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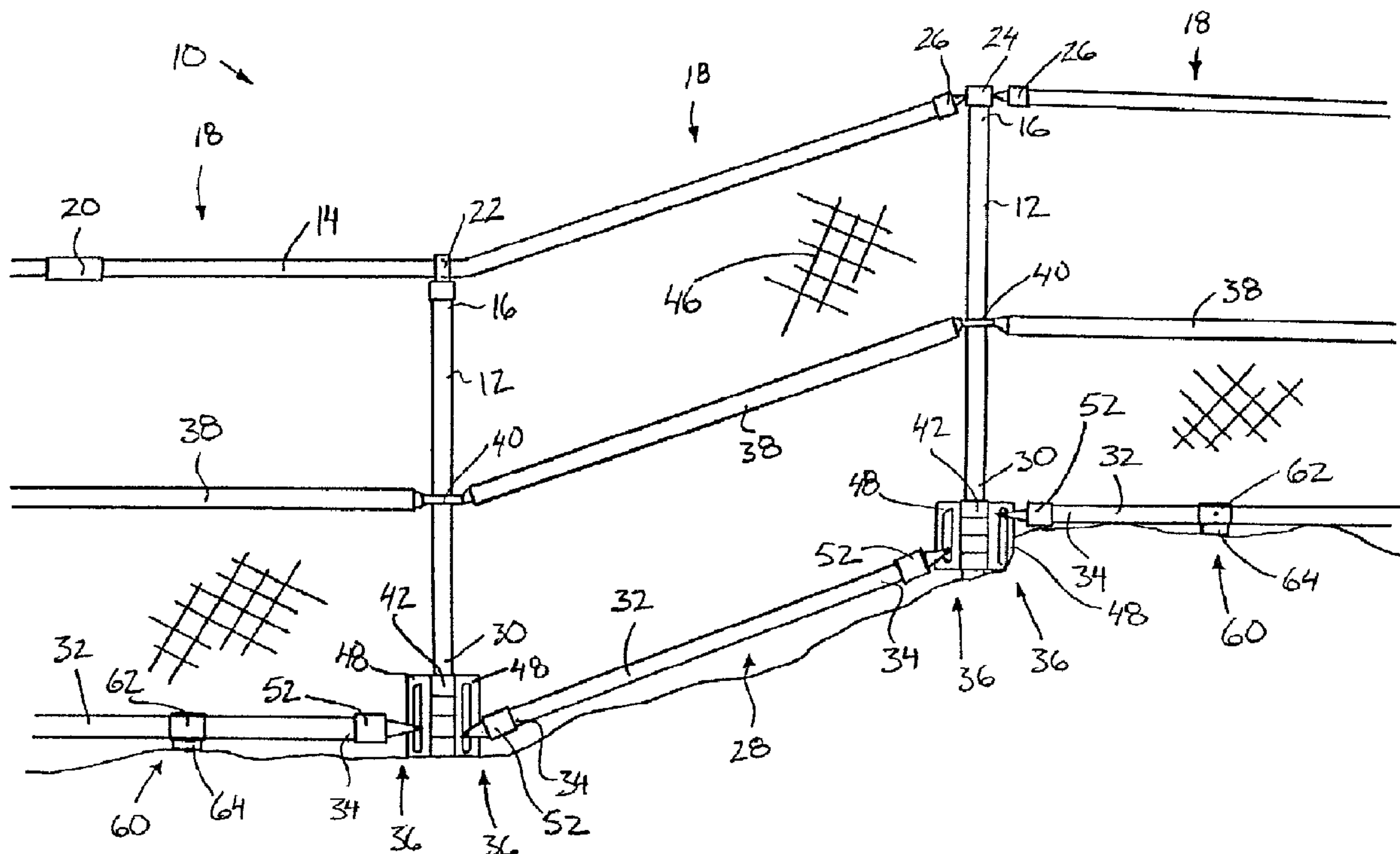
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(54) Titre : STRUCTURE DE CLOTURE UTILISABLE SUR TERRAIN ACCIDENTE

(54) Title: FENCE STRUCTURE FOR USE ON UNEVEN TERRAIN



(57) Abrégé/Abstract:

A kit of parts is provided for assembly into a floating fence structure. The kit includes a plurality of fence posts as well as top and bottom rails mounted between the posts. Chain link fencing material spans between the posts and rails. Mounting members are provided for securing sections of the bottom rail between respective posts with each section of the bottom rail being adjustable in height in relation to the respective fence posts. The ability to adjust the height of one section of the bottom rail in relation to another permits adjacent sections of the fence structure to be secured at different relative heights. The mounting members are also arranged to permit pivotal movement of each bottom rail section in relation to each respective post supporting the section thereon about a longitudinal axis of the post, a longitudinal axis of the bottom rail section and a lateral axis extending transversely to both longitudinal axes.



