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54 A ground anchor device.

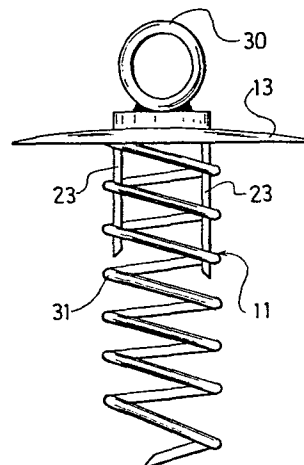
57 A ground anchor device comprises a plate (13), which in use rests upon the ground, a stanchion (12, 25, 30) or the like projecting from one face of the plate as well as a helical member (11) adapted to be screwed into the ground.

The helical member is formed as an open helix (22, 28, 31), and at the plate there is at least one vertical stay (23, 27) for bracing the helix, which, by itself, will not have a satisfactory lateral rigidity, as it lacks a core.

The stays can be formed as short rods (23), preferably of semi-circular cross-section, which are welded to the plate (13), inside the helix (22, 31), and extend downwardly over at least two windings of the helix, to be welded thereto.

Alternatively the stay may consist of a length of tube (27) from the end of which remote from the plate the helix (28) issues. The tube (27) is preferably provided with at least one opening (29) for the escape of soil being forced upwards by the helix.

FIG. 6



A ground anchor device

The present invention refers to ground anchoring devices, which are to be screwed into the soil. The part of the device extending above a ground plate can be differently shaped, suited to a variety of uses. The important part of the invention pertains to the helical member retaining the device in position.

A general desire is that the screwing into the soil should occur with a small input of power, but the ground engaging portion must possess sufficient rigidity to withstand the lateral forces, which may be applied to the portion of the device projecting above ground.

A device according to the invention is characterized in that the helical member is formed as an open helix, and that at least one stay is attached to the plate in a position to support said helix.

The helix may be attached directly to the plate and at least two stay rods, preferably located diametrically opposite to each other are attached to the plate, within the helix, extending downwardly across at least two windings thereof and attached thereto. The helix, as well as the stay rods, may then be made from profile bars having a substantially semicircular cross-section, or consist of a flat bar being wound into a helix, or alternatively a tube being cut along a helical line, and then expanded longitudinally.

The stay may alternatively be formed as a tubular member to the edge portion of which, remote from the plate, the helix projects. The stay tube is then preferably adjacent to the plate provided with at least one opening for forcing out soil.

The invention will below be described with reference to the accompanying drawings, which by way of example show some embodiments of anchoring devices having differently shaped helical members.

Figure 1 shows a fence post, provided with a helical member according to the invention,

Figures 2 and 3 show detail views of elements attached to the post for holding barbed wire or other fencing material,

Figure 4 is an end view, seen from below of the helical member,

Figure 5 shows an anchoring device adapted to receive a bar or the like to be maintained in upright position, and

Figure 6 shows an anchoring device carrying an eye-bolt to be used for staying or tying purposes.

Figure 1 shows a fence post 10 having a screw member 11 according to a first embodiment of the invention, and connected to the post stanchion 12 by means of a plate 13, which, in use, will rest upon the ground. The plate is preferably circular and has a slightly vaulted form.

The stanchion 12 is preferably formed from a square-section pipe, and is at suitable distances above the ground provided with brackets 14 to carry fence wire or the like. The bracket is shown on a larger scale in Figure 3. The upper end of the pipe is closed by a removable stopper 15, the shape of which is better shown in Figure 2. When screwing the post into the soil the stopper 15 is removed and a wrench mating with the passage in the pipe is inserted for rotating the pipe, so the helical member 11 works itself down into the soil.

The stopper 15 may be made of plastic, and has two upwardly directed ears 17. Each of those is at one of its vertical edges provided with a slot 18. The slots are directed in opposite directions, so it is possible to fit a fence wire between the ears, and then straighten it, so it will be jammed into the slots 18. It will thus not be necessary to fix the wire to the post.

