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(54) FENCING SYSTEM IN PARTICULAR FOR DEER CONTROL

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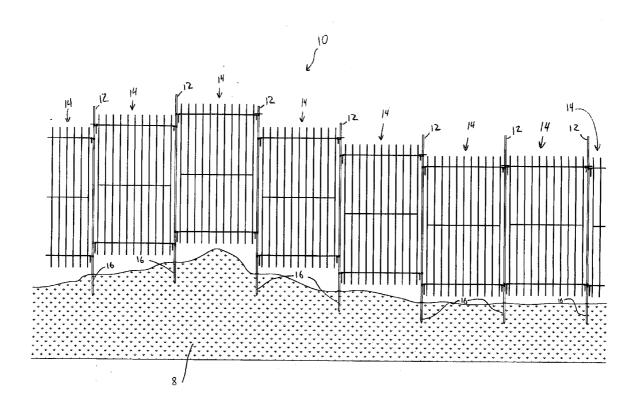
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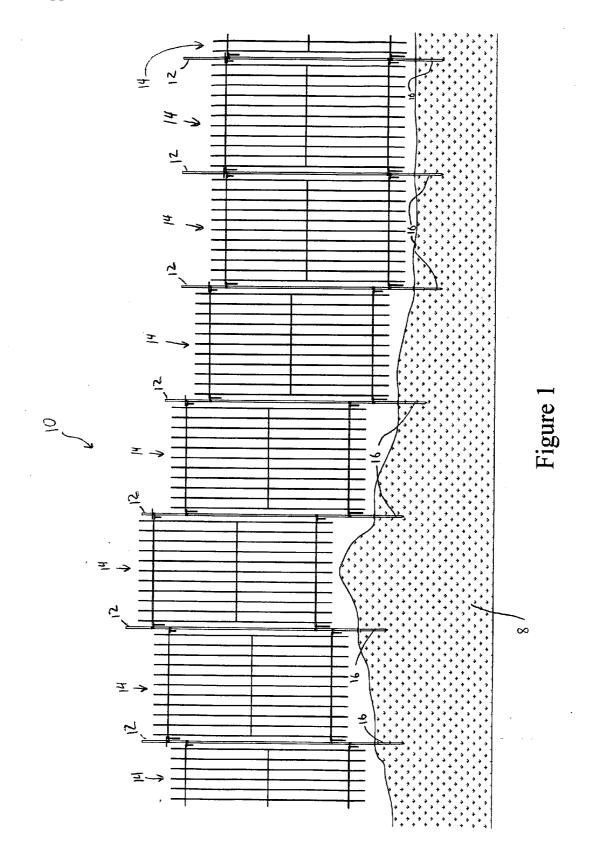
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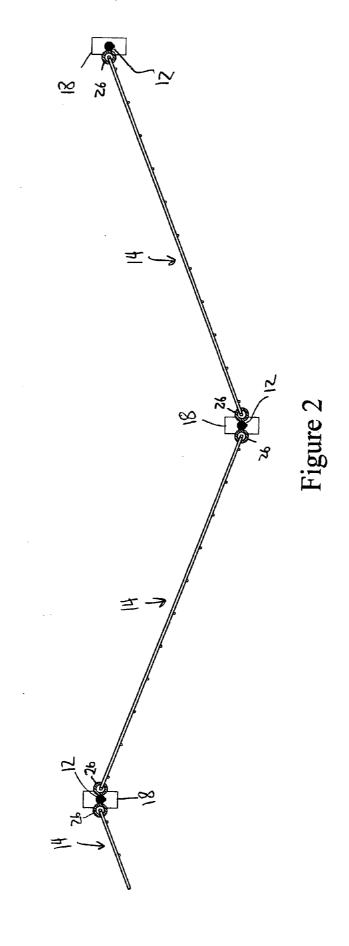
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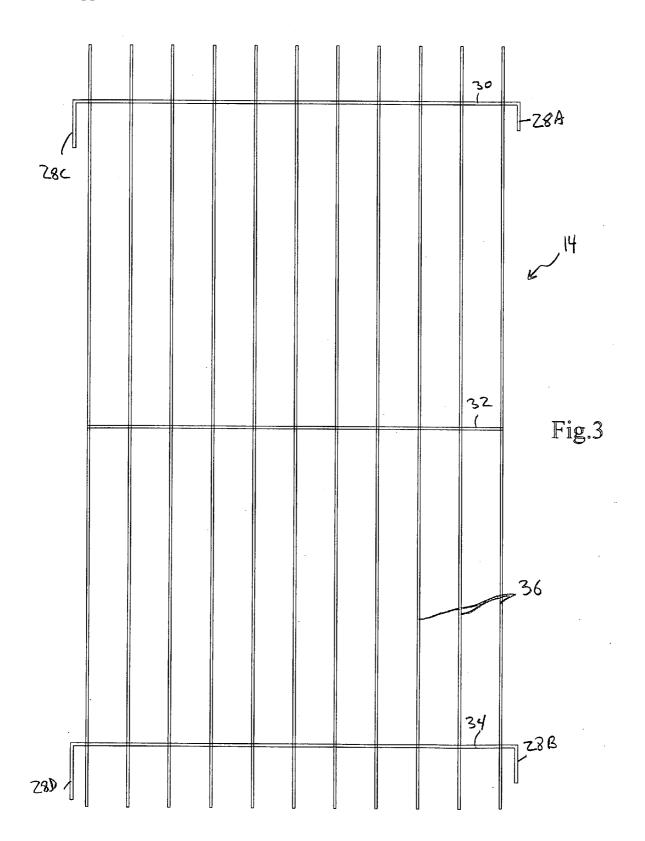
#### ABSTRACT (57)

Fencing system including elongate posts adapted to be secured to the ground, fence sections each arranged between an adjacent pair of posts and including downward-facing mounting pins, and post clips arranged on the posts. Each post clip includes a tubular mounting collar slidable along and rotatable relative to the posts, a locking mechanism for locking the mounting collar in a fixed vertical position and a pin-receiving ring defining an aperture for receiving one of the mounting pins to enable engagement of the mounting pins with the post clips and thus engagement of the fence sections with the posts. Assembly of the fencing system includes positioning the post clips on the posts, securing the posts to the ground, and placing the mounting pins through the pin-receiving rings of the post clips once the posts are secured to the ground and the post clips are set at the desired vertical location.









