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(54) **POST-HOLDER**

(57) The invention is directed to a post-holder (1) for a post (3), comprising a soil screw (5) with a pointed distal end (7) and a proximal end (9), and a post receiver (11) at the proximal end (9) of the soil screw (5). The post receiver (11) further comprises a shaft portion (13) on which a hole (15) in a lower face of the post (3) can be

fitted and fastened by means of a cement (17) there between, said shaft portion (13) having an outer longitudinal surface (19) with a retaining shape (21) configured for mechanically engaging with the cement (17) in the longitudinal direction.

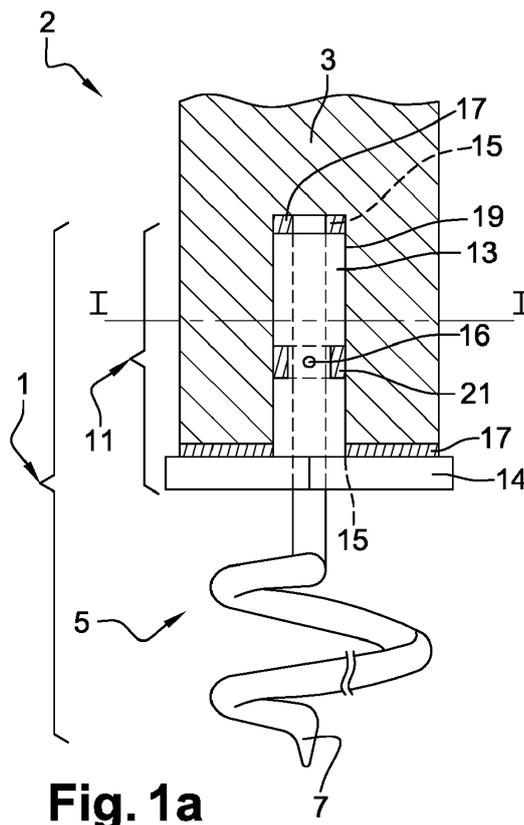


Fig. 1a

Description

[0001] The invention relates to the field of fence posts. In particular, this invention relates to holders for fence posts, poles and the like.

[0002] Generally, fence posts are held in position by digging a large opening in the ground somewhat larger than the cross-section of the fence posts and relatively deep in proportion to the above-ground height of the installed post. Subsequently, the lower end of fence posts is placed in the opening, which is then filled with soil removed by digging, hard core and/or sometimes concrete. This conventional method of fixing fence-post is clearly time consuming and posts installed are particularly difficult to extract, adapt and generally no-reusable. Moreover, as traditional fence posts are in wood, the buried portion of posts is usually subject to rot and decay over time due to exposure to moisture environment. As a result, posts strength is weakened, leading thus to lateral instability of fence posts.

[0003] Various attempts have been made over the time to provide structural devices for convenient placement and attachment of the posts into the ground. Among these devices, the standard practice of fixing posts is generally to use ground post anchors. Various ground post anchors exist and generally comprise a ground-engaging portion and a fence post-receiving portion, the engaging portion being of the screw-type made in corrosion resistant material.

[0004] In this sense prior art patent document published WO 86/01849 A1 discloses a post-holder which comprises a spring steel soil screw with a boring tip at one end and which is welded at the other end to a circular steel stabilizing plate on which one is welded a box-shaped post receiver. Although, this type of post-holder allows to erect and maintain a fence post without having to dig an opening in the ground and furthermore while not requiring any portion of the post to be underground, it presents a complex integrated design, with a post receiver portion not adaptable to a variety of posts having irregular shapes or different diameters. Moreover, with this post-holder problems of moisture and thus of wood degradation still occur since rain water can trickle down and thus infiltrate between the interior part of the post receiver and the bottom end of the wood post fixed on the post receiver.

[0005] The invention has for technical problem to provide a solution to at least one of the drawbacks of the above cited prior art. More specifically, the invention has for technical problem to provide a simple and efficient solution to improve motion resistance of fence posts, while protecting bottom end of fence posts against moisture.

