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(54) **FENCING POST JUNCTION SYSTEM**

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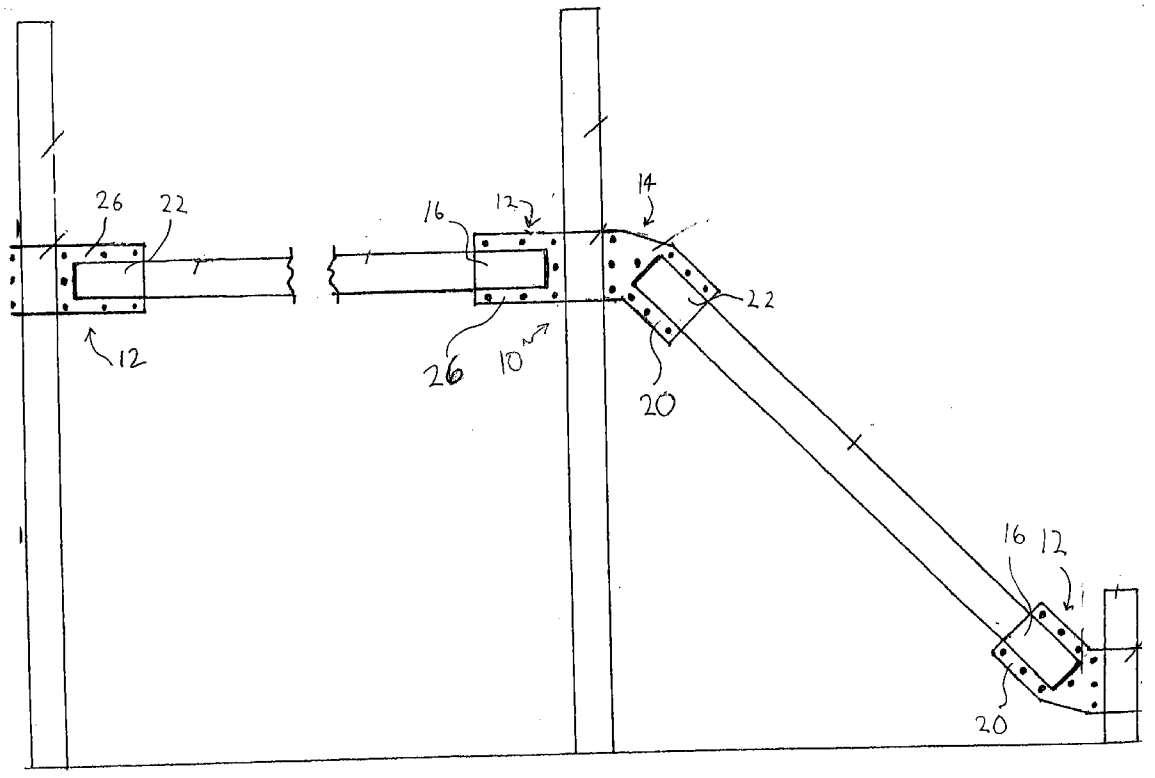
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(57) **ABSTRACT**

A no-weld fencing post junction system which allows for the construction of variable fencing configurations without the use of additional equipment and personnel such as would be necessary with welded fencing post junctions.



