FENCE STABILIZATION SYSTEM

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ABSTRACT
A fence stabilization system has a plurality of vertical fence support posts, each having hollow interiors extending the full length of each post. A column insert is positioned within each support post and extends substantially the length of the post. Each column insert is adjacent to, but spaced apart from the outer wall of the support post. The column insert has openings which are aligned with openings in the support post itself for the insertion of horizontal fence rail members into and through both the column insert and support post openings. Locking brackets with threaded connectors are located near the upper ends of the column insert and support post for securing horizontal rail members to the post. Threaded adjustment connectors are located near the lower ends of the column insert and support post to adjust the position of the column insert within the post and to secure the column insert position within the post.
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BACKGROUND THE INVENTION

[0001] The use of vinyl fence post and rail members has recently become increasingly popular in fencing systems. The relative lightweight of these elements, coupled with their durability, relatively inexpensive cost, pliability, and pleasing appearance have made such fence systems desirable both for residential and commercial use.

[0002] However, the advantages of vinyl fencing systems and their components come with a price. Due to their flexible nature, vinyl vertical fence support posts tend to become stressed and will bend or even break under heavy wind or weather conditions or if a significant load or weight is applied against the posts. There have been a number of attempts to address this problem by using reinforcing columns within the posts themselves. However, such supports use many components and present complex construction techniques, which serve to increase the price of assembly and, hence, the cost of construction. The complex configurations represented by existing fencing systems tend to make the use of internal support columns impractical and expensive. Consequently, such support structures are often not included, which serves to substantially weaken the overall system. In addition, none of these prior support configurations account for the placement and connection of the horizontal rail members which are used in the fencing systems, while still maintaining the integrity of the vertical support posts themselves.

[0003] Another problem endemic to fence stabilization systems, especially those with vinyl fencing components, is that the vertical support posts which frame the gates installed in the systems routinely bend or lean inward, thus making it difficult or impossible to open and close the fencing system’s gate. Most people have experienced the problem of having to lift the entire gate portion of the fencing system in order to then be able to rotate the gate open or closed.

SUMMARY OF THE INVENTION

[0004] It is thus an object of the present invention to provide a fence stabilization system which overcomes the limitations and disadvantages of prior systems.

[0005] It is an object of the present invention to provide a fence stabilization system which is simple to install and effective in maintaining the integrity of the vertical support posts used in the system.

[0006] It is another object of the present invention to provide a fence stabilization system which consists of relatively few components and, thus, is easily and economically manufactured.

[0007] It is still another object of the present invention to provide a fence stabilization system which provides for means to secure horizontal rail support members to aid in the stability of the system.

[0008] It is a further object of the present invention to provide a fence stabilization system which is effective and reliable in maintaining the integrity of an entire fencing stabilization system.

[0009] It is another object of the present invention to provide a fence stabilization system which will ensure the integrity of gate members of the system, permitting ease of opening and closing of the gate member.

[0010] These and other objects are accomplished by the present invention, a fence stabilization system which comprises a plurality of vertical fence support posts, each having hollow interiors extending the full length of each post. A column insert is positioned within each support post and extends substantially the length of the post. Each column insert is adjacent to, but spaced apart from the outer wall of the support post. The column insert has openings which are aligned with openings in the support post itself for the insertion of horizontal fence rail members into and through both the column insert and support post openings. Locking brackets with threaded connectors are located near the upper ends of the column insert and support post for securing horizontal rail members to the post. Threaded adjustment connectors are located near the lower ends of the column insert and support post to adjust the position of the column insert within the post and to secure the column insert position within the post.

[0011] The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims. The invention, itself, however, both as to its design, construction and use, together with additional features and advantages thereof, are best understood upon review of the following detailed description with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a perspective view of a section of the fence stabilization system of the present invention.

[0013] FIG. 2 shows an elevation view, partly cut away, of a support post and column insert in accordance with the fence stabilization system of the present invention.

[0014] FIG. 3 is a cross-sectional view taken from FIG. 2.

[0015] FIG. 4 is another cross-sectional view taken from FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

[0016] The fence stabilization system of the present invention comprises a plurality of vertically extending support posts, each substantially identical to that which is shown in FIG. 1. Vertical support post 2 is tubular, i.e. hollow, with internal space 4 extending through its elongated length. Post 2 has outer wall 6 with inner surface 8 which circumnavigates space 4. Post 2 is shown as being square in configuration, but the post should not be considered restricted to this shape. The support post of the subject fence stabilization system can be designed with any convenient geometric shape, e.g. rectangular, circular, triangular, or the like.

[0017] It is contemplated that post 2, as well as horizontal fence rail members 10, 12, 14, and 16 shown in FIG. 1 inserted into and extending from the post, will be constructed of vinyl, vinyl plastic, or equivalent lightweight material.