The shape of brackets 14 is better shown in Figure 3. In each bracket there are two notches 19 suited to receive barbed wire, and two slots 20 suited to receive rope or wire for temporary fencing purposes. There are further two holes 21 in each bracket, by means of which it is possible to attach battens or boards to the post to form an enclosure.

The slots 19 and 20 are, to each side of the post member 12, turned in opposite direction, so it is possible to stretch a wire over one bracket, and below an adjacent

bracket, and so on while, simultaneously changing from inside the posts to outside thereof. In such a manner a satisfactory retension of the wire is obtained to a row of fence posts without any tying or other manner of locking.

The helical member is here formed as an open helix, i.e. it has no core, it is just a bar wound around an imaginary, cylindrical, core. In the embodiment shown in Figure 1 the helix is formed by a bar 22 having about semi-circular cross-section, which is attached directly to plate 13. The open helix will offer a low resistance only, during the screwing into the soil, but it will have a low capacity to withstand forces acting sidewardly upon the post member. In order to remove this drawback two stays 23 are attached to plate 13, within the open helix and extending downwards over a few windings of the helix, to which they are attached. The stays 23 are also preferably manufactured from a bar having a semi-circular cross-section. Two stays are preferably located diametrically opposite each other, within the helix. Due to their shape they will only add insignificantly to the resistance during the screwing down operation, but they will brace the helix in a very satisfactory manner.

Figure 5 shows a modified embodiment of a ground anchor device, which here includes a short length of tubing 25 provided with a suitable number of locking screws 26. The short tube may be used for receiving a pole carrying for instance a drying rack, or a garden umbrella, or an outdoor Christmas tree. The helical member is formed in a slightly different manner from the previous one. A tube 27 is attached to the plate 13 and the helix 28 issues from the edge of the tube remote from the plate. Here the tube 27 is the stay which takes care of possible lateral forces acting upon the pole. When the helix works its way downwards soil will be forced up into the tube, and this is therefore provided with at least one opening 29, just below plate 13, where excess soil may be squeezed out.

The helix 28 may, as with the embodiment according to Figure 1, consist of a flat bar having about semi-circular

cross-section, but it can also be formed directly from the tube. In this embodiment tubes 25 and 27 may be integral and have circular cross-section. The combined tube is passed through a hole in the plate and welded thereto. The lower end of tube 27 can be cut along a helical line, and the helix 28 is there formed by expanding the cut tube part longitudinally.

Figure 6 shows a further, modified embodiment. The portion above the plate is here formed as an eye bolt 30, which may be used for various staying purposes, and the helical member 31 is formed by a flat bar being wound along an helical path, and welded to the lower face of the plate 13. Within the helix there are two stays 23, which are welded to the plate and to some of the adjacent windings of the helix. The stays may, as with the embodiment according to Figure 1, advantageously be formed from pieces of bars having a semi-circular cross-section.

All components, i.e. posts and other upwardly directed members, the plate and the helical member are made of steel and welded together, and may be galvanized or anti-corrosion treated in any suitable manner. The helical members may be modified in many ways, and as is evident from the drawings, there are many fields of use for devices according to the invention. It is for instance possible to mount arcuate transoms between parallel rows of posts of the type shown in Figure 1 or Figure 5, to carry tarpaulins or the like to temporarily provide shelters for goods to be stored out of doors.

Claims

1. A ground anchor device of the type comprising a plate (13), which, in use, is substantially horizontally located, a fastening member (12, 25, 30) projecting from one face of said plate, and a helical member (11) directed away from the fastening member, c h a r a c t e r i z e d in that the helical member (11) is formed as an open helix (22, 28, 31), and that at least one stay (23, 27) is attached to the plate in a position to support said helix.

2. A ground anchor device according to claim 1, c h a r a c t e r i z e d in that the helical member (22, 31) is directly attached to the plate (13) and that at least two stay rods (23), preferably located diametrically opposite to each other are attached to the plate, within the helix, extending downwardly across at least two windings thereof and attached thereto.

3. A ground anchor device according to claim 2, c h a r a c t e r i z e d in that the helix (22) as well as the stay rods (23) are made from profile bars having a substantially semi-circular cross-section.

