and additional time to set a replacement post in concrete. Second, there may be space limitation near the fence posts that make removal and replacement problematic. For example, construction or plants added after the original post was put in place may make it difficult to set a post in the old position.

[0008] Thus there is a need in the art for a method and apparatus that permits for the easy replacement of damaged support posts. Such a method and apparatus should be easy to implement, should not be significantly more expensive that standard demolition and disposal techniques, and should be compatible with conventional construction materials.

BRIEF SUMMARY OF THE INVENTION

[0009] The present invention overcomes the disadvantages of prior art by providing an apparatus and method for using the existing concrete foundation when repairing a poured concrete post foundation. The inventive apparatus and method requires less time and is less expensive than those available in the prior art.

[0010] It is one aspect of the present invention to provide a post bracket that allows for the retrofitting of a new post into the recess of the foundation of an old post. In one embodiment of the present invention, the post bracket has a timber receiving portion to accept a new post and foundation support portion for insertion and mechanical securing to the recess of the foundation.

[0011] It is another aspect of the present invention to provide a bracket for attaching a timber post to a recess of a foundation including a first portion for attaching to the timber post and a second portion having at least one pair of outwards facing, and a second portion including opposed surfaces having a first spacing and a mechanism to increase the spacing of the surfaces. In one embodiment of the present invention, the first portion includes two opposing surface and at least one pair of holes through the opposing surfaces, thus providing for attachment of the timber post. In another embodiment of the present invention, each of the opposed surfaces is a portion of an elongated member having a first end proximal the first portion and a second end. The mechanism includes a first plate having an internally threaded hole and a width greater than the first spacing, a second plate rigidly connected to the second portion proximal the first portion and having a hole, and a bolt having a head supported on the second plate and a body passing through the second plate and threadably attached to the first plate. The rotation of the bolt to decrease the spacing between the first and second plates increases the spacing of the surfaces. Preferably, the second portion is adapted to fit within the shape of a standard size timber post, such as a 4"×4" post.

[0012] It is yet another aspect of the present invention to provide a bracket for attaching a timber post to a recess of a foundation, where the bracket includes a first portion for attaching to the timber post, and a second portion including at least one pair of outwards facing, opposed members having a first end proximal the first portion and a second end, and a first spacing at the a first end proximal the first portion, and a mechanism to increase the spacing between the at least one pair of opposed members.

[0013] It is one aspect of the present invention to provide a bracket for attaching a timber post to a recess of a foundation, where the bracket includes a first portion for attaching the timber post, and a second portion including an elongate portion attached to the first portion and having a shape to allow acceptance by the recess with the first portion protruding above the recess, and a mechanism to move at least a portion of the accepted elongate portion against the recess. The elongate portion, when moved, provides a resistive force to the movement of the connector from the recess.

[0014] It is yet another aspect of the present invention to provide a method of mounting a post in an existing poured concrete foundation using a post bracket having a timber receiving portion and a foundation securing portion. The method includes placing the foundation receiving portion of the post bracket in the recess, mechanically securing the foundation receiving portion in the recess, and mounting the post to the timber receiving portion of the post bracket. Additionally the method includes first exposing the recess of the existing foundation.

[0015] These features together with the various ancillary provisions and features which will become apparent to those skilled in the art from the following detailed description, are attained by the exercise device of the present invention, preferred embodiments thereof being shown with reference to the accompanying drawings, by way of example only, wherein:

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0016] **FIG. 1** is a perspective cut-way view of a prior art post and poured concrete foundation;

[0017] **FIG. 2** is a cross-sectional side view of one embodiment post bracket attaching a post to a foundation;

[0018] **FIGS. 3A-5** are views of one embodiment post bracket of the present invention, where **FIG. 3A** is a first side view, **FIG. 3B** is a second side view; **FIG. 4** is a top view and **FIG. 5** is a bottom view;

[0019] **FIGS. 6-9** are cross-sectional views of one embodiment post bracket of the present invention, where **FIG. 6** is a side sectional view **6-6** of **FIG. 3A**, **FIG. 7** is a side sectional view **7-7** of **FIG. 3B**, and **FIGS. 8 and 9** are a top sectional views **8-8** and **9-9**, respectively, of **FIG. 3B**;

[0020] **FIGS. 10A and 10B** are side views of the elongate member corresponding to the views of **FIGS. 3A and 3B**, respectively;

[0021] **FIG. 11** is a top view of the upper foundation plate;

[0022] **FIGS. 12A and 12B** are side views of the cap corresponding to the views of **FIGS. 3A and 3B**, respectively;