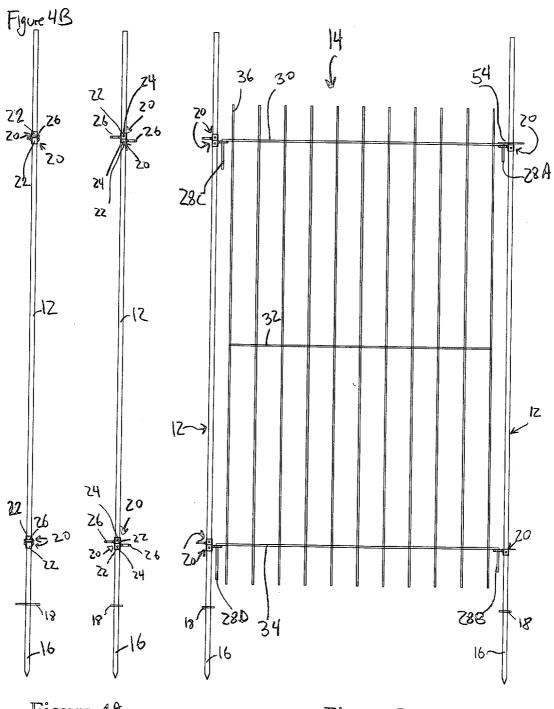


Figure 4A

Figure 5

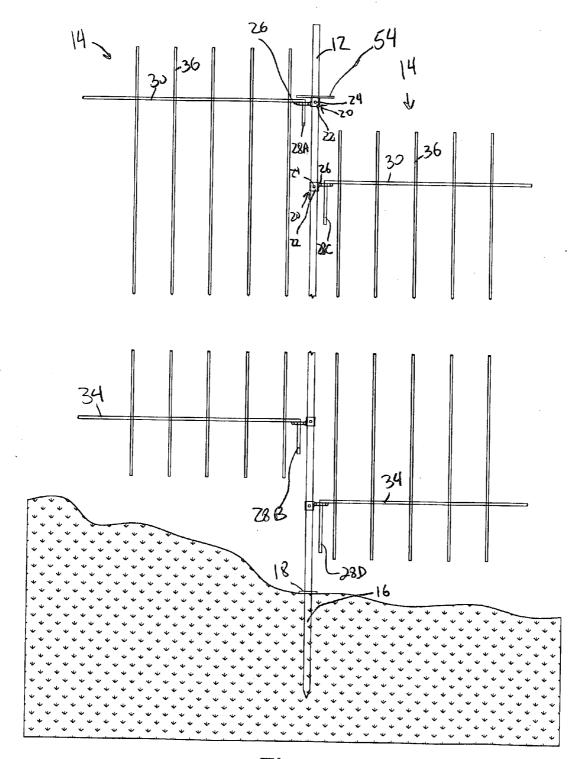
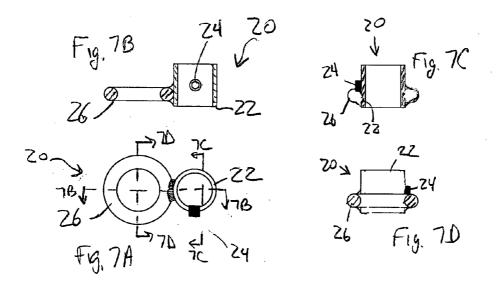
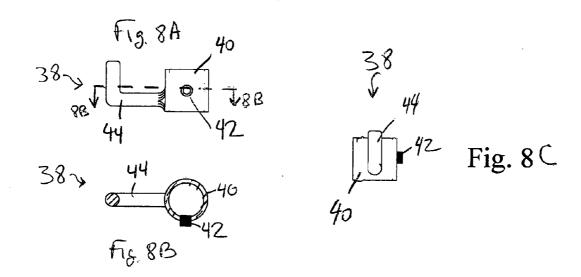


Figure 6





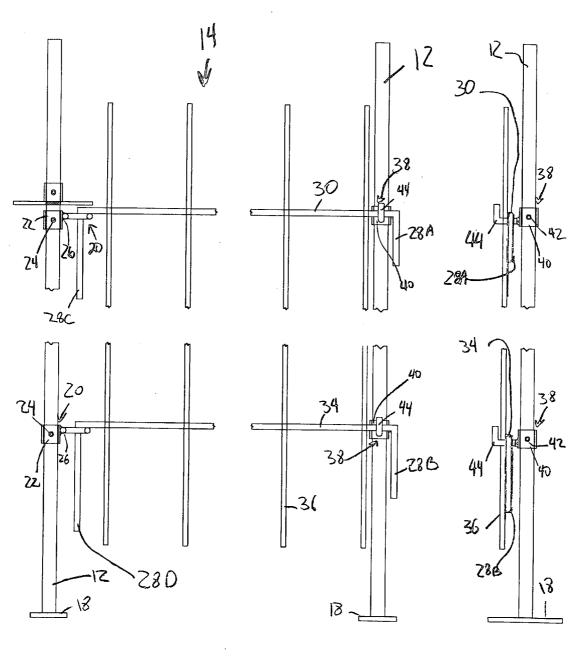
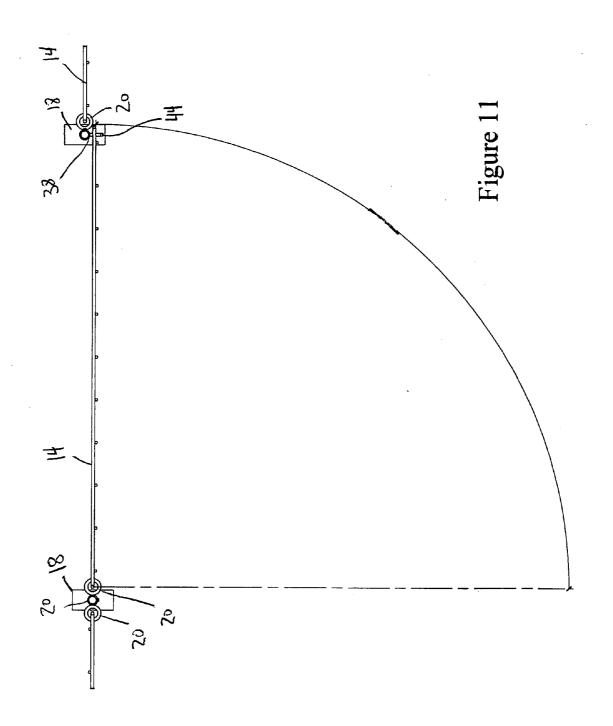
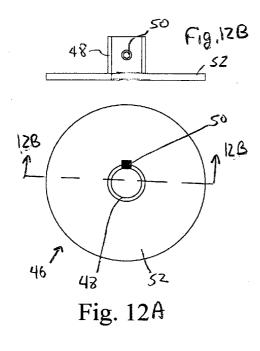
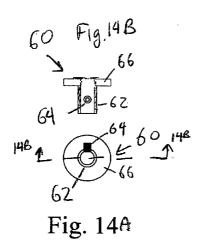


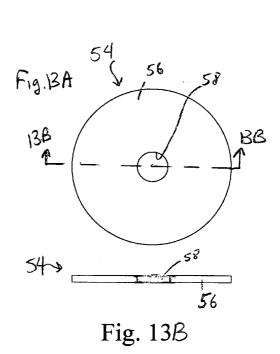
Figure 9

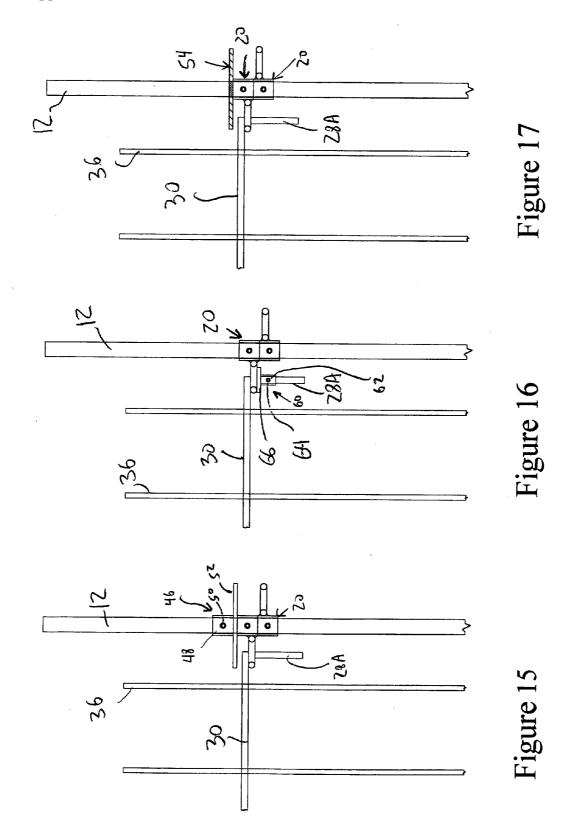
Figure 10











# FENCING SYSTEM IN PARTICULAR FOR DEER CONTROL

#### FIELD OF THE INVENTION

[0001] The present invention relates generally to a fencing system and more particularly to a fencing system for installation around an area to be protected in order to prevent animals such as deer from entering into the area and damaging the protected area.

### BACKGROUND OF THE INVENTION

[0002] Deer consume a significant amount of vegetation and as their population increases without effective curbs on growth, they encroach on suburban and urban areas consuming homeowner's shrubs, flowers and trees. The presence of deer is typically a seasonal phenomena dependent on the present of sufficient vegetation in natural forests. When there is insufficient vegetation in the forest, deer will travel to suburban areas in search of vegetation.