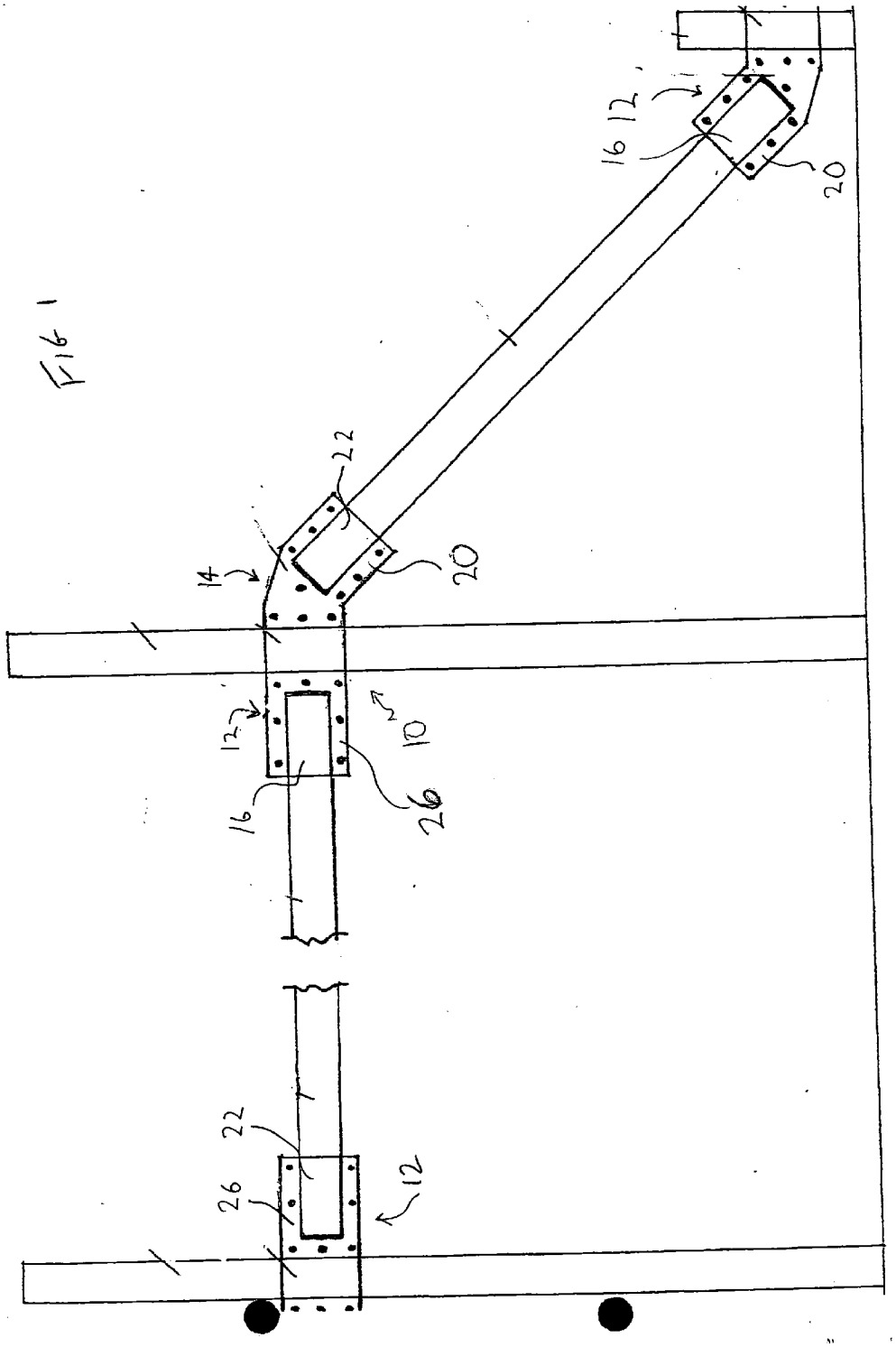


FIG 1

FIG. 2