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ABSTRACT

A kit of parts is provided for assembly into a floating fence structure. The kit includes a plurality of fence posts as well as top and bottom rails mounted between the posts. Chain link fencing material spans between the posts and rails.

- 5 Mounting members are provided for securing sections of the bottom rail between respective posts with each section of the bottom rail being adjustable in height in relation to the respective fence posts. The ability to adjust the height of one section of the bottom rail in relation to another permits adjacent sections of the fence structure to be secured at different relative heights. The mounting members are also
- 10 arranged to permit pivotal movement of each bottom rail section in relation to each respective post supporting the section thereon about a longitudinal axis of the post, a longitudinal axis of the bottom rail section and a lateral axis extending transversely to both longitudinal axes.

FENCE STRUCTURE FOR USE ON UNEVEN TERRAIN

FIELD OF THE INVENTION

The present invention relates to a fence structure for use on uneven terrain and more particularly to portable a kit of parts for being readily assembled
5 into a floating fence structure.

BACKGROUND

Often when installing a fence across the ground, adjustment of the fence is required to accommodate variation in elevation and inclination of the surrounding terrain. When installing floating fencing in particular, uneven terrain
10 poses many difficulties because adjacent sections of the fence are not properly aligned and thus cannot be properly secured to one another.

Examples of adjustable fencing are provided in United States patents 4,986,512 , 4,047,332 and 3,960,367. In general known fences which are able to accommodate variations in the terrain will require digging holes for receiving fence
15 posts therein as in conventional fences and thus are not readily portable. Floating fences which do not require digging holes, in general are not able to accommodate sharp changes in elevation between adjacent sections of the fence in addition to variations in inclination of the terrain.

SUMMARY

20 According to one aspect of the present invention there is provided a kit of parts for assembly into a fence structure, the kit of parts comprising:

a plurality of fence posts arranged to be supported in an upright orientation at spaced intervals along the ground;

a top rail arranged to be mounted between the fence posts adjacent
25 respective top ends of the fence posts;

a bottom rail arranged to be mounted between the fence posts

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adjacent respective bottom ends of the fence posts, the bottom rail comprising a plurality of sections with each section being arranged to span between an adjacent pair of the fence posts;

fencing material arranged for spanning between the fence posts; and
5 a plurality of mounting members, each being arranged to support a respective one of the sections of the bottom rail on a respective one of the fence posts of the respective pair of adjacent fence posts between which the section is arranged to span;

each mounting member comprising at least one collar arranged for
10 slidably receiving the respective fence post therein such that the collar is pivotal about a longitudinal axis of the respective fence post;

each mounting member further comprising a plate coupled to said at least one collar such that the plate is pivotal together with the collar about the longitudinal axis of the respective fence post, the plate including a substantially
15 vertical slot therein;

each mounting member further comprising a substantially horizontally extending pivotal member mounted at an end of the respective section of the bottom rail;

the pivotal member of each mounting member being received through
20 the vertical slot of the mounting member such that:

the respective section of the bottom rail is adjustable in height in relation to the respective fence post by vertical sliding movement of the pivotal member along the vertical slot of the mounting member;

the respective section of the bottom rail is pivotal in relation to
25 the respective fence post about a respective lateral axis of the pivotal member extending transversely to the respective section of the bottom rail when supported

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on the fence posts by the mounting members; and

the respective section of the bottom rail is pivotal in relation to the respective fence post together with said at least one collar of the mounting member about the longitudinal axis of the respective fence post.

5 The ability to adjust the height of one section of the bottom rail in relation to another permits adjacent sections of a floating fence structure to be secured at different relative heights as well as permitting the bottom rail of only one section to be raised over an obstacle for example large rocks and the like.

Each mounting member may comprise a pair of collars joined to one
10 another at spaced positions by the plate of the mounting member.

When each fence post includes a pair of the mounting members which are arranged to support respective sections of the bottom rail on the fence post, the pair of collars of each mounting member may be arranged to receive one of the collars of the other mounting member therebetween when supported on the
15 respective fence post.

A space between the collars of each mounting member may correspond approximately to a height of the collar received therebetween. The plate of each mounting member may span a combined height of the collars supported on the respective fence post.

20 The pair of mounting members of each fence post may be substantially identical to one another in which one of the mounting members is inverted in relation to the other one of the mounting members when supported on the respective fence post.

There may be provided means for restricting removal of the posts from
25 the respective mounting members.

Each mounting member preferably includes a receptacle suitably

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arranged for receiving an end of a respective one of the sections of the bottom rail therein. The mounting member is thus also arranged to support a conventional rail used in chain link fencing therein.

