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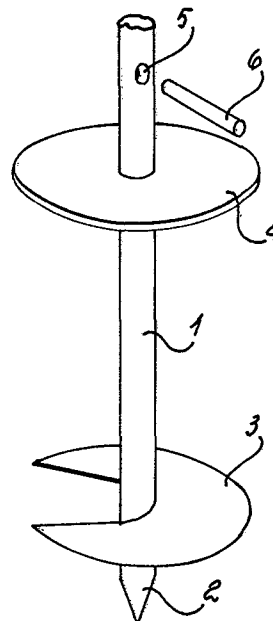
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(54)

Ground anchoring device for poles.

(57)

Laying of line surface structures at ground level by means of a stabilization device with a helical point (2) and an upper transverse base (4) integral with a spike (1) in order to determine a penetration wedge space.



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TITLE MODIFIED

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"Stabilizer on the ground for poles".

The invention refers to a ground stabilizer for poles employing a shoe tool with helical penetration, operating with gradual compacting of the ground. The means substantially permits - when the ground plane of base is foreseen for this purpose has been reached, with transversal correspondence, integral with the said part of ground penetration - to gradually increase the compactness of the retention ground while the spiral penetration of the point is progressing. In this way, the laying of supports is permitted for structures of line
10 such as: poles for ducts, road stakes, uprights for plantations and other, or for surface structures such as: enclosures, continuous walls or other, thus obviating the present operations of digging and concrete mix casting.

15 Essential feature of the invention is the fact that the employment of the transversal small base, when its contact with the ground has been reached, allows to operate the ground compactness in progression when penetration of the helical point is going on. This because, while the point is progressing,
20 the quantity of ground in the penetration wedge is increasing. The ground is compacting in the said space, and, with a gradual progression, is exercising a gradual pressure effect by expansion from the ideal cylindrical wall of the wedge on the surrounding ground, thus operating a total effect of
25 the pole stabilization.

For space of the penetration wedge with constant volume is to understand the one included between the helical penetration tool and having for base the section of the penetration cavity and the upper stabilization base on the ground.

30

End stretchers of different kinds are at present used with helical penetration for camping: these are implements that operate retention with penetration wedge, through which the resistance to slipping off is allowed by the natural ground compactness. These tension rods, which are generally used for tent pitching, do not allow the solution of the problem of anchoring in grounds with limited consistency.

20 The invention permits the solution of the laying of line and
40 surface structures at ground plane by means of a device operating with penetration and gradual ground compactness, principally allowing the stable placing into the ground of the structure and operating without excavations and laying of foundations. Performing the rotation of the tool in the inversed sense, the total recovery of the structures is possible.

Version of execution and essential employ forms are illustrated in the drawings of Table 1, where Fig. 1 is the perspective view of an implement according to the invention. Fig. 2 is the view of the same in longitudinal section in driven in condition into the ground to show the ground expansion in the penetration wedge, on the surrounding one. Fig. 3 is the schematic view of a pole equipped with a tool at its bottom according to the invention. Fig. 4 shows a pole applied axially on an similar device on stabilisation ground. From Fig. 5 a pole can be noted which is coaxially applied on an analogous device on stabilization ground. Fig. 6 shows a set of poles applied on line for plantation support. Fig. 7 illustrates the employ of poles ap-

plied according to the invention to be successively equipped
60 with surface elements to form enclosure generic structures. In
a version, the implement of stabilization employs a rod spike
1 with penetration point 2 having a penetrating helical relief
3 at its lower end and upper ground compacting plate 4 as well
as through hole 5 for the transversal imposing bar 6 apt to
65 bring the spike in rotation for the imposing and disconnecting
phases.

Version (a) is foreseen using pole 1a with base 2a, point 3a
and helical part 4a suitable for permitting poles to be direcly
70 tly stabilized in the ground. Version (b) foresees a tool for
stabilization in the ground with point 1b, helical part 2b,
base 3b and coaxial part in elevation 4b apt for integral app
lication of pole 5b by axial introduction of its pin 6b a-
nd coaxial blocking to obtain by means of pin, screw or other
75 blocking part. Version (c) foresees another stabilization tool
in the ground with point 1c, helical part 2c and base 3c,
with axial pin in elevation 4c useful for the application of
coaxial 5c, bottom end of the pole 6c and blocking of the two
parts by means of various devices.

80

The poles stabilized in the ground can operate as support of
different transversal structures such as: cables, plates or
other connecting elements.

85 Practically, the execution particulars of the stabilization
devices as well as of the line and surface structures that
can thus be laid on the ground plane can be foreseen in dif-
ferent ways. The invention allows universality of employ for
positioning structures of different kinds on ground plane, to
90 be laid or disconnected by merely rotating the penetration
rod in one sense or the other.