[0018] Post 2 comprises post openings 18 and 20 into which the system’s rail members are inserted. Similar openings may be located on more than one side of post 2, as seen in FIGS. 1 and 2, showing rail members 10 and 12 extending through post openings and rail members 14 and 16 extending through post openings 17 and 19 in the vertical post.

[0019] Tubular column insert 30 is located within space 4 of post 2 and extends substantially the full length of the post. Column insert 30 takes the same shape as post 2 and is sized to be positioned adjacent to and in spaced apart relation from inner surface 8 of outer wall 6 of the post. Like post 2, column insert 30 is hollow, forming elongated space 5 therethrough. Column insert 30 comprises openings 32 and 34 configured to be aligned with the openings in post 2 through which rail
members 10 and 12 are inserted, as shown in FIG. 1. Rail members 10 and 12 are thus inserted into both the post openings and column insert openings 32 and 34, as seen in FIG. 2. Column insert openings are also aligned with the post openings, e.g., openings 17 and 19, through which rail members 14 and 16 are inserted, also as seen in FIG. 2. Column insert 30 has additional openings, such as seen at 33 and 36. Opening 33 of column insert 30 is configured to be aligned with post opening 18 and opening 36 of column insert 30 is configured to be aligned with post opening 20, when the column insert is properly positioned within the vertical post.

Proper positioning of column insert 30 within post 2 will result in corresponding post openings and column insert openings being aligned to permit horizontal rail members of the system to be inserted through vertical post 2 and column insert 30, into space 5. This positioning and adjustment of column insert 30 in relation to post 2 in order to attain proper alignment of the post openings and column insert openings for insertion is accomplished by adjustment means comprising threaded bolts 38 and 40. Bolts 38 and 40 extended from space 5, through column insert 30, where they then contact inner surface 8 of post 2. Turning bolts 38 and 40 appropriate distances, will cause column insert 30 to be shifted laterally to insure its proper positioning within post 2. Once column insert 30 is properly positioned within post 2, bolts 38 and 40 serve to secure the column insert within space 4 of the post. Access to bolts 38 and 40 is gained through the open bottoms of post 2 and column insert 30, prior to installing the post in place in the ground.

Upper rail members of the system, such as 10 and 12, are secured within space 4 of post 2 and space 5 of column 30 by locking means. The locking means comprise "U" shaped brackets 42 which are secured to and extend from inner surfaces 31 of column insert 30. Brackets 42 have aligned openings 44 through each leg of the "U" of the brackets. Threaded connector elements, e.g., bolts 46, are configured to extend through openings 44 in each bracket 42. As bolts 46 are screwed through openings 44, they ultimately contact the top surface of rail members 10 and 12. Continued turning of the bolts will secure them tightly against rail members 10 and 12, thus ensuring that the rail members are fixedly attached with spaces 4 and 5. Access to bolts 46 is gained through the open tops of post 2 and column insert 30. A post cap or crown can then be placed over vertical post 2 to cover the post and spaces 4 and 5.

The fence stabilization system of the present invention will result in vertical support posts which are stable, immoveable, and unyielding to weather or outside forces which would otherwise cause them to bend or break. Installation of upper rail members with the locking means as discussed and described further increases the stability and integrity of the fencing system. The components of the system itself are relatively lightweight, yet sturdy in use. The few individual components which are needed are relatively inexpensive to manufacture, and the system is simple to install.

Certain novel features and components of this invention are disclosed in detail in order to make the invention clear in at least one form thereof. However, it is to be clearly understood that the invention as disclosed is not necessarily limited to the exact form and details as disclosed, since it is apparent that various modifications and changes may be made without departing from the spirit of the invention.

1. A fence stabilization system having horizontally configured fence rail members, said system comprising:
   at least one vertically extending support post with an outer wall and upper and lower ends, the post having a hollow internal length, an internal space, and a plurality of post opening means through the outer wall for accepting horizontal fence rail members;
   a vertical column insert located adjacent to and in spaced apart relation from the outer wall and extending within substantially the full hollow internal length of the support post, the column insert comprising column insert opening means aligned with the post opening means for accepting and maintaining fence rail members extending through the post opening means into the internal space of the support post;
   fence rail member locking means for securing the rail members within the post opening means and column insert opening means; and
   adjustment means located at the lower end of the support post to moveably position and secure the column insert within the hollow internal length of the support post.

2. The fence stabilization system as in claim 1 wherein the fence rail locking means comprises brackets secured to inner surfaces of the column insert and connector elements.

3. The fence stabilization system as in claim 1 wherein the adjustment means comprises connectors which secure the column insert to the support post.

4. The fence stabilization system as in claim 1 further comprising a plurality of support posts as described therein.

5. The fence stabilization system as in claim 1 further comprising a plurality of rail members extending from the support post and column insert.

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