There may be provided means for restricting removal of the ends of the
5 sections of the bottom rail from the respective receptacles.

Each receptacle is preferably arranged to permit relative rotation of a respective section of the bottom rail secured therein about a longitudinal axis of the bottom rail.

Preferably there is provided a plurality of brace members arranged to
10 be secured to the bottom rail with each brace member comprising at least one leg arranged to extend laterally outward from the bottom rail for supporting the bottom rail on the ground. The posts are thus suitably arranged to be supported fully above ground. Supporting the posts fully above ground permits the fence structure to be readily portable and assembled and no post holes are required. The fence structure
15 is thus also suitable for use on terrain in which post holes cannot be formed into the ground, for example rocky terrain or concrete surfaces.

The brace members are preferably arranged to be pivotal relative to the bottom rail about a longitudinal axis of the bottom rail. The brace members mounted on the bottom rail are thus adjustable about a longitudinal axis of the
20 bottom rail to accommodate inclinations of the terrain which extend transversely to the longitudinal direction of the fence structure.

Each brace member includes a stop member arranged to selectively restrict relative rotation between the brace member and the bottom rail. The fence structure is thus a rigid and stable structure once assembled.

25 There may be provided an intermediate rail arranged to be mounted between the fence posts spaced vertically between the top and bottom rails.

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The intermediate rail may comprise a plurality of sections with each section being arranged to span between an adjacent pair of the fence posts and wherein there is provided a plurality of intermediate rail mounts each being arranged to support an end of one section of the intermediate rail on the respective post for
5 relative pivotal movement therebetween.

The fencing material preferably comprises chain link wire mesh material arranged to span the fence posts.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings, which illustrate an exemplary
10 embodiment of the present invention:

Figure 1 is a side elevational view of the fence structure showing plural sections thereof.

Figure 2 is an isometric view illustrating a pair of the mounting members securing a respective pair of bottom rail sections to one of the fence posts.

15 Figure 3 is an isometric view of a brace member mounted on one section of the bottom rail.

DETAILED DESCRIPTION

Referring to the accompanying drawings, there is illustrated a fence structure generally indicated by reference numeral 10. The fence structure is a
20 floating fence assembled from a kit of parts and is particularly suited for installations on uneven terrain in which different relative heights and inclinations of the terrain between the sections of the fence structure may be expected. The floating fence structure 10 is intended to be fully supported above ground so as to be readily assembled without the need to dig post holes.

25 The fence structure generally includes a plurality of fence posts 12 formed of tubular steel similar to posts for conventional chain link fencing. The posts

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12 are arranged to be supported at spaced intervals in an upright orientation fully above ground.

A top rail 14 is provided which is also formed of tubular steel similar to conventional chain link fences. The top rails are arranged to be mounted between
5 the fence posts adjacent respective top ends 16 of the posts. The top rail may comprise long continuous sections which are longer than the space between adjacent posts 12 so as to span several sections 18 of the fence structure with each section 18 being defined between a pair of the posts 12.

Collars 20 may be provided for connecting long sections of the top rail
10 together. The top rail 14 is arranged to be bent at desired locations to follow the ground inclination. Eyelets 22 on the top of each post is arranged to receive the top rail 14 therethrough. At respective ends of the fence structure, or at sharp elevation changes and at corner posts, the top end of the post may be provided with a cap 24 which connects an end of the top rail 14 thereto by a pivotal bracket 26 providing
15 relative pivotal movement therebetween.

A bottom rail 28 is arranged to be mounted between the fence posts adjacent respect bottom ends 30 of the fence posts. The bottom rail 28 is formed in sections 32 with each section being arranged to span between an adjacent pair of the fence posts. The ends 34 of each section 32 of the bottom rail is secured to a
20 respective post 12 by a mounting member 36. The mounting member 36 will be described in more detail later herein with reference to Figure 2.

The mounting members 36 permit adjustment of each section of the bottom rail 28 in relation to a respective post 12 about three axes while also permitting the relative height of the section of the bottom rail in relation to the post to
25 be adjusted. The three axes include a longitudinal axis of the post, a longitudinal axis of the rail and a horizontal axis extending laterally outward from the rail

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transversely to both longitudinal axes.

An intermediate rail 38 is provided comprising a tubular steel pipe formed in sections similarly to the bottom rail. The intermediate rail 38 is spaced vertically between the top and bottom rails and is secured between the fence posts 12. A collar 40 is provided for mounting each end of each section of the intermediate rails 38 to the respective post while permitting relative pivotal movement therebetween.

Each post 12 which is at an intersection of two sections 18 of the fence structure includes two mounting members 36 secured thereon for mounting the sections of the bottom rail 28 from each respective section of the fence structure. When the post is located at one end of the fence structure for example at a gate or adjacent a building, only one mounting member 36 is mounted thereon for securement of only one section of the fence structure to the post.