[0003] Fencing systems are known which are installed around areas to be protected or enclosed, some of which invariably could be used to keep deer out of the protected or enclosed area. One simple construction comprises a series of wood posts and wood fence sections attached to the posts, e.g., by nails. Other fencing systems are made of steel or similar material and typically include posts and fence sections welded to the posts. In such fencing systems, the fence sections, once nailed or welded to the posts, are not adjustable and cannot be easily taken apart. Thus, such fencing systems are not conducive to a seasonal or temporary installation.

[0004] These types of fencing system also do not allow for easy adjustment of the vertical position of the fence sections to the posts.

[0005] However, fencing systems which allow for variation in the vertical position of the fence sections to the posts are disclosed, for example, in U.S. Pat. No. 3,304,683 (Ferreira) and U.S. Pat. No. 5,645,271 (Nunez). Ferreira discloses a post having channels on two sides in which L-shaped bracket members slide. The position of the bracket members is vertically adjustable and when the desired vertical position is obtained, the bracket members are tightened by threaded members and nuts. Fence sections are then attached to pins of the bracket members. Nunez discloses a metal fence post assembly with an inner sleeve and two-part outer sleeve. An upper part of the outer sleeve can be mounted at different vertical positions to the inner sleeve in view of the presence of a plurality of screw holes formed in the outer sleeve. This enables variations between the height of a fence section on one side of the post assembly and the height of a fence section on the other side of the post assembly.

[0006] Other fencing systems which include posts and fence sections coupled thereto include U.S. Pat. No. 54,794 (Thompson), U.S. Pat. No. 134,624 (Anderson), U.S. Pat. No. 194,724 (Reed et al.), U.S. Pat. No. 1,730,936 (High), U.S. Pat. No. 1,776,785 (Davidson), U.S. Pat. No. 3,096,079 (Winn), U.S. Pat. No. 3,815,877 (Turner), U.S. Pat. No. 3,942,763 (Helterbrand et al.), U.S. Pat. No. 4,073,478 (Bermudez), U.S. Pat. No. 4,174,096 (Campbell), U.S. Pat. No. 6,481,697 (Brown) and U.S. Pat. No. 6,578,827 (McCracken).

[0007] The prior art fencing systems described in these references do not provide a fencing system which is easy to install, has the potential to be only a seasonal or temporary installation, can easily contour to the terrain, allows for variations in the vertical mounting height of fence sections thereof and enables the fence sections to be securely locked to posts.

# OBJECTS AND SUMMARY OF THE INVENTION

[0008] It is an object of the present invention to provide a new fencing system designed primarily to prevent deer from gaining access to areas sought to be protected from their intrusion. However, the fencing system need not be only used to prevent deer from entering a specific location, but can also be used to prevent other animals or children from entering an area, or used for decorative purposes.

[0009] It is another object of the present invention to provide a new fencing system comprised of posts and fence sections coupled thereto which is easier to install than similar prior art fencing systems.

[0010] It is still another object of the present invention to provide a new fencing system which is capable of contouring to uneven terrain.

[0011] It is yet another object of the present invention to provide a new fencing system comprised of posts and fence sections coupled thereto which allows adjacent fence sections to be vertical spaced from one another and thereby allow the fencing system to contour to the ground.

[0012] Yet another object of the present invention is to provide a new fencing system which prevents large foraging animals, in particular deer, from entering yards, vegetable gardens and estates, and protects plantings, small trees and shrubbery around houses and other buildings from such foraging animals.

[0013] Still another object of the present invention is to provide a new fencing system which can be used either as a permanent installation or as a temporary or seasonal installation.

[0014] It is still a further object of the present invention to provide a new fencing system which is exceptionally light in material as well as weight, making it inexpensive as well as easy to move, this being achieved by its ability to be set up in a slight zigzag or room screen fashion creating an exceptionally strong structure.

[0015] It is still another object of the present invention to provide a new fencing system which has the ability to be easily and quickly removed and reinstalled to allow access to enclosed areas by large equipment such as commercial lawn mowers, backhoes, etc., while not leaving a breach in the enclosed area for even a short period of time.

[0016] It is still another object of the present invention to provide a new fencing system which has the ability to be easily and quickly removed and reinstalled in the event that an unwanted animal which has gained access to the enclosed area through an open gate or other breach in the enclosure can be herded through a large opening of 10'-20' or more, as opposed to a small gate of only 3 or so feet, since this may be nearly impossible to do with a large, wild and frightened animal.

[0017] In order to achieve these objects and others, a first embodiment of a fencing system in accordance with the invention includes elongate posts adapted to be secured to the ground, fence sections each arranged between an adjacent pair of posts and including downward-facing mounting pins, and post clips arranged on the posts. Each post clip includes a tubular mounting collar slidable along and rotatable relative to the posts, a locking mechanism for locking the mounting collar in a fixed vertical position and a pin-receiving ring defining an aperture for receiving one of the mounting pins to thereby enable engagement of the mounting pins with the post clips and thus engagement of the fence sections with the posts. Assembly of the fencing system entails securing the posts to the ground, positioning the post clips at desired vertical positions, locking them in those positions and then placing the mounting pins through the pin-receiving rings of the post clips once the posts are secured to the ground and the post clips are set at the desired vertical location.

[0018] The fence sections typically include at least upper and lower horizontal rails and vertical rails connected thereto. The mounting pins are arranged at end regions or ends of the horizontal rails and may be angled relative thereto to face downward, e.g., substantially perpendicular to the horizontal rails.

[0019] In an advantageous embodiment, the length of the mounting pins on the horizontal rails is set to provide for easy installation of the fence sections onto the posts. Specifically, the mounting pins are arranged such that on each side of the fence section, there are two mounting pins and the lowermost mounting pin is longer than the uppermost mounting pin, and moreover such that the uppermost mounting pin on one side of the fence section is longer than the lowermost mounting pin on the other side of the fence section. For example, the mounting pins can be arranged such that on one side of the fence section, the lowermost mounting pin has a length of about 6" and the uppermost mounting pin has a length of about 5" and on the other side of the fence section, the lowermost mounting pins has a length of about 4" and the uppermost mounting pin has a length of about 3". This variation in length of the mounting pins allows for the longest mounting pin to be engaged with a post clip first, then the next longest mounting pin and then the next longest mounting and finally the smallest mounting pin, while maintaining any previously engaged mounting pin(s) in position.

[0020] When using this particular relative dimensioning of the mounting pins, it is possible to use clips or brackets for securing the mounting pins to the posts other than the post clips described above.

[0021] In another embodiment of a fencing system in accordance with the invention, gate clips are used to form a gate from one of the fence sections. A set of gate clips is arranged on at least one post and each gate clip includes a tubular mounting collar slidable along and rotatable relative to the post, a locking mechanism for locking the mounting collar in a fixed vertical position and a substantially L-shaped pin fixed to the mounting collar and defining a support for one of the horizontal rails of the fence section. In this manner, the fence section is engaged with the posts. Such gate clips can be used independent of the post clips described above and indeed, it is envisioned that other clips

or brackets for securing the sides of fence sections, or mounting pins when present on the fence sections, to the posts can be used in combination with the gate clips.

[0022] Another embodiment of a fencing system in accordance with the invention includes elongate posts adapted to be secured to the ground, fence sections each engaged with an adjacent pair of posts and including upper and lower horizontal rails and vertical rails connected to the horizontal rails and at least one lock clip for locking one of the fence sections in engagement with the posts. The lock clip can engage with one of the posts or with one of the mounting pins on a fence section, when present.