[0023] **FIG. 13** is a detail **13-13** from **FIG. 6**;

[0024] **FIGS. 14A-14E** are views of a channel used to form the elongate member, where **FIGS. 14A and 14B** are orthogonal side views, and **FIG. 14C** is a top view and **FIG. 14D** is a bottom view, and **FIG. 14E** shows the channel cut and folded;

[0025] **FIGS. 15A and 15B** are sectional views **6-6** and **7-7**, respectively, showing the deformation of the foundation support portion after a first tightening of the bolt;

[0026] **FIGS. 16A and 16B** are sectional views **6-6** and **7-7**, respectively, showing the deformation of the foundation support portion after a further tightening of the bolt; and

[0027] **FIGS. 17A-17F** are sectional side views illustrating one method of using the post bracket of the present invention, where **FIG. 17A** shows an existing foundation prepared for the post bracket, **FIG. 17B** shows the foundation support portion fit within the foundation recess, **FIG. 17C** shows the tightening of the bolt to secure the post bracket in the foundation, **FIG. 17D** shows the cap placed on the plate, **FIG. 17E** shows the replacement post placed within the timber receiving portion; and **FIG. 17F** shows the replacement post secured to the existing foundation.

[0028] Reference symbols are used in the Figures to indicate certain components, aspects or features shown therein, with reference symbols common to more than one Figure indicating like components, aspects or features shown therein.

DETAILED DESCRIPTION OF THE INVENTION

[0029] The present invention provides a device and method for repairing damaged foundations formed by setting a post with concrete without the need for replacing existing concrete foundations or piers. Thus, for example, if an existing concrete foundation is secure in the ground, the present invention provides a device and method for repairing the foundation prior to replacing a structure without the necessity of removing and replacing the concrete. In particular, the present invention provides a post bracket having a first portion that can be inserted into the space previously occupied by the old timber post previously poured foundation and a second portion that can secure a new timber post.

[0030] As one example of a post bracket that is not meant to limit the scope of the present invention, a user has need to replace a post P from a prior art concrete foundation F as illustrated in **FIG. 1**, where, importantly, foundation F is structurally sound. For illustrative purposed, **FIG. 2** is a cross-sectional side view of an embodiment of post bracket **200** of the present invention after a new, replacement post P' is secured in the existing foundation F. Post bracket **200** includes a first portion, also referred to herein as a timber receiving portion **210** and a second portion, also referred to herein as a foundation support portion **220**. As is described subsequently, one use of post bracket **200** to replace post P includes removing the post to expose recess R, inserting and mechanically securing foundation support portion **220** of the post bracket into the recess, and attaching a new post P' to timber receiving portion **210** of the post bracket. In one embodiment of the present invention, foundation support portion **220** has a first configuration that allows the portion to be inserted into recess R and a second configuration that forces the sides of the portion outwards and against the recess to secure the post bracket in the foundation. It is preferred that structural components of post bracket **200** are constructed of galvanized steel, stainless steel, or reinforced aluminum of sufficient thickness and dimension to provide structural support. Specific embodiments of post bracket **200**, which are not meant to limit the scope of the present invention, provide a device for performing the functions of accepting a timber post, including but not limited to a fence post, and securing the post bracket into a foundation. The dimensions and shapes provided are for illustrative purposes and are not meant to limit the scope of the present invention.

[0031] Post bracket **200** is shown in greater tail in **FIGS. 3-9**, where **FIG. 3A** is a first side view of the post bracket,

FIG. 3B is a second side view of the post bracket that is orthogonal to the view of **FIG. 3A**, **FIG. 4** is a top view of the post bracket, **FIG. 5** is a bottom view of the post bracket, **FIGS. 6 and 7** are sectional side views of **FIGS. 3A and 3B**, respectively, and **FIGS. 8 and 9** are sectional top views of **FIG. 3B**. With reference to **FIGS. 3A and 6**, post bracket **200** includes a longitudinal elongate member **202** that extends from a first end **201** to a second end **223**, an upper foundation plate **205**, a cap **207** adapted to fit on the plate and having a cap surface **209**, a lower foundation plate **230**, and a bolt **240** that spans the distance from the upper to lower foundation plates. Further illustrations of post bracket **200** are shown in **FIGS. 10A and 10B** as two side views of elongate member **202** corresponding to the views of **FIGS. 3A and 3B**, respectively, **FIG. 11** as a top view of plate **205**, **FIGS. 12A and 12B** as two side view of cap **207** corresponding to the views of **FIGS. 3A and 3B**, respectively, and **FIG. 13** as a detail of plate **230** from **FIG. 6**.