4. A ground anchor device according to claim 2, c h a r a c t e r i z e d in that the helix is formed by a flat bar being wound into a helix, or by a tube being cut along a helical line, and then expanded longitudinally.

5. A ground anchor device according to claim 1, c h a r a c t e r i z e d in that the stay is formed as a tubular member (27) to the edge portion of which, remote from the plate, the helix (28) projects.

6. A ground anchor device according to claim 5, c h a r a c t e r i z e d in that the stay tube (27) adjacent to the plate (13) is provided with at least one opening (29) for forcing out soil.

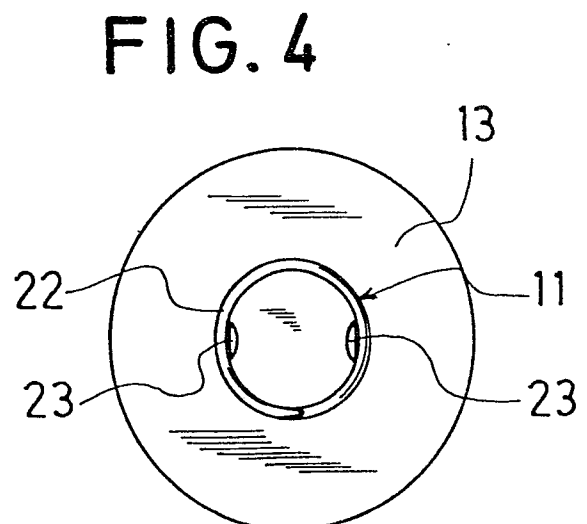
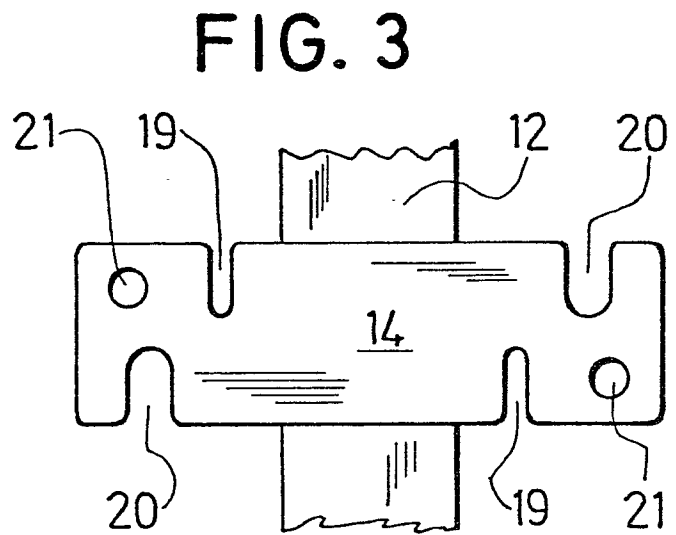
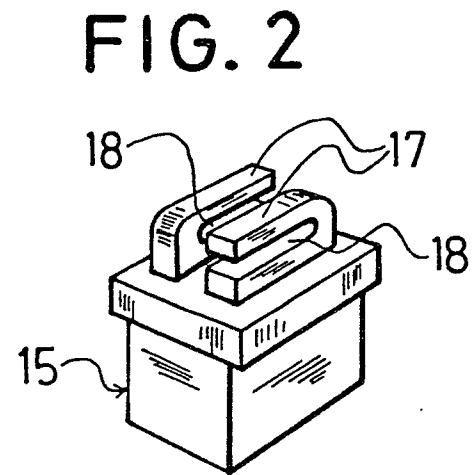
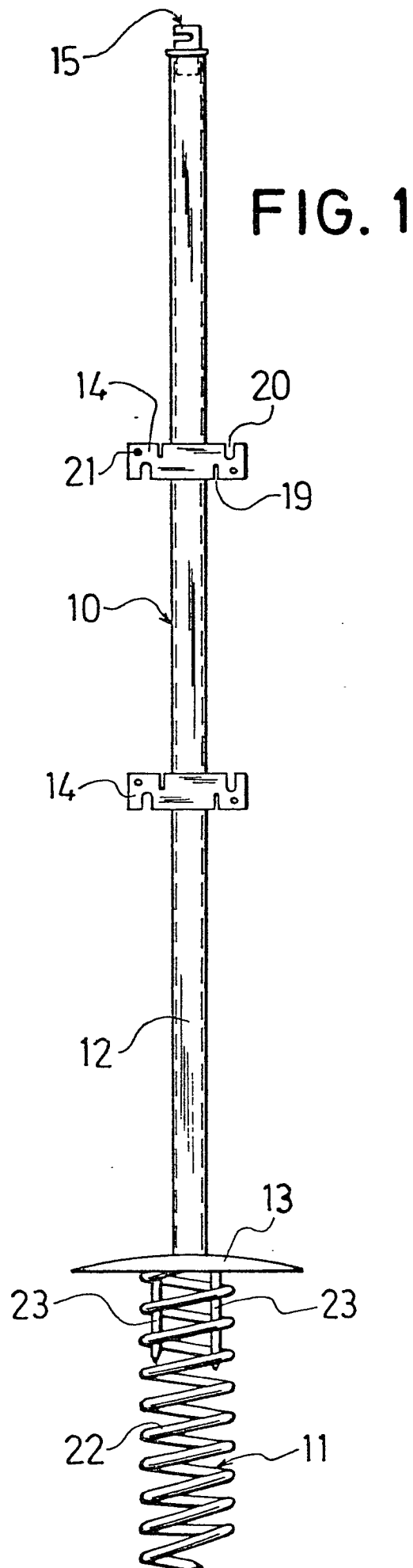