[0023] In the former situation, post clips are arranged on the posts, each defining an aperture through which one of the mounting pins passes to thereby enable engagement of the mounting pins with the post clips and thus engagement of the fence sections with the posts. One embodiment of a lock clip can include a tubular mounting collar slidable along the post, a locking mechanism for locking the mounting collar in a fixed vertical position and an annular plate fixed to the mounting collar. The lock clip is arranged relative to the post clip such that the plate extends over one of the mounting pins when it is engaged with the post clip and the distance between the lock clip and the pin-receiving ring of the post clip is less than the length of the mounting pin. Removal of the mounting pin from the space between the pin-receiving ring of the post clip and the lock clip is precluded. Another lock clip includes an annular plate having an aperture with a diameter substantially corresponding to a diameter of the post such that the lock clip must be slid on the post straight upward to enable release of the locking provided thereby. The lock clip is arranged relative to the post clip such that the plate extends over one of the mounting pins when it is engaged with the post clip and the distance between the lock clip and the pin-receiving ring of the post clip is less than the length of the mounting pin. Instead of annular plates, any size and shape plate may be used provided it restricts upward movement of the horizontal rail and mounting pin.

[0024] When the lock clip is engaged with a mounting pin, the lock clip can include a tubular mounting collar slidable along the mounting pin, a locking mechanism for locking the mounting collar in a fixed vertical position on the mounting pin and a plate fixed to the mounting collar. The plate has a cross-sectional shape and size which prevents its passage through the aperture defined by the pin-receiving ring of the post clip engaging with the mounting pin. When the mounting pins have different lengths, a single lock clip can be provided in engagement with the mounting pin having the smallest length so that none of the mounting pins can be removed from engagement with the respective post clip.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0025] The invention, together with further objects and advantages thereof, may best be understood by reference to the following description taken in conjunction with the accompanying drawings, wherein like reference numerals identify like elements, and wherein:

[0026] FIG. 1 is an elevational view of a fencing system in accordance with the invention shown contouring to a small hill.

[0027] FIG. 2 is a top view of a fencing system in accordance with the invention shown in a zig-zag configuration.

[0028] FIG. 3 is an elevational view of a fence section of a fencing system in accordance with the invention.

[0029] FIG. 4A is a front view of a post of a fencing system in accordance with the invention.

[0030] FIG. 4B is a side view of the post shown in FIG. 4A.

[0031] FIG. 5 is an elevational view of a basic construction of a pair of posts and a fence section in a fencing system in accordance with the invention.

[0032] FIG. 6 is a view showing a portion of a fence in accordance with the invention contouring to an uneven surface.

[0033] FIG. 7A is a top view of a post clip used in a fencing system in accordance with the invention.

[0034] FIG. 7B is a cross-sectional view of the post clip shown in FIG. 7A taken along the line 7B-7B of FIG. 7A.

[0035] FIG. 7C is a cross-sectional view of the post clip shown in FIG. 7A taken along the line 7C-7C of FIG. 7A.

[0036] FIG. 7D is a cross-sectional view of the post clip shown in FIG. 7A taken along the line 7D-7D of FIG. 7A.

[0037] FIG. 8A is a side view of a gate clip used in a fencing system in accordance with the invention.

[0038] FIG. 8B is a cross-sectional view of the gate clip shown in FIG. 8A taken along the line 8B-8B of FIG. 8A.

[0039] FIG. 8C is a side view of a gate clip shown in FIG. 8A.

[0040] FIG. 9 is a front view showing a gate-forming portion of a fencing system in accordance with the invention.

[0041] FIG. 10 is a side view showing the gate-forming portion of the fencing system shown in FIG. 9.

[0042] FIG. 11 is a view showing the extent of opening of a gate-forming portion of the fencing system in accordance with the invention.

[0043] FIG. 12A is a top view showing a post lock fence clip of a fencing system in accordance with the invention.

[0044] FIG. 12B is a cross-sectional view of the post lock fence clip shown in FIG. 12A taken along the line 12B-12B of FIG. 12A.

[0045] FIG. 13A is a top view showing a cantilever post lock fence clip of a fencing system in accordance with the invention.

[0046] FIG. 13B is a cross-sectional view of the cantilever post lock fence clip shown in FIG. 13A taken along the line 13B-13B of FIG. 13A.

[0047] FIG. 14A is a top view showing a fence pin lock clip of a fencing system in accordance with the invention.

[0048] FIG. 14B is a cross-sectional view of the fence pin lock clip shown in FIG. 14A taken along the line 14B-14B of FIG. 14A.

[0049] FIG. 15 is a view showing the post lock fence clip of FIGS. 12A and 12B on a post.

[0050] FIG. 16 is a view showing the fence pin lock clip of FIGS. 14A and 14B on a post.

[0051] FIG. 17 is a view showing the cantilever post lock fence clip of FIGS. 13A and 13B on a post.

## DETAILED DESCRIPTION OF THE INVENTION

[0052] Referring to the accompanying drawings wherein like reference numbers refer to the same or similar objects, FIG. 1 shows a fencing system in accordance with the invention which is designated generally as 10 and comprises a plurality of elongate posts 12 secured to the ground 8 and a fence section 14 arranged between each adjacent pair of posts 12 and engaged therewith.

[0053] Posts 12 are designed to be either removably or permanently secured into various different terrains by any known method in the fencing industry. In their simplest configuration, posts 12 are elongate rods, either tubular or solid, having a spike 16 at their bottom end and can be pushed into the ground 8 until they can maintain a firm, upright position. Spikes 16 may be about 12" long and 3/4" in diameter. Posts 12 can be made of steel or another rigid material.

[0054] A ground stop plate 18 is optionally attached at a predetermined distance from the bottom end of each post 12 and limits the insertion of the spike 16 into the ground (see FIGS. 2 and 6). As such, ground stop plates 18 enable a plurality of posts 12 to be inserted while maintaining a substantially consistent height of the remaining portion of the posts 12 above the ground stop plate 18. Ground stop plates 18 could also be used without spikes 16 and thus could be at the bottom of the posts 12. In this case, the ground stop plates 18 could be attached to the terrain or buried underground.

[0055] Other techniques for either removably or permanently fixing posts 12 in a firm, upright position can also be applied in accordance with the invention, e.g., embedding a lower end portion of the posts 12 in concrete.

[0056] As shown in FIG. 1, fence 10 can conform to the contour of the terrain to which it is being secured. To this end, the height of the posts 12 and the height of the fence sections 14 must be considered when securing the posts 12 to the ground 8. Generally, the posts 12 are secured a distance apart from one another substantially equal to the length of the fence section 14. When securing a new post 12 adjacent a previously secured post, the post 12 must also be secured to the ground 8 so that it has an overlapping vertical portion with the previously secured, adjacent post 12 at least equal to the height of the fence section 14 to enable the fence section 14 to be secured to these two, adjacent posts 12. As the length of the fence sections 14 is smaller, the fence 10 is better able to conform to the terrain.

[0057] As shown in FIG. 2, a non-linear fence, e.g., a zig-zag fence, can be formed by arranging posts 12 in a non-linear manner, but maintaining the same distance between the posts 12 substantially equal to the length of the fence sections 14. The variation in the linearity of the fence is enabled by the placement of posts 12 not in line with one another.

[0058] The ability to form a non-linear fencing system is also useful if rocks are located at one or more desired

post-securing positions and it is therefore necessary to displace the post 12 slightly from the linear alignment of the other posts 12.

[0059] To engage the fence sections 14 with the posts 12, post clips 20 are slidably attached to each post 12. Post clips 20 are shown most clearly in FIGS. 7A, 7B, 7C and 7D, and each includes a tubular mounting collar 22 have a diameter which enables it to slide along the respective post 12 to a desired vertical position on the post 12, a locking mechanism, e.g., a set screw 24, arranged in connection with the mounting collar 22 to lock the mounting collar 22 in the desired vertical position and a pin-receiving ring 26 fixed to the mounting collar 22. The pin-receiving rings 26 each define an aperture through which downward-facing mounting pins 28 on the fence sections 14 pass to thereby engage the fence sections 14 with to the posts 12, or couple the fence sections 14 to the posts 12.

[0060] Mounting collar 22 can rotate around the post 12 to any rotational position relative to the post 12. This increases the possible variations in the orientation of adjacent fence sections 14.

