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(54) **Post, particularly for delimiting tracings**

Stange, insbesondere zum Begrenzen von Pisten

Piquet, particulièrement pour délimiter des pistes

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Description

[0001] The present invention relates to a post for delimiting tracings, in particular for applications in the sporting field for delimiting tracks, supporting protec-

[0002] As is well known, posts that are widely employed in skiing facilities are made of plastic material or, more rarely, of wood; such posts are substantially shaped according to elongated forms, present an extremity suitable for being driven into the solid ground or into snow and can be used individually or in such a way as to constitute supports for safety nets. Other typical examples of such posts provide for their use as supports for signs or as border elements between areas devoted to sporting practice and areas devoted to other functions.

[0003] The posts constructed according to known solutions present several drawbacks, particularly severe if one considers that an essential feature of the posts should be their guaranteeing users' safety.

[0004] The first problem is given by the poor elasticity that posts currently in use generally have. The impact of the human body with one of them can therefore cause considerable injuries. In consideration of this hazard, traditional posts can be provided with protections made of softer materials. Since such protections must, out of practical necessity, be rather small in size, they can reduce only to a small extent the effects of an impact on a body at high speed which may run into the post, as occurs for instance in alpine skiing.

[0005] The use of posts, made of wood or plastic, that are deformable thanks to their reduced cross section can, on the other hand, have even worse consequences.

[0006] The nature of such materials is such that the post thus constructed will have dangerously low mechanical strength characteristics, so much so that in the impact it may easily break, often with the formation of splinters that are violently projected into the surrounding environment. Moreover, the permanence of the post stub is an additional hazard, as it constitutes a typically sharp protuberance. This not only defeats its purpose, when it is to delimit or provide protection, but may lead to injuries caused by the splintered parts of the post.

[0007] The common use of materials like plastic and wood also presents various drawbacks linked to environmental conditions. At low temperatures plastic is prone to a decay of its elastic properties, so that the application of a load nominally withstood by the post could cause its permanent warping under particularly adverse environmental conditions.

[0008] On the other hand, it is well known that using wood outdoors can cause its properties to decay due to humidity and low temperatures. These effects can be limited by subjecting the wood material to particular

treatments which, however, are absolutely disadvantageous in terms of the cost-effectiveness of the product.

[0009] Beside the known solutions introduced above, a different type of delimiting post is available on the market, and it finds particular use in routes for alpine skiing competitions. For instance, in the "slalom" speciality, a particular type of post is currently used, made of plastic, having tubular section and provided in its portion proximate to the ground with a ball joint, generally made of silicone resin. Essentially, the joint allows the lowering of the part of post emerging from the ground by athletes who impact thereon when skirting the post itself.

[0010] The first problem of such a construction is, yet again, safety. First of all, the athlete is subjected to a hard impact against the rigid material of the post; in the second place, the skier who has lowered it can be violently hit by the post as it returns upright, given that the elastic element concentrated in a single point close to the ground causes the rigid portion of the post to return violently, with considerable problems connected to the reactive impact of the post on the athlete's body. These facts today force slalom specialists to wear protections for all their limbs, their head and their teeth. Lastly, such a post presents considerable costs and constructive complexity, being constituted by a multiplicity of elements such as a ground anchoring body, a ball joint and an upper portion projecting from the ground.

[0011] It is known from FR 2029174 a pole for delimiting "slalom" tracks, which is essentially constructed with a substantially rigid, tubular main structure made of a composite material, which brings, in its internal cavity, a foamed polyurethane core.

[0012] It is also known from FR2555064 another pole structure having a tubular main portion and an anchoring portion mutually connected through a hinge element.

[0013] In light of the above description, the fundamental aim of the present invention is to provide a new post able substantially to solve all the drawbacks mentioned previously.

[0014] A particular aim of the present invention is to provide a post with an extremely advantageous elastic behaviour in case of impact, i.e. able to provide adequate damping capabilities whilst maintaining a substantial structural integrity.

[0015] A further aim of the present invention consists of obtaining a post of considerable constructive simplicity, in terms of complexity and overall number of elements required.

[0016] Lastly, an aim of the present invention consists of enabling to obtain a post that is free of the phenomena of decay in mechanical characteristics in low-temperature environments.

[0017] The specified technical task and the aims set out above are substantially achieved by a post for delimiting tracings as described in the accompanying claims.