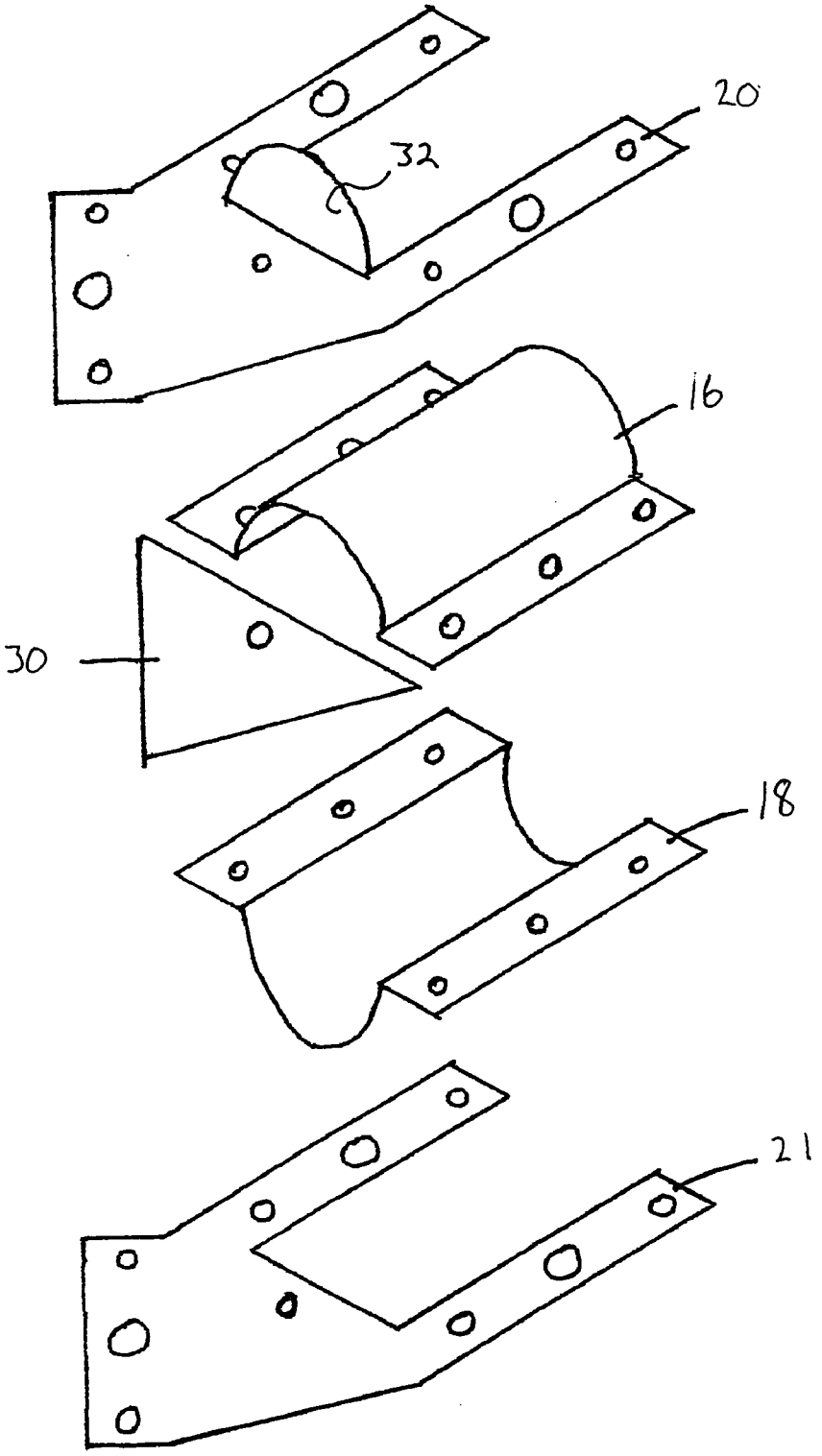
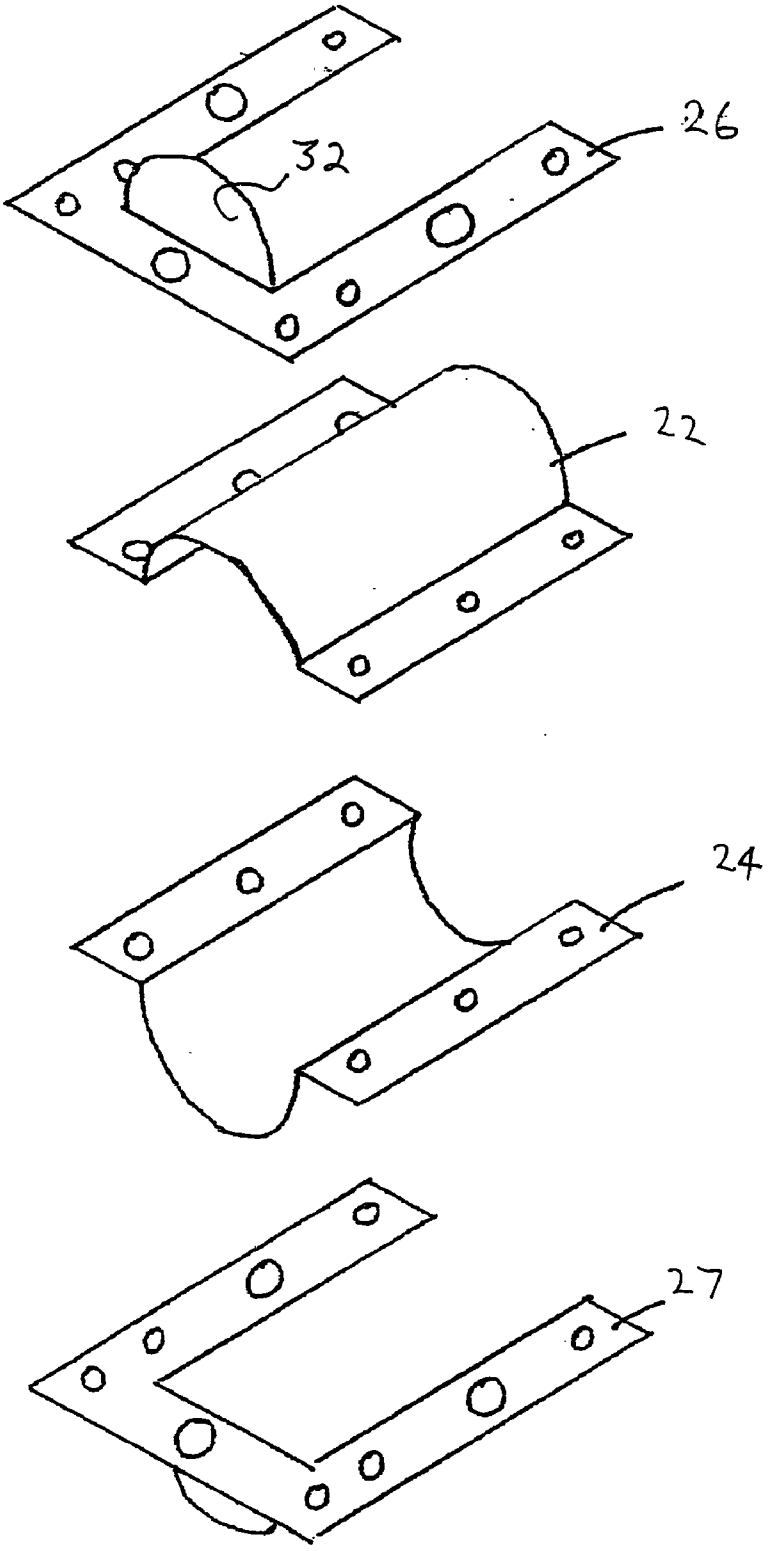