[0006] For this purpose the invention is directed to a post-holder for a post, comprising : a soil screw with a pointed distal end and a proximal end; a post receiver at the proximal end of the soil screw; wherein the post receiver comprises a shaft portion on which a hole in a

lower face of the post can be fitted and fastened by means of a cement there between, said shaft portion having an outer longitudinal surface with a retaining shape configured for mechanically engaging with the cement in the longitudinal direction.

[0007] According to a preferred embodiment, the retaining shape of the outer longitudinal surface of the shaft portion comprises at least one transversal groove.

[0008] According to a preferred embodiment, the outer longitudinal surface of the shaft portion shows a constant cross-section along the longitudinal direction of said shaft portion with the exception of the retaining shape.

[0009] According to a preferred embodiment, the outer longitudinal surface of the shaft portion shows a cross-section, along the longitudinal direction of said shaft portion, with a profile that is circular with two opposed and parallel flattened areas.

[0010] According to a preferred embodiment, the at least one transversal groove extends perpendicularly to the two opposed and parallel flattened areas of the shaft portion.

[0011] According to a preferred embodiment, the at least one transversal groove comprises two parallel and opposed grooves.

[0012] According to a preferred embodiment, a plate extending radially from the shaft portion so as to receive the lower face of the post.

[0013] According to a preferred embodiment, the shaft portion and, if present, the plate, are a hollow element press-fitted on the proximal end of the soil screw.

[0014] According to a preferred embodiment, hollow element is made of aluminum, preferably cast-aluminum.

[0015] According to a preferred embodiment, the soil screw is formed by a helically wound steel wire.

[0016] According to a preferred embodiment, the hollow element is press-fitted on a longitudinally extending steel wire portion forming the distal end of the soil screw.

[0017] The invention is also directed to a post assembly comprising: a post-holder; and a post fixed to the post-holder; wherein the post-holder is according to the invention, the post having the hole in the lower face fitted on the shaft portion of the post-holder and fastened thereto by means of the cement.

[0018] According to a preferred embodiment, the outer longitudinal surface of the shaft portion of the post-holder shows a cross-section, along the longitudinal direction of said shaft portion, with a profile that is circular with two opposed and parallel flattened areas, and the diameter of the circular profile of the shaft portion corresponds to the diameter of the hole of the post, the cement being located between each of the two opposed and parallel flattened areas and a portion of the hole of the post that is in vis-à-vis of said area.

[0019] According to a preferred embodiment, the post comprises a radial passage connecting the hole of said post to an outer surface of said post, said passage serving for injecting the cement into said hole.

[0020] The invention is also directed to a process of

mounting a post assembly comprising a post-holder and a post, said method comprising the steps of: inserting the post-holder in the soil; fixing the post to the post-holder; wherein the post assembly is according to the invention, the step of fixing the post to the post-holder comprising applying, preferably injecting, the cement to the hole and the shaft portion.

[0021] The invention is interested in that it provides a simple device for installation of fence posts into the ground with minimal effort and which enhances posts stability while protecting them against moisture. This invention is also particularly interesting in that it decreases the mounting time of wood posts and is adaptable to a large variety of posts independently of their diameter and their shape.

[0022] Other features and advantages of the present invention will be readily understood from the following detailed description and drawings among them:

- Figures 1 a and 1b show, respectively, a view of a longitudinal section and a cross section view of a preferred embodiment of a post-holder according to the invention.
- Figure 2 shows a perspective view of the post-holder of figure 1 as well as a perspective view of a variation of the preferred embodiment of the post-holder according to the invention.
- Figure 3 depicts a view of a second longitudinal section of the post-holder of figure 1.

[0023] Figure 1 a presents a longitudinal section of a preferred embodiment of a post-holder 1 on which a wood post 3 is fixed, the post-holder 1 and the post 3 forming a post assembly 2. The post-holder 1 is actually constituted by two elements, a soil screw 5 which has a pointed distal end 7 for engaging in the ground, and a post receiver 11 which is positioned at the proximal end 9 of the soil screw 5. The post receiver 11 further comprises a shaft portion 13 on which a hole 15 in a lower face of the wood post 3 can be fitted and fastened by means of a cement 17. On its side, the shaft portion 13 presents an outer longitudinal surface 19 with a retaining shape 21 which is configured for mechanically engaged with the cement 17 in the longitudinal direction. This outer longitudinal surface 19 of the shaft portion 13 has a constant cross-section along the longitudinal direction of the shaft portion 13 with the exception of the retaining shape 21. Advantageously, the retaining shape 21 of the outer longitudinal surface 19 of the shaft portion 13 is composed of at least one transversal groove 21, which advantageously also comprises two parallel and opposed grooves 21- On figure 1a, in this case, two transversal grooves 21 are represented on the shaft portion 13.