[0061] Set screw 24 is inserted into a threaded channel formed in the mounting collar 22 and, when turned in one direction, presses against the post 12 and thereby fixes the mounting collar 22 to the post 12. Sliding movement of the post clip 20 along the post 12 is enabled by turning the set screw 24 in the opposite direction which loosens the post clip 20. Instead of a set screw 24, other mechanisms known to those skilled in the art for fixing a tubular structure to a member which passes through an interior of the tubular structure can be used in the invention.

[0062] Mounting collar 22 and pin-receiving ring 26 of each post clip 20 are preferably made of a rigid material, such as steel or plastic, which is capable of providing a secure and sturdy connection between the fence sections 14 and the posts 12 to which they are coupled. Mounting collar 22 and pin-receiving ring 26 are connected together, e.g., by welding.

[0063] For a post 12 in the middle of a fencing system 10 in accordance with the invention, there will be two sets of one or more post clips 20 oriented in different directions, one set preferably oriented toward the adjacent post 12 on one side and the other set preferably oriented toward the adjacent post 12 on the other side. Orientation of a post clip 20 relates to the direction in which the pin-receiving ring 26 extends outward from the post 12. The number of post clips 20 in each set depends on the number of mounting pins 28 on each side of the fence sections 14 to be used in combination with the posts 12. In the illustrated embodiment, each fence section 14 includes two mounting pins 28 on each side and therefore, two sets of post clips each having two post clips 20 are mounted on each post 12 to be used in the middle of a fencing system 10 (see FIGS. 4A and 4B).

[0064] FIGS. 4A and 4B show the uppermost post clips 20 of the two sets adjoining one another and the lowermost post clips of the two sets adjoining one another, and this relative positioning is usually used when the terrain to which the fencing system 10 is being secured is level (see the two complete fence sections 14 on the right of FIG. 1). When the terrain is not level, the post clips 20 in the two sets are usually spaced apart from one another (see the remaining

complete fence sections 14 in FIG. 1 and FIG. 6). Variation in the height of the post clips 20 on the posts 12 is provided by loosening the set screw 24, sliding the post clip 20 to the desired vertical position and then tightening the set screw 24.

[0065] For a post at the end of a fencing system 10, there would only be one set of post clips 20.

[0066] In a preferred installation technique, the position of the lower post clip 20 of each set is fixed so that the bottom of the fence section 14 engaged therewith is proximately located to the ground (see FIG. 1). The position of the post clips 20 would thus depend on the contour of the ground 8 if it is desired that the fencing system 10 follow the contour of the ground 8 while also maintaining a small gap between the bottom of the fence section 14 and the ground.

[0067] Referring now in particular to FIG. 3, each fence section 14 is made of an upper horizontal rail 30, an intermediate horizontal rail 32 and a lower horizontal rail 34, all of which are preferably substantially parallel to one another. Vertical pickets or rails 36 are connected to the horizontal rails 30, 32, 34, e.g., by welding. The number of vertical rails 36 can vary depending on, for example, the length of the fence section 14, the length of horizontal rails 30, 32, 34 and the desired spacing between the vertical rails 36. The spacing between vertical rails 36 can also depend on the intended use of the fence 10, e.g., a fence for keeping deer and other large, wild animals away could have a larger spacing between vertical rails 36 than a fence for keeping small animals away. Although fence sections 14 are shown in with three horizontal rails 30, 32, 34, each fence section 14 can include only two horizontal rails, namely horizontal rails 30, 34.

[0068] Horizontal rails 30, 32, 34 and vertical rails 36 are preferably made of a rigid material such as steel. In one embodiment, the horizontal rails 30, 32, 34 are made of 5/16" diameter steel rods and the vertical rails 36 are made of 1/4" diameter steel rods. Since it is desired that the fence sections 14 have a manageable weight, the materials of the rails 30, 32, 34 and spacing of vertical rails 36 can be selected so that for a 46" wide fence section, the weight can be less than about 15 pounds.

[0069] At end regions or exactly at their ends as shown, upper and lower horizontal rails 30, 34 include the mounting pins 28 which enable the fence section 14 to be engaged with or coupled to a pair of adjacent posts 12. When the fence section 14 is properly coupled to a pair of posts 12, the horizontal rails 30, 34 will rest on the post clips 20 with the mounting pins 28 extending through the apertures defined by the pin-receiving rings 26 of the post clips 20, which proper positioning can be achieved by adjusting the vertical portion of the post clips 20. When the horizontal rails 30, 34 are formed from a linear piece of material, mounting pins 28 can be formed by bending the ends of these pieces downward about 90° such that the mounting pins 28 are substantially perpendicular to the horizontal rails 30, 34.

[0070] An important feature of the invention is that the height of the four mounting pins 28 is coordinated to enable easy installation of the fence section 14 on a pair of adjacent posts 12. As shown most clearly in FIG. 3, mounting pins 28A, 28B, 28C and 28D all have different lengths with the lowermost mounting pin 28B, 28D on each side having a

larger length than the uppermost mounting pin 28A, 28C on the respective side, i.e., mounting pin 28B is longer than mounting pin 28A and mounting pin 28D is longer than mounting pin 28C. Moreover, mounting pin 28C is longer than mounting pin 28B so that mounting pin 28A has the smallest length of all of the mounting pin 28A, 28B, 28C, 28D, mounting pin 28B is longer than mounting pin 28A, mounting pin 28C is longer than mounting pin 28B and mounting pin 28D is longer than mounting pin 28C. For example, mounting pin 28A can be about 3", mounting pin 28B can be about 4", mounting pin 28C can be about 5" and mounting pin 28D can be about 6".

[0071] By making the lower mounting pin 28D on one side of the fence sections 14 longer than the upper mounting pin 28C on that side, and the mounting pins 28A, 28B on the other side shorter, and with the lower mounting pin 28B longer than the upper mounting pin 28A, installation of the fence sections 14 on the posts 12 is easier.

[0072] Specifically, it becomes possible to first insert lower mounting pin 28D into the aperture defined by the pin-receiving ring 26 of the lower one of a pair of post clips 20 on a post 12 and then insert the upper mounting pin 28C into the aperture defined by the pin-receiving ring 26 of the upper one of the pair of post clips 20 on the post 12 without concern that the lower mounting pin 28D will come out of the pin-receiving ring 26 of the lower post clip 20. That is, while the lower mounting pin 28D extends through the pin-receiving ring 26 of the lower post clip 20, the fence section 14 can be adjusted until the upper mounting pin 28C aligns with the aperture in the pin-receiving ring 26 of the upper post clip 20 and once this alignment is attained, the fence section 14 is then lowered. Both mounting pins 28C, 28D extend through the pin-receiving ring 26 of the respective post clip 20 and the rails 30, 34 rest thereon (until installation of the fence section to an adjacent post is started).

[0073] An alternative technique to install the side of fence section 14 having mounting pins 28C, 28D to a post 12 would be to simultaneously align both mounting pins 28C, 28D with the pin-receiving ring 26 of the respective post clip 20 and then lower the fence section 14 until the rails 30, 34 rest on the pin-receiving rings 26 of the post clips 20.

[0074] Coupling of the fence section 14 to the adjacent post 12 via mounting pins 28A, 28B is also easier since the installer now moves over the side of the fence section 14 with mounting pins 28A, 28B and lifts the fence section 14 up (with rails 30, 34 being raised off of the post clips 20 on the side with mounting pins 28C, 28D) and adjusts its position until mounting pin 28B aligns with the aperture in the pin-receiving ring 26 of the lower post clip 20 on the adjacent post 12. During this time, the fence section 14 does not disengage from the post 12 to which it is engaged via mounting pins 28C and 28D because mounting pins 28C and 28D are longer than mounting pin 28B. Thus, mounting pins 28C, 28D do not have to be lifted completely out of the pin-receiving ring 26 of the post clips 20 in order to enable alignment of mounting pin 28B with the pin-receiving ring 26 of its post clip 20 and placement therein.