FIG. 3



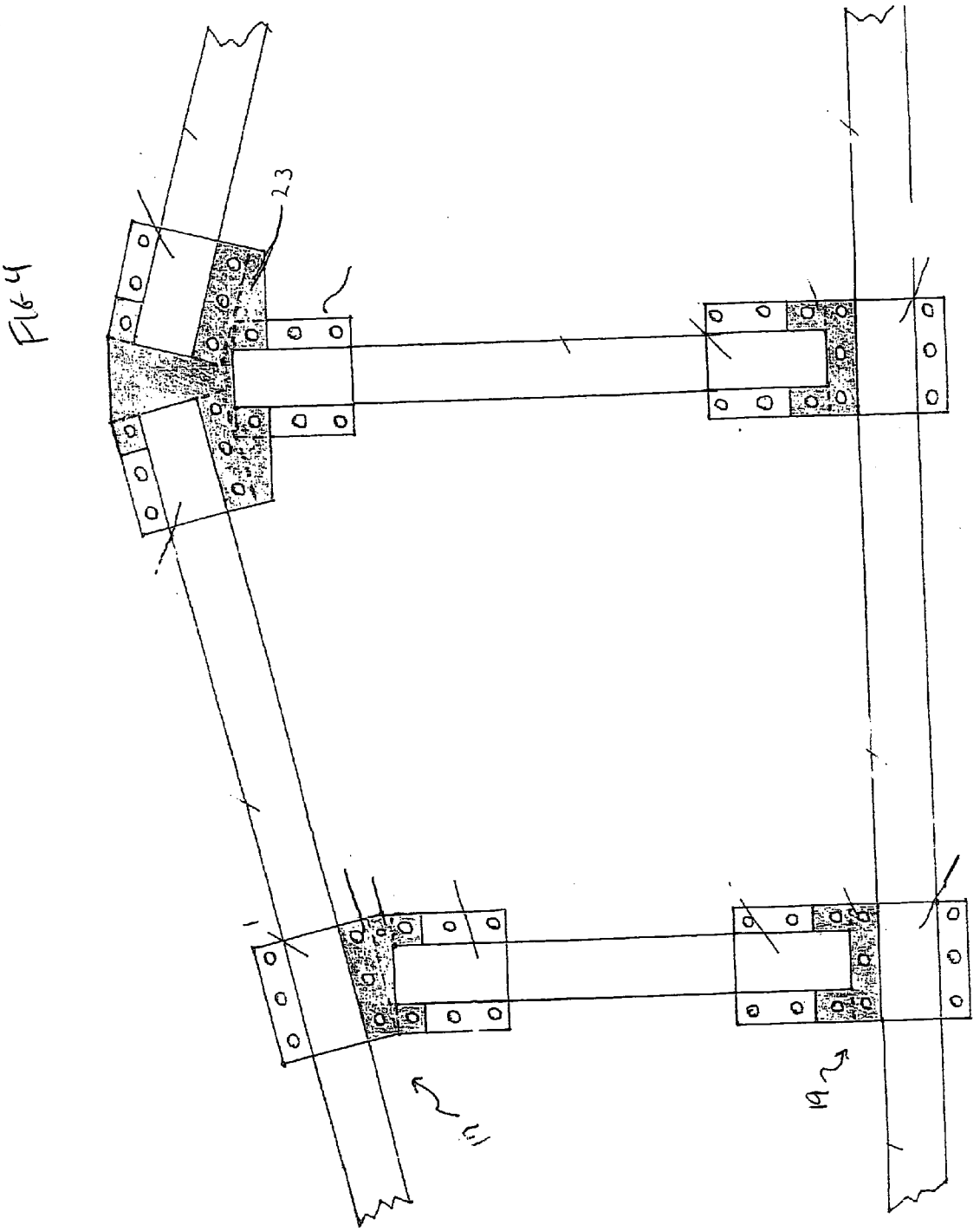


FIG 4

FIG 5

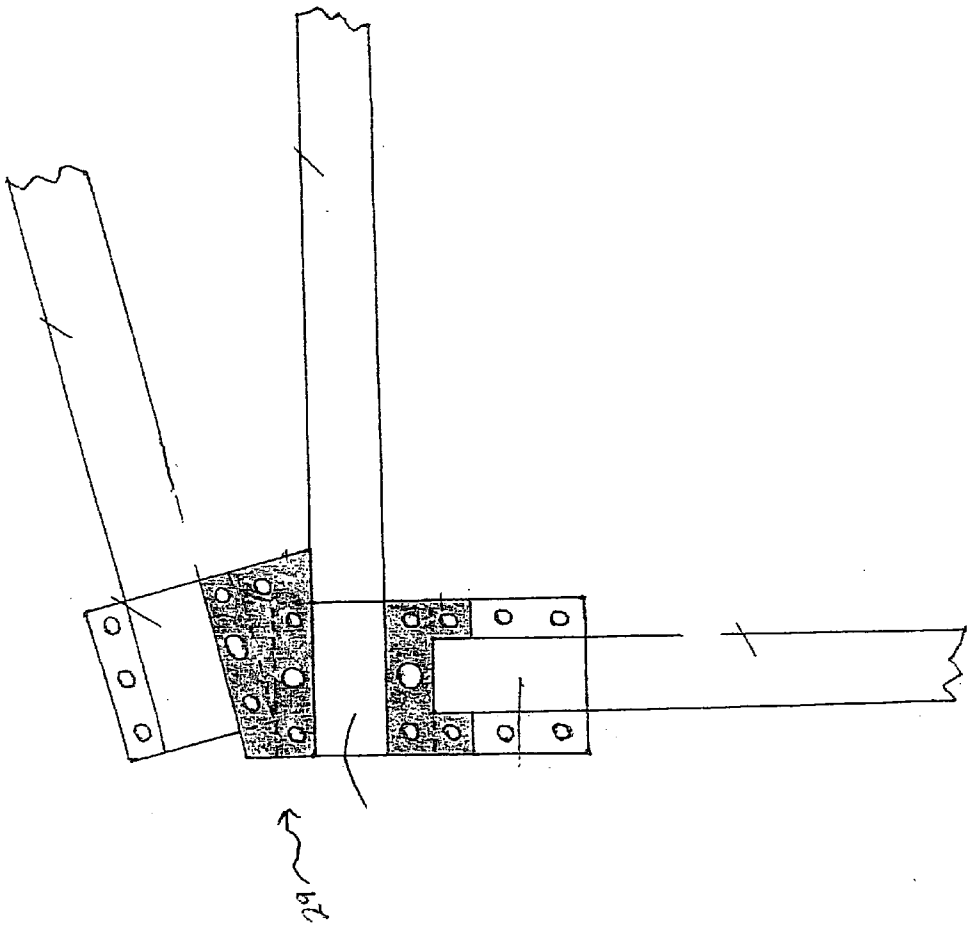