[0018] The description is now provided, purely by way of non limiting example, of some preferred but not ex-

clusive embodiments of a post, in particular for delimiting tracings, illustrated in the accompanying drawings, in which:

- Figure 1 shows a longitudinal section of a post according to the invention;
- Figure 2 shows a section of the post according to the trace II-II of Figure 1;
- Figure 3 shows a longitudinal section of a different embodiment of the post according to the invention; and
- Figure 4 shows a section of the post of Figure 3 according to the trace IV-IV.

[0019] With reference to the aforementioned figures, the post according to the invention is globally indicated with the number 1.

[0020] It comprises a pole-like body 2 made of composite material; in reference to the described embodiments it is important to note that the composite material employed in the construction of this pole-like body 2 has its mechanically resisting fibres continuous, and substantially arranged along the axis of development of the pole-like body 2 itself. Delving in further detail, the fact should be stressed that the reinforcing fibres extend over the entire length of the pole-like body 2.

[0021] The reason for this structural choice advantageously resides in the fact that such a configuration is able to offer a homogeneous elastic behaviour to the entire pole-like body 2; in other words the pole-like body 2 simultaneously serves as a structural core and as an elastic element for the post 1 according to the present invention. The selection of composite material with which to manufacture the pole-like element 2 is dictated by the usual engineering and cost considerations; in particular, one can choose to manufacture the pole-like body 2 with fibreglass, but if circumstances so require, materials with more advanced mechanical characteristics can be adopted, such as aramid fibre compounds (i.e. Kevlar) or carbon fibre based composites.

[0022] The pole-like is formally divided into an active portion 3, which with the post 1 in the installed condition emerges from the ground and an anchoring portion 4 which on the contrary is buried when the post 1 is installed in the appropriate areas of the tracing to be delimited: with particular reference to Figures 1 and 3, one can note that the active portion and the anchoring portion 4 are mutually connected without interruption, and at the same time the composite material with which the pole-like body 2 is constructed guarantees the elasticity of this connection.

[0023] According to the configuration just described, the active portion 3 is tasked with absorbing the kinetic energy of a body which may impact against the post, whereas the anchoring portion 4 operates in such a way as to maintain the post 1 secured to the ground especially during the occurrence of the impact itself; lastly, one should consider the fact that the pole-like body is

designed to confer a sufficiently elastic behaviour to the entire structure of the post 1 according to the present invention to avoid causing serious injuries or damage to the impacting body while maintaining the structural soundness of the post after the impact.

[0024] The pole-like body 2 presents a geometrically identical section along the entire axis of development and this section is preferably shaped according to an axially symmetrical figure. The reason why the section of the pole-like body 2, with particular attention to the section of the active portion 3, should preferably be axially symmetrical resides in the fact that the post 1 according to the present invention must offer the same dynamic behaviour in case of impact in an undifferentiated manner according to all possible directions of incidence of the impact; in this view, as noted in Figure 2, the section of the pole-like body 2 advantageously has circular or slightly elliptical shape, but in case of given design and/or functional specifications the pole-like body 2 presents a solid structure. Any how, the pole-like body 2 can be manufactured with constant measures of the section along the entire axis of longitudinal development or can have variable cross section measurements; in particular, a pole-like body 2 can be obtained which presents at least the active portion 3 tapered, with growing section proceeding from the top of the post towards the ground.

[0025] In some cases it is also possible to construct the pole-like body in two or more successive portions with geometrically differentiated section: for instance a body comprising a segment with circular section and then a segment with elliptical section.

[0026] Advantageously, the pole-like body 2 is suitable for being manufactured by profiling, given its simple geometric configuration; with particular reference to the employment of the composite material mentioned above (fibreglass), said pole-like body 2 is conveniently manufactured with the industrial process of pultrusion.

[0027] Accessories can be associated to the pole-like body 2 to improve the functionality of the post 1 in terms of easing the installation of the post 1 itself and to improve the ability to reduce the severity of the damage to any bodies which may impact it. For instance, observing Figure 3 one can note the presence of an anchoring element 5 associated to the anchoring portion 4, for instance by means of gluing; said anchoring body 5 is conveniently made of plastic material, and presents an inner cavity 7 destined to house at least partially the anchoring portion 4 (with reference to Figure 3, note that said inner cavity 7 is substantially counter-shaped relative to the anchoring portion 4), whilst on its own outer surface it houses friction means 8 destined to enhance the stability of the insertion of the post 1 into the ground; said friction means 8 are obtained by means of a projecting thread, which advantageously allows to insert the post 1 into the ground as if it were a self-threading screw. The anchoring element 5, as Figure 3 shows, presents substantially cylindrical shape, but it can advantageous-

ly be shaped as a cone or even as a cone frustum.