[0024] In the preferred embodiment of the post-holder 1, the shaft receiver 11 further comprises a plate 14 which extends radially from the shaft portion 13 in a way to

receive the lower face of the wood post 3. In addition to provide strength to the physical connection between the shaft portion 13 of the post receiver 11 and the soil screw 5, this base plate 14 increases thus the lateral stability of the post-holder 1 in the ground. Generally, the edge of the plate 14 is circular but advantageously, it can also be of any other shape with several straight sides, in a way to allow a rotatably engaging with a screw tool of the post-holder 1 into the ground.

[0025] Figure 1b depicts a transversal cross-sectional view of the above post assembly 2. On this figure, the outer longitudinal surface 19 of the shaft portion 13 of the post receiver 11 (figure 1a) actually presents a cross section, along the longitudinal direction of the shaft portion 13, that is circular with two opposed and parallel flattened areas 23. Advantageously, and that is the case in figures 1 a and 1 b, the at least one transversal groove 21 extends perpendicularly to these two opposed and parallel areas 23 and comprises two parallel and opposed grooves 21. As it can also be noted on figure 1b, the hole 15 of the lower face of the post 3 fits strongly on the shaft portion 13 of the post receiver 11, as well as the shaft portion 13 is configured on its side to also firmly fit on the proximal end 9 (not visible) of the soil screw 5. As figure 1b is a sectional view of figure 1a, according to the cutting plane I-I, the two grooves 21 present along the outer longitudinal section 19 of shaft portion 13 are thus represented with dashed lines.

[0026] Figure 2a show a perspective view of the post-holder 1 of figure 1 without a wood post attached on it. On this figure, the two opposed and parallel flattened areas 23 of the outer longitudinal surface 19 of the shaft portion 13 are clearly observable, as well as the at least one transversal groove 21. Figure 2b presents for its part a alternative of the preferred embodiment of the post-holder 1 but without a base plate 14 at the bottom of the shaft portion 13.

[0027] Figure 3 shows a view of a second longitudinal section of the post-holder 1 of figure 1 on which a wood post 3 is positioned and which is being fixed into the ground. On this section, the post 3 comprises a radial passage 25 which connects the hole 15, made in the lower face of the wood post 3, to an outer surface of the post 3. This passage 25 is positioned face to the grooves (not visible on figure 3) and actually serves for injecting a cement 17 into the hole of the post 3. Once the cement 17 injected in the radial passage 25, it then flows between each of the two opposed and parallel flattened areas 23 and the portion of the hole 15 that is in vis-à-vis of said area 23, and subsequently in the grooves which are configured for mechanically engaging with the cement 17 in the longitudinal direction and consequently to enhance the fastening of the post-holder 1 to the post 3.

[0028] In the post-holder 1 of this invention, the shaft portion 13 of the post receiver 11, as well as the plate 14, if present (figure 1a, figure 3), constitute a hollow element which may be manufactured by direct-injection molding or over-molding from corrosion-resistant metals

such as aluminum, preferably cast-aluminum. The second part of the post-holder 1, namely the soil screw 5, is generally formed by a helically 6 wound steel wire with a pointed distal end 7 and a longitudinally 8 extending steel wire portion to the other end 9 (figure 1a, figure 3). However, the soil screw 5 can also present other configurations, as particularly a cylindrical or conical hollow or solid body having a helix. The helical part 6 of the soil screw 5 is integrally inserted in the ground while the longitudinal extended part 8 is largely out of the ground (figure 1a, figure 3). The thread of the helical part 6 can have a constant angular pitch of between 3 and 30 degrees relative to the horizontal plane and the length of the longitudinal part 8 can be greater or equal to 10% or no more or less than 25% of the total length of the soil screw 5.