[0075] Thus, as a result of the length variations of the mounting pins 28B, 28C and 28D, it is possible to both maintain mounting pins 28C, 28D in position extending through the pin-receiving ring 26 of their respective post clip

20 and also lift the fence section 14 slightly above the aperture in the pin-receiving ring 26 of the lower post clip 20 on the adjacent post 12 into which mounting pin 28B will be placed. Once lower mounting pin 28B aligns with the pin-receiving ring 26 of the respective post clip 20, the fence section 14 is lowered, e.g., until the rail 34 contacts the pin-receiving ring 26 of the post clip 20 alongside mounting pin 28B.

[0076] Mounting pin 28A is then engaged with its respective post clip 20 by lifting the fence section 14 up and adjusting its position until mounting pin 28A aligns with the aperture in the pin-receiving ring 26 of the upper post clip 20 on the adjacent post 12. During this time, care is exercised not to disengage the fence section 14 from the post 12 to which it is engaged via mounting pins 28B, 28C and 28D, as such disengagement is not required because mounting pins 28B, 28C and 28D are longer than mounting pin 28A. Thus, mounting pins 28B, 28C, 28D do not have to lifted completely out of the pin-receiving ring 26 of the post clips 20 in order to enable alignment of mounting pin 28A with the pin-receiving ring 26 of its post clip 20 and placement therein.

[0077] In view of the length variations of the mounting pins 28A, 28B, 28C and 28D, it is possible to both maintain mounting pins 28B, 28C, 28D in position extending through the pin-receiving ring 26 of their respective post clip 20 and also lift the fence section 14 slightly above the aperture in the pin-receiving ring 26 of the upper post clip 20 on the adjacent post 12 into which mounting pin 28A will be placed. Once lower mounting pin 28A aligns with the pin-receiving ring 26 of the respective post clip 20, the fence section 14 is lowered, e.g., until the rail 30 contacts the pin-receiving ring 26 of the post clip 20 alongside mounting pin 28A.

[0078] An alternative technique to install the side of fence section 14 having mounting pins 28A, 28B to the adjacent post 12 would be to simultaneously align both mounting pins 28A, 28B with the pin-receiving ring 26 of the respective post clip 20 and then lower the fence section 14 until the rails 30, 34 rest on the post clips 20 alongside mounting pins 28A, 28B, respectively.

[0079] When installation is complete, all mounting pins 28 extend through the pin-receiving ring 26 of their respective post clip 20 and rails 30, 34 rest on the pin-receiving rings 26 of the post clips 20. Fence section 14 is thus secured to the posts 12 as shown in FIG. 5.

[0080] In addition to the installation advantage achieved by the specific variation in the length of the mounting pins 28 described above, another important advantage is that each fence section 14 can act as a gate. When using the fence section 14 as a gate, the side of the fence section 14 coupled via mounting pins 28A, 28B to the post 12 is lifted up until mounting pins 28A, 28B are clear of the pin-receiving ring 26 of the respective post clips 20, i.e., the lower edge of the mounting pins 28A, 28B are above the level of the respective pin-receiving ring 26. The fence section 14 is then swivelled in one direction or the other to create an opening between the post 12 and the fence section 14. During this time, mounting pins 28C, 28D engaged with post clips 20 attached to the adjacent post 12 are not removed entirely from the pin-receiving ring 26 of the respective post clips 20 in view of their longer lengths than mounting pins 28A, 28B.

Maintaining this engagement allows the fence section 14 to be lowered immediately after the mounting pins 28A, 28B are swivelled out of alignment with the pin-receiving ring 26 of the respective post clips 20 until the rails 30, 34 of the fence section 14 rests on pin-receiving rings 26 of the post clips 20 alongside mounting pins 28C, 28D. Fence section 14 can continue to be swivelled while supported on the pin-receiving rings 26 of the post clips 20.

[0081] When the gate is no longer needed, the fence section 14 is re-engaged with the post 12 via mounting pins 28A, 28B in the manner described above.

[0082] Referring now to FIGS. 8A-11, instead of using post clips 20 to secure the fence sections 14 to the posts 12, it is possible to use gate clips 38. When forming a gate with fence section 14, gate clips 38 are designed to allow an easier swivel motion of a fence section 14 apart from a post 12 than with post clips 20 as described above, because it is not necessary to lift the fence section 14 up until a pair of mounting pins on one side of the fence section 14, e.g., mounting pins 28A, 28B, is above the pin-receiving ring 26 of the respective post clip 20. Rather, a smaller lifting movement is required.

[0083] As shown in FIGS. 8A, 8B and 8C, each gate clip 38 includes a tubular mounting collar 40 have a diameter which enables it to slide along the respective post 12 to a desired vertical position on the post 12, a locking mechanism, e.g., set screw 42, arranged in connection with the mounting collar 40 to lock the mounting collar 40 in the desired vertical position and a substantially L-shaped pin 44 fixed to the mounting collar 40. Pin 44 defines a support surface on which the horizontal rails 30, 34 can rest. The pin 44 may be formed from a rod of rigid material, such as steel, bent upward at an angle of about 90° and is attached to the mounting collar 40 by, e.g., welding. Mounting collar 40 can rotate around the post 12 to any rotational position relative to the post 12.

[0084] Set screw 42 is inserted into a threaded channel formed in the mounting collar 40 and, when turned in one direction, presses against the post 12 and thereby fixes the mounting collar 40 to the post 12. Sliding movement of the gate clip 38 along the post 12 is enabled by turning the set screw 42 in the opposite direction which loosens the gate clip 38. Instead of a set screw 42, other mechanisms known to those skilled in the art for fixing a tubular structure to a member which passes through an interior of the tubular structure can be used in the invention.

[0085] In use, gate clips 38 are secured at a vertical position along a post 12 to support the rails 30, 34 on one side of a fence section 14 (see FIG. 9). As shown in FIG. 9, the upper support surface of the pins 44 of the gate clips 38 on a post 12 on one side of a fence section 14 can be substantially level with the upper surface of the pin-receiving rings 26 of the post clips 20 on a post 12 on the other side of the fence section 14. In this position, the rails 30, 34 rest at one end region on the post clips 20 and at an opposite other end region on the gate clips 38. Although the side of fence section 14 having mounting pins 28A, 28B is shown engaged with gate clips 38 in FIG. 9, the other side of the fence section 14 can alternatively be engaged with gate clips 38

[0086] To open the gate, the fence section 14 is lifted slightly upward until the rails 30, 34 are above the vertical

portion of the pins 44 and then the fence section 14 is swivelled outward away from the post 12 to create an opening between the post 12 and the fence section 14. During this time, mounting pins 28C, 28D engaged with post clips 20 are not removed entirely from the pin-receiving ring 26 of the respective post clips 20. Maintaining this engagement allows the fence section 14 to be lowered immediately after the rails 30, 34 are passed over the vertical portion of the pins 44 until the rails 30, 34 of the fence section 14 rest on pin-receiving rings 26 of the post clips 20. Fence section 14 can continue to be swivelled while supported on post clips 20. When the gate is no longer needed, the fence section 14 is re-engaged with the gate clips 38 by passing the rails 30, 34 over the vertical portion of the pins 44 and then lowering the rails 30, 34 until they rest on the horizontal portion of the pins 44.

[0087] FIG. 11 shows the possible use of a gate-forming fence section 14 in the middle of a fencing system. For this construction, the post 12 having the gate clips 38 is also provided with a set of post clips 20 oriented in such a manner to avoid interfering with the swinging of the gate-forming fence section 14.

[0088] Referring now to FIGS. 12A-17, fencing system 10 in accordance with the invention also preferably includes various lock clips which prevent inadvertent or unauthorized movement or adjustment of the components of the fencing system 10, e.g., the fence sections 14.