FIG 6

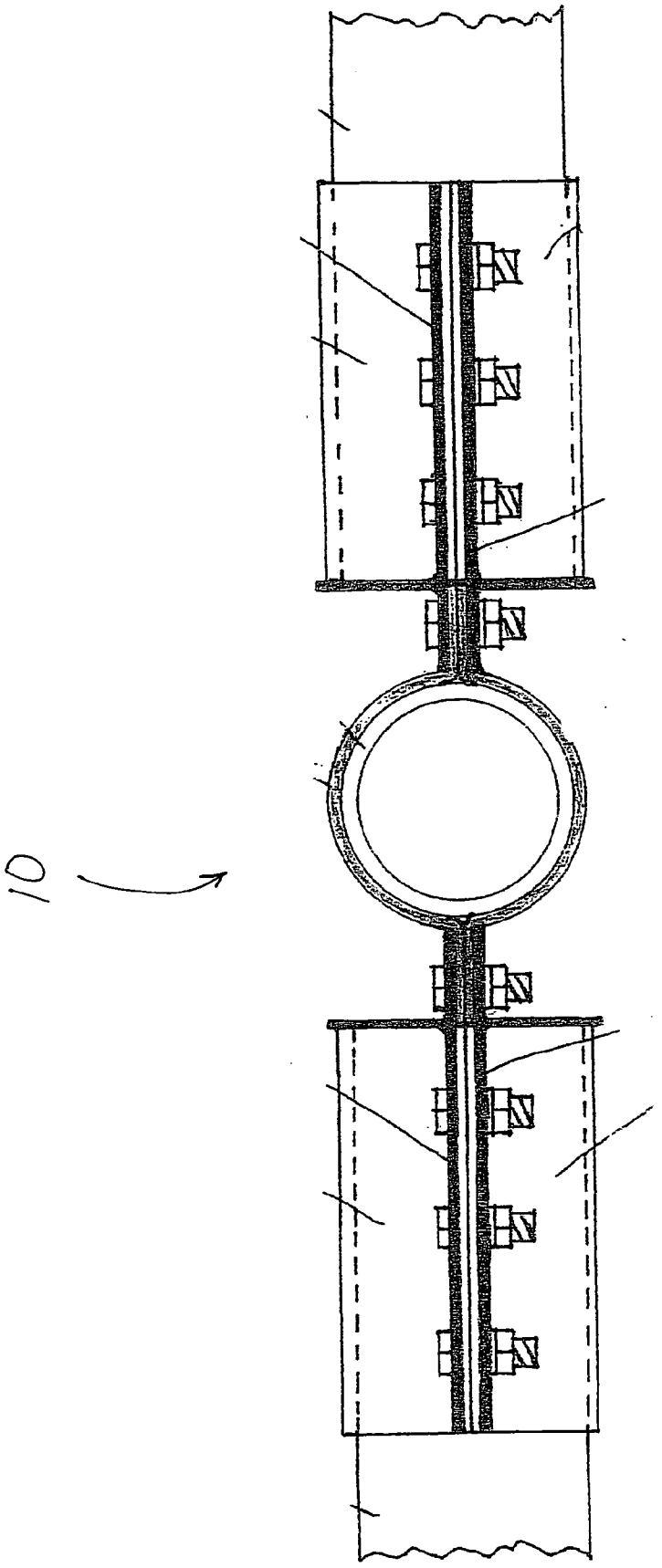


FIG 7

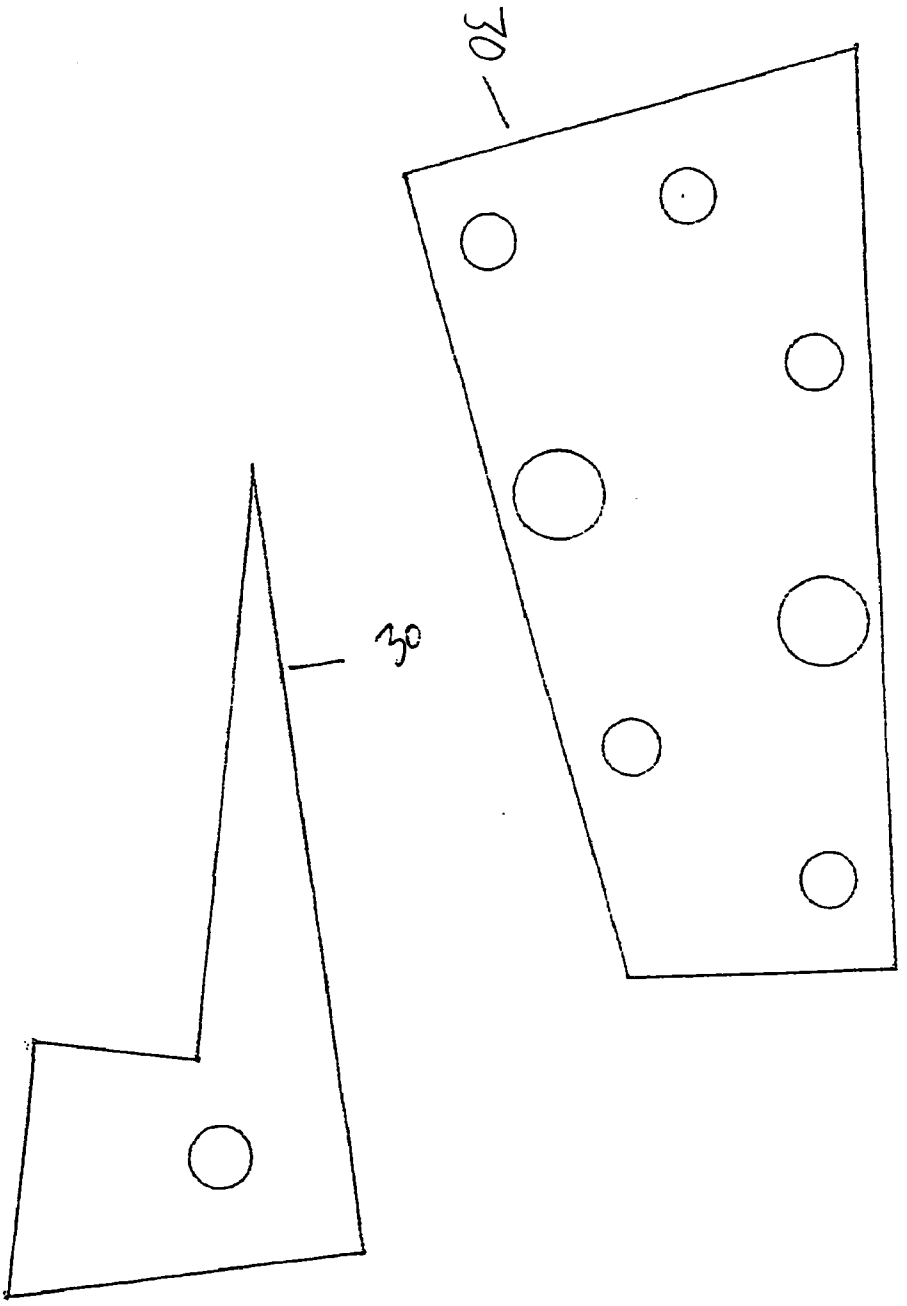