[0029] Thanks to the post-holder 1 of this invention, the process of mounting of a fence post 3 is simple and fast. Actually, it comprises two main successive steps corresponding firstly to insert the post-holder 1 in the soil and secondly to fix the wood post 3 to the post-holder 1, but each of these steps also comprise several steps.

[0030] Concerning the first step, it consists in a first time to screw in the soil the helically 6 wound steel wire portion of the soil screw 5, while leaving out the ground its proximal end 9, which is formed by a longitudinally 8 extending steel wire portion. In a second time the shaft portion 13 of the post receiver 11 and, if present a plate 14, is then press-fitted on the proximal end 9 of the soil screw 5. Advantageously, a pin 16 can also be inserted through the shaft portion 13 and the longitudinal 8 extended portion of the soil screw 5 to maintain their engagement (figure 1 a).

[0031] Concerning the second step of the mounting process, it consists to fit a wood post 3, having a hole 15 in the lower face, on the shaft portion 13 of the inserted post-holder 1. The diameter of the circular profile of the shaft portion 13 corresponding to the diameter of the hole 15 of the wood post 3, this last one is thus firmly fixed to the shaft portion 13. Means of cement 17 are then injected in the radial passage 25 of the wood post 3. Among the varying means of cement 17, well-known of the skilled in the art, and which can be employed, epoxy resin compounds are preferred for this application because they particularly present an excellent adherence and mechanical properties to strengthen wood fibers. Since, transversal grooves 21 or other remaining shape 21 present on the outer longitudinal surface 19 of the shaft portion 13, are configured for mechanically engaging with the cement 17 in the longitudinal direction, it results that the wood post 3 is strongly fixed and fastened to the post-holder 1. In the same way, when the post receiver 11 present a plate 14, a cement 17, such as epoxy compound, is also applied between the bottom face of the wood post 3 and the upper face of the plate 14 (figures 1a and 3). In addition to fixing the wood post 3 to the post-holder 1, the cement 17 protects the post assembly 2 from moisture.

[0032] One of the supplementary advantages of this

mounting process, and thus of the post-holder 1 of the invention, is that when a wood post 3 is damaged, it can be easily and rapidly replaced by another one. For this purpose, the inferior part of the damaged post 3 is destroyed for separating it of the post-holder 1, the cement is then removed and another wood post 3, with a hole 15 previously drilled in its lower face bottom, can be implemented on the post-holder 1.

[0033] Generally, the present invention is interesting in that fence posts thus fixed present the necessary rigidity for not being loosened and removed by shaking, and nevertheless enough flexibility so that they are less readily carried out by accidental impact than fences of conventional type. Moreover, this invention is interesting in that it is suitable for posts which are permanently erected or temporary posts.

Claims

1. A post-holder (1) for a post (3), comprising :

- a soil screw (5) with a pointed distal end (7) and a proximal end (9);
- a post receiver (11) at the proximal end (9) of the soil screw (5),

characterized in that

the post receiver (11) comprises a shaft portion (13) on which a hole (15) in a lower face of the post (3) can be fitted and fastened by means of a cement (17) there between, said shaft portion (13) having an outer longitudinal surface (19) with a retaining shape (21) configured for mechanically engaging with the cement (17) in the longitudinal direction.