Each mounting member comprises a pair of collars 42 which are spaced apart and offset to one end of the mounting member such that reversing one of the mounting members associated with a given fence post 12 permits the collars 42 of two mounting members 36 to be interlocked with all of the collars being adjacent to one another and aligned about a common axis so as to define a receptacle for receiving the fence post 12 therein. When two mounting members 36 are secured to a given post 12, the mounting members are thus identical in configuration, with one being reversed from end to end in relation to the other.

Once the mounting members 36 are aligned and a post is received therethrough the post is then restricted from removal from the receptacle formed by the mounting members once fencing material 46 is secured across the assembled fence post and rail structure. Set screws in the respective collars 42 can also be used once the fence is assembled and levelled to restrict further pivotal movement

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of the mounting members 36 about the respective post 12.

Each mounting member 36 includes a vertical plate 48 secured between the two collars 42 to extend between respective ends of the mounting member. The vertical plate 48 includes a vertical slot 50 therein which acts as a
5 slide for slidably mounting one end of a respective section of the bottom rail thereon. A receptacle 52 is slidably mounted with the vertical slot 50 for mounting the end of the section of the bottom rail thereon.

The receptacle 52 is a cylindrical socket suitably arranged to receive an end of a bottom rail section therein while permitting rotation of the section about a
10 longitudinal axis of the bottom rail. Set screws 54 are provided about a periphery of the receptacle 52 for securement of the receptacle to the section of the bottom rail 28 received therein to selectively restrict relative rotation therebetween and to restrict removal of the rail from the receptacle once the fence structure has been assembled and levelled.

15 The receptacle 52 is mounted within the vertical slot 50 by a pair of parallel mounting plates 56 which are spaced apart so as to receive the vertical plate 48 therebetween with minimal clearance. A bolt 58 extends between the mounting plates 56 through the vertical slot 50 for movement up and down in the slot while permitting pivotal movement of the rail about a horizontal axis extending
20 longitudinally through the bolt 58. The arrangement of the mounting plates which are parallel and adjacent to the vertical plate 48 enables restriction of relative rotation between the receptacle 52 and the post 12 receiving the mounting member thereon about a longitudinal axis of the bottom rail.

The vertical slot 50 thus permits vertical height adjustment between the
25 section of the bottom rail mounted thereon and the respective post 12 while also permitting pivotal movement of the rail about a horizontal axis transverse to the rail.

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The collars 42 of the mounting member further enable the section of the bottom rail to be pivoted in relation to the respective post 12 about an upright longitudinal axis of the post.

Brace members 60 are provided to support the posts 12 fully above
5 ground in an upright orientation. Each brace member 60 includes a collar 62 arranged to be secured about the bottom rail and a transverse support 64 welded to a bottom side of the collar 62 to define a pair of legs extending laterally outward from each side of the bottom rail.

The transverse support 64 comprises a C-shaped channel having a
10 base member and two upstanding flanges 66 extending upwardly therefrom for securement to the collar 62. The flanges 66 being upstanding are thus suitably oriented to resist bending otherwise resulting from lateral deflection of the fence structure to provide optimal support to the fence structure.

A stop member, in the form of one or more set screws 68, is provided
15 about a circumference of the collar 62 to selectively restrict relative rotation between the brace member 60 and the respective section of the bottom rail 28. When the screws 68 are released the brace member 60 is permitted to rotate about the longitudinal axis of the bottom rail to support the posts fully above ground even when the ground is inclined in a direction transverse to the longitudinal direction of the
20 fence structure.

The fencing material 46 comprises conventional chain link wire mesh material which is secured to the posts and rails of the fence structure using straps and collars secured about the respective posts and rails. Once the fencing material 46 is secured between respective posts and between respective top and bottom rails
25 of the fence structure, removal of the posts and rails from the respective receptacles of the mounting members 36 is thus restricted.

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In order to assemble the fence structure 10, a kit of parts including the posts, rails, mounting members and fencing material is provided. The posts 12 are first spaced across the ground at desired locations corresponding to the spacing of the desired sections 18 of the assembled fence structure. Inserting the posts 12 into
5 the collars 42 of the respective mounting members 36 permits the sections 32 of the bottom rail 28 to be secured between respective adjacent pairs of the posts. The brace members 60 on each section of the bottom rail 28 are adjusted to match the corresponding inclination of the terrain upon which it is supported and is then secured in place using the set screws 68.

10 Once the brace members 60 are secured in place, the set screws 54 on the receptacles 52 of the respective mounting members 36 may also be secured in place with the collars 42 of the mounting members being oriented about an upright axis to support the fence posts 12 in a vertical orientation therein. Ground contours and obstacles automatically deflect the sections 32 of the bottom rail 28 upward
15 within the respective vertical slots 50 where required so that the fence posts 12 can be supported directly on the ground.