FIG. 5

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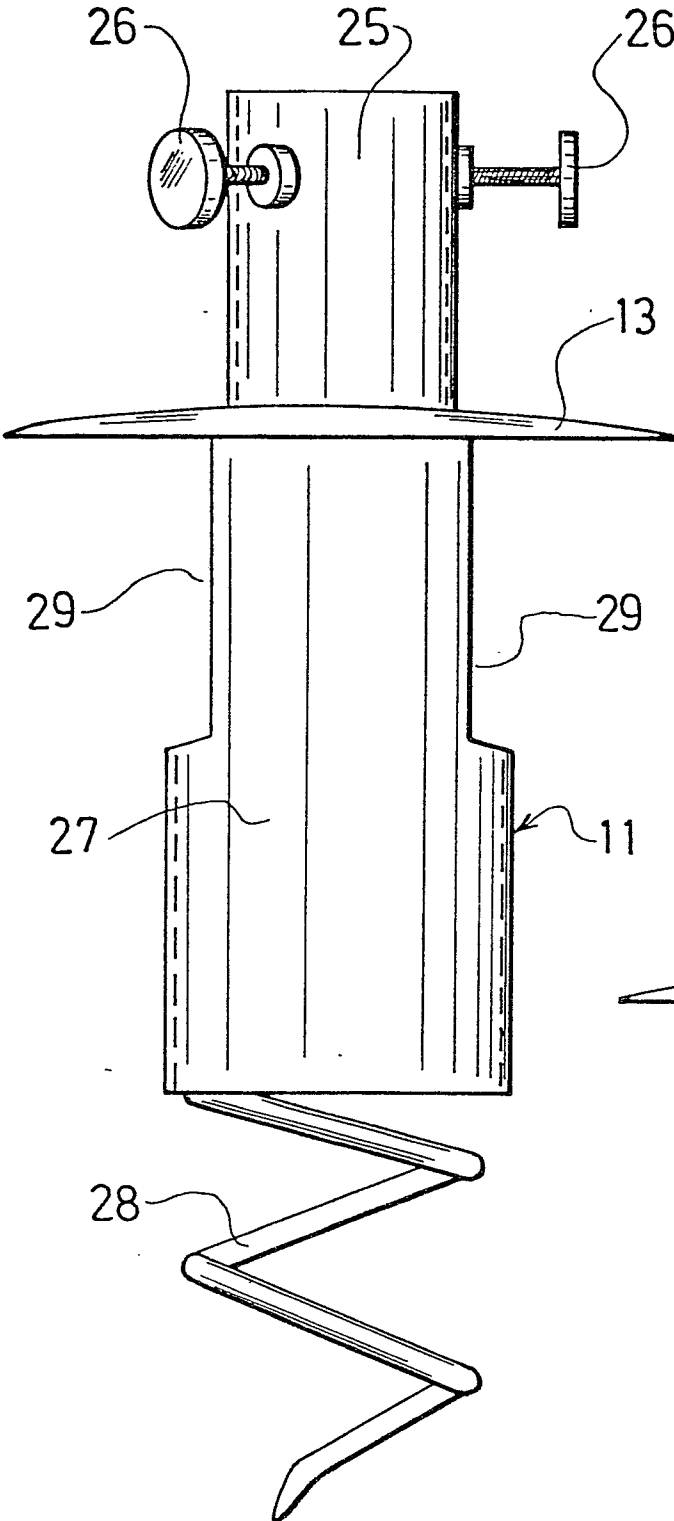
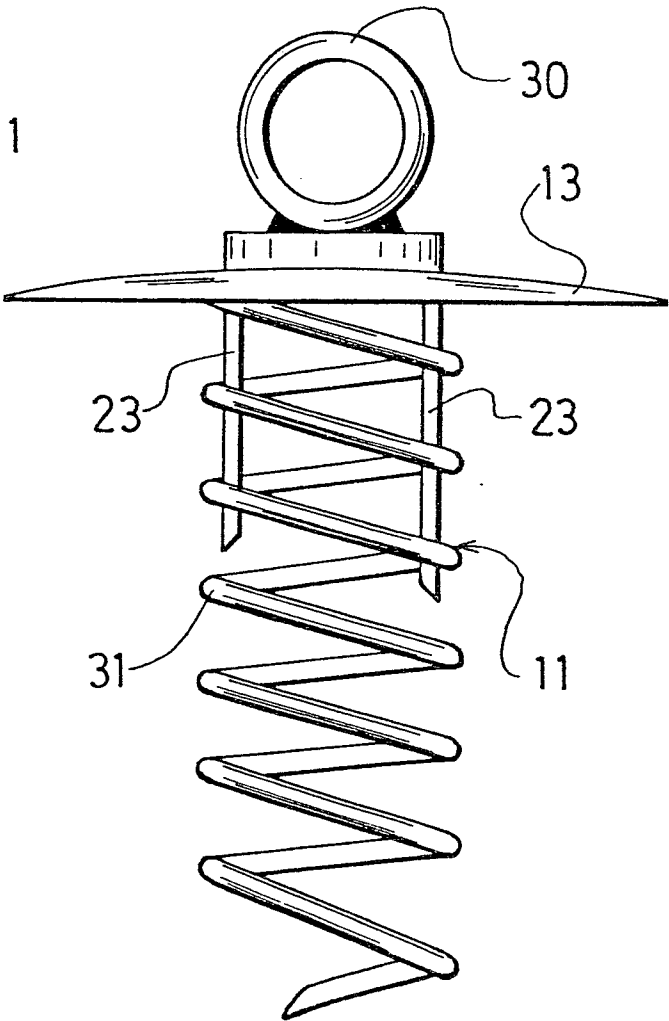


FIG. 6





European Patent
Office

EUROPEAN SEARCH REPORT

0033305

Application number

EP 81 85 0010

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	FR - A - 867 153 (TRICOU) * Page 1, right-hand column, paragraphs 2 and 7; page 2, left-hand column, paragraphs 2,3,4; figures 1 and 2 * --	1,2,5	E 02 D 5/80
X	US - A - 2 447 444 (WAITE) * Column 1, lines 41-55; column 2, lines 29-44; figure 1 * --	1	TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
X	FR - A - 413 247 (BEHRENS) * Page 1, lines 57-62; page 2, lines 1,2; figures 1,3 * --	1	E 02 D
A	GB - A - 798 426 (MONTROSE) ----		
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	07-05-1981	RUYMBEKE	