FIG 8

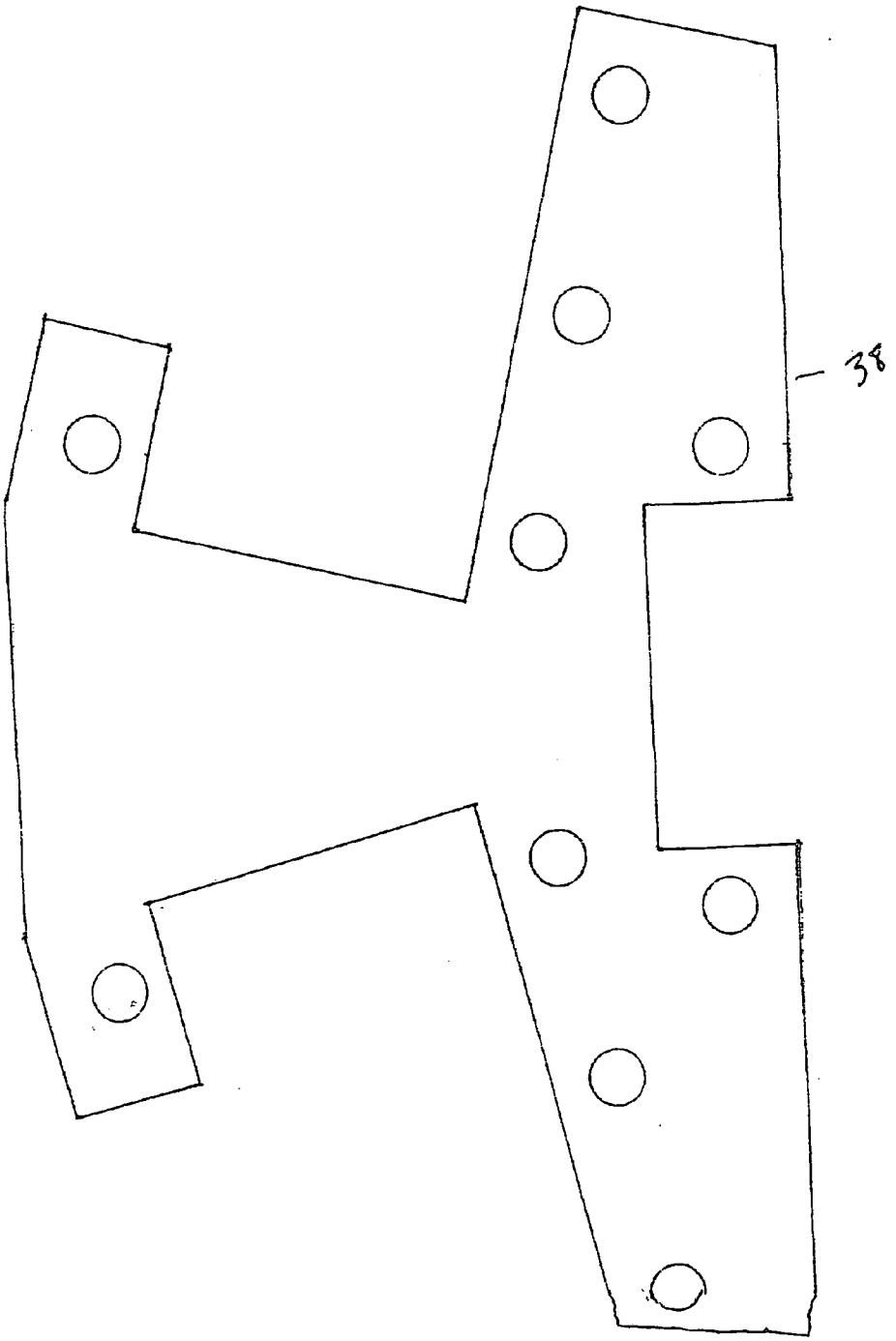
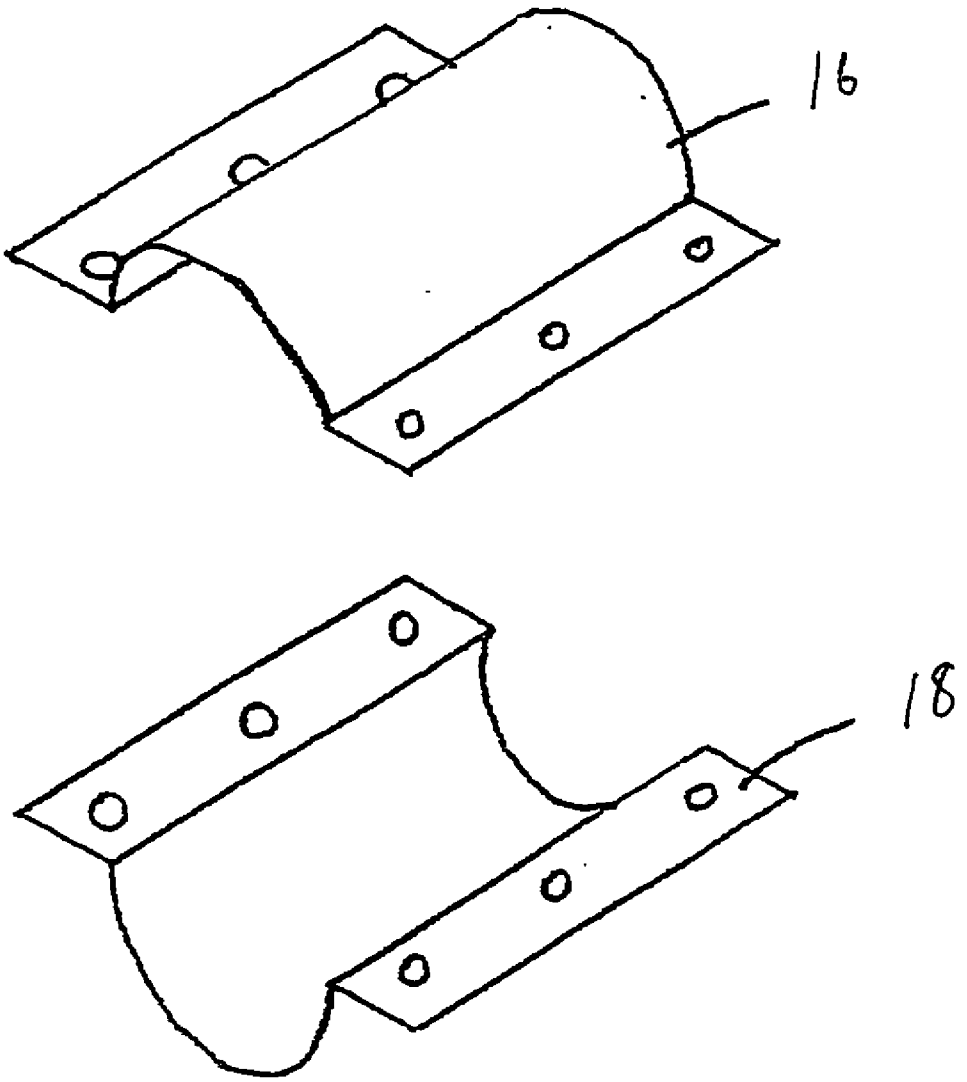