[0028] Also in reference to accessories installed on the post, in Figure 3 one can observe the presence of an exterior coating 6, made of porous plastic material, yielding on contact (preferably polyurethane foam), shaped in such a way as to encompass the active portion 3 emerging from the ground; at this point it should be noted that this exterior coating can cover only a part of the active portion 3, but is advantageously made to cover the entire active portion 3.

[0029] The function of the exterior coating 6 substantially consists of dampening the effects of the impact on the delicate parts of the impacting body whilst preventing the hazardous ejection of splinters in case of an unfortunate sudden rupture of the pole-like body 2 as a result of the impact the exterior coating 6 presents substantially cylindrical shape closed at one extremity and has an interior cavity shaped substantially counter to the active portion 3; the exterior coating 6 is mounted on the pole-like body 2 simply by fitting the exterior coating 6 on the active portion 3, so that the active portion 3 itself is housed in the inner cavity of the exterior coating 6.

[0030] The invention achieves important advantages.

[0031] First of all, note how the presence of the pole-like body 2 provides the entire post 1 with a much greater ability to absorb impacts than known posts, because of the intrinsic elasticity of the composite material and thanks to the fact that the elastic properties are distributed along the entire pole-like body 2 and not concentrated in a limited area.

[0032] Also with respect to behaviour in case of impact, note that the elasticity of the pole-like body 2, coupled with the substantial reversible deformation of the exterior coating 6, allows it to adapt to the shape of the impacting body, and this in effect determines a considerable reduction in the effects of sudden elastic return into position of the post 1.

[0033] Additionally, note that advantageously the adoption of the composite material limits the possibility of splinter formation in limit cases of structural collapse of the post, with significant benefits in terms of collateral damage reduction. The danger that any splinters may propagate is further attenuated by the presence of the exterior coating 6.

[0034] A further advantage deriving from the use of composite material resides in the fact that this category of materials in practice is not affected in terms of degradation of its mechanical characteristics as a result of prolonged exposure to low temperatures.

[0035] Yet another advantage, lastly, is the extreme simplicity of construction of the post according to the present invention, which substantially guarantees elasticity without having to introduce elastic joints into the structure or divide the structure itself into multiple parts manufactured separately and then interconnected; this leads to significant benefits in regard to production times.

Claims

1. A post, particularly for delimiting tracings, comprising a pole-like body (2), said pole-like body(2) being formally divided into:

- an active portion (3) of elongated shape; and
- an anchoring portion (4) securable to the ground, connected to said active portion (3);

characterized by the fact that the pole-like body (2) presents a solid section which is constant along an entire axis of development of the pole-like body (2) itself, said solid section being entirely made with a plastic matrix into which a plurality of continuous reinforcing fibres is buried.

2. A post as claimed in claim 1, **characterised in that** it presents a pole-like body (2) comprising said active portion (3) and said anchoring portion (4), the anchoring portion (4) being elastically connected to the active portion (3), the anchoring portion (4) being an uninterrupted continuation of said active portion (3).

3. A post as claimed in either of the previous claims, **characterised in that** said reinforcing fibres are of the continuous type.

4. A post as claimed in claim 3, **characterised in that** said fibres are arranged according to the axis of longitudinal development of the post (1), preferably parallel to said axis.

5. A post as claimed in claim 3, **characterised in that** said fibres extend over the entire length of the active portion (3).

6. A post as claimed in any of the previous claims, **characterised in that** said reinforcing fibres are made of glass and/or aramidic and/or made of carbon.

7. A post as claimed in any of the previous claims, **characterised in that** said anchoring portion (4) is made with a plastic matrix into which a plurality of reinforcing fibres is buried.

8. A post as claimed in any of the previous claims, **characterised in that** it comprises an anchoring element (5), terminally associated to said anchoring portion (4).

9. A post as claimed in claim 8, **characterised in that** said anchoring element (5) is glued to the anchoring portion (4) of the post (1).