[**0032**] As shown in **FIGS. 3A, 3B**, and **7**, timber receiving portion **210** includes a pair of opposing sides **215** of elongate member **202** having a length **A3** from first end **201** to cap surface **209** and a width of A2. Sides **215**, indicated individually as side **215***a* and **215***b*, are separated by a distance **A1** and each have timber mounting holes **217***a* and **217***b* that are aligned across sides **215**. Timber receiving portion **210** is preferably sized to receive a length A3 of a timber post of a specific size or range, such as standard post sizes between sides **215**, as shown in **FIG. 2**, for example. Importantly, as described subsequently, the separation of sides **215** and placement of holes **217** allow a timber post of a given size to be inserted and attached to the pair of sides **215**, for example by drilling holes through an inserted post aligned with the holes and securing the post to the post bracket with bolts. Sides **215** can either be straight or may have a slight inwards bow along their length to help restrain a received post.

[**0033**] Thus, for example, a timber receiving portion adapted to accept a nominal 4"×4" timber post, which has an actual dimension of 3½ inches on a side, has a spacing **A1** that is slightly larger than 3½ inches, has a width A2 that is preferably less than a side of the 4×4, for example from 2 inches to 3 inches in width, and a length A3 that is sufficiently long to allow 2 or more holes with a spacing approximately equal to the width of the post. Thus, for example A3 is preferably from 6 to 8 inches long, having holes **217** to accept a half inch bolt and spaced approximately 4 inches apart. It is also preferred that sides **215** are formed from galvanized steel having a thickness of from ⅛ inch to ¼ inch, and more preferably that the thickness be 3/16 inches.

[**0034**] In an alternative embodiment of timber receiving portion **210**, not shown, holes **217** are arranged in other matching patterns on opposing sides **215** to facilitate the attachment of a post to post bracket **200**, and in another alternative embodiment, two pair of opposing sides are provided to restrain an inserted post on all four sides.

[**0035**] Support and spacing for sides **215** and cap **207** are provided by plate **205**. As shown in **FIGS. 7 and 11**, plate **205** has a pair of slots **701** spaced a distance A1 and each sized to accept one of the pair of sides **215** by having a length that is slightly larger than width A2 and a width slightly larger than the thickness of sides **215**. Cap **207**, as shown in **FIGS. 12A and 12B**, has a pair of mutually opposing sides **601** attached to transverse cap surface **209** and having a wide portion **1201** of length H and a narrow portion **1203**. In addition, as shown in **FIGS. 6 and 11**, plate **205** has a pair of slots **603**. The pair of narrow portions **1303** fit within slots **603** to support cap **207** on the plate with spacing H. Plate **205** is preferably formed from a steel plate, for example a plate 4¼ inch square and 3/16 inch thick.

[**0036**] As is shown in **FIGS. 3A, 3B, 5, 6,** and **7**, elongate member **202** extends from plate **205** through a shoulder **221** a distance C2 to second end **223**. Foundation support portion **220** includes four surfaces **225** of elongate member **202** that form two pairs of mutually opposing and outwards facing surfaces **225***a* and **226***b*, as shown in **FIG. 5**, and that each extend from a portion having a size W2×W2, as indicated in **FIG. 8**, and have a length C1 from a plane **227** to second end **223**. The cross-sectional shape of sides **215** and elongate member **202** from shoulder **221** to second end **223** is bound within a square having sides W1, as is shown in **FIGS. 6, 7,** and **9**, and the thickness of elongate member **202** at surfaces **225** is t as is shown in **FIG. 13**. It is important that the cross-section of foundation support portion **220** fits than the width W of the intended recess R and that the length C2 is less than the length D. It is preferable that the difference between W and W1 be great enough so that foundation support portion **220** easily fits within recess R.

[**0037**] Foundation support portion **220** also includes, as is shown in **FIG. 6**, bolt **240** that has a head **611**, a body **613** that is at least partially threaded, and an end **241**. As is shown in **FIGS. 6 and 11**, plate **205** has a hole **605** that accepts body **613** while providing support for head **611**. The distance H of cap **207** is selected to allow the cap to sit on plate **205** and not rest on head **611**. Body **613** is also threadably connected to plate **230**, as is shown in greater detail in **FIGS. 13**. Plate **230** has a first side **231** facing away from plate **205** and an opposing side **233** facing the plate. A threaded nut **607** is attached to side **233**, preferably by welding, and is aligned with a hole **609** in plate **230**. A threaded portion of body **613** threadably engages nut **607**. Rotation of head **611** can thus place bolt **240** in tension and pull plate **230** towards plate **205**. It is preferred that bolt **240** is a galvanized course thread ¾ inch ×6 inch bolt. The diameter of holes **605** and **609** and the threads of nut **607** are chosen to match bolt **240**. For example, holes **605** and **609** sized to receive a ¾ inch bolt have diameters of ⅞ inch.