Fig. 9



FENCING POST JUNCTION SYSTEM

CITATION TO PARENT APPLICATION(S)

[0001] This application claims the benefit of U.S. Provisional Application No. 60/427,012, filed Nov. 18, 2002, and U.S. Provisional Application No. 60/447,916, filed Feb. 19, 2003, from which priority is claimed pursuant to 35 U.S.C. 119(e).

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to the field of fence construction. Representative examples of applications of the present invention would be permanent fencing, temporary fencing, and hand rails.

[0004] 2. Background Information

[0005] A serious deficiency presently exists with respect to the need to weld the connections in most fencing junctures. Welding cannot be accomplished on certain surfaces such as galvanized steel without first removing the zinc coating or by protecting against the toxic fumes that will be released if the zinc is not removed. If the protecting zinc is removed before welding, the resultant surface must be treated with galvanizing paint to avoid damaging rust development after welding.

[0006] Also, when welding is used to secure the joints in a fence or hand rail, the resulting weld must be filed or ground to create a smooth and flush surface that does not present a danger to the people or animals who come in contact with the welded surface. The present invention of no weld tubing clamps and connector brackets eliminates the need for repairing and protecting the surface after welding.

[0007] Further, welding requires specialized equipment, or additional personnel to accomplish the welding process. Currently, specialized clamps are sold to stabilize the joint to be welded in cases in which there is not adequate personnel available. The present invention allows a minimum of equipment and personnel to accomplish the same end.

[0008] In addition, short pieces of pipe are typically wasted in fence construction due to the difficulty of welding the pieces together. The present invention allows such short pieces of pipe to be spliced together and utilized in the fence, thereby reducing waste.

SUMMARY OF THE INVENTION

[0009] In view of the foregoing, it is an object of the present invention to provide a novel form of fencing post junction without the use of welding.

[0010] It is another object of the present invention to provide a variable system of fencing post junctions through the use of post engagement means and abutment plates, which allows for many possible configurations of fencing without the inconvenience and expense of welding.

[0011] It is a further object of the present invention to allow for an adjustable variable system of fencing post junctions which would provide flexibility in fence construction without the use of welding.

[0012] In satisfaction of these and other related objectives, Applicant's present invention permits practitioners to create fencing post junctions and variable fencing systems without added equipment or personnel.

[0013] Applicant's approach to the problem described above is certainly simple, but it is equally unobvious. Applicant's no-weld, bolt-together tubing clamps and connector brackets permit, for the first time, a wide variety of fencing configurations without the inconvenience of welding.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] **FIG. 1** is a perspective view of a fencing post junction system of the present invention configured for perpendicular and non-perpendicular orientations.

[0015] **FIG. 2** is an enlarged view of the components of a fencing post junction system of the present invention allowing for non-perpendicular orientations.

[0016] **FIG. 3** is an enlarged view of the components of a fencing post junction system of the present invention allowing for perpendicular orientations.

[0017] **FIG. 4** is a perspective view of a fencing post junction system connecting post junctions side to end not at a 90 degree angle to each other, connecting post junctions side to end at a 90 degree angle, and connecting post junctions in three different orientations.

[0018] **FIG. 5** is a perspective view of a fencing post junction system connecting post junctions side to side but not parallel with each other.

[0019] **FIG. 6** is a cross-sectional view of a fencing post junction.

[0020] **FIG. 7** is an enlarged view of the abutment plates of a fencing post junction system allowing for side to side but not parallel orientations.

[0021] **FIG. 8** is an enlarged view of the abutment member of a fencing post junction system allowing for three different orientations in one junction.

[0022] **FIG. 9** is an enlarged view of the components of a fencing post junction system of the present invention which forms the first elongate post channel through which a fencing post may extend.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] With reference to the Figures, the fencing post junction system of the present invention is identified generally by the reference numeral **10**.

[0024] Assembly **10** includes, at a minimum, a first post engagement means **12** and a second post engaging means **14**. First post engagement means **12** include first and second collar members **16** and **18**, respectively, and a first and second attachment members **26** and **27**. In like manner, second post engagement means **14** includes third and fourth collar members **22** and **24**, and a second attachment members **20** and **21**.

[0025] In any configuration of system **10** (for attaching, for example, only two posts or rails), first and second post engagement means **12** and **14** will be connected by some

junction member. For junctions involving three or more posts or rails, additional post engagement means will be involved.

[0026] In the preferred embodiment of the present invention, the junction member comprises mutually, reversibly attachable portions, or extensions of the attachment members **20**, **21**, **26** and **27** themselves, which are configured for cooperatively orienting first and second collar members **16** and **18** on the first part, and third and fourth collar members **22** and **24** in the second part, in the suitable relative orientations or configuring a fencing or rail structure as desired. Of course, the junction member may, in the alternative, be a separate component (not shown in the drawings) which is attached respectively to the first and second attachments members **20** and **26** to support and orient them (and rails or posts associated with them) as desired.

[0027] With particular reference to **FIGS. 2, 3** and **9**, one can see how collars **16**, **18**, **22** and **24** are to be nested within recesses of attachment members **20** and **26** and secured by suitable nut and bolt arrangements (or a suitable alternative attachment means) whereby the respective axes of the cylindrical spaces defined by pairs of collars **16-18** and **22-24** will be suitably defined and oriented for directing posts or rails in the desired relative orientations.