10. A post as claimed in claim 8, **characterised in that**

said anchoring element (5) presents an inner cavity (7) able to house at least a part of the anchoring portion (4) and an exterior surface delimiting said body, said anchoring element (5) being associated to the anchoring portion (4) by the insertion of said anchoring portion (4) into said inner cavity (7).

11. A post as claimed in claim 10, **characterised in that** said anchoring element (5) presents, on its exterior surface, friction means (8) to increase its grip on the ground.

12. A post as claimed in claim 11, **characterised in that** said friction means (8) comprise a thread obtained on said exterior surface.

13. A post as claimed in any of the previous claims, **characterised in that** the active portion (3) has its cross section axially symmetrical relative to the axis of development.

14. A post as claimed in claim 13, **characterised in that** the active portion (3) presents circular cross section.

15. A post as claimed in any of the previous claims from 2 to 14, **characterised in that** the pole-like body (2) has variable section along the longitudinal axis of development, the pole-like body (2) preferably being tapered in the direction away from the ground.

16. A post as claimed in any of the previous claims, **characterised in that** the axial body (2) is obtained by profiling.

17. A post as claimed in claim 16, **characterised in that** the axial body (2) is obtained by pultrusion.

18. A post as claimed in any of the previous claims, **characterised in that** it presents an exterior coating (6) removably engaged on said active portion (3) and destined to attenuate the effects of an impact of a body against the post (1).

19. A post as claimed in claim 18, **characterised in that** said coating (6) is an elongated body presenting an inner cavity able to house at least a part of the active portion (3), said exterior coating (6) being associated to the active portion (3) through the insertion of said active portion (3) into said inner cavity of the exterior coating (6).

20. A post as claimed in claim 19, **characterised in that** said inner cavity of the exterior coating (6) is shaped counter to the part of active portion (3) where to it is associated.

21. A post as claimed in claim 18, **characterised in that**

said exterior coating (6) is made of polyurethane foam.

5 Patentansprüche

1. Stange, insbesondere zum Begrenzen von Pisten, umfassend einen stangenartigen Körper (2), wobei der stangenartige Körper (2) der Form nach unterteilt ist in:

- einen aktiven Abschnitt, verlängerter Ausbildung; und
- einen am Boden befestigbaren Verankerungsabschnitt (4), der mit dem aktiven Abschnitt (3) verbunden ist;

dadurch gekennzeichnet, dass der stangenartige Körper (2) einen festen Teil aufweist, der längs der gesamten Abwicklungsachse des stangenartigen Körpers (2) selbst konstant ist, wobei der feste Teil vollständig mit einer plastischen Matrice ausgeführt ist, in der eine Vielzahl von kontinuierlichen Verstärkungsfasern eingebettet ist.

2. Stange nach Anspruch 1, **dadurch gekennzeichnet, dass** sie einen stangenförmigen Körper (2) aufweist, der den aktiven Abschnitt (3) und den Verankerungsabschnitt (4) umfasst, wobei der Verankerungsabschnitt (4) mit dem aktiven Abschnitt (3) elastisch verbunden ist, wobei der Verankerungsabschnitt (4) eine ununterbrochene Fortsetzung des aktiven Abschnittes (3) ist.

3. Stange nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Verstärkungsfasern kontinuierlicher Art sind.

4. Stange nach Anspruch 3, **dadurch gekennzeichnet, dass** die Fasern gemäß der Längsabwicklungsachse der Stange (1), bevorzugter Weise parallel zu dieser Achse angeordnet sind.

5. Stange nach Anspruch 3, **dadurch gekennzeichnet, dass** sich die Fasern längs der gesamten Länge des aktiven Abschnittes (3) erstrecken.

6. Stange nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Verstärkungsfasern aus Glas und/oder Aramidfasern und/oder Kohlenstoff bestehen.

7. Stange nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der Verankerungsabschnitt (4) mit einer Plastikmatrice ausgeführt ist, in der eine Vielzahl von Verstärkungsfasern eingebettet ist.