Once the posts have been levelled and the mounting members 36 secured to restrict relative rotation between the various components of the fence structure the intermediate and top rails may be mounted on the posts for
20 subsequently receiving the fencing material 46 to be strapped thereon.

As described herein, the invention comprises a kit of parts for assembly into a fence structure 10. The kit of parts generally comprises a plurality of fence posts 12, a top rail 14, a bottom rail 28, and fencing material 46 in which the sections 32 of the bottom rail are attached to respective ones of the fence posts by
25 respective mounting members 36. Each mounting member 36 comprises one pair of collars 42 joined to one another at spaced positions by the vertical plate 48 of the

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mounting member. The collars 42 commonly slidably receive the respective fence post therein such that the plate is pivotal together with the collar about the longitudinal axis of the respective fence post. The plate includes the vertical slot 50 therein through which the horizontal pivotal member 58 mounted at the end of the
5 respective section of the bottom rail is received. Each fence post 12 includes a pair of the mounting members 36 which are arranged to support respective sections 32 of the bottom rail thereon. The collars 42 are similar in height in the longitudinal direction of the fence posts. The space between the collars of each mounting member corresponds approximately to a height of a collar received therebetween
10 such that the pair of collars of each mounting member are arranged to receive one of the collars 42 of the other mounting member therebetween when supported on the respective fence post 12. The plate 48 of each mounting member spans a combined height of the collars 42 of the two mounting members 36 supported on the respective fence post 12. The two mounting members 36 on each post 12 are
15 substantially identical to one another, however one of the mounting members is inverted in relation to the other one of the mounting members when supported on the respective fence post.

Accordingly the respective section of the bottom rail is: i) adjustable in height in relation to the respective fence post by vertical sliding movement of the
20 pivotal member along the vertical slot of the mounting member; ii) pivotal in relation to the respective fence post about a respective lateral axis of the pivotal member extending transversely to the respective section of the bottom rail when supported on the fence posts by the mounting members; and iii) pivotal in relation to the respective fence post together with said at least one collar of the mounting member
25 about the longitudinal axis of the respective fence post.

While one embodiment of the present invention has been described in

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the foregoing, it is to be understood that other embodiments are possible within the scope of the invention. The invention is to be considered limited solely by the scope of the appended claims.

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CLAIMS:

1. A kit of parts for assembly into a fence structure, the kit of parts comprising:

5 a plurality of fence posts arranged to be supported in an upright orientation at spaced intervals along the ground;

a top rail arranged to be mounted between the fence posts adjacent respective top ends of the fence posts;

10 a bottom rail arranged to be mounted between the fence posts adjacent respective bottom ends of the fence posts, the bottom rail comprising a plurality of sections with each section being arranged to span between an adjacent pair of the fence posts;

fencing material arranged for spanning between the fence posts; and

15 a plurality of mounting members, each being arranged to support a respective one of the sections of the bottom rail on a respective one of the fence posts of the respective pair of adjacent fence posts between which the section is arranged to span;

each mounting member comprising at least one collar arranged for slidably receiving the respective fence post therein such that the collar is pivotal about a longitudinal axis of the respective fence post;

20 each mounting member further comprising a plate coupled to said at least one collar such that the plate is pivotal together with the collar about the longitudinal axis of the respective fence post, the plate including a substantially vertical slot therein;

25 each mounting member further comprising a substantially horizontally extending pivotal member mounted at an end of the respective section of the bottom rail;

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the pivotal member of each mounting member being received through the vertical slot of the mounting member such that:

the respective section of the bottom rail is adjustable in height in relation to the respective fence post by vertical sliding movement of the pivotal member along the vertical slot of the mounting member;

the respective section of the bottom rail is pivotal in relation to the respective fence post about a respective lateral axis of the pivotal member extending transversely to the respective section of the bottom rail when supported on the fence posts by the mounting members; and

the respective section of the bottom rail is pivotal in relation to the respective fence post together with said at least one collar of the mounting member about the longitudinal axis of the respective fence post.

2. The kit of parts according to Claim 1 wherein each mounting member comprises a pair of collars joined to one another at spaced positions by the plate of the mounting member.

3. The kit of parts according to Claim 2 wherein each fence post includes a pair of the mounting members which are arranged to support respective sections of the bottom rail on the fence post and wherein the pair of collars of each mounting member are arranged to receive one of the collars of the other mounting member therebetween when supported on the respective fence post.

4. The kit of parts according to Claim 3 wherein a space between the collars of each mounting member corresponds approximately to a height of the collar received therebetween.