[0089] FIGS. 12A and 12B show a post lock fence clip 46 which is used to prevent a fence section 14 from being removed out of engagement with the post 12 to which it is engaged. Post lock fence clip 46 includes a tubular mounting collar 48 have a diameter which enables it to slide along the post 12 to a desired vertical position on the post 12, a locking mechanism, e.g., set screw 50, arranged in connection with the mounting collar 48 to lock the mounting collar 48 in the desired vertical position and an annular plate 52 fixed to the mounting collar 48. Set screw 50 is inserted into a threaded channel formed in the mounting collar 48 and, when turned in one direction, presses against the post 12 and thereby fixes the mounting collar 48 to the post 12. Sliding movement of the post lock fence clip 46 along the post 12 is enabled by turning the set screw 50 in the opposite direction which loosens the post lock fence clip 46. Instead of a set screw 50, other mechanisms known to those skilled in the art for fixing a tubular structure to a member which passes through an interior of the tubular structure can be used in the invention.

[0090] The diameter of annular plate 52 is sufficiently large such that it extends over the rail 30 when the post lock fence clip 46 is positioned over a post clip 20 (see FIG. 15). When post lock fence clip 46 is positioned such that the distance between the annular plate 52 and the pin-receiving ring 26 of the post clip 20 is less than the length of the mounting pin 28A passing through the pin-receiving ring 26, it is not possible to remove the mounting pin 28A completely from the pin-receiving ring 26. Thus, unless post lock fence clip 46 is first raised upward or removed, the fence section 14 cannot be raised and lifted off of the posts 12 and therefore will be maintained or locked in position engaging with the post 12.

[0091] FIGS. 13A and 13B show a cantilever post lock fence clip 54 which is also used to prevent a fence section 14 from being removed out of engagement with the post 12

to which it is engaged. Post lock fence clip 54 includes an annular plate 56 have a central aperture 58 with a diameter which substantially corresponds to the diameter of the post 12 so that if the post lock fence clip 54 is not slid on post 12 straight upward, it will lock up. That is, there is a very tight tolerance between the diameter of the central aperture 58 and the diameter of the post 12.

[0092] The diameter of annular plate 56 is sufficiently large such that it extends over the rail 30 when the post lock fence clip 54 is positioned over a post clip 20 (see FIG. 17). When post lock fence clip 54 is positioned such that the distance between the annular plate 56 and the pin-receiving ring 26 of the post clip 20 is less than the length of the mounting pin 28A passing through the pin-receiving ring 26, it is not possible to remove the mounting pin 28A completely from the pin-receiving ring 26. Thus, unless post lock fence clip 54 is raised upward or removed, the fence section 14 cannot be raised and lifted off of the posts 12 and therefore will be maintained or locked in position engaging with the post 12.

[0093] FIGS. 14A and 14B show another lock clip 60 which in contrast to the embodiments shown in FIGS. 12A-13B does not engage with the post 12. Rather, lock clip 60 is a fence pin lock clip which prevents a mounting pin 28 of fence section 14 from being removed completely out of engagement with the pin-receiving ring 26 of the post clip 20. Fence pin lock clip 60 includes a tubular mounting collar 62 have a diameter which enables it to slide along one of the mounting pins 28, a locking mechanism, e.g., set screw 64, arranged in connection with the mounting collar 62 to lock the mounting collar 62 in a locking position and an annular plate 66 fixed to the mounting collar 62.

[0094] In use, mounting collar 62 is slid along the mounting pin 28, e.g., to a position in which the plate 66 contacts the pin-receiving ring 26 with which the mounting pin 28A is engaged (see FIG. 16-note that fence pin lock clip 60 can be used for any mounting pin 28 on fence section 14 and is not limited to use with the smallest mounting pin 28A as shown). The diameter of annular plate 66 is sufficiently large such that it cannot pass through the opening defined by the pin-receiving ring 26 of the post clip 20. Thus, the presence of fence pin lock clip 60 on the mounting pin 28A prevents disengagement of the mounting pin 28 from the post clip 20. Even without contact between the plate 66 and the pin-receiving ring 26, disengagement of the mounting pin 28A from the post clip 20 is not possible.

[0095] Set screw 64 is inserted into a threaded channel formed in the mounting collar 62 and, when turned in one direction, presses against the mounting pin 28A and thereby fixes the mounting collar 62 to the mounting pin 28. Sliding movement of the post lock fence clip 46 along the mounting pin 28A is enabled by turning the set screw 64 in the opposite direction which loosens the fence pin lock clip 60. Instead of a set screw 64, other mechanisms known to those skilled in the art for fixing a tubular structure to a member which passes through an interior of the tubular structure can be used in the invention.

[0096] In the embodiments shown in FIGS. 12A-17, an annular plate is provided it is envisioned that other shapes or plates can be used which achieve the same function, i.e., prevent upward movement of the rail and/or mounting pin. [0097] One of the primary intended uses of fencing system 10 in any of the constructions described above is as a

seasonal barrier to deer. For this use, fencing system 10 would be installed around an area to be protected from deer and controls the deer to the extent that they would not be able to enter into the protected area and cause damage thereto. Once the deer are no longer in the vicinity of the area being protected, the fencing system could be removed.

[0098] Fencing system 10 is designed to be easy to install in that all that is required to enable placement of the fence sections 14 is for the installer to drive the spikes 16 of the posts 12 into the ground 8 and adjust the set screws 24 on the post clips 20 and any set screws on gate clips and/or locking clips. The first step would therefore be to determine the position of the posts 12, which would determine the path of the fencing system 10. The spikes 16 are then driven into the ground at these positions. If ground stop plates 18 are provided on the posts 12, then the spikes 16 are driven into the ground until the ground stop plates 18 contact the ground 8. The next step is to position the post clips 20 and gate clips and/or lock clips, if any are present. This involves rotating the set screws 24 and sliding the mounting collars 22 up or down until they are at the desired position and then tightening the set screws 24 to lock the post clips 20 in place. Spacing between the post clips 20 is controlled to be substantially the same as the distance between the rails 30, 34 of the fence sections 14, which defines the width of the fence sections 14. Post clips 20 on adjacent posts 12 are positioned to be substantially level with one another. Once the post clips 20 are locked in place, the fence sections 14 are engaged with the post clips 20 in the distinctive manner described above, i.e., first engaging mounting pins 28C and 28D and then engaging mounting pins 28A and 28B. Fencing system 10 is now complete.

[0099] If any gate clips 36 are used to form a gate, the gate clips 36 are positioned on one post 12 level with the post clips 20 on the post 12 on the other side of the gate-forming fence section and then tightened. The rails 30, 34 are then placed onto the gate clips 36.

[0100] If any lock clips 46, 54, 60 are used, they are placed at an appropriate location and fixed thereat.

[0101] Using the particular posts 12, fence sections 14, post clips 20 and optional gate clips 38 and lock clips 48, 54, 60, a fencing system 10 of about 60 feet can be installed in as little as one hour, or even less, depending on, for example, the ground conditions and the level of the terrain.

[0102] Another advantage of fencing system 10 in accordance with the invention is that, when used on a seasonal basis, it can be disassembled at the end of the season and easily stored. Disassembly involves removing any lock clips 46, 54, 60, then removing the fence sections 14 from engagement with the post clips 20 and then lifting the posts 12 out of the ground 8. The latter step could be aided by a pry bar. The fence sections 14 can be readily stacked either one on top of the other or next to each other and the posts 12 piled up. Stored in this manner, the fence sections 14 of a 60' fencing system 10 (each being about 46" wide) could occupy as little as a 10" by 4' space. In contrast to chain-link fences, there are no heavy rolls of material to handle nor any possibility of plants or weeds being stuck in the fence and impeding rolling of the fence.

[0103] When used on a seasonal basis, to aid in reassembly of the fencing system 10, the posts 12 could be

numbered. In this manner, it would not be necessary to adjust the post clips 20, unless the terrain has changed.

[0104] While particular embodiments of the invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention in its broader aspects, and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of the invention. For example, although the description above describes mounting pins and a pinreceiving aperture constructed to receive the mounting pins, other male-type connectors can be arranged on the horizontal rails and the post clips can include other female-type connectors.