CLAIMS:

- 1) Stabilizer on the ground for poles, characterized by the fact that it permits laying line and surface structures at ground level by means of a stabilization device with penetration through helical point and upper transversal base integral with the spike in order to determine a penetration wedge space. Continuing the penetration beyond the adhesion condition of the base to the ground, its compaction is obtained in progression. This is possible because, when the spike is progressing, the quantity of ground in the penetration wedge is increased and, therefore, a gradual expansion of the mass contained in the relevant space is obtained to determine a total effect of ground compaction. In this way, the stabilization is attained of the pole integral with such foundation device.
- 2) Stabilizer on the ground for poles, according to the previous claim, characterized by the fact that, in a version, the stabilization device employs rod spike 1 with penetration point 2 having a helical relief 3 for penetration and an upper plate 4 for ground compacting and passing hole 5 for the transversal mounting of bar 6 apt to bring spike 1 into rotation for the fitting and disconnecting phases.
- 3) Stabilizer on the ground for poles, according to the previous claims, characterized by the fact that version (a) is foreseen which employs pole 1a with base 2a, point 3a and helical part 4a suitable for allowing poles directly to be stabilized into the ground.
- 4) Stabilizer on the ground for poles, according to the previous claims, characterized by the fact that version (b) foresees a stabilizing device into the ground with point 1b, helical part 2b, base 3b and coaxial part in elevation 4b for integral

fitting pole 5b by axial introduction of its pin 6b and coaxii
35 al blocking to be obtained with pin, screw or another blocki-
ng means.

5) Stabilizer on the ground for poles, according to the previoi
us claims, characterized by the fact that version (c) foresees
40 another stabilizing device into the ground with point 1c, heli
ical part 2c and base 3c fitted with axial pin in elevation 4c
for mounting coaxial part 5c, lower end of pole 6c, and blocki
ing of both parts by means of ~~different~~ devices.

45 6) Stabilizer on the ground for poles, according to the previoi
us claims, characterized by the fact that the poles stabilized
into the ground can be properly connected with line structures
like cables, rods or others, or also with surface structures
such as planes or other composition elements for carrying out
50 the previously made laying of different structures such as: see
parations, supports and structures in general to be laid into
work without excavations and without employing underpinning lii
ke foundations in concrete or others.

55 7) Execution forms substantially as described and illustrated
for the specified purposes.