5. The kit of parts according to any one of Claims 1 through 4 wherein each fence post includes a pair of the mounting members which are arranged to support respective sections of the bottom rail on the fence post and

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wherein the plate of each mounting member spans a combined height of the collars supported on the respective fence post.

6. The kit of parts according to any one of Claims 1 through 5 wherein each fence post includes a pair of the mounting members which are
5 arranged to support respective sections of the bottom rail on the fence post and wherein the pair of mounting members are substantially identical to one another in which one of the mounting members is inverted in relation to the other one of the mounting members when supported on the respective fence post.

7. The kit of parts according to any one of Claims 1 through 6
10 wherein the posts are arranged to be supported fully above ground.

8. The kit of parts according to any one of Claims 1 through 7 wherein there is provided means restricting removal of the posts from the respective mounting members.

9. The kit of parts according to any one of Claims 1 through 8
15 wherein each mounting member further comprises a receptacle suitably arranged for receiving an end of a respective one of the sections of the bottom rail therein.

10. The kit of parts according to Claim 9 wherein there is provided means for restricting removal of the ends of the sections of the bottom rail from the respective receptacles.

20 11. The kit of parts according to Claim 9 wherein each receptacle is arranged to permit relative rotation of a respective section of the bottom rail secured therein about a longitudinal axis of the bottom rail.

12. The kit of parts according to any one of Claims 1 through 11 wherein there is provided a plurality of brace member arranged to be secured to the
25 bottom rail, each brace member comprising at least one leg arranged to extend laterally outward from the bottom rail for supporting the bottom rail on the ground.

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13. The kit of parts according to Claim 12 wherein the brace members are arranged to be pivotal relative to the bottom rail about a longitudinal axis of the bottom rail.

14. The kit of parts according to Claim 13 wherein each brace member includes a stop member arranged to selectively restrict relative rotation between the brace member and the bottom rail.

15. The kit of parts according to any one of Claims 1 through 14 wherein there is provided an intermediate rail arranged to be mounted between the fence posts spaced vertically between the top and bottom rails.

16. The kit of parts according to Claim 15 wherein the intermediate rail comprises a plurality of sections with each section being arranged to span between an adjacent pair of the fence posts and wherein there is provided a plurality of intermediate rail mounts each being arranged to support an end of one section of the intermediate rail on the respective post for relative pivotal movement therebetween.

17. The kit of parts according to any one of Claims 1 through 16 wherein the fencing material comprises chain link wire mesh material arranged to span the fence posts.