8. Stange nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** sie ein Verankerungselement (5) umfasst, das endseitig dem Verankerungsabschnitt (4) zugeordnet ist.
9. Stange nach Anspruch 8, **dadurch gekennzeichnet, dass** das Verankerungselement (5) am Verankerungsabschnitt (4) der Stange (1) angeklebt ist.
10. Stange nach Anspruch 8, **dadurch gekennzeichnet, dass** das Verankerungselement (5) einen Innenhohlraum (7), der mindestens einen Teil des Verankerungsabschnittes (4) aufnimmt, und eine den Körper begrenzende Außenfläche aufweist, wobei das Verankerungselement (5) dem Verankerungsabschnitt (4) durch Einbringen des Verankerungsabschnittes (4) in den Innenhohlraum (7) zugeordnet ist.
11. Stange nach Anspruch 10, **dadurch gekennzeichnet, dass** das Verankerungselement (5) an einer Außenfläche Reibmittel (8) aufweist, um die Griffbarkeit mit dem Boden zu erhöhen.
12. Stange nach Anspruch 11, **dadurch gekennzeichnet, dass** die Reibungsmittel (8) ein an der genannten Außenfläche ausgenommenes Gewinde umfassen.
13. Stange nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der aktive Abschnitt (3) einen Querschnitt aufweist, der gegenüber der Abwicklungsachse axialsymmetrisch ist.
14. Stange nach Anspruch 13, **dadurch gekennzeichnet, dass** der aktive Abschnitt (3) einen kreisförmigen Querschnitt aufweist.
15. Stange nach einem beliebigen der vorstehenden Ansprüche von 2 bis 14, **dadurch gekennzeichnet, dass** der stangenartige Körper (2) einen längs der Längsabwicklungsachse veränderlichen Querschnitt aufweist, wobei der stangenartige Körper (2) bevorzugter Weise vom Boden weg verjüngt ist.
16. Stange nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der Axialkörper (2) durch formgebende Bearbeitung erhalten wird.
17. Stange nach Anspruch 16, **dadurch gekennzeichnet, dass** der Axialkörper (2) durch Pultrusion erhalten wird.
18. Stange nach einem beliebigen der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** sie eine Außenverkleidung (6) aufweist, die am aktiven

Abschnitt (3) auswechselbar angreift, und dazu bestimmt ist, die Stoßwirkungen eines Körpers gegen die Stange (1) abzuschwächen.

- 5 19. Stange nach Anspruch 18, **dadurch gekennzeichnet, dass** die Außenverkleidung (6) ein Längskörper ist, der einen Innenhohlraum aufweist, der mindestens einen Teil des aktiven Abschnittes (3) aufnimmt, wobei die Außenverkleidung (6) dem aktiven Abschnitt (3) durch Einbringen des aktiven Abschnittes (3) in den Innenhohlraum der Außenverkleidung (6) zugeordnet ist.
- 10 20. Stange nach Anspruch 19, **dadurch gekennzeichnet, dass** der Innenhohlraum der Außenverkleidung (6) dem Teil des aktiven Abschnittes (3) gegenprofiliert ist, dem er zugeordnet ist.
- 15 21. Stange nach Anspruch 18, **dadurch gekennzeichnet, dass** die Außenverkleidung (6) aus geschäumtem Polyurethan besteht.

Revendications

- 25 1. Piquet, particulièrement pour délimiter des pistes, comprenant un corps en forme de tige (2), ledit corps en forme de tige (2) étant formellement divisé en:
 - une portion active (3) de forme allongée; et
 - une portion d'ancrage (4) destinée à être fixée au sol et reliée à ladite portion active (3);
- 30 **caractérisé en ce que** le corps en forme de tige (2) présente une section pleine qui est constante le long de tout l'axe d'extension dudit corps en forme de tige (2), ladite section pleine étant entièrement réalisée en utilisant une matrice plastique dans laquelle on a noyé une pluralité de fibres de renforcement continues.
- 35 2. Piquet selon la revendication 1, **caractérisé en ce qu'il** présente un corps en forme de tige (2) comprenant ladite portion active (3) et ladite portion d'ancrage (4), la portion d'ancrage (4) étant élastiquement reliée à la portion active (3), la portion d'ancrage (4) étant une continuation ininterrompue de ladite portion active (3).
- 40 3. Piquet selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdites fibres de renforcement sont de type continu.
- 45 4. Piquet selon la revendication 3, **caractérisé en ce que** lesdites fibres sont disposées suivant l'axe d'extension longitudinal du piquet (1), de préférence parallèles audit axe.
- 50