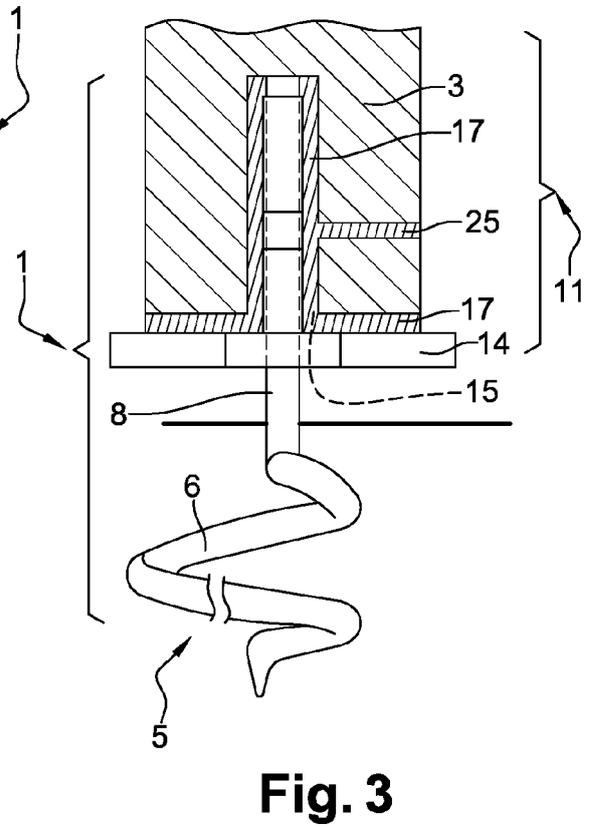
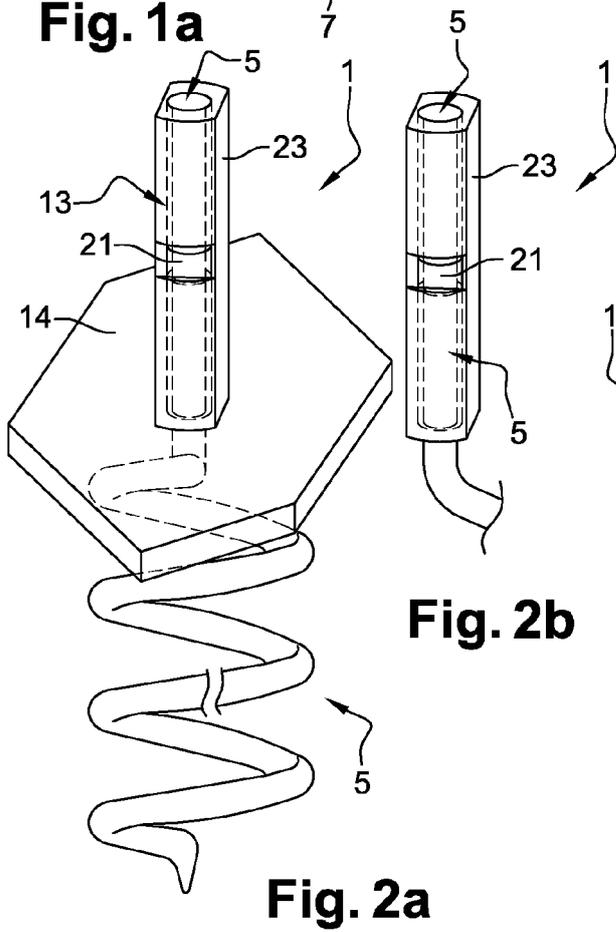
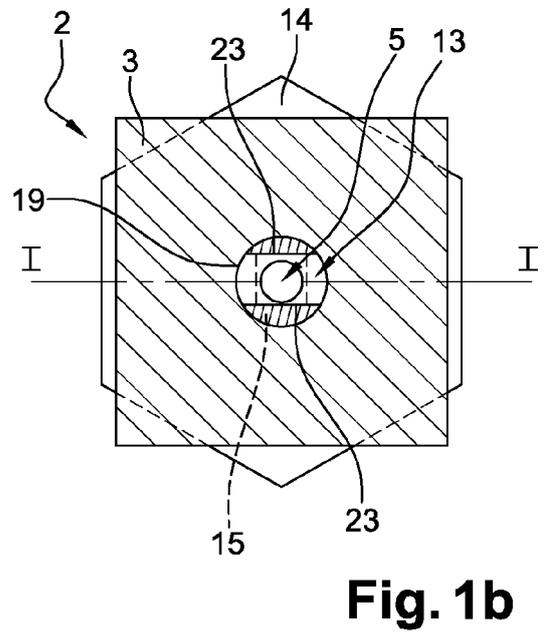
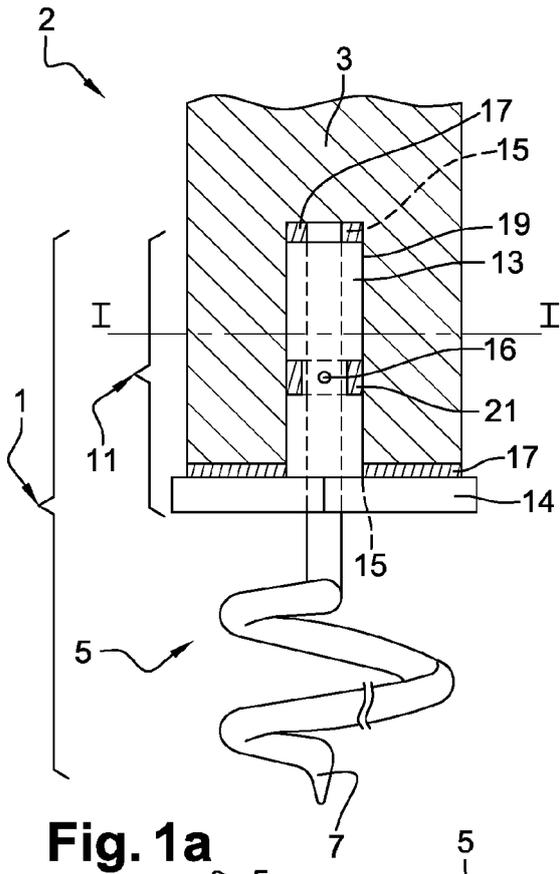
2. The post-holder (1) according to claim 1, wherein the retaining shape (21) of the outer longitudinal surface (19) of the shaft portion (13) comprises at least one transversal groove (21).
3. The post-holder (1) according to one of claims 1 and 2, wherein the outer longitudinal surface (19) of the shaft portion (13) shows a constant cross-section along the longitudinal direction of said shaft portion (13) with the exception of the retaining shape (21).
4. The post-holder 1 according to any one of claims 1 to 3, wherein the outer longitudinal surface (19) of the shaft portion (13) shows a cross-section, along the longitudinal direction of said shaft portion (13), with a profile that is circular with two opposed and parallel flattened areas (23).
5. The post-holder (1) according to claims 2 and 4, wherein the at least one transversal groove (21) extends perpendicularly to the two opposed and parallel flattened areas (23) of the shaft portion (13).