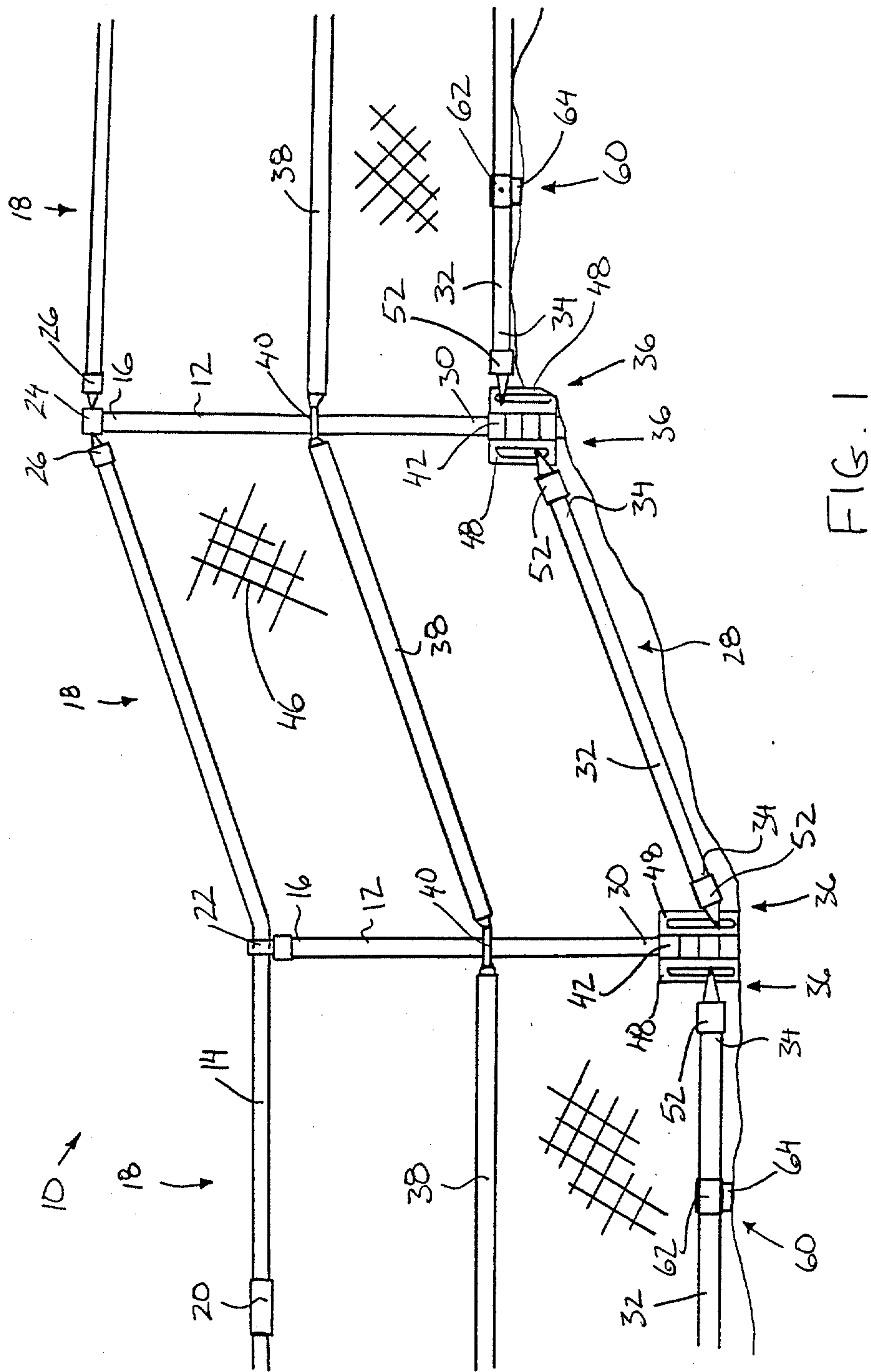


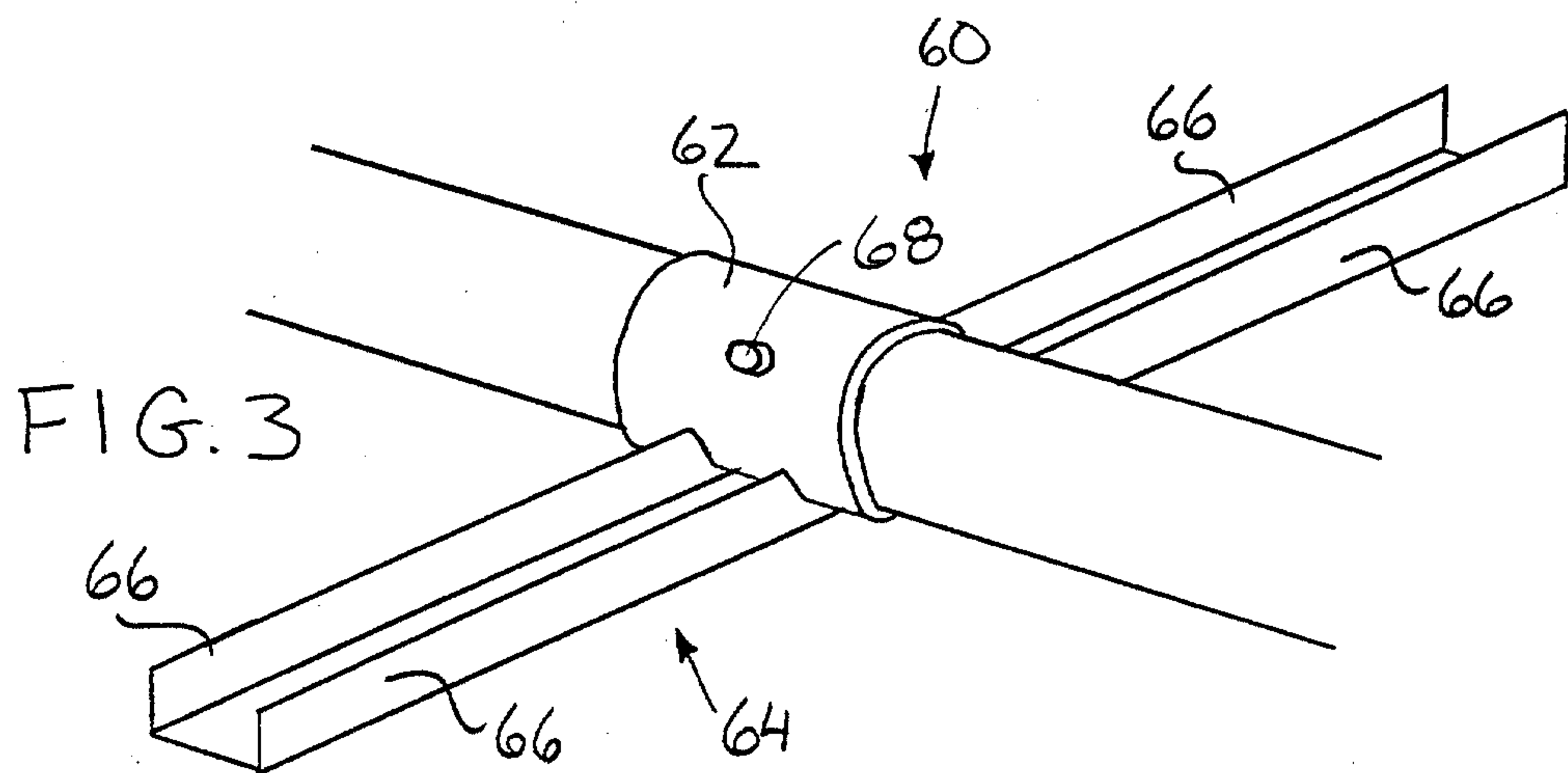