5. Piquet selon la revendication 3, **caractérisé en ce que** lesdites fibres s'étendent sur toute la longueur de la portion active (3).
6. Piquet selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdites fibres de renforcement sont fabriquées en verre et/ou en fibres d'aramide et/ou en carbone.
7. Piquet selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ladite portion d'ancrage (4) est réalisée en utilisant une matrice plastique dans laquelle on a noyé une pluralité de fibres de renforcement.
8. Piquet selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** comporte un élément d'ancrage (5) associé à son extrémité à ladite portion d'ancrage (4).
9. Piquet selon la revendication 8, **caractérisé en ce que** ledit élément d'ancrage (5) est collé à la portion d'ancrage (4) du piquet (1).
10. Piquet selon la revendication 8, **caractérisé en ce que** ledit élément d'ancrage (5) présente une cavité intérieure (7) susceptible de loger au moins une partie de la portion d'ancrage (4) et une surface extérieure délimitant ledit corps, ledit élément d'ancrage (5) étant associé à la portion d'ancrage (4) par introduction de ladite portion d'ancrage (4) dans ladite cavité intérieure (7).
11. Piquet selon la revendication 10, **caractérisé en ce que** ledit élément d'ancrage (5) présente, sur sa surface extérieure, des moyens de frottement (8) destinés à augmenter sa prise sur le terrain.
12. Piquet selon la revendication 11, **caractérisé en ce que** lesdits moyens de frottement (8) comportent un filetage obtenu sur ladite surface extérieure.
13. Piquet selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la portion active (3) a sa section transversale symétrique en sens axial par rapport à l'axe d'extension.
14. Piquet selon la revendication 13, **caractérisé en ce que** la portion active (3) présente une forme circulaire en coupe transversale.
15. Piquet selon l'une quelconque des revendications précédentes 2 à 14, **caractérisé en ce que** le corps en forme de tige (2) a une section variable le long de l'axe d'extension longitudinal, le corps en forme de tige (2) étant de préférence à section décroissante dans la direction d'éloignement du sol.
16. Piquet selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le corps axial (2) est obtenu par façonnage.
17. Piquet selon la revendication 16, **caractérisé en ce que** le corps axial (2) est obtenu par pultrusion.
18. Piquet selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'il** présente un revêtement extérieur (6) engagé de manière amovible sur ladite portion active (3) et destiné à atténuer les effets causés par le choc d'un corps contre le piquet (1).
19. Piquet selon la revendication 18, **caractérisé en ce que** ledit revêtement (6) est un corps allongé présentant une cavité intérieure en état de loger au moins une partie de la portion active (3), ledit revêtement extérieur (6) étant associé à la portion active (3) par introduction de ladite portion active (3) dans ladite cavité intérieure du revêtement extérieur (6).
20. Piquet selon la revendication 19, **caractérisé en ce que** la forme de ladite cavité intérieure du revêtement extérieur (6) épouse celle de la partie de la portion active à laquelle cette cavité est associée.
21. Piquet selon la revendication 18, **caractérisé en ce que** ledit revêtement extérieur (6) est réalisé en polyuréthane expansé.

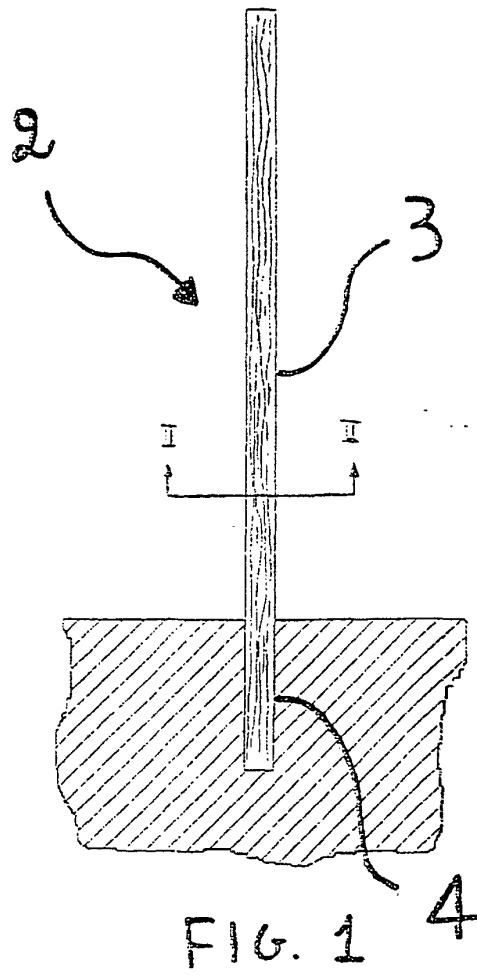


FIG. 2