#### 1. A fencing system, comprising:

elongate posts adapted to be secured to the ground;

fence sections each arranged between an adjacent pair of said posts and including downward-facing mounting pins; and

- post clips arranged on said posts, each of said post clips including a tubular mounting collar slidable along and rotatable relative to said posts, locking means for locking said mounting collar in a fixed vertical position and a pin-receiving ring defining an aperture for receiving one of said mounting pins to thereby enable engagement of said mounting pins with said post clips and thus engagement of said fence sections with said posts.
- 2. The fencing system of claim 1, wherein said locking means comprise a set screw arranged in a threaded channel formed in said mounting collar.
- 3. The fencing system of claim 1, wherein each of said fence sections includes upper and lower horizontal rails and vertical rails connected to said horizontal rails, said mounting pins being arranged at ends of said horizontal rails.
- **4**. The fencing system of claim 3, wherein said mounting pins are substantially perpendicular to said horizontal rails.
- 5. The fencing system of claim 3, wherein said mounting pins are arranged such that on each side of said fence section, a lowermost one of said mounting pins is longer than an uppermost one of said mounting pins and the uppermost one of said mounting pins on one side of said fence section is longer than the lowermost one of said mounting pins on the other side of said fence section.
- 6. The fencing system of claim 3, wherein said mounting pins are arranged such that on one side of said fence section, a lowermost one of said mounting pins has a length of about 6" and an uppermost one of said mounting pins has a length of about 5" and on the other side of said fence section, a lowermost one of said mounting pins has a length of about 4" and an uppermost one of said mounting pins has a length of about 3"
- 7. The fencing system of claim 3, further comprising gate clips arranged on at least one of said posts, each of said gate clips including a tubular mounting collar slidable along and rotatable relative to said at least one of said posts, locking means for locking said mounting collar in a fixed vertical position and a substantially L-shaped pin fixed to said mounting collar and defining a support for one of said horizontal rails.
- **8**. The fencing system of claim 1, wherein said posts are constructed to be removably securable to the ground.

- 9. The fencing system of claim 1, further comprising a ground stop plate attached to each of said posts at a predetermined, fixed distance from a bottom end of each of said posts such that when said posts are placed into the ground up to said ground stop plates, a remaining portion of said posts above said ground stop plates is substantially equal.
- 10. The fencing system of claim 1, further comprising at least one lock clip for locking one of said fence sections in engagement with said posts.
- 11. The fencing system of claim 10, wherein said at least one lock clip is arranged to engage with one of said posts.
- 12. The fencing system of claim 11, wherein said at least one lock clip includes a tubular mounting collar slidable along said one of said posts, locking means for locking said mounting collar in a fixed vertical position and a plate fixed to said mounting collar, said at least one lock clip being arranged relative to said one of said post clips such that said plate extends over one of said mounting pins when said mounting pin is engaged with said post clip and the distance between said lock clip and said pin-receiving ring of said post clip is less than the length of said mounting pin.
- 13. The fencing system of claim 11, wherein said at least one lock clip includes a plate have an aperture with a diameter substantially corresponding to a diameter of said one of said posts such that said at least lock clip must be slid on said one of said posts straight upward to enable release of the locking provided by said at least one lock clip, said at least one lock clip being arranged relative to said one of said post clips such that said plate extends over one of said mounting pins when said mounting pin is engaged with said post clip and the distance between said lock clip and said pin-receiving ring of said post clip is less than the length of said mounting pin.
- **14**. The fencing system of claim 10, wherein said at least one lock clip is arranged to engage with one of said mounting pins.
- 15. The fencing system of claim 14, wherein said at least one lock clip includes a tubular mounting collar slidable along said one of said mounting pins, locking means for locking said mounting collar in a fixed vertical position and a plate fixed to said mounting collar, said plate having a cross-sectional size which prevents its passage through the aperture defined by said pin-receiving ring of said post clips engaging with said one of said mounting pins.
- 16. The fencing system of claim 15, wherein said mounting pins have different lengths, said at least one lock clip engaging with one of said mounting pins have the smallest length.

### 17. A fencing system, comprising:

elongate posts adapted to be secured to the ground;

fence sections each arranged between an adjacent pair of said posts and including upper and lower horizontal rails, vertical rails connected to said horizontal rails and downward-facing mounting pins arranged at end regions of said horizontal rails, said mounting pins being arranged such that on each side of said fence section, a lowermost one of said mounting pins is longer than an uppermost one of said mounting pins and the uppermost one of said mounting pins on one side of said fence section is longer than the lowermost one of said mounting pins on the other side of said fence section; and

post clips arranged on said posts, each of said post clips defining an aperture for receiving one of said mounting pins to thereby enable engagement of said mounting pins with said post clips and thus engagement of said fence sections with said posts.

18. The fencing system of claim 17, wherein said mounting pins are arranged such that on one side of said fence section, a lowermost one of said mounting pins has a length of about 6" and an uppermost one of said mounting pins has a length of about 5" and on the other side of said fence section, a lowermost one of said mounting pins has a length of about 4" and an uppermost one of said mounting pins has a length of about 3".

19. A fencing system, comprising:

elongate posts adapted to be secured to the ground;

fence sections each engaged with an adjacent pair of said posts and including upper and lower horizontal rails and vertical rails connected to said horizontal rails; and

gate clips arranged on at least one of said posts, each of said gate clips including a tubular mounting collar slidable along and rotatable relative to said at least one of said posts, locking means for locking said mounting collar in a fixed vertical position and a substantially L-shaped pin fixed to said mounting collar and defining a support for one of said horizontal rails to thereby engage said fence section with said at least one of said posts.

20. The fencing system of claim 19, wherein said locking means comprise a set screw arranged in a threaded channel formed in said mounting collar.

21. A fencing system, comprising:

elongate posts adapted to be secured to the ground;

fence sections each engaged with an adjacent pair of said posts and including upper and lower horizontal rails and vertical rails connected to said horizontal rails; and

at least one lock clip for locking one of said fence sections in engagement with said posts.

22. The fencing system of claim 21, wherein said at least one lock clip is arranged to engage with one of said posts.

23. The fencing system of claim 21, wherein each of said fence sections further comprises downward-facing mounting pins arranged at end regions of said horizontal rails, the fencing system further comprising:

post clips arranged on said posts, each of said post clips defining an aperture for receiving one of said mounting pins to thereby enable engagement of said mounting pins with said post clips and thus engagement of said fence sections with said posts.

24. The fencing system of claim 23, wherein said at least one lock clip includes a tubular mounting collar slidable along said one of said posts, locking means for locking said mounting collar in a fixed vertical position and a plate fixed to said mounting collar, said at least one lock clip being arranged relative to said one of said post clips such that said plate extends over one of said mounting pins when said mounting pin is engaged with said post clip and the distance between said lock clip and said pin-receiving ring of said post clip is less than the length of said mounting pin.

25. The fencing system of claim 23, wherein said at least one lock clip includes a plate have an aperture with a diameter substantially corresponding to a diameter of said one of said posts such that said at least lock clip must be slid on said one of said posts straight upward to enable release of the locking provided by said at least one lock clip, said at least one lock clip being arranged relative to said one of said post clips such that said plate extends over one of said mounting pins when said mounting pin is engaged with said post clip and the distance between said lock clip and said pin-receiving ring of said post clip is less than the length of said mounting pin.

**26**. The fencing system of claim 23, wherein said at least one lock clip is arranged to engage with one of said mounting pins.

27. The fencing system of claim 26, wherein said at least one lock clip includes a tubular mounting collar slidable along said one of said mounting pins, locking means for locking said mounting collar in a fixed vertical position and a plate fixed to said mounting collar, said plate having a cross-sectional size which prevents its passage through the aperture defined by said pin-receiving ring of said post clips engaging with said one of said mounting pins.

28. The fencing system of claim 27, wherein said mounting pins have different lengths, said at least one lock clip engaging with one of said mounting pins have the smallest length.

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