[**0038**] **FIG. 13** also shows detail of edges **1301** and **1303** of plate **230**. Plate **230** is preferably formed from a steel plate, for example a U×U square, 3/16 inch thick plate. Edge **1301** is formed from the side of the plate and is perpendicular to side **231**, and edge **1303** is angled relative to edge **1301** and side **233**. Preferably edge **1303** form an angle of 45 degrees relative to edge **1301** and side **233**, and plate **230** is sized such that ends **223** contact edge **1303**. Preferably, as described below, the dimensions W1, W2, U, and t are selected relative to W to permit foundation support portion **220** to easily be inserted into recess R, and for the geometry to be changed by rotating bolt **240** to secure the

[**0039**] Before discussing methods of using post bracket **200**, one method for manufacturing elongate member **202** is now discussed with reference to **FIGS. 14A-14E**, where **FIGS. 14A and 14B** are orthogonal side views of the steel channel, and **FIG. 14C** is a top view and **FIG. 14D** is a bottom view of the channel, and **FIG. 14E** shows the channel cut and folded. Steel channel **1400** is a **14** inch length of 3 inch by 3 inch channel (that is, W2=3 inches) having a wall thickness of 3/16 inches. **FIGS. 14A-1D** have marks indicating cuts and folds used to produce elongate member **202**. Lines **1401**, **1403**, **1405**, and **1407** show cuts to the corners of channel **1400** that form surfaces **225**. Lines **1409** and **1411** show cuts to the corners and sides of channel **1400** that produce planar sides **215**. Lines **1413** and **1415** indicate fold lines used to form shoulder **211**. **FIG. 14E** shows the part resulting from the cuts and folds of **FIGS. 14A-14D** that can subsequently be used to form elongate member **202**. **FIG. 14E** also shows a slight bowing of the ends **223**. This bowing can result from the release of stress from within channel **1400** when it is cut. It is important that the cross section of the resulting channel fit within a desired cross-sectional area, for example a square having sides W.

[**0040**] Post bracket **200** includes a mechanism for expanding the outer dimension of the cross-section of foundation support portion **220**. Specifically, post bracket **200** has an initial configuration, shown in **FIGS. 3A and 3B**, where plate **230** is beyond ends **223**, where the configuration allows foundation support portion **220** to fits within a recess of size W. When bolt **240** is rotated in a direction that reduces the spacing between plate **230** and plate **205**, plate **230** moves upwards along elongated member **202**, increasing the spacing of surfaces **225**. This movement results in a deformation of surfaces **225**, specifically of a bending of each side from position. An illustration of the response of post bracket **200** to a tightening of bolt **240** relative to that of **FIGS. 6 and 7** is illustrated in a first set of **FIGS. 15A and 15B**, where the bolt is turned a first amount, resulting in the displacement of plate by a distance Z1 to the position shown as plate **230***a*. As noted previously, the angled edge **1303** of plate **230** is positioned to contact ends **223**. As a result of the displacement of plate **230**, surfaces **225** bend outwards from plane **227**, having a dimension W2 as shown in **FIG. 8**, and continue to contact either edge **1301** or **1303**, with a separation that increases with the displacement of the plate. As illustrated in **FIGS. 15A and 15B**, ends **223** are displaced by a distance Q1, to a total separation of W.

[**0041**] The further tightening of bolt **240** is shown in **FIGS. 16A and 16B**, where the position of the plate in **FIGS. 6 and 7** is indicated as the phantom plate **230**. In **FIGS. 16A and 16B**, bolt **240** is turned a greater amount, resulting in the displacement of plate by a distance Z2 as indicated by plate **230***b*. As a result of the displacement of the plate, surfaces **225** bend from plane **227** outwards a greater distance. The lateral displacement of surfaces **225**, indicated as a distance Q2, increases the spacing between opposing ends **233** to a distance greater than W. If post bracket **200** were in a recess of size W, foundation support portion **220** would be laterally expanding to secure the post bracket in the recess.