6. The post-holder (1) according to claim 5, wherein the at least one transversal groove (21) comprises two parallel and opposed grooves (21).
7. The post-holder (1) according to any one of claims 1 to 6, further comprising a plate (14) extending radially from the shaft portion (13) so as to receive the lower face of the post (3).
8. The post-holder (1) according to any one of claims 1 to 7, wherein the shaft portion (13) and, if present, the plate (14), are a hollow element press-fitted on the proximal end (9) of the soil screw (5).
9. The post-holder (1) according to claim 8, wherein the hollow element (13, 14) is made of aluminum, preferably cast-aluminum.
10. The post-holder (1) according to any one of claims 1 to 9, wherein the soil screw (5) is formed by a helically (6) wound steel wire.
11. The post-holder (1) according to one of claims 8 and 9 and according to claim (10), wherein the hollow element (13, 14) is press-fitted on a longitudinally (8) extending steel wire portion forming the proximal end (7) of the soil screw (5).
12. A post assembly (2) comprising:
- a post-holder (1); and
 - a post (3) fixed to the post-holder (1);
- characterized in that** the post-holder (1) is according to any one of claims 1-11, the post (3) having the hole (15) in the lower face fitted on the shaft portion (13) of the post-holder (1) and fastened thereto by means of the cement (17).
13. The post assembly (2) according to claim 12, wherein post-holder (1) is according to claim 4, and the diameter of the circular profile of the shaft portion (13) corresponding to the diameter of the hole 15 of the post 3, the cement (17) being located between each of the two opposed and parallel flattened areas (23) and a portion of the hole (15) of the post (3) that is in vis-à-vis of said area (23).
14. The post assembly 2 according to one of claims 12 and 13, wherein the post 3 comprises a radial passage 25 connecting the hole (15) of said post (3) to an outer surface of said post 3, said passage 25 serving for injecting the cement (17) into said hole (15).
15. Process of mounting a post assembly 2 comprising a post-holder (1) and a post (3), said method comprising the steps of:

- inserting the post-holder (1) in the soil;
- fixing the post (3) to the post-holder (1);

characterized in that

the post assembly (2) is according to any one of claims 12 to 14, the step of fixing the post (3) to the post-holder 1 comprising applying, preferably injecting, the cement (17) to the hole (15) and the shaft portion (13).





EUROPEAN SEARCH REPORT

Application Number
EP 17 17 9872

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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