[0028] Spacer member(s) **30** are to be included in system **10** for maintaining suitable alignment of the components of each post engagement means, and is to lie between any two juxtaposed attachment members.

[0029] **FIGS. 7**, and **8** illustrate a variety of attachment member configurations for achieving varying combinations of post engagement means for constructing highly variable post or rail configurations. With particular reference to **FIGS. 1, 4**, **5** and **6**, it is clear that a near infinite variety of post or rail configurations or orientations can be achieved quickly and with considerable flexibility, through the mere selection of the suitable attachment members for the desired orientations.

[0030] Throughout the figures, one will note that abutment plates **32** appear, either as part of attachment members or collar members, and serve to limit the extent to which a fence post or rail extends relative to the collar-defined, cylindrical space.

[0031] An alternative embodiment of the present invention may involve post engagement means in which collars and attachment members are unitary structures which are merely selected and attached to achieve the desired post or rail orientations. However, it is believed that the depicted embodiments are more cost-effective, as collar members are universally applicable to any desired post or rail configuration, and only the attachment members are specific to differing orientations.

[0032] A still further, alternative embodiment of the present invention (not shown in the drawings) involves the substitution of the depicted collar members with items which, while still defining a path for posts and rails, does so without a solid, annular surface, such as by suitably shaped "fingers", tabs, or the like, but still attached to mounting flanges for integrations with items serving substantially as attachment members as shown.

[0033] It is contemplated that the post engagement means of this invention, along with the post attachment means, and the abutment plates, be produced from any suitably stiff material that is convenient such as, but not limited to, steel or aluminum. It is contemplated that the post engagement means of this invention, along with the post attachment means, and the abutment plates, be cast in molds or made in any other conventional manner as is the common practice in this field. It is further contemplated that the post engagement means and the abutment plates of this invention will be scored with a plurality of slots which allow for secure attachment of the post engagement means and abutment plates. In the preferred embodiment, the post engagement means and abutment plates are secured by suitable nuts and bolts, as are commonly used in the field. There is a plurality of conceivable mechanisms to attach the post engagement means and abutment plates, the one described above is illustrative, and not intended to limit the possible adaptation for joining.

[0034] With reference to **FIG. 4**, several variations of the fencing post junction system of the present invention can be seen. A fencing post junction system connecting post junctions side-to-end, not at a 90 degree angle, is identified generally by the reference numeral **17**. A fence post junction system connecting post junctions side-to-end, at a 90 degree angle, is identified generally by the reference numeral **19**. And a fencing post junction system connecting post junctions in three different orientations in the same junction is identified generally by the reference numeral **23**.

[0035] With reference to **FIG. 5**, another variation of the fencing post junction system of the present invention is identified generally by the reference numeral **29**.

[0036] Although not shown in the drawings, an alternative embodiment may include an adjustable fencing post junction system. In this embodiment, first and second attachment means for first and second post engagement means would include features for an interaction of holes, elongate slots, nuts and bolts whereby, rather than having fixed orientations associated with any one attachment means selection, the orientation would actually be adjustable within a range or relative movement of first and second (or more) post engagement means.

[0037] Although the invention has been described with reference to specific embodiments, this description is not meant to be construed in a limited sense. Various modifications of the disclosed embodiments, as well as alternative embodiments of the inventions will become apparent to persons skilled in the art upon reference to the description of the invention. It is, therefore, contemplated that the appended claims will cover such modifications that fall within the scope of the invention.

I claim:

1. A fencing post junction system comprising:

first post engagement means having first and second collar members said first and second collar members being configured for cooperatively defining an first elongate post channel through which a fencing post may extend along a first axis of said first elongate post channel;

first attachment means for reversibly securing said first and second collar members in a configuration for said cooperatively defining said first elongate post channel and for mechanically engaging a length of a first fence post therein;

second post engagement means having third and forth collar members, said third and fourth collar members being configured for cooperatively defining a second elongate post channel through which a fencing post may extend along a second axis of said second elongate post channel;

second attachment means for reversibly securing said first and second collar members in a configuration for said cooperatively defining said second elongate post channel and for mechanically engaging a length of a second fence post therein; and

junction means for securing said first attachment means to said second attachment means in a substantially fixed relative orientation.

2. The system of claim 1 wherein said junction means is configured for respectively orienting said first attachment means and said first post engagement means and said second attachment means and said second post engaging means whereby said first and second axial directions are in substantially parallel orientations.

3. The system of claim 1 wherein said junction means is configured for respectively orienting said first attachment means and said first post engagement means and said second attachment means and said second post engaging means whereby said first and second axial directions are in substantially non-parallel orientations.

4. A fencing post junction system comprising:

first post engagement means having first and second post-grasping members, said first and second post-grasping members being configured for cooperatively defining an first aperture through which a fencing post may extend in a first axial direction;

first attachment means for reversibly securing said first and second post-grasping members in a configuration for said cooperatively defining said first aperture and for mechanically engaging a length of a first fence post therein;

second post engagement means having third and forth post-grasping members, said third and fourth post-grasping members being configured for cooperatively defining a second aperture through which a fencing post may extend in a second axial direction;

second attachment means for reversibly securing said first and second post-grasping members in a configuration for said cooperatively defining said second aperture and for mechanically engaging a length of a second fence post therein; and

junction means for securing said first attachment means to said second attachment means in a substantially fixed relative orientation.

5. The system of claim 4 wherein said junction means is configured for respectively orienting said first attachment means and said first post engagement means and said second attachment means and said second post engaging means whereby said first and second axial directions are in substantially parallel orientations.

6. The system of claim 4 wherein said junction means is configured for respectively orienting said first attachment means and said first post engagement means and said second attachment means and said second post engaging means whereby said first and second axial directions are in non-parallel orientations.

* * * * *