[**0042**] Importantly, the rotation of bolt **240** thus causes plate **230** to travel along elongated member **202** adjacent surfaces **225** and for ends **223** to correspondingly expand outward. Preferably, width W is greater than width W1, permitting foundation support portion **220** to be inserted into recess R, the combined width of plate **230** and the thickness of elongated member **202** adjacent sides **225** (that is, U+2t) is less than the width W to permit plate **230** to traverse the foundation support portion while it is inserted in the recess, and the dimensions U, t, W2, and C1 allow the edges of the foundation support portion to extends at least to the edges of the recess.

[**0043**] Thus, for example, foundation support portion **220** that is sized for replacement of a 4"×4" post must be able to fit within the W=3½ inch square recess R that was formed by the pouring of concrete about the post. A value of W1 from 3 to 3¼ inches provides adequate space for inserting foundation support portion **220** into recess R. It is also preferred that the length C2 is from 5 to 8 inches, preferably 6 inches, and that the length C1 is approximately 5 inches, and t is from 1/8 inch to ¼ inch, and more preferably t=3/16 inches. In addition, the combined width of plate **230** and the thickness of elongated member **202** adjacent surfaces **225** (U+2t) must be greater than W (for a 4"×4" post replacement, a preferred value of W2 is 3 inches, U is 3 inches, and t is 3/16 inches—thus U+2t=3⅜ inches, which is between W and W1). In the example of **FIGS. 15A and 15B**, ends **233** have a separation that is greater than W1 and less than W, while in **FIGS. 16A and 16B** ends **223** have a separation greater than W. The portion of elongated member **202** adjacent surface **225** from the displaced plate **230** to ends **223** can act as spring when placed in a recess of dimension W.

[**0044**] One method of using post bracket **200** to secure a post in a preexisting foundation using a post bracket of the present invention is shown with reference to the sectional side views of **FIG. 17A-17F**. First, **FIG. 17A** shows an existing foundation is prepared for the post bracket. This is accomplished by removing post P the post from foundation F which may be accomplished, for example, by cutting the post flush with the foundation with a reciprocating say and corresponding 8 inch or longer wood blade, and then using a 3 inch drill bit such as a masonry drill bit and a heavy duty drill to remove the timber to a depth of 6½ inch, and finally removing the remaining material with a chisel. Next, foundation support portion **220** is placed with recess R, as shown in **FIG. 17B**. Next, as shown in **FIG. 17C**, bolt **240** is tightened, resulting in the movement of plate **230** to position **230***b*. As illustrated in **FIGS. 16A and 16B**, this amount of tightening expands unconstrained ends **223** to a separation greater than the recess width W. Since foundation support portion **220** is within recess R, the displacement of plate to position **230***b* forces surfaces **225** against recess R, securing post bracket **200** in foundation F. During the tightening of bolt **240**, the position and orientation of post bracket **200** can be adjusted and, if the position is not quite correct, the bolt can be loosened and the position can be further adjusted. Next, in **FIG. 17D**, cap **207** is placed over bolt head **611**, providing a horizontal surface **207**. A new post P is next placed on top of surface **207** and within timber receiving portion **210 (FIG. 17E)**. Lastly, holes H1 and H2 are drilled through holes **217** and post P1 and bolts B1 and B2 are used to secure the post to post bracket **200**.

[**0045**] Reference throughout this specification to "one embodiment" or "an embodiment" means that a particular feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, 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 particular features, structures or characteristics may be combined or altered in any suitable manner, as would be apparent to one of ordinary skill in the art from this disclosure, in one or more embodiments.

[0046] Similarly, it should be appreciated that in the above description of exemplary embodiments of the invention, various features of the invention are sometimes grouped together in a single embodiment, figure, or description thereof for the purpose of streamlining the disclosure and aiding in the understanding of one or more of the various inventive aspects. This method of disclosure, however, is not to be interpreted as reflecting an intention that the claimed invention requires more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive aspects lie in less than all features of a single foregoing disclosed embodiment. Thus, the claims following the Detailed Description are hereby expressly incorporated into this Detailed Description, with each claim standing on its own as a separate embodiment of this invention.