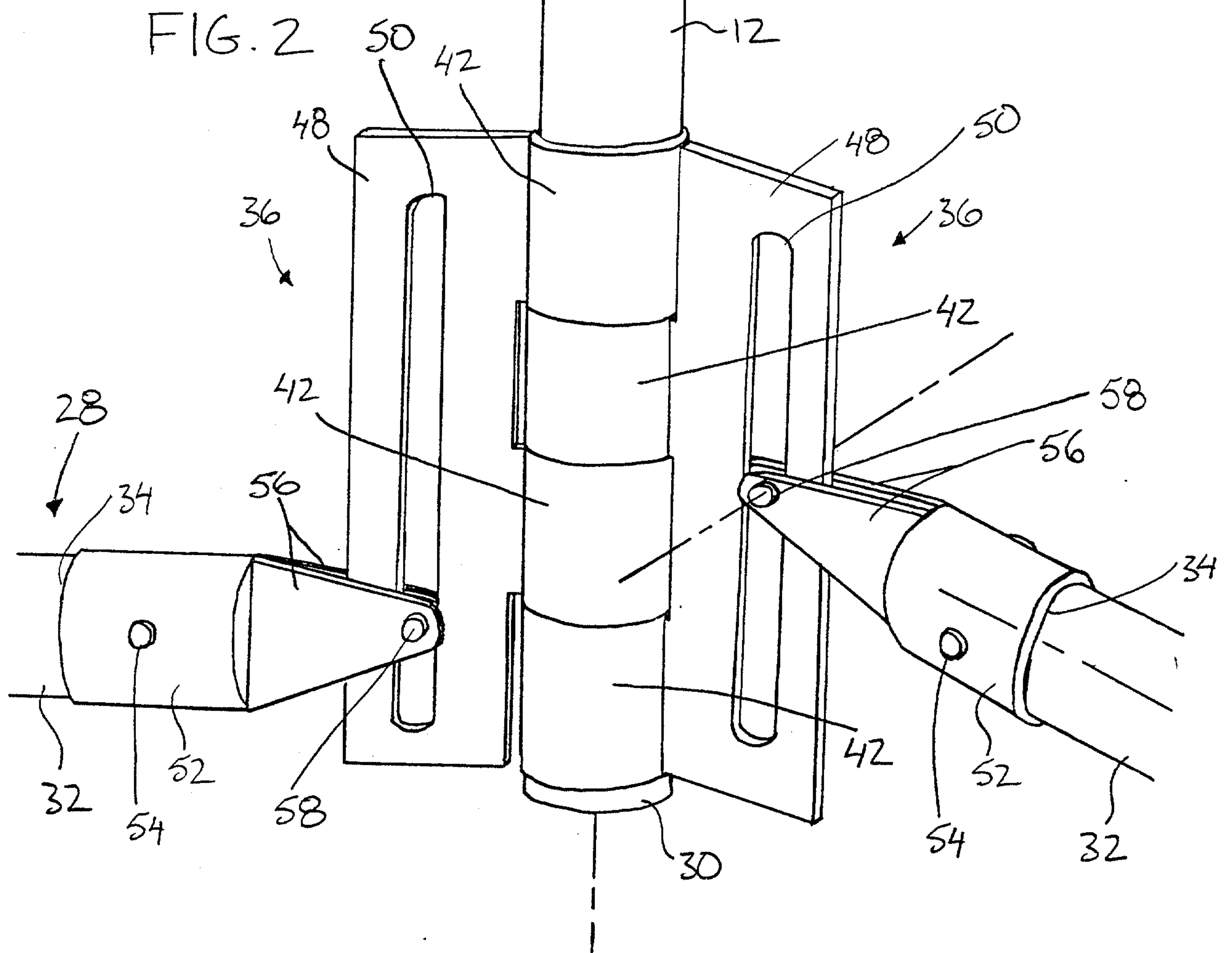
FIG. 1

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