FIG. 2

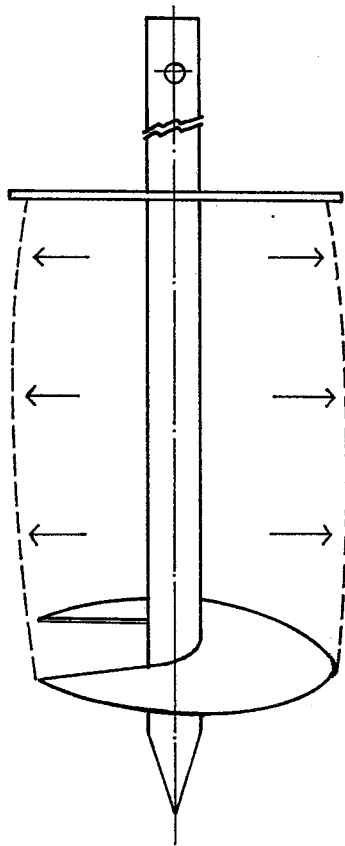


FIG. 3

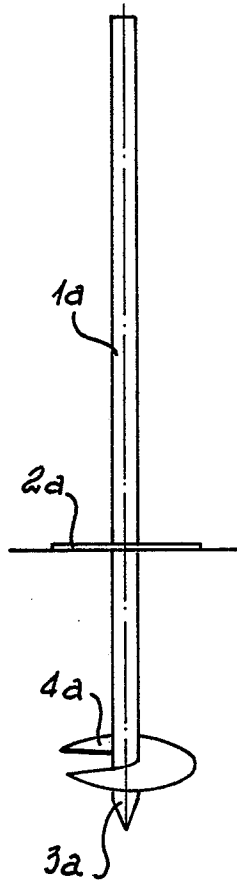


FIG. 4

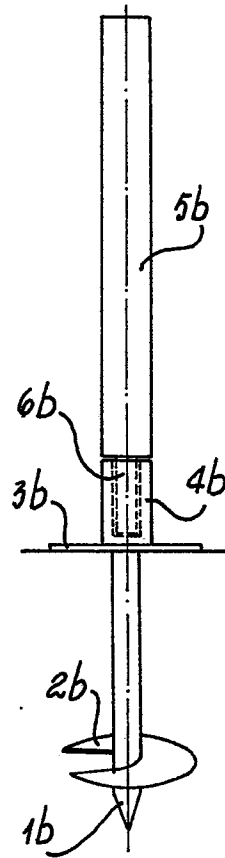


FIG. 5

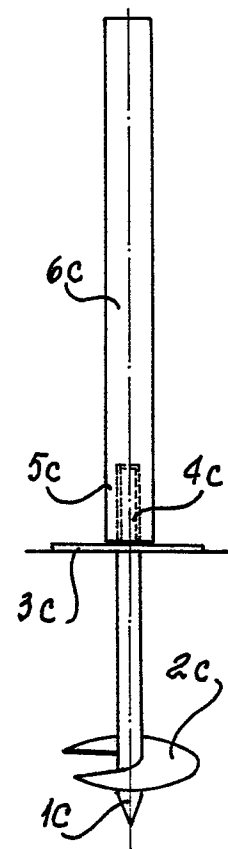


FIG. 1

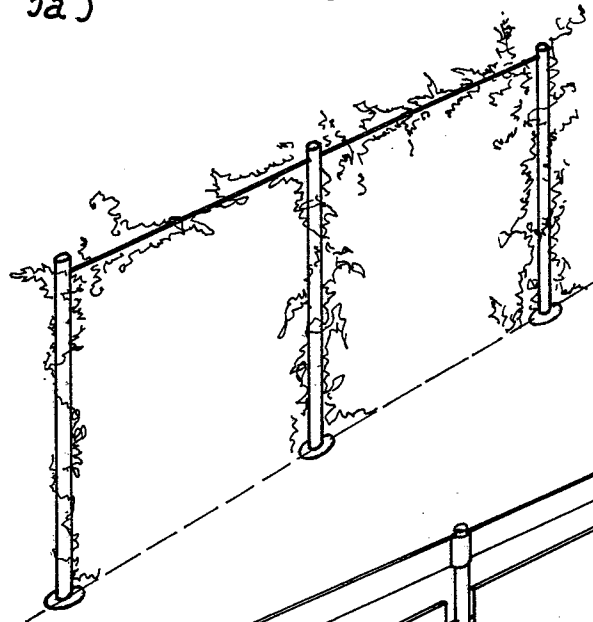
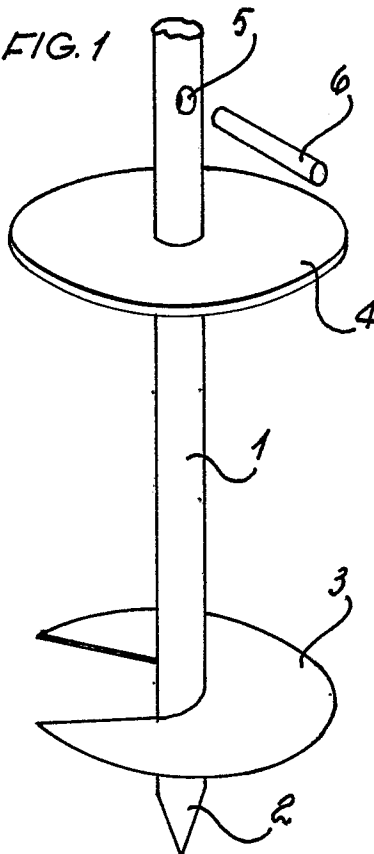


FIG. 6

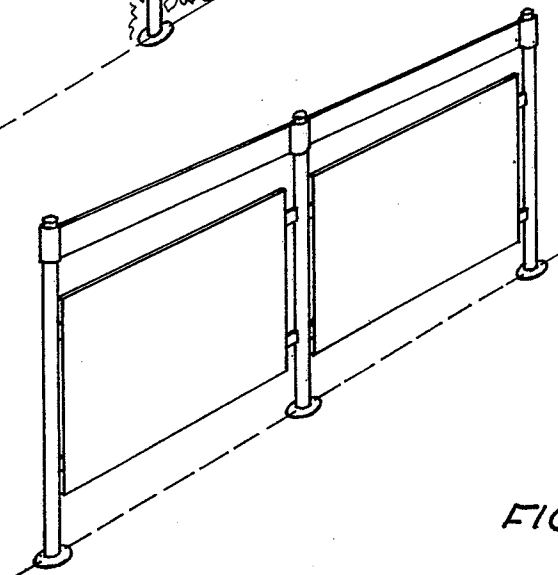


FIG. 7



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EUROPEAN SEARCH REPORT

0073264
Application number

EP 81 10 6794

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	NL - A - 66 09962 (MOREL) * Page 4, lines 6-18; page 6, lines 11-29; figure 3 * --	1,3,6,7	E 02 D 5/80 E 04 H 17/22
X	CH - A - 386 670 (GACHOUD) * Page 1, lines 34-52, 64-74; figure 4 * --	1,2,4	
X	DE - C - 163 571 (SCHULZ) * Page 1, lines 37-51, 61-69; figure 1 * --	1,6,7	TECHNICAL FIELDS SEARCHED (Int. Cl.)
	US - A - 2 084 239 (BRADFORD) * Page 1, right-hand column, lines 4-24, 38-42, 47-49; figures 1,2,6,7 * --	1,2,3,4,6,7	E 02 D E 04 H
	AU - B - 18796/70 (DULMISON) * Page 2, lines 16-27; page 4, lines 1-3; figure 1 * --	1,4,5	
A	GB - A - 134 301 (HUTCHINSON)		CATEGORY OF CITED DOCUMENTS
A	FR - A - 1 423 308 (LANGER-GERÄTE)		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
A	FR - A - 2 082 152 (GLIENKE) ----		
The present search report has been drawn up for all claims			&: member of the same patent family, corresponding document
Place of search The Hague		Date of completion of the search 30-11-1981	Examiner RUYMBEKE