[0047] Thus, while there has been described what is believed to be the preferred embodiments of the invention, those skilled in the art will recognize that other and further modifications may be made thereto without departing from the spirit of the invention, and it is intended to claim all such changes and modifications as fall within the scope of the invention. For example, post bracket **200** can be adapted to accept timber of any size and to fit with a recess of any size. Thus the device and method has been described with reference to use with 4"×4" timber posts. The device and methods are easily modified for use with 3"×3", 4"×6", and 6"×6" posts by adjusting the dimensions of the device accordingly. Timber support portion **210** can include devices other than bolts to secure a post, and can also present surfaces to the post that restrict movement, such as a rough surface. Foundation support portion **220** can provide for other types of mechanical restraints within a recess. Thus, for example, foundation support portion can provide for lateral expansion to the sides of the recess by a bolt that expands a scissor-like expandable mechanism, or by a mechanism that moves one side. In addition, the timber support portion and foundation support portion may be formed from separate pieces that are welded or otherwise joined together. Alternatively, the functions of the timber support portion and the foundation support portions can have overlapping components or pieces to any extends. Steps for the use of the post bracket may be added, deleted, or rearranged to methods described within the scope of the present invention.

I claim:

1. A bracket for attaching a timber post to a foundation recess comprising:

a first portion for attachment to the timber post; and

a second portion including

at least one pair of outwards facing, opposed surfaces having a first spacing, and

a mechanism to increase the spacing of said opposed surfaces.

2. The bracket of claim 1, wherein said first portion includes two opposing surface and at least one pair of holes through said opposing surfaces.

3. The bracket of claim 1, wherein each of said at least one pair of opposed surfaces is a portion of an elongated member having a first end proximal said first portion and a second end, and wherein said mechanism includes a first plate having an internally threaded hole and a width greater than said first spacing, a second plate rigidly connected to said second portion proximal said first portion and having a hole, and a bolt having a head supported on said second plate and a body passing through said second plate and threadably attached to said first plate, where the rotation of said bolt to decrease the spacing between said first plate and said second plate increases the spacing of said surfaces.

4. The bracket of claim 1, wherein the outer surface of said second portion having said first spacing is bound by an elongated square extending away from said first portion.

5. The bracket of claim 4, wherein said square is approximately 3½ inches on a side.

6. A bracket for attaching a timber post to a foundation recess having inwardly facing walls, said bracket comprising:

a first portion for attachment to the timber post; and

a second portion including

at least one pair of outwards facing, opposed members having a first end proximal said first portion and a second end, and having a first spacing at said a first end proximal said first portion, where said first spacing is less than the distance between said inwardly facing walls, and

a mechanism to increase the spacing between said at least one pair of opposed members.

7. The bracket of claim 5, wherein said first portion includes two opposing surface and at least one pair of holes through said opposing surfaces.

8. The bracket of claim 5, wherein said mechanism includes a first plate having an internally threaded hole and a width greater than said first spacing, a second plate rigidly connected to said second portion proximal said first portion and having a hole, and a bolt having a head supported on said second plate and a body passing through said second plate and threadably attached to said first plate, where the rotation of said bolt to decrease the spacing between said first plate and said second plate increases the spacing of said surfaces.

9. The bracket of claim 5, wherein the outer surface of said second portion having said first spacing is bound by an elongated square extending away from said first portion.

10. The bracket of claim 9, wherein said square is approximately 3½ inches on a side.

11. A bracket for attaching a timber post to a recess of a foundation comprising:

a first portion for attachment to the timber post; and

a second portion including

an elongate portion attached to said first portion and having a shape to allow acceptance by the recess with said first portion protruding above said recess, and

a mechanism to move at least a portion of said accepted elongate portion against said recess, where said moved elongate portion of provides a resistive force to the movement of said connector from said recess.

12. The bracket of claim 11, wherein said first portion includes two opposing surface and at least one pair of holes through said opposing surfaces.

13. The bracket of claim 11, wherein said mechanism includes a first plate having an internally threaded hole and a width greater than said first spacing, a second plate rigidly connected to said second portion proximal said first portion and having a hole, and a bolt having a head supported on said second plate and a body passing through said second plate and threadably attached to said first plate, where the rotation of said bolt to decrease the spacing between said first plate and said second plate increases the spacing of said surfaces.

14. The bracket of claim 11, wherein said recess has a square cross-sectional shape.

15. The bracket of claim 14, wherein said square is approximately 3½ inches on a side.

16. A method of mounting a post in an existing poured concrete foundation using a post bracket having a timber receiving portion and a foundation securing portion, said method comprising:

placing the foundation receiving portion of the post bracket in the recess;

mechanically securing the foundation receiving portion in the recess; and

mounting the post to the timber receiving portion of the post bracket.

17. The method of claim 16, further including, first exposing the recess of the existing foundation.

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